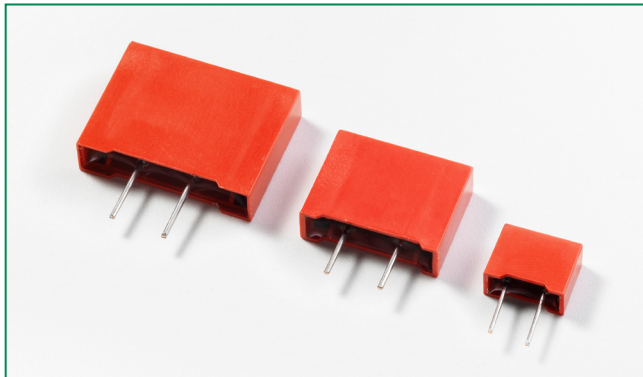


RA Varistor Series



Agency Approvals

Agency	Agency Approval	Agency File Number
	UL1449	E320116

Additional Information



Datasheet



Resources



Samples

Description

The RA Series transient surge suppressors are varistors (MOVs) supplied in a low-profile box that features a precise seating plane to increase mechanical stability for secure circuit-board mounting. This feature makes these devices suitable for industrial applications critical to vibration. Their construction permits operation up to 125°C (ambient) without derating.

The RA Series are available in voltage ratings up to 275V $V_{M(AC)RMS}$ and energy levels up to 140J. These varistors are used in automotive, motor-control, telecommunication, and military applications.

See RA Series Device Ratings and Specifications Table for part number and brand information.

Features

- Lead-free/RoHS compliant parts available (add suffix "x2749")
- Low profile outline with precise seating plane
- No derating up to 125°C ambient
- In-line leads
- Wide operating voltage range:
 $V_{M(AC)RMS}$: 4 – 275V
 $V_{M(DC)}$: 5.5 – 369V
- High energy absorption capability W_{TM} up to 140J
- 3 model sizes available
 A8, RA16, and RA22

Absolute Maximum Ratings

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

Continuous	RA8 Series	RA16 Series	RA22 Series	Units
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RA Series Ratings & Specifications

Part Number	Brand	Maximum Rating (125°C)				Specifications (25°C)					
		Continuous		Transient		Varistor Voltage at 1mA DC Test Current			Max Clamping Volt V_C (8/20 μ s)		Typical Capacitance
		V_{RMS}	V_{DC}	Energy (10/1000 μ s)	Peak Current (8/20 μ s)						
		$V_{M(AC)}$	$V_{M(DC)}$	W_{TM}	I_{TM}	Min	$V_{N(DC)}$	Max	V_C	I_P	f = 1MHz
	(mm)	(V)	(V)	(J)	(A)	(V)	(V)	(V)	(V)	(A)	(pF)
† RA8 Series											
V8RA8	8R	4	5.5	0.4	150	6	8.6	11.2	22	5	3000
V12RA8	12R	6	8	0.6	150	9	12.5	16	34	5	2500
V18RA8	18R	10	14	0.8	250	16.2	18	19.8	42	5	2000
V22RA8	22R	14	18 (Note 3)	10 (Note 2)	250	19.8	22	24.2	47	5	1600
V27RA8	27R	17	22	1.0	250	24.3	27	29.7	57	5	1300
V33RA8	33R										

RA Series Ratings & Specifications

Part Number	Brand	Maximum Rating (125°C)				Specifications (25°C)					
		Continuous		Transient		Varistor Voltage at 1mA DC Test Current			Max Clamping Volt V_C (8/20 μ s)		Typical Capacitance
		V_{RMS}	V_{DC}	Energy (10/1000 μ s)	Peak Current (8/20 μ s)						
		$V_{M(AC)}$	$V_{M(DC)}$	W_{TM}	I_{TM}	Min	$V_{N(DC)}$	Max	V_C	I_P	f = 1MHz
	(mm)	(V)	(V)	(J)	(A)	(V)	(V)	(V)	(V)	(A)	(pF)
† RA22 Series											
V24RA22	24R22	14	18 (Note 3)	100.0 (Note 2)	2000	21.6	24	26.4	43	20	18000
V36RA22	36R22	23	31	160.0 (Note 2)	2000	32.4	36	39.6	63	20	12000
† V200RA22	200R22	130	175	70.0	6500	184.5	205	225.5	340	100	1900
† V240RA22	240R22	150	200	80.0	6500	216	240	264	395	100	1600
† V270RA22	270R22	175									

Maximum Clamping Voltage for 8mm Parts

V8RA8 - V68RA8

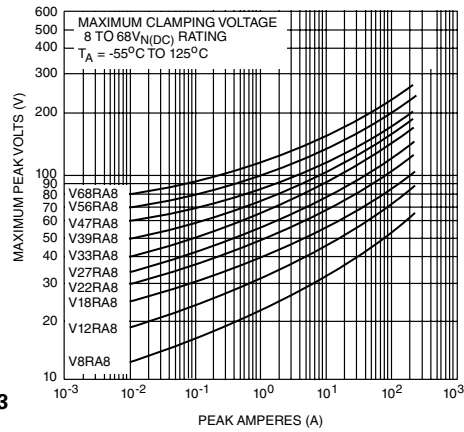


Figure 3

Repetitive Surge Capability for 8mm Parts

V8RA8 - V12RA8

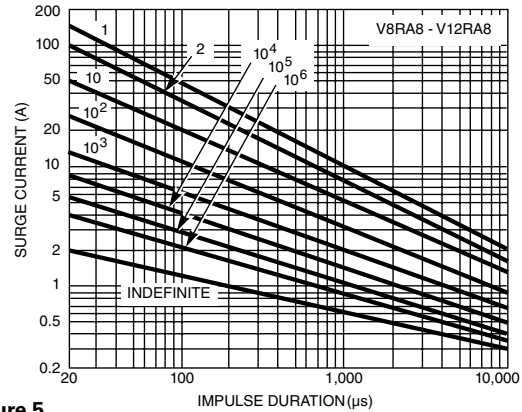


Figure 5

V82RA8 - V430RA8

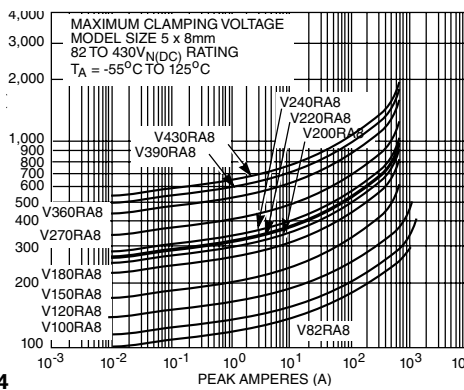
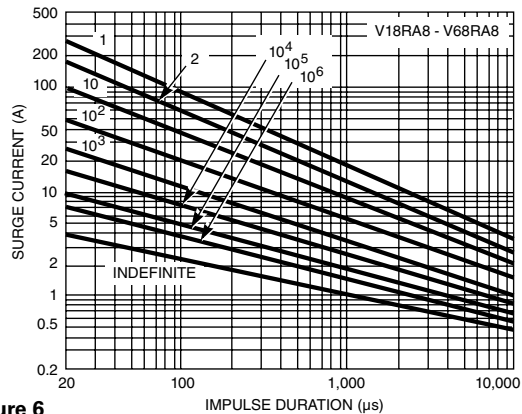


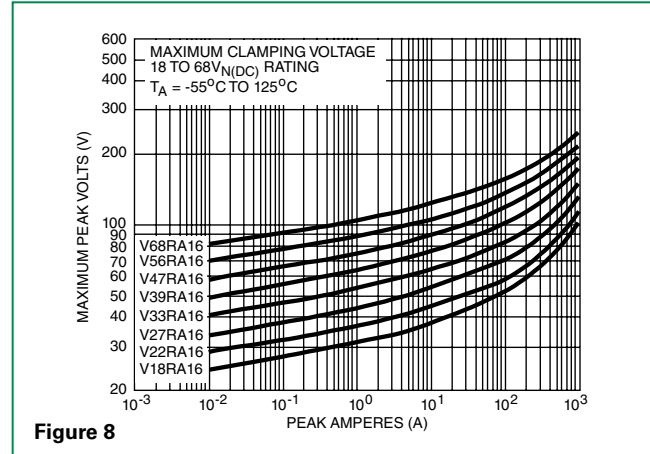
Figure 4

V18RA8 - V68RA8



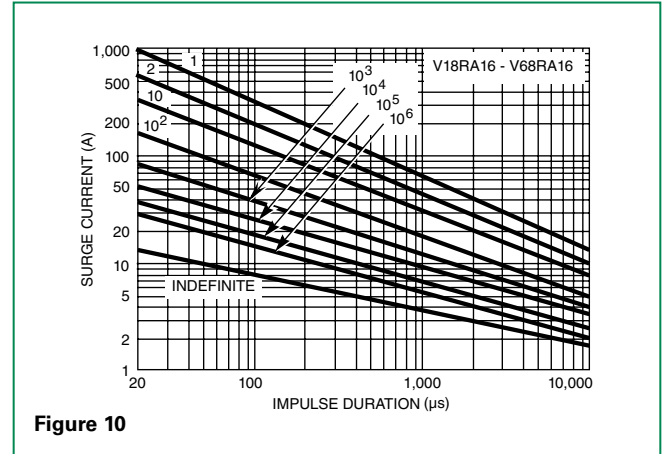
Maximum Clamping Voltage for 16mm Parts

V18RA16 - V68RA16

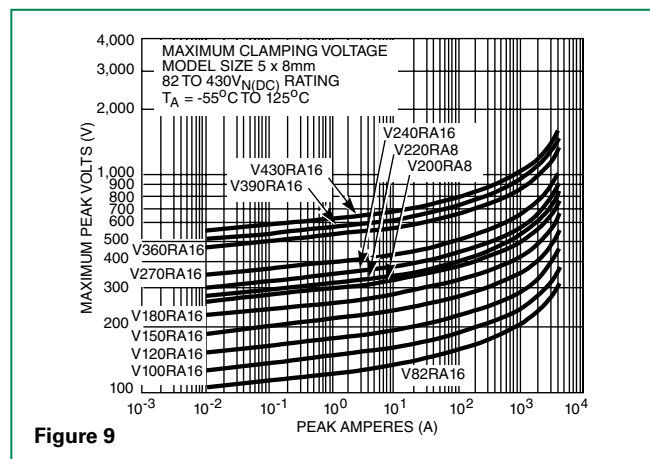


Repetitive Surge Capability for 16mm Parts

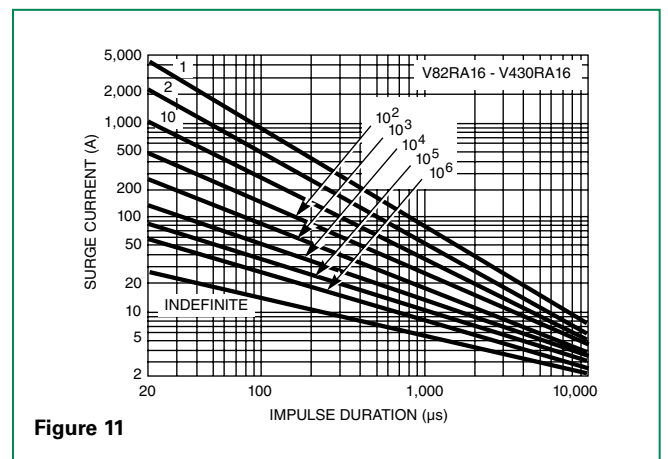
V18RA16 - V68RA16



V82RA16 - V430RA16



V82RA16 - V430RA16



Maximum Clamping Voltage for 22mm Parts

V24RA22 - V36RA22

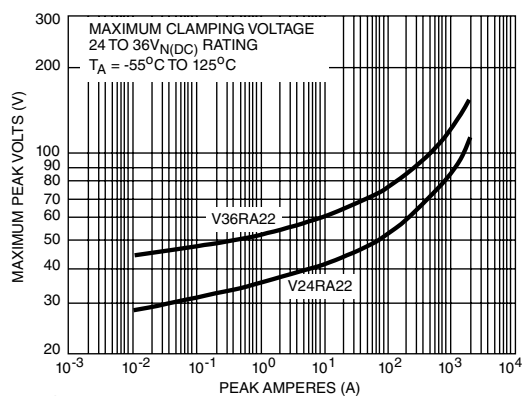


Figure 12

Repetitive Surge Capability for 22mm Parts

V24RA22 - V36RA22

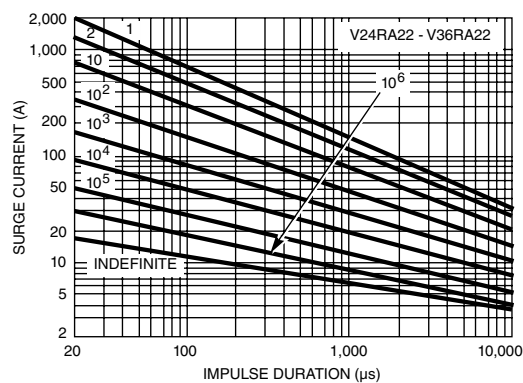


Figure 14

V200RA22 - V430RA22

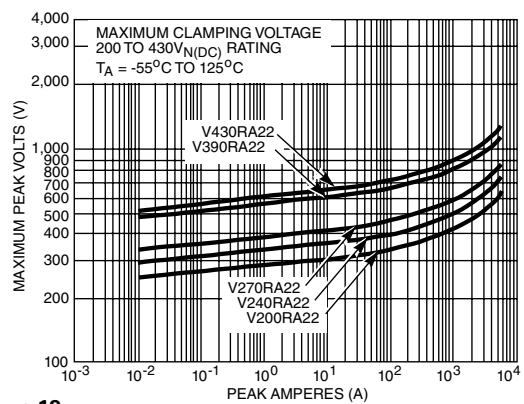
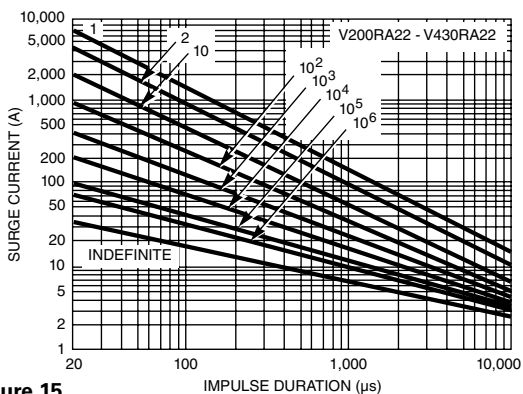


Figure 13

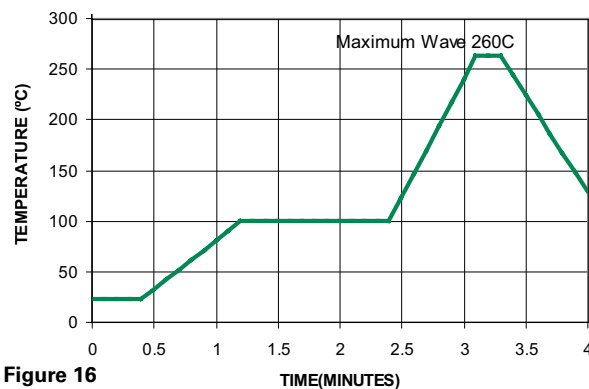
V200RA22 - V430RA22



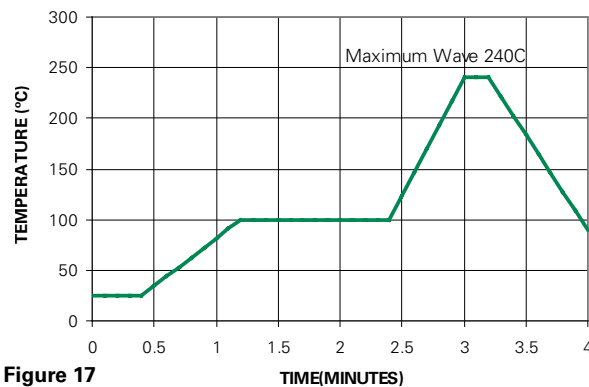
Wave Solder Profile

Reflow Condition		Pb – Free assembly
Pre Heat	- Temperature Min (Ts(min))	150°C
	- Temperature Max (Ts(max))	200°C
	- Time (min to max) (ts)	60 – 180 secs
Average ramp-up rate (Liquidus Temp (TL) to peak)		5°C/second max
TS(max) to TL - Ramp-up Rate		5°C/second max
Reflow	- Temperature (TL) (Liquidus)	217°C
	- Temperature (tL)	60 – 150 seconds
Peak Temperature (TP)		250+0/-5°C
Time within 5°C of actual peak Temperature (tp)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (TP)		8 minutes Max.
Do not exceed		260°C

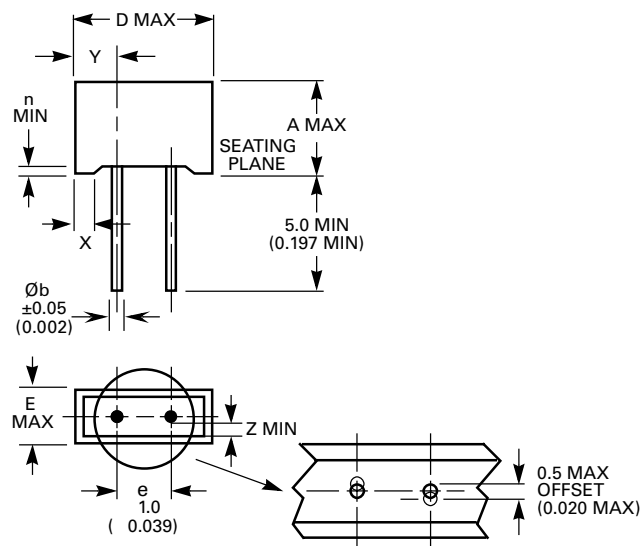
Lead-free Profile



Non Lead-free Profile



Product Dimensions (mm)

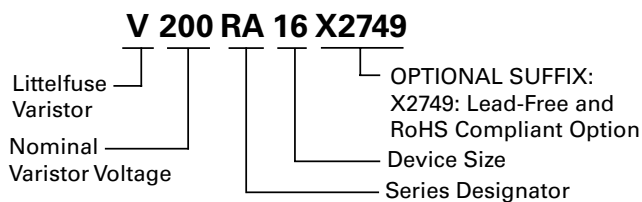


SYMBOL	RA8 Series	RA16 Series	RA22 Series
A (max.)	8.85 (0.348)	15.1 (0.594)	19.1 (0.752)
D (max.)	11.45 (0.450)	19.7 (0.776)	25.5 (1.004)
e ± 1	5 (0.197)	7.5 (0.295)	7.5 (0.295)
E (max.)	5.2 (0.205)	6.3 (0.248)	6.3 (0.248)
n (max.)	0.7 (0.027)	0.7 (0.027)	0.7 (0.027)
$\varnothing b \pm 0.05$	0.635 (0.025)	0.81 (0.032)	0.81 (0.032)
Weight (typical)	1 Gram	3.4 Grams	4.4 Grams
X	2.2 (0.087)	2.2 (0.087)	4.4 (0.173)
Y (Typ.)	3.1 $\pm$ 0.5 (0.122 $\pm$ 0.02)	6 $\pm$ 1 (0.236 $\pm$ 0.04)	8.9 $\pm$ 1 (0.35 $\pm$ 0.04)
Z (min.)	0.4 (0.015)	0.8 (0.031)	0.8 (0.031)

NOTES: Dimensions are in mm, with dimensions in inches in parentheses.
Inches for reference only.

Part Numbering System

The RA Series is supplied in bulk pack.





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- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.