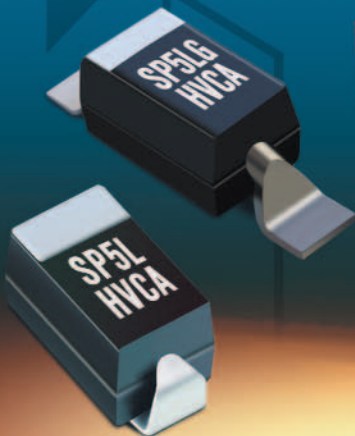




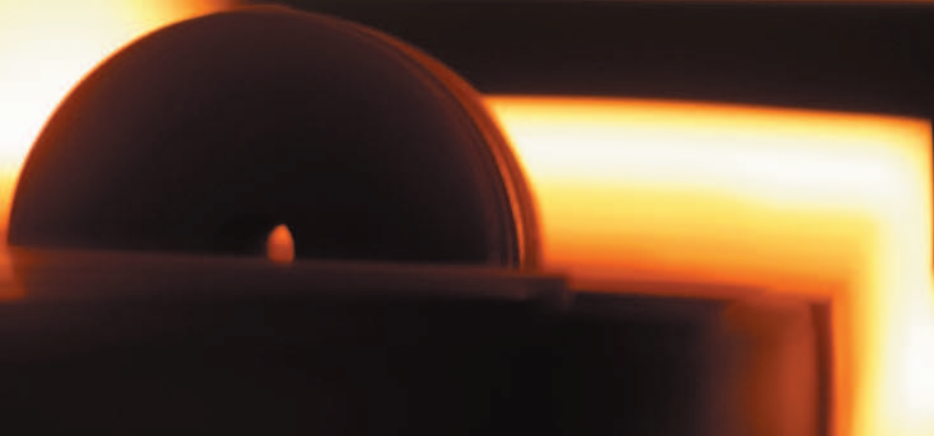
HV Component Associates



Manufacturers of

- HIGH VOLTAGE DIODES
- MOVs
- TVSS DEVICES
- SELENIUM SUPPRESSORS
- SILICON CARBIDE SUPPRESSORS
- HIGH VOLTAGE HIGH CURRENT ASSEMBLIES
- CAPACITORS
- HEATSINKS AND CLAMPS
- BRIDGE RECTIFIERS AND DIODES

**CAN'T FIND WHAT YOU NEED?
CALL US.
CUSTOM DESIGN IS OUR SPECIALTY.**





HV Component Associates (HVCA) specializes in the design, development and manufacture of high voltage rectifiers, bridge rectifiers and special assemblies for specific customer applications. CKE is a manufacturer of high voltage silicon rectifiers, MOVs, selenium suppressors, silicon carbide varistors, high voltage disk ceramic capacitors, high current/high voltage assemblies and also builds custom assemblies for unique requirements.

Originally, HVCA was the rectifier division of Galileo Electro-Optic Corporation formed in the early 1960s. In 1989, HVCA purchased the Conditioning Semiconductor Devices Corporation (CSdc), and began manufacturing epoxy power blocks that had been formerly produced by International Rectifier Corporation (IR).



Farmingdale, NJ facility

Dean Technology Inc. purchased Electronics Manufacturing Inc. (EM) based in Mobile, Alabama in 2001. EM manufactured high voltage diode assemblies similar to those of HVCA and CKE, so production has been moved into those facilities. The former owner of EM joined the Dean Technology team further expanding their technology with his specialty - RF and Transmitter design and repair.

In 2002, Dean Technology Inc. purchased the silicon carbide varistor line made by Therm-O-Disc, a division of Emerson Electric, combining it with the CKE operation. As a result, CKE makes the industry's widest variety of suppression products and offers suppression capabilities that no other company can match.



Lucernemines, PA facilities

CKE was created in 1980 through the acquisition of the FMC Sytron metallic rectifier and surge suppressor product lines, as well as the General Electric, International Rectifier, Westinghouse and Sarkes-Tarzian (ST-Semicon) selenium lines. Later, CKE began to supply metal oxide varistors (MOVs), providing direct replacements for most of the Harris, GE, Panasonic and Siemens MOV products. CKE introduced the TRANZAP line to provide replacements for silicon zener products similar to those made by General Semiconductor, Motorola and Semicon.



Indiana, PA facility

In 1989, CKE acquired the high voltage channel stack line formerly owned by Westinghouse/Powerex, adding a high voltage breadth to its line of low to medium

power silicon assemblies. In 1993, the International Rectifier lines were added, which included the popular half and full wave controlled SCR assemblies. Dean Technology Inc., HVCA's parent company, acquired CKE in 1999, which expanded the product line and combined the strengths of the two engineering departments.

NEW PRODUCTS

In most instances, new products are generated from requests for new and different high voltage rectifiers and special assemblies from present customers or new sources seeking solutions for special applications.

All requests for potentially new and better products are welcomed. We will work with our customers' engineering groups to provide working samples for engineering approval.

If you have a special requirement, please Contact Us.



Anshan, Liaoning China facility

ISO 9001: 2002 CERTIFIED

Anshan Sun Locus HV Components Corp., Ltd. (ASL), initially created as a joint venture in Anshan China, was fully acquired by Dean Technology, Inc. in 2006. This ISO 9001:2002 certified facility greatly increases Dean Technology's production capacity, while ensuring overall quality and cost effectiveness.



HVPSI Carrollton, TX facility

High Voltage Power Solutions Inc. (HVPSI), located in Carrollton, Texas, joined the Dean Technology family of companies in 2005. As the former manufacturing division of Collmer Semiconductor, they have over 26 years

experience in the design and manufacturing of custom high voltage power supplies (3kV to 150kV) and high voltage test equipment.

The administrative and technical group of HVCA, CKE, HVPSI and ASL is comprised of individuals who have pioneered high voltage rectifier technology for almost half a century. Our combined experience, along with advanced technology, is incorporated into the design and manufacturing techniques used to produce our products. This benefits our customers, who receive the most economical and highest quality products available.

CKE

HV COMPONENT ASSOCIATES

Lucernemines, PA 15754
 Telephone: (724) 479-3533 ■ Fax: (724) 479-3537
 www.cke.com

Mailing Address: P.O. Box 848 ■ Farmingdale, NJ 07727
 Telephone: (732) 938-4499 ■ Fax: (732) 938-4451
 www.hvca.com



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**For additional information or questions regarding the products in this catalog,
please contact the appropriate division at the bottom of each page.**

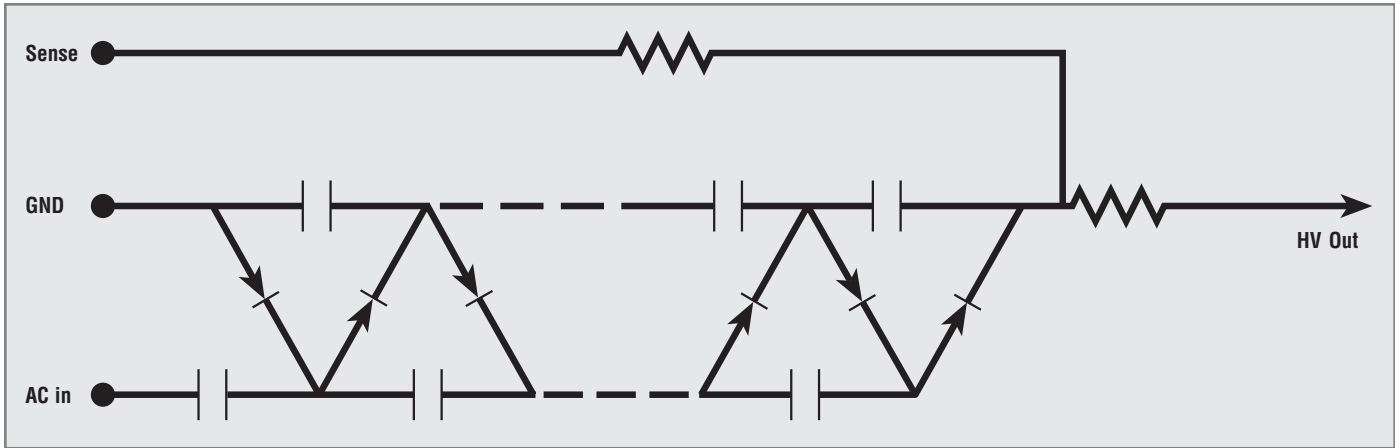
HVCA – CKE reserves the right to make changes in these specifications at any time and without notice in order to supply the best product possible.

CKE

HV COMPONENT ASSOCIATES

Lucernemines, PA 15754
Telephone: (724) 479-3533 ■ Fax: (724) 479-3537
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Custom voltage multiplier assemblies for various applications such as CRT, Electrostatic and X-Ray are a major part of our production. Because each application is unique, our engineering staff can help select the elements that will facilitate the operation of each design in the most efficient and cost-effective manner.

A wide variety of diodes, capacitors, resistors, wire, connectors and packages are available. Contact our technical staff for their expert assistance in helping you meet all your engineering design goals.

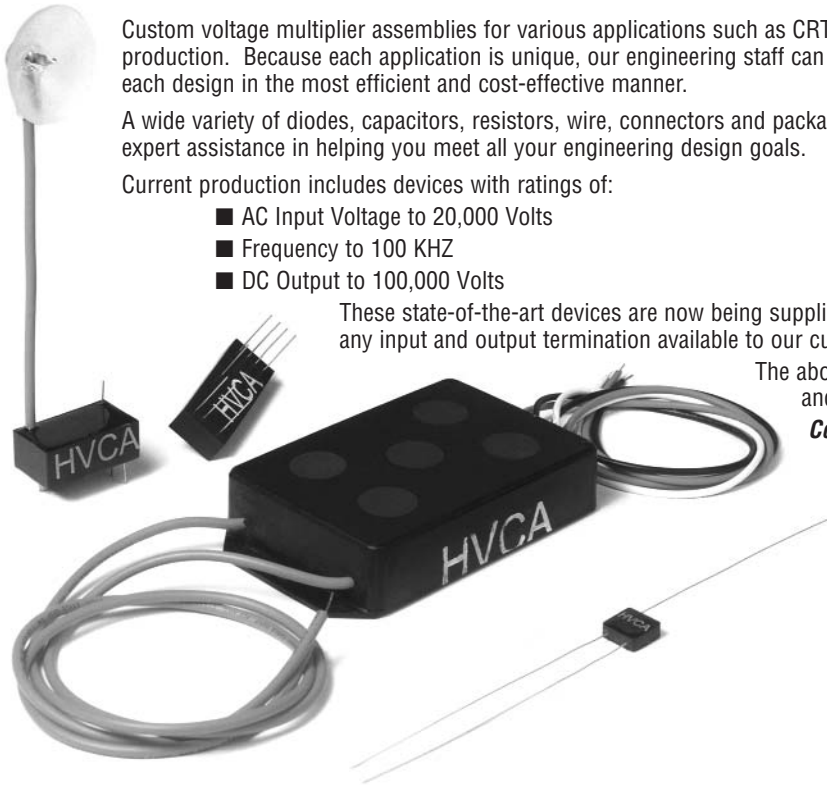
Current production includes devices with ratings of:

- AC Input Voltage to 20,000 Volts
- Frequency to 100 KHZ
- DC Output to 100,000 Volts

These state-of-the-art devices are now being supplied with resistor networks and internal shields as well as any input and output termination available to our custom molding department.

The above represents only our current production. The voltages and applications for multipliers are virtually unlimited.

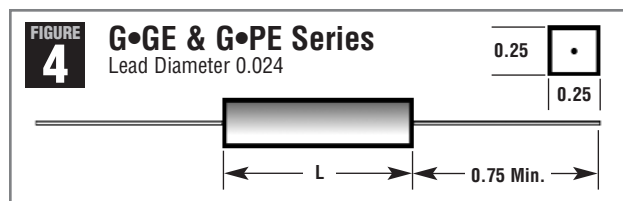
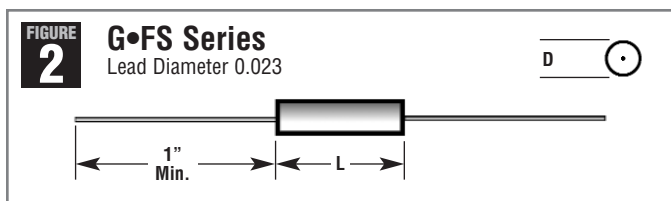
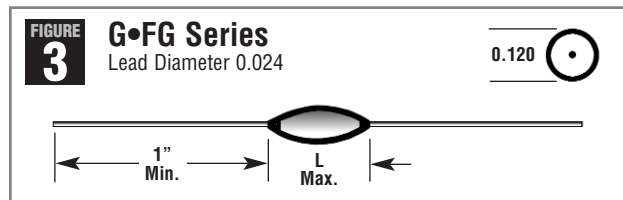
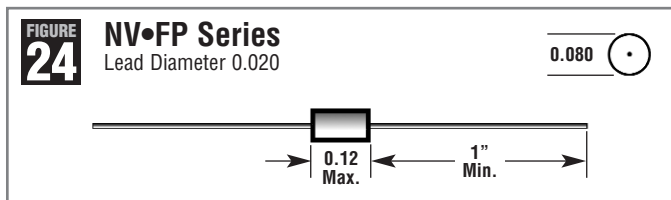
Contact us with your specifications - we will deliver.



CUSTOM DEVICES

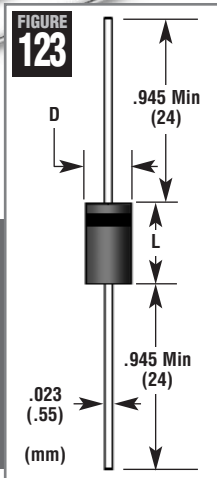
Specifications for devices made for unique applications are too numerous to list. A brief description of a few samples follows:

- High Reliability Military Screenwork for Any Device
- High Voltage Three Phase Molded Bridges
- High Voltage Axial Lead Cartridge Assemblies
- High Voltage Tubular Devices
- Solid State Tube Replacements
- Low Voltage Molded Custom Rectifier Assemblies
- Custom Molding and Assembly Services for SCR, Triac, Transistor and Power Supply Assemblies
- High Current-High Surge-High Voltage Open Board Assemblies
- Prototype Assemblies - We Specialize In and Encourage Building One or Two of Anything.



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} V (Volts)	Avg. Forward Current Max. $I_{FAVM@55^{\circ}C}$ mA (milliAmps)	Max. Forward Voltage Drop $V_F@10ma$ V (Volts)	Max. Reverse Current $I_R@V_{RRM}@25^{\circ}C$ μA (microAmps)	Max. Surge Current $I_{FSM}(8.3 ms)$ A (Amps)	Max. Reverse Recovery Time T_r (nsec)	Case Length Inches
NV • FP-Subminiature 100 nsec High Voltage Rectifier							Fig. 24
NV20FP	2000	20	10	0.02	3.0	100	0.12 Max.
NV30FP	3000	20	10	0.02	3.0	100	0.12 Max.
NV40FP	4000	20	10	0.02	3.0	100	0.12 Max.
NV50FP	5000	20	10	0.02	3.0	100	0.12 Max.
G • FS-Miniature 100 nsec High Voltage Rectifier							Fig. 2 – L and D
G2FS	2000	25	15	0.20	3.0	100	0.20 0.10
G3FS	3000	25	15	0.20	3.0	100	0.20 0.10
G4FS	4000	25	15	0.20	3.0	100	0.20 0.10
G5FS	5000	25	15	0.20	3.0	100	0.20 0.10
G6FS	6000	25	18	0.20	3.0	100	0.32 0.12
G7FS	7000	25	18	0.20	3.0	100	0.32 0.12
G8FS	8000	25	25	0.20	3.0	100	0.32 0.12
G10FS	10000	25	25	0.20	3.0	100	0.32 0.12
G12FS	12000	10	35	0.20	3.0	100	0.40 0.12
G15FS	15000	10	35	0.20	3.0	100	0.40 0.12
G • FP-Miniature 100 nsec High Voltage Rectifier							Fig. 2 – L and D
G20FP	20000	10	55	0.20	3.0	100	0.47 0.12
G25FP	25000	10	55	0.20	3.0	100	0.47 0.12
G30FP	30000	10	55	0.20	3.0	100	0.47 0.12
G • FG-Glass Passivated Fast Recovery High Voltage Rectifier							Fig. 3 L
G10FG	10000	10	50	0.20	3.0	100	0.44 Max
G12FG	12000	10	50	0.20	3.0	100	0.44 Max
G15FG	15000	10	50	0.20	3.0	100	0.44 Max
G • GE-Poured Epoxy Overmolded Fast Recovery Glass Passivated High Voltage Rectifier							Fig. 4 L
G10GE	10000	15	50	0.20	3.0	100	1.0
G12GE	12000	15	50	0.20	3.0	100	1.0
G15GE	15000	15	50	0.20	3.0	100	1.0
G • PE-Poured Epoxy Overmolded Fast Recovery High Voltage Rectifier							Fig. 4 L
G20PE	20000	15	70	0.20	3.0	200	1.0
G25PE	25000	15	70	0.20	3.0	200	1.0
G30PE	30000	15	70	0.20	3.0	200	1.0

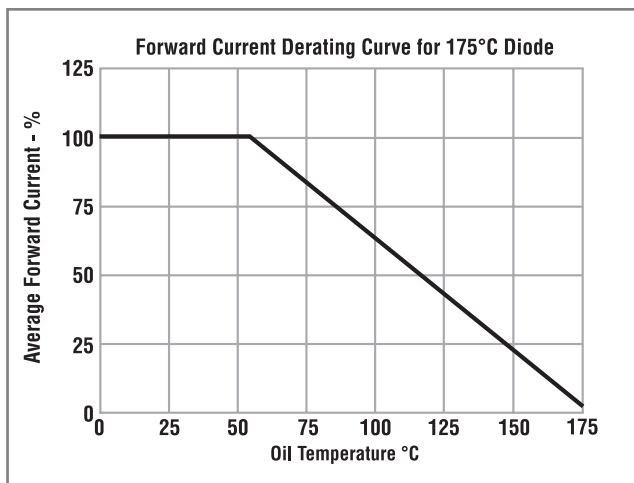
DIODES



**High Temperature Use
With Low Reverse Leakage**

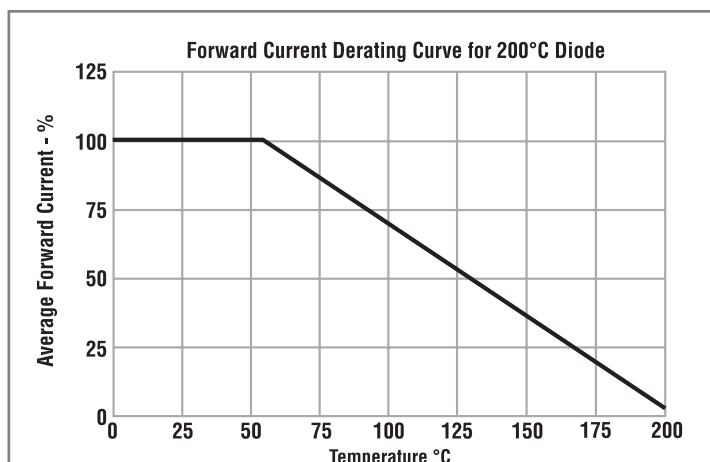
Applications

- Downhole Use
- Oil Well Drilling
- Automotive



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} (Volts)	Avg. Forward Current Max $I_{FAVM@55°C}$ Oil (mA (milliAmps))	Avg. Forward Current Max. I_{FAVM} @ 175°C Oil (mA (milliAmps))	Max. Forward Voltage Drop $V_F@I_{FAVM@25°C}$ (Volts)	Max. Reverse Current $I_R@25°C$ V_{RRM} @25°C (µA (microAmps))	Max. Reverse Current $I_R@175°C$ $V_{RRM}@175°C$ (µA (microAmps))	Max. Surge Current I_{FSM} (8.3ms) (A (Amps))	Typical Reverse Recovery Time T_{RR} (nsec)	Fig. 123 Length (inches)	Fig. 123 Diameter (inches)
High Temp Diode										
Ambient Operating Temperature Range -55°C to +175°C										
HVTD5	5000	50	5	15	0.5	15	3	-	0.32	0.12
HVTD5L	5000	35	5	25	0.5	5	3	-	0.40	0.10
HVTD6	6000	35	5	25	0.5	7.5	3	-	0.40	0.10
HVTD7	7000	35	5	25	0.5	7.5	3	-	0.40	0.10
Fast Recovery High Temp Diode										
Ambient Operating Temperature Range -55°C to +175°C										
HVTDR3	3000	25	1	25.0	0.20	14.0	3	100 @25°C 300@175°C	0.26	0.10
HVTDR4	4000	25	1	25.0	0.20	15.0	3	100 @25°C 300@175°C	0.26	0.10
HVTDR5	5000	25	1	25.0	0.20	16.0	3	100 @25°C 300@175°C	0.26	0.10
HVTDR6	6000	25	1	25.0	0.20	18.0	3	100 @25°C 300@175°C	0.26	0.10
HVTDR7	7000	25	1	25.0	0.20	20.0	3	100 @25°C 300@175°C	0.26	0.10

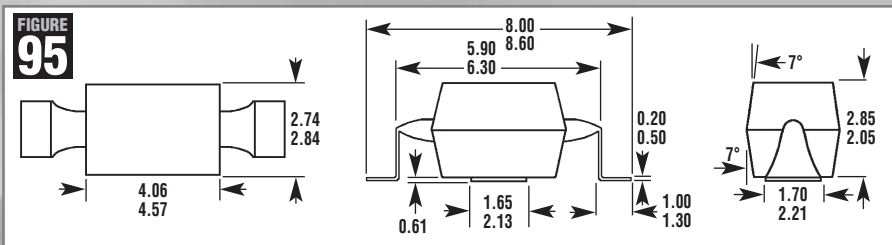
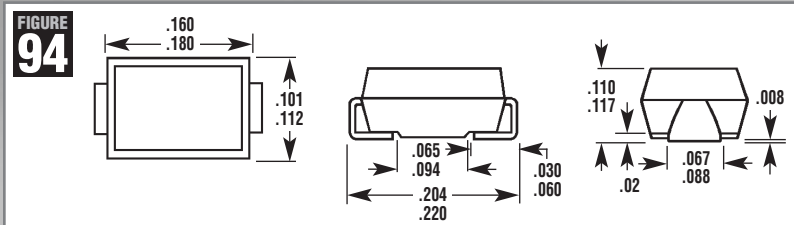
High Temperature Custom Assemblies are Available



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} (Volts)	Avg. Forward Current Max $I_{FAVM@55°C}$ Oil (mA (milliAmps))	Avg. Forward Current Max. I_{FAVM} @ 200°C Oil (mA (milliAmps))	Max. Forward Voltage Drop $V_F@I_{FAVM@25°C}$ (Volts)	Max. Reverse Current $I_R@25°C$ V_{RRM} @25°C (µA (microAmps))	Max. Reverse Current $I_R@200°C$ $V_{RRM}@200°C$ (µA (microAmps))	Max. Surge Current I_{FSM} (8.3ms) (A (Amps))	Typical Reverse Recovery Time T_{RR} (nsec)	Fig. 123 Length (inches)	Fig. 123 Diameter (inches)
High Temp Diode										
Ambient Operating Temperature Range -55°C to +200°C										
HVTD3	3000	50	1	25	0.5	30.0 Max 18.0 Typ	3	-	0.40	0.10

Note: I_R is measured in oil after voltage has been applied for 3 minutes on all HVTD Series Diodes.

DIODES



All dimensions in mm

**SMA Package Voltages up to 5kV
Currents up to 900mA**

HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} (Volts)	Avg. Forward Current Max. $I_{FAVM}@T_L=55^\circ\text{C}$ mA (milliamps)	Avg. Forward Current Max. $I_{FAVM}@T_L=100^\circ\text{C}$ mA (milliamps)	Max. Forward Voltage Drop $V_F@100\text{mA}$ V (Volts)	Typical Reverse Recovery Time (Note 1) T_{RR} (nsec)	Typical Reverse Recovery Time (Note 2) T_{RR} (nsec)	Lead Type
SM3F	3000	900	350	4.6	75	75	Fig 94
SM3FG	3000	900	350	4.6	75	75	Fig 95
SP5L	5000	270	140	14.0	75	100	Fig 94
SP5LG	5000	270	140	14.0	75	100	Fig 95
SP5S	5000	40	20	14.0	60	100	Fig 94
SP5SG	5000	40	20	14.0	60	100	Fig 95

HVCA Number	Max. Reverse Current $I_{RM}@25^\circ\text{C}$ μA (microamps)	Typical Junction Capacitance C_j (pF) (Note 3)	Typical Thermal Resistance $R_{\theta JA}$ $^\circ\text{C}/\text{W}$ (Note 4)	Typical Thermal Resistance $R_{\theta JL}$ $^\circ\text{C}/\text{W}$	Max Surge Current I_{FSM} (8.3 ms) A (Amps)	Operating Temperature T_o ($^\circ\text{C}$)	Storage Temperature T_s ($^\circ\text{C}$)
SM3F	5.0	15	30	7	15	-55 to 125	-55 to 150
SM3FG	5.0	15	30	7	15	-55 to 125	-55 to 150
SP5L	0.1	15	-	9	10	-55 to 150	-55 to 150
SP5LG	0.1	15	-	9	10	-55 to 150	-55 to 150
SP5S	2.0	15	-	-	3	-55 to 150	-55 to 150
SP5SG	2.0	15	-	-	3	-55 to 150	-55 to 150

Notes:

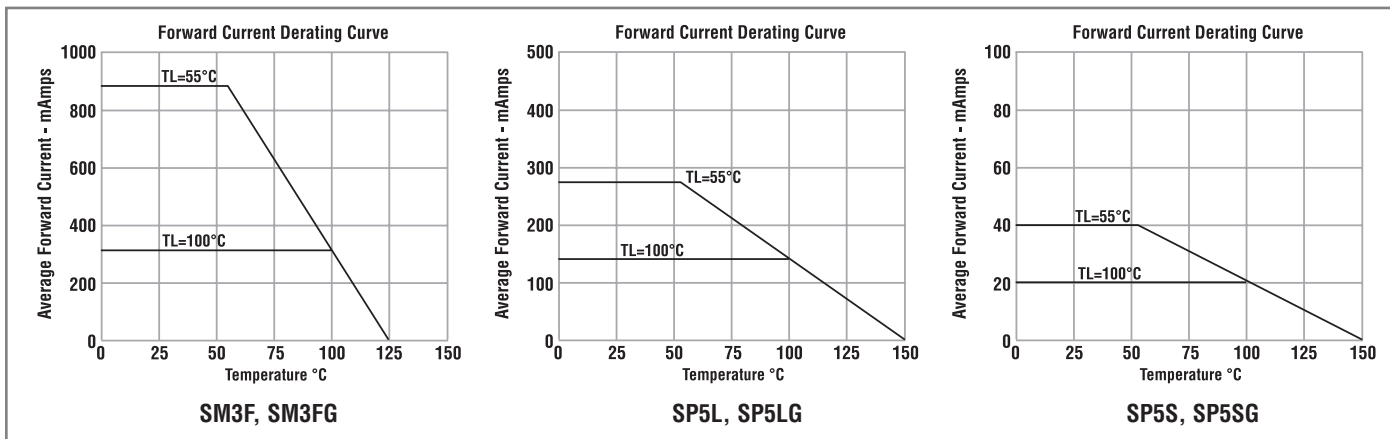
(1) $I_F=20\text{mA}$, $I_R=4\text{mA}$, $I_{rr}=10\text{mA}$

(2) $I_F=100\text{mA}$, $I_R=250\text{mA}$, $I_{rr}=50\text{mA}$

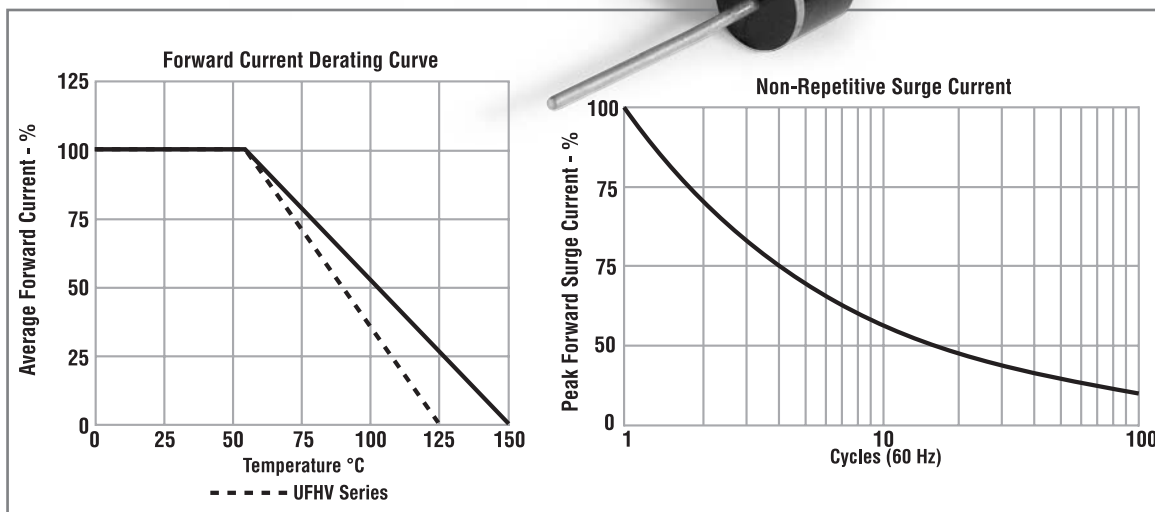
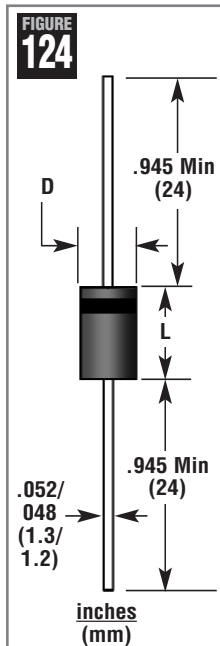
(3) Measured at 1 KHz

(4) P.C.B. mounted on 0.2" x 0.2" (5.0 x 5.0mm) copper pad areas

Derating Curves



DIODES



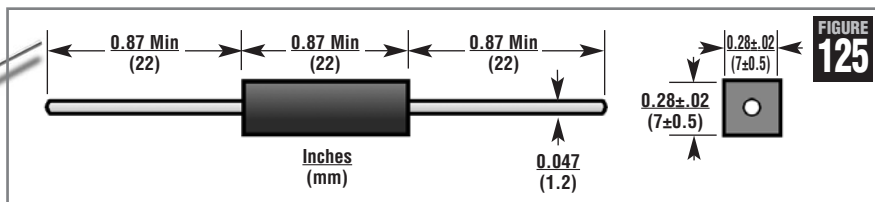
HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} Per Leg (Volts)	Avg. Forward Current Max $I_{FAVM}@55^{\circ}C$ (Amps)	Avg. Forward Voltage Drop $V_F@I_{FAVM}$ (Volts)	Max. Reverse Current $I_R@V_{RRM}@25^{\circ}C$ (μA)	Max. Surge Current I_{FSM} (8.3ms) (Amps)	Max. Reverse Recovery Time T_{RR} (nsec)	Length L (inches)	Diameter D (inches)
BR - High Voltage, Medium Current, Small Size								
BR2	2000	1.0	2.4	5.0	40.0	-	0.354	0.197
BR4	4000	0.850	4.4	5.0	20.0	-	0.354	0.197
BR4F	4000	0.600	7.0	5.0	20.0	100	0.354	0.197
BR5F	5000	0.600	8.8	5.0	20.0	100	0.354	0.197
BR10F	10000	0.250	14.0	5.0	20.0	150	0.354	0.197
HVW, HVRW - High Voltage, High Current, High Surge, Small Size - NOTE 1								
HVW3	3000	2.0	3.0	5.0	300	-	0.36	0.36
HVRW1	1000	2.5	2.0	10.0	200	150	0.38	0.32
HVRW2	2000	1.5	4.0	10.0	200	150	0.38	0.32
HVRW3	3000	1.5	5.0	10.0	200	150	0.38	0.32
HVRW4	4000	1.0	6.0	10.0	200	150	0.38	0.32
CL03 - High Voltage, Medium Current, Fast Recovery								
CL03-8	8000	0.40	20	2.0	20	100	0.87	0.30
CL03-10	10000	0.30	25	2.0	20	100	0.87	0.30
CL03-12	12000	0.25	30	2.0	20	100	0.87	0.30
CL03-15	15000	0.20	35	2.0	20	100	0.87	0.30
CL03-20	20000	0.12	38	2.0	20	100	0.87	0.30
2CL1 - High Voltage, Medium Current, Standard Recovery								
2CL105	9000	0.450	10.0	2.0	30	-	0.87	0.30
2CL106	12000	0.450	12.0	2.0	30	-	0.87	0.30
UFHV - High Voltage, Medium Current, Fast Recovery								
UFHV2K	2000	.850	3.0	5.0	30	75	0.20	0.10
UFHV3K	3000	.825	4.5	5.0	30	75	0.20	0.10
UFHV4K	4000	.800	6.0	5.0	30	75	0.20	0.10

Note 1) HV Components suggests that a proper heatsink is used on the leads of this device to prevent damage from heating and to achieve maximum current capability

DIODES

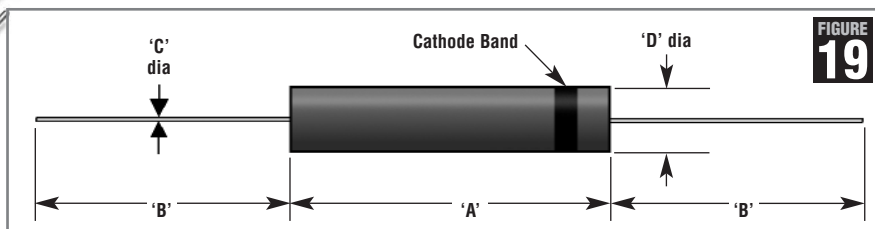
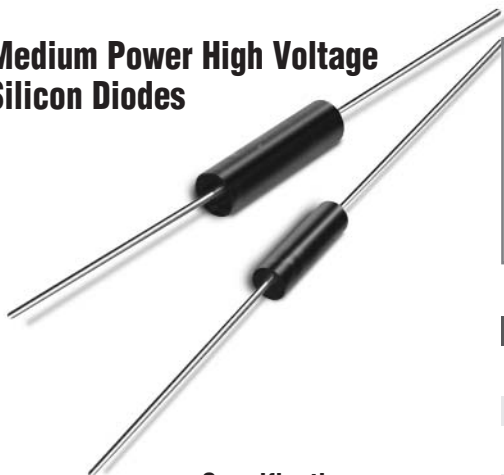


High Voltage Power Diodes Ultra-Fast Recovery



HVCA Number	Repetitive Peak Reverse V_{RRM} V (Volts)	Avg. Forward Current Maximum $I_{FAVM@}$		Max. Forward Voltage Drop $V_F@I_F$ V (Volts)	Max. Reverse Recovery Time T_{rr} (nsec)	Max. Reverse Current $I_R@V_{RRM}@25^\circ C$ μA (microAmps)	Max. Surge Current I_{FSM} (8.3ms) A (Amps)	Figure
		$T_A=55^\circ C$ mA (milliamps)	$T_{OIL}=55^\circ C$ mA (milliamps)					
UX—Ultra Fast Recovery High Current Diode								
UX-FOB	8000	500	600	12.0	40	0.5	20	125
UX-FBR8	8000	420	500	12.0	40	0.5	20	124
<i>Dimensions for UX-FBR8 – Length L (inches) - 0.354, Diameter D (inches) - 0.197</i>								
UX-F15B	15000	200	320	16.0	50	0.5	20	125
UX-F2CL15	15000	150	250	16.0	50	0.5	20	19

Medium Power High Voltage Silicon Diodes



Dimension Details

A		B		C		D			
Maximum		Minimum		Minimum	Maximum	Maximum			
Inch	mm	Inch	mm	Inch	mm	Inch	mm		
0.60	15.24	0.94	24	0.028	0.71	0.032	0.81	0.170	4.30

Specifications

HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} V (Volts)	Average Forward Current Maximum $I_{FAVM@}$		Maximum Single Cycle Surge Current I_{FSM} A (Amps)	Maximum Forward Voltage Drop $V_F@T_A=25^\circ C$ & 100mA V (Volts)	Maximum Reverse Current $I_R@V_{RRM}$		Maximum Reverse Recovery Time@ $T_A=25^\circ C$ T_{rr} (nsec)	Maximum Virtual Junction Cap. $C_j@T_A=25^\circ C$ $V_{RRM}=0$ Freq=1Mhz pF (Picofarads)
		$T_A=40^\circ C$ mA (milliamps)	$T_{OIL}=55^\circ C$ mA (milliamps)			$T_A=25^\circ C$ μA Amps	$T_A=100^\circ C$ μA Amps		
2CL2F	8,000	100	220	20	10.0	2.0	40	-	15
2CL2G	10,000	100	220	20	12.0	2.0	40	-	15
2CL2H	12,000	100	220	20	13.0	2.0	40	-	15
2CL2J	15,000	100	220	20	16.0	2.0	40	-	15
2CL2FF	8,000	60	120	10	16.0	2.0	50	150	15
2CL2FG	10,000	60	120	10	18.0	2.0	50	150	15
2CL2FH	12,000	60	120	10	20.0	2.0	50	150	15
2CL2FJ	15,000	60	120	10	24.0	2.0	50	150	15
2CL2FK	10,000	100	220	10	22.0	2.0	50	100	15
2CL2FL	15,000	100	220	10	26.0	2.0	50	100	15
2CL2FM	20,000	100	220	10	35.0	2.0	50	100	15
2CL2FP	30,000	100	220	10	52.0	2.0	50	100	15

High Current Version

HV37-08	8,000	210	410	15	12.0	2.0	10	150	15
HV37-10	10,000	190	365	15	14.0	2.0	10	150	15

DIODES



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} Per Leg V(Volts)	Peak Reverse Voltage, Test V_{TRM} V(Volts)	Avg. Forward Current Max. $I_{FAVM}@55^{\circ}C$ mA(milliamps)	Max. Forward Voltage Drop $V_{F@I_F}$ Per Leg V(Volts)	Max. Reverse Current $I_R@V_{RRM}@25^{\circ}C$ μA (microAmps)	Max. Surge Current I_{FSM} (8.3ms) A (Amps)	Max. Reverse Recovery Time T_{rr} (nsec)	Figure 20 Board Size
HVB, XRB-High Voltage Rectifier Boards								
HVSB100	100000	-	220	140	2	20	-	A
HVSB150	150000	-	220	182	2	20	-	A
HVSB200	200000	-	220	224	2	20	-	A
HVSBF100	100000	-	220	308	2	10	100	A
HVSBF150	150000	-	220	364	2	10	100	A
HVSBF200	200000	-	220	364	2	10	100	A
XRB100	100000	125000	220	160	2	20	-	B
XRB125	125000	150000	220	192	2	20	-	B
XRB150	150000	175000	220	208	2	20	-	B
XRB175	175000	200000	220	256	2	20	-	B
XRB200	200000	225000	220	256	2	20	-	B
XRBF100	100000	125000	220	352	2	10	100	B
XRBF125	125000	150000	220	352	2	10	100	B
XRBF150	150000	175000	220	416	2	10	100	B
XRBF175	175000	200000	220	416	2	10	100	B
XRBF200	200000	225000	220	416	2	10	100	B
XRBF250	250000	275000	220	560	2	10	100	B
XRLB100	100000	125000	220	170	2	20	-	C
XRLB125	125000	150000	220	204	2	20	-	C
XRLB150	150000	175000	220	221	2	20	-	C
XRLB175	175000	200000	220	221	2	20	-	C
XRLB200	200000	225000	220	272	2	20	-	C
XRLBF100	100000	125000	220	374	2	10	100	C
XRLBF125	125000	150000	220	374	2	10	100	C
XRLBF150	150000	175000	220	442	2	10	100	C
XRLBF175	175000	200000	220	442	2	10	100	C
XRLBF200	200000	225000	220	442	2	10	100	C
XRLBF250	250000	275000	220	595	2	10	100	C
HVMB175	175000	-	220	230	2	20	-	D
HVMB225	225000	-	220	276	2	20	-	D
HVMB275	275000	-	220	299	2	20	-	D
HVMB325	325000	-	220	368	2	20	-	D
HVMBF225	225000	-	220	506	2	10	100	D
HVMBF325	325000	-	220	598	2	10	100	D
HVMBF450	450000	-	220	805	2	10	100	D
HVB200	200000	-	220	300	2	20	-	E
HVB250	250000	-	220	360	2	20	-	E
HVB300	300000	-	220	360	2	20	-	E
HVB350	350000	-	220	390	2	20	-	E
HVB450	450000	-	220	480	2	20	-	E
HVBF200	200000	-	220	660	2	10	100	E
HVBF250	250000	-	220	660	2	10	100	E
HVBF300	300000	-	220	660	2	10	100	E
HVBF350	350000	-	220	780	2	10	100	E
HVBF450	450000	-	220	780	2	10	100	E
HVBF600	600000	-	220	1050	2	10	100	E
HV•B, HV•BF-High Voltage Board Center Tap and Doubler (Voltage is Per Leg, Double the Voltage for the Whole Board)								
HV•B75	75000	-	220	110	2	20	-	F
HV•B100	100000	-	220	132	2	20	-	F
HV•B125	125000	-	220	143	2	20	-	F
HV•B150	150000	-	220	176	2	20	-	F
HVBF•100	100000	-	220	242	2	10	100	F
HVBF•150	150000	-	220	286	2	10	100	F
HVBF•200	200000	-	220	385	2	10	100	F

Please Note: Different Circuit Arrangements are identified by using a Circuit Code Letter.

P=Positive Center Tap
N=Negative Center Tap
D=Doubler

Positive Center Tap (P)

●—|—●—|—●
 Positive Center Tap 220mA, 75000V/LEG HVBP75

Negative Center Tap (N)

●—|—●—|—●
 Negative Center Tap 220mA, 75000V/LEG HVBN75

Doubler (D)

●—|—●—|—●
 (I_{FAVM} of Doubler is $I_{FAVM} \times 0.5$)
 Fast Recovery Doubler 220mA, 75000V/LEG HVBD75

Notes: To achieve rated current and voltage, diodes must be submerged in Shell Diala oil AX electrical insulating oil or equivalent.

Boards over 200kv are only forward tested after assembly, all individual diodes are reverse tested at full rated voltage before assembly.

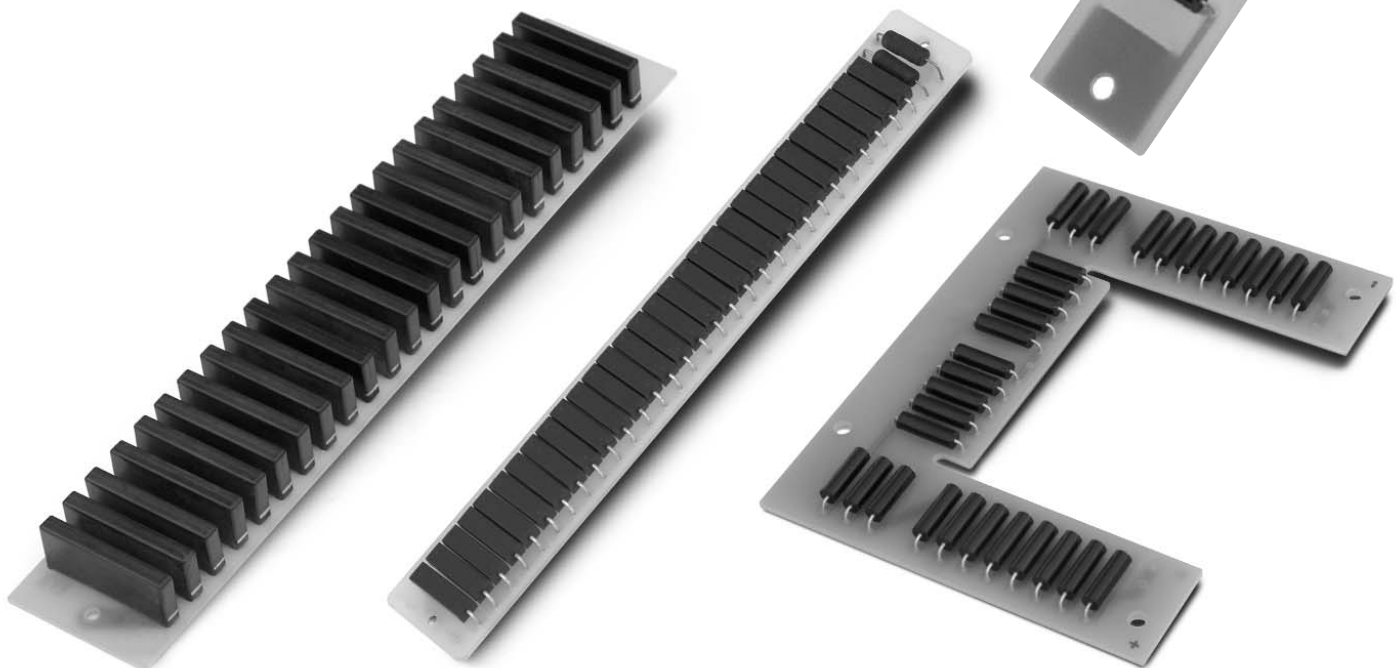
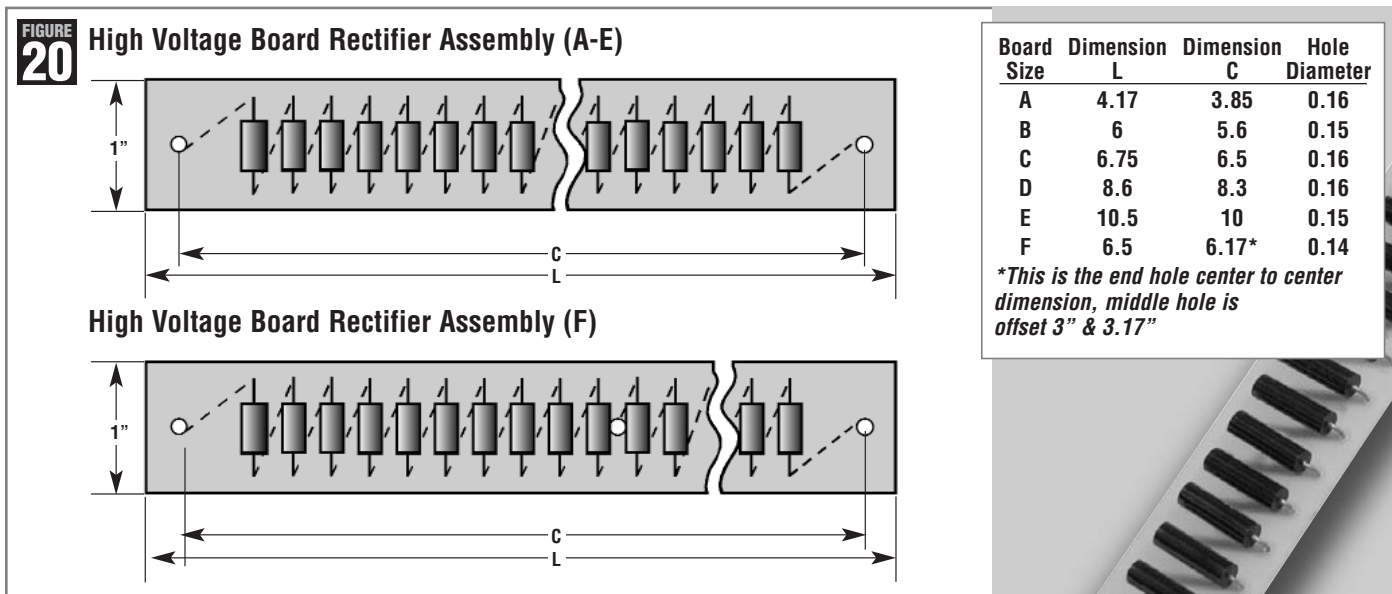


HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} V(Volts) Leg	Peak Reverse Voltage, Test V_{TRM} V(Volts)	Avg. Forward Current Max. $I_{FAVM}@55^{\circ}C$ A(Amps)	Max. Forward Voltage Drop $V_F@I_F$ V(Volts) Leg	Max. Reverse Current $I_R@V_{RRM}$ @25°C μA (microAmps)	Max. Surge Current I_{FSM} (8.3ms) A (Amps)	Max. Reverse Recovery Time T_{rr} (nsec)	Board Length & Width (Inches) L & W
PBA - Power Board Assembly (Note 1)								
3PBA50	50000	-	3	48	0.5	150	-	Fig 20-14.0x1.25
6PBA25	25000	-	5	25	5	400	-	Fig 20-14.0x1.25
PBA•RC-Resistor Capacitor Compensated Power Board Assembly (Note 1)								
3PBA50RC	50000	-	3	48	500	150	-	*Fig 20-14.0x1.25
6PBA25RC	25000	-	5	25	500	400	-	*Fig 20-14.0x1.25

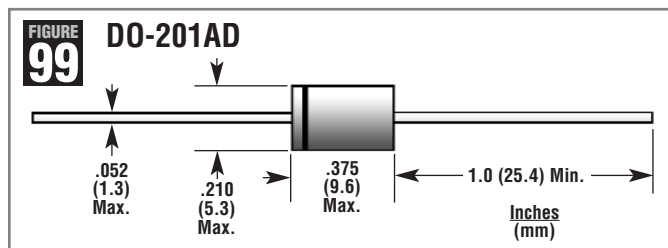
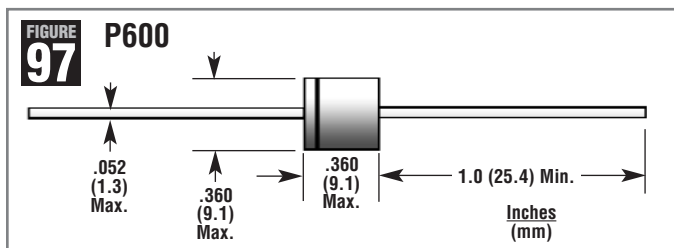
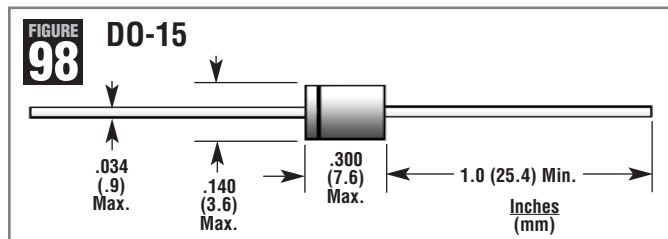
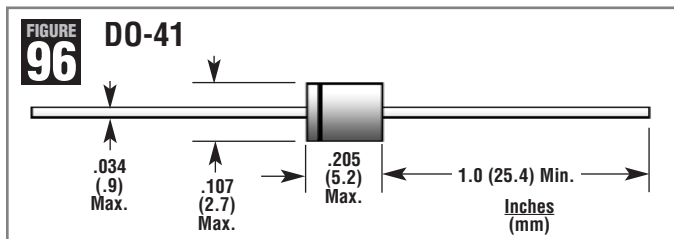
Note 1: Forced air required. Significantly higher current is available with improved cooling.

*Consult the factory

Custom board available



DIODES



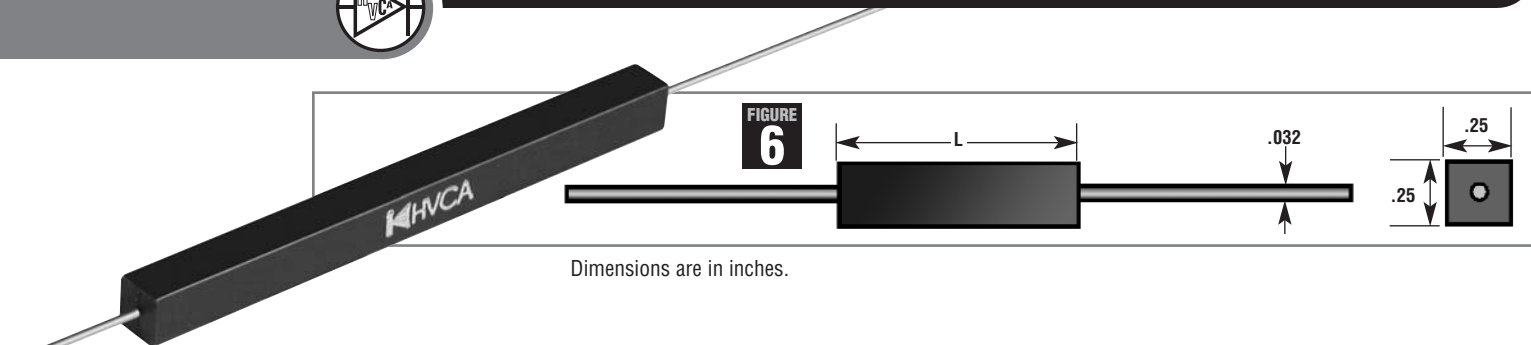
HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} V (Volts)	Avg. Forward Current Max. $I_{FAVM@50^{\circ}C}$ A (Amps)	Max. Forward Voltage Drop $V_F@I_F$ V (Volts)	Max. Surge Current $I_{FSM}(8.3ms)$ A (Amps)	Max. Reverse Current $I_R@V_{RRM@25^{\circ}C}$ μ A (microAmps)	Typical Recovery Time T_r (nsec)	Figure
SUPER FAST RECTIFIERS							
SF16L	400	1.0	1.25	30	5.0	35	96
SF26	400	2.0	1.25	50	5.0	35	98
SF36	400	3.0	1.25	125	5.0	35	99
ULTRA FAST RECTIFIERS							
UF4007	1000	1.0	1.40	30	5.0	75	96
UF5408	1000	3.0	1.40	125	10.0	75	99
HIGH EFFICIENCY RECTIFIERS							
HER158	1000	1.5	1.70	50	5.0	75	98
HER208	1000	2.0	1.70	55	5.0	75	98
HER308	1000	3.0	1.70	125	10.0	75	99
HER508	1000	5.0	1.70	150	10.0	75	99
HER608	1000	6.0	1.70	200	10.0	75	97
SOFT FAST RECOVERY RECTIFIERS							
SFR157	1000	1.5	1.20	50	5.0	350	98
SFR207	1000	2.0	1.20	60	5.0	350	98
SFR307	1000	3.0	1.20	150	10.0	350	99
SFR607	1000	6.0	1.20	200	10.0	350	97

Other voltages available - contact the factory

DIODES



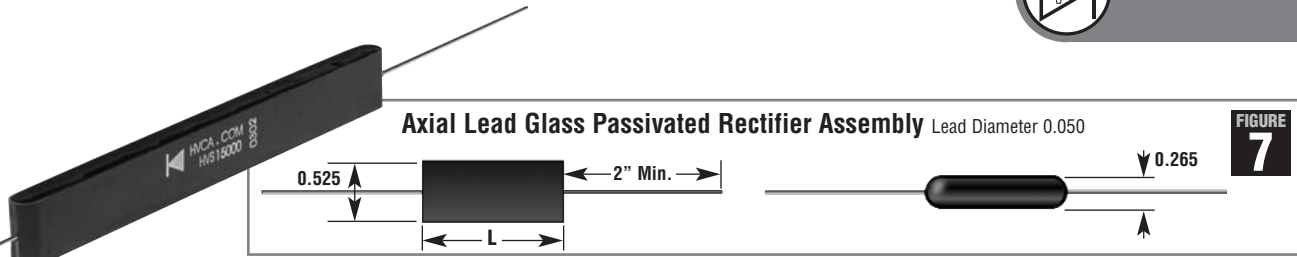
HIGH VOLTAGE AXIAL LEAD RECTIFIER ASSEMBLY – BCH, RH, RS & RTH SERIES



Dimensions are in inches.

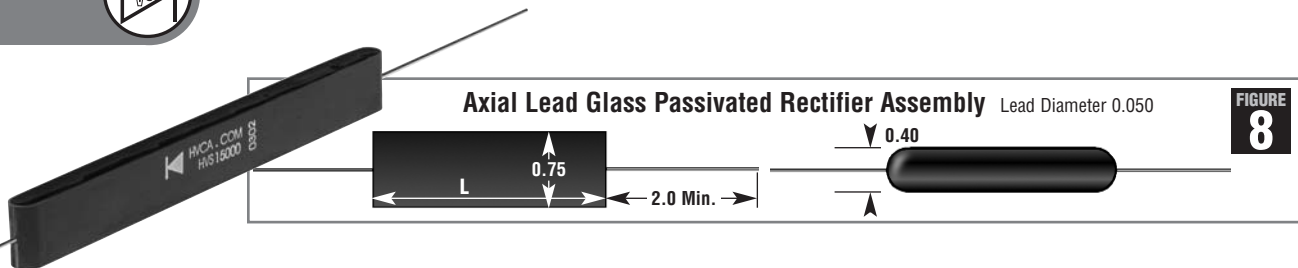
HVCA Number	Peak Reverse Voltage V_{RRM} V(Volts)	Avg. Forward Current Max. $I_{FAVM}@55^{\circ}C$ mA(milliamps)	Max. Forward Voltage Drop $V_F@I_F$ V(Volts)	Max. Reverse Current $I_R@V_{RRM}@25^{\circ}C$ μA (microAmps)	Max. Surge Current $I_{FSM}(8.3ms)$ A(Amps)	Max. Reverse Recovery Time T_r (nsec)	Figure No. 6 Length
RSUF2	2000	650	2.6	5	10	35	1.0
RSUF3	3000	650	3.9	5	10	35	1.5
RSUF5	5000	550	6.5	5	10	35	2.0
RSUF6	6000	500	7.8	5	10	35	2.5
RSUF7	7000	500	9.1	5	10	35	3.0
RSUFH12	1200	1500	3.6	10	50	35	1.0
RSUFH18	1800	1500	5.4	10	50	35	1.5
RSUFH24	2400	1250	7.2	10	50	35	2.0
RSUFH36	3600	1250	10.8	10	50	35	2.5
RSUFH42	4200	1250	12.6	10	50	35	3.0
RHV15	15000	25	35	1	3	100	2.0
RHV20	20000	25	55	1	3	100	2.0
RHV25	25000	25	55	1	3	100	2.0
RHV30	30000	25	70	1	3	100	3.0
RHV35	35000	25	110	1	3	100	3.0
RHV40	40000	25	110	1	3	100	3.0
RHV50	50000	25	110	1	3	100	3.0
RHV60	60000	25	110	1	3	100	3.0
RHV90	90000	25	165	1	3	100	3.0
RHV120	120000	25	220	1	3	100	3.0
RHV150	150000	25	275	1	3	100	3.0
BCHV08	8000	100	10	2	20	-	1.0
BCHV10	10000	100	12	2	20	-	1.0
BCHV12	12000	100	13	2	20	-	1.0
BCHV15	15000	100	16	2	20	-	1.5
BCHV20	20000	100	24	2	20	-	2.0
BCHV25	25000	100	32	2	20	-	2.5
BCHV30	30000	100	32	2	20	-	3.0
BCHV35	35000	100	39	2	20	-	3.0
BCHV40	40000	100	48	2	20	-	3.0
BCHV45	45000	100	48	2	20	-	3.0
BCHV50	50000	100	64	2	20	-	3.0
BCHV60	60000	100	64	2	20	-	3.0
RTHV08	8000	100	22	2	10	100	1.0
RTHV10	10000	100	22	2	10	100	1.0
RTHV12	12000	100	26	2	10	100	1.0
RTHV15	15000	100	26	2	10	100	1.5
RTHV20	20000	100	44	2	10	100	2.0
RTHV25	25000	100	52	2	10	100	2.5
RTHV30	30000	100	52	2	10	100	3.0
RTHV35	35000	100	70	2	10	100	3.0
RTHV40	40000	100	78	2	10	100	3.0
RTHV45	45000	100	78	2	10	100	3.0
RTHV50	50000	100	105	2	10	100	3.0
RTHV60	60000	100	105	2	10	100	3.0
RTHV80	80000	100	140	2	10	100	3.0

Custom parts available, please consult factory.



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} V(Volts)	Avg. Forward Current Max. $I_{FAVM}@55^{\circ}C$ A (Amps)	Max. Forward Voltage Drop $V_F@I_F$ V(Volts)	Max. Reverse Current $I_R@V_{RRM}@25^{\circ}C$ μ A(microAmps)	Max. Surge Current $I_{FSM}(8.3ms)$ A(Amps)	Max. Reverse Recovery Time T_r (nsec)	Case Length L (Inches)
HV-Standard Recovery Axial Lead 1.0 Amp Glass Passivated Rectifier Assembly							
							Figure 7
HV5000	5000	0.6	4.5	0.5	50	-	1.125
HV7500	7500	0.6	7.2	0.5	50	-	1.625
HV10000	10000	0.6	9.0	0.5	50	-	2.000
HV15000	15000	0.6	14.0	0.5	50	-	2.750
HV20000	20000	0.6	18.0	0.5	50	-	3.500
HV25000	25000	0.6	22.0	0.5	50	-	4.250
HV30000	30000	0.6	28.0	0.5	50	-	4.250
HVF-Fast Recovery T_r 150 nsec Axial Lead 1.0 Amp Glass Passivated Rectifier Assembly							
							Figure 7
HVF2500	2500	0.5	6.0	0.5	50	150	1.125
HVF5000	5000	0.5	9.0	0.5	50	150	2.000
HVF7500	7500	0.5	12.0	0.5	50	150	2.750
HVF10000	10000	0.5	15.0	0.5	50	150	3.500
HVF12500	12500	0.5	20.0	0.5	50	150	4.250
HVF15000	15000	0.5	24.0	0.5	50	150	4.250
HVF20000	20000	0.5	30.0	0.5	50	150	4.250
HVUF-Ultra Fast Recovery T_r 75 nsec Axial Lead 1.0 Amp Rectifier Assembly							
							Figure 7
HVUF2500	2500	0.5	3.3	1.0	35	75	1.125
HVUF5000	5000	0.5	5.5	1.0	35	75	1.125
HVUF7500	7500	0.5	8.8	1.0	35	75	1.625
HVUF10000	10000	0.5	11.0	1.0	35	75	2.000
HVUF12500	12500	0.5	15.0	1.0	35	75	2.750
HVUF15000	15000	0.5	17.0	1.0	35	75	2.750
HVUF20000	20000	0.5	22.0	1.0	35	75	3.500
HVUF25000	25000	0.5	28.0	1.0	35	75	4.250
HVFE-Super Fast Recovery T_r 35 nsec Axial Lead 1.0 Amp Fast Efficient Glass Passivated Rectifier Assembly							
							Figure 7
HVFE2500	2500	0.6	13.0	1.0	50	35	2.750
HVFE5000	5000	0.6	24.0	1.0	50	35	4.250
HVUSF-Ultra Super Fast Recovery T_r 35 nsec Axial Lead 1.0 Amp Rectifier Assembly							
							Figure 7
HVUSF2500	2500	0.5	4.2	1.0	10	35	1.125
HVUSF5000	5000	0.5	7.0	1.0	10	35	2.000
HVUSF7500	7500	0.5	11.2	1.0	10	35	2.750
HVUSF10000	10000	0.5	14.0	1.0	10	35	3.500
HVUSF12500	12500	0.5	18.2	1.0	10	35	4.250
HVUSF15000	15000	0.5	21.0	1.0	10	35	4.250
HVUSF20000	20000	0.5	28.0	1.0	10	35	4.250

DIODES



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} V(Volts)	Avg. Forward Current Max. $I_{FAVM@55^{\circ}C}$ A (Amps)	Max. Forward Voltage Drop $V_F@I_F$ V(Volts)	Max. Reverse Current $I_R@V_{RRM@25^{\circ}C}$ μ A(microAmps)	Max. Surge Current $I_{FSM}(8.3ms)$ A(Amps)	Max. Reverse Recovery Time $T_{rr}(nsec)$	Case Length L (Inches)
HVS-Standard Recovery Axial Lead 3.0 Amp Glass Passivated Rectifier Assembly Figure 8							
HVS2500	2500	1.1	2.4	0.5	150	-	1.5
HVS5000	5000	1.1	4.5	0.5	150	-	2.5
HVS7500	7500	1.1	7.2	0.5	150	-	3.5
HVS10000	10000	1.1	9.0	0.5	150	-	4.5
HVS12500	12500	1.1	11.0	0.5	150	-	5.5
HVS15000	15000	1.1	14.0	0.5	150	-	6.5
HVS20000	20000	1.1	18.0	0.5	150	-	6.5
HVS25000	25000	1.1	22.0	0.5	150	-	6.5
HVS30000	30000	1.1	28.0	0.5	150	-	6.5
HVFS-Fast Recovery T_{rr} 250 nsec Axial Lead 3.0 Amp Glass Passivated Rectifier Assembly Figure 8							
HVFS2500	2500	0.75	4.0	0.5	100	250	1.5
HVFS5000	5000	0.75	7.0	0.5	100	250	2.5
HVFS7500	7500	0.75	11.0	0.5	100	250	3.5
HVFS10000	10000	0.75	13.0	0.5	100	250	4.5
HVFS12500	12500	0.75	17.0	0.5	100	250	5.5
HVFS15000	15000	0.75	22.0	0.5	100	250	6.5
HVFS20000	20000	0.75	26.0	0.5	100	250	6.5
HVFS25000	25000	0.75	34.0	0.5	100	250	6.5
HVFS30000	30000	0.75	44.0	0.5	100	250	6.5
HVFES-Super Fast Recovery-T_{rr} 35 nsec Axial Lead 3.0 Amp Fast Efficient Glass Passivated Rectifier Assembly Figure 8							
HVFES2500	2500	1.3	13.0	5.0	125	35	3.5
HVFES5000	5000	1.3	24.0	5.0	125	35	6.5
HVUFS-Ultra Fast Recovery T_{rr} 75 nsec Axial Lead 3.0 Amp Rectifier Assembly Figure 8							
HVUFS2500	2500	2.0	4.2	5.0	150	75	1.5
HVUFS5000	5000	2.0	7.0	5.0	150	75	2.5
HVUFS7500	7500	2.0	11.2	5.0	150	75	3.5
HVUFS10000	10000	1.75	14.0	5.0	150	75	4.5
HVUFS12500	12500	1.75	18.2	5.0	150	75	5.5
HVUFS15000	15000	1.75	21.0	5.0	150	75	6.5
HVUFS20000	20000	1.75	28.0	5.0	150	75	6.5
HVUFS25000	25000	1.75	35.0	5.0	150	75	6.5
HVUSFS-Ultra Super Fast Recovery T_{rr} 40 nsec Axial Lead 2.0 Amp Rectifier Assembly Figure 8							
HVUSFS2500	2500	1.25	6.0	5.0	60	40	1.5
HVUSFS5000	5000	1.25	10.0	5.0	60	40	2.5
HVUSFS7500	7500	1.25	16.0	5.0	60	40	3.5
HVUSFS10000	10000	1.25	20.0	5.0	60	40	4.5
HVUSFS12500	12500	1.0	26.0	5.0	60	40	5.5
HVUSFS15000	15000	1.0	30.0	5.0	60	40	6.5
HVUSFS20000	20000	1.0	40.0	5.0	60	40	6.5



Please Note: Different Circuit Arrangements are identified by using a Circuit Code Letter.

P=Positive Center Tap
N=Negative Center Tap
D=Doubler

Positive Center Tap (P)

Positive Center Tap 1.2A, 5000V/LEG MRP5000

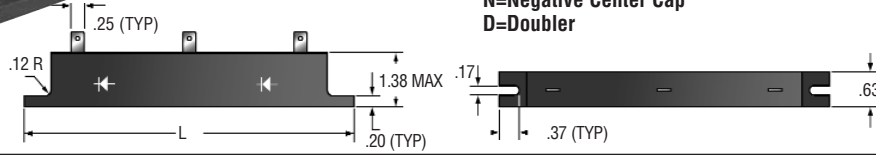
Negative Center Tap (N)

Negative Center Tap 2.5A, 1500V/LEG MRSN15000

Doubler (D)

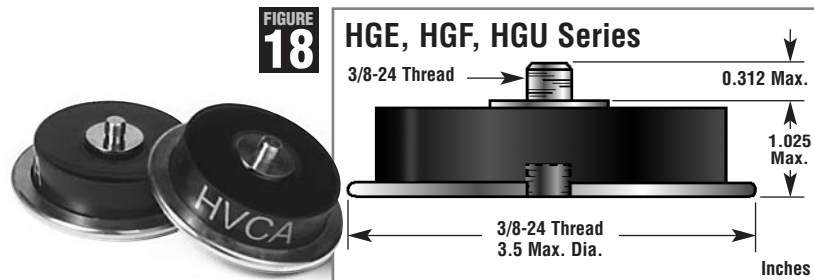
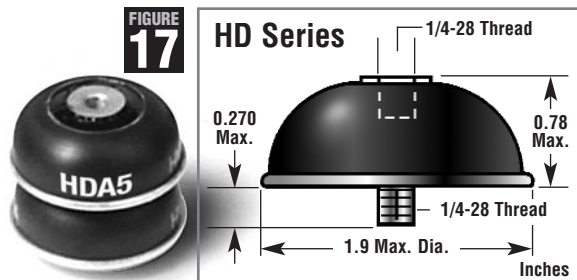
(I_{FAVM} of Doubler is $I_{FAVM} \times 0.5$)
 Fast Recovery Doubler 1.0A, 7500V/LEG MRFS7500

FIGURE 9



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} Per Leg V(Volts)	Avg. Forward Current Max. $I_{FAVM}@55^{\circ}C$ A (Amps)	Max. Forward Voltage Drop $V_F@I_F$ Per Leg V(Volts)	Max. Reverse Current $I_R@V_{RRM}@25^{\circ}C$ μA (microAmps)	Max. Surge Current $I_{FSM}(8.3ms)$ A(Amps)	Max. Reverse Recovery Time T_R (nsec)	Case Length L (Inches)
MR—Standard Recovery 1.0 Amp Glass Passivated Rectifier Assembly							
MR2500	2500	0.6	2.4	0.5	50	-	Figure 9 3.36
MR5000	5000	0.6	4.5	0.5	50	-	3.36
MR7500	7500	0.6	7.2	0.5	50	-	3.36
MR10000	10000	0.6	9.0	0.5	50	-	3.36
MR12500	12500	0.6	11.0	0.5	50	-	4.04
MR15000	15000	0.6	14.0	0.5	50	-	4.04
MR20000	20000	0.6	18.0	0.5	50	-	4.72
MR25000	25000	0.8	22.0	0.5	50	-	5.08
MR30000	30000	0.8	28.0	0.5	50	-	6.09
MRS—Standard Recovery 3.0 Amp Glass Passivated Rectifier Assembly							
MRS2500	2500	1.25	2.4	0.5	150	-	Figure 9 3.36
MRS5000	5000	1.25	4.5	0.5	150	-	4.04
MRS7500	7500	1.25	7.2	0.5	150	-	4.04
MRS10000	10000	1.25	9.0	0.5	150	-	4.04
MRS12500	12500	1.25	11.0	0.5	150	-	4.72
MRS15000	15000	1.25	14.0	0.5	150	-	6.09
MRS20000	20000	1.25	18.0	0.5	150	-	6.09
MRS25000	25000	1.25	22.0	0.5	150	-	6.09
MRS30000	30000	1.25	28.0	0.5	150	-	6.09
MRF—Fast Recovery T_R 150 nsec 1.0 Amp Glass Passivated Rectifier Assembly							
MRF2500	2500	0.5	6.0	0.5	50	150	Figure 9 3.36
MRF5000	5000	0.5	9.0	0.5	50	150	3.36
MRF7500	7500	0.5	12.0	0.5	50	150	4.04
MRF10000	10000	0.5	15.0	0.5	50	150	4.04
MRF12500	12500	0.5	20.0	0.5	50	150	4.72
MRF15000	15000	0.5	24.0	0.5	50	150	6.09
MRF20000	20000	0.5	30.0	0.5	50	150	6.09
MRF25000	25000	0.5	40.0	0.5	50	150	6.09
MRF30000	30000	0.5	48.0	0.5	50	150	6.09
MRFS—Fast Recovery T_R 250 nsec 3.0 Amp Glass Passivated Rectifier Assembly							
MRFS2500	2500	1.0	4.0	0.5	100	250	Figure 9 3.36
MRFS5000	5000	1.0	7.0	0.5	100	250	4.04
MRFS7500	7500	1.0	11.0	0.5	100	250	4.72
MRFS10000	10000	1.0	13.0	0.5	100	250	6.09
MRFS12500	12500	1.0	17.0	0.5	100	250	6.09
MRFS15000	15000	1.0	22.0	0.5	100	250	6.09
MRFS20000	20000	1.0	28.0	0.5	100	250	6.09
MRFS30000	30000	1.0	34.0	0.5	100	250	6.09
MR•—Standard Recovery 1.0 Amp Glass Passivated Rectifier Center Tap and Doubler Assembly							
MR•2500	2500	1.2	2.4	0.5	50	-	Figure 9 3.36
MR•5000	5000	1.2	4.5	0.5	50	-	4.04
MR•7500	7500	1.2	7.2	0.5	50	-	4.72
MR•10000	10000	1.2	9.0	0.5	50	-	4.72
MR•12500	12500	1.2	11.0	0.5	50	-	6.09
MR•15000	15000	1.2	14.0	0.5	50	-	6.09
MRS•—Standard Recovery 3.0 Amp Glass Passivated Rectifier Center Tap and Doubler Assembly							
MRS•2500	2500	2.5	2.4	0.5	150	-	Figure 9 3.36
MRS•5000	5000	2.5	4.5	0.5	150	-	4.72
MRS•7500	7500	2.5	7.2	0.5	150	-	6.09
MRS•10000	10000	2.5	9.0	0.5	150	-	6.09
MRS•12500	12500	2.5	11.0	0.5	150	-	6.09
MRS•15000	15000	2.5	14.0	0.5	150	-	6.09
MRF•—Fast Recovery T_R 150 nsec 1.0 Amp Glass Passivated Rectifier Center Tap and Doubler Assembly							
MRF•2500	2500	1.0	6.0	0.5	50	150	Figure 9 3.36
MRF•5000	5000	1.0	9.0	0.5	50	150	4.72
MRF•7500	7500	1.0	12.0	0.5	50	150	6.09
MRF•10000	10000	1.0	16.0	0.5	50	150	6.09
MRF•12500	12500	1.0	20.0	0.5	50	150	6.09
MRF•15000	15000	1.0	24.0	0.5	50	150	6.09
MRFS•—Fast Recovery T_R 250 nsec 3.0 Amp Glass Passivated Rectifier Center Tap and Doubler Assembly							
MRFS•2500	2500	2.0	4.0	0.5	100	250	Figure 9 4.04
MRFS•5000	5000	2.0	7.0	0.5	100	250	6.09
MRFS•7500	7500	2.0	11.0	0.5	100	250	6.09
MRFS•10000	10000	2.0	13.0	0.5	100	250	6.09
MRFS•12500	12500	2.0	17.0	0.5	100	250	6.09

DIODES



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} V(Volts)	Avg. Forward Current Max. $I_{F(AV)}@T_c75^\circ\text{C}$ A (Amps)	Max. Forward Voltage Drop $V_F@I_F$ V(Volts)	Max. Reverse Current $I_R@V_{RRM}@25^\circ\text{C}$ μA (microAmps)	Max. Surge Current $I_{FSM}(8.3\text{ms})$ A(Amps)	Max. Reverse Recovery Time T_r (nsec)	Figure Number
HD-Standard Recovery Hi-Bel 1.0 and 3.0 Amp Glass Passivated Rectifier Assembly							
HDB2.5	2500	3.0	2.2	0.5	150	-	Fig. 17
HDB5	5000	2.0	4.4	0.5	150	-	Fig. 17
HDA5	5000	1.7	4.5	0.5	150	-	Fig. 17
HDB7.5	7500	1.4	6.6	0.5	150	-	Fig. 17
HDA7.5	7500	1.3	6.6	0.5	150	-	Fig. 17
HDB10	10000	1.2	9.0	0.5	150	-	Fig. 17
HDA10	10000	1.0	9.0	0.5	150	-	Fig. 17
HDA15	15000	0.7	12.0	0.5	50	-	Fig. 17
HDA20	20000	0.6	17.0	0.5	50	-	Fig. 17
HD-Standard Recovery Hi-Bel 6.0 Amp Rectifier Assembly							
HDE2.5	2500	4.0	3.0	5.0	400	-	Fig. 17
HDE5	5000	4.0	5.0	5.0	400	-	Fig. 17
HD-Fast Recovery Hi-Bel 1.0 and 3.0 Amp Glass Passivated Rectifier Assembly							
HDD2.5	2500	2.3	4.0	0.5	100	250	Fig. 17
HDD5	5000	1.5	7.0	0.5	100	250	Fig. 17
HDC5	5000	1.2	7.0	0.5	100	250	Fig. 17
HDD7.5	7500	1.0	11.0	0.5	100	250	Fig. 17
HDC7.5	7500	0.9	11.0	0.5	100	250	Fig. 17
HDC10	10000	0.8	13.0	0.5	50	150	Fig. 17
HDC15	15000	0.6	22.0	0.5	50	150	Fig. 17
HD-Fast Recovery Hi-Bel 6.0 Amp Rectifier Assembly							
HGEF2.5	2500	3.0	3.6	5.0	200	350	Fig. 17
HGEF5	5000	3.0	6.0	5.0	200	350	Fig. 17
HD-Ultra Fast Recovery Hi-Bel Rectifier Assembly							
HDU1.5	1500	1.0	8.0	1.0	50	35	Fig. 17
HDU2	2000	0.9	10.0	1.0	50	35	Fig. 17
HDU3	3000	0.7	15.0	1.0	50	35	Fig. 17
HDV1.5	1500	1.4	8.0	5.0	125	35	Fig. 17
HDV2	2000	1.3	10.0	5.0	125	35	Fig. 17
HDT1	1000	2.5	2.0	10.0	250	50	Fig. 17
HDT1.5	1500	2.0	3.0	10.0	250	50	Fig. 17
HD-Ultra Fast Recovery Hi-Bel 1.0 and 3.0 Amp Rectifier Assembly							
HDAUF5	5000	0.8	5.5	1.0	35	75	Fig. 17
HDBUF2.5	5000	2.25	7.0	5.0	150	75	Fig. 17
HDAUF7.5	7500	0.8	8.8	1.0	35	75	Fig. 17
HDBUF7.5	7500	2.25	11.2	5.0	150	75	Fig. 17
HDAUF10	10000	0.8	11.0	1.0	35	75	Fig. 17
HDAUF15	15000	0.8	17.0	1.0	35	75	Fig. 17
HD-Ultra Super Fast Recovery 1.0 and 2.0 Amp Rectifier Assembly							
HDAUSF5	5000	0.65	7.0	1.0	10	35	Fig. 17
HDBUSF5	5000	1.75	10.0	5.0	60	40	Fig. 17
HDAUSF7.5	7500	0.65	11.2	1.0	10	35	Fig. 17
HDAUSF10	10000	0.65	14.0	5.0	10	35	Fig. 17
HGE-Standard Recovery Hi-Bel Glass Passivated Rectifier Assembly							
HGE2.5	2500	8	3.3	10	200	-	Fig. 18
HGE5	5000	8	5.5	10	200	-	Fig. 18
HGF-Fast Recovery Hi-Bel Glass Passivated Rectifier Assembly							
HGF2.5	2500	8	5.2	10	150	250	Fig. 18
HGF5	5000	8	9.0	10	150	250	Fig. 18
HGU-Ultra Fast Recovery Hi-Bel Glass Passivated Rectifier Assembly							
HGU2	2000	10	6.0	10	250	50	Fig. 18

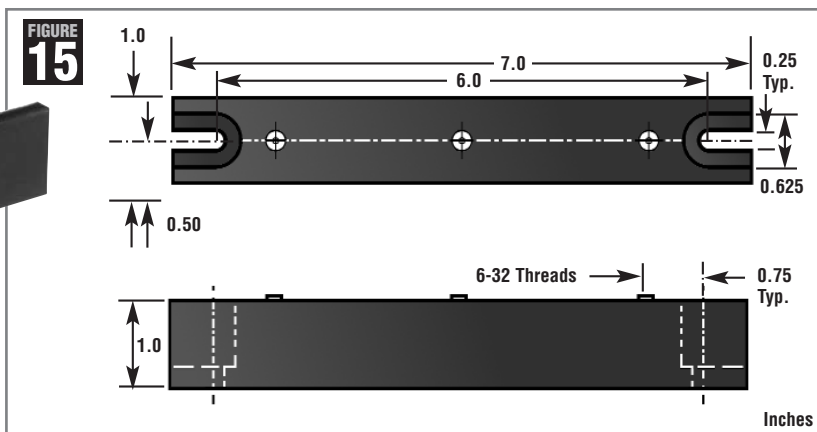
Please Note: These parts are replacements for Unitrode. Custom parts available, please consult factory.



HG, 3HG, 6HG, Rectifier Blocks High Voltage, Mounting Slots



Please Note:
For Halfwave Assemblies, omit center terminal



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} Per Leg (Volts)	Avg. Forward Current Max. $I_{FAVM}@55^{\circ}C$ (Amps)	Max. Forward Voltage Drop $V_F@I_F$ Per Leg (Volts)	Max. Reverse Current $I_R@V_{RRM}@25^{\circ}C$ (μA (microAmps))	Max. Surge Current $I_{FSM}(8.3ms)$ (Amps)	Max. Reverse Recovery Time T_R (nsec)	Case Style Figure Number
HG-1.0 Amp Glass Passivated Rectifier Assembly							
HG10	10000	1.0	9.0	0.5	50	-	Fig.15
HG15	15000	1.0	14.0	0.5	50	-	Fig.15
HG20	20000	1.0	18.0	0.5	50	-	Fig.15
HG25	25000	0.8	22.0	0.5	50	-	Fig.15
HG30	30000	0.8	28.0	0.5	50	-	Fig.15
HG40	40000	0.8	36.0	0.5	50	-	Fig.15
HG50	50000	0.8	44.0	0.5	50	-	Fig.15
HG•-1.0 Amp Glass Passivated Center Tap and Doubler Assembly							
HG•5	5000	2.0	4.5	0.5	50	-	Fig.15
HG•10	10000	2.0	9.0	0.5	50	-	Fig.15
HG•15	15000	1.6	14.0	0.5	50	-	Fig.15
HG•20	20000	1.6	18.0	0.5	50	-	Fig.15
HG•25	25000	1.6	22.0	0.5	50	-	Fig.15
3HG-3.0 Amp Glass Passivated Rectifier Assembly							
3HG10	10000	2.50	9.0	0.5	150	-	Fig.15
3HG15	15000	2.25	14.0	0.5	150	-	Fig.15
3HG20	20000	2.25	18.0	0.5	150	-	Fig.15
3HG25	25000	2.00	22.0	0.5	150	-	Fig.15
3HG30	30000	2.00	28.0	0.5	150	-	Fig.15
3HG•-3.0 Amp Glass Passivated Center Tap and Doubler Assembly							
3HG•5	5000	5.0	4.8	0.5	150	-	Fig.15
3HG•10	10000	4.5	9.0	0.5	150	-	Fig.15
3HG•15	15000	4.0	14.0	0.5	150	-	Fig.15
3HG•RC-Resistor-Capacitor Compensated 3.0 Amp Glass Passivated Rectifier Assembly							
3HG10RC	10000	3.00	9.0	500	150	-	Fig.15
3HG15RC	15000	2.75	14.0	500	150	-	Fig.15
3HG20RC	20000	2.50	18.0	500	150	-	Fig.15
6HG-6.0 Amp Rectifier Assembly							
6HG10	10000	3.00	10.0	5.0	400	-	Fig.15
6HG15	15000	2.75	15.0	5.0	400	-	Fig.15
6HG20	20000	2.50	20.0	5.0	400	-	Fig.15
6HG•RC-Resistor-Capacitor Compensated 6.0 Amp Rectifier Assembly							
6HG10RC	10000	3.6	10.0	500	400	-	Fig.15
6HG15RC	15000	3.3	15.0	500	400	-	Fig.15
6HG18RC	18000	3.0	18.0	500	400	-	Fig.15

Available with resistor and capacitor or capacitor only compensation.

Ad "T" for turret at end of part number.
Example: 3HG20T

Please Note:
Different Circuit Arrangements are identified by using a Circuit Code Letter.
P=Positive Center Tap
N=Negative Center Cap
D=Doubler

Positive Center Tap (HGP•)
 Positive Center Tap 2.0A, 10000V/LEG HGP10
Negative Center Tap (HGN•)
 Negative Center Tap 1.6A, 25000V/LEG HGN25
Doubler (3HGD•)
 (I_{FAVM} of Doubler is I_{FAVM} X 0.5)
Doubler 2.0A, 15000V/LEG 3HGD15



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} Per Leg V(Volts)	Avg. Forward Current Max. $I_{FAVM}@55^{\circ}C$ A (Amps)	Max. Forward Voltage Drop $V_F@I_F$ Per Leg V(Volts)	Max. Reverse Current $I_R@V_{RRM}@25^{\circ}C$ μ A (microAmps)	Max. Surge Current $I_{FSM}(8.3ms)$ A (Amps)	Max. Reverse Recovery Time T_r (nsec)	Case Style Figure Number
HGUF-Ultra Fast Recovery T_r 75 nsec 1.0 Amp Rectifier Assembly							
HGUF10	10000	0.9	11.0	1.0	35	75	Fig.15
HGUF15	15000	0.9	17.0	1.0	35	75	Fig.15
HGUF20	20000	0.7	22.0	1.0	35	75	Fig.15
HGUF25	25000	0.7	28.0	1.0	35	75	Fig.15
HGUF30	30000	0.7	34.0	1.0	35	75	Fig.15
HGUF40	40000	0.7	44.0	1.0	35	75	Fig.15
HGUF50	50000	0.7	56.0	1.0	35	75	Fig.15
HGUSF-Ultra Super Fast Recovery T_r 35 nsec 1.0 Amp Rectifier Assembly							
HGUSF10	10000	0.65	14.0	1.0	10	35	Fig.15
HGUSF15	15000	0.65	21.0	1.0	10	35	Fig.15
HGUSF20	20000	0.5	28.0	1.0	10	35	Fig.15
HGUSF25	25000	0.5	35.0	1.0	10	35	Fig.15
HGUSF30	30000	0.5	42.0	1.0	10	35	Fig.15
HGUSF40	40000	0.4	56.0	1.0	10	35	Fig.15
HGUSF50	50000	0.4	70.0	1.0	10	35	Fig.15
2HGUSF-Ultra Super Fast Recovery T_r 40 nsec 2.0 Amp Rectifier Assembly							
2HGUSF10	10000	1.75	20.0	5.0	60	40	Fig.15
2HGUSF15	15000	1.5	30.0	5.0	60	40	Fig.15
2HGUSF20	20000	1.5	40.0	5.0	60	40	Fig.15
3HGUF - Ultra Fast Recovery T_r 75 nsec 3.0 Amp Rectifier Assembly							
3HGUF10	10000	2.25	14.0	5.0	150	75	Fig.15
3HGUF15	15000	2.25	21.0	5.0	150	75	Fig.15
3HGUF20	20000	2.25	28.0	5.0	150	75	Fig.15
3HGUF25	25000	1.75	35.0	5.0	150	75	Fig.15
3HGUF30	30000	1.75	42.0	5.0	150	75	Fig.15
3HGUF - Ultra Fast Recovery T_r 75 nsec 3.0 Amp Center Tap and Doubler Assembly							
3HGUF•5	5000	4.5	7.0	5.0	150	75	Fig.15
3HGUF•10	10000	4.5	14.0	5.0	150	75	Fig.15
3HGUF•15	15000	3.5	21.0	5.0	150	75	Fig.15
HGUF - Ultra Fast Recovery T_r 75 nsec 1.0 Amp Center Tap and Doubler Assembly							
HGUF•5	5000	1.8	5.5	1.0	35	75	Fig.15
HGUF•10	10000	1.4	11.0	1.0	35	75	Fig.15
HGUF•15	15000	1.4	17.0	1.0	35	75	Fig.15
HGUF•20	20000	1.4	22.0	1.0	35	75	Fig.15
HGUF•25	25000	1.4	28.0	1.0	35	75	Fig.15
6HGF- Fast Recovery T_r 350 nsec 6.0 Amp Rectifier Assembly							
6HGF10	10000	2.5	12.0	5.0	200	350	Fig.15
6HGF15	15000	2.5	18.0	5.0	200	350	Fig.15
6HGF20	20000	2.25	24.0	5.0	200	350	Fig.15
HGUSF - Ultra Super Fast Recovery T_r 35 nsec 1.0 Amp Center Tap and Doubler Assembly							
HGUSF•5	5000	1.3	7.0	1.0	10	35	Fig.15
HGUSF•10	10000	1.0	14.0	1.0	10	35	Fig.15
HGUSF•15	15000	1.0	21.0	1.0	10	35	Fig.15
2HGUSF - Ultra Super Fast Recovery T_r 40 nsec 2.0 Amp Center Tap and Doubler Assembly							
2HGUSF•5	5000	3.5	10.0	5.0	60	40	Fig.15
2HGUSF•10	10000	3.0	20.0	5.0	60	40	Fig.15

Available with resistor and capacitor or capacitor only compensation.

Ad "T" for turret at end of part number.

Example: 3HG20T

Please Note:

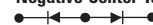
Different Circuit Arrangements are identified by using a Circuit Code Letter.
P=Positive Center Tap
N=Negative Center Tap
D=Doubler

Positive Center Tap (HGP•)



Positive Center Tap 2.0A, 10000V/LEG HGP10

Negative Center Tap (HGN•)



Negative Center Tap 1.6A, 25000V/LEG HGN25

Doubler (3HGD•)



(I_{FAVM} of Doubler is $I_{FAVM} \times 0.5$)
 Doubler 2.0A, 15000V/LEG 3HGD15

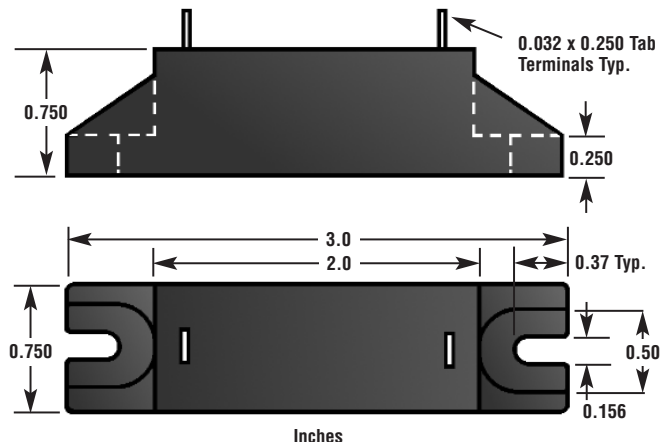


HC, 3HC, 3HCF, HCUF Rectifier Blocks High Voltage, Mounting Slots

FIGURE 14



Please Note:
For Solder Turrets Add Suffix "T"



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} Per Leg (Volts)	Avg. Forward Current Max. $I_{FAVM}@55^{\circ}C$ A (Amps)	Max. Forward Voltage Drop $V_F@I_F$ Per Leg (Volts)	Max. Reverse Current $I_R@V_{RRM}@25^{\circ}C$ μA (microAmps)	Max. Surge Current $I_{FSM}(8.3ms)$ A (Amps)	Max. Reverse Recovery Time T_{rr} (nsec)	Case Style Figure Number
HC-Standard Recovery 1.0 Amp Glass Passivated Rectifier Assembly							
HC5	5000	1.0	4.5	0.5	50	-	Fig.14
HC8	8000	1.0	7.2	0.5	50	-	Fig.14
HC10	10000	1.0	9.0	0.5	50	-	Fig.14
HC12	12000	0.8	10.5	0.5	50	-	Fig.14
HC15	15000	0.7	14.0	0.5	50	-	Fig.14
HC20	20000	0.6	18.0	0.5	50	-	Fig.14
3HC-Standard Recovery 3.0 Amp Glass Passivated Rectifier Assembly							
3HC5	5000	2.5	4.8	0.5	150	-	Fig.14
3HC10	10000	2.0	9.0	0.5	150	-	Fig.14
3HC12	12000	1.75	10.5	0.5	150	-	Fig.14
3HC15	15000	1.5	13.2	0.5	150	-	Fig.14
HCF-Fast Recovery T_{rr} 150 nsec 1.0 Amp Glass Passivated Rectifier Assembly							
HCF5	5000	1.0	8.0	0.5	50	150	Fig.14
HCF8	8000	1.0	12.0	0.5	50	150	Fig.14
HCF10	10000	0.8	15.0	0.5	50	150	Fig.14
HCF12	12000	0.7	18.0	0.5	50	150	Fig.14
3HCF-Fast Recovery T_{rr} 250 nsec 3.0 Amp Glass Passivated Rectifier Assembly							
3HCF5	5000	2.0	7.0	0.5	100	250	Fig.14
3HCF10	10000	1.5	13.0	0.5	100	250	Fig.14
HCUF-Ultra Fast Recovery T_{rr} 75 nsec 1.0 Amp Rectifier Assembly							
HCUF5	5000	1.0	5.5	1.0	35	75	Fig.14
HCUF8	8000	1.0	8.8	1.0	35	75	Fig.14
HCUF10	10000	0.8	11.0	1.0	35	75	Fig.14
HCUF12	12000	0.7	13.2	1.0	35	75	Fig.14
HCUF15	15000	0.6	17.0	1.0	35	75	Fig.14
HCUSF-Ultra Super Fast Recovery T_{rr} 35 nsec 1.0 Amp Rectifier Assembly							
HCUSF5	5000	0.650	7.0	1.0	10	35	Fig.14
HCUSF8	8000	0.650	11.2	1.0	10	35	Fig.14
HCUSF10	10000	0.5	14.0	1.0	10	35	Fig.14
HCUSF12	12000	0.5	16.8	1.0	10	35	Fig.14
HCUSF15	15000	0.5	21.0	1.0	10	35	Fig.14
2HCUSF-Ultra Super Fast Recovery T_{rr} 40 nsec 2.0 Amp Rectifier Assembly							
2HCUSF3	3000	1.75	6.0	5.0	60	40	Fig.14
2HCUSF5	5000	1.75	10.0	5.0	60	40	Fig.14
2HCUSF8	8000	1.5	16.0	5.0	60	40	Fig.14
3HCUF-Fast Recovery T_{rr} 75 nsec 3.0 Amp Rectifier Assembly							
3HCUF5	5000	2.25	7.0	5.0	150	75	Fig.14
3HCUF8	8000	2.0	11.2	5.0	150	75	Fig.14
3HCUF10	10000	2.0	14.0	5.0	150	75	Fig.14

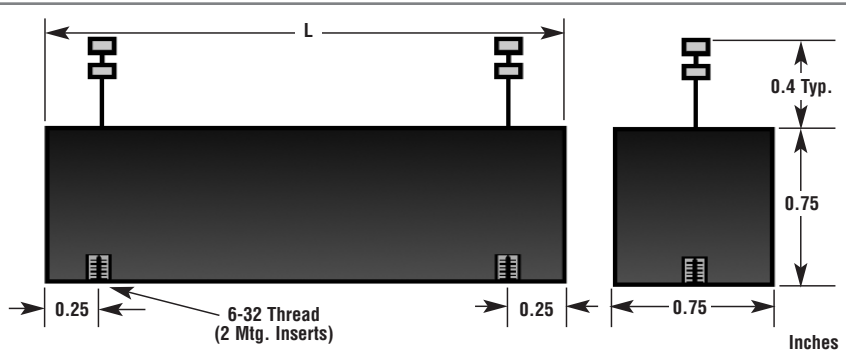
DIODES



Rectifier Block

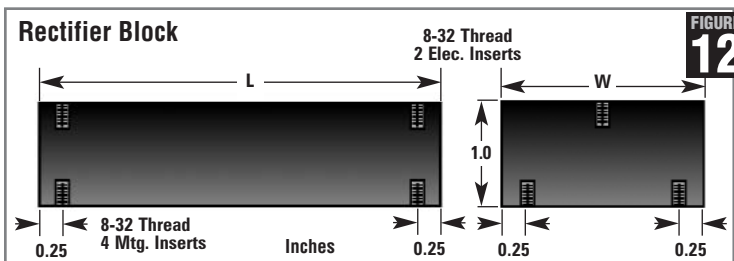
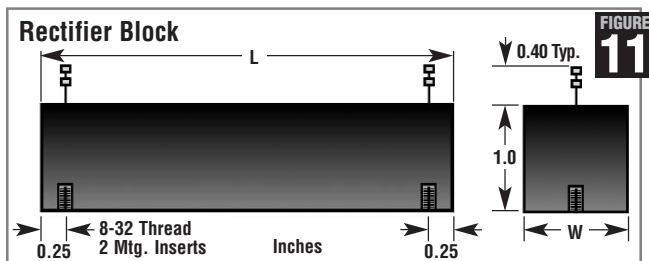


FIGURE 10



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} V(Volts)	Avg. Forward Current Max. $I_{FAVM@55^{\circ}C}$ A (Amps)	Max. Forward Voltage Drop $V_F@I_F$ V(Volts)	Max. Reverse Current $I_R@V_{RRM@25^{\circ}C}$ μ A(microAmps)	Max. Surge Current $I_{FSM}(8.3ms)$ A(Amps)	Max. Reverse Recovery Time $T_{rr}(nsec)$	Case Length L (Inches)
1HV•K- Standard Recovery Block 1.0 Amp Glass Passivated Rectifier Assembly							
Figure 10							
1HV5K	5000	1.0	4.5	0.5	50	-	2.5
1HV8K	8000	1.0	7.2	0.5	50	-	3.5
1HV10K	10000	1.0	9.0	0.5	50	-	3.5
1HV15K	15000	1.0	14.0	0.5	50	-	5.0
1HV20K	20000	1.0	18.0	0.5	50	-	5.0
1HV25K	25000	0.75	22.0	0.5	50	-	6.0
1HV30K	30000	0.75	28.0	0.5	50	-	6.0
1HV40K	40000	0.75	36.0	0.5	50	-	7.0
1HV50K	50000	0.75	44.0	0.5	50	-	7.0
1HV60K	60000	0.75	56.0	0.5	50	-	7.0
1HVF•K-Fast Recovery T_{rr} 150 nsec Block 1.0 Amp Glass Passivated Rectifier Assembly							
Figure 10							
1HVF5K	5000	0.9	8.0	0.5	50	150	2.5
1HVF8K	8000	0.9	12.0	0.5	50	150	3.5
1HVF10K	10000	0.9	15.0	0.5	50	150	3.5
1HVF15K	15000	0.9	24.0	0.5	50	150	5.0
1HVF20K	20000	0.7	30.0	0.5	50	150	5.0
1HVF25K	25000	0.7	40.0	0.5	50	150	6.0
1HVF30K	30000	0.7	48.0	0.5	50	150	6.0
1HVF40K	40000	0.7	60.0	0.5	50	150	7.0
1HVF50K	50000	0.7	78.0	0.5	50	150	7.0
1HVUF•K-Ultra Fast Recovery T_{rr} 75 nsec Block 1.0 Amp Rectifier Assembly							
Figure 10							
1HVUF5K	5000	0.9	5.5	1.0	35	75	2.5
1HVUF8K	8000	0.9	8.8	1.0	35	75	3.5
1HVUF10K	10000	0.9	11.0	1.0	35	75	3.5
1HVUF15K	15000	0.9	17.0	1.0	35	75	5.0
1HVUF20K	20000	0.7	22.0	1.0	35	75	5.0
1HVUF25K	25000	0.7	28.0	1.0	35	75	6.0
1HVUF30K	30000	0.7	34.0	1.0	35	75	6.0
1HVUF40K	40000	0.7	44.0	1.0	35	75	7.0
1HVUF50K	50000	0.7	56.0	1.0	35	75	7.0
1HVFE•K-Super Fast Recovery T_{rr} 35 nsec Block 1.0 Amp Fast Efficient Glass Passivated Rectifier Assembly							
Figure 10							
1HVFE3K	3000	1.0	15.0	1.0	50	35	5.0
1HVFE5K	5000	0.75	24.0	1.0	50	35	6.0
1HVFE10K	10000	0.75	48.0	1.0	50	35	7.0
1HVUSF•K-Ultra Super Fast Recovery T_{rr} 35 nsec Block 1.0 Amp Rectifier Assembly							
Figure 10							
1HVUSF5K	5000	0.65	7.0	1.0	10	35	2.5
1HVUSF8K	8000	0.65	11.2	1.0	10	35	3.5
1HVUSF10K	10000	0.65	14.0	1.0	10	35	3.5
1HVUSF15K	15000	0.65	21.0	1.0	10	35	5.0
1HVUSF20K	20000	0.5	28.0	1.0	10	35	5.0
1HVUSF25K	25000	0.5	35.0	1.0	10	35	6.0
1HVUSF30K	30000	0.5	42.0	1.0	10	35	6.0
1HVUSF40K	40000	0.5	56.0	1.0	10	35	7.0
1HVUSF50K	50000	0.5	70.0	1.0	10	35	7.0

Available with resistor and capacitor or capacitor only compensation.



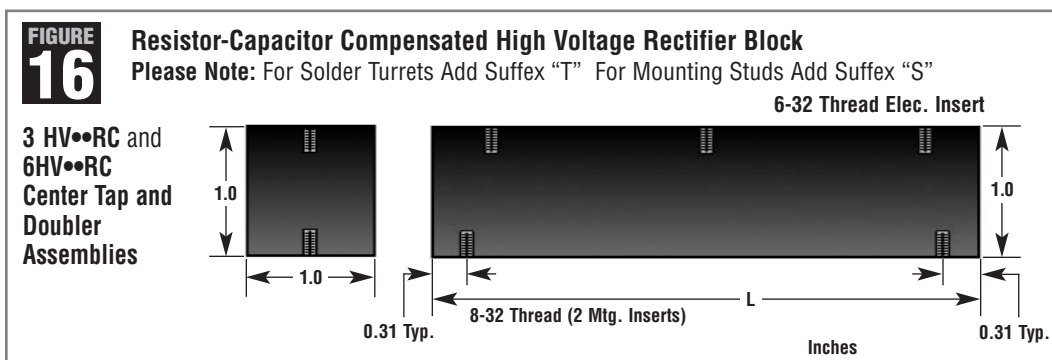
HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} (Volts)	Avg. Forward Current Max. $I_{F(AV)}@55^{\circ}C$ (Amps)	Max. Forward Voltage Drop $V_F@I_F$ (Volts)	Max. Reverse Current $I_R@V_{RRM}@25^{\circ}C$ μA (microAmps)	Max. Surge Current $I_{FSM}(8.3ms)$ (Amps)	Max. Reverse Recovery Time T_{rr} (nsec)	Case Length L (Inches)	Figure
2HUSF•K - Ultra Super Fast Recovery T_{rr} 40 nsec Block 2.0 Amp Rectifier Assembly								
2HUSF5K	5000	2.0	10.0	5.0	60	40	4.0x1.0	11
2HUSF8K	8000	1.75	16.0	5.0	60	40	6.0x1.0	11
2HUSF10K	10000	1.5	20.0	5.0	60	40	7.0x1.0	11
2HUSF15K	15000	1.5	30.0	5.0	60	40	4.0x2.0	12
2HUSF20K	20000	1.25	40.0	5.0	60	40	6.0x2.0	12
2HUSF25K	25000	1.25	50.0	5.0	60	40	8.0x2.0	12
2HUSF30K	30000	1.25	60.0	5.0	60	40	4.0x3.0	12
2HUSF40K	40000	1.25	80.0	5.0	60	40	8.0x3.0	12
2HUSF50K	50000	1.25	100.0	5.0	60	40	6.0x4.0	12
3HV•K-Standard Recovery Block 3.0 Amp Glass Passivated Rectifier Assembly								
3HV5K	5000	3.0	4.8	0.5	150	-	4.0x1.0	11
3HV8K	8000	2.75	7.5	0.5	150	-	6.0x1.0	11
3HV10K	10000	2.5	9.0	0.5	150	-	7.0x1.0	11
3HV15K	15000	2.5	14.0	0.5	150	-	4.0x2.0	12
3HV20K	20000	2.25	18.0	0.5	150	-	6.0x2.0	12
3HV25K	25000	2.25	22.0	0.5	150	-	8.0x2.0	12
3HV30K	30000	2.25	28.0	0.5	150	-	4.0x3.0	12
3HV40K	40000	2.25	36.0	0.5	150	-	8.0x3.0	12
3HV50K	50000	2.25	44.0	0.5	150	-	6.0x4.0	12
3HVF•K-Fast Recovery T_{rr} 250 nsec Block 3.0 Amp Glass Passivated Rectifier Assembly								
3HVF5K	5000	2.5	7.0	0.5	100	250	4.0x1.0	11
3HVF8K	8000	2.5	11.0	0.5	100	250	6.0x1.0	11
3HVF10K	10000	2.5	13.0	0.5	100	250	7.0x1.0	11
3HVF15K	15000	2.25	22.0	0.5	100	250	4.0x2.0	12
3HVF20K	20000	2.25	26.0	0.5	100	250	6.0x2.0	12
3HVF25K	25000	2.25	34.0	0.5	100	250	8.0x2.0	12
3HVF30K	30000	2.25	40.0	0.5	100	250	4.0x3.0	12
3HVF40K	40000	2.25	52.0	0.5	100	250	8.0x3.0	12
3HVF50K	50000	2.25	68.0	0.5	100	250	6.0x4.0	F12
3HUF•K - Ultra Fast Recovery T_{rr} 75 nsec Block 3.0 Amp Rectifier Assembly								
3HUF5K	5000	3.0	7.0	5.0	150	75	4.0x1.0	11
3HUF8K	8000	2.75	11.0	5.0	150	75	6.0x1.0	11
3HUF10K	10000	2.5	14.0	5.0	150	75	7.0x1.0	11
3HUF15K	15000	2.5	21.0	5.0	150	75	4.0x2.0	12
3HUF20K	20000	2.25	28.0	5.0	150	75	6.0x2.0	12
3HUF25K	25000	2.25	35.0	5.0	150	75	8.0x2.0	12
3HUF30K	30000	2.25	42.0	5.0	150	75	4.0x3.0	12
3HUF40K	40000	2.25	56.0	5.0	150	75	8.0x3.0	12
3HUF50K	50000	2.25	70.0	5.0	150	75	6.0x4.0	12
6HV•K- Standard Recovery Block 6.0 Amp Rectifier Assembly								
6HV5K	5000	3.5	5.0	5.0	400	-	4.0x1.0	11
6HV8K	8000	3.25	8.0	5.0	400	-	6.0x1.0	11
6HV10K	10000	3.0	10.0	5.0	400	-	7.0x1.0	11
6HV15K	15000	3.0	15.0	5.0	400	-	4.0x2.0	12
6HV20K	20000	2.75	20.0	5.0	400	-	6.0x2.0	12
6HV25K	25000	2.5	25.0	5.0	400	-	8.0x2.0	12
6HV30K	30000	2.5	30.0	5.0	400	-	4.0x3.0	12
6HV40K	40000	2.5	40.0	5.0	400	-	8.0x3.0	12
6HV50K	50000	2.5	50.0	5.0	400	-	6.0x4.0	12
6HVF•K - Fast Recovery T_{rr} 350 nsec Block 6.0 Amp Rectifier Block								
6HVF5K	5000	3.0	6.0	5.0	200	350	4.0x1.0	11
6HVF8K	8000	2.75	9.6	5.0	200	350	6.0x1.0	11
6HVF10K	10000	2.5	12.0	5.0	200	350	7.0x1.0	11
6HVF15K	15000	2.5	18.0	5.0	200	350	4.0x2.0	12
6HVF20K	20000	2.25	24.0	5.0	200	350	6.0x2.0	12
6HVF25K	25000	2.0	30.0	5.0	200	350	8.0x2.0	12
6HVF30K	30000	2.0	36.0	5.0	200	350	4.0x3.0	12
6HVF40K	40000	2.0	48.0	5.0	200	350	8.0x3.0	12
6HVF50K	50000	2.0	60.0	5.0	200	350	6.0x4.0	12

Available with resistor and capacitor or capacitor only compensation.

DIODES



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} Per Leg V (Volts)	Avg. Forward Current Max. $I_{FAVM}@55^{\circ}C$ A (Amps)	Max. Forward Voltage Drop $V_F@I_F$ Per Leg V (Volts)	Max. Reverse Current $I_R@V_{RRM}@25^{\circ}C$ μA (microAmps)	Max. Surge Current I_{FSM} (8.3ms) A (Amps)	Case Length L (Inches)
3HV•RC-Resistor-Capacitor Compensated 3.0 Amp Glass Passivated Rectifier Assembly Figure 16						
3HV3RC	3000	1.75	2.4	500	150	2.38
3HV5RC	5000	1.75	4.8	500	150	2.38
3HV8RC	8000	1.75	7.5	500	150	2.38
3HV10RC	10000	1.75	9.0	500	150	4.50
3HV12RC	12000	1.75	10.8	500	150	4.50
3HV15RC	15000	1.75	14.0	500	150	5.50
3HV20RC	20000	1.75	18.0	500	150	7.00
3HV25RC	25000	1.75	22.0	500	150	8.25
3HV30RC	30000	1.75	28.0	500	150	10.25
3HV40RC	40000	1.75	36.0	500	150	13.25
3HV50RC	50000	1.75	44.0	500	150	16.25
3HV75RC	75000	1.75	69.0	500	150	25.00
6HV•RC-Resistor-Capacitor Compensated 6.0 Amp Rectifier Assembly Figure 16						
6HV3RC	3000	2.0	3.0	500	400	3.25
6HV5RC	5000	2.0	5.0	500	400	3.25
6HV8RC	8000	2.0	8.0	500	400	3.25
6HV10RC	10000	2.0	10.0	500	400	5.50
6HV12RC	12000	2.0	12.0	500	400	5.50
6HV15RC	15000	2.0	15.0	500	400	7.00
6HV20RC	20000	2.0	20.0	500	400	10.25
6HV25RC	25000	2.0	25.0	500	400	13.25
6HV30RC	30000	2.0	30.0	500	400	16.25
6HV40RC	40000	2.0	40.0	500	400	25.00
6HV50RC	50000	2.0	50.0	500	400	25.00
3HV••RC-Resistor-Capacitor Compensated 3.0 Amp Glass Passivated Rectifier Center Tap and Doubler Assembly Figure 16						
3HV•5RC	5000	3.5	4.8	500	150	4.50
3HV•8RC	8000	3.5	7.5	500	150	5.50
3HV•10RC	10000	3.5	9.0	500	150	7.00
3HV•12RC	12000	3.5	10.8	500	150	8.25
3HV•15RC	15000	3.5	14.0	500	150	10.25
3HV•20RC	20000	3.5	18.0	500	150	13.25
3HV•25RC	25000	3.5	23.0	500	150	16.25
6HV••RC-Resistor-Capacitor Compensated 6.0 Amp Rectifier Center Tap and Doubler Assembly Figure 16						
6HV•5RC	5000	4.0	5.0	500	400	5.5
6HV•8RC	8000	4.0	8.0	500	400	8.25
6HV•10RC	10000	4.0	10.0	500	400	10.25
6HV•12RC	12000	4.0	12.0	500	400	13.25
6HV•15RC	15000	4.0	15.0	500	400	13.25
6HV•20RC	20000	4.0	20.0	500	400	25.0
6HV•25RC	25000	4.0	25.0	500	400	25.0

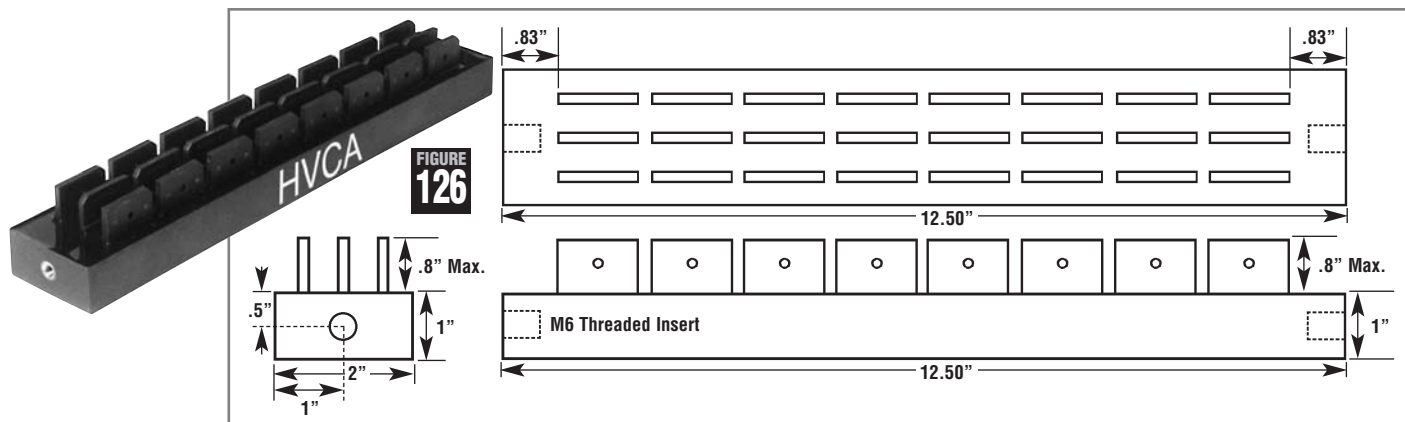


Please Note: Different Circuit Arrangements are identified by using a **Circuit Code Letter.**
P=Positive Center Tap
N=Negative Center Cap
D=Doubler

Positive Center Tap (HGP•)
 Positive Center Tap 2.0A, 10000V_{LEG} HGP10

Negative Center Tap (HGN•)
 Negative Center Tap 1.6A, 25000V_{LEG} HGN25

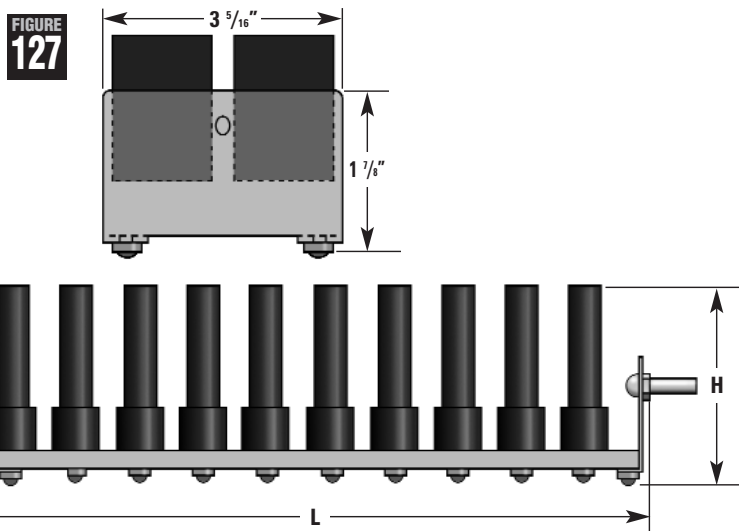
Doubler (3HGD•)
 (I_{FAVM} of Doubler is I_{FAVM} x 0.5)
 Doubler 2.0A, 15000V_{LEG} 3HGD15



HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} V(Volts)	Avg. Forward Current Max. $I_{FAVM}@T_A$ 35°C A(Amps)	Max. Forward Voltage Drop $V_F@12A$ V(Volts)	Max Reverse Current $I_R@V_{RRM}@25°C/100°C$ μA (microAmps)	Max Surge Current I_{FSM} (8.3 ms) A (Amps)
JH547	29000	2/8*	48	400/600	600

*With heat sinks and forced air at 700 ft/min.
JH547 has M6 threaded insert. For 1/4-20 insert, specify JH565.

Complete Replacement For:
Philips Amperex RS3.5, RS5, RS10,
OSB-, OSM-, OSS-, 9115,
9215, 9415



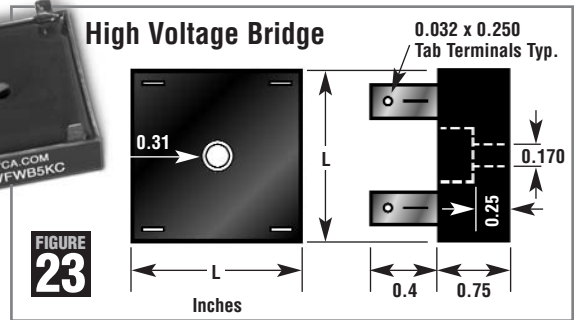
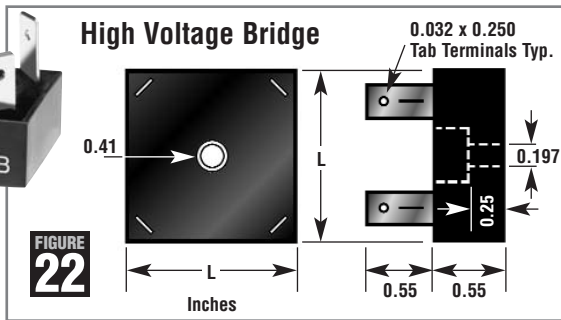
**Power Rectifier Assembly
 Capacitor Compensated**

HRS5		Height H=3.25" max							
Average Forward Current Max @ 50°C Ambient	I_{FAVM}	5.0 Amps							
Average Forward Current Max @ 50°C (Forced Air 300ft/min)	I_{FAVM}	15.0 Amps							
Maximum Surge Current, 10 ms Sine Pulse	I_{FSM}	400 Amps							
HRS10		Height H=3.75" max							
Average Forward Current Max @ 50°C Ambient	I_{FAVM}	10.0 Amps							
Average Forward Current Max @ 50°C (Forced Air 300ft/min)	I_{FAVM}	25.0 Amps							
Maximum Surge Current, 10 ms Sine Pulse	I_{FSM}	950 Amps							
HRSxx-	-6	-9	-12	-15	-18	-21	-24	-27	-30
Length L (Inches)	4.8	7	8.15	10.4	11.5	12.62	14.85	16	18.2
V_{RRM} (KV)	9.6	16	19.2	25.6	28.8	32	38.4	41.6	48
$V_F @ I_F=5.0A@25°C$	6	10	12	16	18	20	24	26	30
Operating and Storage Temperature			T_A		-55°C to 150°C				
Maximum Reverse Leakage Current @ V_{RRM} @ $T_J=25°C$			I_{RM}		100 μ Amps				

**Higher Voltages, Higher Surge Currents, Fast Recovery, Custom Lengths, Doubler, Positive and Negative Taps Available,
 Please Consult the Factory.**

Add an S for M6-35mm Studs instead of 1/4-28-1" Studs
 Example HRS5-18S is 5 Amps Average Forward Current, 28.8kV, L=11.5", with M6 Studs

DIODES



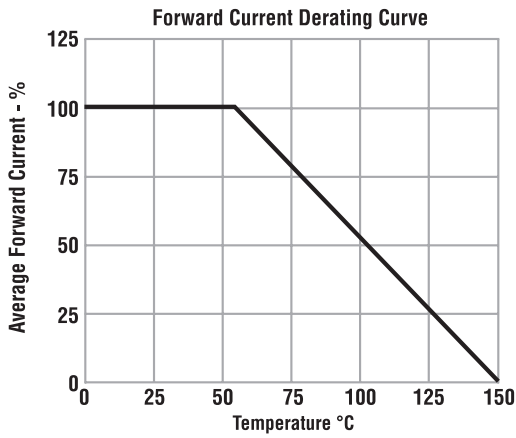
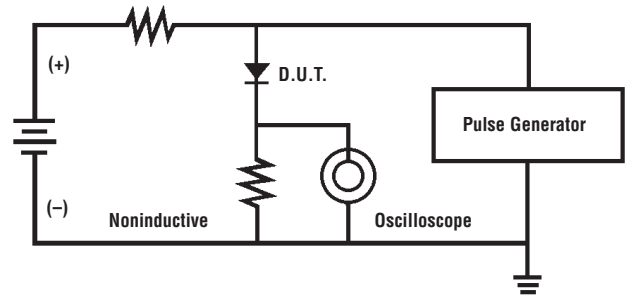
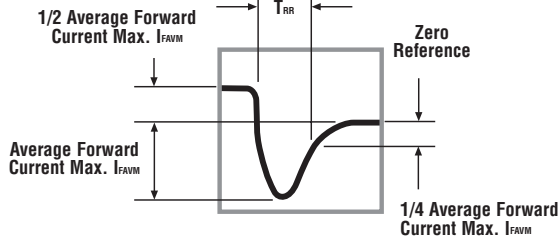
HVCA Number	Repetitive Peak Reverse Voltage V_{RRM} Per Leg V (Volts)	Avg. Forward Current Max. $I_{F(AV)}@55^{\circ}C$ A (Amps)	Max. Forward Voltage Drop $V_f@I_f$ Per Leg V (Volts)	Max. Reverse Current $I_{R@25^{\circ}C}$ $V_{RRM}@25^{\circ}C$ μA (microAmps)	Max. Surge Current I_{FSM} (8.3ms) A (Amps)	Max. Reverse Recovery Time T_r (nsec)	Case Length L (Inches)	Figure
HVFWB-Standard Recovery 1.0 and 3.0 Amp Glass Passivated Rectifier Assemblies								
2HVFWB5KB	5000	2.0	4.8	0.5	50	-	1.25	22
2HVFWB8KB	8000	2.0	7.2	0.5	50	-	1.25	22
2HVFWB5KC	5000	2.0	4.8	0.5	50	-	1.5	23
2HVFWB10KC	10000	2.0	8.4	0.5	50	-	1.5	23
2HVFWB10KD	10000	2.0	8.4	0.5	50	-	2.0	23
2HVFWB15KD	15000	2.0	12.0	0.5	50	-	2.0	23
2HVFWB15KE	15000	2.0	12.0	0.5	50	-	2.5	23
2HVFWB20KE	20000	2.0	18.0	0.5	50	-	2.5	23
5HVFWB5KC	5000	5.0	5.2	0.5	150	-	1.5	23
5HVFWB7.5KD	7500	5.0	6.5	0.5	150	-	2.0	23
5HVFWB5KE	5000	5.0	5.2	0.5	150	-	2.5	23
5HVFWB10KE	10000	5.0	10.4	0.5	150	-	2.5	23
5HVFWB15KE	15000	5.0	13.0	0.5	150	-	2.5	23
HVFWB•F-Fast Recovery 1.0 and 3.0 Amp Glass Passivated Rectifier Assemblies								
1HVFWB5KBF	5000	1.0	7.2	0.3	20	250	1.25	22
1HVFWB10KBF	10000	1.0	14.4	0.3	20	250	1.25	22
1HVFWB5KCF	5000	1.0	7.2	0.3	20	250	1.5	23
1HVFWB10KCF	10000	1.0	14.4	0.3	20	250	1.5	23
2HVFWB5KDF	5000	2.0	6.5	0.5	50	150	2.0	23
2HVFWB10KDF	10000	2.0	13.0	0.5	50	150	2.0	23
2HVFWB10KEF	10000	2.0	13.0	0.5	50	150	2.5	23
2HVFWB15KEF	15000	2.0	20.0	0.5	50	150	2.5	23
4HVFWB5KCF	5000	4.0	7.0	0.5	100	250	1.5	23
4HVFWB5KDF	5000	4.0	7.0	0.5	100	250	2.0	23
5HVFWB5KEF	5000	5.0	7.5	0.5	100	250	2.5	23
4HVFWB10KEF	10000	4.0	14.0	0.5	100	250	2.5	23
HVFWB•UF-Ultra Fast Recovery T_r 75 nsec 1.0 and 3.0 Amp Rectifier Assembly								
2HVFWB5KBUF	5000	2.0	8.0	1.0	35	75	1.25	22
2HVFWB8KBUF	8000	2.0	13.0	1.0	35	75	1.25	22
2HVFWB5KCUF	5000	2.0	8.0	1.0	35	75	1.5	23
2HVFWB10KCUF	10000	2.0	16.0	1.0	35	75	1.5	23
2HVFWB10KDUF	10000	2.0	16.0	1.0	35	75	2.0	23
2HVFWB15KDUF	15000	2.0	24.0	1.0	35	75	2.0	23
2HVFWB15KEUF	15000	2.0	24.0	1.0	35	75	2.5	23
2HVFWB20KEUF	20000	2.0	32.0	1.0	35	75	2.5	23
4HVFWB5KCUF	5000	4.0	7.0	5.0	150	75	1.5	23
4HVFWB5KDUF	5000	4.25	7.0	5.0	150	75	2.0	23
4HVFWB8KDUF	8000	4.0	11.2	5.0	150	75	2.0	23
4HVFWB10KEUF	10000	4.25	14.0	5.0	150	75	2.5	23
4HVFWB15KEUF	15000	4.0	21.0	5.0	150	75	2.5	23
HVFWB•USF-Ultra Super Fast Recovery T_r 35 nsec 1.0 Amp Rectifier Assemblies								
1HVFWB5KBUSF	5000	1.0	7.0	1.0	10	35	1.25	22
1HVFWB5KCUSF	5000	1.0	7.0	1.0	10	35	1.5	23
1HVFWB8KCUSF	8000	1.0	11.2	1.0	10	35	1.5	23
1HVFWB10KDUFSF	10000	1.0	14.0	1.0	10	35	2.0	23
1HVFWB15KDUFSF	15000	0.9	21.0	1.0	10	35	2.0	23
1HVFWB15KEUSF	15000	1.0	21.0	1.0	10	35	2.5	23
1HVFWB20KEUSF	20000	0.9	28.0	1.0	10	35	2.5	23
HVFWB•USF-Ultra Super Fast Recovery T_r 40 nsec 2.0 Amp Rectifier Assemblies								
3HVFWB5KCUSF	5000	3.0	10.0	5.0	60	40	1.5	23
3HVFWB5KDUFSF	5000	3.0	10.0	5.0	60	40	2.0	23
3HVFWB10KDUFSF	10000	2.75	20.0	5.0	60	40	2.0	23
3HVFWB10KEUSF	10000	3.0	20.0	5.0	60	40	2.5	23
3HVFWB15KEUSF	15000	2.75	30.0	5.0	60	40	2.5	23

Please Note: Faster recoveries available, consult factory. Three Phase Full Wave Bridges available, consult factory. For Solder Turrets Add Suffix "T" For Wire Leads Add Suffix "W"



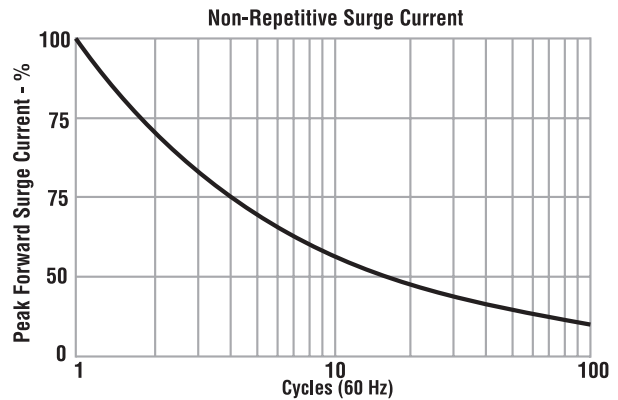
These curves apply to most diodes in this catalog.
For further information, please contact the factory.

Reverse Recovery Test



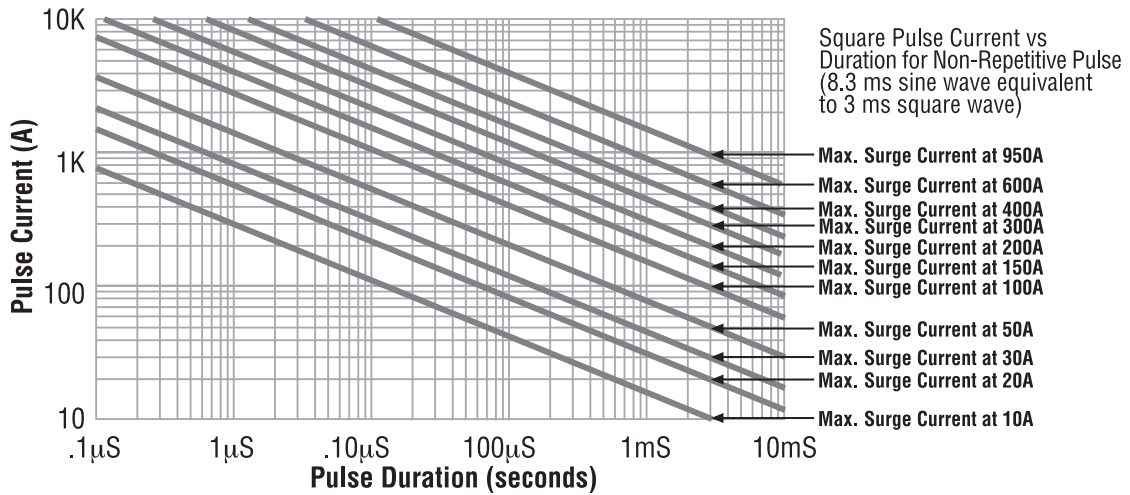
This applies to most diodes in our catalog that show average current rating at 55°C unless otherwise specified.

Max operating temperature is 150°C unless otherwise specified.



This curve refers to a percentage of maximum surge ratings of an individual parts in this catalog.

Foward Pulse Current vs. Pulse Duration



Note: All curves indicate a rating of 8.3 ms.
Refer to individual part for corresponding curve.



Introduction

These ceramic capacitors use high dielectric constant ($K > 1000$) ferroelectric materials based on barium titanate. Key features of this capacitor class include its non-linear temperature characteristics, reliable voltage and frequency performance and predictable change of capacitance with time. The capacitors available in this class have temperature characteristic codes of Z5P. Other codes are also available having dielectric constants usually, but not necessarily, greater than 4000. The capacitors available in this class have temperature characteristic codes of T3M, Y5R, Y5U, Y5V, Z5P and Z5U.

Application

1. High voltage power supplies
2. Voltage multipliers
3. By-pass circuits
4. Coupling circuits
5. Filters

Specifications

Capacitance and Dissipation Factor Measurement Methods:

Capacitance and Dissipation Factor are measured at a standard frequency of 1 KHz. A temperature of 25°C is used with an applied test voltage of less than 2 Volts AC. The allowable dissipation factor will be no greater than 2.5%.

Voltage Ratings:

500 V_{DC} to 15 KV_{DC} (see tables)

Capacitance Tolerances Available:

Tolerance	Code Letter
±5	J
±10%	K
±20%	M
+80, -20%	Z
+100, -0%	P

Dielectric Withstand Voltage:

Capacitors must meet the original manufacturer's specifications following application of 2 times the rated D.C. voltage for 5±1 seconds or 1.5 times the rated voltage for NY2 Series.

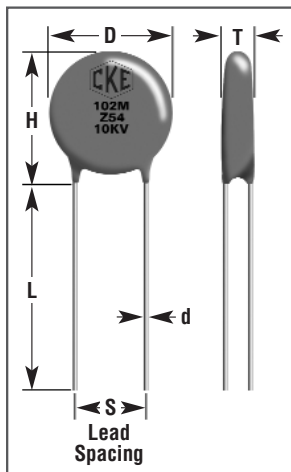
Insulation Resistance:

Insulation resistance shall be 10,000 megohms or greater with a test temperature of 25°C. Measurements are made between component terminals following a 2 minute charge at 100 Volts DC. Charging currents will be limited to no more than 50 milliamperes.

Temperature Characteristics Available:

The temperature characteristics table follows the EIA Standard RS-198-C. The first letter in the table indicates the low temperature limit followed by a number which sets the upper temperature limit. The final letter sets the maximum capacitance deviation acceptable over the designated range with 25°C serving as the reference point.

1st Letter	Number	Last Letter
X= -55°C	5= +85°C	F= ±7.5%
Y= -30°C	6= +105°C	P= ±10%
Z= +10°C	7= +125°C	R= ±15%
		S= ±22%
		T= +22%/-33%
		U= +22%/-56%
		V= +22%/-82%



Life Testing Method:

These capacitors are designed to withstand voltages of at least 1.5 times the rated DC voltage for at least 1000 hours at 85°C. A change of capacitance of no more than 10% is acceptable when tested 24 hours later. Dissipation Factor changes are limited to 5% with Insulation Resistance values of no less than 1000 megohms.

Temperature Ratings:

Class II capacitors are intended to operate within the temperature limits set forth in EIA RS-198-C but may be stored at temperatures ranging from -55°C to +125°C without harm.

Humidity Resistance:

Capacitors must have a minimum insulation resistance of 1000 megohms and a maximum Dissipation Factor of 5% following exposure to a relative humidity of 95% for 100 hours at 40°C.

Construction

Coating Materials:

All Capacitors with 500 VDC ratings and 1 KVDC ratings are coated with a flame retardant, baked-on phenolic coating applied using the wet-dip method. Those rated 2 KV and above, are coated with a flame retardant, dry process fluid-bed epoxy. Diameter and thickness dimensions shown in the tables apply to epoxy as well as phenolic-coated units.

Lead Coatings:

On straight leads, the coatings shall not extend beyond 1/8 inch below the bottom of the capacitor disk. On bent or formed leads, the coating will not be allowed beyond the kink which is the seating plane of the capacitor.

Lead Wire Material and Configurations:

Lead wire material is tin-plated copper wire of 22 or 20 AWG. Capacitors with diameters of 12 mm or less, or voltage values less than 8 KV will be of the smaller gauge. Standard lead configurations are straight and at least 1 inch long, and formed or cut leads are available on special order (drawings required on special configurations). Lead spacings are available from the tables.

Component Marking:

Both inking and laser equipment are used to mark these components. Each capacitor shall bear the manufacturer's initials "CKE" across the top, followed by the capacitance, tolerance, temperature code and voltage where space permits. When space is limited, the temperature characteristic code may be omitted.

Ordering Information:

Component values should be selected from the information provided in the tables, and orders should be placed using the convention described below. For special orders, contact CKE using the contact information provided at the end of this document.

CK2 Manufacturer's Code	Y5P Temperature Characteristics Code	102 Capacitor Value (pf)	M Capacitance Tolerance Code	10KV DC Voltage Rating
CK2 or NY2 for Class II Capacitors	From Temperature Characteristics Table to the Left	3 Digits Total 1st two are Significant Third is Multiplier 0=X1 1=X10 2=X100 3=X1000 9=X10000	K=±10% M=±20% Z=+80, -20% P= +100, -0%	From Table

Example: CK2Z5U471K5KV
This is a capacitor with Z5U temperature characteristics, a capacitance of 470 pf, a capacitance tolerance of ±10% with a rated DC voltage of 5 KV.



CAPACITORS

Maximum Diameter (mm)	Maximum Capacitance Available (pf)-Y5P Temperature Coefficient									CK2 Series	
	500V _{DC}	1KV _{DC}	2KV _{DC}	3KV _{DC}	4KV _{DC}	5KV _{DC}	6KV _{DC}	8KV _{DC}	10KV _{DC}	12KV _{DC}	15KV _{DC}
Max. Thickness (mm) ▶	4.0	5.0	6.0	6.0	7.0	7.0	8.0	9.0	10.0	10.0	12.0
6	1000	680	470	300	270						
7	1500	1000	680	470	330	270					
8	2200	1500	1000	680	470	330	240	220			
9	3300	2200	1500	1000	680	470	330	270	220	180	
10	3900	2700	1800	1200	1000	680	470	330	270	240	220
12	4700	3900	2200	1800	1500	1000	680	680	470	390	330
14	6800	4700	3300	2200	1800	1500	1000	820	680	470	390
16	10000	6800	4700	2700	2200	2000	1500	1000	820	680	470
18		10000	6800	3300	3000	2700	2200	1500	1200	1000	680
20			10000	4700	3900	3300	2700	2000	1500	1200	1000

Maximum Diameter (mm)	Maximum Capacitance Available (pf)-Y5U Temperature Coefficient									CK2 Series	
	500V _{DC}	1KV _{DC}	2KV _{DC}	3KV _{DC}	4KV _{DC}	5KV _{DC}	6KV _{DC}	8KV _{DC}	10KV _{DC}	12KV _{DC}	15KV _{DC}
Max. Thickness (mm) ▶	4.0	5.0	6.0	6.0	7.0	7.0	8.0	9.0	10.0	10.0	12.0
6	2200	1500	1000								
7	3300	2200	1500	820	680	470					
8	4700	3300	2200	1200	1000	680	470	390			
9	6800	4700	3300	1800	1200	1000	680	470	430		
10	10000	6800	3900	2200	1500	1200	1000	680	560	470	
12	15000	8200	4700	2700	2200	1800	1500	1000	820	680	470
14	22000	10000	6800	3300	3300	2700	2200	1500	1200	1000	680
16	27000	15000	10000	4700	3900	3300	2700	2200	1800	1500	1000
18	33000	22000	15000	6800	4700	3900	3300	2700	2200	1800	1200
20	39000	30000	22000	10000	6800	4700	3900	3300	2700	2200	1500

Maximum Diameter (mm)	Maximum Capacitance Available (pf)-Y5V Temperature Coefficient									CK2 Series	
	500V _{DC}	1KV _{DC}	2KV _{DC}	3KV _{DC}	4KV _{DC}	5KV _{DC}	6KV _{DC}	8KV _{DC}	10KV _{DC}	12KV _{DC}	15KV _{DC}
Max. Thickness (mm) ▶	4.0	5.0	6.0	6.0	7.0	7.0	8.0	9.0	10.0	10.0	12.0
6	3300	2200	1500	820							
7	4700	3300	2200	1500	1200	1000					
8	8200	4700	3300	2200	1500	1200	1000				
9	10000	6800	4700	3300	2200	1800	1200	1000			
10	15000	8200	6800	3900	3300	2200	1800	1500	1000		
12	22000	10000	8200	4700	3900	3300	3000	2200	1500	1000	
14	33000	15000	10000	6800	5600	4700	3900	3300	2200	1500	
16	47000	22000	15000	8200	7500	6800	4700	3900	3300	2200	
18	68000	33000	22000	12000	10000	8200	6800	4700	4300	3600	
20	100000	47000	33000	15000	12000	10000	8200	6800	5600	4700	

Maximum Diameter (mm)	Maximum Capacitance Available (pf)-Z5P Temperature Coefficient									CK2 Series	
	500V _{DC}	1KV _{DC}	2KV _{DC}	3KV _{DC}	4KV _{DC}	5KV _{DC}	6KV _{DC}	8KV _{DC}	10KV _{DC}	12KV _{DC}	
Max. Thickness (mm) ▶	4.0	5.0	5.0	6.0	6.0	7.0	7.0	8.0	9.0	10.0	
6	560	430	300	180	150	120	100				
8	1500	1000	680	390	330	270	240				
10	2700	1800	1200	680	560	470	390	300	240	200	
12	3900	2700	1800	1000	820	750	680	470	390	300	
14	5600	3900	2700	1500	1200	1000	910	680	560	470	
16	8200	5600	3600	2200	1800	1500	1200	820	680	560	
18	10000	6300	4300	2400	2000	1800	1500	1000	820	680	
20		8200	5100	3300	2700	2400	2000	1200	1000	820	

Maximum Diameter (mm)	Maximum Capacitance Available (pf)-Z5U Temperature Coefficient									CK2 Series	
	500V _{DC}	1KV _{DC}	2KV _{DC}	3KV _{DC}	4KV _{DC}	5KV _{DC}	6KV _{DC}	8KV _{DC}	10KV _{DC}	12KV _{DC}	
Max. Thickness (mm) ▶	4.0	5.0	5.0	6.0	6.0	7.0	7.0	8.0	9.0	10.0	
6	1800	1000	750	470	390	330	270				
8	3900	1800	1000	750	560	470	430				
10	6800	3000	2200	1200	1000	820	750	560	470	390	
12	10000	4700	3300	2000	1500	1200	1000	820	680	560	
14	15000	7500	4700	3000	2400	2000	1800	1200	1000	820	
16		10000	6800	3900	3300	2700	2200	1800	1200	1000	
18			8200	4700	3900	3300	2700	2000	1500	1200	
20			10000	5600	4700	3900	3600	2400	2000	1500	

- 1) 500V, 1KV, 2KV
- 2) 3KV/4KV
- 3) 5KV/6KV/8KV
- 4) 10KV/12KV

Lead Spacing 5mm	dia over 10mm, Lead Spacing = 7.5mm or 10mm
Lead Spacing 7.5mm	dia over 10mm, Lead Spacing = 10mm
Lead Spacing 10mm	dia over 15mm, Lead Spacing = 12.5mm
Lead Spacing 10mm	dia over 15mm, Lead Spacing = 12.5mm



Maximum Diameter (mm)	Maximum Capacitance Available (pf)-Y5P Temperature Coefficient									NY2 Series	
	500V _{DC}	1KV _{DC}	2KV _{DC}	3KV _{DC}	4KV _{DC}	5KV _{DC}	6KV _{DC}	8KV _{DC}	10KV _{DC}	12KV _{DC}	15KV _{DC}
Max. Thickness (mm) ▶	4.0	5.0	6.0	6.0	7.0	7.0	8.0	9.0	10.0	10.0	12.0
6	1000	680	470	330	300	270					
7	1500	1000	680	560	470	330	270				
8	2200	1500	1000	820	680	470	330	240	220		
9	3300	2200	1500	1000	1000	680	470	330	270	220	180
10	3900	2700	1800	1500	1200	1000	680	470	330	300	270
12	4700	3900	2200	1800	1800	1500	1000	680	680	470	390
14	6800	4700	3300	2200	2200	1800	1500	1000	820	680	470
16	10000	6800	4700	3300	2700	2200	2000	1500	1000	820	680
18		10000	6800	4700	3300	3000	2700	2200	1500	1200	1000
20			10000	6800	4700	3900	3300	2700	2000	1500	1200

Maximum Diameter (mm)	Maximum Capacitance Available (pf)-Y5U Temperature Coefficient									NY2 Series	
	500V _{DC}	1KV _{DC}	2KV _{DC}	3KV _{DC}	4KV _{DC}	5KV _{DC}	6KV _{DC}	8KV _{DC}	10KV _{DC}	12KV _{DC}	15KV _{DC}
Max. Thickness (mm) ▶	4.0	5.0	6.0	6.0	7.0	7.0	8.0	9.0	10.0	10.0	12.0
6	2200	1500	1000								
7	3300	2200	1500	1000	820	680	470				
8	4700	3300	2200	1500	1200	1000	680	470	390		
9	6800	4700	3300	2200	1800	1200	1000	680	470	430	
10	10000	6800	3900	2700	2200	1500	1200	1000	680	560	470
12	15000	8200	4700	3300	2700	2200	1800	1500	1000	820	680
14	22000	10000	6800	4700	3300	3300	2700	2200	1500	1200	1000
16	27000	15000	10000	6800	4700	3900	3300	2700	2200	1800	1500
18	33000	22000	15000	10000	6800	4700	3900	3300	2700	2200	1800
20	39000	30000	22000	15000	10000	6800	4700	3900	3300	2700	2200

Maximum Diameter (mm)	Maximum Capacitance Available (pf)-Y5V Temperature Coefficient									NY2 Series	
	500V _{DC}	1KV _{DC}	2KV _{DC}	3KV _{DC}	4KV _{DC}	5KV _{DC}	6KV _{DC}	8KV _{DC}	10KV _{DC}	12KV _{DC}	15KV _{DC}
Max. Thickness (mm) ▶	4.0	5.0	6.0	6.0	7.0	7.0	8.0	9.0	10.0	10.0	12.0
6	3300	2200	1500	1000	820						
7	4700	3300	2200	2200	1500	1200	1000				
8	8200	4700	3300	3300	2200	1500	1200	1000			
9	10000	6800	4700	3900	3300	2200	1800	1200	1000		
10	15000	8200	6800	4700	3900	3300	2200	1800	1500	1000	
12	22000	10000	8200	6800	4700	3900	3300	3000	2200	1500	1000
14	33000	15000	10000	8200	6800	5600	4700	3900	3300	2200	1500
16	47000	22000	15000	10000	8200	7500	6800	4700	3900	3300	2200
18	68000	33000	22000	15000	12000	10000	8200	6800	4700	4300	3600
20	100000	47000	33000	22000	15000	12000	10000	8200	6800	5600	4700

Maximum Diameter (mm)	Maximum Capacitance Available (pf)-Z5P Temperature Coefficient									NY2 Series	
	500V _{DC}	1KV _{DC}	2KV _{DC}	3KV _{DC}	4KV _{DC}	5KV _{DC}	6KV _{DC}	8KV _{DC}	10KV _{DC}	12KV _{DC}	15KV _{DC}
Max. Thickness (mm) ▶	4.0	5.0	5.0	6.0	6.0	7.0	7.0	8.0	9.0	10.0	12.0
6	750	560	390	220	180	150	120				
8	1800	1200	820	470	390	330	300				
10	2700	2000	1200	820	680	560	470	390	330	240	
12	4700	3000	2000	1200	1000	820	750	620	470	360	300
14	6800	4700	2700	1800	1500	1200	1000	820	750	560	430
16	8200	6200	3900	2400	2000	1800	1500	1000	910	750	560
18	10000	8200	4700	3300	2700	2200	1800	1500	1200	910	820
20		10000	6800	3900	3600	3000	2400	2000	1500	1200	1000

Maximum Diameter (mm)	Maximum Capacitance Available (pf)-Z5U Temperature Coefficient									NY2 Series	
	500V _{DC}	1KV _{DC}	2KV _{DC}	3KV _{DC}	4KV _{DC}	5KV _{DC}	6KV _{DC}	8KV _{DC}	10KV _{DC}	12KV _{DC}	15KV _{DC}
Max. Thickness (mm) ▶	4.0	5.0	5.0	6.0	6.0	7.0	7.0	8.0	9.0	10.0	12.0
6	1800	1200	750	470	390	330	270				
8	3900	2400	1500	910	750	680	560				
10	6800	3900	2400	1500	1200	910	910	750	620	470	
12	10000	5600	3600	2200	1800	1500	1200	1000	910	750	560
14	15000	8200	5600	3300	2700	2200	1800	1500	1200	1000	820
16		10000	7500	4700	3600	3000	2400	2200	1800	1500	1000
18			10000	6200	4700	3900	3300	3000	2400	1800	1500
20				7500	6200	4700	4300	3900	3300	2400	2000

- 1) 500V, 1KV, 2KV
- 2) 3KV/4KV
- 3) 5KV/6KV/8KV
- 4) 10KV/12KV

Lead Spacing 5mm	dia over 10mm, Lead Spacing = 7.5mm or 10mm
Lead Spacing 7.5mm	dia over 10mm, Lead Spacing = 10mm
Lead Spacing 10mm	dia over 15mm, Lead Spacing = 12.5mm
Lead Spacing 10mm	dia over 15mm, Lead Spacing = 12.5mm



Introduction

The temperature compensating Class 1 disk ceramic capacitors offer solutions for high Q applications such as RF Amplifiers and Filters that require good capacitance stability across a wide range of temperatures and operating conditions. These capacitors have temperature coefficients ranging from P350 to N1000 with K factors ranging from 10 to 300 max.

Application

1. RF Amplifiers
2. Filter Circuits
3. Resonant Networks

Specifications

Capacitance and Dissipation Factor Measurements:

Measurements for C and DF will be made at 25°C with less than 2 volts applied at a frequency of 1 MHz. Dissipation factor for capacitance values greater than 30 pf shall be .1% max (Q=1000 minimum).

Standard Capacitance Tolerances Available: J – 5% K – 10% M – 20%

Voltage Ratings: 500 V_{DC} to 15 KV_{DC} (see tables)

Dielectric Withstand Voltage:

Capacitors must meet the original manufacturer's specifications following application of two times the rated D.C. voltage for 5±1 seconds.

Insulation Resistance:

Insulation resistance will be not less than 10,000 Megohms at 25°C. Measurement current is limited to 30 mA while charging to 100VDC in 2 minutes.

Temperature Characteristics Available: NPO and SL types

Life Testing Method:

These capacitors are designed to withstand voltages of at least 1.5 times the rated DC voltage for at least 1000 hours at 85°C. A change of capacitance of no more than 10% is acceptable when tested 24 hours later. Dissipation Factor changes are limited to 5% with Insulation Resistance values of no less than 1000 Megohms. DF will be less than 0.2%.

Temperature Ratings:

Class I capacitors are intended to operate within the temperature limits set forth in EIA RS-198-C but may be stored at temperatures ranging from -55°C to +125°C without harm.

Humidity Resistance:

Capacitors must have a minimum insulation resistance of 1000 Megohms and a maximum Dissipation Factor of 5% following exposure to a relative humidity of 95% for 100 hours at 40°C.

Construction

Coating Materials:

All Capacitors with 500 VDC and 1 KVDC ratings are coated with a flame retardant, baked-on phenolic coating applied using the wet-dip method. Those rated 2 KV and above, are coated with a flame retardant, dry process fluid-bed epoxy. Lead coatings on straight leads shall not extend beyond 1/8 inch below the bottom of the capacitor disk. On formed leads, coating shall not extend beyond the kink which is the seating plane of the capacitor.

Lead Wire Material and Configurations:

Lead wire material is tin-plated copper wire of 22 or 20 AWG. Capacitors with diameters of 12 mm or less, or voltage values less than 8 KV will be of the smaller gauge. Standard lead configurations are straight and at least 1 inch long, and formed or cut leads are available on special order (drawings required on special configurations). Lead spacings are available from the tables.

Component Marking:

Both inking and laser equipment are used to mark these components. Each capacitor shall bear the manufacturer's initials "CKE" across the top, followed by the capacitance, tolerance, temperature code and voltage where space permits. When space is limited, the temperature characteristic code may be omitted.

Ordering Information:

Component values should be selected from the information provided in the tables, and orders should be placed using the convention described below. For special orders, contact CKE using the contact information provided at the end of this document.

CK1 Manufacturer's Code	NPO Temperature Characteristics Code	101 Capacitor Value (pf)	K Capacitance Tolerance Code	10KV DC Voltage Rating
CK1 for Class 1 Capacitors	From Table	3 Digits Total 1st two are Significant Third is Multiplier	J = ±5% K = ±10% M = ±20%	From Table

Example: CK1NPO101K6KV
This is a capacitor with a NPO temperature characteristic, a capacitance of 100 pf, and a tolerance of ±10% at a rated voltage of 6KV.

		Maximum Capacitance Available (pf)-NPO Temperature Coefficient								CK1 Series		
Maximum Diameter (mm)	Lead Spacing (mm)	500V _{DC}	1KV _{DC}	2KV _{DC}	3KV _{DC}	4KV _{DC}	5KV _{DC}	6KV _{DC}	8KV _{DC}	10KV _{DC}	12KV _{DC}	15KV _{DC}
Max. Thickness (mm) ▶		4.0	5.0	5.0	6.0	6.0	6.0	7.0	7.0	7.0	8.0	9.0
6.0	5.0	27	22	18	15	12	10	8				
7.0	5.0	47	39	27	22	18	15	12	10			
8.0	5.0	68	56	39	36	30	22	18	15	10	9.1	6.8
9.0	7.5	100	75	56	47	36	30	24	18	15	12	9.1
10.0	7.5	150	100	75	68	47	36	30	22	18	15	12
12.0	10.0	300	180	120	91	62	51	39	30	27	22	18
14.0	10.0	470	270	200	130	91	75	62	47	36	30	24
16.0	12.5		390	300	180	120	91	75	56	47	39	30
18.0	12.5		560	390	220	150	120	100	75	62	51	39
20.0	12.5			470	270	210	160	130	100	75	62	51

		Maximum Capacitance Available (pf)-SL Temperature Coefficient								CK1 Series		
Maximum Diameter (mm)	Lead Spacing (mm)	500V _{DC}	1KV _{DC}	2KV _{DC}	3KV _{DC}	4KV _{DC}	5KV _{DC}	6KV _{DC}	8KV _{DC}	10KV _{DC}	12KV _{DC}	15KV _{DC}
Max. Thickness (mm) ▶		4.0	5.0	5.0	6.0	6.0	6.0	7.0	7.0	7.0	8.0	9.0
6.0	5.0	100	68	47	39	33	30	24				
7.0	5.0	150	100	68	47	43	39	36	27			
8.0	5.0	220	180	100	82	75	62	51	36	30	24	20
9.0	7.5	330	220	120	100	91	82	68	51	39	33	27
10.0	7.5	470	300	150	120	110	100	91	62	51	43	36
12.0	10.0	680	390	220	200	180	150	130	100	75	62	51
14.0	10.0	1000	510	360	300	270	220	180	130	110	91	68
16.0	12.5		750	560	470	390	300	240	180	130	110	91
18.0	12.5				620	510	360	300	220	180	150	120
20.0	12.5					620	470	390	270	220	180	150



CKE's safety rated capacitors are intended for use on 125 Volt and 250 Volt AC power lines and for antenna coupling applications. They are small volume, low dissipation, high reliability devices with a wide selection of temperature characteristics. They are designed and certified to meet specific X & Y international safety agency requirements. They are approved by certifying agencies such as UL, VDE, CSA and others.

Applications

1. Line to line and line to ground
2. Line bypass filtering applications
3. Antenna coupling

Standard Capacitance Tolerances Available: K and M

Voltage Ratings: X1Y2 (250VAC/2500VAC) and X1Y1 (400VAC/4000VAC)

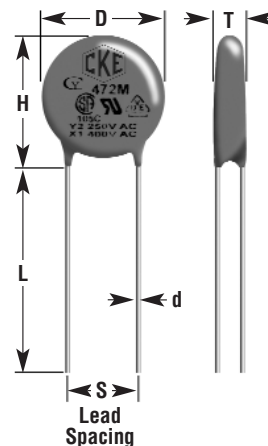
Insulation Resistance: 10000 Megohms minimum at 500VDC for 1 minute.

Construction: Ceramic disk coated with flame retardant epoxy resin.

Component Marking: As specified by approving agencies

Ordering Information:

This catalog has only typical specifications, approvals and certifications. It is important that you verify approvals, certifications and specifications for your particular application before ordering. Our sales and engineering staff will provide assistance in making selections.

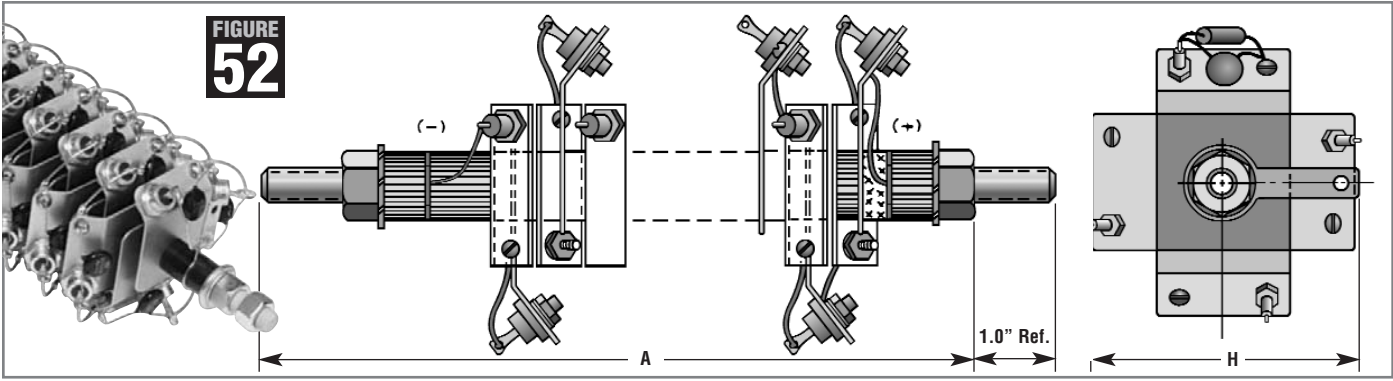


CK8 Manufacturer's Code	Y5P Temperature Characteristics Code	102 Capacitor Value (pf)	K Capacitance Tolerance Code	X1Y1 Voltage Ratings	
CK8 Capacitors	From Table	3 Digits Total 1st two are Significant Third is Multiplier	K = ±10% M = ±20%	From Table	Example: CK8Y5P102KX1Y1 This is a capacitor with a Y5P temperature characteristic, a capacitance of 1000 pf, and a tolerance of ±10% and an X1Y1 voltage characteristic.

Capacitance Tolerance K & M		Maximum Capacitance Available Temperature Coefficient			X1Y1 Series
	Maximum Diameter (mm)	Maximum Thickness (mm)	Lead Spacing (mm)	Lead Diameter (mm)	Maximum Capacitance Available (pf)
Y5P	08	8	10	0.7	100-220
Y5P	10	8	10	0.7	330-820
Y5P	12	8	10	0.7	1000
Y5U	10	8	10	0.7	1000
Y5U	12	8	10	0.7	1500
Y5U	14	8	10	0.7	2200
Y5U	16	8	10	0.7	3900-4700
Y5V	08	8	10	0.7	1000
Y5V	10	8	10	0.7	1500-2200
Y5V	12	8	10	0.7	3300
Y5V	14	8	10	0.7	4700

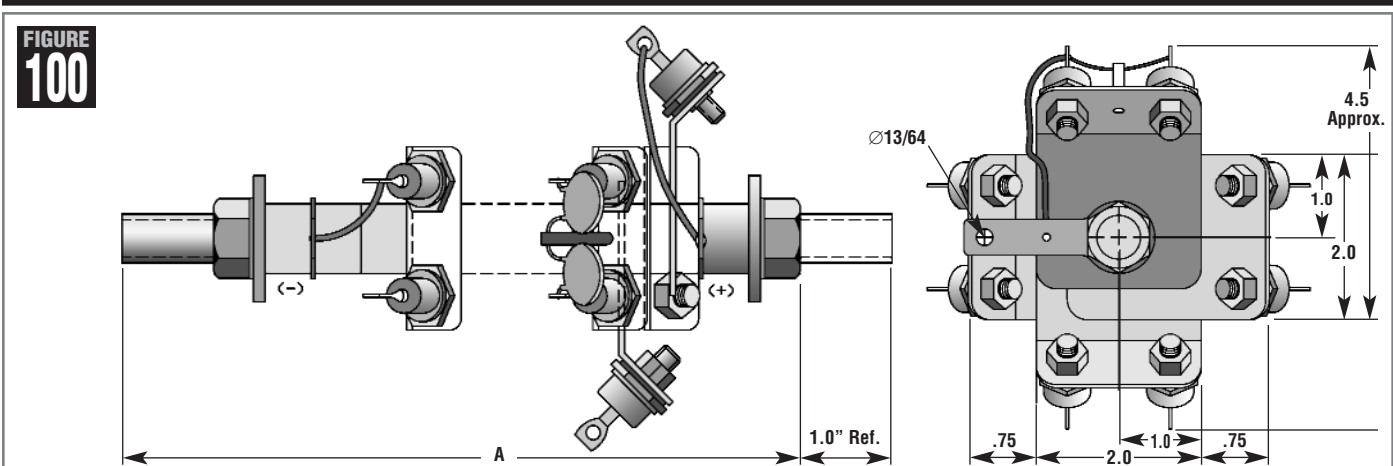
Capacitance Tolerance K & M		Maximum Capacitance Available Temperature Coefficient			X1Y2 Series
	Maximum Diameter (mm)	Maximum Thickness (mm)	Lead Spacing (mm)	Lead Diameter (mm)	Maximum Capacitance Available (pf)
Y5P	08	7	7.5 or 10	0.7	100-330
Y5P	10	7	7.5 or 10	0.7	470-680
Y5P	12	7	7.5 or 10	0.7	1000
Y5U	08	7	7.5 or 10	0.7	1000
Y5U	10	7	7.5 or 10	0.7	2200
Y5U	12	7	7.5 or 10	0.7	2700
Y5U	14	7	7.5 or 10	0.7	3300Y5U
Y5U	16	7	7.5 or 10	0.7	4700
Y5V	08	7	7.5 or 10	0.7	1000
Y5V	10	7	7.5 or 10	0.7	1500-2200
Y5V	12	7	7.5 or 10	0.7	3300-3900
Y5V	14	7	7.5 or 10	0.7	4700
Y5V	16	7	7.5 or 10	0.7	10000

CAPACITORS



CJV04H*S		Height H=3.70" max
Average Forward Current Max @ 50°C Ambient	I _{FAVM}	6.5 Amps
Average Forward Current Max @ 50°C (Forced Air 300ft/min)	I _{FAVM}	12.5 Amps
Maximum Surge Current, 10ms Sine Pulse	I _{FSM}	370 Amps
CJV05H*S		Height H=3.70" max
Average Forward Current Max @ 50°C Ambient	I _{FAVM}	10.0 Amps
Average Forward Current Max @ 50°C (Forced Air 300ft/min)	I _{FAVM}	22.0 Amps
Maximum Surge Current, 10 ms Sine Pulse	I _{FSM}	800 Amps
CJV06H*S		Height H=3.70" max
Average Forward Current Max @ 50°C Ambient	I _{FAVM}	12.0 Amps
Average Forward Current Max @ 50°C (Forced Air 300ft/min)	I _{FAVM}	24.0 Amps
Maximum Surge Current, 10 ms Sine Pulse	I _{FSM}	1200 Amps

*- Number of modules	16	20	24	28	32	36	40	44	48	
Length A (Inches)	7.375	8.50	9.625	10.75	11.875	13.00	14.125	15.25	16.375	
Maximum Operating Peak Voltage	8KV	10KV	12KV	14KV	16KV	18KV	20KV	22KV	24KV	
VF @ I _{FAVM} @ 25°C	16	20	24	28	32	36	40	44	48	
Maximum Operating and Storage Temperature									TA	-40°C to 125°C
Maximum Reverse Leakage Current @ operating voltage @ T _J =25°C, less than 100 micro amps										



CJ2V04H*S		Height H=3.70" max
Average Forward Current Max @ 50°C Ambient	I _{FAVM}	3.25 Amps
Average Forward Current Max @ 50°C (Forced Air 300ft/min)	I _{FAVM}	6.25 Amps
Maximum Surge Current, 8.3ms Sine Pulse	I _{FSM}	370 Amps
CJ2V06H*S		Height H=3.70" max
Average Forward Current Max @ 50°C Ambient	I _{FAVM}	6.0 Amps
Average Forward Current Max @ 50°C (Forced Air 300ft/min)	I _{FAVM}	12.0 Amps
Maximum Surge Current, 8.3 ms Sine Pulse	I _{FSM}	1500 Amps

*- Number of modules	16	20	24	32	36	40	48	56		
Length A (Inches)	5.125	5.625	6.250	7.375	7.875	8.500	9.625	10.725		
Maximum Operating Peak Voltage	8KV	10KV	12KV	16KV	18KV	20KV	24KV	28KV		
VF @ I _{FAVM} @ 25°C	16	20	24	32	36	40	48	56		
Maximum Operating and Storage Temperature									TA	-40°C to 120°C
Maximum Reverse Leakage Current @ operating voltage @ T _J =25°C, less than 100 micro amps										

Note: 1 The true PIV of an MOV compensated unit is 2X the operating voltage.
 Note: 2 Each diode is rated @ 1000 volt minimum and MOV compensated which gives an avalanche rating of 90 joules maximum (8x20 microsec) and a V_{nominal} of 680 volts. For R-C compensation, drop the "S" suffix.

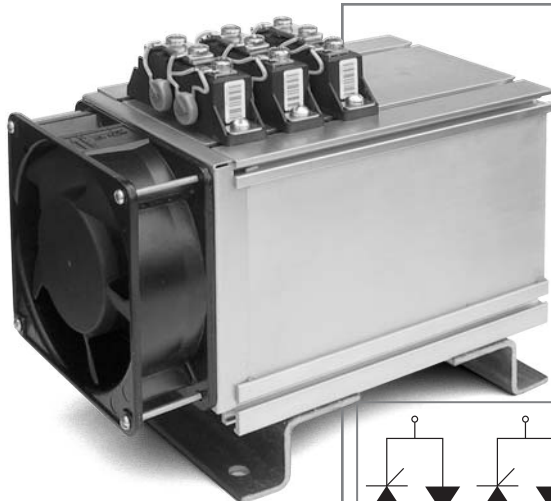
Higher Voltages, Higher Surge Currents, Fast Recovery, Custom Lengths, and doubler assemblies available. Please Consult the Factory.
 Note: Each diode is MOV compensated.

DIODES





3 PHASE AC SCR CONTACTORS



SCR75TC120F

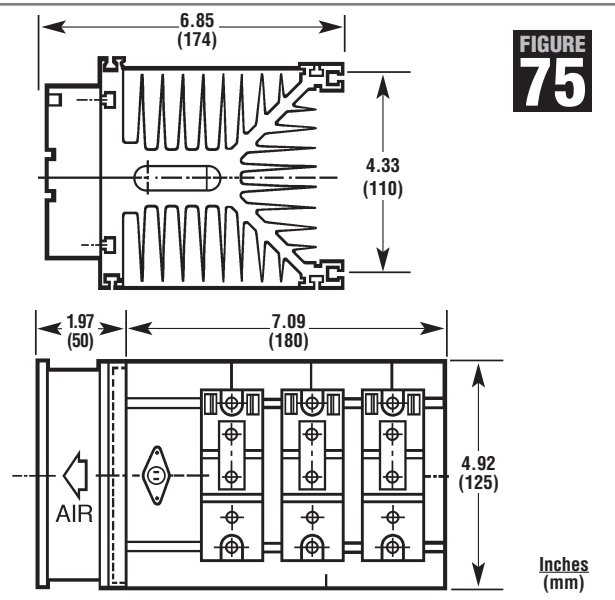
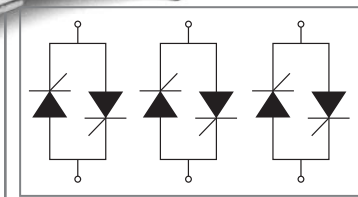
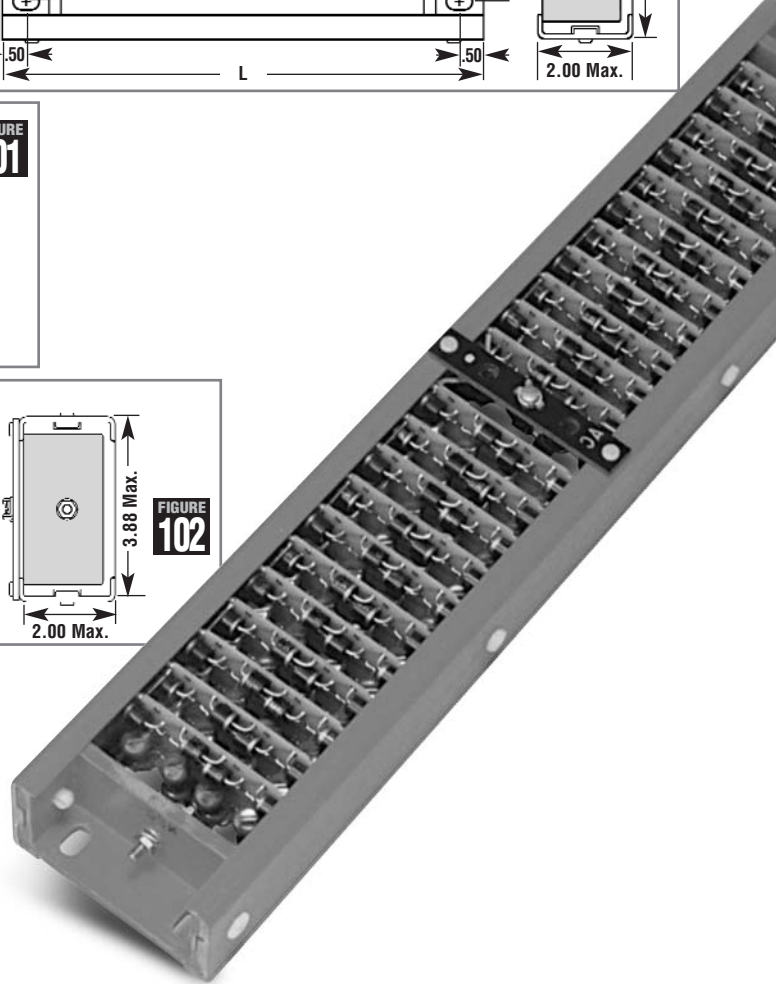
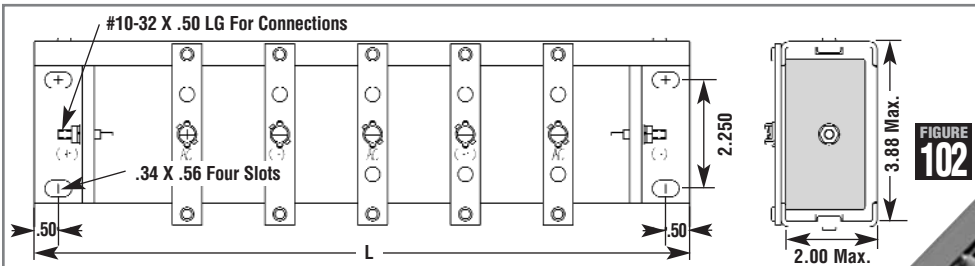
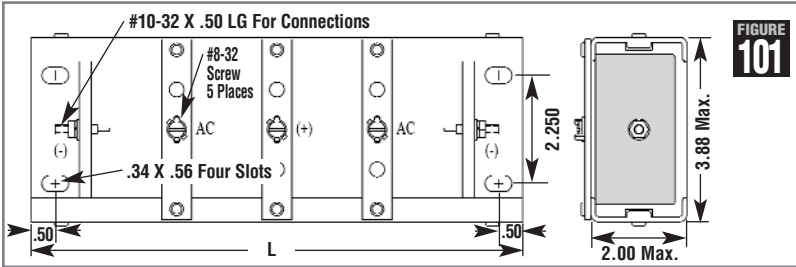
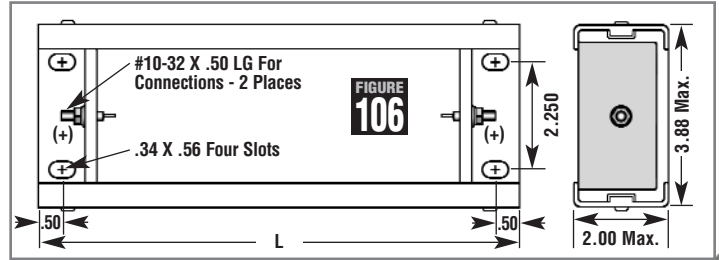
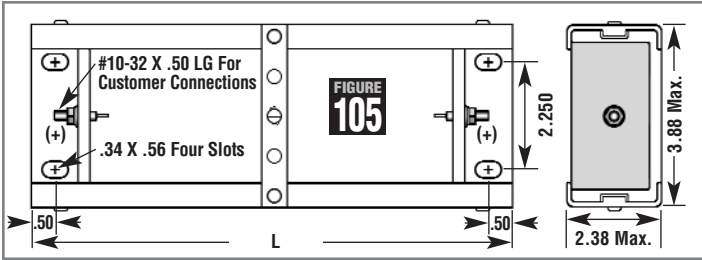


FIGURE 75

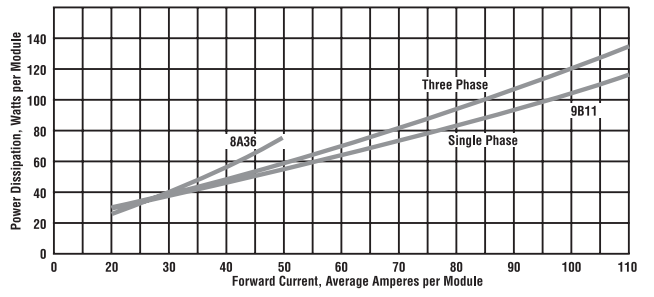
Inches (mm)

CKE Number	Repetitive Peak Reverse Voltage V_{RRM} Per Leg V (Volts)	Maximum Forward Voltage Drop V_f @ I_f Per Leg V (Volts)	Output Current Amps RMS (A_{RMS})	Forced Air Cooling (A_{RMS})	Leakage milliAmps T_j @ 125°C	Maximum Reverse Surge Current I_{FSM} (8.3ms) A (Amps)	Dimensions A B (millimeters)
SCR47 Series							Figure 75
SCR47TC40	400	1.95	47	60	15	420	174 180
SCR47TC60	600	1.95	47	60	15	420	174 180
SCR47TC80	800	1.95	47	60	15	420	174 180
SCR47TC100	1000	1.95	47	60	15	420	174 180
SCR47TC120	1200	1.95	47	60	15	420	174 180
SCR60 Series							Figure 75
SCR60TC40	400	1.81	60	85	15	890	174 180
SCR60TC60	600	1.81	60	85	15	890	174 180
SCR60TC80	800	1.81	60	85	15	890	174 180
SCR60TC100	1000	1.81	60	85	15	890	174 180
SCR60TC120	1200	1.81	60	85	15	890	174 180
SCR75 Series							Figure 75
SCR75TC40	400	1.54	75	100	15	1370	174 180
SCR75TC60	600	1.54	75	100	15	1370	174 180
SCR75TC80	800	1.54	75	100	15	1370	174 180
SCR75TC100	1000	1.54	75	100	15	1370	174 180
SCR75TC120	1200	1.54	75	100	15	1370	174 180
SCR95 Series							Figure 75
SCR95TC40	400	1.58	95	135	15	1870	174 180
SCR95TC60	600	1.58	95	135	15	1870	174 180
SCR95TC80	800	1.58	95	135	15	1870	174 180
SCR95TC100	1000	1.58	95	135	15	1870	174 180
SCR95TC120	1200	1.58	95	135	15	1870	174 180
SCR135 Series							Figure 75
SCR135TC40	400	1.57	135	160	50	3360	200 220
SCR135TC60	600	1.57	135	160	50	3360	200 220
SCR135TC80	800	1.57	135	160	50	3360	200 220
SCR135TC100	1000	1.57	135	160	50	3360	200 220
SCR135TC120	1200	1.57	135	160	50	3360	200 220
SCR160 Series							Figure 75
SCR160TC40	400	1.54	160	185	50	5100	200 220
SCR160TC60	600	1.54	160	185	50	5100	200 220
SCR160TC80	800	1.54	160	185	50	5100	200 220
SCR160TC100	1000	1.54	160	185	50	5100	200 220
SCR160TC120	1200	1.54	160	185	50	5100	200 220

Please Note: All units are MOV compensated. Other circuit arrangements available, doubler, quadrupler and single phase bridges. Please add a "D" for Free Wheeling Diode and an "F" for Fan. Fast recovery can be requested along with higher voltages and higher current assemblies.



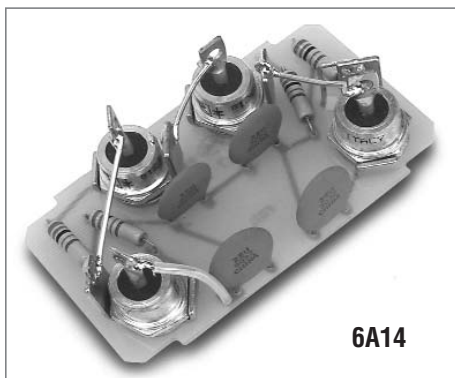
Electrical Characteristics Average Power Dissipation per Module



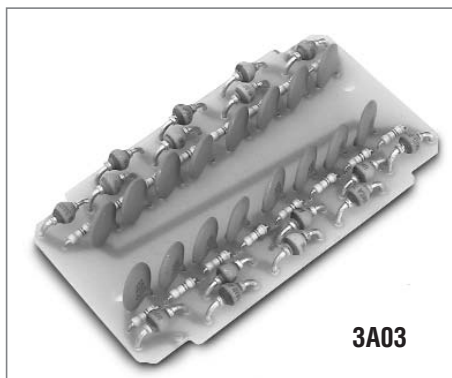
CKE Part Number	Rep. PIV V_{RM} kV Per Leg	Avg. Forward Current @		Max. Forward Voltage Drop $V_F @ I_F$ Per Leg V (Volts)	Max. Reverse Current $I_R @$ Operating Voltage μA (microAmps)	Max. Surge Current I_{FSM} (8.3 ms) A (Amps)	Overall Length Inches L Max	Figure
		40°C A(Amp)	70°C Oil A(Amp)					
SD17A12Z0817S	8	12	11	8.8	100	370	16.25	105
SD15A09Z0817S	32	2.4	4.0	36	100	370	16.25	105
SD16A14Z0625S	24	4.0	7.0	24	100	1050	22.25	105
SH13A03Z0508S	56	1.0	1.5	88	100	150	9.50	106
SH13A03Z1320S	145	1.0	1.5	208	100	150	18.50	106
SH16A14Z0612S	24	4.0	7.0	24	100	1050	12.50	106
SH15A09Z2020S	80	2.4	4.0	88	100	370	18.50	106
SH18A36Z3434S	34	15	26	38	100	1050	29.00	106
SH19B11Z1633S	16	33	70	24	100	3000	28.25	106
SB53A03Z0111S	11	1.0	1.5	16	100	150	11.75	101
SB56A14Z0111S	4	4.0	7.0	4.4	100	1050	11.75	101
SE53A03Z0223S	22	1.0	1.5	32	100	150	20.75	102
SE55A09Z0111S	4	2.4	4.0	4.4	100	370	11.75	102
SE58A36Z03235	3	15	26	3.3	100	1050	20.75	102

*MOV compensated units max operating voltage is 1/2 times PIV.
Higher Voltages, Higher Surge Currents, Fast Recovery, Custom Lengths, Doubler, Positive and Negative Taps Available.

DIODES



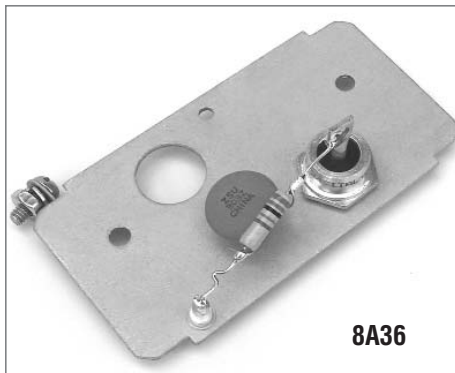
6A14



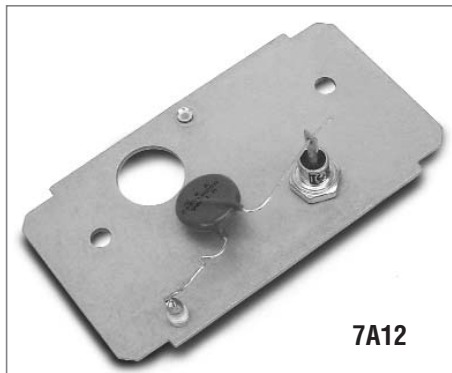
3A03



5A09



8A36



7A12



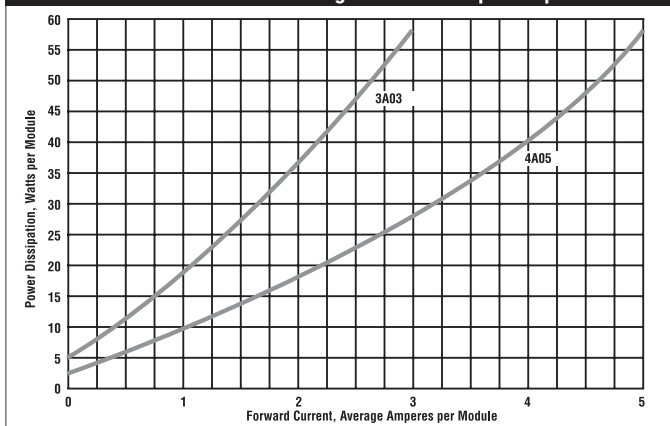
4A05

Product Description Number

Circuit	Termination	Module (see above)	Modules (per Leg)	Channel No.
S *	1	7 A 1 2 Z	1 5	3 1
SH = Half Wave SD = Doubler SB = 1φ Bridge SE = 3φ Bridge	Please consult factory for other ends			To determine channel length in inches L=(3.5+channel number x .75 inches)

Module Type	Volts/ Board	Avg. Forward Current Max. $I_{FAVM}@T_c 40^\circ C$ A (Amps)	Max. Surge Current $I_{FSM} (8.3ms)$ A (Amps)
6A14	4kv	4.0	1050
3A03	16kv	1.2	150
5A09	4kv	2.4	370
8A36	1kv	15	1050
7A12	1kv	12	370
4A05	8kv	3.0	150

Electrical Characteristics Average Power Dissipation per Module



Electrical Characteristics Average Power Dissipation per Module

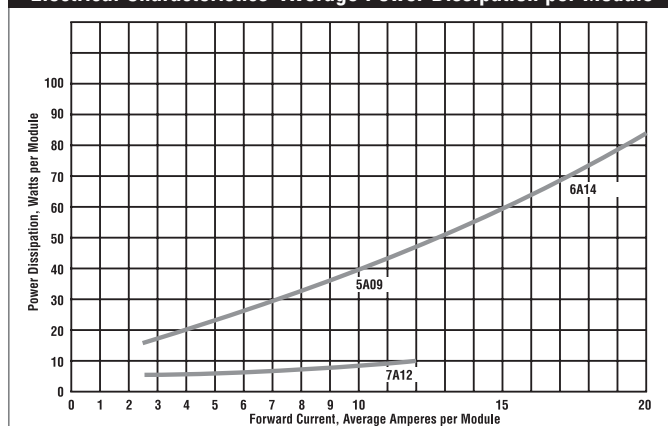
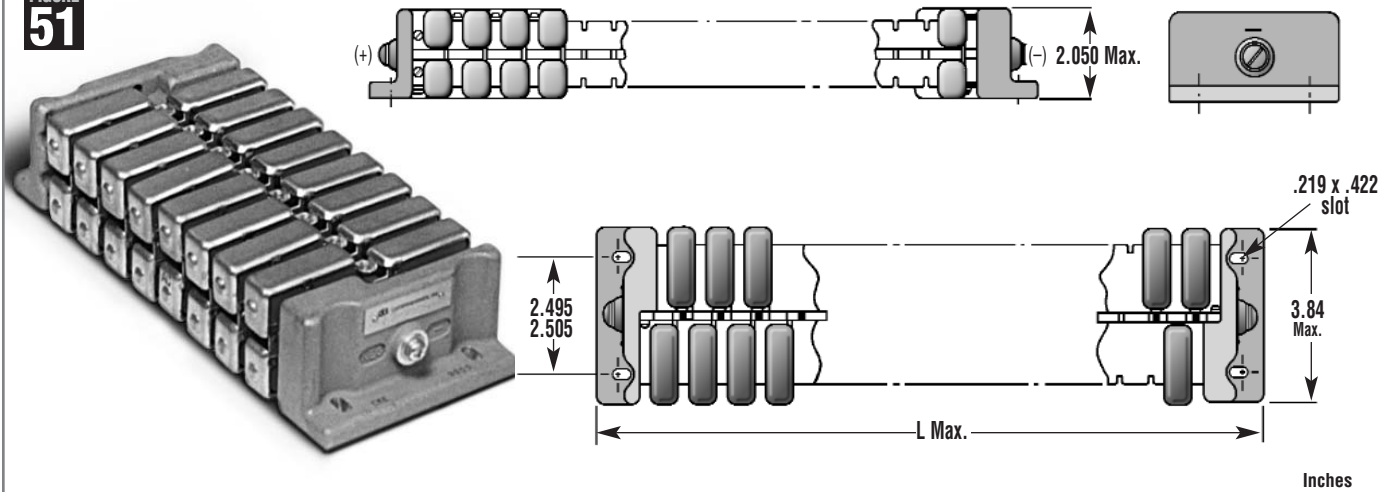




FIGURE 51



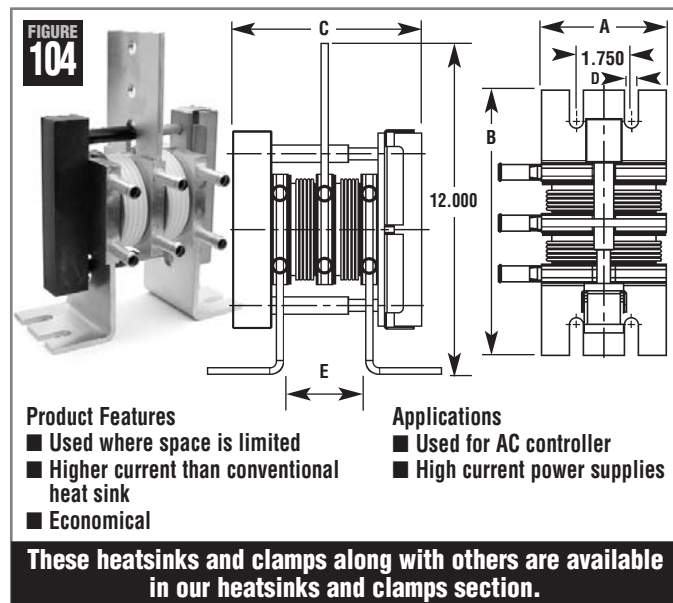
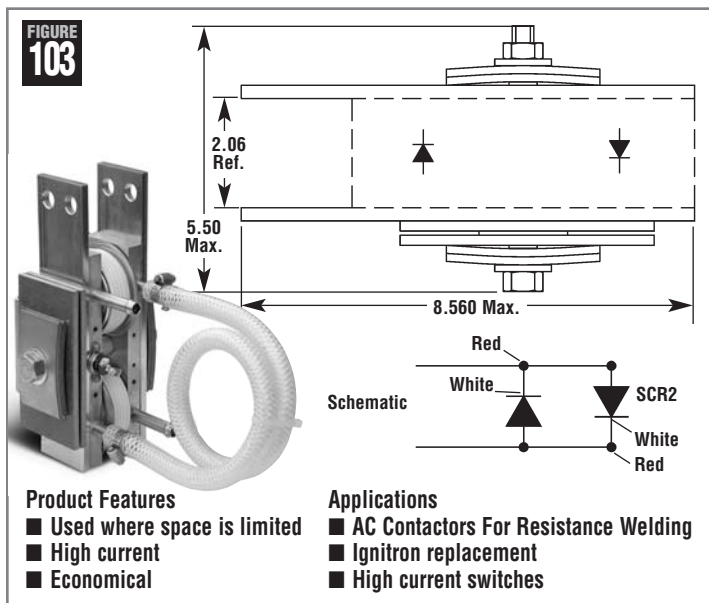
CKE Part Number	Rep. PIV V_{RRM} kV	Avg. Forward Current @		Max. Forward Voltage Drop $V_F @ I_F$ Per Leg V (Volts)	Max. Reverse Current $I_R @ V_{RRM} @ 25^\circ C$ mA (milliAmps)	Max. Surge Current I_{FSM} (8.3 ms) A (Amps)	Overall Length Inches L Max
		40°C A (Amps)	70°C Oil A (Amps)				
1HV12 Series							
1HV12R10A	24	3.0	12.0	20	1.5	370	5.54
1HV12R20A	48	3.0	12.0	40	1.5	370	8.67
1HV12R30A	72	3.0	12.0	60	1.5	370	11.8
1HV12R40A	96	3.0	12.0	80	1.5	370	14.93
1HV12R50A	120	3.0	12.0	100	1.5	370	18.06
1HV12R60A	144	3.0	12.0	120	1.5	370	21.19
1HV12R70A	168	3.0	12.0	140	1.5	370	24.32
1HV12R80A	192	3.0	12.0	160	1.5	370	27.45
1HV12R90A	216	3.0	12.0	180	1.5	370	30.58
1HV12R100A	240	3.0	12.0	200	1.5	370	33.71
2HV12 Series							
2HV12R10A	24	4.0	12.5	20	1.5	370	6.73
2HV12R20A	48	4.0	12.5	40	1.5	370	10.8
2HV12R30A	72	4.0	12.5	60	1.5	370	14.87
2HV12R40A	96	4.0	12.5	80	1.5	370	18.94
2HV12R50A	120	4.0	12.5	100	1.5	370	23.01
2HV12R60A	144	4.0	12.5	120	1.5	370	27.08
2HV12R70A	168	4.0	12.5	140	1.5	370	31.15
3HV*P Series							
3HV12P10A	24	7.0	33.0	20	4	1050	10.22
3HV12P20A	48	7.0	33.0	40	4	1050	18.03
3HV12P30A	72	7.0	33.0	60	4	1050	25.84
3HV12P40A	96	7.0	33.0	80	4	1050	33.65
3HV16P10A	32	7.0	33.0	20	5.3	1050	10.22
3HV16P20A	64	7.0	33.0	40	5.3	1050	18.03
3HV16P30A	96	7.0	33.0	60	5.3	1050	25.84
3HV16P40A	128	7.0	33.0	80	5.3	1050	33.65
3HV*M Series							
3HV12M10A	24	8.0	36.0	20	4	1500	10.22
3HV12M20A	48	8.0	36.0	40	4	1500	18.03
3HV12M30A	72	8.0	36.0	60	4	1500	25.84
3HV12M40A	96	8.0	36.0	80	4	1500	33.65
3HV16M10A	32	8.0	36.0	20	5.3	1500	10.22
3HV16M20A	64	8.0	36.0	40	5.3	1500	18.03
3HV16M30A	96	8.0	36.0	60	5.3	1500	25.64
3HV16M40A	127	8.0	36.0	80	5.3	1500	33.65

Please Note: Other circuit arrangements available, doubler, quadrupler, single phase and three phase bridges. Fast recovery and MOV compensation can be requested.

All parts are RC compensated unless otherwise requested.

Custom parts available, please consult factory.

DIODES



CKE Number	Welding Rating Amps RMS @ 50% Duty Cycle	Welding Rating Amps RMS @100% Duty Cycle	SCR Voltage Rating (PIV)	I _{FSM} (Amps) Single Cycle Surge Rating 8.3 msec	Figure
RW700AC1000	1350	700	1000	7500	103
RW700AC1200	1350	700	1200	7500	103
RW700AC1400	1350	700	1400	7500	103
RW700AC1600	1350	700	1600	7500	103
RW700AC1800	1350	700	1800	7500	103
RW700AC2000	1350	700	2000	7500	103
RW1000AC1000	1900	1000	1000	13000	103
RW1000AC1200	1900	1000	1200	13000	103
RW1000AC1400	1900	1000	1400	13000	103
RW1000AC1600	1900	1000	1600	13000	103
RW1000AC1800	1900	1000	1800	13000	103
RW1000AC2000	1900	1000	2000	13000	103
RW2100AC1000	3250	2100	1000	23000	103
RW2100AC1200	3250	2100	1200	23000	103
RW2100AC1400	3250	2100	1400	23000	103
RW2100AC1600	3250	2100	1600	23000	103
RW2100AC1800	3250	2100	1800	23000	103
RW2100AC2000	3250	2100	2000	23000	103

Custom parts available, please consult factory.

Diode

CKE Number	1/2 Wave Rating I _{AVG}	Single Phase Rating (2 units req'd) Idc	PRV Volts	Tol.	Dimensions (Inches)					Figure
					A	B	C	D	E	
WC38D1500A*V	1500	2900	1500-2600	±0.075	3	8.537	6.958	0.406	3.097	104
WC52D2100A*V	2100	4100	1400-2000	±0.075	3	8.537	6.958	0.406	3.097	104
WC77D3600A*V	3600	6800	1800-2600	±0.045	4	9.307	7.668	0.531	3.807	104

SCR

CKE Number	1/2 Wave Rating I _{AVG}	Single Phase Rating (2 units req'd) Idc	PRV Volts	Tol.	Dimensions (Inches)					Figure
					A	B	C	D	E	
WC38T750A*V	750	1450	500-1600	±0.075	3	8.537	6.958	0.406	3.097	104
WC52T1250A*V	1250	2450	500-1400	±0.075	3	8.537	6.958	0.406	3.097	104
WC65T1750A*V	1750	3350	600-2000	±0.045	4	9.107	7.468	0.531	3.607	104
WC77T1950A*V	1950	3700	1200-2100	±0.045	4	9.307	7.668	0.531	3.807	104

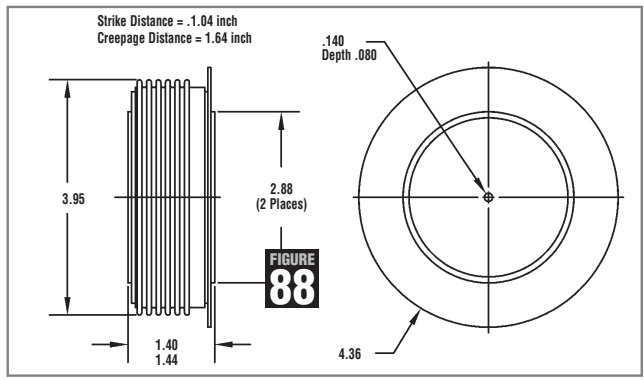
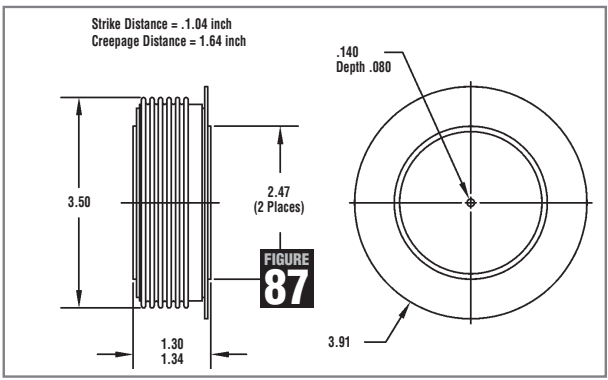
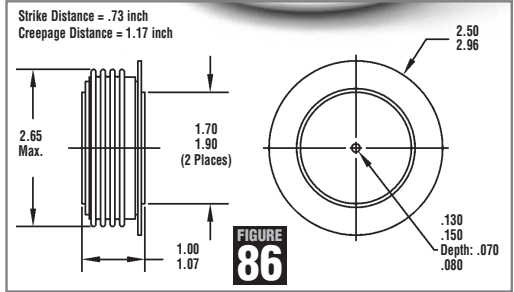
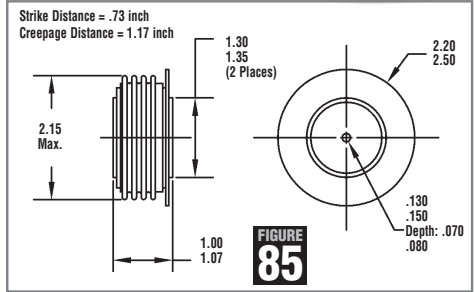
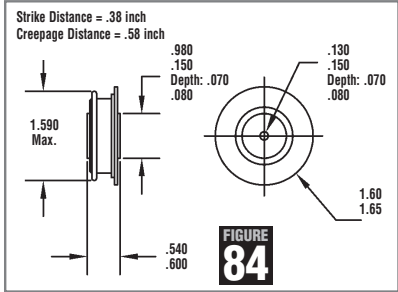
* Denote voltage to be used. Example: WC38T750A500V is a 750 Amp, 500 Volt assembly.



Diode Capsules



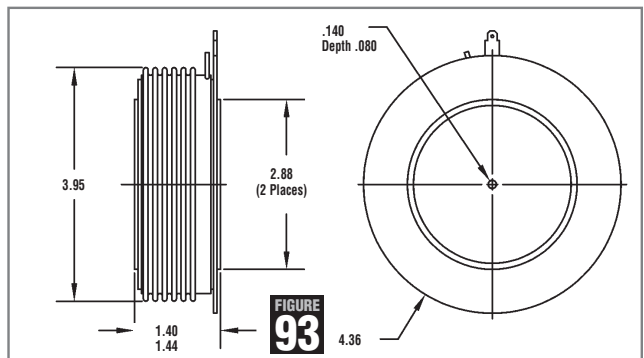
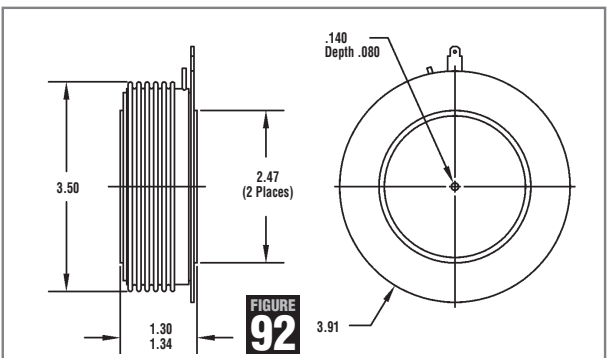
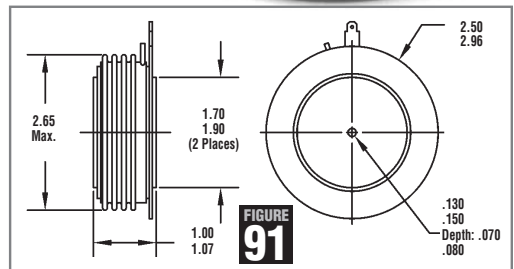
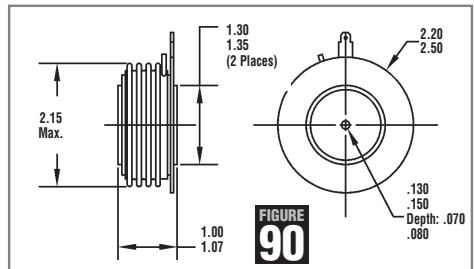
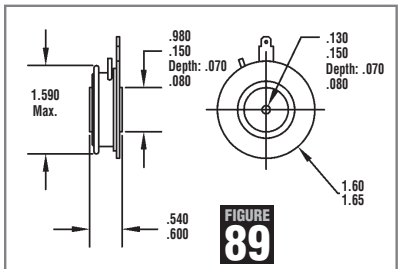
Inches



SCR Capsules



Inches



SCR/DIODES



Diode Capsules

CKE Number	V _{rrm} (volts)	I _{I (avg)} (A)	T _{case} (°C)	t _{rr} (u sec)	I _{sm} (A)	I _{2t} (KA ² s)	I _{rrm} (ma)@ T _{1 max}	V _{rm} (volts)	I _{rm} (A)	T _{1 MAX} (°C)	R _{θj-c} Double sided cooled (°C/W)	Mtg Force (Lb)	Fig
D30P400S	500-1500	400	115	-	7000	170	40	1.400	1200	185	0.055	1000	84
D30P1200S	500-1500	1200	115	-	11100	510	40	1.650	3800	185	0.055	1000	84
D38P750S	1500-3000	750	90	-	10000	417	50	1.700	2400	175	0.040	4000	85
D38P1000S	1000-2000	1000	90	-	12000	600	50	1.750	3200	185	0.040	4000	85
D38P1000S1	1500-2600	1000	90	-	12000	600	50	1.750	3200	200	0.040	4000	85
D38P1000S3	3500-4500	1000	85	-	11000	500	50	1.400	1000	170	0.040	4000	85
D38P1200S	2800-3500	1200	85	-	13000	700	50	1.200	1000	170	0.040	4000	85
D38P1500S	1500-2600	1500	90	-	16000	1060	50	1.650	4700	185	0.040	4000	85
D52P1800S	2500-3000	1800	100	-	25000	2600	50	1.800	5000	175	0.023	5000	86
D52P2400S	1400-2000	2400	100	-	32000	4300	50	1.700	7600	185	0.023	5000	86
D77P2900S	3800-4500	2900	100	-	40000	6600	100	1.150	2000	170	0.012	8000	88
D77P3900S	2700-3200	3900	100	-	60000	14900	100	1.050	2000	175	0.012	8000	88
D77P4400S	1800-2600	4400	100	-	60000	14900	100	0.865	2000	185	0.012	8000	88

Fast Recovery

CKE Number	V _{rrm} (volts)	I _{I (avg)} (A)	T _{case} (°C)	t _{rr} (u sec)	I _{sm} (A)	I _{2t} (KA ² s)	I _{rrm} (ma)@ T _{1 max}	V _{rm} (volts)	I _{rm} (A)	T _{1 MAX} (°C)	R _{θj-c} Double sided cooled (°C/W)	Mtg Force (Lb)	Fig
D30P650F	500-1500	650	65	*	10000	410	40	1.90	2000	125	0.055	1000	84
D38P600F	600-1500	600	65	3.50	10000	415	50	1.80	2000	125	0.043	4000	85
D38P1000F	1500-2000	1000	78	*	14000	815	50	3.00	3200	125	0.043	4000	85
D52P925F	1500-2400	925	70	*	18000	1300	75	2.65	2900	150	0.023	5000	86

SCR Capsules

CKE Number	V _{rrm} (volts)	I _{I (avg)} (A)	T _c (°C)	I _{TSM} (amps)	I ² t (KA ² s)	I _{rrm} (ma)@ T _{1 max}	V _{rm} (volts)	I _{rm} (A)	T _{1 MAX} (°C)	di/dt (A/us)	dV/dt (V/us)	I ₀₁ /V _{gt} (mA/volt @25°C)	t _g (us)	Q _{rr} (uc)	I _h (mA)	Mtg force (lb)	R _{θj-c} Double sided cooled (°C/W)	Fig.
T30P600S	1000-2000	600	65	7500	235	30	2.30	2000	125	400	200	150/3	200	*	400	1000	0.055	89
T30P700S	500-1400	700	65	8000	265	30	2.20	2000	125	400	200	150/3	200	*	400	1000	0.055	89
T38P400S	3500-4500	400	70	5500	130	75	2.10	500	125	200	1000	150/3	400	*	400	3000	0.040	90
T38P750S	1000-2000	750	67	11000	500	35	1.80	2200	125	400	200	150/3	200	*	400	3000	0.040	90
T38P900S	500-1600	900	67	13000	700	35	1.60	2800	125	400	200	150/3	200	*	400	3000	0.040	90
T52P800S	4000-4500	800	70	9000	330	75	2.00	1000	125	150	1000	150/3	500	*	400	5500	0.025	91
T52P950S	3500-4000	950	70	16000	1000	75	1.60	1000	125	150	1000	150/3	500	*	400	5500	0.025	91
T52P1000S	2200-3200	1000	74	15000	937	75	2.26	3000	125	300	300	150/3	250	*	400	5500	0.025	91
T52P1300S	500-2000	1300	65	20000	1700	65	1.75	3000	125	400	400	150/3	250	*	400	5500	0.025	91
T52P1500S	500-2000	1500	65	23000	2200	65	1.65	3000	125	400	400	150/3	250	*	400	5500	0.025	91
T52P1640S	500-1400	1640	65	28500	3400	65	1.40	3000	125	400	400	150/3	250	*	400	5500	0.025	91
T65P1200S	3600-4400	1200	65	20000	1900	150	2.00	2000	125	250	500	200/4	250	*	500	8000	0.017	92
T65P1500S	1600-3000	1500	65	22500	2300	90	1.90	2000	125	250	500	200/4	250	*	500	10000	0.017	92
T65P2000S	600-2000	2000	65	29400	3000	90	1.70	2000	125	300	500	200/4	250	*	500	10000	0.017	92
T77P1650S	3600-4400	1650	70	26000	2800	250	2.55	5000	125	300	1000	200/4	400	*	250	10000	0.012	93
T77P2100S	1200-1800	2100	70	38000	5500	100	1.55	2000	125	800	500	200/4	80	*	500	10000	0.012	93
T77P2300S	2200-2700	2300	70	35000	5000	150	1.35	2000	125	300	500	200/4	400	*	100	10000	0.012	93
T77P2500S	1200-2400	2500	65	45000	8500	150	1.90	7850	125	300	500	200/4	400	*	100	10000	0.012	93
T77P3000S	800-1400	3000	65	45000	8500	150	1.15	2000	125	300	500	200/4	400	*	100	10000	0.012	93
T77P3000S1	1200-2100	3000	70	55000	12500	150	1.10	2000	125	300	1000	200/4	400	*	100	10000	0.012	93

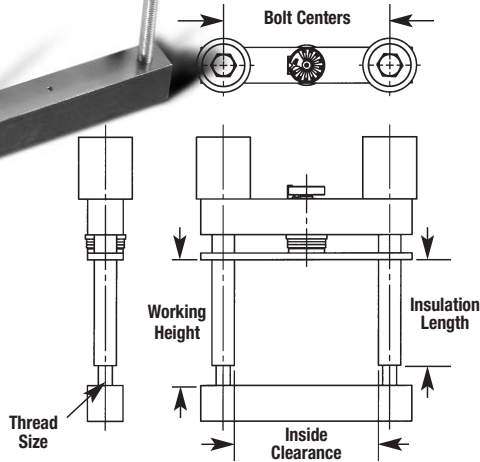
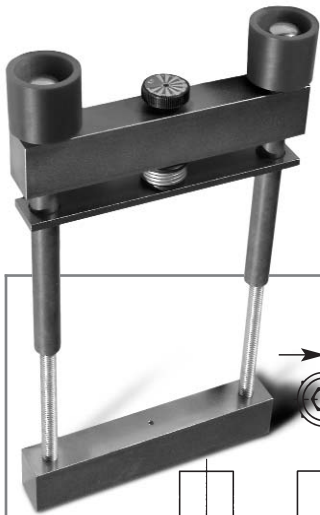
Inverter Grade SCRs – Fast Switching

CKE Number	V _{rrm} (volts)	I _{rms} (amps)	I _{TSM} (amps)	I ² t (KA ² s)	I _{rrm} (mA)	V _{rm} (volts)	I _{rm} (amps)	T _{1 MAX} (°C)	di/dt (A/us)	dV/dt (V/us)	I ₀₁ /V _{gt} (mA/volt @25°C)	t _g (us)	Q _{rr} (uc)	I _h (mA)	Mtg force (lb)	R _{θj-c} Double sided cooled (°C/W)	Fig.
T30P600F	500-1400	600	6000	150	40	2.50	1200	125	800	400	150/3	20	*	500	1000	0.0550	89
T38P900F	1500-2000	900	7800	250	50	2.50	2000	125	800	500	200/3	30	*	500	3000	0.0400	90
T38P1000F	500-1400	1000	10000	415	35	2.90	2000	125	800	500	200/3	25-40	*	500	3500	0.0400	90
T38P1150F	1500-2000	1150	9000	336	50	2.50	2300	125	800	500	200/3	55	*	500	3000	0.0400	90
T52P1700F	1500-2000	1700	20000	1660	65	2.20	3400	125	800	500	150/3	50	2000	500	5500	0.0230	91
T52P2000F	500-1400	2000	16000	1060	65	2.60	4000	125	800	500	150/3	35	400	500	5500	0.0230	91
T65P2500F	600-1600	2500	24500	2500	90	1.90	3000	125	800	500	200/4	65	*	500	10000	0.0170	92
T65P2500F2	2200-2500	2500	40000	6800	100	2.25	4000	125	800	500	200/4	80	*	500	10000	0.0120	92
T77P3000F	2000-2800	3000	48000	8200	100	2.45	5000	125	800	500	200/4	75	*	500	16000	0.0085	93
T77P3500F	1200-2000	3500	51000	9100	150	1.95	5000	125	800	500	200/4	80	*	500	16000	0.0085	93

How to order: CKE Part Number (first column)-Voltage Required (from range in second column – in 100 volt increments)
Example: T30P600F800

*Call factory for guarantee values

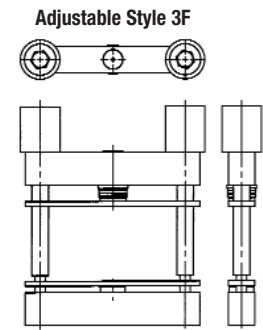
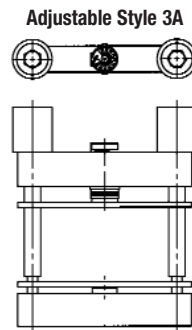
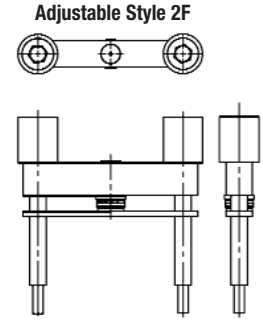
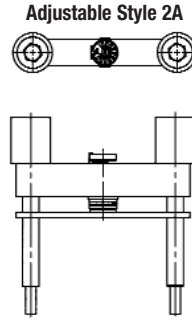
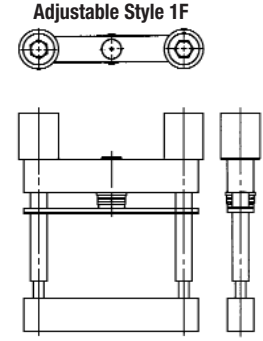
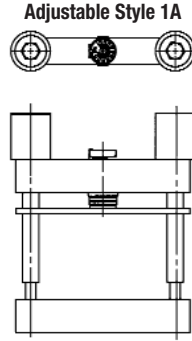
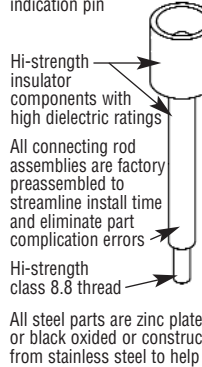
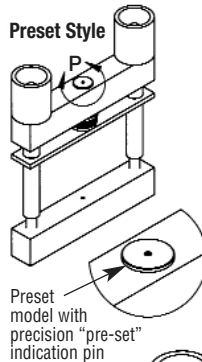
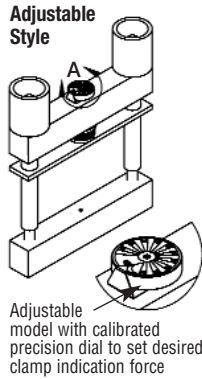
CKE



Bolt Centers	Max. Force*	Inside Clearance	Rod Thread
2.750"	4000 Lbs.	2.25"	M8-1.25
3.125"	4000 Lbs.	2.63"	M8-1.25
3.500"	5000 Lbs.	3.00"	M8-1.25
4.000"	7400 Lbs.	3.50"	M8-1.25
4.625"	7400 Lbs.	4.00"	M10-1.5
5.500"	10000 Lbs.	4.88"	M10-1.5

*To convert to kilonewtons divide force lbs. by 224.8

Note: Catalog data represents only standard stocked clamps. Custom sizes and forces are available.



How to Order

CL - - - - -
CL is for Clamp

The next two is either, 1A, 2A or 3A for adjustable range, or 1F, 2F or 3F for fixed/preset. The next is for pressure (maximum for the adjustable and for the fixed).

- 1=1000 lbs. or 5KN
- 2=2000 lbs. or 9.8KN
- 3=3000 lbs. or 13.4 KN
- 5=5000 lbs. or 22KN
- 9=10000 lbs. or 44KN

The next three is for the bolt centers in inches

- 550=5.50
- 462=4.625
- 350=3.50
- 312=3.125
- 275=2.75

The next three represents the working height of the clamp in .25 or 1/4 inch increments.

(Example: 325=3.25 inches)

The next three represents the insulation length in inches, in .25 or 1/4 inch increments.

A=.25, B=.5, C=.75
 (Example: 01A=1.25 inches or 10B=10.50 inches)

Clamp numbering example is **CL2A335037502C**

(It is an adjustable clamp with 3000 lbs, centers of 3.50 inches, working dimension of 3.75 inches and insulation length of 2.75

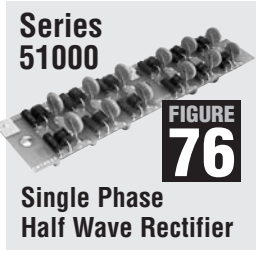


FIGURE 76

Single Phase Half Wave Rectifier

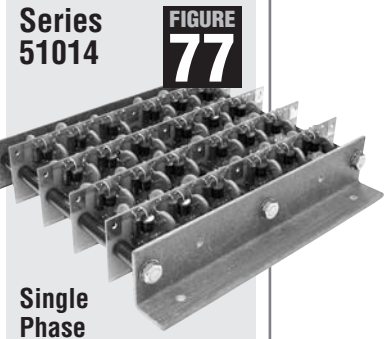
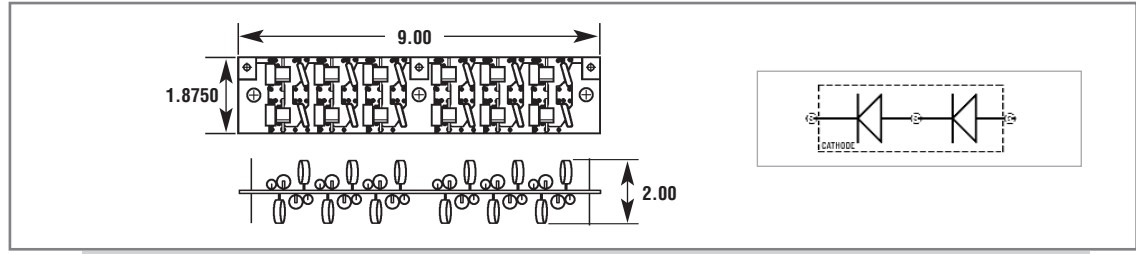


FIGURE 77

Single Phase Full Wave Rectifier

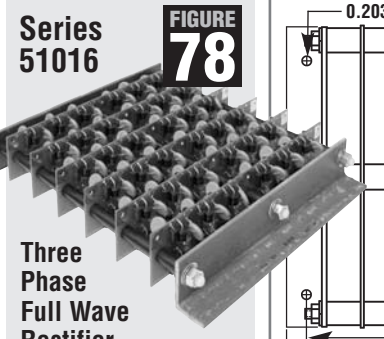
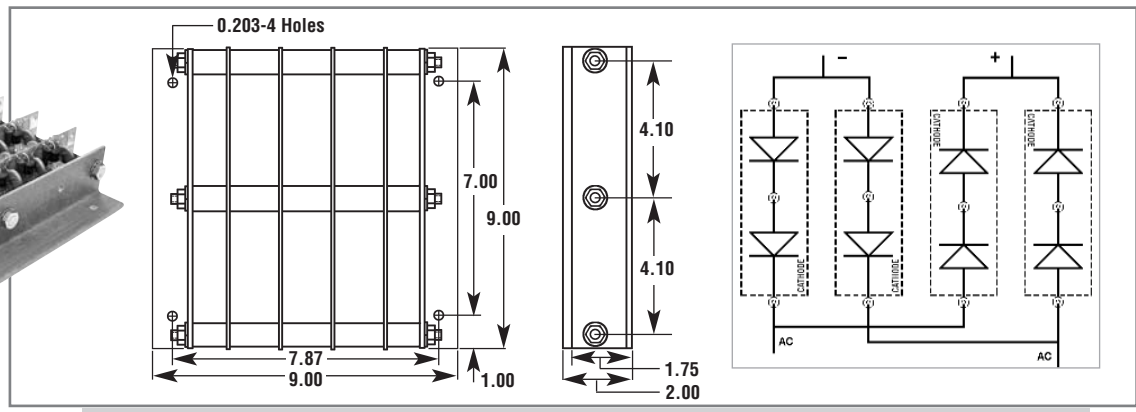
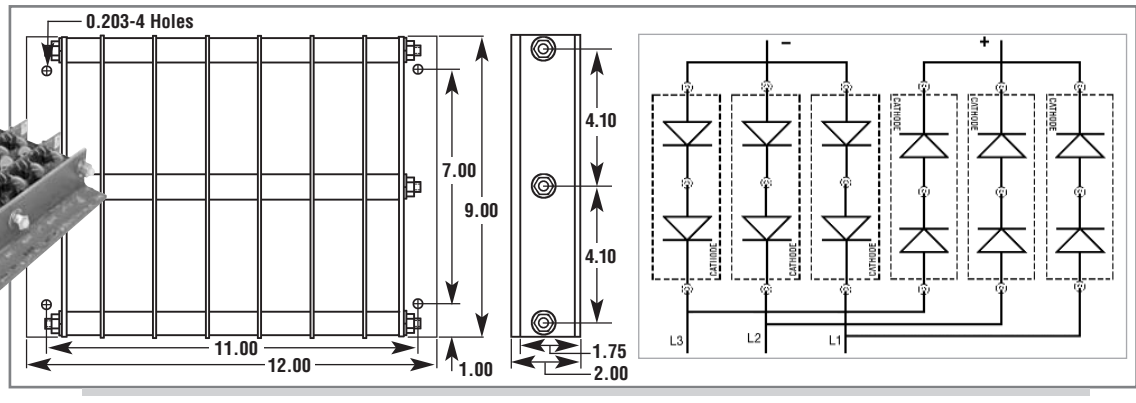


FIGURE 78

Three Phase Full Wave Rectifier



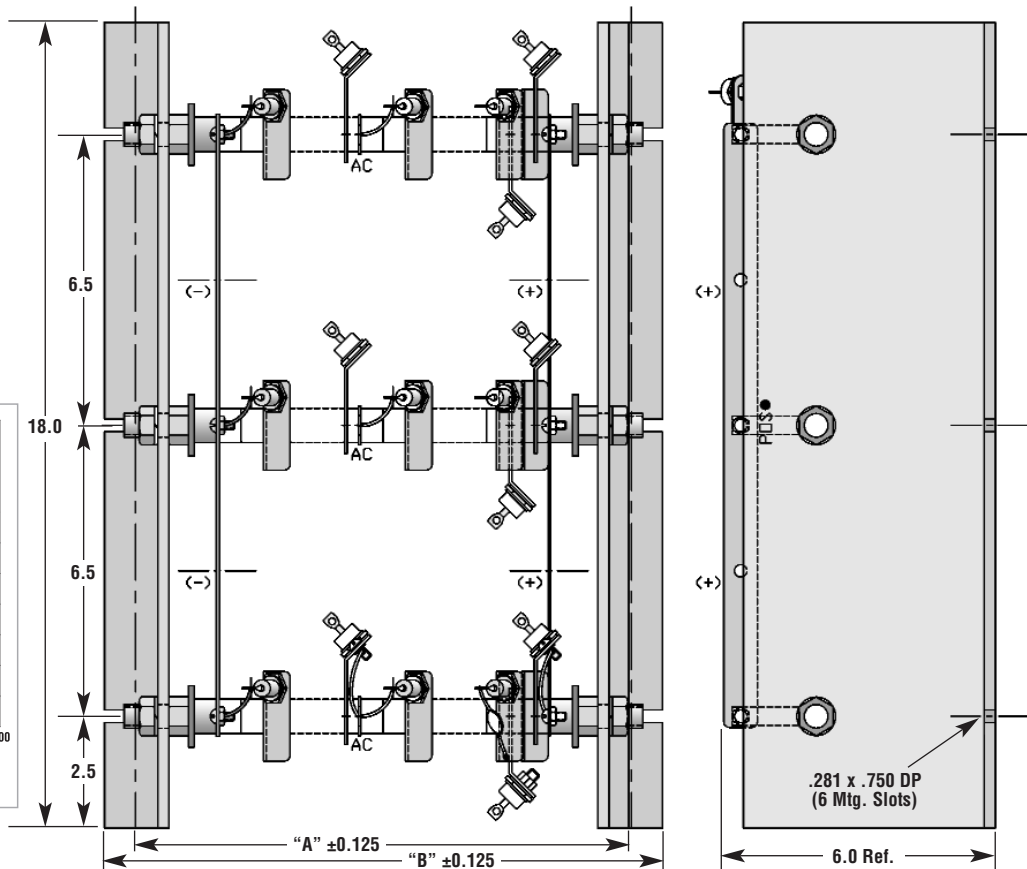
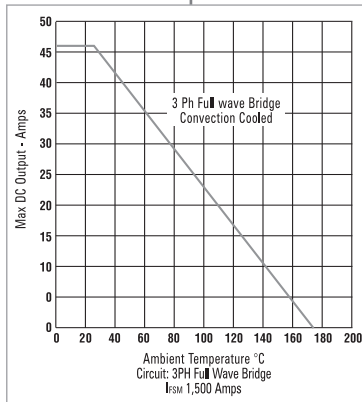
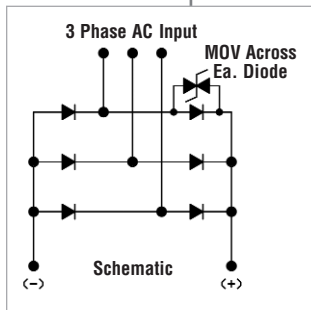
Series	Configuration	Figure
Series 51000	Single Phase Half Wave Rectifier	Figure 76
Average Forward Current @	50°C (Ambient)	3.0 Amps
Average Forward Current @	50°C (Forced Air 300ft/min)	4.5 Amps
Maximum Surge Current, 8.3ms Sine Pulse		400 Amps
Peak Inverse Voltage Rating (V _{RRM})		24 KV
Maximum Forward Voltage Drop		24 Volts
Series 51014	Single Phase Full Wave Bridge	Figure 77
Average Forward Current @	50°C (Ambient)	6.0 Amps
Average Forward Current @	50°C (Forced Air 300ft/min)	9.0 Amps
Maximum Surge Current, 8.3ms Sine Pulse		400 Amps
Peak Inverse Voltage Rating (V _{RRM})	Per Leg	24 KV
Maximum Forward Voltage Drop	Per Leg	24 Volts
Series 51016	Three Phase Full Wave Bridge	Figure 78
Average Forward Current @	50°C (Ambient)	9.0 Amps
Average Forward Current @	50°C (Forced Air 300ft/min)	13.5 Amps
Maximum Surge Current, 8.3ms Sine Pulse		400 Amps
Peak Inverse Voltage Rating (V _{RRM})	Per Leg	24 KV
Maximum Forward Voltage Drop	Per Leg	24 Volts

Physical Dimensions				
P/N	Length	Width	Height	Figure
51000	9.0 inches	1.875 inches	2.0 inches	76
51014	9.0 inches	9.0 inches	2.0 inches	77
51016	9.0 inches	12.00 inches	2.0 inches	78
Operating and Storage Temperature (T _A)		125° to -40°C		

Higher current ratings can be achieved by running the unit in oil.
Other voltages, currents, configurations and fast recovery are available. Please consult the factory.



FIGURE 128



CKE Number	PRV Rating Per Leg	Recommended Input PIV	V _r @I _r =14 Amps Per Leg	DIM "A"	DIM "B"
3PHFWB40A4KV	4000	2000	4	8.161	9.380
3PHFWB40A8KV	8000	4000	8	10.411	11.630
3PHFWB40A12KV	12000	6000	12	12.661	13.880
3PHFWB40A16KV	16000	8000	16	14.911	16.130
3PHFWB40A20KV	20000	10000	20	17.161	18.380
3PHFWB40A24KV	24000	12000	24	19.411	20.630
3PHFWB40A28KV	28000	14000	28	21.661	22.880
3PHFWB40A32KV	32000	16000	32	23.911	25.130
3PHFWB40A36KV	36000	18000	36	26.161	27.380

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Average value of output current	I _{F(DC)}		42		A	T _{amb} @40°C
Repetitive peak reverse leakage @ Operating Voltage	I _{RRM}		<100μA			
Peak one cycle surge (non repetitive) current	I _{FSM}		1500		A	8.3 msec (60Hz), sinusoidal wave-shape, 180° conduction, T _j =150 °C
Max I ² t for Fusing	I ² t		9400		A	8.3 msec
Operating junction temperature	T _j	-40	+180		°C	
Storage temperature	T _{stg}	-40	+125		°C	

* For guaranteed maximum values, contact factory

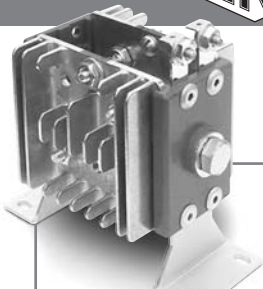


FIGURE 73

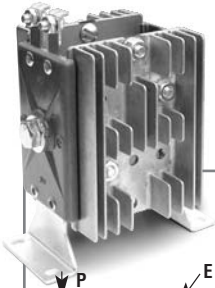
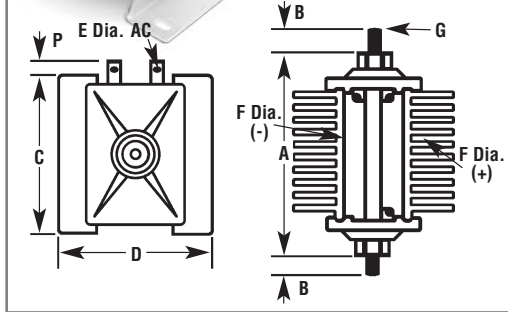
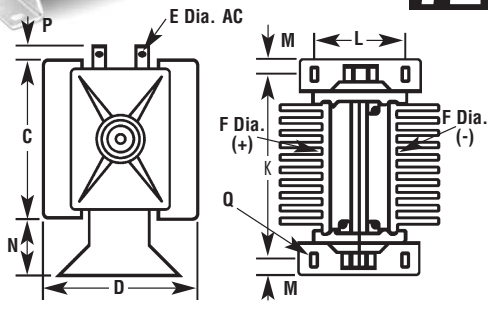
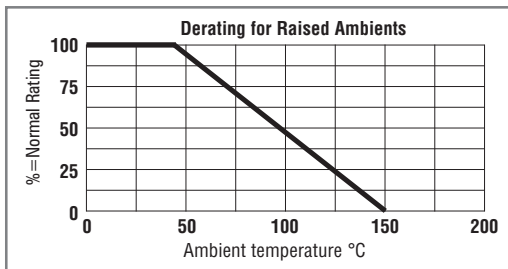


FIGURE 72



Dimensions

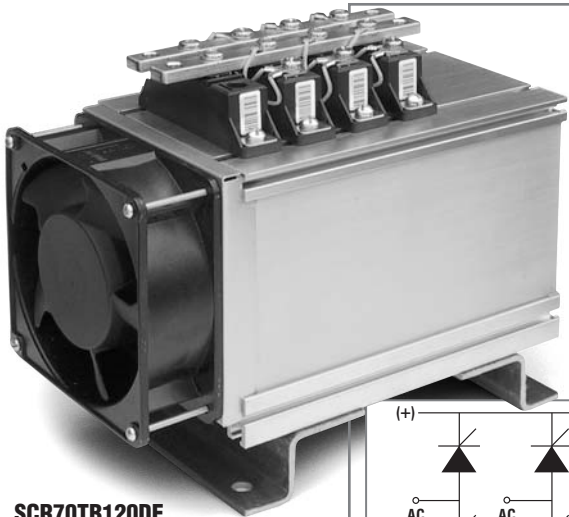
	X Type		Y Type	
	Inches	Millimeters	Inches	Millimeters
A	4.31	109.4	4.0	101.6
B	.625	15.87	0.5	12.7
C	4.0	101.6	2.5	63.5
D	3.12	79.2	2.56	65.0
E	.201	5.10	.177	4.495
F	.265	6.731	.198	5.029
G	3/8 - 16UNC - 3A		5/16 - 16UNC - 3A	
K	3.93	15.87	3.75	95.2
L	1.5	101.6	1.25	31.7
M	.281	79.2	.281	7.137
N	.875	5.10	.937	23.79
P	.625	6.731	.625	15.87
Q	3/16x5/16		3/16x5/16	



Please Note: Other circuit arrangements available, doubler, quadrupler, single phase and three phase bridges. Fast recovery and MOV compensation can be requested.

Part Number	Rep. PIV V _{RRM} In Volts	Avg. Forward Current (Amps) @		Max. Forward Voltage Drop V _{F@I_F} V (Volts)	Max. Reverse Current I _{R@V_{RRM@25°C}} mA (milliAmps)	Max. Surge Current I _{FSM} (8.3ms) A (Amps)	Figure Number
		40°C	40°C (Forced Air 800 LFM)				
Single Phase							
Y2102B1*1	200	14	26	1.2	5.0	370	Fig. 73
Y2104B1*1	400	14	26	1.2	5.0	370	Fig. 73
Y2106B1*1	600	14	26	1.2	5.0	370	Fig. 73
Y2108B1*1	800	14	26	1.2	5.0	370	Fig. 73
Y2110B1*1	1000	14	26	1.2	5.0	370	Fig. 73
Y2112B1*1	1200	14	26	1.2	5.0	370	Fig. 73
Y2114B1*1	1400	14	26	1.2	5.0	370	Fig. 73
Y2116B1*1	1600	14	26	1.2	5.0	370	Fig. 73
X2102B1*1	200	22	40	1.2	5.0	370	Fig. 72
X2104B1*1	400	22	40	1.2	5.0	370	Fig. 72
X2106B1*1	600	22	40	1.2	5.0	370	Fig. 72
X2108B1*1	800	22	40	1.2	5.0	370	Fig. 72
X2110B1*1	1000	22	40	1.2	5.0	370	Fig. 72
X2112B1*1	1200	22	40	1.2	5.0	370	Fig. 72
X2114B1*1	1400	22	40	1.2	5.0	370	Fig. 72
X2116B1*1	1600	22	40	1.2	5.0	370	Fig. 72
X3402B1*1	200	35	68	1.2	5.0	1050	Fig. 72
X3404B1*1	400	35	68	1.2	5.0	1050	Fig. 72
X3406B1*1	600	35	68	1.2	5.0	1050	Fig. 72
X3408B1*1	800	35	68	1.2	5.0	1050	Fig. 72
X3410B1*1	1000	35	68	1.2	5.0	1050	Fig. 72
X3412B1*1	1200	35	68	1.2	5.0	1050	Fig. 72
X3414B1*1	1400	35	68	1.2	5.0	1050	Fig. 72
X3416B1*1	1600	35	68	1.2	5.0	1050	Fig. 72
X3702B1*1	200	43	80	1.2	5.0	1500	Fig. 72
X3704B1*1	400	43	80	1.2	5.0	1500	Fig. 72
X3706B1*1	600	43	80	1.2	5.0	1500	Fig. 72
X3708B1*1	800	43	80	1.2	5.0	1500	Fig. 72
X3710B1*1	1000	43	80	1.2	5.0	1500	Fig. 72
X3712B1*1	1200	43	80	1.2	5.0	1500	Fig. 72
X3714B1*1	1400	43	80	1.2	5.0	1500	Fig. 72
X3716B1*1	1600	43	80	1.2	5.0	1500	Fig. 72
Three Phase							
Y2102Z1*1	200	22	42	1.2	5.0	370	Fig. 73
Y2104Z1*1	400	22	42	1.2	5.0	370	Fig. 73
Y2106Z1*1	600	22	42	1.2	5.0	370	Fig. 73
Y2108Z1*1	800	22	42	1.2	5.0	370	Fig. 73
Y2110Z1*1	1000	22	42	1.2	5.0	370	Fig. 73
Y2112Z1*1	1200	22	42	1.2	5.0	370	Fig. 73
Y2114Z1*1	1400	22	42	1.2	5.0	370	Fig. 73
Y2116Z1*1	1600	22	42	1.2	5.0	370	Fig. 73
X2102Z1*1	200	26	55	1.2	5.0	370	Fig. 72
X2104Z1*1	400	26	55	1.2	5.0	370	Fig. 72
X2106Z1*1	600	26	55	1.2	5.0	370	Fig. 72
X2108Z1*1	800	26	55	1.2	5.0	370	Fig. 72
X2110Z1*1	1000	26	55	1.2	5.0	370	Fig. 72
X2112Z1*1	1200	26	55	1.2	5.0	370	Fig. 72
X2114Z1*1	1400	26	55	1.2	5.0	370	Fig. 72
X2116Z1*1	1600	26	55	1.2	5.0	370	Fig. 72
X3402Z1*1	200	55	100	1.2	5.0	1050	Fig. 72
X3404Z1*1	400	55	100	1.2	5.0	1050	Fig. 72
X3406Z1*1	600	55	100	1.2	5.0	1050	Fig. 72
X3408Z1*1	800	55	100	1.2	5.0	1050	Fig. 72
X3410Z1*1	1000	55	100	1.2	5.0	1050	Fig. 72
X3412Z1*1	1200	55	100	1.2	5.0	1050	Fig. 72
X3414Z1*1	1400	55	100	1.2	5.0	1050	Fig. 72
X3416Z1*1	1600	55	100	1.2	5.0	1050	Fig. 72
X3702Z1*1	200	65	120	1.2	5.0	1500	Fig. 72
X3704Z1*1	400	65	120	1.2	5.0	1500	Fig. 72
X3706Z1*1	600	65	120	1.2	5.0	1500	Fig. 72
X3708Z1*1	800	65	120	1.2	5.0	1500	Fig. 72
X3710Z1*1	1000	65	120	1.2	5.0	1500	Fig. 72
X3712Z1*1	1200	65	120	1.2	5.0	1500	Fig. 72
X3714Z1*1	1400	65	120	1.2	5.0	1500	Fig. 72
X3716Z1*1	1600	65	120	1.2	5.0	1500	Fig. 72

*Available with bracket (B) or stud (N) mounting. Fast recovery and MOV compensation can be requested.



SCR70TB120DF
(Fan optional)

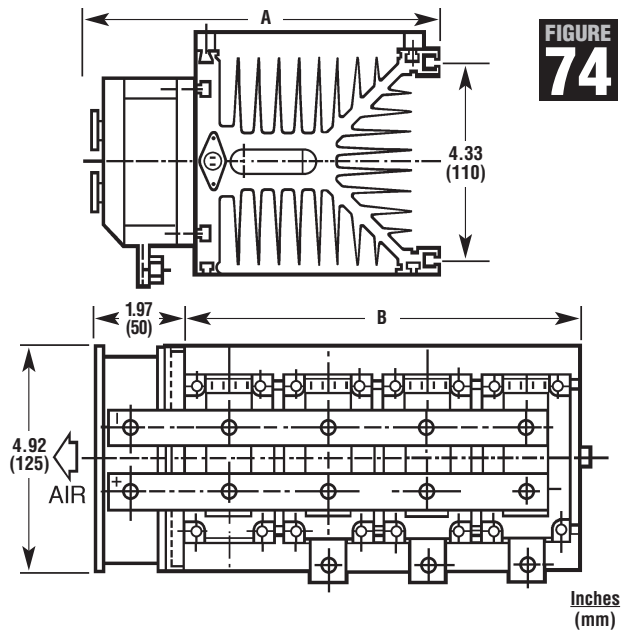
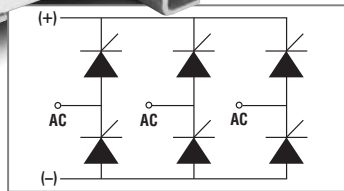


FIGURE 74

CKE Number	Repetitive Peak Reverse Voltage	Maximum Forward Voltage Drop	Average Forward Current		Maximum Reverse Leakage	Maximum Surge Current	Dimensions	
	V_{RRM} Per Leg V (Volts)	$V_F @ I_F$ Per Leg V (Volts)	$I_{OUT} @ 45^\circ$ A (Amps-DC)	Forced Air Cooling (A-DC)	milliAmps T. @ 125°C	I_{FSM} (8.3ms) A (Amps)	A (millimeters)	B (millimeters)
SCR47 Series							Figure 74	
SCR47TB40	400	1.95	47	77	15	420	174	180
SCR47TB60	600	1.95	47	77	15	420	174	180
SCR47TB80	800	1.95	47	77	15	420	174	180
SCR47TB100	1000	1.95	47	77	15	420	174	180
SCR47TB120	1200	1.95	47	77	15	420	174	180
SCR60 Series							Figure 74	
SCR60TB40	400	1.81	60	110	15	890	174	180
SCR60TB60	600	1.81	60	110	15	890	174	180
SCR60TB80	800	1.81	60	110	15	890	174	180
SCR60TB100	1000	1.81	60	110	15	890	174	180
SCR60TB120	1200	1.81	60	110	15	890	174	180
SCR70 Series							Figure 74	
SCR70TB40	400	1.54	70	130	15	1370	174	180
SCR70TB60	600	1.54	70	130	15	1370	174	180
SCR70TB80	800	1.54	70	130	15	1370	174	180
SCR70TB100	1000	1.54	70	130	15	1370	174	180
SCR70TB120	1200	1.54	70	130	15	1370	174	180
SCR85 Series							Figure 74	
SCR85TB40	400	1.58	85	175	15	1870	174	180
SCR85TB60	600	1.58	85	175	15	1870	174	180
SCR85TB80	800	1.58	85	175	15	1870	174	180
SCR85TB100	1000	1.58	85	175	15	1870	174	180
SCR85TB120	1200	1.58	85	175	15	1870	174	180
SCR105 Series							Figure 74	
SCR105TB40	400	1.49	105	235	50	7850	200	220
SCR105TB60	600	1.49	105	235	50	7850	200	220
SCR105TB80	800	1.49	105	235	50	7850	200	220
SCR105TB100	1000	1.49	105	235	50	7850	200	220
SCR105TB120	1200	1.49	105	235	50	7850	200	220

Please Note: All units are MOV compensated. Other circuit arrangements available, doubler, quadrupler and single phase bridges. Please add a "D" for Free Wheeling Diode and an "F" for Fan. Fast recovery can be requested along with higher voltages and higher current assemblies.



SINGLE & THREE PHASE HIGH CURRENT BRIDGES – CB & CT SERIES

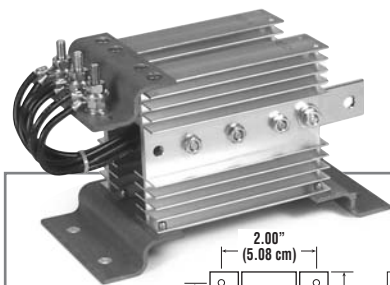
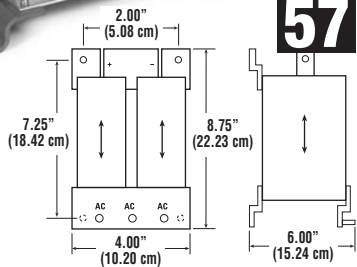


FIGURE 57



CKE Number	Repetitive Peak Reverse Voltage V_{RRM} Per Leg (Volts)	Average Forward Current Max $I_{F(AV)} @ 50^\circ$ A (Amps)	Maximum Forward Voltage Drop $V_f @ I_f$ Per Leg (Volts)	Maximum Reverse Current $I_r @ V_{RRM} @ 25^\circ C$ milliAmps	Maximum Surge Current $I_{FSM} (8.3ms)$ A (Amps)
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CT50 Series (Three Phase) Figure 57

CT50G2AA40	400	50	1.50	1.0	500
CT50G2AA60	600	50	1.50	1.0	500
CT50G2AA80	800	50	1.50	1.0	500
CT50G2AA100	1000	50	1.50	1.0	500
CT50G2AA120	1200	50	1.50	1.0	500

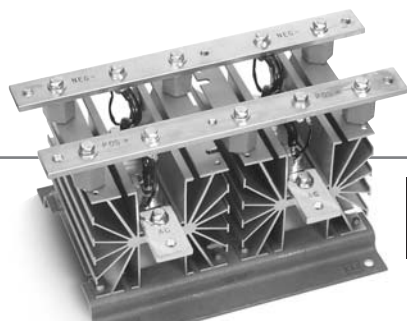
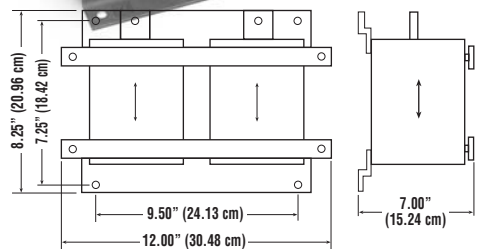


FIGURE 53



CB120 Series (Single Phase) Figure 53

CB120K2AA40	400	120	1.50	1.0	1200
CB120K2AA60	600	120	1.50	1.0	1200
CB120K2AA80	800	120	1.50	1.0	1200
CB120K2AA100	1000	120	1.50	1.0	1200
CB120K2AA120	1200	120	1.50	1.0	1200

CB200 Series (Single Phase) Figure 53

CB200K2AA40	400	200	1.50	1.0	3000
CB200K2AA60	600	200	1.50	1.0	3000
CB200K2AA80	800	200	1.50	1.0	3000
CB200K2AA100	1000	200	1.50	1.0	3000
CB200K2AA120	1200	200	1.50	1.0	3000

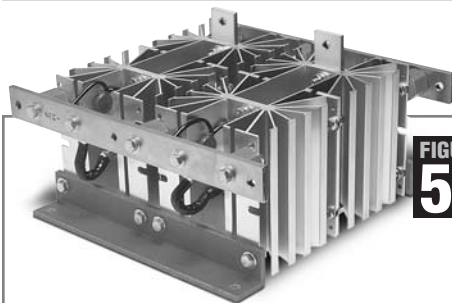
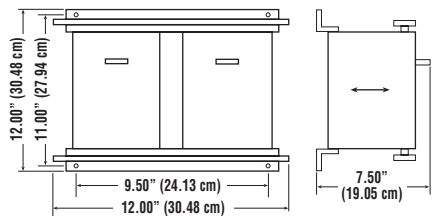


FIGURE 55



CB250 Series (Single Phase) Figure 55

CB250K4AA40	400	250	1.50	1.0	3600
CB250K4AA60	600	250	1.50	1.0	3600
CB250K4AA80	800	250	1.50	1.0	3600
CB250K4AA100	1000	250	1.50	1.0	3600
CB250K4AA120	1200	250	1.50	1.0	3600
CB250K4AA160	1600	250	1.50	1.0	3600
CB250K4AA200	2000	250	1.50	1.0	3600

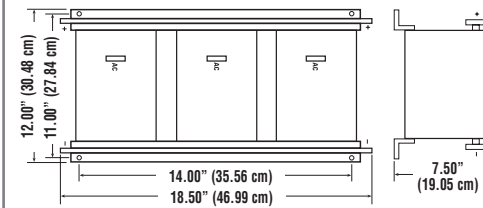
CB300 Series (Single Phase) Figure 55

CB300K4AA40	400	300	1.50	1.0	6850
CB300K4AA60	600	300	1.50	1.0	6850
CB300K4AA80	800	300	1.50	1.0	6850
CB300K4AA100	1000	300	1.50	1.0	6850
CB300K4AA120	1200	300	1.50	1.0	6850
CB300K4AA160	1600	300	1.50	1.0	6850

BRIDGES



FIGURE 54

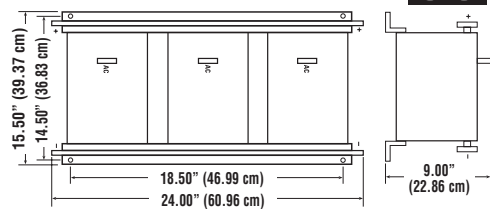


CKE Number	Repetitive Peak Reverse Voltage V_{RRM} Per Leg V (Volts)	Average Forward Current Max $I_{F(AV)} @ 50^\circ$ A (Amps)	Maximum Forward Voltage Drop $V_f @ I_f$ Per Leg V (Volts)	Maximum Reverse Current $I_r @ V_{RRM} @ 25^\circ C$ milliAmps	Maximum Surge Current $I_{FSM} (8.3ms)$ A (Amps)
CT400 Series (Three Phase) Figure 54					
CT400K6AA40	400	400	1.50	1.0	3600
CT400K6AA60	600	400	1.50	1.0	3600
CT400K6AA80	800	400	1.50	1.0	3600
CT400K6AA100	1000	400	1.50	1.0	3600
CT400K6AA120	1200	400	1.50	1.0	3600
CT400K6AA160	1600	400	1.50	1.0	3600
CT400K6AA200	2000	400	1.50	1.0	3600
CT400K6AA250	2500	400	1.50	1.0	3600

CT500 Series (Three Phase) Figure 54					
CT500K6AA40	400	500	1.50	1.0	6850
CT500K6AA60	600	500	1.50	1.0	6850
CT500K6AA80	800	500	1.50	1.0	6850
CT500K6AA100	1000	500	1.50	1.0	6850
CT500K6AA120	1200	500	1.50	1.0	6850
CT500K6AA160	1600	500	1.50	1.0	6850



FIGURE 56



CT700 Series (Three Phase) Figure 56					
CT700U6AA40	400	700	1.50	1.0	6850
CT700U6AA60	600	700	1.50	1.0	6850
CT700U6AA80	800	700	1.50	1.0	6850
CT700U6AA100	1000	700	1.50	1.0	6850
CT700U6AA120	1200	700	1.50	1.0	6850
CT700U6AA160	1600	700	1.50	1.0	6850

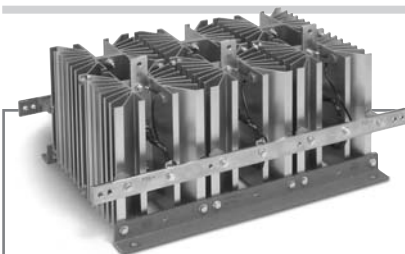
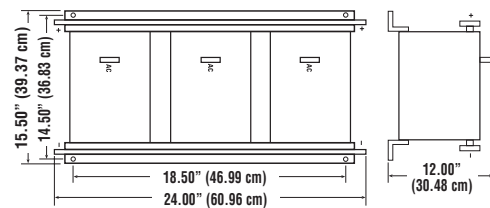


FIGURE 58

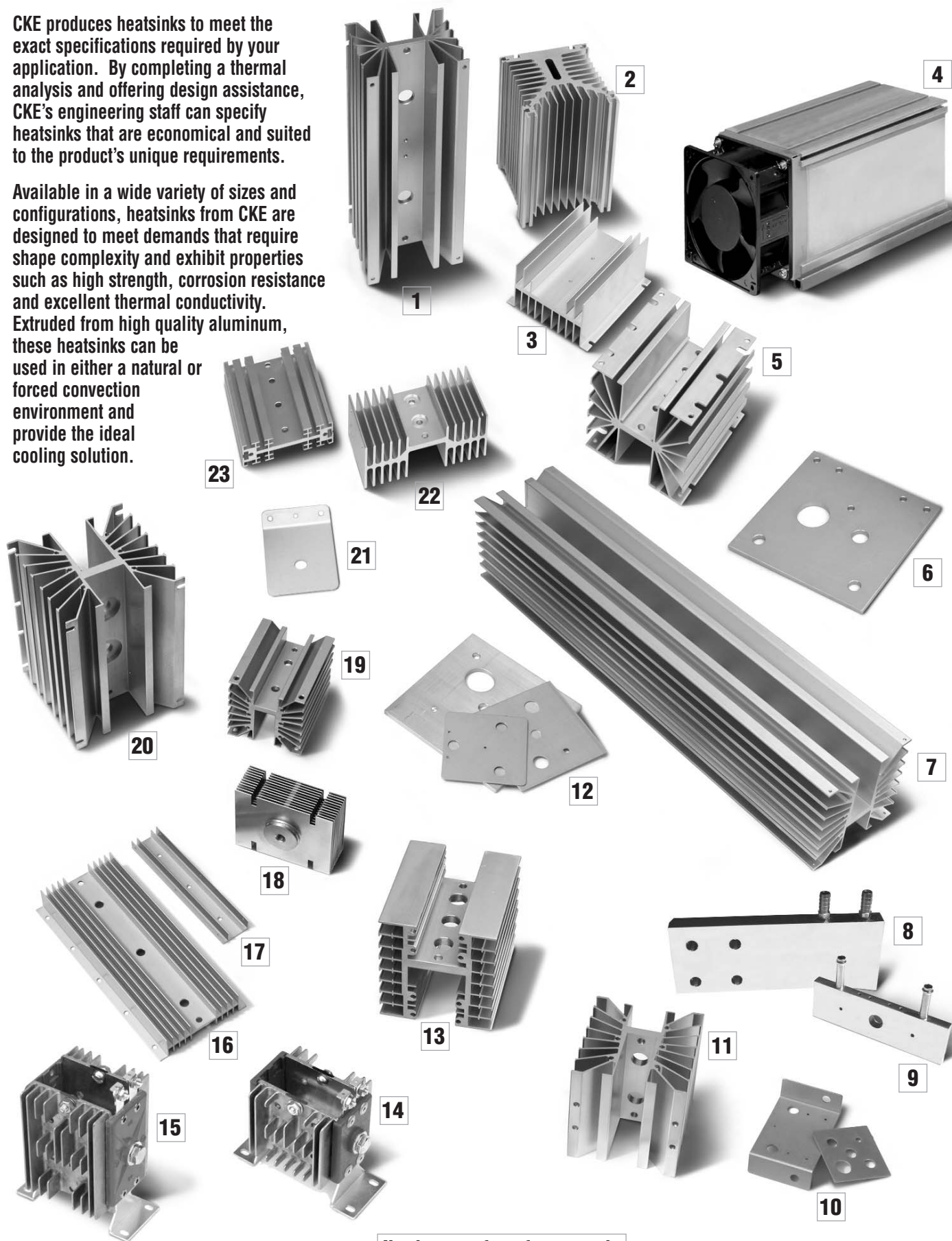


CT1000 Series (Three Phase) Figure 58					
CT1000V6AA40	400	1000	1.50	1.0	10960
CT1000V6AA60	600	1000	1.50	1.0	10960
CT1000V6AA80	800	1000	1.50	1.0	10960
CT1000V6AA100	1000	1000	1.50	1.0	10960
CT1000V6AA120	1200	1000	1.50	1.0	10960
CT1000V6AA160	1600	1000	1.50	1.0	10960



CKE produces heatsinks to meet the exact specifications required by your application. By completing a thermal analysis and offering design assistance, CKE's engineering staff can specify heatsinks that are economical and suited to the product's unique requirements.

Available in a wide variety of sizes and configurations, heatsinks from CKE are designed to meet demands that require shape complexity and exhibit properties such as high strength, corrosion resistance and excellent thermal conductivity. Extruded from high quality aluminum, these heatsinks can be used in either a natural or forced convection environment and provide the ideal cooling solution.



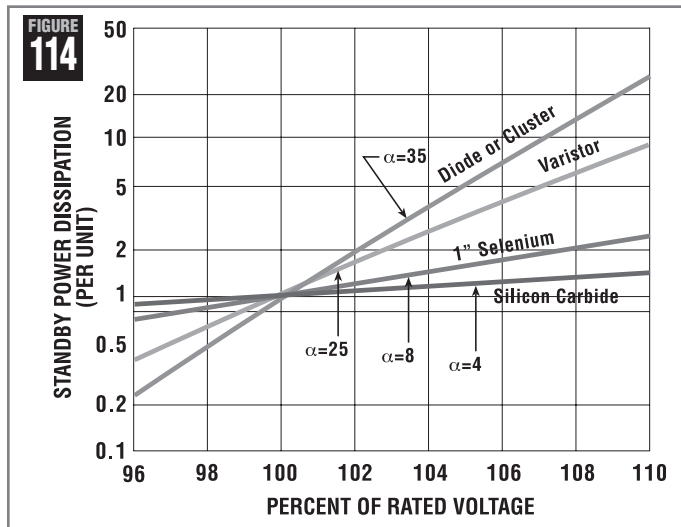
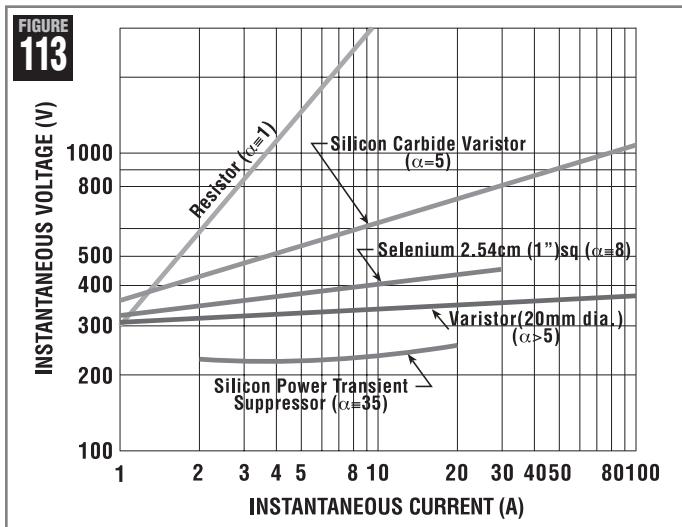
Numbers are for reference only

HEATSINKS





Product Features	Applications
<p>TVSS:</p> <ul style="list-style-type: none"> ■ Fast response time, sub picosecond ■ Board mountable ■ High clamping ratio ■ Low standby (leakage) current 	<ul style="list-style-type: none"> ■ Telecommunications ■ Data transmission ■ Power supplies ■ Electrostatic discharges
<p>MOV:</p> <ul style="list-style-type: none"> ■ High surge rating on short pulses ■ Fast response time pico-second range ■ Low standby (leakage) current ■ Cost effective for low average power applications ■ High clamping ratio ■ Board mountable, (Larger devices available) 	<ul style="list-style-type: none"> ■ Appliances ■ Power supplies ■ Computers ■ Motor controls ■ Microelectronics ■ Telecommunications
<p>Arrester Disc:</p> <ul style="list-style-type: none"> ■ High surge capability, and capacity ■ Available in several standard voltages ■ Can be put in series to attain required voltage ■ Meets IEC standard IEC60099-4 	<ul style="list-style-type: none"> ■ AC transmission or transformation equipment ■ Can be enclosed in either porcelain or silicon rubber housing
<p>Silicon Carbide Varistor:</p> <ul style="list-style-type: none"> ■ Capable of handling long pulses, 100-400 milliseconds ■ Fast response time 5-10 nanoseconds ■ High body temperature operation, continuous 110°C ■ Large mass device and consequently high energy 	<ul style="list-style-type: none"> ■ Discharging lifting magnets ■ Exciter field protection ■ Insulation protection
<p>Selenium Suppressor:</p> <ul style="list-style-type: none"> ■ Multi-crystalline structure that enables a “self healing” characteristic ■ Fast response time < 1microsecond ■ Inherent heatsink design, subsequently high energy device 	<ul style="list-style-type: none"> ■ Inductive load protection ■ Synch motors protection ■ Diode/SCR protection
<p>Arrestors–Secondary:</p> <ul style="list-style-type: none"> ■ MOV Based, UL - OWHX-rated ■ 13,000 and 25,000 amp rated arrestors ■ Category C device for main service 	<ul style="list-style-type: none"> ■ Residential ■ Industrial ■ Commercial ■ Agricultural
<p>Arrestors–Distribution & Intermediate:</p> <ul style="list-style-type: none"> ■ MOV Based ■ Distribution rated to 42kV ■ Intermediate rated to 138kV ■ Polymer Design 	<ul style="list-style-type: none"> ■ Space & weight saving ■ Increased equipment and personnel safety



Curves used with permission from Littelfuse

Comparison Synopsis

Figures 113 & 114 show the characteristics of transients suppressors and compares their abilities to first suppress transients and also their ability to handle elevated or so called "swell voltages".

Figure 113 shows the devices ability to clamp transients. The resistor is the first element and as would be expected the current draw is a direct correlation to the voltage applied. Hence an Alpha of 1. The term Alpha represents the non-linearity of the device. With the resistor, any percent change in voltage equals the same percent change in current.

As the Alpha of the transient suppressor increases so does the degree of non-linearity of the device. That is to say, for a large change in current there is a small change in voltage.

The transient suppressors are "voltage dependent variable resistors". As the voltage increases, the resistance or impedance of the device is inversely affected, and decreases exponentially. This is the basic concept on how a Transient Suppressor works. As a transient voltage spike increases, the Suppressor changes it's impedance and draws a near short circuit in parallel to the system being protected. In doing this the Suppressor device will clamp the transient spike to a safe level for the system.

Figure 114 represents how the Suppressors handle over voltages. The higher the Alpha, the higher the current draw, for small changes in voltage. This also corresponds to larger power to be dissipated, and since the high alpha devices are small in size and low average power rated, they are unable to handle over-voltages (swell voltage).

Summary

Each suppressor has it's unique niche market and advantages. If the user is better able to understand the strengths of each different type, utilizing combinations can improve performance.

The characteristics that have to be matched are the speed of response and clamping or VI characteristics.

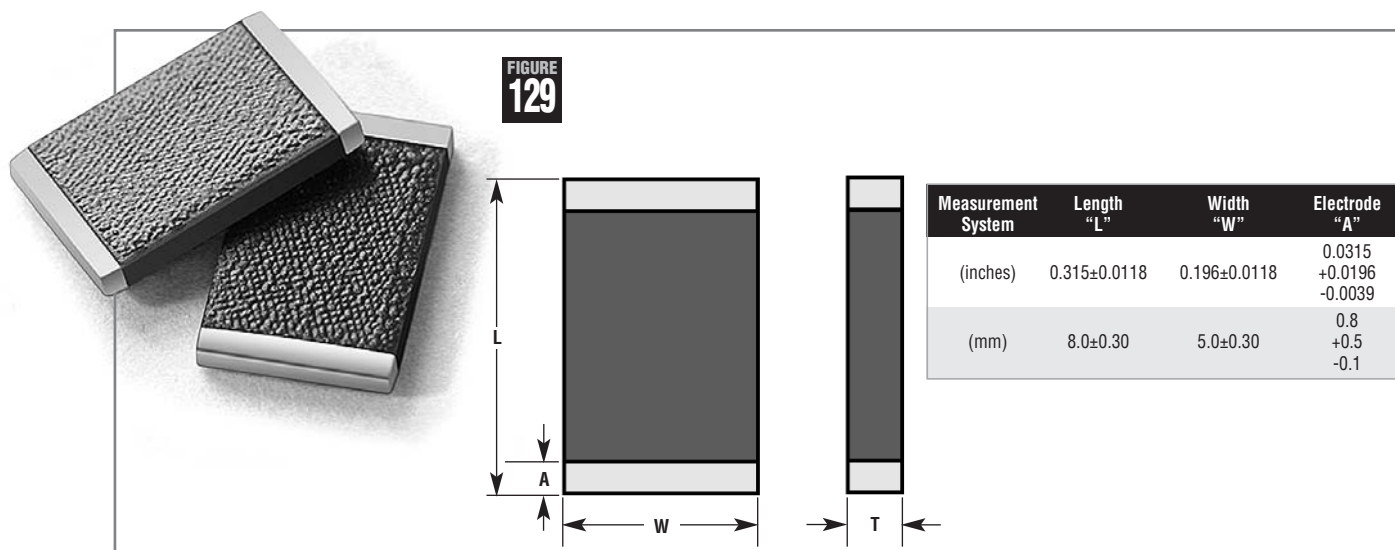
Examples

An application where there is an inductive load that has a back EMF with pulse width of approximately 400 milliseconds and peak current of 50-100 amps, can utilize several large body MOVs in parallel, a couple of Selenium Suppressors in parallel, or a Silicon Carbide assembly.

Another example is an op-amp feeding a capacitive load. Using a MOV will work in this circuit, however a TVSS device would be more economical and better suited.

These are just a couple of examples and there are many more where knowledge of the different types of Suppressors will enable the designer to enhance the performance of the systems as it pertains to transient protection.

See website www.cke.com or contact factory for additional information on characteristic curves



CKE Number	Maximum Ratings (TA=125°C)				Characteristics (TA=25°C)					
	Max. Allowable Voltage		Surge Current 8/20us(A)	Energy Absorption (10/1000us) (J)	Max. Clamping Voltage		Varistor Voltage (V)	Typical Capacitance pF(MHz)	Figure 129 Thickness	
	AC (V _{RMS})	DC(V)			(A)	(V)			T±0.0394 (inches)	T±1 (mm)
08CH180K	11	14	250	0.8	5	40	18(16-20)	3300	0.0591	1.5
08CH220K	14	18	250	1.0	5	46	22(20-24)	1750	0.0591	1.5
08CH270K	17	22	250	1.0	5	56	27(24-30)	1500	0.0591	1.5
08CH330K	20	26	250	1.2	5	67	33(30-36)	1200	0.0591	1.5
08CH390K	25	31	250	1.5	5	76	39(35-43)	820	0.0591	1.5
08CH470K	30	38	250	1.8	5	90	47(42-52)	660	0.0591	1.5
08CH560K	35	45	250	2.3	5	106	56(50-62)	530	0.0787	2.0
08CH680K	40	56	250	3.0	5	124	68(62-74)	360	0.0787	2.0
08CH820K	50	65	500	4.0	10	135	82(74-90)	250	0.0591	1.5
08CH101K	65	85	500	5.0	10	165	100(90-110)	225	0.0591	1.5
08CH121K	75	102	500	6.0	10	198	120(108-132)	200	0.0591	1.5
08CH151K	95	127	500	8.0	10	248	150(135-165)	150	0.0591	1.5
08CH181K	115	153	500	10.0	10	292	180(162-198)	110	0.0591	1.5
08CH201K	130	175	500	11.0	10	340	200(180-220)	100	0.0591	1.5
08CH221K	140	180	500	12.0	10	356	220(198-242)	94	0.0591	1.5
08CH241K	150	200	500	13.0	10	390	240(216-264)	86	0.0591	1.5
08CH271K	175	225	500	14.0	10	450	270(243-297)	76	0.0591	1.5
08CH301K	190	250	500	15.0	10	495	300(270-330)	64	0.0591	1.5
08CH331K	210	275	500	16.0	10	545	330(297-363)	52	0.0591	1.5
08CH361K	230	300	500	20.0	10	593	360(324-396)	45	0.0787	2.0
08CH391K	250	330	500	21.0	10	647	390(351-429)	42	0.0787	2.0
08CH431K	275	369	500	23.0	10	705	430(387-473)	39	0.0984	2.5
08CH471K	300	385	500	25.0	10	775	470(423-517)	35	0.0984	2.5

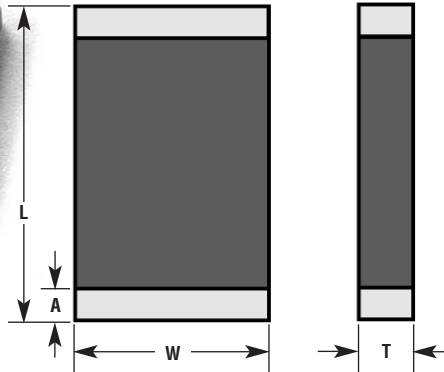
Consult Factory for MOQ.

Note: Parts are available on tape and reel in quantities of 1000 pieces per reel.

All parts are RoHS compliant



FIGURE 130



Z1206MLA Series				
Measurement System	Length "L"	Width "W"	Electrode "A"	Thickness "T"
(inches)	0.126 ±0.0079	0.063 ±0.0059	0.0197 +0.0079 -0.0079	0.059 max.
(mm)	3.200 ±0.200	1.600 ±0.150	0.500 +0.200 -0.200	1.500 max.

Z1210MLA Series				
Measurement System	Length "L"	Width "W"	Electrode "A"	Thickness "T"
(inches)	0.126 ±0.0079	0.098 ±0.0079	0.0200 +0.0079 -0.0079	0.059 max.
(mm)	3.200 ±0.200	2.500 ±0.200	0.500 +0.200 -0.200	1.500 max.

Z2220MLA Series				
Measurement System	Length "L"	Width "W"	Electrode "A"	Thickness "T"
(inches)	0.2244 ±0.0079	0.1969 ±0.0079	0.0197 +0.0118 -0.0039	0.098 max.
(mm)	5.700 ±0.200	5.000 ±0.200	0.500 +0.300 -0.100	2.500 max.

Z1812MLA Series				
Measurement System	Length "L"	Width "W"	Electrode "A"	Thickness "T"
(inches)	0.177 ±0.0079	0.126 ±0.0079	0.0197 +0.0118 -0.0039	0.079 max.
(mm)	4.500 ±0.200	3.200 ±0.200	0.500 +0.300 -0.100	2.000 max.

CKE Number	Working Voltage (Max)		Breakdown Voltage 1mA (V)	Peak Current (Max) 8/20us (A)	Max. Clamping Voltage		Energy Absorption (Max) 10/1000	Typical Capacitance 1KHz (pF)
	AC (V _{RMS})	DC(V)			(A)	(V)		
Z1206MLA150H	8.000	11.000	15(12.75-17.25)	200	1	28	0.4	1700
Z1206MLA180H	11.000	14.000	18(15.3-20.7)	200	1	30	0.5	1500
Z1206MLA220H	12.000	16.500	22(19.8-24.2)	200	1	36	0.5	1280
Z1206MLA240H	14.000	18.000	24(21.6-27)	200	1	39	0.5	1160
Z1206MLA270H	17.000	22.000	27(24.3-29.8)	200	1	44	0.6	1080
Z1206MLA330H	20.000	26.000	33(29.7-36.3)	200	1	54	0.7	680
Z1206MLA390H	25.000	30.000	39(35.1-42.9)	200	1	65	1.0	620
Z1206MLA470H	30.000	38.000	47(42.3-51.7)	200	1	77	1.1	550
Z1206MLA560H	35.000	45.000	56(50.4-61.6)	200	1	90	0.8	400
Z1210MLA150H	8.000	11.000	15(12.75-17.25)	400	2.5	28	1.0	4050
Z1210MLA180H	11.000	14.000	18(15.3-20.7)	400	2.5	30	1.2	3860
Z1210MLA220H	12.000	16.500	22(19.8-24.2)	400	2.5	36	1.4	2600
Z1210MLA240H	14.000	18.000	24(21.6-27)	400	2.5	39	1.4	2380
Z1210MLA270H	17.000	22.000	27(24.3-29.8)	400	2.5	44	1.7	2100
Z1210MLA330H	20.000	26.000	33(29.7-36.3)	400	2.5	54	1.9	1400
Z1210MLA390H	25.000	30.000	39(35.1-42.9)	400	2.5	65	1.7	1180
Z1210MLA470H	30.000	38.000	47(42.3-51.7)	400	2.5	77	2.0	1000
Z1210MLA560H	35.000	45.000	56(50.4-61.6)	400	2.5	90	2.0	660
Z1812MLA150H	8.000	11.000	15(12.75-17.25)	800	5	28	1.8	8450
Z1812MLA180H	11.000	14.000	18(15.3-20.7)	800	5	30	1.9	7030
Z1812MLA220H	12.000	16.500	22(19.8-24.2)	800	5	36	2.3	5080
Z1812MLA240H	14.000	18.000	24(21.6-27)	800	5	39	2.3	4650
Z1812MLA270H	17.000	22.000	27(24.3-29.8)	800	5	44	2.7	4150
Z1812MLA330H	20.000	26.000	33(29.7-36.3)	800	5	54	3.0	3400
Z1812MLA390H	25.000	30.000	39(35.1-42.9)	800	5	65	3.7	2950
Z1812MLA470H	30.000	38.000	47(42.3-51.7)	800	5	77	4.2	2550
Z1812MLA560H	35.000	45.000	56(50.4-61.6)	800	5	90	4.2	2400
Z2220MLA150H	8.000	11.000	15(12.75-17.25)	1200	10	28	4.2	21200
Z2220MLA180H	11.000	14.000	18(15.3-20.7)	1200	10	30	5.4	17700
Z2220MLA220H	12.000	16.500	22(19.8-24.2)	1200	10	36	5.8	14500
Z2220MLA240H	14.000	18.000	24(21.6-27)	1200	10	39	5.8	13600
Z2220MLA270H	17.000	22.000	27(24.3-29.8)	1200	10	44	7.2	12000
Z2220MLA330H	20.000	26.000	33(29.7-36.3)	1200	10	54	7.8	10500
Z2220MLA390H	25.000	30.000	39(35.1-42.9)	1200	10	65	9.6	8900
Z2220MLA470H	30.000	38.000	47(42.3-51.7)	1200	10	77	12.0	5700
Z2220MLA560H	35.000	45.000	56(50.4-61.6)	1200	10	90	7.7	4800

Note: Parts are available on tape and reel.

Z1206 – 3000 pcs/reel Z1812 – 1000 pcs/reel
 Z1210 – 2000 pcs/reel Z2222 – 1000 pcs/reel

Consult Factory for MOQ.

Note: Parts are available on tape and reel in quantities of 1000 pieces per reel.

All parts are RoHS compliant



RADIAL LEAD METAL OXIDE VARISTORS-LINE VOLTAGE SERIES

SUPPRESSION

Table with 13 columns: CKE Part Number, Marking On Part, Max Applied Contin. Volts (ACrms, DC), Varistor Voltage @ 1 mA DC (DC Volts), Energy 2ms (Joules), Max. Clamping Voltage 8/20 μs (Volts, Amps), Peak Current (Amps), Typical Capacitance (pF), Dimensions (mm) - Figure 64 (D-Max, T, W, d).

All radial leaded MOVs are available on tape and reel and/or crimp lead and/or trim lead. Consult factory for details

Radial leaded MOVs having the Underwriters Laboratory Recognized Component Mark, ʘ , conform to UL 1414, UL1449 second edition and CSA class 222101. CKE's UL recognized parts are listed on file #E90510 Maximum Power Dissipation: 7 mm-0.25 watt; 10 mm-0.4 watt; 14 mm-0.6 watt, 20 mm-1 watt. Typical response time is less than 15 nanoseconds.

All parts RoHS compliant



CKE Part Number	Marking On Part	Max Applied Contin. Volts		Varistor Voltage @ 1 mA DC DC Volts	Energy 2ms Joules	Max. Clamping Voltage 8/20 μ s		Peak Current Amps	Typical Capacitance pF	Dimensions (mm) - Figure 64			
		AC _{RMS}	DC			Volts	Amps			D-Max	\pm 1 mm T-Max	W	d
⚡ Z130LA2H	1302H	130	170	200 (185-225)	12.5	340	10	1750	250	9.0	4.7	5.0	0.6
⚡ Z130LA5H	1305H	130	170	200 (185-225)	25	340	25	3500	570	14.0	5.1	7.5	0.8
⚡ Z130LA10AH	130H10A	130	170	200 (185-225)	50	340	50	6000	1150	17.5	5.1	7.5	0.8
⚡ Z130LA20AH	130H20A	130	170	200 (185-225)	100	340	100	10000	2300	25.0	5.5	10.0	1.0
⚡ Z130LA20BH	130H20B	130	170	200 (185-210)	100	325	100	10000	2300	25.0	5.5	10.0	1.0
⚡ Z140LA2H	1402H	140	180	220 (198-242)	13.5	360	10	1750	250	9.0	4.7	5.0	0.6
⚡ Z140LA5H	1405H	140	180	220 (198-242)	27.5	360	25	3500	560	14.0	5.1	7.5	0.8
⚡ Z140LA10AH	140H10A	140	180	220 (198-242)	55	360	50	6000	1100	17.5	5.1	7.5	0.8
⚡ Z140LA20AH	140H20A	140	180	220 (198-242)	110	360	100	10000	2200	25.0	5.5	10.0	1.0
⚡ Z140LA20BH	140H20B	140	180	220 (198-230)	110	345	100	10000	2200	25.0	5.5	10.0	1.0
⚡ Z150LA2H	1502H	150	200	240 (216-264)	15	395	10	1750	240	9.0	4.7	5.0	0.6
⚡ Z150LA5H	1505H	150	200	240 (216-264)	30	395	25	3500	550	14.0	5.1	7.5	0.8
⚡ Z150LA10AH	150H10A	150	200	240 (216-264)	60	395	50	6000	1050	17.5	5.1	7.5	0.8
⚡ Z150LA20AH	150H20A	150	200	240 (216-264)	120	395	100	10000	2200	25.0	5.5	10.0	1.0
⚡ Z150LA20BH	150H20B	150	200	240 (216-252)	120	375	100	10000	2200	25.0	5.5	10.0	1.0
⚡ Z175LA2H	1752H	175	225	270 (247-303)	17	455	10	1750	220	9.0	4.8	5.0	0.6
⚡ Z175LA5H	1755H	175	225	270 (247-303)	35	455	25	3500	530	14.0	5.2	7.5	0.8
⚡ Z175LA10AH	175H10A	175	225	270 (247-303)	70	455	50	6000	1000	17.5	5.2	7.5	0.8
⚡ Z175LA20AH	175H20A	175	225	270 (247-303)	135	455	100	10000	2100	25.0	5.6	10.0	1.0
⚡ Z175LA20BH	175H20B	175	225	270 (247-284)	135	435	100	10000	2100	25.0	5.6	10.0	1.0
⚡ Z200LA2H	2002H	195	250	300 (270-330)	18.5	500	10	1750	190	9.0	4.8	5.0	0.6
⚡ Z200LA5H	2005H	195	250	300 (270-330)	38	500	25	3500	500	14.0	5.2	7.5	0.8
⚡ Z200LA10AH	200H10A	195	250	300 (270-330)	78	500	50	6000	900	17.5	5.2	7.5	0.8
⚡ Z200LA20AH	200H20A	195	250	300 (270-330)	148	500	100	10000	1800	25.0	5.6	10.0	1.0
⚡ Z200LA20BH	200H20B	195	250	300 (270-315)	148	475	100	10000	1800	25.0	5.6	10.0	1.0
⚡ Z210LA4H	2104H	210	275	330 (297-363)	20	550	10	1750	170	9.0	4.9	5.0	0.6
⚡ Z210LA10H	210LH	210	275	330 (297-363)	42	550	25	3500	450	14.0	5.3	7.5	0.8
⚡ Z210LA20AH	210H20A	210	275	330 (297-363)	80	550	50	6000	850	17.5	5.3	7.5	0.8
⚡ Z210LA40AH	210H40A	210	275	330 (297-363)	160	550	100	10000	1750	25.0	5.7	10.0	1.0
⚡ Z210LA40BH	210H40B	210	275	330 (297-345)	160	525	100	10000	1750	25.0	5.7	10.0	1.0
⚡ Z230LA4H	2304H	230	300	360 (324-396)	23	595	10	1750	180	9.0	4.9	5.0	0.6
⚡ Z230LA10H	230H	230	300	360 (324-396)	45	595	25	3500	450	14.0	5.3	7.5	0.8
⚡ Z230LA20AH	230H20A	230	300	360 (324-386)	90	595	50	6000	850	17.5	5.3	7.5	0.8
⚡ Z230LA40AH	230H40A	230	300	360 (324-396)	180	595	100	10000	1700	25.0	5.7	10.0	1.0
⚡ Z230LA40BH	230H40B	230	300	360 (324-380)	180	565	100	10000	1700	25.0	5.7	10.0	1.0
⚡ Z250LA4H	2504H	250	320	390 (351-429)	25	650	10	1750	160	9.0	5.1	5.0	0.6
⚡ Z250LA10H	250H	250	320	390 (351-429)	50	650	25	3500	430	14.0	5.5	7.5	0.8
⚡ Z250LA20AH	250H20A	250	320	390 (351-429)	100	650	50	6000	800	17.5	5.5	7.5	0.8
⚡ Z250LA40AH	250H40A	250	320	390 (351-429)	195	650	100	10000	1400	25.0	5.9	10.0	1.0
⚡ Z250LA40BH	250H40B	250	320	390 (351-410)	195	620	100	10000	1400	25.0	5.9	10.0	1.0
⚡ Z275LA4H	2754H	275	350	430 (387-473)	27.5	710	10	1750	150	9.0	5.3	5.0	0.6
⚡ Z275LA10H	275H	275	350	430 (387-473)	55	710	25	3500	400	14.0	5.7	7.5	0.8
⚡ Z275LA20AH	275H20A	275	350	430 (387-473)	110	710	50	6000	650	17.5	5.7	7.5	0.8
⚡ Z275LA40AH	275H40A	275	350	430 (387-473)	215	710	100	10000	1350	25.0	6.1	10.0	1.0
⚡ Z275LA40BH	275H40B	275	350	430 (387-450)	215	675	100	10000	1350	25.0	6.1	10.0	1.0
⚡ Z300LA4H	3004H	300	385	470 (423-517)	30	775	10	1750	130	9.0	5.5	5.0	0.6
⚡ Z300LA10H	300H	300	385	470 (423-517)	60	775	25	3500	300	14.0	5.9	7.5	0.8
⚡ Z300LA20AH	300H20A	300	385	470 (423-517)	125	775	50	6000	550	17.5	5.9	7.5	0.8
⚡ Z300LA40AH	300H40A	300	385	470 (423-517)	250	775	100	10000	1200	25.0	6.3	10.0	1.0
⚡ Z300LA40BH	300H40B	300	385	470 (423-494)	250	735	100	10000	1200	25.0	6.3	10.0	1.0

All radial leaded MOVs are available on tape and reel and/or crimp lead and/or trim lead. Consult factory for details

Radial leaded MOVs having the Underwriters Laboratory Recognized Component Mark, ⚡, conform to UL 1414, UL1449 second edition and CSA class 222101. CKE's UL recognized parts are listed on file #E90510 Maximum Power Dissipation: 7 mm-0.25 watt; 10 mm-0.4 watt; 14 mm-0.6 watt, 20 mm-1 watt. Typical response time is less than 15 nanoseconds. All parts RoHS compliant



CKE Part Number	Marking On Part	Max Applied Contin. Volts		Varistor Voltage @ 1 mA DC	Energy 2ms	Max. Clamping Voltage 8/20 μ s		Peak Current	Typical Capacitance	Dimensions (mm) - Figure 64			
		AC _{RMS}	DC	DC Volts	Joules	Volts	Amps	Amps	pF	D-Max	\pm 1 mm T-Max	W	d
⚡ Z320LA4H	3204H	320	410	510 (459-561)	32	845	10	1750	120	9.0	5.7	5.0	0.6
⚡ Z320LA10H	320H	320	410	510 (459-561)	67	845	25	3500	260	14.0	6.1	7.5	0.8
⚡ Z320LA20AH	320H20A	320	410	510 (459-561)	136	845	50	6000	450	17.5	6.1	7.5	0.8
⚡ Z320LA40AH	320H40A	320	410	510 (459-561)	273	845	100	10000	1050	25.0	6.5	10.0	1.0
⚡ Z320LA40BH	320H40B	320	410	510 (459-535)	273	805	100	10000	1050	25.0	6.5	10.0	1.0
⚡ Z350LA4H	3504H	350	460	560 (504-616)	32	915	10	1750	120	9.0	6.0	5.0	0.6
⚡ Z350LA10H	350H	350	460	560 (504-616)	67	915	25	3500	200	14.0	6.0	7.5	0.8
⚡ Z350LA20AH	350H20A	350	460	560 (504-616)	136	915	50	6000	400	14.0	6.4	7.5	0.8
⚡ Z350LA40AH	350H40A	350	460	560 (504-616)	273	915	100	10000	850	25.0	6.8	10.0	1.0
⚡ Z350LA40BH	350H40B	350	460	560 (504-590)	273	870	100	10000	850	25.0	6.8	10.0	1.0
⚡ Z385LA4H	3854H	385	505	620 (558-682)	32	1025	10	1750	120	9.0	6.3	5.0	0.6
⚡ Z385LA10H	385H	385	505	620 (558-682)	67	1025	25	3500	170	14.0	6.7	7.5	0.8
⚡ Z385LA20AH	385H20A	385	505	620 (558-682)	136	1025	50	6000	350	17.5	6.7	7.5	0.8
⚡ Z385LA40AH	385H40A	385	505	620 (558-682)	273	1025	100	10000	570	25.0	7.1	10.0	1.0
⚡ Z385LA40BH	385H40B	385	505	620 (558-650)	273	975	100	10000	570	25.0	7.1	10.0	1.0
⚡ Z420LA10H	420H	420	560	680 (612-748)	67	1120	25	3500	160	14.0	7.0	7.5	0.8
⚡ Z420LA20AH	420H20A	420	560	680 (612-748)	136	1120	50	6000	350	17.5	7.0	7.5	0.8
⚡ Z420LA40AH	420H40A	420	560	680 (612-748)	273	1120	100	10000	550	25.0	7.4	10.0	1.0
⚡ Z420LA40BH	420H40B	420	560	680 (612-715)	273	1065	100	10000	550	25.0	7.4	10.0	1.0
⚡ Z460LA10H	460H	460	615	750 (675-825)	70	1240	25	3500	150	14.0	7.4	7.5	0.8
⚡ Z460LA20AH	460H20A	460	615	750 (675-825)	150	1240	50	6000	330	17.5	7.4	7.5	0.8
⚡ Z460LA40AH	460H40A	460	615	750 (675-825)	300	1240	100	10000	530	25.0	7.8	10.0	1.0
⚡ Z460LA40BH	460H40B	460	615	750 (675-790)	300	1180	100	10000	530	25.0	7.8	10.0	1.0
Z480LA20H	480H	485	640	780 (702-858)	75	1290	25	3500	150	14.0	7.4	7.5	0.8
Z480LA40AH	480H40A	485	640	780 (702-858)	160	1290	50	6000	330	17.5	7.4	7.5	0.8
Z480LA80AH	480H80A	485	640	780 (702-858)	315	1290	100	10000	530	25.0	7.8	10.0	1.0
Z480LA80BH	480H80B	485	640	780 (702-820)	315	1225	100	10000	530	25.0	7.8	10.0	1.0
⚡ Z510LA20H	510H	510	670	820 (738-902)	80	1355	25	3500	150	14.0	7.8	7.5	0.8
⚡ Z510LA40AH	510H40A	510	670	820 (738-902)	165	1355	50	6000	330	17.5	7.8	7.5	0.8
⚡ Z510LA80AH	510H80A	510	670	820 (738-902)	325	1355	100	10000	530	25.0	8.2	10.0	1.0
⚡ Z510LA80BH	510H80B	510	670	820 (738-860)	325	1290	100	10000	530	25.0	8.2	10.0	1.0
⚡ Z550LA20H	550H	550	745	910 (819-1001)	90	1500	25	3500	140	14.0	8.2	7.5	0.8
⚡ Z550LA40AH	550H40A	550	745	910 (819-1001)	180	1500	50	6000	300	17.5	8.2	7.5	0.8
⚡ Z550LA80AH	550H80A	550	745	910 (819-1001)	360	1500	100	10000	480	25.0	8.6	10.0	1.0
⚡ Z550LA80BH	550H80B	550	745	910 (819-955)	360	1425	100	10000	480	25.0	8.6	10.0	1.0
⚡ Z600LA20H	625H	625	825	1000 (900-1100)	100	1650	25	3500	140	14.0	8.7	7.5	0.8
⚡ Z600LA50AH	600H50A	625	825	1000 (900-1100)	200	1650	50	6000	300	17.5	8.7	7.5	0.8
⚡ Z600LA100AH	600H100A	625	825	1000 (900-1100)	400	1650	100	10000	480	25.0	9.1	10.0	1.0
⚡ Z600LA100BH	600H100B	625	825	1000 (900-1050)	400	1570	100	10000	480	25.0	9.1	10.0	1.0
⚡ Z660LA20H	660H	680	895	1100 (990-1210)	110	1815	25	3500	130	14.0	9.2	7.5	0.8
⚡ Z660LA50AH	660H50A	680	895	1100 (990-1210)	220	1815	50	6000	200	17.5	9.2	7.5	0.8
⚡ Z660LA100AH	660H100A	680	895	1100 (990-1210)	440	1815	100	10000	400	25.0	9.6	10.0	1.0
⚡ Z660LA100BH	660H100B	680	895	1100 (990-1155)	440	1725	100	10000	400	25.0	9.6	10.0	1.0
⚡ Z1000LA20H	1000H	1000	1465	1800 (1620-1980)	183	2970	25	3500	70	14.0	9.2	7.5	0.8
⚡ Z1000LA80AH	1000H80A	1000	1465	1800 (1620-1980)	360	2970	50	6000	150	17.5	13.9	7.5	0.8
⚡ Z1000LA160AH	1000H160A	1000	1465	1800 (1620-1980)	720	2970	100	10000	250	25.0	14.3	10.0	1.0
⚡ Z1000LA160BH	1000H160B	1000	1465	1800(1620-1890)	720	2820	100	1000	250	25.0	14.3	10.0	1.0

All radial leaded MOVs are available on tape and reel and/or crimp lead and/or trim lead. Consult factory for details

Radial leaded MOVs having the Underwriters Laboratory Recognized Component Mark, ⚡, conform to UL 1414, UL1449 second edition and CSA class 222101. CKE's UL recognized parts are listed on file #E90510 Maximum Power Dissipation: 7 mm-0.25 watt; 10 mm-0.4 watt; 14 mm-0.6 watt, 20 mm-1 watt. Typical response time is less than 15 nanoseconds. All parts RoHS compliant

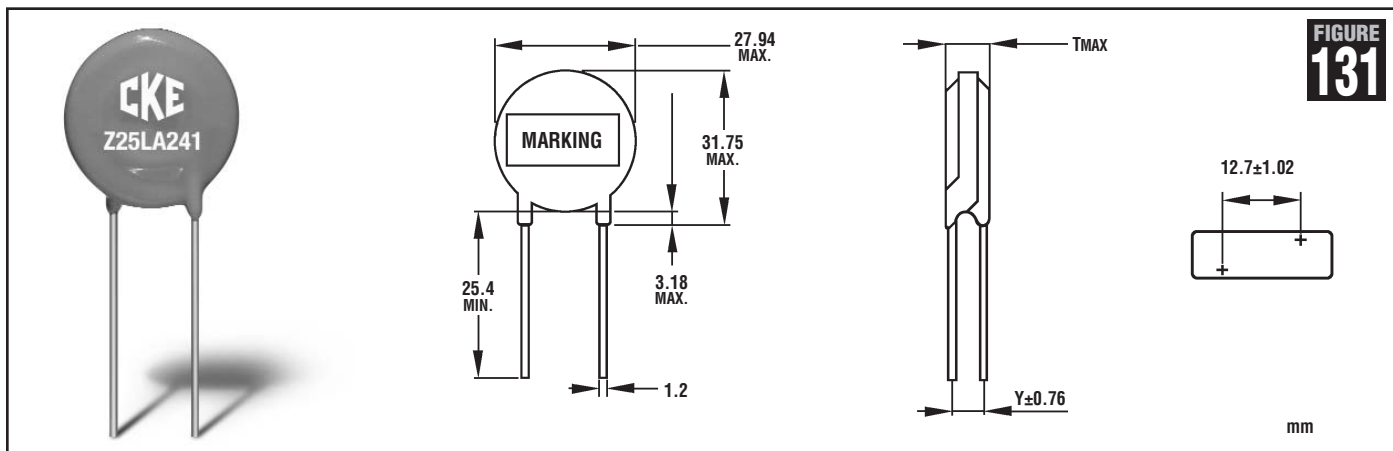


FIGURE 131

Model Number 25mm	Maximum Allowable Voltage		Varistor Voltage V_{1mA} (V)	Clamping Voltage (Max.)		Maximum Peak Current (8/20 μ s)		Maximum Energy (JOULES)		Typical Capacitance (Reference) @1KHZ (pf)	T,mm	Y,mm	Figure
	AC _{RMS} (V)	DC (V)		V_C (V)	I_P (A)	1 Time (A)	2 Times (A)	10/1000 (μ s)	2ms				
	☘ Z25LA201	130	170	200(185-225)	340	150	20000	15000	190	140	3700	8.2	3.7
☘ Z25LA221	140	180	220(198-242)	360	150	20000	15000	200	150	3400	8.2	3.7	131
☘ Z25LA241	150	200	240(216-264)	395	150	20000	15000	220	160	3100	8.4	3.9	131
☘ Z25LA271	175	225	270(243-297)	455	150	20000	15000	255	180	2600	8.5	4.2	131
☘ Z25LA301	190	250	300(270-330)	500	150	20000	15000	275	200	2100	8.6	4.2	131
☘ Z25LA331	210	275	330(297-363)	550	150	20000	15000	300	220	2200	8.7	4.3	131
☘ Z25LA361	230	300	360(324-396)	595	150	20000	15000	330	240	2100	8.9	4.5	131
☘ Z25LA391	250	320	390(351-429)	650	150	20000	15000	360	260	1900	9.1	4.7	131
☘ Z25LA431	275	350	430(387-473)	710	150	20000	15000	380	280	1800	9.3	5.0	131
☘ Z25LA471	300	385	470(423-517)	775	150	20000	15000	440	300	1600	9.5	5.2	131
☘ Z25LA511	320	415	510(459-561)	845	150	20000	15000	440	300	1500	9.8	5.5	131
☘ Z25LA561	350	460	560(504-616)	925	150	20000	15000	440	300	1300	10.1	5.8	131
☘ Z25LA621	385	505	620(558-682)	1025	150	20000	15000	440	300	1200	10.4	6.2	131
☘ Z25LA681	420	560	680(612-748)	1120	150	20000	15000	460	320	1100	10.8	6.6	131
☘ Z25LA751	460	615	750(675-825)	1240	150	20000	15000	510	350	1000	11.2	6.8	131
☘ Z25LA781	485	640	780(702-858)	1290	150	20000	15000	530	360	990	11.4	7.0	131
☘ Z25LA821	510	670	820(738-902)	1355	150	20000	15000	570	380	930	11.6	7.6	131
☘ Z25LA911	550	745	910(819-1001)	1500	150	20000	15000	620	430	860	12.1	7.8	131
☘ Z25LA102	625	825	1000(900-1100)	1650	150	20000	15000	685	460	760	12.6	8.7	131
☘ Z25LA112	680	895	1100(990-1210)	1815	150	20000	15000	770	500	690	13.1	9.3	131
☘ Z25LA122	750	970	1200(1080-1320)	2000	150	20000	15000	870	580	620	14.2	10.4	131
☘ Z25LA142	880	1150	1400(1260-1540)	2290	150	20000	15000	935	645	540	15.2	11.6	131
☘ Z25LA162	900	1200	1600(1440-1760)	2550	150	20000	15000	1050	725	470	16.3	12.8	131

Radial leaded MOVs having the Underwriters Laboratory Recognized Component Mark, ☘, conform to UL 1414, UL1449 second edition and CSA class 222101. CKE's UL recognized parts are listed on file #E90510.

Typical response time is less than 15 nanoseconds.

Maximum Power Dissipation: Z25LA - 1 watt

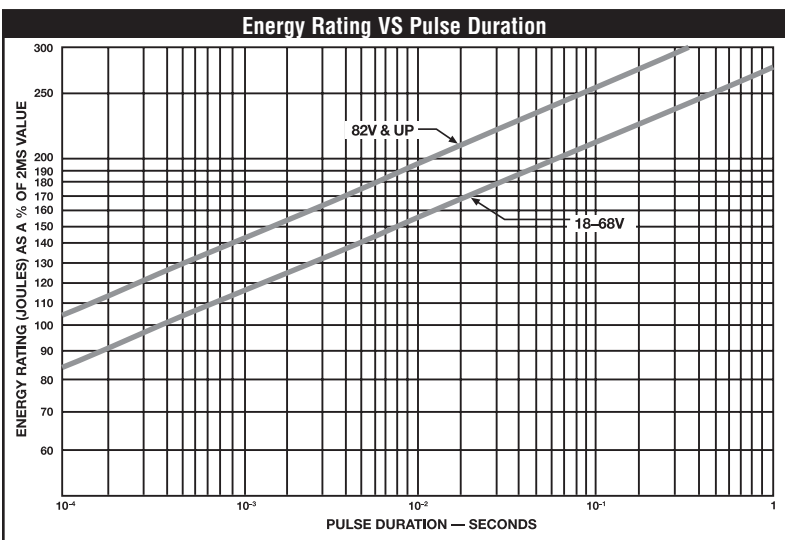
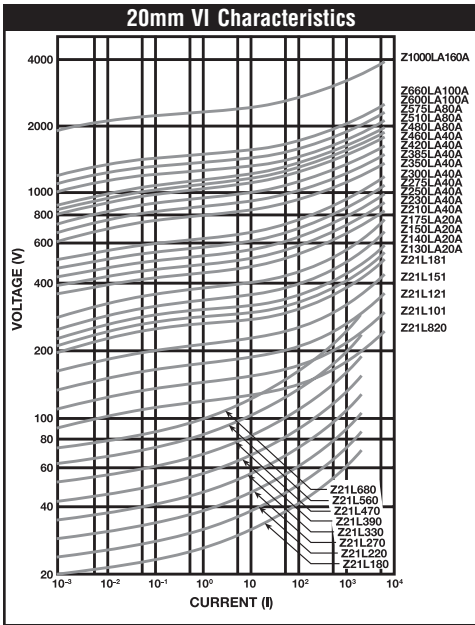
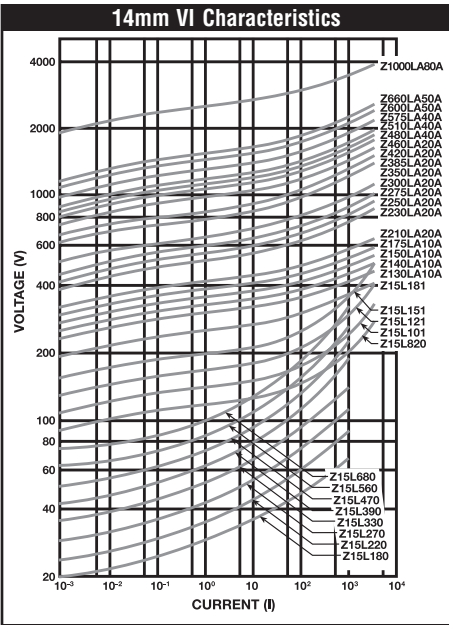
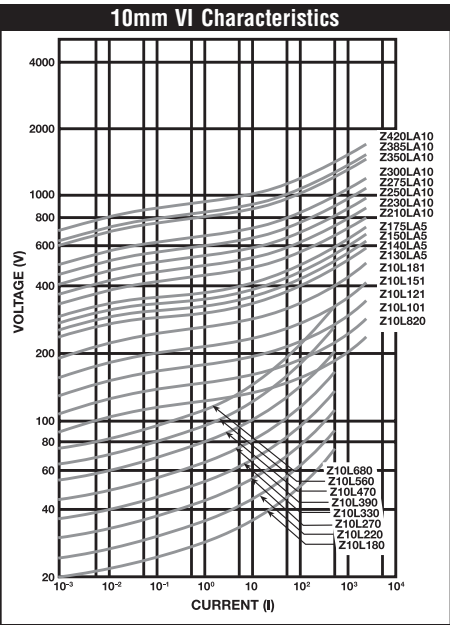
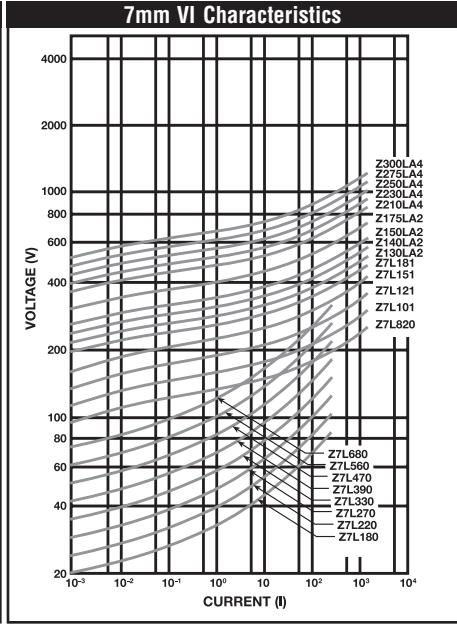
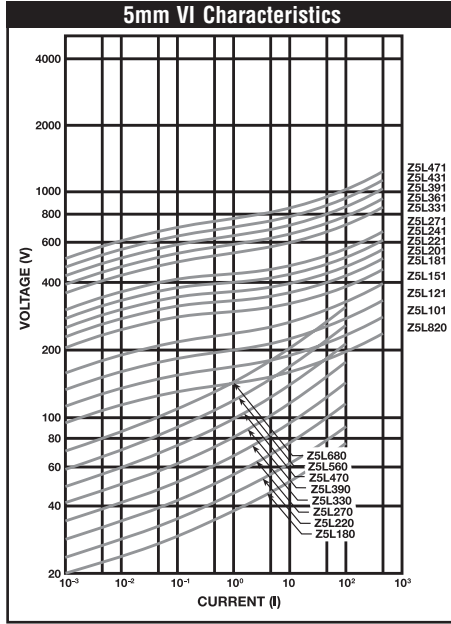
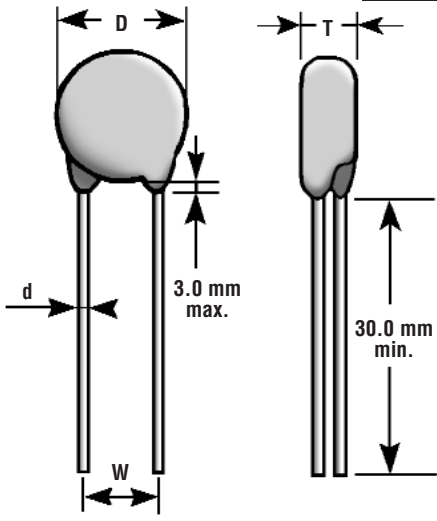
Typical response time is less than 15 nanoseconds.



SUPPRESSION

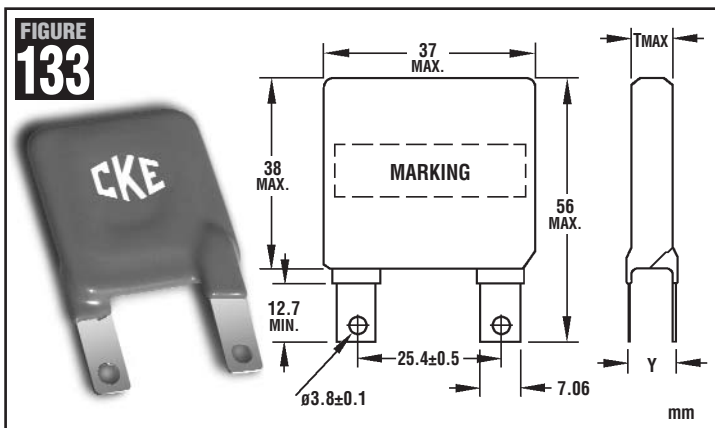
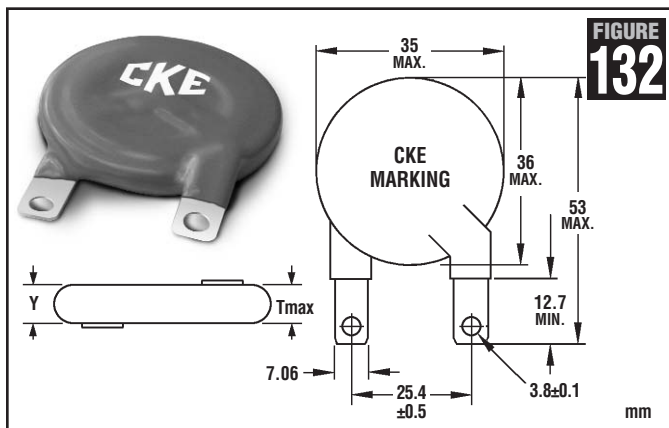
Radial Lead Series

FIGURE 64



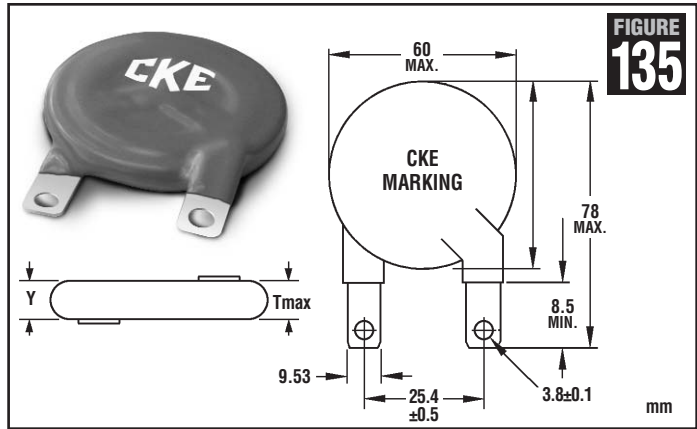
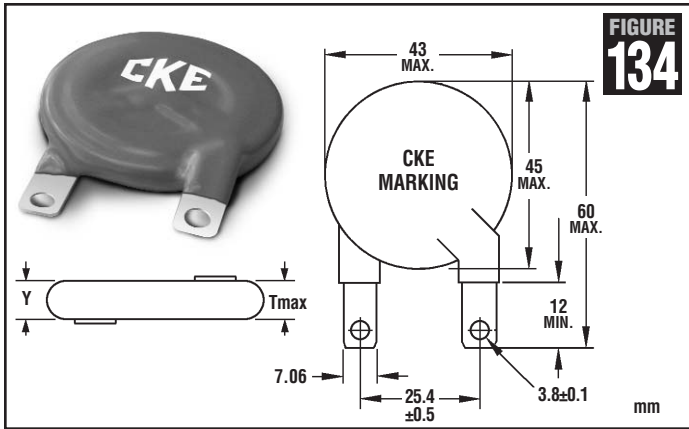
See website www.cke.com or contact factory for additional information on characteristic curves





CKE Part Number	Maximum Allowable Voltage		Varistor Voltage V _{1mA} (V)	Clamping Voltage (Max.)		Maximum Peak Current (8/20µs)		Maximum Energy (JOULES) 10/1000 µs	Typical Capacitance (Reference) @1KHZ pf	T, mm	Y, mm	
	AC _{RMS} (V)	DC (V)		V _c (V)	I _p (A)	1 Time (A)	2 Times					
							(A)					
Z32RD Round Series											Figure 132	
⚡ Z32RD201	130	170	200(185-225)	340	200	25000	20000	210	4100	6.8	4.9	
⚡ Z32RD241	150	200	240(216-264)	395	200	25000	20000	240	3400	7	5.1	
⚡ Z32RD271	175	225	270(243-297)	455	200	25000	20000	255	2900	7.1	5.2	
⚡ Z32RD331	210	275	330(297-363)	550	200	25000	20000	300	2600	7.3	5.4	
⚡ Z32RD361	230	300	360(324-396)	595	200	25000	20000	315	2300	7.5	5.6	
⚡ Z32RD391	250	320	390(351-429)	650	200	25000	20000	330	2100	7.7	5.8	
⚡ Z32RD431	275	350	430(387-473)	710	200	25000	20000	360	2000	7.9	6.0	
⚡ Z32RD471	300	385	470(423-517)	775	200	25000	20000	380	1700	8.1	6.2	
⚡ Z32RD511	320	415	510(459-561)	845	200	25000	20000	430	1600	8.4	6.5	
⚡ Z32RD621	385	505	620(558-682)	1025	200	25000	20000	470	1300	9	7.1	
⚡ Z32RD681	420	560	680(612-748)	1120	200	25000	20000	495	1300	9.4	7.5	
⚡ Z32RD751	460	615	750(675-825)	1240	200	25000	20000	520	1100	9.8	7.9	
⚡ Z32RD781	485	640	780(702-858)	1290	200	25000	20000	550	1100	10	8.0	
⚡ Z32RD821	510	670	820(738-902)	1355	200	25000	20000	580	1000	10.2	8.3	
⚡ Z32RD911	550	745	910(819-1001)	1500	200	25000	20000	620	950	10.7	8.8	
⚡ Z32RD951	575	765	950(855-1045)	1570	200	25000	20000	650	900	11	9.0	
⚡ Z32RD102	625	825	1000(900-1100)	1650	200	25000	20000	685	840	11.2	9.3	
⚡ Z32RD112	680	895	1100(990-1210)	1815	200	25000	20000	750	770	11.7	9.8	
⚡ Z32RD122	750	970	1200(1062-1300)	2100	200	25000	20000	800	690	12.8	10.9	
⚡ Z32RD142	880	1150	1400(1245-1520)	2290	200	25000	20000	850	590	13.8	11.9	
⚡ Z32RD162	1000	1200	1600(1414-1728)	2700	200	25000	20000	900	520	14.9	13.0	
Z34SQ Square Series											Figure 133	
⚡ Z34SQ201	130	170	200(185-225)	340	300	40000	25000	310	7900	6.8	4.9	
⚡ Z34SQ221	140	180	220(198-242)	360	300	40000	25000	330	7200	6.9	5	
⚡ Z34SQ241	150	200	240(216-264)	395	300	40000	25000	360	6600	7	5.1	
⚡ Z34SQ271	175	225	270(243-297)	455	300	40000	25000	390	5600	7.1	5.2	
⚡ Z34SQ331	210	275	330(297-363)	550	300	40000	25000	460	5000	7.3	5.4	
⚡ Z34SQ361	230	300	360(324-396)	595	300	40000	25000	475	4400	7.5	5.6	
⚡ Z34SQ391	250	320	390(351-429)	650	300	40000	25000	490	4100	7.7	5.8	
⚡ Z34SQ431	275	350	430(387-473)	710	300	40000	25000	550	3800	7.9	6.0	
⚡ Z34SQ471	300	385	470(423-517)	775	300	40000	25000	600	3400	8.1	6.2	
⚡ Z34SQ511	320	415	510(459-561)	845	300	40000	25000	640	3200	8.4	6.5	
⚡ Z34SQ561	350	460	560(504-616)	920	300	40000	25000	710	2900	8.5	6.8	
⚡ Z34SQ621	385	505	620(558-682)	1025	300	40000	25000	720	2600	9	7.1	
⚡ Z34SQ681	420	560	680(612-748)	1120	300	40000	25000	750	2400	9.4	7.5	
⚡ Z34SQ751	460	615	750(675-825)	1240	300	40000	25000	780	2200	9.8	7.9	
⚡ Z34SQ781	485	640	780(702-858)	1290	300	40000	25000	820	2100	10	8.0	
⚡ Z34SQ821	510	670	820(738-902)	1355	300	40000	25000	900	2000	10.2	8.3	
⚡ Z34SQ911	550	745	910(819-1001)	1500	300	40000	25000	960	1800	10.7	8.8	
⚡ Z34SQ951	575	765	950(855-1045)	1570	300	40000	25000	1000	1700	11	9.0	
⚡ Z34SQ102	625	825	1000(900-1100)	1650	300	40000	25000	1055	1600	11.2	9.3	
⚡ Z34SQ112	680	895	1100(990-1210)	1815	300	40000	25000	1155	1500	11.7	9.8	
⚡ Z34SQ122	750	970	1200(1062-1300)	2100	300	40000	25000	1200	1300	12.8	10.9	
⚡ Z34SQ142	880	1150	1400(1245-1520)	2290	300	40000	25000	1300	1100	13.8	11.9	
⚡ Z34SQ162	1000	1200	1600(1414-1728)	2700	300	40000	25000	1400	1000	14.9	13.0	

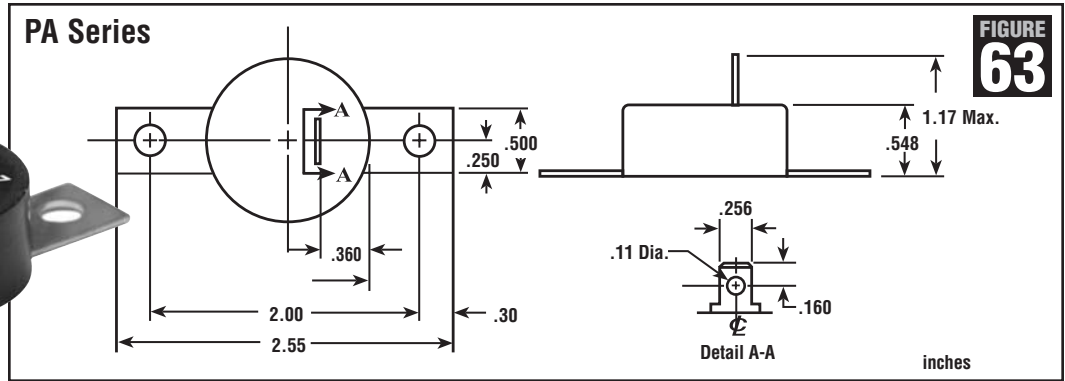
Maximum Power Dissipation: Z32RD - 1.2 watts Z34SQ - 1.4 watts
 MOVs having the Underwriters Laboratory Recognized Component Mark, ⚡, conform to UL 1414, UL1449 second edition and CSA class 222101. CKE's UL recognized parts are listed on file #E90510. Typical response time is less than 15 nanoseconds.
 All parts RoHS compliant



CKE Part Number	Maximum Allowable Voltage		Varistor Voltage V _{1mA} (V)	Clamping Voltage (Max.)		Maximum Peak Current (8/20 μ s)		Maximum Energy (JOULES) 10/1000 μ s	Typical Capacitance (Reference) @1KHZ pf	T, mm	Y, mm
	AC _{RMS} (V)	DC (V)		V _c (V)	I _p (A)	1 Time (A)	2 Times (A)				
Z40RD Series Figure 134											
Z40RD201	130	170	200(185-225)	340	300	40000	25000	310	8600	6.8	4.9
Z40RD241	150	200	240(216-264)	395	300	40000	25000	360	7200	7	5.1
Z40RD271	175	225	270(243-297)	455	300	40000	25000	390	6000	7.1	5.2
Z40RD331	210	275	330(297-363)	550	300	40000	25000	460	5400	7.3	5.4
Z40RD361	230	300	360(324-396)	595	300	40000	25000	475	4800	7.5	5.6
Z40RD391	250	320	390(351-429)	650	300	40000	25000	490	4400	7.7	5.8
Z40RD431	275	350	430(387-473)	710	300	40000	25000	550	4100	7.9	6.0
Z40RD471	300	385	470(423-517)	775	300	40000	25000	600	3600	8.1	6.2
Z40RD511	320	415	510(459-561)	845	300	40000	25000	640	3400	8.4	6.5
Z40RD621	385	505	620(558-682)	1025	300	40000	25000	720	2800	9	7.1
Z40RD681	420	560	680(612-748)	1120	300	40000	25000	750	2600	9.4	7.5
Z40RD751	460	615	750(675-825)	1240	300	40000	25000	780	2400	9.8	7.9
Z40RD781	485	640	780(702-858)	1290	300	40000	25000	820	2270	10	8.0
Z40RD821	510	670	820(738-902)	1355	300	40000	25000	900	2160	10.2	8.3
Z40RD911	550	745	910(819-1001)	1500	300	40000	25000	960	1940	10.7	8.8
Z40RD951	575	765	950(855-1045)	1570	300	40000	25000	1000	1800	11	9.0
Z40RD102	625	825	1000(900-1100)	1650	300	40000	25000	1055	1730	11.2	9.3
Z40RD112	680	895	1100(990-1210)	1815	300	40000	25000	1155	1620	11.7	9.8
Z40RD122	750	970	1200(1062-1300)	2100	300	40000	25000	1200	1400	12.8	10.9
Z40RD142	880	1150	1400(1245-1520)	2290	300	40000	25000	1300	1200	13.8	11.9
Z40RD162	1000	1200	1600(1414-1728)	2700	300	40000	25000	1400	1080	14.9	13.0
Z53RD Series Figure 135											
⚡ Z53RD201	130	170	200(185-225)	340	500	70000	50000	490	14000	6.8	4.9
⚡ Z53RD241	150	200	240(216-264)	395	500	70000	50000	570	11000	7	5.1
⚡ Z53RD271	175	225	270(243-297)	455	500	70000	50000	630	10000	7.1	5.2
⚡ Z53RD331	210	275	330(297-363)	550	500	70000	50000	680	8500	7.3	5.4
⚡ Z53RD361	230	300	360(324-396)	595	500	70000	50000	730	7700	7.5	5.6
⚡ Z53RD391	250	320	390(351-429)	650	500	70000	50000	880	7100	7.7	5.8
⚡ Z53RD431	275	350	430(387-473)	710	500	70000	50000	950	6600	7.9	6.0
⚡ Z53RD471	300	385	470(423-517)	775	500	70000	50000	1000	5900	8.1	6.2
⚡ Z53RD511	320	415	510(459-561)	845	500	70000	50000	1100	5700	8.4	6.5
⚡ Z53RD561	350	460	560(504-616)	875	500	70000	50000	1200	5000	8.7	6.8
⚡ Z53RD621	385	505	620(558-682)	1025	500	70000	50000	1300	4600	9	7.1
⚡ Z53RD681	420	560	680(612-748)	1120	500	70000	50000	1500	4400	9.4	7.5
⚡ Z53RD751	460	615	750(675-825)	1240	500	70000	50000	1600	3900	9.8	7.9
⚡ Z53RD781	485	640	780(702-858)	1290	500	70000	50000	1650	3800	10	8.0
⚡ Z53RD821	510	670	820(738-902)	1355	500	70000	50000	1800	3500	10.2	8.3
⚡ Z53RD911	550	745	910(819-1001)	1500	500	70000	50000	2000	3300	10.7	8.8
⚡ Z53RD951	575	765	950(855-1045)	1570	500	70000	50000	2100	3100	11	9.0
⚡ Z53RD102	625	825	1000(900-1100)	1650	500	70000	50000	2200	2900	11.2	9.3
⚡ Z53RD112	680	895	1100(990-1210)	1815	500	70000	50000	2500	2700	11.7	9.8
⚡ Z53RD122	750	970	1200(1062-1300)	2100	500	70000	50000	2600	2400	12.8	10.9
⚡ Z53RD142	880	1150	1400(1245-1520)	2290	500	70000	50000	3200	2100	13.8	11.9
⚡ Z53RD162	1000	1200	1600(1414-1728)	2700	500	70000	50000	3500	1800	14.9	13.0

Maximum Power Dissipation: Z40RD - 1.8 watts Z53RD - 2 watts
 MOVs having the Underwriters Laboratory Recognized Component Mark, ⚡, conform to UL 1414, UL1449 second edition and CSA class 222101. CKE's UL recognized parts are listed on file #E90510.
 Typical response time is less than 15 nanoseconds.
 All parts RoHS compliant





CKE Part Number	Voltage Ratings				Energy Joules	Maximum Operating Conditions		Peak Current (8x20µs) Amps	Typical Capacitance pF	Figure
	VAC Volts RMS	VDC Volts	Varistor Peak Voltage			Max. Clamping Voltage				
			Min.	Max.		Volts	Amp.			
			Volts	Volts						
Z130PA20A	130	175	184	243	100	340	100	6500	2300	63
Z130PA20C	130	175	184	220	100	325	100	6500	2300	63
Z140PA20A	140	180	198	242	100	360	100	6500	2200	63
Z140PA20C	140	180	198	231	100	345	100	6500	2200	63
Z150PA20A	150	200	212	284	100	420	100	6500	2200	63
Z150PA20C	150	200	212	243	100	360	100	6500	2200	63
Z175PA20A	175	225	243	297	100	455	100	6500	2100	63
Z175PA20C	175	225	243	284	100	435	100	6500	2100	63
Z200PA20A	195	250	270	330	110	550	100	6500	1800	63
Z200PA20C	195	250	270	315	110	500	100	6500	1800	63
Z210PA40A	210	275	297	363	110	550	100	6500	1750	63
Z210PA40C	210	275	297	347	110	525	100	6500	1750	63
Z230PA40A	230	300	324	396	120	595	100	6500	1700	63
Z230PA40C	230	300	324	378	120	565	100	6500	1700	63
Z250PA40A	250	330	354	453	130	675	100	6500	1400	63
Z250PA40C	250	330	354	413	130	620	100	6500	1400	63
Z275PA40A	275	369	389	494	140	740	100	6500	1350	63
Z275PA40C	275	369	389	453	140	680	100	6500	1350	63
Z300PA40A	300	385	423	517	150	775	100	6500	1200	63
Z300PA40C	300	385	423	494	150	735	100	6500	1200	63
Z320PA40A	320	420	462	565	160	850	100	6500	1050	63
Z320PA40C	320	420	462	539	160	800	100	6500	1050	63
Z350PA40A	350	460	504	616	150	915	100	6500	850	63
Z350PA40C	350	460	504	588	150	870	100	6500	850	63
Z385PA40A	385	505	558	682	150	1025	100	6500	570	63
Z385PA40C	385	505	558	651	150	975	100	6500	570	63
Z420PA40A	420	560	610	790	160	1160	100	6500	550	63
Z420PA40C	420	560	610	690	160	1050	100	6500	550	63
Z460PA40A	460	615	675	825	180	1240	100	6500	530	63
Z460PA40C	460	615	675	788	180	1180	100	6500	530	63
Z480PA80A	480	640	670	860	180	1280	100	6500	530	63
Z480PA80C	480	640	670	790	180	1160	100	6500	530	63
Z510PA80A	510	675	735	963	190	1410	100	6500	530	63
Z510PA80C	510	675	735	860	190	1280	100	6500	530	63
Z550PA80A	550	700	775	1000	200	1500	100	6500	480	63
Z550PA80C	550	700	775	960	200	1400	100	6500	480	63
Z575PA80A	575	730	805	1050	220	1560	100	6500	480	63
Z575PA80C	575	730	805	960	220	1410	100	6500	480	63
Z600PA100A	625	825	900	1100	240	1650	100	6500	480	63
Z600PA100C	625	825	900	1050	240	1570	100	6500	480	63
Z625PA80A	625	825	900	1100	230	1650	100	6500	480	63
Z660PA100A	660	850	940	1210	250	1820	100	6500	400	63
Z660PA100C	660	850	940	1100	250	1650	100	6500	400	63
Z1000PA100A	1000	1350	1460	1880	380	2800	100	6500	250	63
Z1000PA100C	1000	1350	1460	1720	380	2580	100	6500	250	63

Maximum Power Dissipation - 1.0 watt

MOVs having the Underwriters Laboratory Recognized Component Mark, conform to UL 1414, UL1449 second edition and CSA class 222101. CKE's UL recognized parts are listed on file #E90510. Typical response time is less than 15 nanoseconds.

All parts RoHS compliant

CKE



EH Series

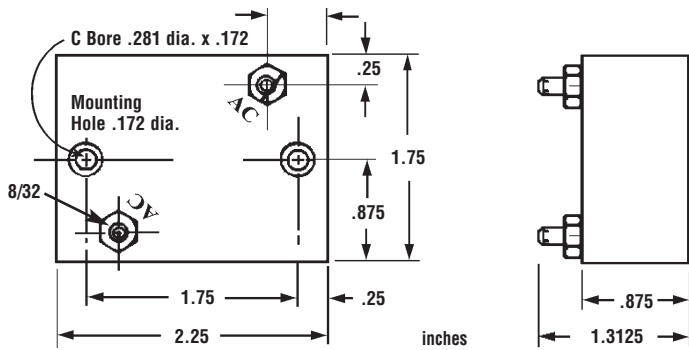


FIGURE 65

CKE Part Number	Continuous		Transient Characteristics								Figure
	RMS Voltage VAC Volts	DC Voltage VDC Volts	Peak Current (8/20µs) Ipk Amperes	Varistors @ 1 mA DC Test Current			Clamping Voltage (8/20µs)		Typical Capacitance Picofarads		
				W-Sec. Joules	Min. Volts	Nom. Volts	Max. Volts	Vc Volts		Ip Amps	
Z130EH4	130	175	200	25000	184	200	228	330	200	6800	65
Z130EH5	130	175	270	32000	184	200	228	325	200	8500	65
Z130EH6	130	175	370	40000	184	200	228	320	200	10200	65
Z150EH4	150	200	220	25000	212	240	268	385	200	6800	65
Z150EH5	150	200	300	32000	212	240	268	380	200	8500	65
Z150EH6	150	200	400	40000	212	240	268	375	200	10200	65
Z250EH4	250	330	330	25000	354	390	429	635	200	4000	65
Z250EH5	250	330	370	32000	354	390	429	630	200	5000	65
Z250EH6	250	330	650	40000	354	390	429	620	200	6000	65
Z275EH4	275	369	360	25000	389	430	473	690	200	3800	65
Z275EH5	275	369	400	32000	389	430	473	685	200	4750	65
Z275EH6	275	369	700	40000	389	430	473	685	200	5700	65
Z320EH4	320	420	390	25000	462	510	539	830	200	3600	65
Z320EH5	320	420	460	32000	462	510	539	820	200	4500	65
Z320EH6	320	420	750	40000	462	510	539	810	200	5400	65
Z420EH4	420	560	400	25000	610	680	748	1050	200	2040	65
Z420EH5	420	560	600	32000	610	680	748	1025	200	2720	65
Z420EH6	420	560	850	40000	610	680	748	1000	200	3780	65
Z480EH4	480	640	450	25000	670	750	824	1160	200	2320	65
Z480EH5	480	640	650	32000	670	750	824	1140	200	2900	65
Z480EH6	480	640	900	40000	670	750	824	1120	200	3480	65
Z510EH4	510	675	500	25000	735	820	910	1280	200	2320	65
Z510EH5	510	675	700	32000	735	820	910	1270	200	2900	65
Z510EH6	510	675	950	40000	735	820	910	1250	200	3480	65
Z575EH4	575	730	550	25000	805	910	1005	1500	200	2320	65
Z575EH5	575	730	770	32000	805	910	1005	1490	200	2900	65
Z575EH6	575	730	1050	40000	805	910	1005	1480	200	3480	65
Z600EH4	600	810	575	25000	900	1000	1100	1650	200	1320	65
Z600EH5	600	810	810	32000	900	1000	1100	1640	200	1640	65
Z600EH6	600	810	1100	40000	900	1000	1100	1620	200	1980	65
Z660EH4	660	850	600	25000	940	1050	1160	1780	200	1320	65
Z660EH5	660	850	900	32000	940	1050	1160	1760	200	1640	65
Z660EH6	660	850	1250	40000	940	1050	1160	1740	200	1980	65

All parts RoHS compliant



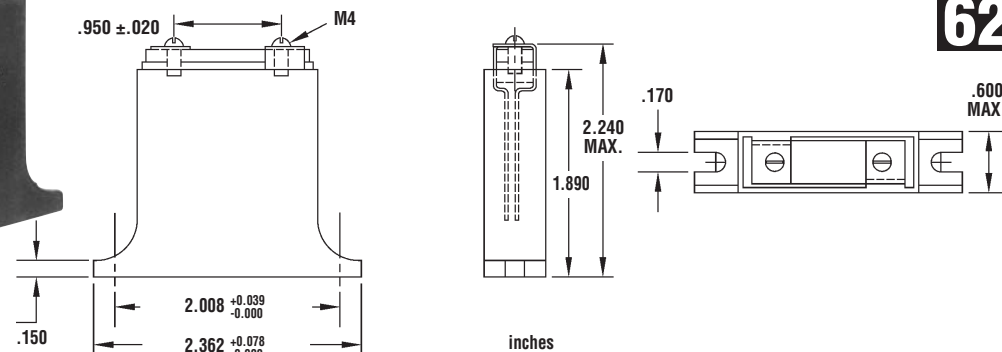
HIGH ENERGY METAL OXIDE VARISTORS – Z33M & Z40M SERIES

SUPPRESSION



Z33M & Z40M Series

FIGURE 62



CKE Part Number	Voltage Ratings				Energy Joules	Maximum Operating Conditions			Typical Capacitance pF	Figure
	VAC Volts RMS	VDC Volts	Varistor Peak Voltage			Max. Clamping Voltage		Peak Current (8x20 μ s) Amps		
			Min.	Max.		Volts	Amp.			
			Volts	Volts		Volts	Amp.			
Z33M Series										
☞ Z33M201	130	170	180	220	210	340	200	25000	4100	62
☞ Z33M241	150	200	216	264	240	395	200	25000	3400	62
☞ Z33M271	175	225	243	297	255	455	200	25000	2900	62
☞ Z33M331	210	275	297	363	320	550	200	25000	2600	62
☞ Z33M361	230	300	324	396	325	595	200	25000	2300	62
☞ Z33M391	250	320	351	429	350	650	200	25000	2100	62
☞ Z33M431	275	350	387	473	400	710	200	25000	2000	62
☞ Z33M471	300	385	423	517	405	775	200	25000	1700	62
☞ Z33M511	320	415	459	561	415	845	200	25000	1600	62
☞ Z33M621	385	505	558	682	425	1025	200	25000	1300	62
☞ Z33M681	420	560	612	748	450	1120	200	25000	1300	62
☞ Z33M751	460	615	675	825	500	1240	200	25000	1100	62
☞ Z33M781	485	640	702	858	520	1290	200	25000	1100	62
☞ Z33M821	510	670	738	902	545	1355	200	25000	1000	62
☞ Z33M911	550	745	819	1001	600	1500	200	25000	950	62
☞ Z33M951	580	760	855	1045	600	1500	200	25000	900	62
☞ Z33M102	625	825	900	1100	655	1650	200	25000	840	62
☞ Z33M112	680	895	990	1210	725	1815	200	25000	770	62
Z40M Series										
☞ Z40M201	130	170	180	220	310	340	300	40000	7900	62
☞ Z40M241	150	200	216	264	360	395	300	40000	6600	62
☞ Z40M271	175	225	243	303	380	455	300	40000	5600	62
☞ Z40M331	215	275	297	363	430	545	300	40000	5000	62
☞ Z40M361	230	300	324	396	460	595	300	40000	4400	62
☞ Z40M391	250	320	351	429	490	650	300	40000	4100	62
☞ Z40M431	275	350	387	473	550	710	300	40000	3800	62
☞ Z40M471	300	385	423	517	590	775	300	40000	3400	62
☞ Z40M511	320	415	459	561	640	845	300	40000	3200	62
☞ Z40M621	385	505	558	682	800	1025	300	40000	2600	62
☞ Z40M681	420	560	612	748	830	1120	300	40000	2400	62
☞ Z40M751	460	615	675	825	850	1240	300	40000	2200	62
☞ Z40M781	485	640	702	858	890	1290	300	40000	2100	62
☞ Z40M821	510	670	738	902	920	1355	300	40000	2000	62
☞ Z40M911	550	745	819	1001	960	1500	300	40000	1800	62
☞ Z40M951	580	760	855	1045	1000	1500	300	40000	1700	62
☞ Z40M102	625	825	900	1100	1020	1650	300	40000	1600	62
☞ Z40M112	680	895	990	1210	1100	1815	300	40000	1500	62

Maximum Power Dissipation: Z33M - 1.5 watts, Z40M - 2.0 watts

MOV's having the Underwriters Laboratory Recognized Component Mark, ☞, conform to UL 1414, UL1449 second edition and CSA class 222101. CKE's UL recognized parts are listed on file #E90510. Typical response time is less than 15 nanoseconds. All parts RoHS compliant



SUPPRESSION



Z60M Series



FIGURE 66

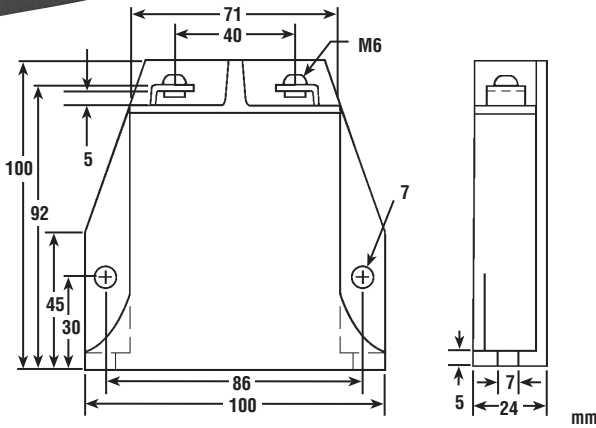
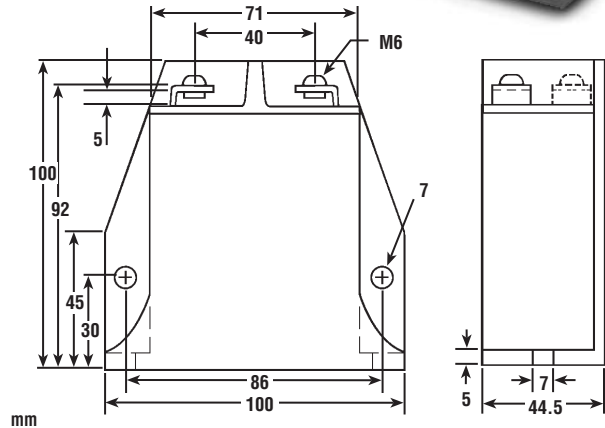


FIGURE 71

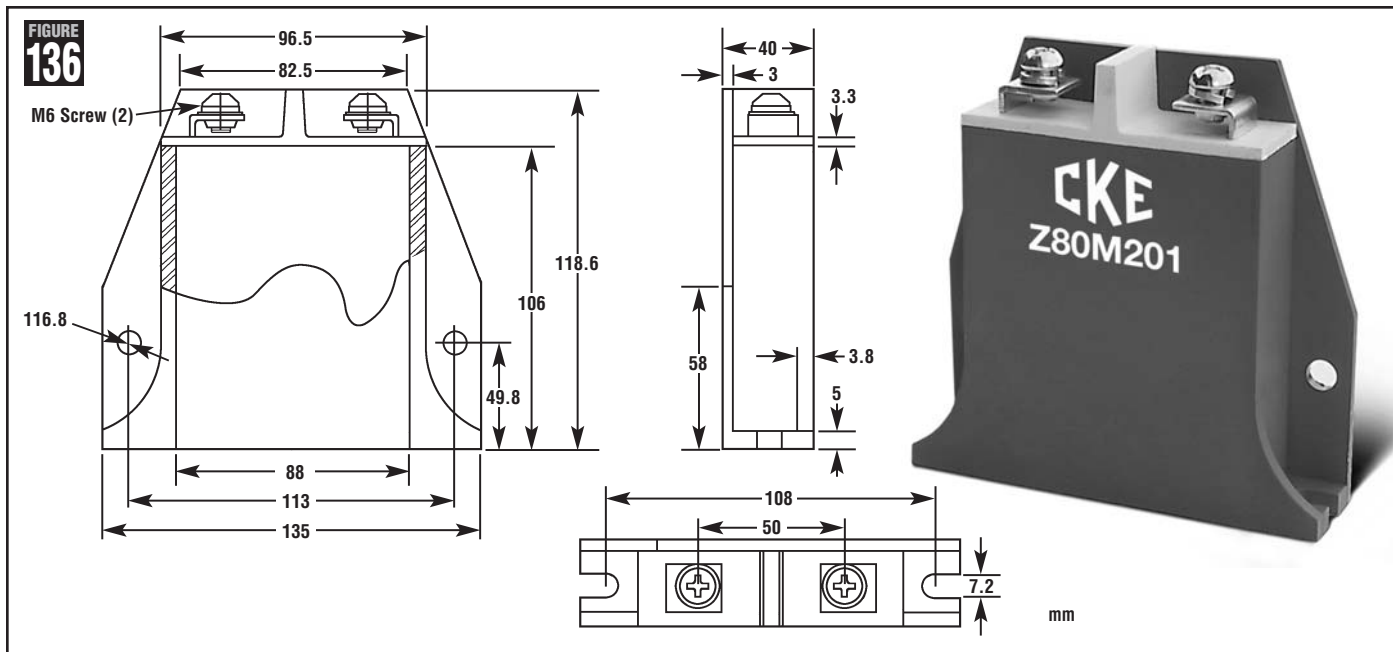


CKE Part Number	Voltage Ratings				Energy Max. Joules	Maximum Operating Conditions			Typical Capacitance pF	Figure
	VAC	VDC Volts RMS	Varistor Peak Voltage			Max. Clamping Voltage		Peak Current (8x20 μ s) Amps		
			Volts	Min. Volts		Volts	Amp.			
⚡ Z60M201	130	175	184	228	490	340	500	70000	14000	66
⚡ Z60M241	150	200	212	268	570	400	500	70000	10000	66
⚡ Z60M271	175	225	243	297	630	455	500	70000	10000	66
⚡ Z60M331	210	275	297	363	680	550	500	70000	8500	66
⚡ Z60M361	230	300	324	396	730	595	500	70000	7700	66
⚡ Z60M391	250	330	354	429	880	620	500	70000	7100	66
⚡ Z60M431	275	369	389	473	950	680	500	70000	6600	66
⚡ Z60M471	300	385	423	517	1000	775	500	70000	5900	66
⚡ Z60M511	320	420	462	539	1100	760	500	70000	5700	66
⚡ Z60M621	385	505	558	682	1300	1025	500	70000	4600	66
⚡ Z60M681	420	560	610	748	1500	1060	500	70000	4400	66
⚡ Z60M751	480	640	670	825	1600	1160	500	70000	3900	66
⚡ Z60M781	485	640	702	858	1650	1290	500	70000	3800	66
⚡ Z60M821	510	675	735	910	1800	1300	500	70000	3500	66
⚡ Z60M911	575	730	805	1000	2100	1420	500	70000	3300	66
⚡ Z60M951	580	760	855	1045	2100	1500	500	70000	3100	66
⚡ Z60M102	660	850	940	1160	2300	1640	500	70000	2900	66
⚡ Z60M112	680	895	990	1210	2300	1640	500	70000	2700	66
⚡ Z60M122	750	970	1080	1320	2600	1880	500	70000	2400	66
⚡ Z60M142	880	1150	1260	1540	3200	2290	500	70000	2100	66
⚡ Z60M162	900	1200	1440	1760	3300	2700	500	70000	1800	66
⚡ Z60M182	1100	1400	1620	2060	3800	2940	500	70000	2200	66
⚡ Z60M222	1400	1750	2020	2550	5000	3600	500	70000	1800	71
⚡ Z60M272	1700	2150	2500	3030	6000	4300	500	70000	1500	71
⚡ Z60M332	2000	2500	2970	3630	7500	5200	500	70000	1200	71
⚡ Z60M392	2400	3000	3510	4290	8600	6200	500	70000	1000	71
⚡ Z60M472	2800	3500	4230	5170	10000	7400	500	70000	800	71

Maximum Power Dissipation: Z60M - 2.5 watts

MOVs having the Underwriters Laboratory Recognized Component Mark, ⚡, conform to UL 1414, UL1449 second edition and CSA class 222101. CKE's UL recognized parts are listed on file #E90510. Typical response time is less than 15 nanoseconds.

All parts RoHS compliant

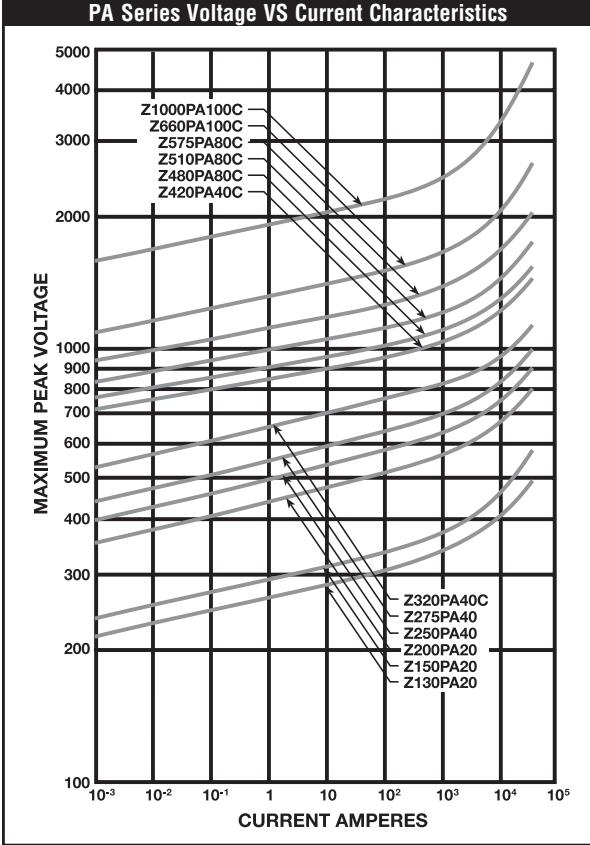


CKE Part Number	Maximum Allowable Voltage		Varistor Voltage V1mA (V)	Clamping Voltage (Max.)		Maximum Peak Current (8/20µs)		Maximum Energy (Joule) 2ms	Typical Capacitance (reference)	Figure
	Acrms (V)	DC (V)		VC (V)	IP (A)	1 Time (A)	2 Times (A)			
	Z80M201	130	170	200(185-225)	340	800	100000	80000	660	28000
Z80M241	150	200	240(216-264)	395	800	100000	80000	800	23000	136
Z80M271	175	225	270(243-297)	455	800	100000	80000	900	20000	136
Z80M331	210	275	330(297-363)	550	800	100000	80000	1000	18000	136
Z80M361	230	300	360(324-396)	595	800	100000	80000	1200	16000	136
Z80M391	250	320	390(351-429)	650	800	100000	80000	1300	14000	136
Z80M431	275	350	430(387-473)	710	800	100000	80000	1400	13000	136
Z80M471	300	385	470(423-517)	775	800	100000	80000	1500	12000	136
Z80M511	320	415	510(459-561)	845	800	100000	80000	1600	11000	136
Z80M621	385	505	620(558-682)	1025	800	100000	80000	2000	9000	136
Z80M681	420	560	680(612-748)	1120	800	100000	80000	2200	8500	136
Z80M751	460	615	750(675-825)	1240	800	100000	80000	2500	7700	136
Z80M781	485	640	780(702-858)	1290	800	100000	80000	2600	7200	136
Z80M821	510	670	820(738-902)	1355	800	100000	80000	2800	6900	136
Z80M911	550	745	910(819-1001)	1500	800	100000	80000	3100	6500	136
Z80M951	575	765	950(855-1045)	1570	800	100000	80000	3300	6200	136
Z80M102	625	825	1000(900-1100)	1650	800	100000	80000	3400	5800	136
Z80M112	680	895	1100(990-1210)	1815	800	100000	80000	3600	5200	136
Z80M122	750	970	1200(1062-1300)	2100	800	100000	80000	4000	4800	136
Z80M142	880	1150	1400(1245-1520)	2290	800	100000	80000	5000	4000	136
Z80M162	1000	1200	1600(1414-1728)	2700	800	100000	80000	6000	3200	136
Z80M182	1100	1400	1800(1620-2060)	3030	800	100000	80000	7000	2900	136

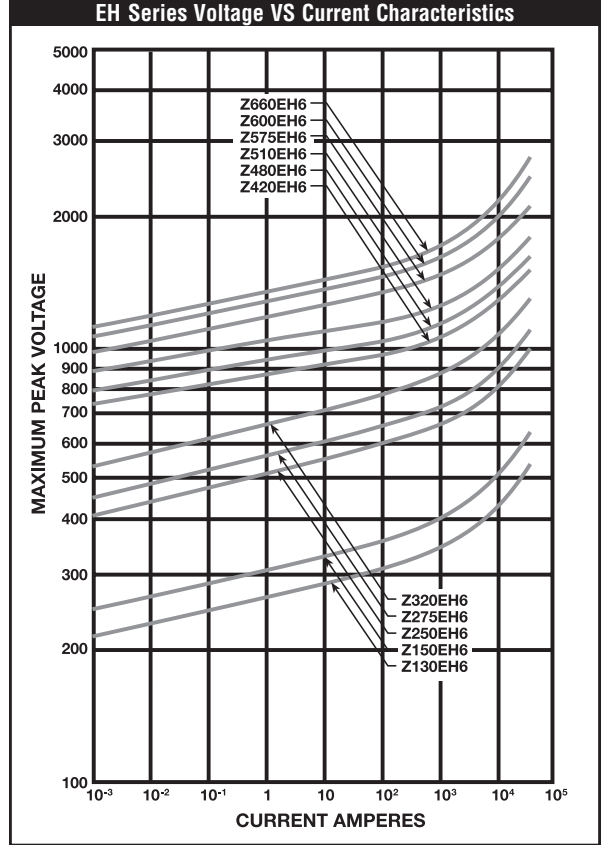
Maximum Power Dissipation: Z60M - 2.5 watts
 MOVs having the Underwriters Laboratory Recognized Component Mark, conform to UL 1414, UL1449 second edition and CSA class 222101. CKE's UL recognized parts are listed on file #E90510. Typical response time is less than 15 nanoseconds.
 All parts RoHS compliant



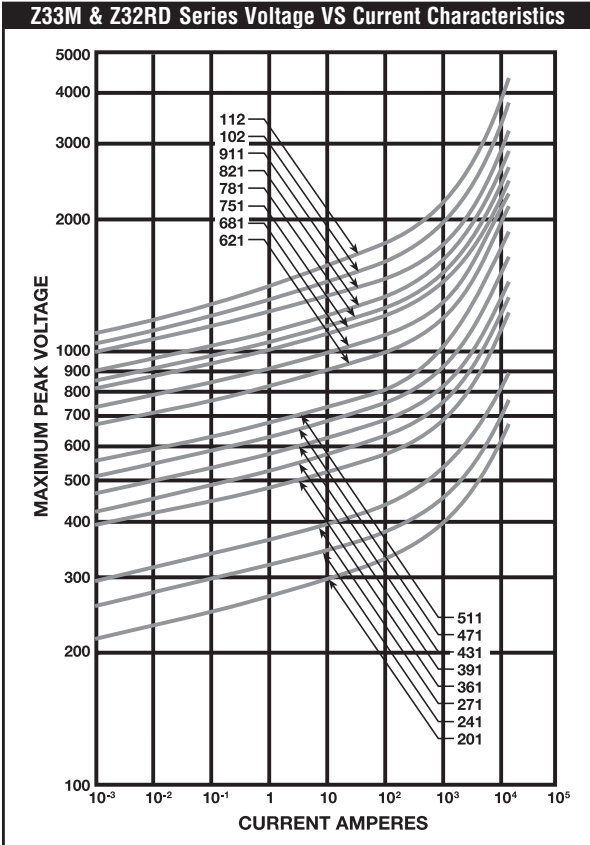
PA Series Voltage VS Current Characteristics



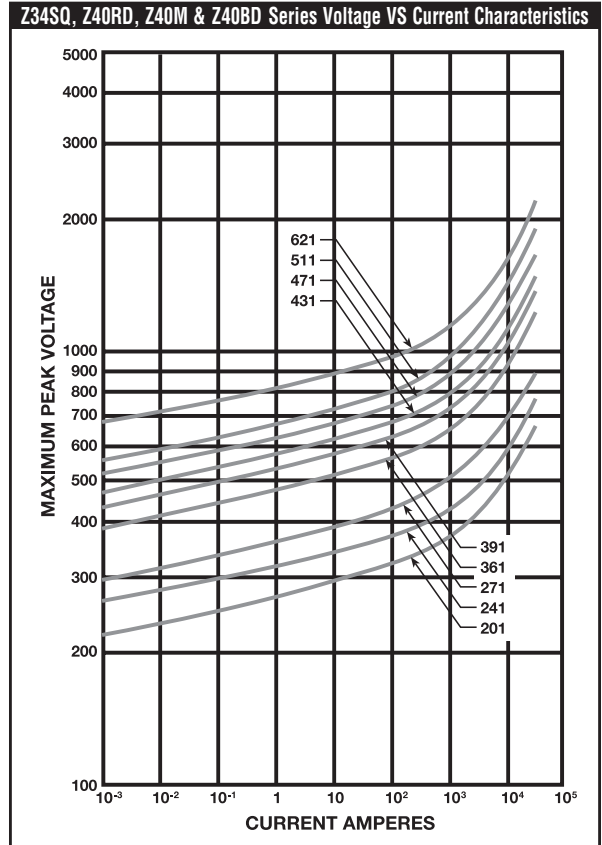
EH Series Voltage VS Current Characteristics



Z33M & Z32RD Series Voltage VS Current Characteristics



Z34SQ, Z40RD, Z40M & Z40BD Series Voltage VS Current Characteristics



See website www.cke.com or contact factory for additional information on characteristic curves



METAL OXIDE VARISTOR DISKS

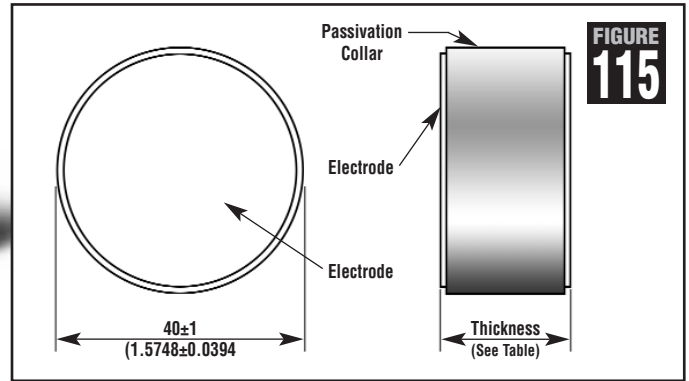
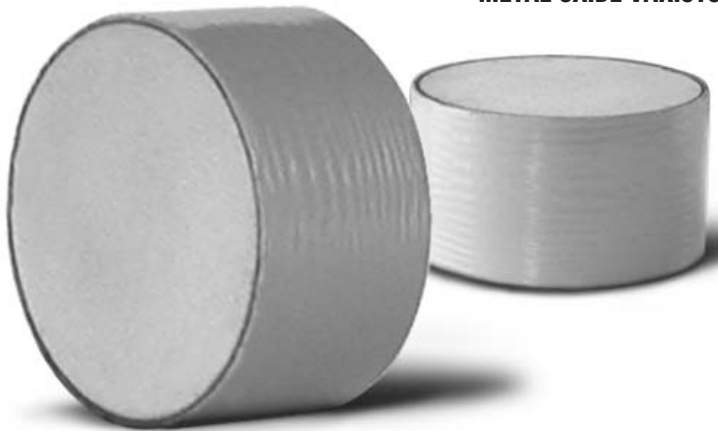


FIGURE 115

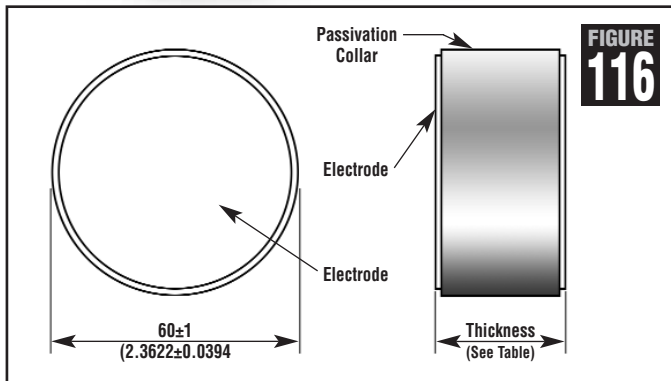


FIGURE 116

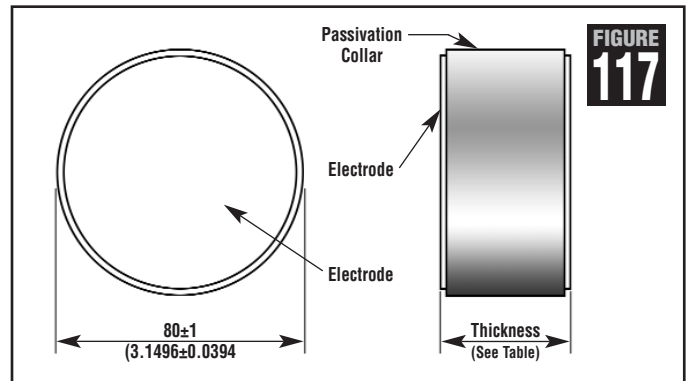


FIGURE 117

CKE Part Number	Max Allowable Voltage		Varistor Voltage @1mA V _{NOM} V	Clamping Voltage (Max)		Max Peak Current (8/20 μs) A	Max Energy (Joules) 10/1000 μs	Typical Capacitance @kHz (pF)	Thickness	
	AC _{RMS} V	DC V		V _C V	I _P A				T±0.0394 inches	T±1 mm
Z40BD Series										
Z40BD201	130	170	200 (185-225)	340	300	40000	310	8400	0.0449	1.140
Z40BD241	150	200	240 (216-264)	395	300	40000	360	8000	0.0539	1.370
Z40BD271	175	225	270 (243-297)	455	300	40000	390	7600	0.0606	1.540
Z40BD331	210	275	330 (297-363)	550	300	40000	460	6700	0.0744	1.890
Z40BD361	230	300	360 (324-396)	595	300	40000	475	6200	0.0811	2.060
Z40BD391	250	320	390 (351-429)	650	300	40000	490	5100	0.0878	2.230
Z40BD431	275	350	430 (387-473)	710	300	40000	550	4900	0.0969	2.460
Z40BD471	300	385	470 (423-517)	775	300	40000	600	4300	0.1059	2.690
Z40BD511	320	415	510 (459-561)	845	300	40000	640	4200	0.1146	2.910
Z40BD621	385	505	620 (558-682)	1025	300	40000	720	3800	0.1394	3.540
Z40BD681	420	560	680 (612-748)	1120	300	40000	750	3500	0.1531	3.890
Z40BD751	460	615	750 (675-825)	1240	300	40000	780	3200	0.1689	4.290
Z40BD781	485	640	780 (702-858)	1290	300	40000	820	3000	0.1756	4.460
Z40BD821	510	670	820 (738-902)	1355	300	40000	900	2900	0.1846	4.690
Z40BD911	550	745	910 (819-1001)	1500	300	40000	960	2200	0.2047	5.200
Z40BD951	575	765	950 (855-1045)	1570	300	40000	1000	2000	0.2138	5.430
Z40BD102	625	825	1000 (900-1100)	1650	300	40000	1055	1800	0.2248	5.710
Z40BD112	680	895	1100 (990-1210)	1815	300	40000	1155	1600	0.2476	6.290
Z40BD122	750	970	1200 (1062-1300)	2100	300	40000	1200	1500	0.2701	6.860
Z40BD142	880	1150	1400 (1245-1520)	2290	300	40000	1300	1400	0.3150	8.000
Z40BD162	1000	1200	1600 (1414-1728)	2700	300	40000	1400	1300	0.3598	9.140

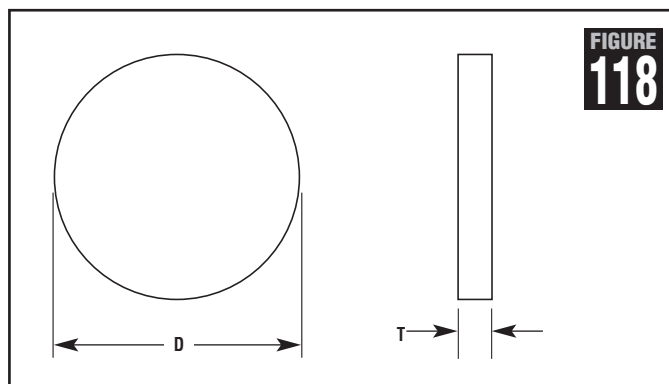


CKE Part Number	Max Allowable Voltage		Varistor Voltage @1mA V _{NOM} V	Clamping Voltage (Max)		Max Peak Current (8/20 μs) A	Max Energy (Joules) μs	Typical Capacitance @kHz pF	Thickness	
	AC _{RMS} V	DC V		V _c V	I _p A				T±0.0394 inches	T±1 mm
Figure 116										
Z60BD Series										
Z60BD391	250	320	390 (351-429)	650	500	70000	880	9000	0.0878	2.230
Z60BD431	275	350	430 (387-473)	710	500	70000	950	8500	0.0969	2.460
Z60BD471	300	350	470 (423-517)	775	500	70000	1000	7600	0.1059	2.690
Z60BD511	320	415	510 (459-561)	845	500	70000	1100	7000	0.1146	2.910
Z60BD621	385	505	620 (558-682)	1025	500	70000	1200	6600	0.1394	3.540
Z60BD681	420	560	680 (612-748)	1120	500	70000	1500	6200	0.1531	3.890
Z60BD751	460	615	750 (675-825)	1240	500	70000	1650	5800	0.1689	4.290
Z60BD781	485	640	780 (702-858)	1290	500	70000	1700	5500	0.1756	4.460
Z60BD821	510	670	820 (738-902)	1355	500	70000	1800	5000	0.1846	4.690
Z60BD911	550	745	910 (819-1001)	1500	500	70000	1900	4500	0.2047	5.200
Z60BD951	575	765	950 (855-1045)	1570	500	70000	2100	4200	0.2138	5.430
Z60BD102	625	825	1000 (900-1100)	1650	500	70000	2200	4000	0.2248	5.710
Z60BD112	680	895	1100 (990-1210)	1815	500	70000	2300	3800	0.2476	6.290
Z60BD122	750	970	1200 (1062-1300)	2100	500	70000	2600	3500	0.2701	6.860
Z60BD142	880	1150	1400 (1245-1520)	2290	500	70000	3200	3000	0.3145	8.000
Z60BD162	1000	1200	1600 (1414-1728)	2700	500	70000	3200	2500	0.3598	9.140
Z60BD182	1100	1400	1800 (1620-2060)	3030	500	70000	3200	2200	0.4051	10.290
Z60BD222	1400	1750	2200 (2020-2200)	3580	500	70000	5000	1800	0.4949	12.570
Z60BD272	1700	2150	2700 (2500-3030)	4400	500	70000	6000	1500	0.6075	15.430
Z60BD332	2000	2500	3300 (2970-3300)	5375	500	70000	7500	1200	0.7437	18.890
Z60BD392	2400	3000	3900 (3510-4290)	6360	500	70000	8600	1000	0.8776	22.290
Z60BD472	2800	3500	4700 (4230-5170)	7665	500	70000	10000	800	1.0587	26.890

CKE Part Number	Max Allowable Voltage		Varistor Voltage @1mA V _{NOM} V	Clamping Voltage (Max)		Max Peak Current (8/20 μs) A	Max Energy (Joules) μs	Typical Capacitance @kHz pF	Thickness	
	AC _{RMS} V	DC V		V _c V	I _p A				T±0.0394 inches	T±1 mm
Figure 117										
Z80BD Series										
Z80BD431	275	350	430 (387-473)	710	800	100000	1400	13000	0.0969	2.460
Z80BD471	300	385	470 (423-517)	775	800	100000	1500	12000	0.1059	2.690
Z80BD511	320	415	510 (459-561)	845	800	100000	1600	11000	0.1146	2.910
Z80BD621	385	505	620 (558-682)	1025	800	100000	2000	9000	0.1394	3.540
Z80BD681	420	560	680 (612-748)	1120	800	100000	2200	8500	0.1531	3.890
Z80BD751	460	615	750 (675-825)	1240	800	100000	2500	7700	0.1689	4.290
Z80BD781	485	640	780 (702-858)	1290	800	100000	2600	7200	0.1756	4.460
Z80BD821	510	670	820 (738-902)	1355	800	100000	2800	6900	0.1846	4.690
Z80BD911	550	745	910 (819-1001)	1500	800	100000	3100	6500	0.2047	5.200
Z80BD951	575	765	950 (855-1045)	1570	800	100000	3300	6200	0.2138	5.430
Z80BD102	625	825	1000 (900-1100)	1650	800	100000	3400	5800	0.2248	5.710
Z80BD112	680	895	1100 (990-1210)	1815	800	100000	3600	5200	0.2476	6.290
Z80BD122	750	970	1200 (1062-1300)	2100	800	100000	4000	4800	0.2701	6.860
Z80BD142	880	1150	1400 (1245-1520)	2290	800	100000	5000	4000	0.3150	8.000
Z80BD162	1000	1200	1600 (1414-1728)	2700	800	100000	6000	3200	0.3598	9.140
Z80BD182	1100	1400	1800 (1620-2060)	3030	800	100000	7000	2900	0.4051	10.290
Z80BD222	1400	1750	2200 (2020-2200)	3580	800	100000	8500	2400	0.4949	12.570
Z80BD272	1700	2150	2700 (2500-3030)	4400	800	100000	9800	2000	0.6075	15.430
Z80BD332	2000	2500	3300 (2970-3300)	5375	800	100000	1050	1600	0.7437	18.890
Z80BD392	2400	3000	3900 (3510-4290)	6360	800	100000	1200	1200	0.8776	22.290
Z80BD472	2800	3500	4700 (4230-5170)	7665	800	100000	1300	1000	1.0587	26.890



SURGE ARRESTOR DISCS



Product Features

- Available in several standard voltages
- Can be put in series to attain required voltage
- Meets IEC standard IEC60099-4
- High surge capability and capacity

Applications

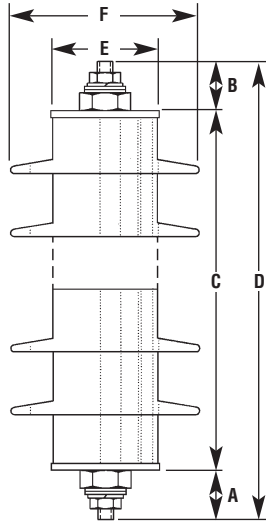
- AC transmission or transformation equipment
- Can be enclosed in either porcelain or silicon rubber housing

CKE Part Number	Overall Dimension mm Figure 118		D.C. Reference Voltage U_R (1mA) (kV)	Max Residual Voltage Ratio (8/20 μ s)	Current Impulse Withstand Capacity		Recommended Rated Voltage kV (r.m.s.)	MCOV	
	Diameter "D"	Thickness "T"			4/10 μ s (kA)	2ms (A)		MCOV (kV)	I_R μ A
ARD32x3	32 \pm 1	3 \pm 0.5	0.6 - 0.8	1.88 (@5kA)	40	100	0.28	0.48	150
ARD32x6	32 \pm 1	6 \pm 0.5	1.2 - 1.6	1.88 (@5kA)	40	100	0.50	0.96	150
ARD32x21	31 \pm 1	21 \pm 1	4.0 - 4.8	1.88 (@5kA)	40	100	3.00	3.20	150
ARD32x31	32 \pm 1	31 \pm 1	6.2 - 7.0	1.88 (@5kA)	40	100	4.50	4.96	150
ARD32x42	32 \pm 1	42 \pm 1	8.4 - 9.2	1.88 (@5kA)	40	100	6.00	6.72	150
ARD35x3	35 \pm 1	3 \pm 0.5	0.6 - 0.8	1.85 (@5kA)	65	100	0.28	0.48	150
ARD35x6	35 \pm 1	6 \pm 0.5	1.2 - 1.6	1.85 (@5kA)	65	100	0.50	0.96	150
ARD35x21	35 \pm 1	21 \pm 1	4.0 - 4.8	1.85 (@5kA)	65	100	3.00	3.20	150
ARD35x31	35 \pm 1	31 \pm 1	6.2 - 7.0	1.85 (@5kA)	65	100	4.50	4.96	150
ARD35x42	35 \pm 1	42 \pm 1	8.4 - 9.2	1.85 (@5kA)	65	100	6.00	6.72	150
ARD40x21	40.5 \pm 1	21 \pm 1	4.0 - 4.8	1.80@5kA/1.89@10kA	100	200	3.00	3.20	160
ARD40x31	40.5 \pm 1	31 \pm 1	6.2 - 7.0	1.80@5kA/1.89@10kA	100	200	4.50	4.96	160
ARD45x21	45 \pm 1	21 \pm 1	4.0 - 4.8	1.75@5kA/1.84@10kA	100	300	3.00	3.20	170
ARD45x31	45 \pm 1	31 \pm 1	6.2 - 7.0	1.75@5kA/1.84@10kA	100	300	4.50	4.96	170
ARD52x21	52.5 \pm 1	21 \pm 1	4.0 - 4.8	1.72@5kA/1.81@10kA	100	400	3.00	6.72	180
ARD52x31	52.1 \pm 1	31 \pm 1	6.2 - 7.0	1.72@5kA/1.81@10kA	100	400	4.50	4.96	180
ARD62x21	62.5 \pm 1	21 \pm 1	4.0 - 4.8	1.69@5kA/1.78@10kA	100	600	3.00	3.20	200
ARD62x31	62.5 \pm 1	31 \pm 1	6.2 - 7.0	1.69@5kA/1.78@10kA	100	600	4.50	4.96	200

- Note:**
1. Metal Oxide Discs can be used in porcelain housing or silicon rubber housing to assemble various surge arrestors, medium is air or SF6 and etc.
 2. Metal Oxide Discs can meet with the technical requirements of all types of metal oxide surge arrestors for A.C. systems according to IEC standard IEC600 99-4.



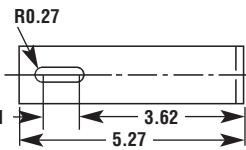
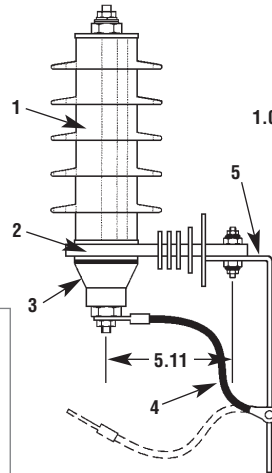
FIGURE 137



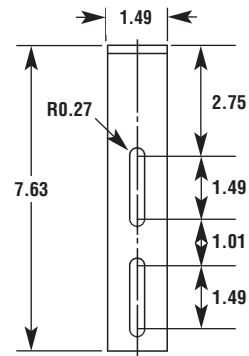
CKE Part Number	Typical Dimensions (in)					
	'A'	'B'	'C'	'D'	'E'	'F'
CKE10W-3/8.5	1.38	1.38	3.15	5.91	2.24	4.06
CKE10W-6/17	1.38	1.38	4.33	7.09	2.24	4.06
CKE10W-9/29	1.38	1.38	5.51	8.27	2.24	4.06
CKE10W-10/33	1.38	1.38	5.51	8.27	2.24	4.06
CKE10W-12/34	1.38	1.38	5.51	8.27	2.24	4.06
CKE10W-15/42.5	1.38	1.38	6.69	9.45	2.24	4.06
CKE10W-18/51	1.38	1.38	7.87	10.63	2.24	4.06
CKE10W-21/59.5	1.38	1.38	9.06	11.81	2.24	4.06
CKE10W-24/68	1.38	1.38	10.24	12.99	2.24	4.06
CKE10W-27/76.5	1.38	1.38	10.24	12.99	2.24	4.06
CKE10W-30/85	1.38	1.38	12.60	15.35	2.24	4.06
CKE10W-33/93.5	1.38	1.38	12.60	15.35	2.24	4.06
CKE10W-36/102	1.38	1.38	13.78	16.54	2.24	4.06
CKE10W-42/119	1.38	1.38	16.14	18.90	2.24	4.06
CKE10W-60/170	1.38	1.38	22.05	24.80	2.24	4.06
CKE10W-90/232	1.38	1.38	37.01	39.76	3.18	5.75
CKE10W-72/201	1.38	1.38	33.27	36.02	3.18	5.75
CKE10W-90/240	1.38	1.38	51.18	53.94	4.58	8.27
CKE10W-120/325	1.38	1.38	51.18	53.94	4.58	8.27
CKE10W-138/375	1.38	1.38	55.28	58.03	4.58	8.27

Features:

- Made from a durable polymer housing
- Meets IEC 60099-4 and IEEE C 62.11 standards
- Available with mounting hardware
- Most typical voltages are available



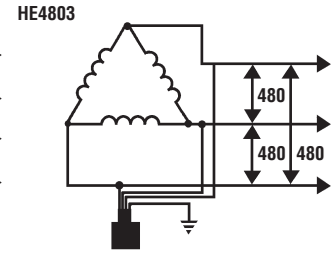
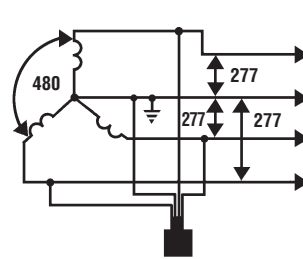
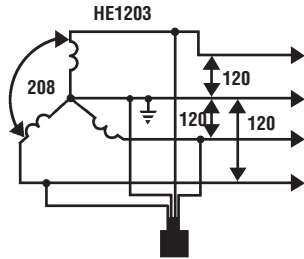
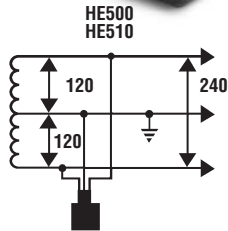
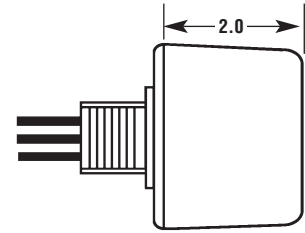
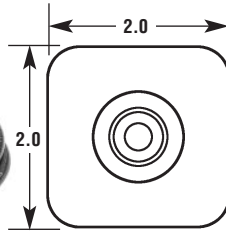
1. Assembly Body
2. Insulation Base
3. Disconnecter
4. 30CM Soft Grounding
5. Installation Bracket



CKE Part Number	Max. Continuous operating V_{MCOV} , kV _{RMS}	Rated voltage, VR, kV _{RMS}	Rated discharge current kA peak value	Max. DC reference voltage V_{1mA} , kV	Max. residual voltage at steep impulse 1/10us, kV	Max. residual voltage at lightning impulse 8/20us, kV	Max. residual voltage at switching impulse 30/60us, kV	Withstand capability at current impulse 4/10us, kV	Housing insulation level at lightning impulse, kV	Housing insulation level at power frequency in wet 1 min., kV	Mechanical strength, torsional/cantilever (N.m/N)	Creepage distance, mm
CK10W-3/8.5	2.4	3	10	4.3	9.8	8.5	7.2	100	35	15	60/250	160
CK10W-6/17	4.8	6	10	8.6	19.5	17	14.4	100	45	20	60/250	220
CK10W-9/29	7.7	9	10	14.8	33.5	29	25	100	75	30	60/250	290
CK10W-10/33	8.5	10	10	16.4	38	33	28	100	75	30	60/250	290
CK10W-12/34	9.6	12	10	17.2	39.1	34	28.9	100	75	30	60/250	290
CK10W-15/42.5	12	15	10	21.5	48.9	42.5	36	100	75	30	60/250	355
CK10W-18/51	14.4	18	10	25.8	58.5	51	43.3	100	90	40	60/250	420
CK10W-21/59.5	16.8	21	10	30.1	68.3	59.5	50.5	100	105	45	60/250	485
CK10W-24/68	19.2	24	10	34.4	78.2	68	57.8	100	125	50	60/250	545
CK10W-27/76.5	21.6	27	10	38.7	87.8	76.5	65	100	125	50	60/250	550
CK10W-30/85	24	30	10	43	97.8	85	72.2	100	145	60	60/250	675
CK10W-33/93.5	26.4	33	10	47.3	107.5	93.5	79.5	100	145	60	60/250	675
CK10W-36/102	28.8	36	10	51.6	117.3	102	86.7	100	170	70	60/250	740
CK10W-42/119	33.6	42	10	60.2	136.8	119	101.2	100	185	80	60/250	875
CK10W-60/170	48	60	10	86	195.5	170	144.5	100	221	110	60/250	1250
CK10W-90/232	72.5	90	10	130	271	232	190	100	450	185	1412	2055
CK10W-72/201	57	72	10	103	231	201	173	100	310	132	780	1860
CK10W-90/240	70	90	10	132	276	240	207	100	450	185	1412	3100
CK10W-120/325	96	120	10	175	356	325	267	100	450	185	1412	3100
CK10W-138/375	111	138	10	202	450	375	335	100	520	210	1412	3540



FIGURE 138



CKE Part Number	Service VAC	Phase	Wire Configuration	Typical Clamp Voltage 8 X 20uS Current Wave (Line to Ground)				
				1.5kA	5kA	10kA	10kA	25kA
HE500	120/240 175V Max (rms)	Single	Line 1 (black) Line 2 (black) Neutral/Ground (white)	500V(1) 625V(2)	650V(1) 950V(2)	750V(1) 1400V(2)	950V(1) 2200V(2)	1050V(1) 2600V(2)
HE510	120/240 175V Max (rms)	Single	Line 1 (black) Line 2 (black) Neutral/Ground (white)	500V(1) 600V(2)	700V(1) 975V(2)	850V(1) 1450V(2)	1500V(1) 2700V(2)	
HE1203	120/208V 175V Max (rms)	Three	Line 1 (black) Line 2 (black) Line 3 (black) Neutral/Ground (white)	500V(1) 625V(2)	650V(1) 950V(2)	750V(1) 1400V(2)	950V(1) 2200V(2)	1050V(1) 2600V(2)
HE4803	277/480V 550V Max (rms)	Three	Line 1 (black) Line 2 (black) Line 3 (black) Neutral/Ground (white)	1450V(1) 1550V(2)	1650V(1) 2000V(2)	1850V(1) 2450V(2)	2200V(1) 3400V(2)	2400V(1) 3950V(2)

Note (1) 1" leads (2) 18" leads

UL File E11269

Protection for other service voltage configurations available. Consult the factory at www.cke.com

Category A

Description: Long branch circuits more than 10 meters (33 feet) from a Category B location.

UL Test: Ring wave with 6,000 volt, 200 Amps.

Category B

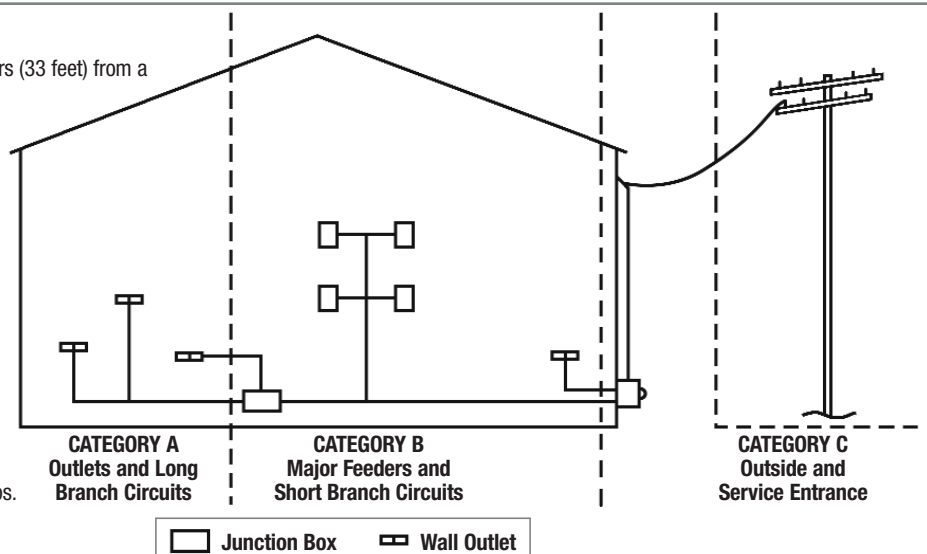
Description: Main Feeder Circuits, short branch circuits, distribution panels, heavy appliance circuits plus receptacles less than 10 meters (33 feet) from a category C circuit.

UL Test: Ringwave of 6,000 volts and 500 amps plus impulse wave of 6,000 volts and 3,000 Amps.

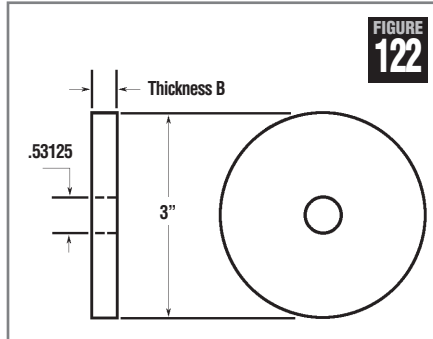
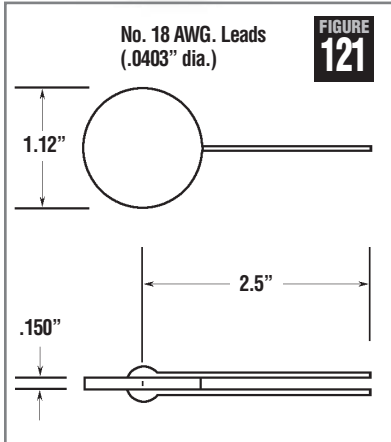
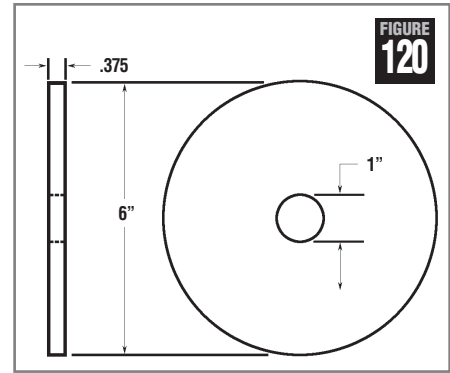
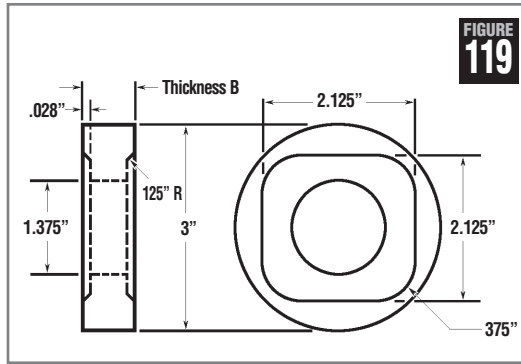
Category C

Description: Outside and service entrance main service panels and any overhead lines to separate structures (weatherhead)

UL Test: Impulse of 10,000 volts and 10,000 Amps.



The HE series are OWHX style Secondary Surge Arrestors and classified as Category C devices. They may be installed on either the line side or load side of service entrance panels.



Product Features

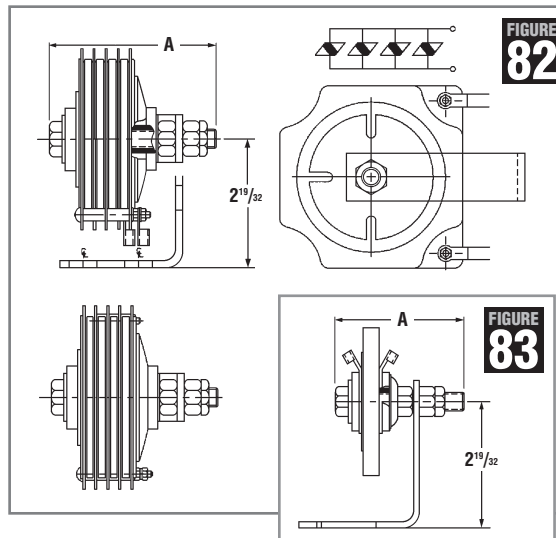
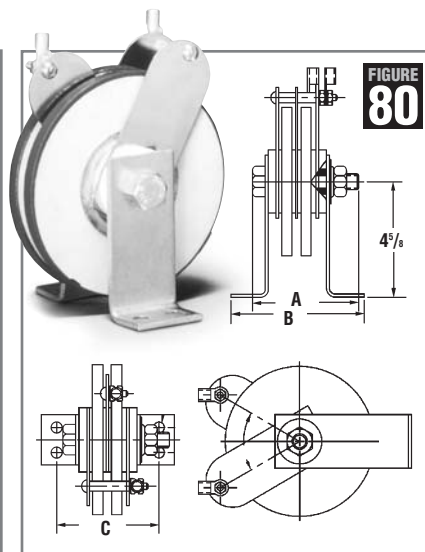
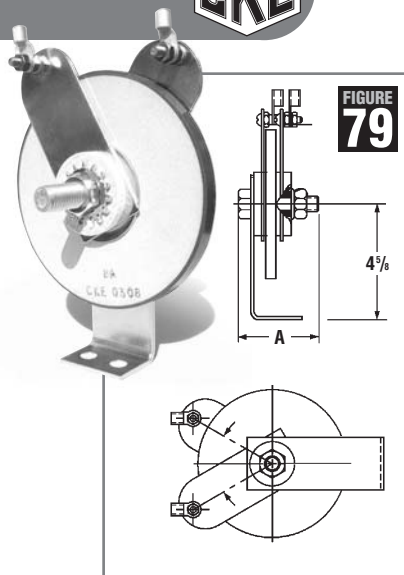
Silicon Carbide Varistor:

- Capable of handling long pulses, 100-400 milliseconds
- Fast response time 5-10 nanoseconds
- High body temperature operation, continuous 110°C
- Large mass device and consequently high energy

Applications

- Discharging lifting magnets
- Exciter field protection
- Insulation protection

CKE Part Number	Maximum Values						Specifications			Figure
	Continuous Operating Voltage		Continuous Power Rating	Discharge Capacity	Peak Discharge Voltage For Given DC Discharge Current		DC Test Voltage & Current			
	DC	AC			Watts	(Watt-Seconds)	Amps	Volts	Min. Volts	
69W60100	275	250	10	22,500	10	1,200	440	660	.500	120
68W60200	200	180	10	22,500	12.5	990	320	480	.500	120
68W60100	150	135	10	22,500	15	780	240	360	.500	120
71W30100	1500	1350	3.5	9250	10	7500	1440	2160	.0025	122
69W30100	300	270	3.0	5100	1.5	1350	416	624	.050	122
68W30100	150	135	3.0	1700	2.5	800	184	276	.050	122
71D10000	300	270	1.5	275	.25	1000	280	420	.005	121
68D10000	150	135	1.5	275	.50	575	140	210	.010	121



Part Number	Maximum Values						Specifications					
	Continuous DC Operating Voltage Rating (Volts)*	Continuous Power Loss in Operation (Watts)	Discharge Capacity (Joules)**	Peak Discharge Voltage For Given DC Discharge Current		Disks (N)	Figure	Approx. Dimensions in Inches			Approx. Wt in Lbs.	
				(Amps)	(Volts)			A	B	C	Net	Shipping
9RV3A1	6	3	1,100	10	40	1	83	2	-	-	3/4	1-1/4
9RV3A2	6	6	2,200	20	40	2	82	2-1/4	-	-	1-1/2	2
9RV3A3	6	12	4,400	40	40	4	82	2-1/2	-	-	1-1/2	2
9RV3A4	12	3	1,350	10	80	1	83	2	-	-	3/4	1-1/2
9RV3A5	12	6	2,700	20	80	2	82	2-1/4	-	-	1-1/2	2
9RV3A6	12	12	5,400	40	80	4	82	2-1/2	-	-	1-1/2	2
9RV3A7	25	6	2,700	10	160	2	83	2-1/4	-	-	3/4	1-1/2
9RV3A8	50	3	1,700	5	200	1	83	2-1/4	-	-	3/4	1-1/4
9RV3A9	50	6	3,400	10	200	2	82	2-1/4	-	-	1-1/2	2
9RV3A10	50	12	6,800	20	200	4	82	2-1/2	-	-	1-1/2	2
9RV3A11	100	6	3,400	5	400	2	83	2-1/4	-	-	3/4	1-1/2
9RV3A12	150	3	5,100	2.5	775	1	83	2-1/4	-	-	3/4	1-1/2
9RV3A14	300	3	5,100	1.5	1,350	1	83	2-3/4	-	-	3/4	1-1/2
9RV3A15	600	6	10,200	0.5	2,300	2	83	3-1/4	-	-	1	1-1/2
9RV3B3	12	6	2,200	10	80	2	83	2-1/4	-	-	3/4	1-1/2
9RV3B4	15	3	1,350	10	100	1	83	2	-	-	3/4	1-1/2
9RV3B5	15	6	2,700	20	100	2	82	2-1/4	-	-	1-1/2	2
9RV3B6	30	3	1,700	5	150	1	83	2-1/4	-	-	3/4	1-1/4
9RV3B7	30	6	3,400	10	150	2	82	1-1/4	-	-	1-1/2	2
9RV3B8	60	3	1,700	5	250	1	83	2-1/4	-	-	3/4	1-1/4
9RV3B9	60	6	3,400	10	250	2	82	2-1/4	-	-	1-1/2	2
9RV3B10	60	12	6,800	20	250	4	82	2-1/2	-	-	1-1/2	2
9RV3B11	100	6	3,400	5	400	2	83	2-1/4	-	-	3/4	1-1/2
9RV6A1	150	10	22,500	15	780	1	79	3-7/16	-	-	2-3/4	5-1/4
9RV6A2	150	20	45,000	30	780	2	80	3-15/16	5	3-25/32	4-1/2	7
9RV6A3	150	30	67,500	45	780	3	80	4-15/16	5-5/8	4-13/32	5-3/4	8-1/2
9RV6A4	150	40	90,000	60	780	4	80	5-7/16	6-1/4	5-1/32	7	9-1/2
9RV6A5	300	20	45,000	10	1,440	2	80	4-11/16	5-3/4	4-15/32	4-1/2	7
9RV6A6	275	10	22,500	10	1,200	1	79	3-7/16	-	-	2-3/4	5-1/4
9RV6A7	275	20	45,000	20	1,200	2	80	3-15/16	5	3-25/32	4-1/2	7
9RV6A8	275	30	67,500	30	1,200	3	80	4-15/16	5-5/8	4-13/32	5-3/4	8-1/2
9RV6A9	275	40	90,000	40	1,200	4	80	5-7/16	6-1/4	5-1/32	7	9-1/2
9RV6A10	550	20	45,000	5	2,160	2	80	4-11/16	5-3/4	4-15/32	4.5	7

Maximum Ratings:

Continuous Body Temperature 110°C
 Short-Time Body Temperature 150°C

Notes: Most bracket mounted assemblies also available for stud mounting. Substitute "C" for "A" in catalog number. All varistors are moisture protected with silicone impregnation.

*AC voltage rating of approximately 90 percent DC voltage rating may be used.

**The Discharge Capacity value should not be exceeded by the energy stored in the magnetic or inductive field (W=1/2LI²). A discharge of energy equal to the Discharge Capacity value will result in a temperature rise of approximately 80°C.



SUPPRESSION

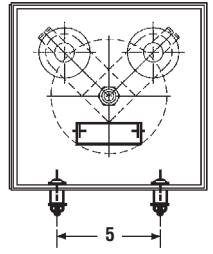
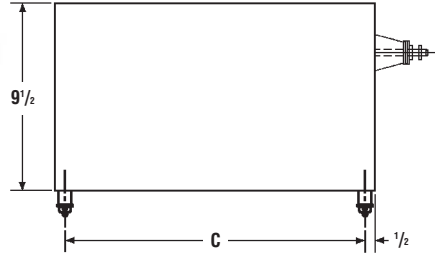
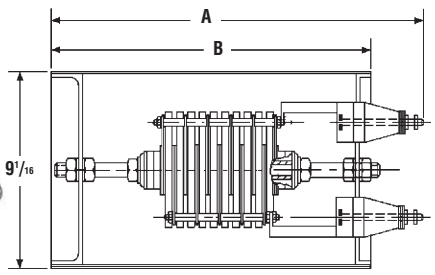
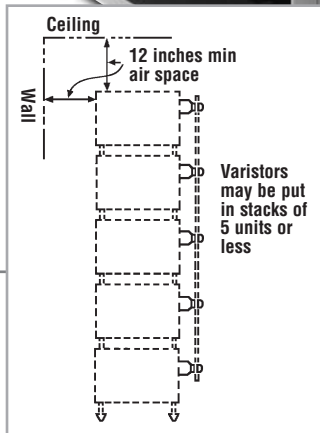
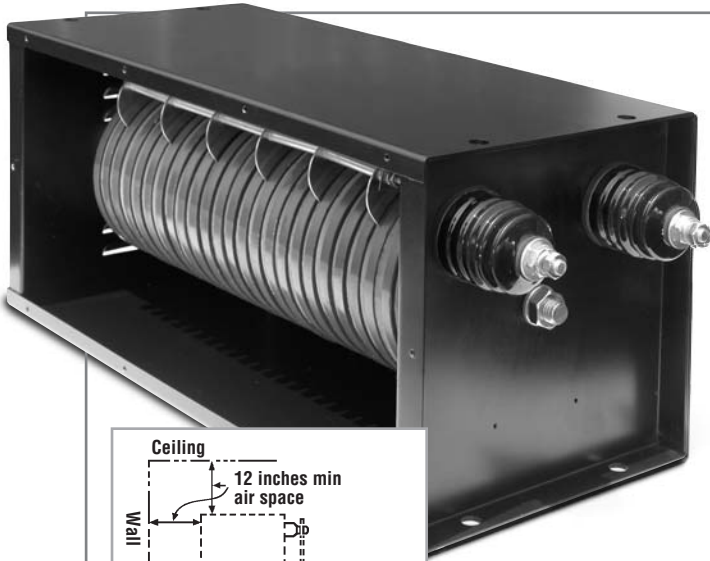


FIGURE 81

CKE Part Number	Maximum Values						Disks (N)	Figure	Specifications			Approx. Wt in Lbs.	
	Continuous DC Operating Voltage Rating (Volts)*	Continuous Power Loss in Operation (Watts)	Discharge Capacity (Joules)**	Peak Discharge Voltage For Given DC Discharge Current		Approx. Dimensions in Inches			A	B	C	Net	Shipping
				(Amps)	(Volts)								
9RV6A50	150	200	450,000	300	780	20	81	23-7/8	21-1/2	20-1/2	52	59	
9RV6A51	200	200	450,000	250	990	20	81	23-7/8	21-1/2	20-1/2	52	59	
9RV6A52	275	200	450,000	200	1,200	20	81	23-7/8	21-1/2	20-1/2	52	59	
9RV6A53	300	240	540,000	170	1,550	24	81	23-7/8	21-1/2	20-1/2	57	64	
9RV6A54	400	240	540,000	140	1,900	24	81	23-7/8	21-1/2	20-1/2	57	64	
9RV6A55	550	240	540,000	60	2,160	24	81	23-7/8	21-1/2	20-1/2	57	64	
9RV6A60	150	100	225,000	150	780	10	81	17-3/4	15-3/4	14-3/4	33	40	
9RV6A61	200	100	225,000	125	990	10	81	17-3/4	15-3/4	14-3/4	33	40	
9RV6A62	275	100	225,000	100	1,200	10	81	17-3/4	15-3/4	14-3/4	33	40	
9RV6A63	300	120	270,000	135	1,550	12	81	17-3/4	15-3/4	14-3/4	35	42	
9RV6A64	400	120	270,000	70	1,900	12	81	17-3/4	15-3/4	14-3/4	35	42	
9RV6A65	550	120	270,000	30	2,160	12	81	17-3/4	15-3/4	14-3/4	35	42	

Maximum Ratings:

Continuous Body Temperature 110°C
 Short-Time Body Temperature 150°C

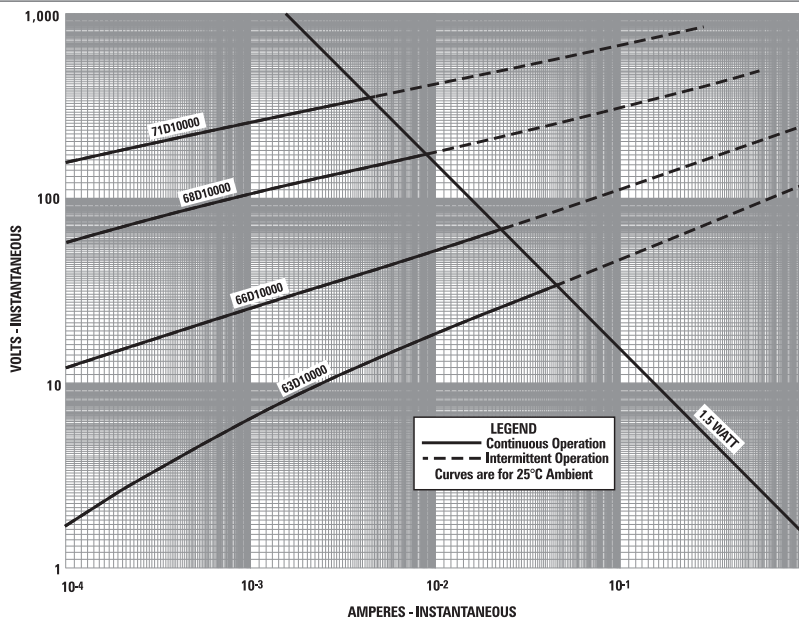
Notes: Most bracket mounted assemblies also available for stud mounting. Substitute "C" for "A" in catalog number. All varistors are moisture protected with silicone impregnation.

*AC voltage rating of approximately 90 percent DC voltage rating may be used.

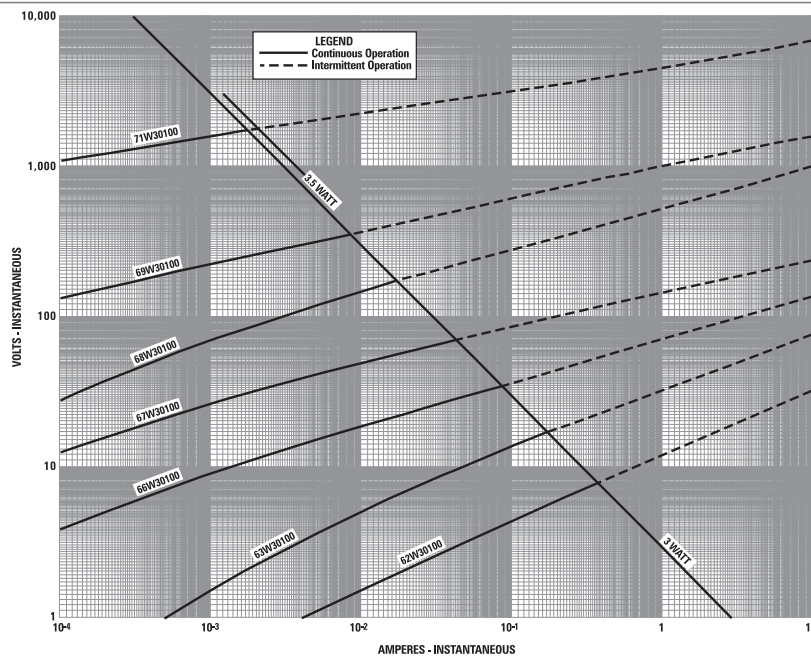
**The Discharge Capacity value should not be exceeded by the energy stored in the magnetic or inductive field ($W = \frac{1}{2}LI^2$). A discharge of energy equal to the Discharge Capacity value will result in a temperature rise of approximately 80°C.



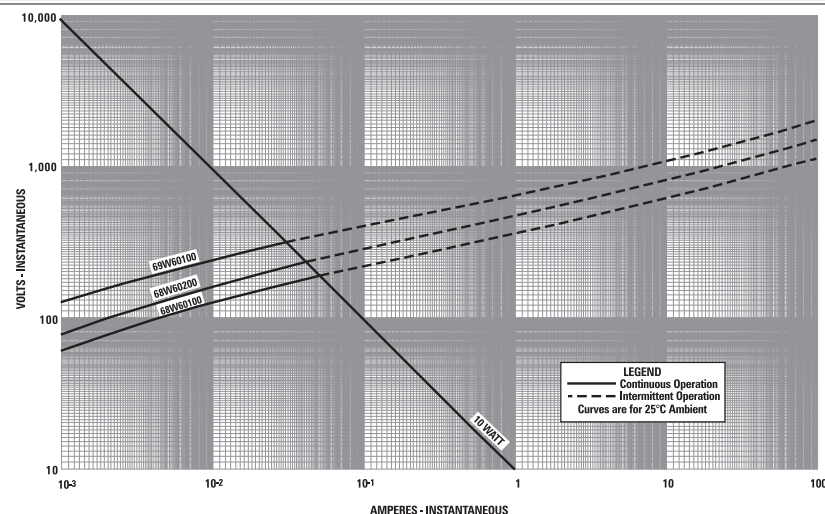
1.12" Varistor Nominal Volt-Ampere Characteristics

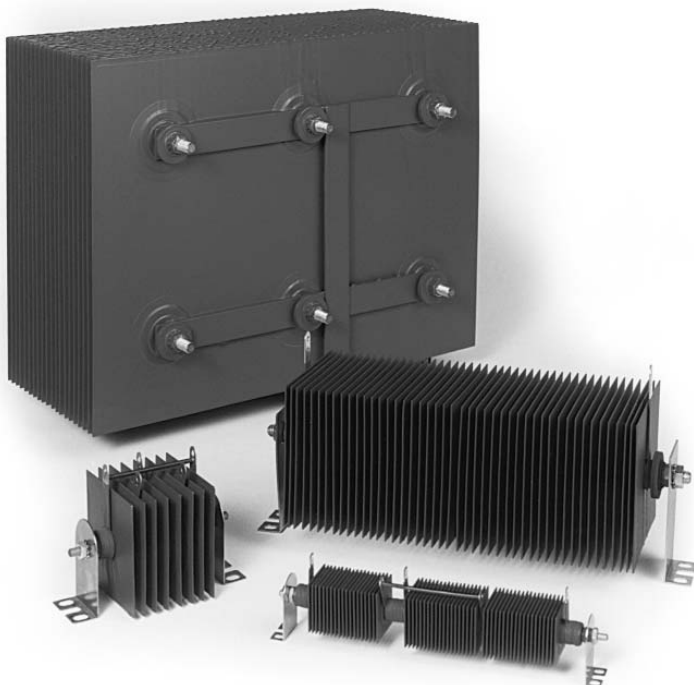


3" Varistor Nominal Volt-Ampere Characteristics



6" Varistor Nominal Volt-Ampere Characteristics





CKE Part Number	Max. DC Voltage	Max. clamping Voltage	Fig.	Dim. A (inches)	Thread size
Series A – 1" x 1"					
SD1543-4	90	240	67	1.0625	8-32
SD1543-5	112	300	67	1.1875	8-32
SD1543-6	135	360	67	1.3125	8-32
SD1543-7	157	420	67	1.3750	8-32
SD1543-8	180	480	67	1.5000	8-32
SD1543-9	202	540	67	1.5625	8-32
SD1543-10	225	600	67	1.6875	8-32
SD1543-11	247	660	67	1.8125	8-32
SD1543-12	270	720	67	1.8750	8-32
SD1543-13	292	780	67	2.0000	8-32
SD1543-14	315	840	67	2.0625	8-32
SD1543-15	337	900	67	2.1875	8-32
SD1543-16	360	960	67	2.3125	8-32
SD1551-17	382	1020	68	2.6250	8-32
SD1551-18	405	1080	68	2.7500	8-32
SD1551-19	427	1140	68	2.8750	8-32
SD1551-20	450	1200	68	2.9375	8-32
SD1551-21	472	1260	68	3.0625	8-32
SD1551-22	495	1320	68	3.1875	8-32
SD1551-23	517	1380	68	3.3125	8-32
SD1551-24	540	1440	68	3.3750	8-32
SD1551-25	562	1500	68	3.5000	8-32
SD1551-26	585	1560	68	3.5625	8-32
SD1551-27	607	1620	68	3.6875	8-32
SD1551-28	630	1680	68	3.8125	8-32
SD1551-29	652	1720	68	3.8750	8-32
SD1551-30	675	1800	68	4.0000	8-32

Peak discharge current - 3 Amps

CKE Part Number	Max. DC Voltage	Max. clamping Voltage	Fig.	Dim. A (inches)	Thread size
Series C – 1 1/2" x 1 1/2"					
SD3066-4	90	240	67	1.0625	8-32
SD3066-5	112	300	67	1.1875	8-32
SD3066-6	135	360	67	1.3125	8-32
SD3066-7	157	420	67	1.3750	8-32
SD3066-8	180	480	67	1.5000	8-32
SD3066-9	202	540	67	1.5625	8-32
SD3066-10	225	600	67	1.6875	8-32
SD3066-11	247	660	67	1.8125	8-32
SD3066-12	270	720	67	1.8750	8-32
SD3066-13	292	780	67	2.0000	8-32
SD3066-14	315	840	67	2.0625	8-32
SD3066-15	337	900	67	2.1875	8-32
SD3066-16	360	960	67	2.3125	8-32
SD3066-17	382	1020	68	2.6250	8-32
SD3066-18	405	1080	68	2.7500	8-32
SD3066-19	427	1140	68	2.8750	8-32
SD3066-20	450	1200	68	2.9375	8-32
SD3066-21	472	1260	68	3.0625	8-32
SD3066-22	495	1320	68	3.1875	8-32
SD3066-23	517	1380	68	3.3125	8-32
SD3066-24	540	1440	68	3.3750	8-32
SD3066-25	562	1500	68	3.5000	8-32
SD3066-26	585	1560	68	3.5625	8-32
SD3066-27	607	1620	68	3.6875	8-32
SD3066-28	630	1680	68	3.8125	8-32
SD3066-29	652	1720	68	3.8750	8-32
SD3066-30	675	1800	68	4.0000	8-32

Peak discharge current - 9 Amps

CKE Part Number	Max. DC Voltage	Max. clamping Voltage	Fig.	Dim. A (inches)	Thread size
Series E – 2" x 2"					
SD2619-4	90	240	67	1.8750	1/4-20
SD2619-5	112	300	67	2.1250	1/4-20
SD2619-6	135	360	67	2.3750	1/4-20
SD2619-7	157	420	67	2.6250	1/4-20
SD2619-8	180	480	67	2.8750	1/4-20
SD2107-9	202	540	68	3.0000	1/4-20
SD2107-10	225	600	68	3.2500	1/4-20
SD2107-11	247	660	68	3.5000	1/4-20
SD2107-12	270	720	68	3.6875	1/4-20
SD2107-13	292	780	68	3.8750	1/4-20
SD2107-14	315	840	68	4.1250	1/4-20
SD2107-15	337	900	68	4.3750	1/4-20
SD2107-16	360	960	68	4.5625	1/4-20
SD2107-17	382	1020	68	4.8125	1/4-20
SD2107-18	405	1080	68	5.0000	1/4-20
SD2107-19	427	1140	68	5.2500	1/4-20
SD2107-20	450	1200	68	5.5625	1/4-20
SD2107-21	472	1260	68	5.7500	1/4-20
SD2107-22	495	1320	68	6.0000	1/4-20
SD2107-23	517	1380	68	6.1875	1/4-20
SD2107-24	540	1440	68	6.3750	1/4-20
SD2107-25	562	1500	68	6.6250	1/4-20
SD2107-26	585	1560	68	6.8750	1/4-20
SD2107-27	607	1620	68	7.0625	1/4-20
SD2107-28	630	1680	68	7.2500	1/4-20
SD2107-29	652	1720	68	7.5000	1/4-20
SD2107-30	675	1800	68	7.7500	1/4-20

Peak discharge current - 15 Amps

Replacement Selenium Rectifiers are available on special order. Consult factory www.cke.com



CKE Part Number	Max. DC Voltage	Max. clamping Voltage	Fig.	Dim. A (inches)	Thread size
Series K – 3" x 3"					
SD1622-4	90	240	67	2.5000	3/8-16
SD1623-5	112	300	68	2.8750	3/8-16
SD1623-6	135	360	68	3.2500	3/8-16
SD1623-7	157	420	68	3.5000	3/8-16
SD1623-8	180	480	68	3.9375	3/8-16
SD1623-9	202	540	68	4.2500	3/8-16
SD1623-10	225	600	68	4.6250	3/8-16
SD1623-11	247	660	68	5.0000	3/8-16
SD1623-12	270	720	68	5.3125	3/8-16
SD1623-13	292	780	68	5.6875	3/8-16
SD1623-14	315	840	68	6.0000	3/8-16
SD1623-15	337	900	68	6.3750	3/8-16
SD1623-16	360	960	68	6.6875	3/8-16
SD1623-17	382	1020	68	7.0000	3/8-16
SD1623-18	405	1080	68	7.3750	3/8-16
SD1623-19	427	1140	68	7.7500	3/8-16
SD1623-20	450	1200	68	8.0625	3/8-16
SD1623-21	472	1260	68	8.4375	3/8-16
SD1623-22	495	1320	68	8.7500	3/8-16
SD1623-23	517	1380	68	9.1250	3/8-16
SD1623-24	540	1440	68	9.5000	3/8-16
SD1623-25	562	1500	68	9.8750	3/8-16
SD1623-26	585	1560	68	10.1875	3/8-16
SD1623-27	607	1620	68	10.5000	3/8-16
SD1623-28	630	1680	68	10.8750	3/8-16
SD1623-29	652	1720	68	11.2500	3/8-16
SD1623-30	675	1800	68	11.6250	3/8-16

Peak discharge current - 37 Amps

CKE Part Number	Max. DC Voltage	Max. clamping Voltage	Fig.	Dim. A (inches)	Thread size
Series M – 4" x 4"					
SD1598-4	90	240	67	2.6875	3/8-16
SD1599-5	112	300	68	3.1875	3/8-16
SD1599-6	135	360	68	3.5625	3/8-16
SD1599-7	157	420	68	4.0000	3/8-16
SD1599-8	180	480	68	4.3750	3/8-16
SD1599-9	202	540	68	4.8125	3/8-16
SD1599-10	225	600	68	5.2500	3/8-16
SD1599-11	247	660	68	5.6250	3/8-16
SD1599-12	270	720	68	6.0625	3/8-16
SD1599-13	292	780	68	6.5000	3/8-16
SD1599-14	315	840	68	6.9375	3/8-16
SD1599-15	337	900	68	7.3750	3/8-16
SD1599-16	360	960	68	7.8125	3/8-16
SD1599-17	382	1020	68	8.2500	3/8-16
SD1599-18	405	1080	68	8.6250	3/8-16
SD1599-19	427	1140	68	9.0625	3/8-16
SD1599-20	450	1200	68	9.4375	3/8-16
SD1599-21	472	1260	68	9.8750	3/8-16
SD1599-22	495	1320	68	10.3125	3/8-16
SD1599-23	517	1380	68	10.6250	3/8-16
SD1599-24	540	1440	68	11.0000	3/8-16
SD1599-25	562	1500	68	11.4375	3/8-16
SD1599-26	585	1560	68	11.8750	3/8-16
SD1599-27	607	1620	68	12.2500	3/8-16
SD1599-28	630	1680	68	12.6250	3/8-16
SD1599-29	652	1720	68	13.0625	3/8-16
SD1599-30	675	1800	68	13.5000	3/8-16

Peak discharge current - 70 Amps

CKE Part Number	Max. DC Voltage	Max. clamping Voltage	Fig.	Dim. A (inches)	Thread size
Series S – 5" x 6"					
SD1772-4	90	240	67	2.8750	3/8-16
SD1772-5	112	300	68	3.2500	3/8-16
SD1772-6	135	360	68	3.6250	3/8-16
SD1772-7	157	420	68	4.1250	3/8-16
SD1772-8	180	480	68	4.5000	3/8-16
SD1772-9	202	540	68	4.8750	3/8-16
SD1772-10	225	600	68	5.3750	3/8-16
SD1772-11	247	660	68	5.7500	3/8-16
SD1772-12	270	720	68	6.1250	3/8-16
SD1772-13	292	780	68	6.6250	3/8-16
SD1772-14	315	840	68	7.0000	3/8-16
SD1772-15	337	900	68	7.3750	3/8-16
SD1772-16	360	960	68	7.7500	3/8-16
SD1772-17	382	1020	68	8.2500	3/8-16
SD1772-18	405	1080	68	8.6250	3/8-16
SD1772-19	427	1140	68	9.0000	3/8-16
SD1772-20	450	1200	68	9.5000	3/8-16
SD1772-21	472	1260	68	9.8750	3/8-16
SD1772-22	495	1320	68	10.2500	3/8-16
SD1772-23	517	1380	68	10.6250	3/8-16
SD1772-24	540	1440	68	11.0000	3/8-16
SD1772-25	562	1500	68	11.5000	3/8-16
SD1772-26	585	1560	68	11.8750	3/8-16
SD1772-27	607	1620	68	12.2500	3/8-16
SD1772-28	630	1680	68	12.7500	3/8-16
SD1772-29	652	1720	68	13.1250	3/8-16
SD1772-30	675	1800	68	13.5000	3/8-16

Peak discharge current - amperes 130

CKE Part Number	Max. DC Voltage	Max. clamping Voltage	Fig.	Dim. A (inches)	Thread size
Series N – 6" x 7 1/4"					
SD2482-4	90	240	67	2.8750	3/8-16
SD2482-5	112	300	68	3.2500	3/8-16
SD2482-6	135	360	68	3.6250	3/8-16
SD2482-7	157	420	68	4.1250	3/8-16
SD2482-8	180	480	68	4.5000	3/8-16
SD2482-9	202	540	68	4.8750	3/8-16
SD2482-10	225	600	68	5.3750	3/8-16
SD2482-11	247	660	68	5.7500	3/8-16
SD2482-12	270	720	68	6.1250	3/8-16
SD2482-13	292	780	68	6.6250	3/8-16
SD2482-14	315	840	68	7.0000	3/8-16
SD2482-15	337	900	68	7.3750	3/8-16
SD2482-16	360	960	68	7.7500	3/8-16
SD2482-17	382	1020	68	8.2500	3/8-16
SD2482-18	405	1080	68	8.6250	3/8-16
SD2482-19	427	1140	68	9.0000	3/8-16
SD2482-20	450	1200	68	9.5000	3/8-16
SD2482-21	472	1260	68	9.8750	3/8-16
SD2482-22	495	1320	68	10.2500	3/8-16
SD2482-23	517	1380	68	10.6250	3/8-16
SD2482-24	540	1440	68	11.0000	3/8-16
SD2482-25	562	1500	68	11.5000	3/8-16
SD2482-26	585	1560	68	11.8750	3/8-16
SD2482-27	607	1620	68	12.2500	3/8-16
SD2482-28	630	1680	68	12.7500	3/8-16
SD2482-29	652	1720	68	13.1250	3/8-16
SD2482-30	675	1800	68	13.5000	3/8-16

Peak discharge current - 200 Amps


 Nonpolarized versions available. Please consult factory.

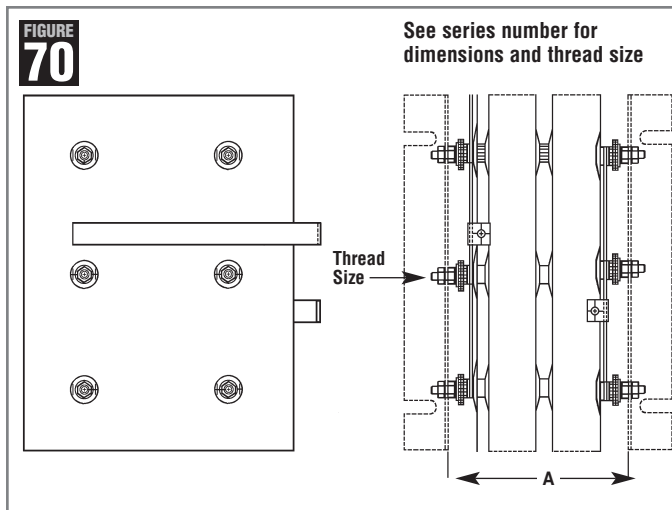
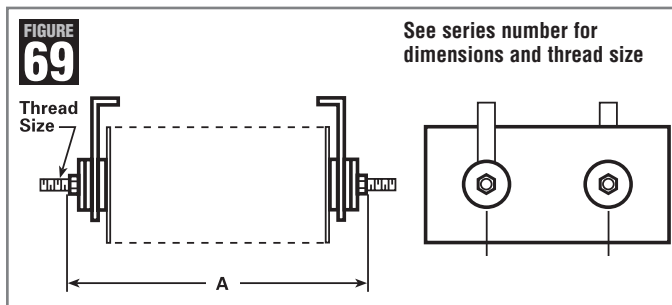
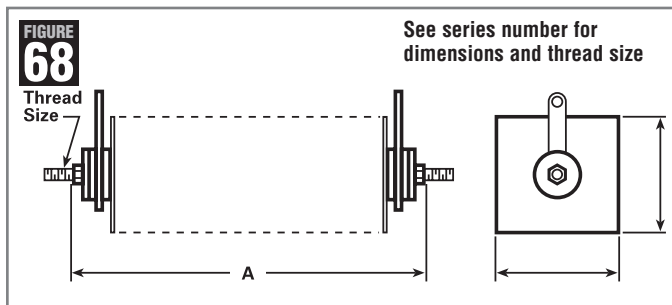
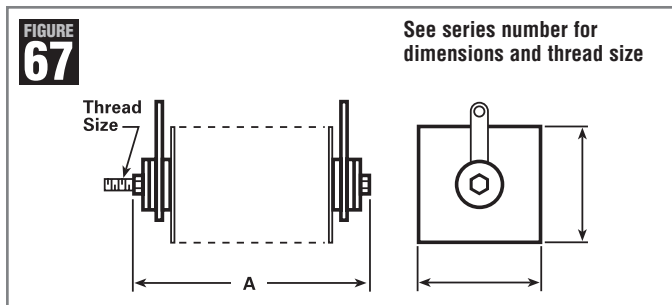


CKE Part Number	Max. DC Voltage	Max. clamping Voltage	Fig.	Dim. A (inches)	Thread size
Series V – 6" x 10"					
SD2399-4	90	240	69	2.8750	3/8-16
SD2399-5	112	300	69	3.2500	3/8-16
SD2399-6	135	360	69	3.6250	3/8-16
SD2399-7	157	420	69	4.1250	3/8-16
SD2399-8	180	480	69	4.5000	3/8-16
SD2399-9	202	540	69	4.8750	3/8-16
SD2399-10	225	600	69	5.3750	3/8-16
SD2399-11	247	660	69	5.7500	3/8-16
SD2399-12	270	720	69	6.1250	3/8-16
SD2399-13	292	780	69	6.6250	3/8-16
SD2399-14	315	840	69	7.0000	3/8-16
SD2399-15	337	900	69	7.3750	3/8-16
SD2399-16	360	960	69	7.7500	3/8-16
SD2399-17	382	1020	69	8.2500	3/8-16
SD2399-18	405	1080	69	8.6250	3/8-16
SD2399-19	427	1140	69	9.0000	3/8-16
SD2399-20	450	1200	69	9.5000	3/8-16
SD2399-21	472	1260	69	9.8750	3/8-16
SD2399-22	495	1320	69	10.2500	3/8-16
SD2399-23	517	1380	69	10.6250	3/8-16
SD2399-24	540	1440	69	11.0000	3/8-16
SD2399-25	562	1500	69	11.5000	3/8-16
SD2399-26	585	1560	69	11.8750	3/8-16
SD2399-27	607	1620	69	12.2500	3/8-16
SD2399-28	630	1680	69	12.7500	3/8-16
SD2399-29	652	1720	69	13.1250	3/8-16
SD2399-30	675	1800	69	13.5000	3/8-16

Peak discharge current - 270 Amps

CKE Part Number	Max. DC Voltage	Max. clamping Voltage	Fig.	Dim. A (inches)	Thread size
Series X – 12" x 16"					
SD4359-4	90	240	70	3.0000	3/8-16
SD4359-5	112	300	70	3.3750	3/8-16
SD4359-6	135	360	70	3.7500	3/8-16
SD4359-7	157	420	70	4.0000	3/8-16
SD4359-8	180	480	70	4.3750	3/8-16
SD4359-9	202	540	70	4.7500	3/8-16
SD4359-10	225	600	70	5.1250	3/8-16
SD4359-11	247	660	70	5.5000	3/8-16
SD4359-12	270	720	70	5.7500	3/8-16
SD4359-13	292	780	70	6.1250	3/8-16
SD4359-14	315	840	70	6.5000	3/8-16
SD4359-15	337	900	70	6.8750	3/8-16
SD4359-16	360	960	70	7.2500	3/8-16
SD4359-17	382	1020	70	7.6250	3/8-16
SD4359-18	405	1080	70	8.0000	3/8-16
SD4359-19	427	1140	70	8.2500	3/8-16
SD4359-20	450	1200	70	8.6250	3/8-16
SD4359-21	472	1260	70	9.0000	3/8-16
SD4359-22	495	1320	70	9.3750	3/8-16
SD4359-23	517	1380	70	9.7500	3/8-16
SD4359-24	540	1440	70	10.0000	3/8-16
SD4359-25	562	1500	69	10.3750	3/8-16
SD4359-26	585	1560	69	10.7500	3/8-16
SD4359-27	607	1620	69	12.0000	3/8-16
SD4359-28	630	1680	69	12.3750	3/8-16
SD4359-29	652	1740	69	12.7500	3/8-16
SD4359-30	675	1800	69	13.8750	3/8-16

Peak discharge current - amperes 904



Nonpolarized versions available. Please consult factory.



Selenium Suppressors Outperform MOV Cousins

By Rajendranath K. Maharaj, CKE, Lucernemines, PA

Used as semiconductor in rectifiers and suppressors for many years, selenium occurs naturally on the earth. Its popularity as a rectifier is fading in favor of its silicon equivalent. However, demand for selenium suppressors continues.

Depositing the elements on a metal substrate's surface produces selenium cells. This provides the cells with good thermal mass and energy dissipation as well as "self-healing" characteristics, allowing the device to survive energy discharges in excess of the rated value. Selenium's crystalline structure gives it the ability to continue functioning after a burst of energy in excess of its short pulse width rating. Its suppressor operation is comparable to a pressure relief valve—when the pressure rises, the relief valve opens, releases the pressure, and then resets itself.

Because of its unique properties, the selenium suppressor remains viable in many applications. Special clamping capabilities enable the selenium suppressor to find its own niche as transient voltage suppressor. Because of its ability to continuously dissipate power and handle long surges, it's better than MOVs or silicon suppressors for some applications.

The selenium suppressor can absorb energy levels in excess of its rated capability while maintaining its clamping characteristics on the next cycle. The layering of the suppressor onto the aluminum plate allows the suppressor's energy capabilities to follow that of a heat sink curve. This heat sink capability allows steady-state power dissipation up to 40 times that of an MOV. For a 130V suppressor, the selenium product allows steady-state dissipation of 2.5W to 80W, compared with an MOV that allows only 0.1W to 2.5W. The photo shows several selenium cells.

Manufacturers produce selenium suppressor cell plates in sizes varying from 1 in. x 1 in. to 12 in. x 16 in. that can function at a temperature of 0°C to 55°C ambient without any derating. The voltage of a selenium suppressor cell starts at 26V_{rms} or 22.5Vdc per cell plate. Users must keep the suppressor to 75V maximum due to the dielectric ceiling of the cell. The capacitive nature of the plate allows placement in series to attain higher voltage levels.

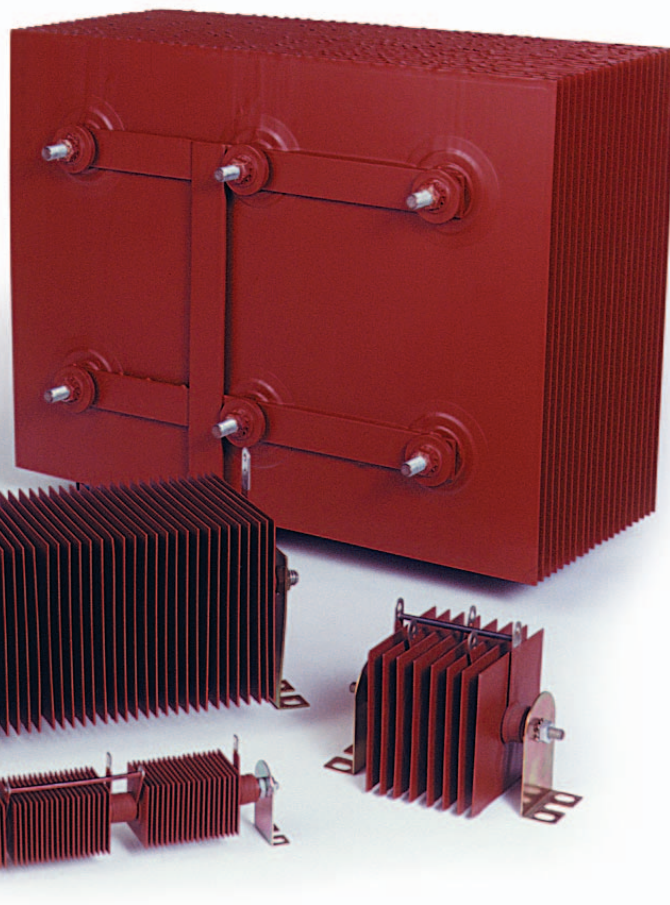
Other suppressors can handle high current, short pulse widths in the microsecond range, but the selenium suppressor can handle milli-second pulse width currents, making it a more robust suppressor than silicon devices. It has a typical response time of less than 1 ms and is capable of handling pulses with long decay times as seen in large DC motors or any inductive loads with L/R ratios in the 100 ms range.

Power conditioning systems, generators, and AC controllers are typical selenium suppressor applications. Suppressor applications are specifically used on the DC side of a rectified generator output, across SCRs on large controllers, across DC motors, and on transformers for line-to-line transient suppression.

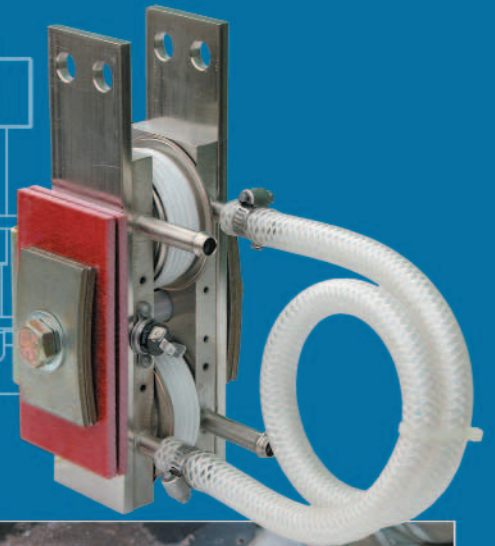
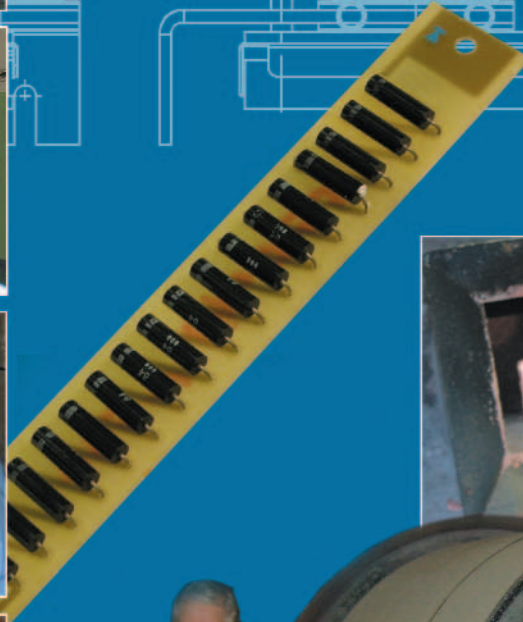
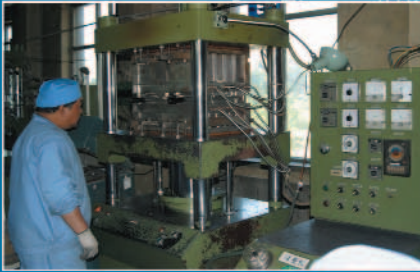
Typical applications for selenium suppressors include:

- On the DC side of a rectified generator output.
- Across the SCRs on large controllers.
- Across DC motors.
- On transformers (for line-to-line suppression)
- Power conditioning (i.e. from power strips to service entrance).

For some devices, an MOV or a TVSS is better suited, and for others, a combination of suppressors is best. However, to the surprise of many electrical engineers, the capabilities unique to the selenium suppressor have enabled it to retain a firm place in today's market.



For more information on
CKE's full line of polarized and
non-polarized selenium suppressors
from 1" x 1" through 12" x 16",
visit our web site at
www.cke.com



Lucernemines, PA 15754
Telephone: (724) 479-3533
Fax: (724) 479-3537
www.cke.com

P.O. Box 848
Farmingdale, NJ 07727
Telephone: (732) 938-4499
Fax: (732) 938-4451
www.hvca.com