



# GE-MOV®

## Metal Oxide Varistors

RATINGS OF 130-1200 VOLTS D.C.,  
95-1000 VOLTS RMS, 1-160 JOULES

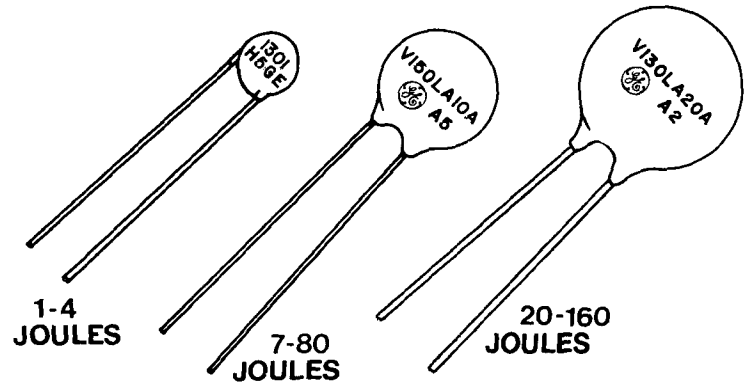
# SERIES

# L

### Description:

GE-MOV® zinc oxide varistors are voltage dependent, symmetrical resistors which perform in a manner similar to back-to-back zener diodes in circuit protective functions and offer advantages in performance and economics.

When exposed to high energy voltage transients, the varistor impedance changes from a very high standby value to a very low conducting value thus clamping the transient voltage to a safe level. The dangerous energy of the incoming high voltage pulse is absorbed by the GE-MOV® varistor, thus protecting your voltage sensitive circuit components.

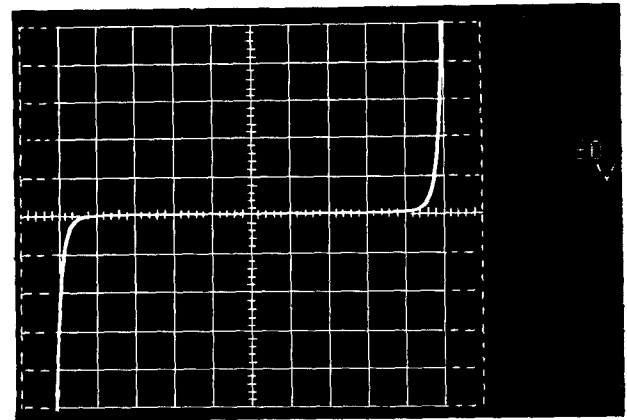


### Replacement For:

- Zener Diodes
- Silicon Carbide
- Selenium Thyrectors
- R-C Networks (non dv/dt)

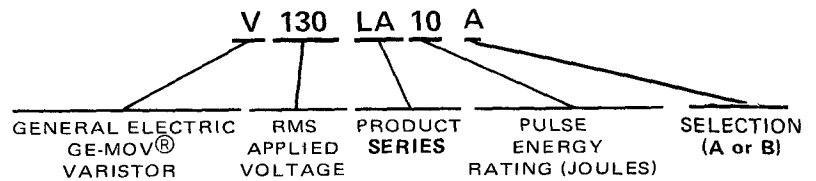
### Features:

- Excellent Clamping
- High Transient Current Capability (4000 Amperes)
- Nanosecond Response
- High Energy Capability
- Wide Operating Temperature Range
- Low Temperature Coefficient
- Low Standby Drain
- Compact and Lightweight



I-V Oscillograph  
(Actual Photo)

### Model Number Nomenclature:



### Benefits:

- Improves Circuit, Component and System Reliability
- Extends Contact Life
- Reduction of Lightning Effects
- Promotes System Cost Reduction
- Reduces System Size and Weight Requirements
- Increases Product Safety
- No Follow-On Current

### Maximum Electrical Ratings:

Maximum Energy, Power and Peak Current .....	See Rating Table
Storage Temperature, T <sub>STG</sub> .....	-40°C to +125°C
Operating Surface Temperature, T <sub>S</sub> .....	115°C
Operating Ambient Temperature (Without Derating) .....	85°C
Maximum Voltage Temperature Coefficient .....	-0.05%/°C

### Mechanical Ratings:

Insulation Resistance – Megohms .....	> 1000
Hipot Encapsulation – Volts D.C. for 1 Minute .....	2500
Solderability .....	Per Mil Std 202E Method 208C

MAXIMUM RATINGS								CHARACTERISTICS		
MODEL NUMBER(6)	STEADY STATE (1)				TRANSIENT			VARISTOR PEAK (5) VOLTAGE @ 1mA AC PEAK		TYPICAL CAPACITANCE f = .1 - 1MHz
	MODEL SIZE (2)	RMS (3) APPLIED VOLTAGE	RECURRENT (3) PEAK IDLE VOLTAGE	DC APPLIED VOLTAGE	ENERGY	AVERAGE POWER DISSIPATION	PEAK (4) PULSE CURRENT	MIN	MAX	
		VOLTS	VOLTS	VOLTS	JOULES	WATTS	AMPS	VOLTS	VOLTS	PICOFARADS
V95LA7__	2	95	134	130	7	0.45	2000	134	191	1250
V130LA1 V130LA2	1	130	184	175	1 2	0.24	400	184	273	250
V130LA10__ V130LA20__	2 3	130	184	175	10 20	0.5 0.85	2000 4000	184	254	1000 1900
V150LA1 V150LA2	1	150	212	200	1 2	0.24	400	212	301	150
V150LA10__ V150LA20__	2 3	150	212	200	10 20	0.5 0.85	2000 4000	212	282	800 1600
V250LA2 V250LA4	1	250	354	330	2 4	0.28	400	354	509	110
V250LA15A V250LA20__ V250LA40__	2 2 3	250	354	330	15 20 40	0.6 0.9	2000 2000 4000	354	472	500 500 1000
V275LA2 V275LA4	1	275	389	375	2 4	0.28	400	389	579	100
V275LA15A V275LA20__ V275LA40__	2 2 3	275	389	369	15 20 40	0.6 0.6 0.9	2000 2000 4000	389	522	450 450 900
V300LA2 V300LA4	1	300	424	405	2 4	0.28	400	420	607	90
V320LA15A V320LA20__ V320LA40__	2 2 3	320	452	420	15 20 40	0.6 0.6 0.9	2000 2000 4000	462	635	380 380 750
V420LB20__ V420LB40__	2 3	420	595	560	20 40	0.6 0.9	2000 4000	610	800	300 600
V460LB20__ V460LB40__	2 3	460	650	615	20 40	0.6 0.9	2000 4000	640	878	270 540
V480LB20A V480LB40__ V480LB80__	2 2 3	480	679	640	20 40 80	0.6 0.7 1.0	2000 2000 4000	670	914	260 260 520
V510LB20A V510LB40__ V510LB80__	2 2 3	510	721	675	20 40 80	0.6 0.7 1.0	2000 2000 4000	735	970	240 240 470
V550LB20A V550LB40__ V550LB80__	2 2 3	550	778	700	20 40 80	0.6 0.7 1.0	2000 2000 4000	775	1060	230 230 450
V575LB20A V575LB40__ V575LB80__	2 2 3	575	813	730	20 40 80	0.7 0.8 1.1	2000 2000 4000	805	1115	215 215 425
V1000LB80__ V1000LB160__	2 3	1000	1414	1200	80 160	0.9 1.3	2000 4000	1425	1900	130 260

(1) Steady State defined as the normal input conditions existing when no transients are present.

(2) Relative size only (See "Dimensions Table").

(3) Sinusoidal voltage assumed as normal input conditions. If nonsinusoidal wave input is present, peak voltage input values should be used to select model.

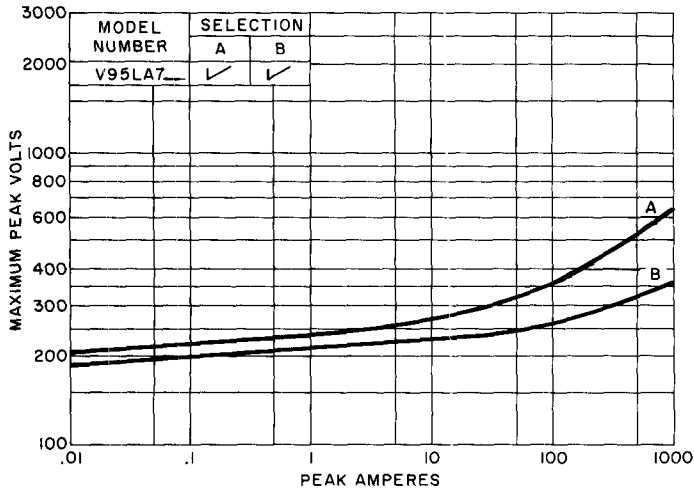
(4) See Figure 18, 19, 20.

(5) 1mA standby current based upon 60Hz sinusoidal input.

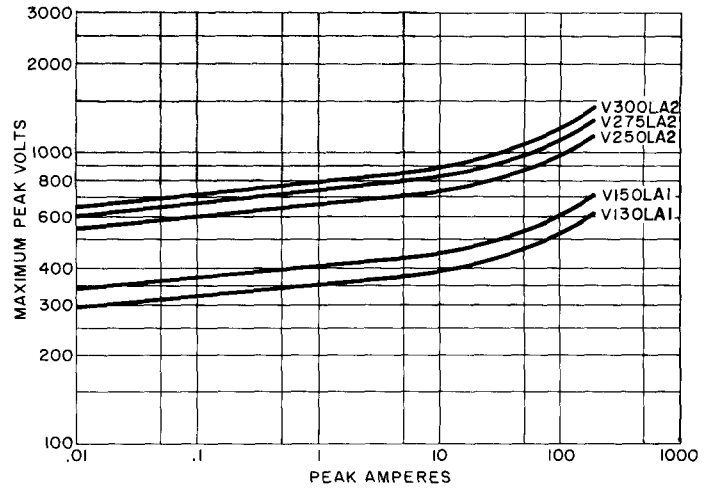
(6) (-) indicates (A or B) selection. See Figure 1-15.

**SERIES L**

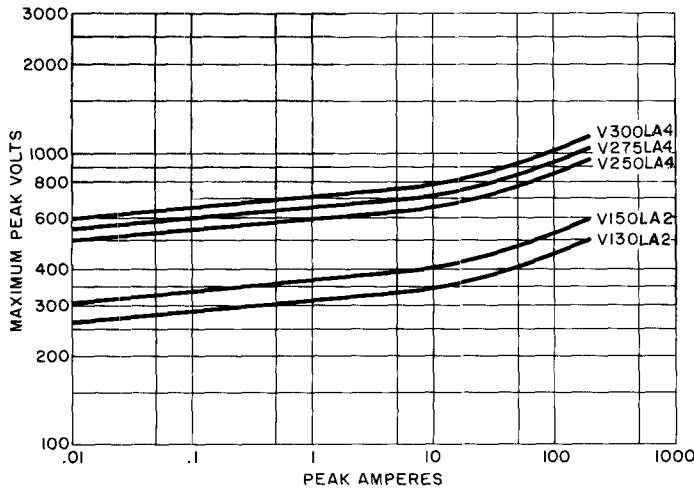
**MAXIMUM VOLT-AMPERE CHARACTERISTICS**



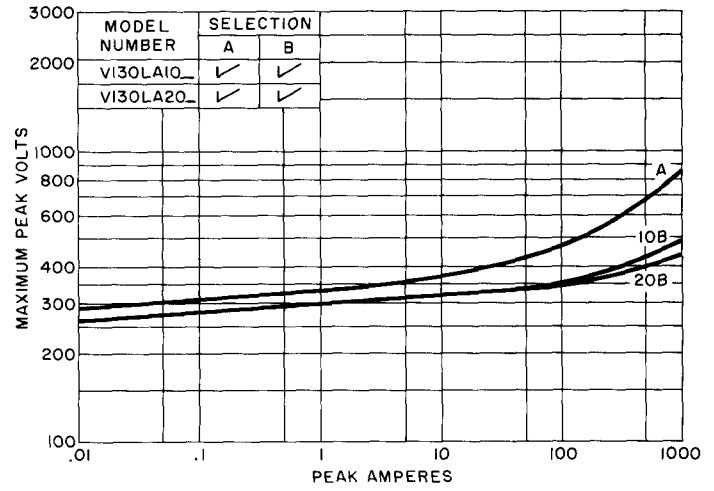
**FIGURE 1**



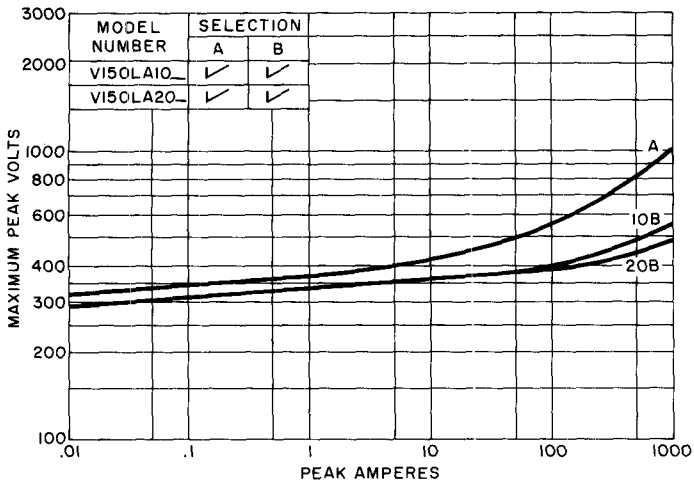
**FIGURE 2**



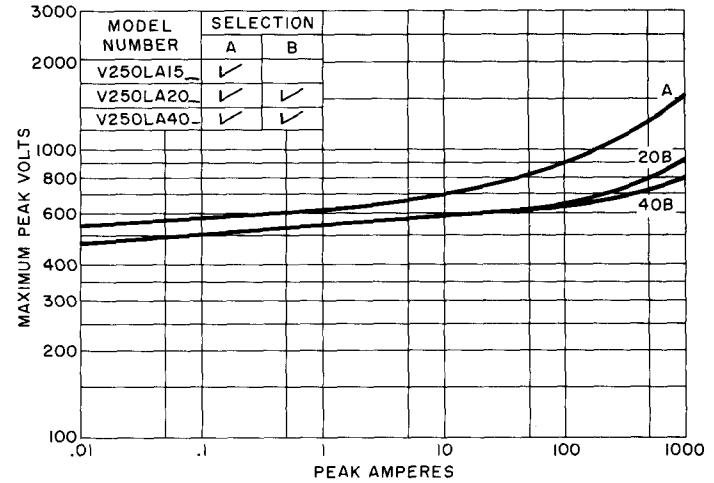
**FIGURE 3**



**FIGURE 4**



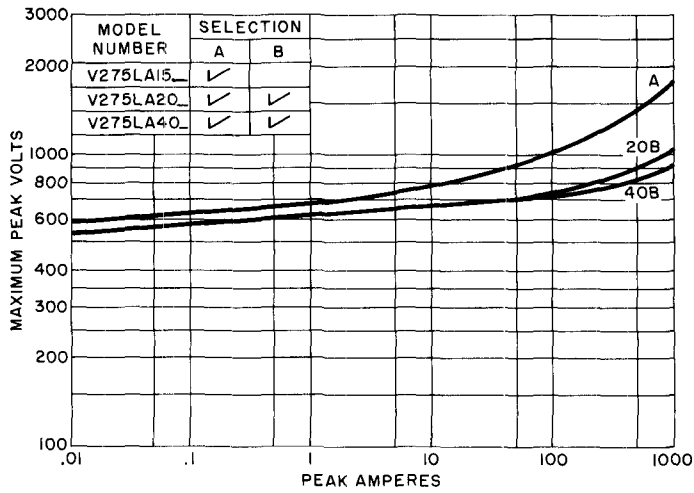
**FIGURE 5**



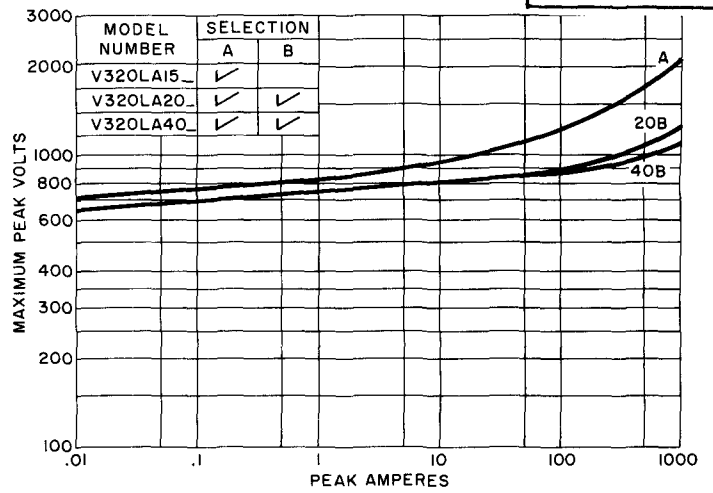
**FIGURE 6**

# MAXIMUM VOLT-AMPERE CHARACTERISTICS

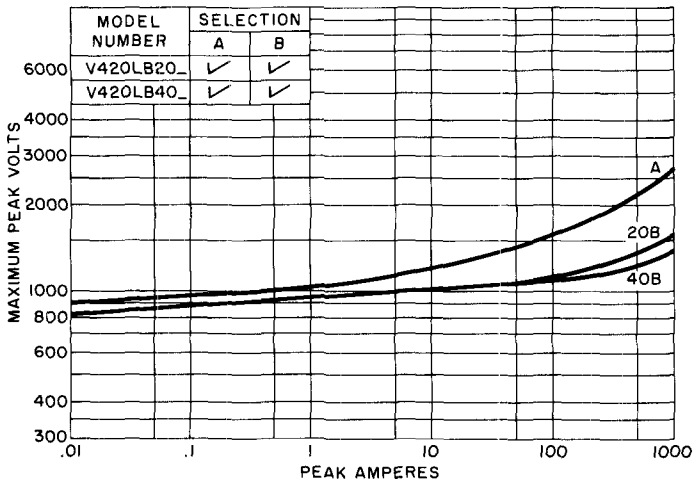
**SERIES L**



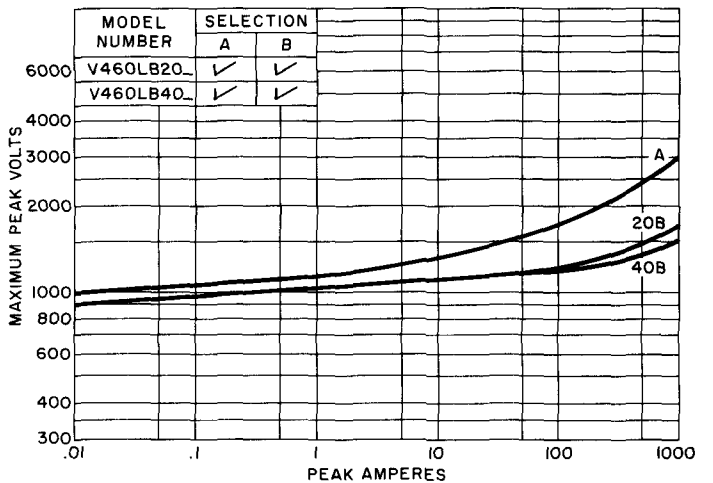
**FIGURE 7**



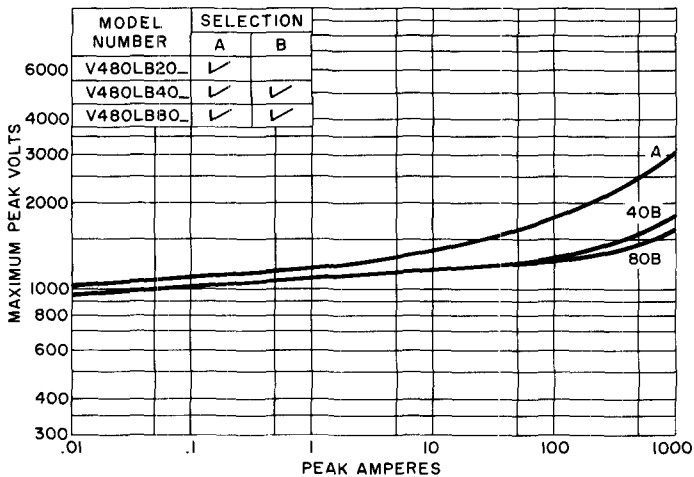
**FIGURE 8**



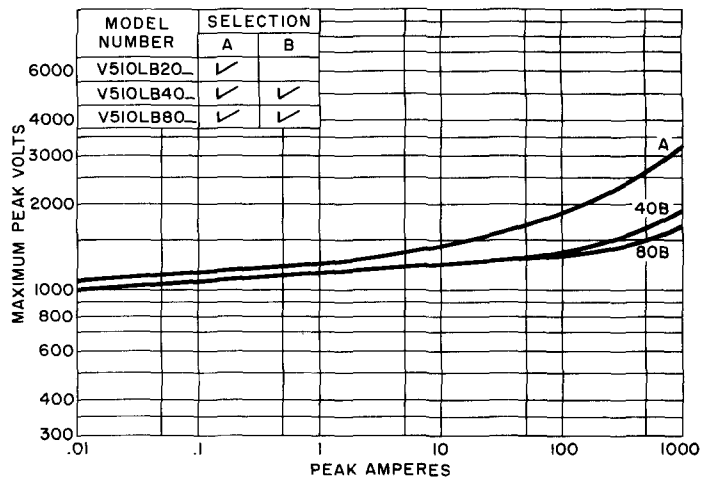
**FIGURE 9**



**FIGURE 10**



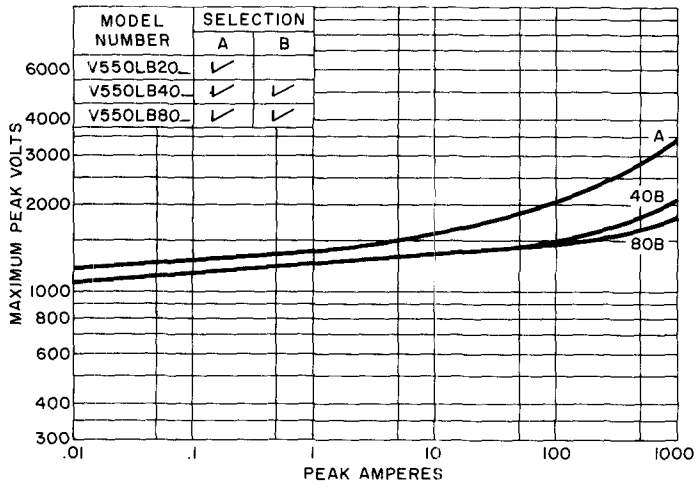
**FIGURE 11**



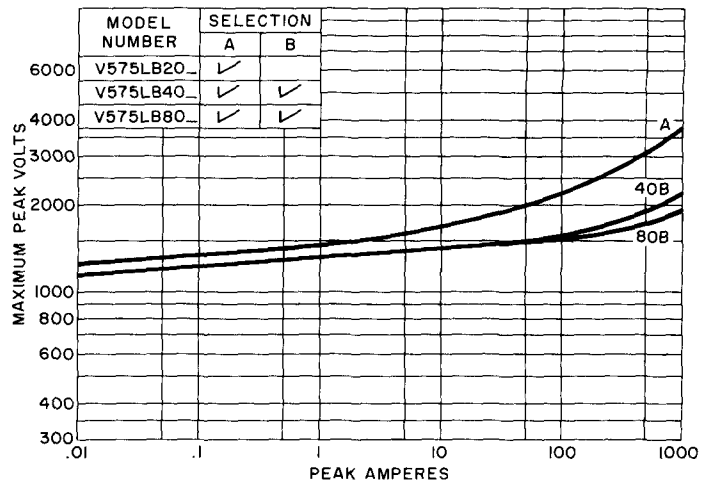
**FIGURE 12**

# MAXIMUM VOLT-AMPERE CHARACTERISTICS

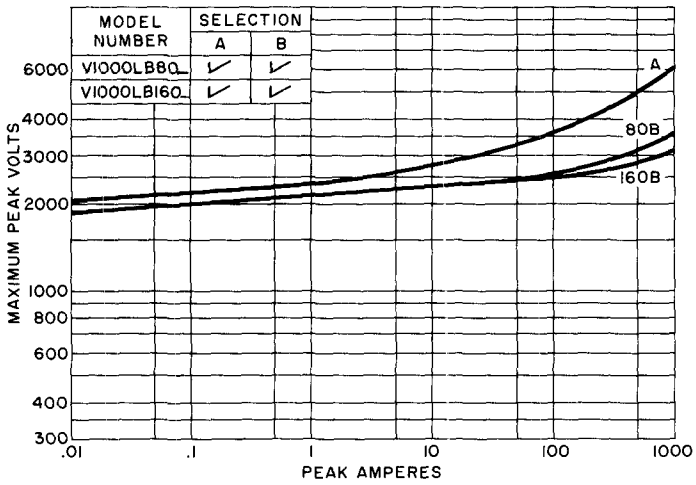
## SERIES L



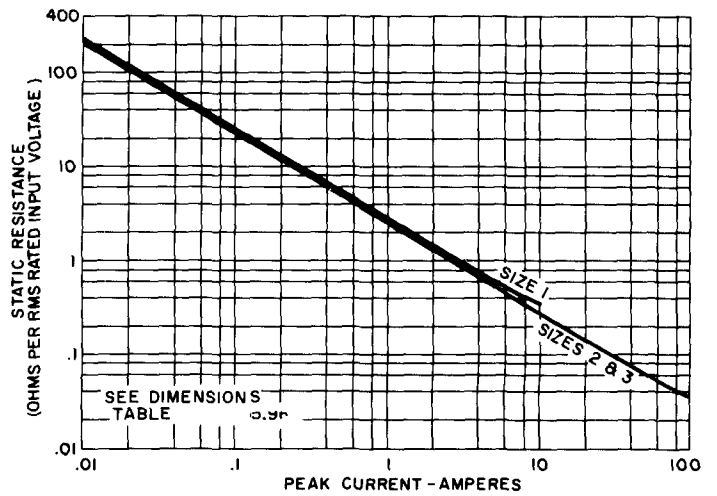
**FIGURE 13**



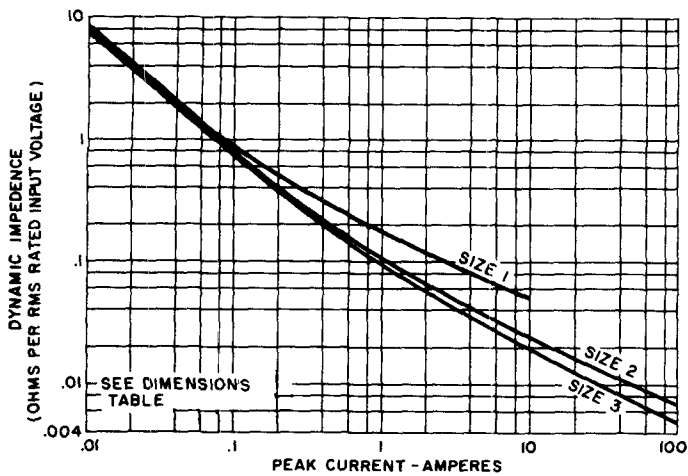
**FIGURE 14**



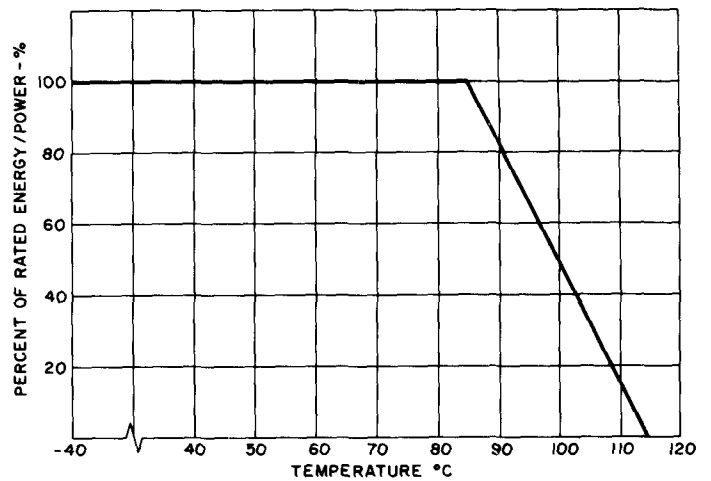
**FIGURE 15**



**FIGURE 16 TYPICAL STATIC RESISTANCE VS. PEAK CURRENT**



**FIGURE 17 TYPICAL DYNAMIC IMPEDANCE VS. PEAK CURRENT**



**FIGURE 18 POWER AND ENERGY RATING VS. TEMPERATURE**

# PULSE LIFETIME RATINGS

SERIES L

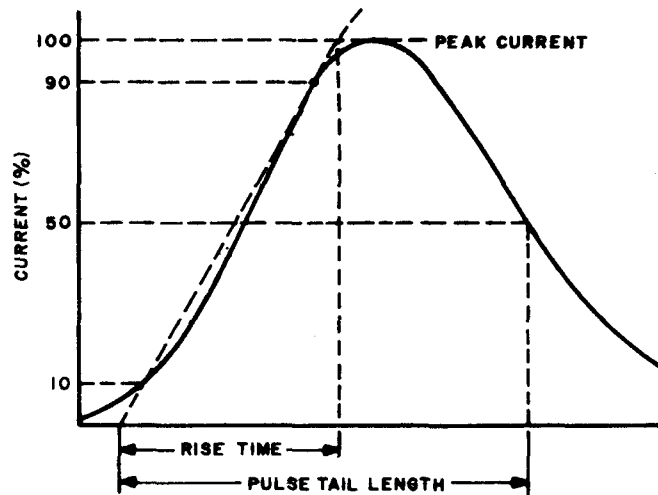
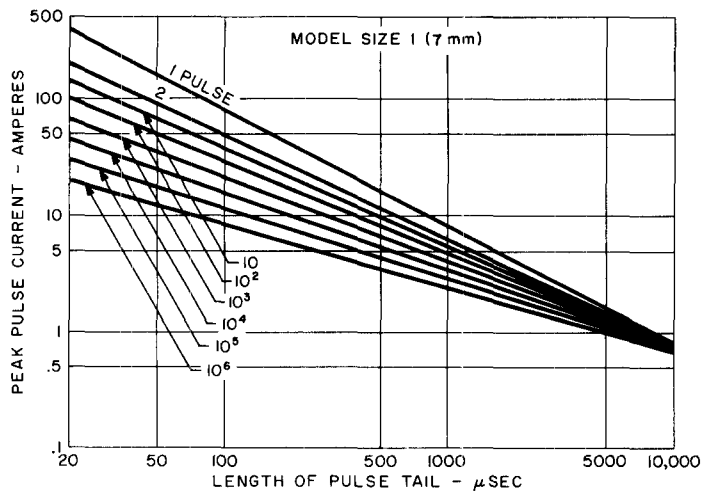
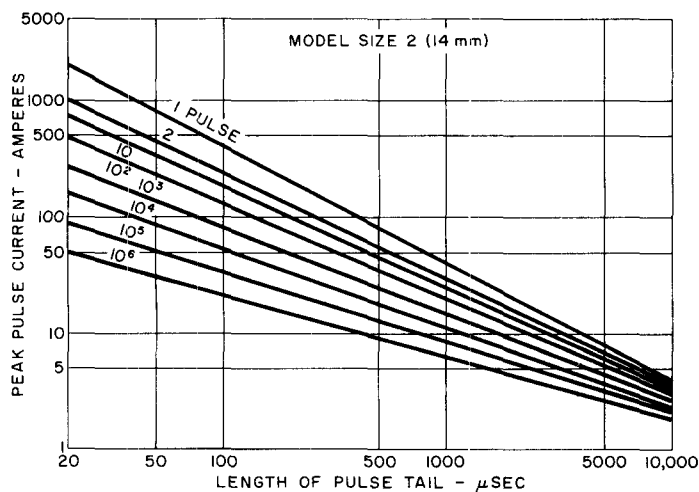


FIGURE 19



**NOTES:**

1. End of lifetime is defined as a degradation failure which occurs when the device exhibits a shift in the varistor voltage at one (1) milliampere in excess of  $\pm 10\%$  of the initial value. This type of failure is normally a result of a decreasing  $V_1$  value, but does not prevent the device from continuing to function. However, the varistor will no longer meet the original specifications.

FIGURE 20

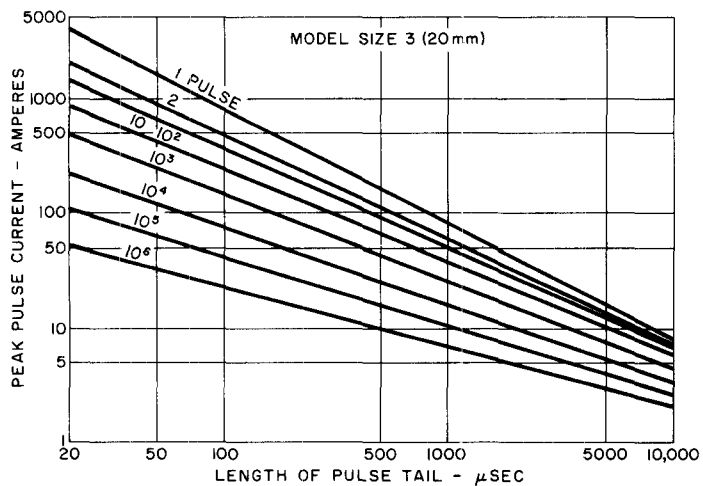


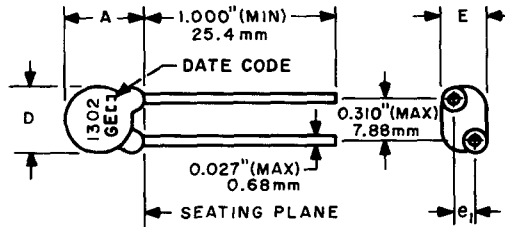
FIGURE 21  
1423

## DIMENSIONS TABLE

### SERIES L

MODEL NUMBER	MARKING (1, 2)	A		D		E		e <sub>1</sub>			
		MAXIMUM		MAXIMUM		MAXIMUM		MINIMUM		MAXIMUM	
		INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
V130LA1 V130LA2	1301 1302	.46	11.7	.34	8.7	.20	5.0	.07	1.9	.12	3.1
V150LA1 V150LA2	1501 1502					.21	5.3	.08	2.1	.13	3.3
V250LA2 V250LA4	2502 2504					.27	6.9	.12	3.2	.19	4.9
V275LA2 V275LA4	2752 2754					.29	7.4	.14	3.5	.22	5.5
V300LA2 V300LA4	3002 3004					.30	7.7	.15	3.8	.23	5.7

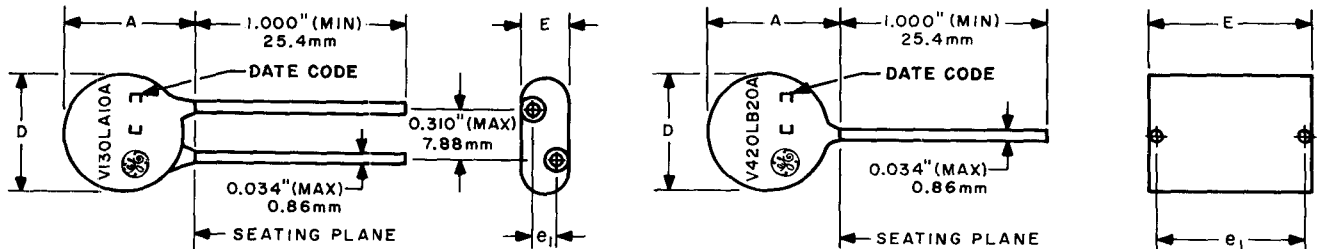
#### OUTLINE DRAWING SIZE 1



## DIMENSIONS TABLE

MODEL NUMBER	MARKING (1, 2)	A		D		E		e <sub>1</sub>			
		MAXIMUM		MAXIMUM		MAXIMUM		MINIMUM		MAXIMUM	
		INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
V95LA7	V95LA7 _	.74	18.9	.65	16.4	.17	4.4	.07	1.7	.11	2.7
V130LA10 V150LA10	V130LA10 _ V150LA10 _					.21	5.3	.08	2.1	.14	3.5
V250LA15 V250LA20	V250LA15 _ V250LA20 _					.26	6.7	.13	3.4	.20	5.0
V275LA15 V275LA20	V275LA15 _ V275LA20 _					.29	7.3	.14	3.7	.22	5.5
V320LA15 V320LA20	V320LA15 _ V320LA20 _					.32	8.2	.16	4.2	.25	6.4
V420LB20 V460LB20	V420LB20 _ V460LB20 _					.41	10.3	.21	5.4	.33	8.5
V480LB20 V480LB40	V480LB20 _ V480LB40 _					.475	10.7	.23	5.9	.35	8.8
V510LB20 V510LB40	V510LB20 _ V510LB40 _					.44	11.1	.25	6.4	.36	9.2
V550LB20 V550LB40	V550LB20 _ V550LB40 _					.46	11.6	.26	6.7	.38	9.6
V575LB20 V575LB40	V575LB20 _ V575LB40 _					.49	12.4	.27	6.9	.41	10.5
V1000LB80	V1000LB80 _					.72	18.4	.46	11.7	.65	16.5

#### OUTLINE DRAWING SIZE 2



"LA" CONFIGURATION

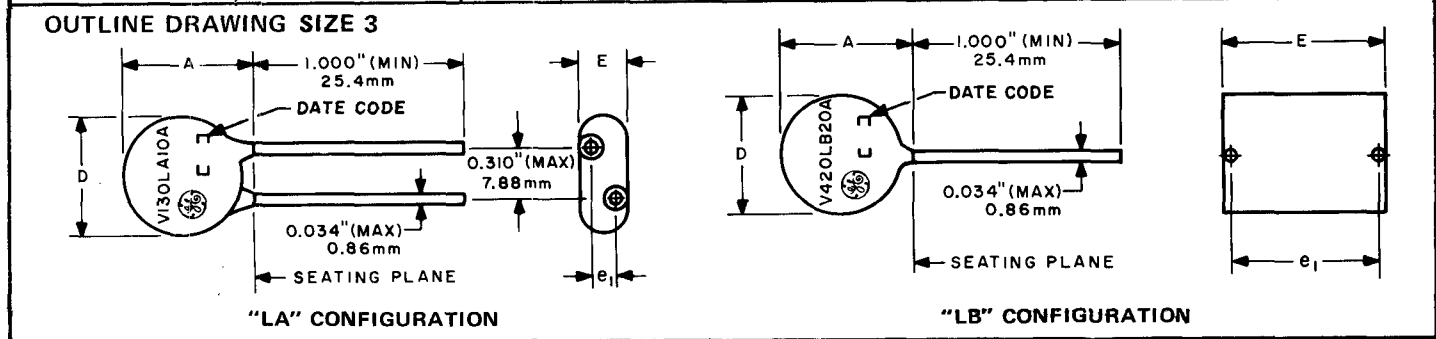
"LB" CONFIGURATION

- (1) ( \_ ) A or B selection.
- (2) All devices to be marked with part designation as indicated plus 2 digit date code and either the General Electric monogram or the initials GE.
- (3) Drawings are not to scale.
- (4) Lead dimensions as measured within 0.05 inches (1.3mm) of seating plane. 1424

# DIMENSIONS TABLE

SERIES L

MODEL NUMBER	MARKING (1, 2)	A		D		E		e <sub>1</sub>			
		MAXIMUM		MAXIMUM		MAXIMUM		MINIMUM		MAXIMUM	
		INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
V130LA20 V150LA20	V130LA20 - V150LA20 -	1.00	25.5	.89	22.5	.21	5.3	.08	2.1	.14	3.5
V250LA40 V275LA40	V250LA40 - V275LA40 -	↓	↓	↓	↓	.29	7.3	.14	3.5	.22	5.6
V320LA40	V320LA40 -	↓	↓	↓	↓	.32	8.2	.17	4.4	.26	6.5
V420LB40 V460LB40	V420LB40 - V460LB40 -	1.10	27.9	0.95	24.1	.41	10.4	.22	5.5	.34	8.7
V480LB80 V510LB80	V480LB80 - V510LB80 -	↓	↓	↓	↓	.44	11.1	.24	6.0	.37	9.4
V550LB80 V575LB80	V550LB80 - V575LB80 -	↓	↓	↓	↓	.49	12.4	.27	6.8	.42	10.7
V1000LB160	V1000LB160 -	↓	↓	↓	↓	.73	18.6	.47	12.0	.67	16.9



- (1) (-) indicates A or B selection.
- (2) All devices are to be marked with part designation as indicated, plus a 2-digit date code and either the General Electric Monogram or the initials GE.
- (3) Drawings are not to scale.
- (4) Lead dimensions as measured within 0.05 inches (1.3mm) of seating plane.