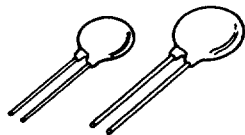


## Radial Lead Metal-Oxide Varistors for Low-to-Medium Voltage Operation

August 1993


 5, 7, 10, 14, 20mm  
 ZA SERIES

### Features

- Recognized as "Transient Voltage Surge Suppressors", UL File #E135010 to Std. 497B
- Wide Operating Voltage Range  $V_{M(AC)RMS}$  ..... 4V to 460V
- DC Voltage Ratings ..... 5.5V to 615V
- 5 Model Sizes Available ..... 5, 7, 10, 14, and 20mm
- Radial-Lead Package for Compact Hard-Wired Printed Circuit Board Designs
- Available in Tape and Reel for Use With Automatic Insertion Equipment

### Description

ZA series transient surge suppressors are radial-lead varistors designed for use in the protection of low and medium-voltage circuits (5V or less) of electronic systems. These systems, whose components because of smaller geometries, faster switching times, and less power consumption, are becoming more sensitive to failure and malfunction due to voltage transients. Because of their radial-lead construc-

tion, ZA series devices require very little mounting space, a feature of importance in compact, hard-wired printed circuit board systems.

These devices are available in five model sizes: 5mm, 7mm, 10mm, 14mm and 20mm, and feature a wide  $V_{M(AC)RMS}$  voltage of 4V to 460V.

### Absolute Maximum Ratings

For ratings of individual members of a series, see Device Ratings and Characteristics chart

	ZA SERIES	UNITS
<b>Continuous:</b>		
Steady State Applied Voltage:		
AC Voltage Range ( $V_{M(AC)RMS}$ ) .....	4 to 460	V
DC Voltage Range ( $V_{M(DC)}$ ) .....	5.5 to 615	V
<b>Transient:</b>		
Peak Pulse Current ( $I_{TM}$ )		
For 8/20 $\mu$ s Current Wave (See Figure 2) .....	25 to 4500	A
Single Pulse Energy Range (Note 1)		
For 10/133000 $\mu$ s Current Wave ( $W_{TM}$ ) .....	0.1 to 35	J
Operating Ambient Temperature Range ( $T_A$ ) .....	-55 to +85	$^{\circ}$ C
Storage Temperature Range ( $T_{STG}$ ) .....	-55 to +125	$^{\circ}$ C
Temperature Coefficient ( $\alpha V$ ) of Clamping Voltage ( $V_C$ ) at Specified Test Current .....	<0.01	%/ $^{\circ}$ C
Hi-Pot Encapsulation (Isolation Voltage Capability) .....	2500	V
(Dielectric must withstand indicated DC voltage for one minute per MIL-STD 202, Method 301) .		
Insulation Resistance .....	1000	M $\Omega$

#### NOTE:

1. Ratings on specific types can be as high as 160J for an impulse duration of 30ms minimum to 1/2 of peak current value.

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 VARISTOR  
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## ZA Series

### Device Ratings and Characteristics (Note 1)

ZA Series Varistors are listed under UL File No. E135010 as a UL recognized component.

MODEL NUMBER	MODEL SIZE DISC DIA. (mm)	DEVICE MARK-ING	MAXIMUM RATINGS (+85°C)				CHARACTERISTICS (+25°C)					
			CONTINUOUS		TRANSIENT		VARISTOR VOLTAGE AT 1mA DC TEST CURRENT			MAX CLAMP-ING VOLTAGE V <sub>C</sub> AT TEST CURRENT (8/20μs)		TYPICAL CAPACITANCE f = 1MHz
			RMS VOLT-AGE	DC VOLTAGE	ENERGY (10/1000μs)	PEAK CURRENT (8/20μs)						
			V <sub>M(AC)</sub> (V)	V <sub>M(DC)</sub> (V)	W <sub>TM</sub> (J)	I <sub>TM</sub> (A)	MIN (V)	V <sub>N(DC)</sub> (V)	MAX (V)	V <sub>C</sub> (V)	I <sub>P</sub> (A)	
V8ZA05	5	Z08	4	5.5	0.1	50	6.0	8.2	11.0	30	2	1400
V8ZA1	7	08Z1	4	5.5	0.4	100	6.0	8.2	11.0	22	5	3000
V8ZA2	10	08Z2	4	5.5	0.8	250	6.0	8.2	11.0	20	5	7500
V12ZA05	5	Z12	6	8	0.14	100	9.0	12	16.0	37	2	1200
V12ZA1	7	12Z1	6	8	0.6	250	9.0	12	16.0	34	5	2500
V12ZA2	10	12Z2	6	8	1.2	250	9.0	12	16.0	30	5	6000
V18ZA05	5	Z18	10	14	0.17	100	14.4	18	21.6	44	2	1000
V18ZA1	7	18Z1	10	14	0.8	250	14.4	18	21.6	42	5	2000
V18ZA2	10	18Z2	10	14	1.5	500	14.4	18	21.6	39	5	5000
V18ZA3	14	18Z3	10	14	3.5	1000	14.4	18	21.6	39	10	11000
V18ZA40	20	18Z40	10	14	80.0 (Note 2)	2000	14.4	18 (Note 3)	21.6	37	20	22000
V22ZA05	5	Z22	14	18 (Note 4)	0.2	100	18.7	22	26.0	51	2	800
V22ZA1	7	22Z1	14	18 (Note 4)	0.9	250	18.7	22	26.0	47	5	1600
V22ZA2	10	22Z2	14	18 (Note 4)	2.0	500	18.7	22	26.0	43	5	4000
V22ZA3	14	22Z3	14	18 (Note 4)	4.0	1000	18.7	22	26.0	43	10	9000
V24ZA50	20	24Z50	14	18 (Note 4)	100.0 (Note 2)	2000	19.2	24 (Note 3)	26.0	43	20	18000
V27ZA05	5	Z27	17	22	0.25	100	23.0	27	31.1	59	2	600
V27ZA1	7	27Z1	17	22	1.0	250	23.0	27	31.1	57	5	1300
V27ZA2	10	27Z2	17	22	2.5	500	23.0	27	31.1	53	5	3000
V27ZA4	14	27Z4	17	22	5.0	1000	23.0	27	31.1	53	10	7000
V27ZA60	20	27Z60	17	22	120.0 (Note 2)	2000	23.0	27 (Note 3)	31.1	50	20	15000
V33ZA05	5	Z33	20	26	0.3	100	29.5	33	38.0	67	2	500
V33ZA1	7	33Z1	20	26	1.2	250	29.5	33	36.5	68	5	1100
V33ZA2	10	33Z2	20	26	3.0	500	29.5	33	36.5	64	5	2700
V33ZA5	14	33Z5	20	26	6.0	1000	29.5	33	36.5	64	10	6000
V33ZA70	20	33Z70	21	27	150.0 (Note 2)	2000	29.5	33 (Note 3)	36.5	58	20	13000
V26ZA80	20	36Z80	23	31	160.0 (Note 2)	2000	32.0	36 (Note 3)	40.0	63	20	12000
V39ZA05	5	Z39	25	31	0.35	100	35.0	39	46.0	79	2	440
V39ZA1	7	39Z1	25	31	1.5	250	35.0	39	43.0	79	5	900
V39ZA3	10	39Z3	25	31	3.5	500	35.0	39	43.0	76	5	2200
V39ZA6	14	39Z6	25	31	7.2	1000	35.0	39	43.0	76	10	5000

**NOTES:**

1. Average power dissipation of transients not to exceed 0.2W, 0.25W, 0.4W, 0.6W or 1W for model sizes 5mm, 7mm, 10mm, 14mm and 20mm, respectively.
2. Energy rating for impulse duration of 30ms minimum to one half of peak current.
3. 10mA DC test current.
4. Also rated to withstand 24V for 5 minutes.

## ZA Series

### Device Ratings and Characteristics (Notes 1, 2)

ZA Series Varistors are listed under UL File No. E135010 as a UL recognized component.

MODEL NUMBER	MODEL SIZE DISC DIA. (mm)	DEVICE MARKING	MAXIMUM RATINGS (+85°C)				CHARACTERISTICS (+25°C)					
			CONTINUOUS		TRANSIENT		VARISTOR VOLTAGE AT 1mA DC TEST CURRENT			MAX CLAMPING VOLTAGE V <sub>C</sub> AT TEST CURRENT (8/20μs)		TYPICAL CAPACITANCE
			RMS VOLTAGE	DC VOLTAGE	ENERGY (10/1000μs)	PEAK CURRENT (8/20μs)						
			V <sub>M(AC)</sub> (V)	V <sub>M(DC)</sub> (V)	W <sub>TM</sub> (J)	I <sub>TM</sub> (A)	MIN (V)	V <sub>N(DC)</sub> (V)	MAX (V)	V <sub>C</sub> (V)	I <sub>p</sub> (A)	f = 1MHz (pF)
V47ZA05	5	Z47	30	38	0.4	100	42	47	55	90	2	400
V47ZA1	7	47Z1	30	38	1.8	250	42	47	52	92	5	800
V47ZA3	10	47Z3	30	38	4.5	500	42	47	52	89	5	2000
V47ZA7	14	47Z7	30	38	8.8	1000	42	47	52	89	10	4500
V56ZA05	5	Z56	35	45	0.5	00	50	56	66	108	2	360
V56ZA2	7	56Z2	35	45	2.3	250	50	56	62	107	5	700
V56ZA3	10	56Z3	35	45	5.5	500	50	56	62	103	5	1800
V56ZA8	14	56Z8	35	45	10.0	1000	50	56	62	103	10	3900
V68ZA05	5	Z68	40	56	0.6	100	61	68	80	127	2	300
V68ZA2	7	68Z2	40	56	3.0	250	61	68	75	127	5	600
V68ZA3	10	68Z3	40	56	6.5	500	61	68	75	123	5	1500
V68ZA10	14	68Z10	40	56	13.0	1000	61	68	75	123	10	3300
V82ZA05	5	Z82	50	66	2.0	400	73	82	97	135	5	240
V82ZA2	7	82Z2	50	66	4.0	1200	73	82	91	135	10	500
V82ZA4	10	82Z4	50	66	8.0	2500	73	82	91	135	25	1100
V82ZA12	14	82Z12	50	66	15.0	4500	73	82	91	145	50	2500
V100ZA05	5	Z100	60	81	2.5	400	90	100	117	165	5	180
V100ZA3	7	100Z	60	81	5.0	1200	90	100	110	165	10	400
V100ZA4	10	100Z4	60	81	10.0	2500	90	100	110	165	25	900
V100ZA15	14	100Z15	60	81	20.0	4500	90	100	110	175	50	2000
V120ZA05	5	Z120	75	102	3.0	400	108	120	138	205	5	140
V120ZA1	7	120Z	75	102	6.0	1200	108	120	132	205	10	300
V120ZA4	10	120Z4	75	102	12.0	2500	108	120	132	200	25	750
V120ZA6	14	120Z6	75	102	22.0	4500	108	120	132	210	50	1700
V150ZA05	5	Z150	92	127	4.0	400	135	150	173	250	5	120
V150ZA1	7	2051	95	127	8.0	1200	135	150	165	250	10	250
V150ZA5	10	150Z4	95	127	15.0	2500	135	150	165	250	25	600
V150ZA10	14	150Z10	95	127	30.0	4500	135	150	165	255	50	1400
V180ZA05	5	Z180	110	153	5.0	400	162	180	207	295	5	100
V180ZA1	7	180Z	115	153	10.0	1200	162	180	198	295	10	200
V180ZA5	10	180Z5	115	153	18.0	2500	162	180	198	300	25	500
V180ZA10	14	180Z10	115	153	35.0	4500	162	180	198	300	50	1100
V220ZA05	5	Z220	140	180	6.0	400	198	220	253	360	5	90
V270ZA05	5	Z270	175	225	7.5	400	243	270	311	440	5	70
V330ZA05	5	Z330	210	275	9.0	400	297	330	380	540	5	60
V390ZA05	5	Z390	250	330	10.0	400	351	390	449	640	5	50
V430ZA05	5	Z430	275	369	11.0	400	387	430	495	700	5	45
V470ZA05	5	Z470	300	385	12.0	400	420	470	517	775	5	35
V680ZA05	5	Z680	420	560	14.0	400	610	680	748	1120	5	32
V750ZA05	5	Z750	460	615	17.0	400	675	750	825	1240	5	30
V910ZA05	5	Z910	-	-	-	-	-	910	-	-	5	28

**NOTES:**

- Average power dissipation of transients not to exceed 0.2W, 0.25W, 0.4W, 0.6W or 1W for model sizes 5mm, 7mm, 10mm, 14mm and 20mm, respectively.
- Higher voltages available, contact Harris Semiconductor Power Marketing

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**Power Dissipation Requirements**

Transients in a suppressor generate heat too quickly for it to be transferred to the surroundings during the pulse interval. Continuous power dissipation capability, therefore, is not a necessary design requirement for a suppressor, unless transients occur in rapid succession. Under this condition, the average power dissipation required is simply the energy (watt-seconds) per pulse times the number of pulses per second. The power so developed must be within the specifications shown on the Device Ratings and Characteristics table for the specific device. Furthermore, the operating values need to be derated at high temperatures as shown in Figure 1. Because varistors can only dissipate a relatively small amount of average power they are, therefore, not suitable for repetitive applications that involve substantial amounts of average power dissipation.

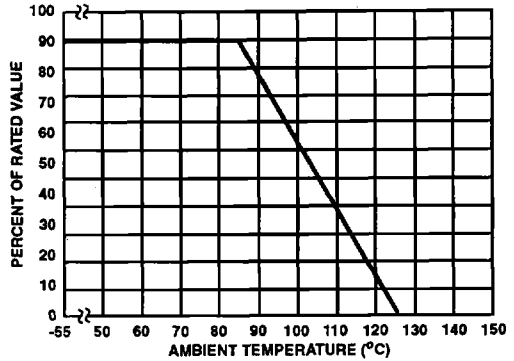


FIGURE 1. CURRENT, ENERGY AND POWER DERATING CURVE

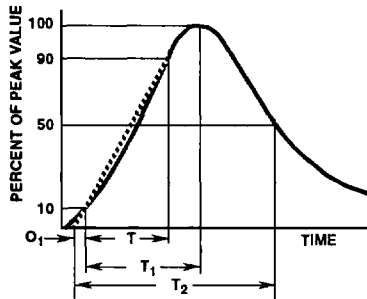


FIGURE 2. PEAK PULSE CURRENT TEST WAVEFORM

- O<sub>1</sub> = Virtual Origin of Wave
- T = Time From 10% to 90% of Peak
- T<sub>1</sub> = Virtual Front time = 1.25 • t
- T<sub>2</sub> = Virtual Time to Half Value (Impulse Duration)

Example: For an 8/20μs Current Waveform:  
 8μs = T<sub>1</sub> = Virtual Front Time  
 20μs = T<sub>2</sub> = Virtual Time to Half Value

**Transient V-I Characteristics Curves**

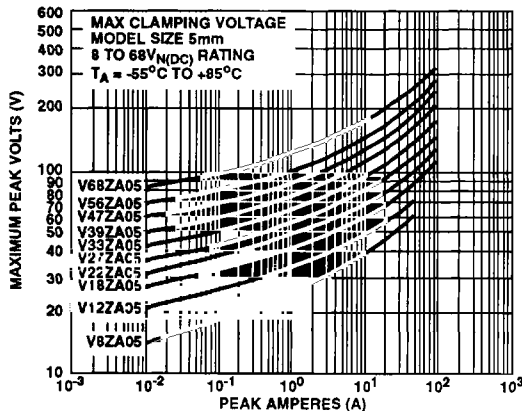


FIGURE 3. CLAMPING VOLTAGE FOR V8ZA05 - V68ZA05

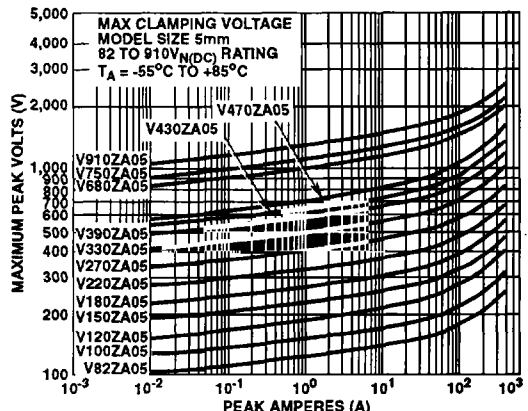


FIGURE 4. CLAMPING VOLTAGE FOR V82ZA05 - V910ZA05

Transient V-I Characteristics Curves (Continued)

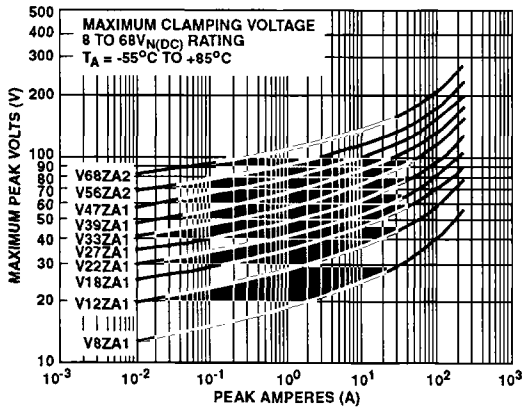


FIGURE 5. PULSE RATING CURVES FOR V8ZA1 - V68ZA2

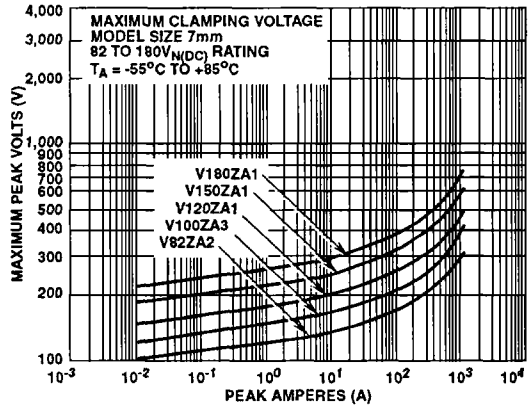


FIGURE 6. PULSE RATING CURVES FOR V82ZA2 - V180ZA1

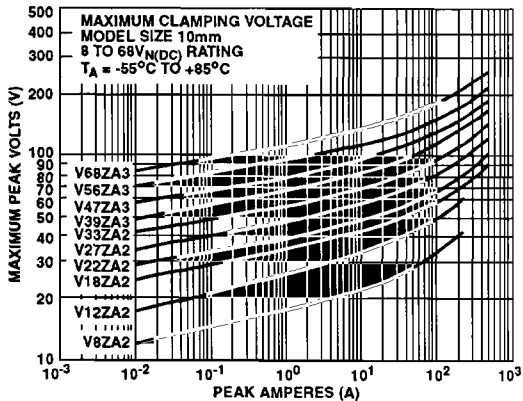


FIGURE 7. CLAMPING VOLTAGE FOR V8ZA2 - V68ZA3

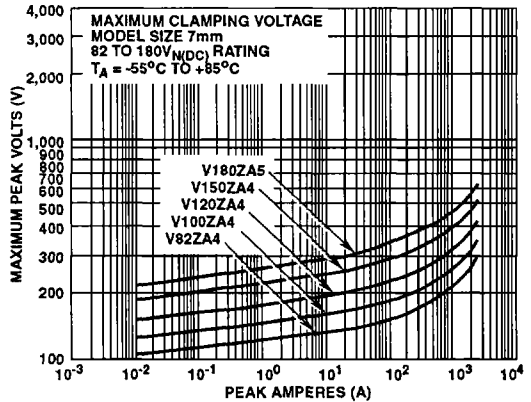


FIGURE 8. CLAMPING VOLTAGE FOR V82ZA4 - V180ZA5

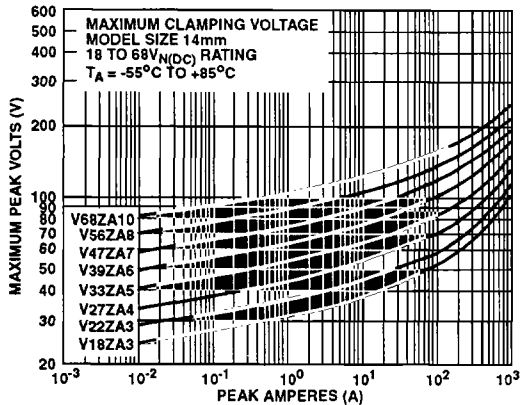


FIGURE 9. CLAMPING VOLTAGE FOR V18ZA3 - V66ZA10

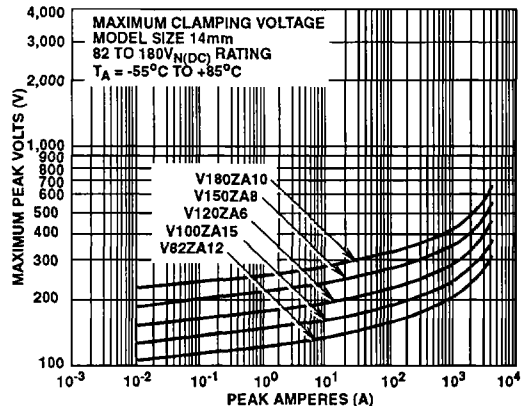


FIGURE 10. CLAMPING VOLTAGE FOR V82ZA12 - V180ZA10

## ZA Series

### Transient V-I Characteristics Curves (Continued)

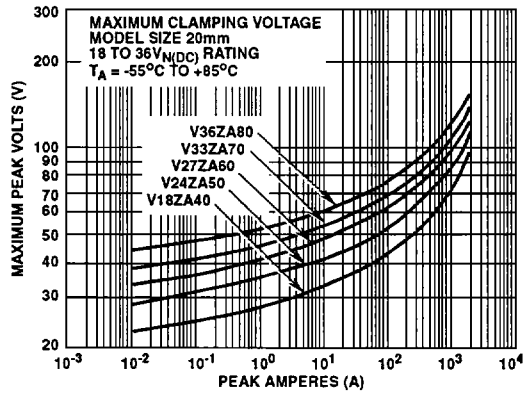


FIGURE 11. CLAMPING VOLTAGE FOR V18ZA40 - V36ZA80

### Pulse Rating Curves

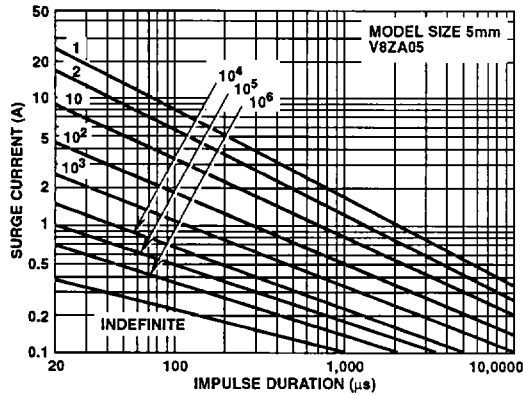


FIGURE 12. SURGE CURRENT RATING CURVES FOR V8ZA05

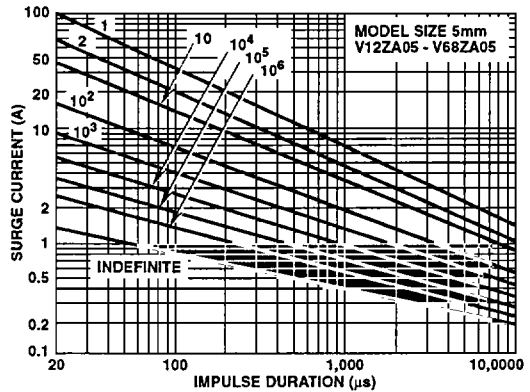


FIGURE 13. SURGE CURRENT RATING CURVES FOR V12ZA05 - V68ZA05

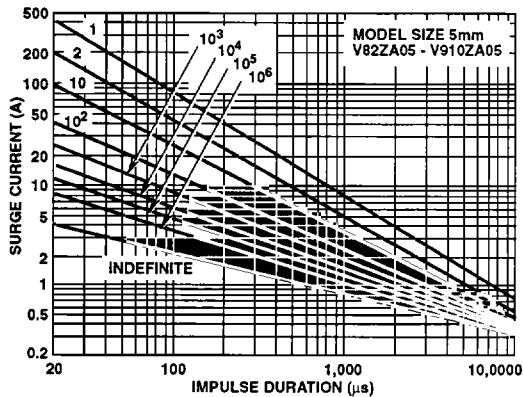


FIGURE 14. SURGE CURRENT RATING CURVES FOR V82ZA05 - V910ZA05

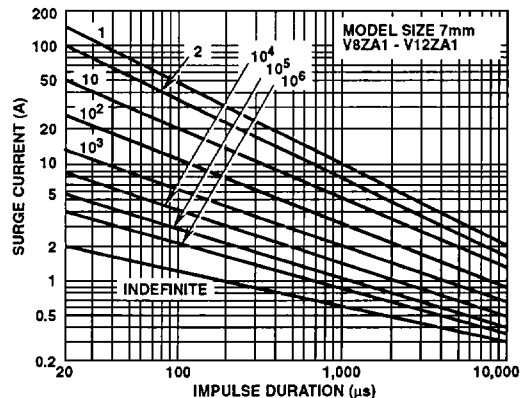


FIGURE 15. SURGE CURRENT RATING CURVES FOR V8ZA1 - V12ZA1

Pulse Rating Curves (Continued)

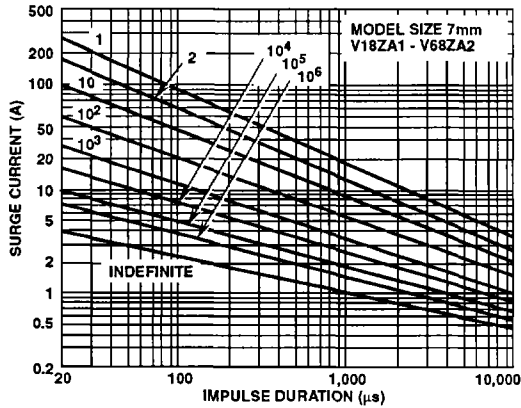


FIGURE 16. SURGE CURRENT RATING CURVES FOR V18ZA1 - V68ZA2

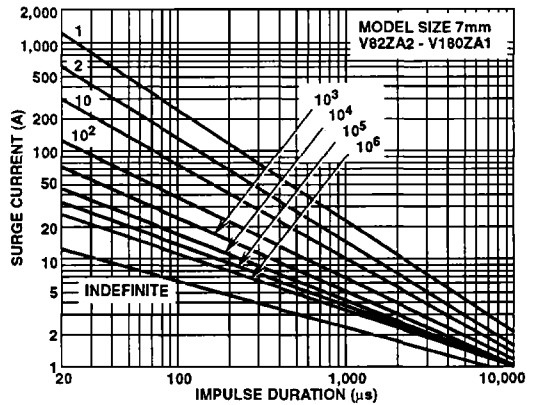


FIGURE 17. SURGE CURRENT RATING CURVES FOR V82ZA2 - V180ZA1

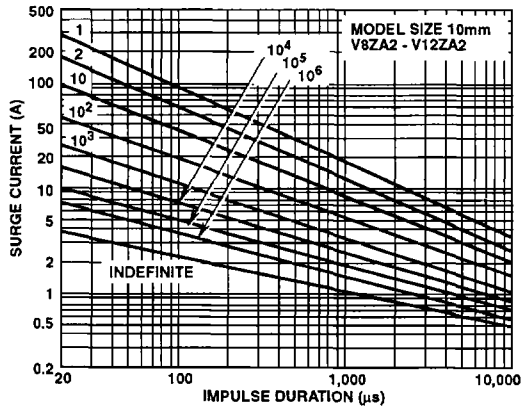


FIGURE 18. SURGE CURRENT RATING CURVES FOR V8ZA2 - V127ZA2

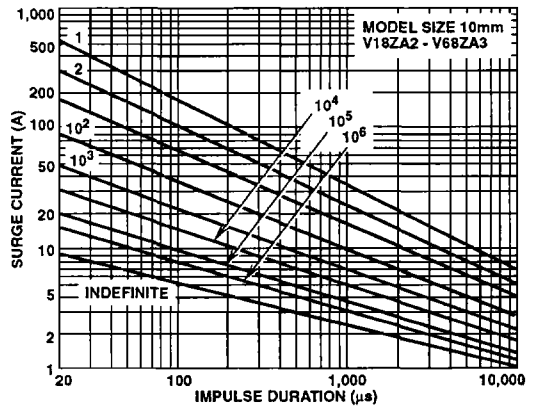


FIGURE 19. SURGE CURRENT RATING CURVES FOR V18ZA2 - V68ZA3

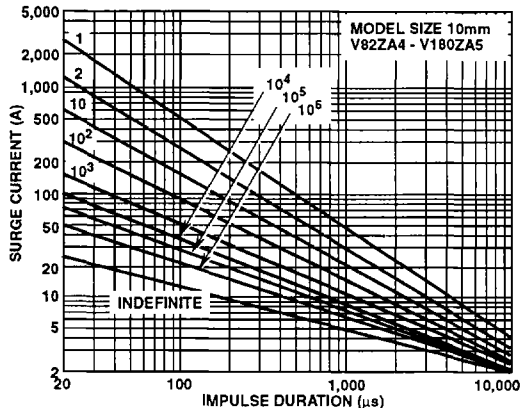


FIGURE 20. SURGE CURRENT RATING CURVES FOR V82ZA4 - V180ZA5

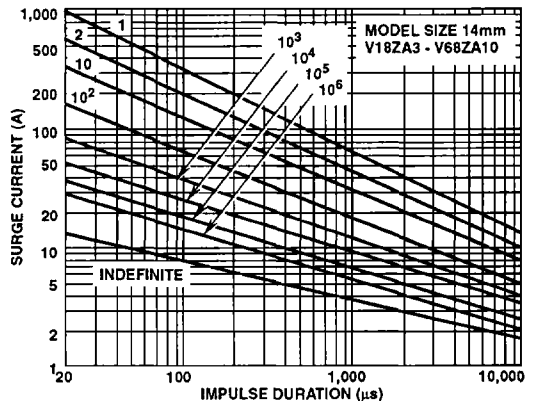
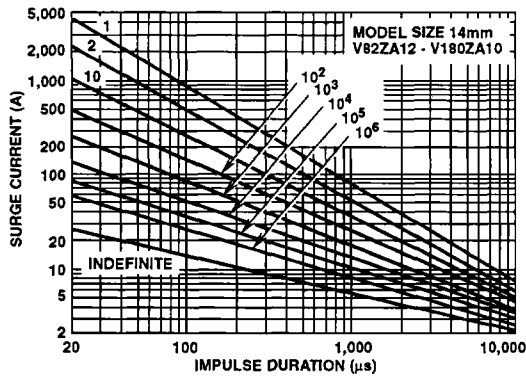


FIGURE 21. SURGE CURRENT RATING CURVES FOR V18ZA3 - V68ZA10

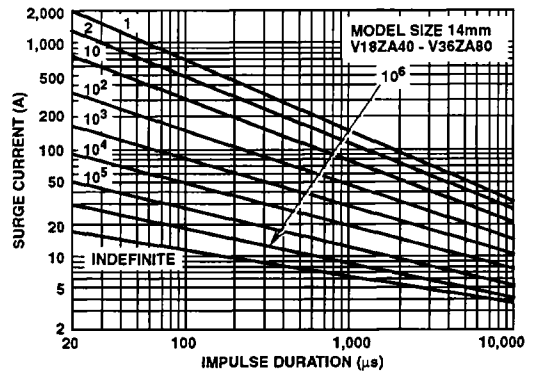
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## ZA Series

### Pulse Rating Curves (Continued)



**FIGURE 22. SURGE CURRENT RATING CURVES FOR V82ZA12 - V180ZA10**



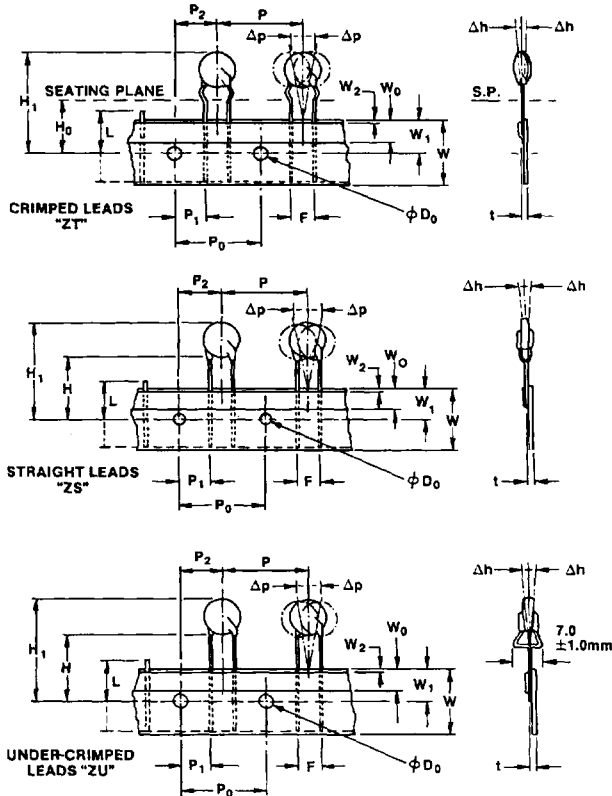
**FIGURE 23. SURGE CURRENT RATING CURVES FOR V18ZA40 - V36ZA80**

NOTE: If pulse ratings are exceeded, a shift of  $V_{N(DC)}$  (at specified current) of more than  $\pm 10\%$  could result. This type of shift, which normally results in a decrease of  $V_{N(DC)}$ , may result in the device not meeting the original published specifications, but it does not prevent the device from continuing to function, and to provide ample protection.



# ZA Series

## Tape and Reel Specifications



## Tape And Reel Data

- Conforms to ANSI and EIA specifications
- Can be supplied to IEC Publication 286-2
- Radial devices on tape are supplied with crimped leads, straight leads, or under-crimped leads

SYMBOL	PARAMETER	MODEL SIZE				
		5mm	7mm	10mm	14mm	20mm
P	Pitch of Component	12.7 ± 1.0	12.7 ± 1.0	25.4 ± 1.0	25.4 ± 1.0	25.4 ± 1.0
P <sub>0</sub>	Feed Hole Pitch	12.7 ± 0.2	12.7 ± 0.2	12.7 ± 0.2	12.7 ± 0.2	12.7 ± 0.2
P <sub>1</sub>	Feed Hole Center to Pitch	3.85 ± 0.7	3.85 ± 0.7	2.6 ± 0.7	2.6 ± 0.7	2.6 ± 0.7
P <sub>2</sub>	Hole Center to Component Center	6.35 ± 1.0	6.35 ± 1.0	6.35 ± 1.0	6.35 ± 1.0	6.35 ± 1.0
F	Lead to Lead Distance	5.0 ± 1.0	5.0 ± 1.0	7.5 ± 1.0	7.5 ± 1.0	7.5 ± 1.0
Δh	Component Alignment	2.0 Max	2.0 Max	2.0 Max	2.0 Max	2.0 Max
W	Tape Width	18.0 + 1.0 18.0 - 0.5	18.0 + 1.0 18.0 - 0.5	18.0 + 1.0 18.0 - 0.5	18.0 + 1.0 18.0 - 0.5	18.0 + 1.0 18.0 - 0.5
W <sub>0</sub>	Hold Down Tape Width	6.0 ± 0.3	6.0 ± 0.3	6.0 ± 0.3	6.0 ± 0.3	12.0 ± 0.3
W <sub>1</sub>	Hole Position	9.0 + 0.75 9.0 - 0.50	9.0 + 0.75 9.0 - 0.50	9.0 + 0.75 9.0 - 0.50	9.0 + 0.75 9.0 - 0.50	9.0 + 0.75 9.0 - 0.50
W <sub>2</sub>	Hold Down Tape Position	0.5 Max	0.5 Max	0.5 Max	0.5 Max	0.5 Max
H	Height from Tape Center to Component Base	18.0 + 2.0 18.0 - 0.0	18.0 + 2.0 18.0 - 0.0	18.0 + 2.0 18.0 - 0.0	18.0 + 2.0 18.0 - 0.0	18.0 + 2.0 18.0 - 0.0
H <sub>0</sub>	Seating Plane Height	16.0 ± 0.5	16.0 ± 0.5	16.0 ± 0.5	16.0 ± 0.5	16.0 ± 0.5
H <sub>1</sub>	Component Height	29.0 Max	29.0 Max	29.0 Max	29.0 Max	29.0 Max
D <sub>0</sub>	Feed Hole Diameter	4.0 ± 0.2	4.0 ± 0.2	4.0 ± 0.2	4.0 ± 0.2	4.0 ± 0.2
t	Total Tape Thickness	0.7 ± 0.2	0.7 ± 0.2	0.7 ± 0.2	0.7 ± 0.2	0.7 ± 0.2
L	Length of Clipped Lead	11.0 Max	11.0 Max	11.0 Max	11.0 Max	12.0 Max
Δp	Component Alignment	3° Max	3° Max	3° Max	3° Max	3° Max

NOTE: Dimensions are in mm.

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## ZA Series

### Tape and Reel Ordering Information

Crimped leads are standard on ZA types supplied in tape and reel and are denoted by the model letter "T". Model letter "S" denotes straight leads and letter "U" denotes special under-crimped leads.

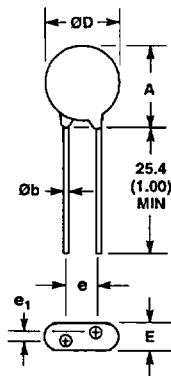
Example:

STANDARD MODEL	CRIMPED LEADS	STRAIGHT LEADS	UNDER-CRIMPED LEADS
V18ZA3	V18ZT3	V18ZS3	V18ZU3

### SHIPPING QUANTITY

SIZE	RMS (MAX) VOLTAGE	QUANTITY PER REEL		
		"T" REEL	"S" REEL	"U" REEL
5mm	All	1000	1000	1000
7mm	All	1000	1000	1000
10mm	All	1000	1000	1000
14mm	< 300V	500	500	500
14mm	≥ 300V	500	500	500
20mm	< 300V	500	500	500
20mm	≥ 300V	500	500	500

### Packaging



SYM-BOL	VOLTAGE MODEL	VARISTOR MODEL SIZE									
		5mm		7mm		10mm		14mm		20mm	
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
A	All	6 (0.236)	10 (0.394)	7.5 (0.295)	12 (0.472)	10 (0.394)	16 (0.630)	13.5 (0.531)	20 (0.787)	17.5 (0.689)	26.5 (1.043)
ØD	All	6 (0.236)	7 (0.276)	7.5 (0.295)	9 (0.354)	10 (0.394)	12.5 (0.492)	13.5 (0.531)	17 (0.669)	17.5 (0.689)	23 (0.906)
e (Note 1)	All	4 (0.157)	6 (0.236)	4 (0.157)	6 (0.236)	6.5 (0.256)	8.5 (0.335)	6.5 (0.256)	8.5 (0.335)	6.5 (0.256) (Note 1)	8.5 (0.335) (Note 1)
e <sub>1</sub>	V8ZA-V56ZA	1 (0.039)	3 (0.118)	1 (0.039)	3 (0.118)	1 (0.039)	3 (0.118)	1 (0.039)	3 (0.118)	1 (0.039)	3 (0.118)
	V68ZA-V100ZA	1.5 (0.059)	3.5 (0.138)	1.5 (0.059)	3.5 (0.138)	1.5 (0.059)	3.5 (0.138)	1.5 (0.059)	3.5 (0.138)	NA (NA)	NA (NA)
	V120ZA-V180ZA	1 (0.039)	3 (0.118)	1 (0.039)	3 (0.118)	1 (0.039)	3 (0.118)	1 (0.038)	1 (0.118)	NA (NA)	NA (NA)
	V220ZA-V910ZA	1.5 (0.059)	3.5 (0.138)	-	-	-	-	-	-	-	-
E	V8ZA-V56ZA	-	5 (0.197)	-	5 (0.197)	-	5 (0.197)	-	5 (0.197)	-	5 (0.197)
	V68ZA-V100ZA	-	5.6 (0.220)	-	5.6 (0.220)	-	5.6 (0.220)	-	5.6 (0.220)	-	5.6 (0.220)
	V120ZA-V180ZA	-	5 (0.197)	-	5 (0.197)	-	5 (0.197)	-	5 (0.197)	-	5 (0.197)
	V220ZA-V910ZA	-	5.6 (0.220)	-	5.6 (0.220)	-	5.6 (0.220)	-	5.6 (0.220)	-	5.6 (0.220)
Øb	All	0.585 (0.023)	0.685 (0.027)	0.585 (0.023)	0.685 (0.027)	0.76 (0.030)	0.86 (0.034)	0.76 (0.030)	0.86 (0.034)	0.76 (0.030)	0.86 (0.034)

NOTE: Dimensions in millimeters, inches in parentheses.

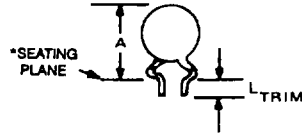
1. 10mm ALSO AVAILABLE; See Ordering Information.

V24ZA50 only supplied with lead spacing of 6.35mm ± 0.5mm (0.25 ± 0.197)

## ZA Series

### Available Lead Style

Radial lead types can be supplied with a preformed crimp in the leads, and are available in all model sizes. Lead trim ( $L_{TRIM}$ ) is supplied to the dimensions shown.



\*Seating plane interpretation per IEC-717

**CRIMPED AND TRIMMED LEAD**

SYMBOL	VARISTOR MODEL SIZE									
	5mm		7mm		10mm		14mm		20mm	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
A	-	13.0 (0.512)	-	15 (0.591)	-	19.5 (0.768)	-	22.5 (0.886)	-	29.0 (1.142)
$L_{TRIM}$	2.41 (0.095)	4.69 (0.185)	2.41 (0.095)	4.69 (0.185)	2.41 (0.095)	4.69 (0.185)	2.41 (0.095)	4.69 (0.185)	2.41 (0.095)	4.69 (0.185)

NOTE: Dimensions in millimeters, inches in parentheses.

### Ordering Information

- For crimped and trimmed lead styles, standard radial type model numbers are changed by replacing the model letter "A" with "C".
- For 10/±1mm lead spacing on 20mm diameter models only; append standard model numbers by adding "X10".

Example:

STANDARD CATALOG MODEL	ORDER AS:
V18ZA3	V18ZC3

Example:

STANDARD CATALOG MODEL	ORDER AS:
V18ZA40	V18ZA40X10

- For crimped leads without trimming and any variations to the above, contact Harris Semiconductor Power Marketing.

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