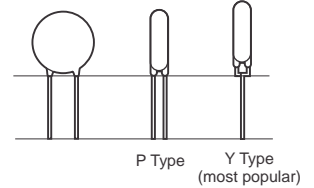


HOW TO SELECT METAL OXIDE VARISTORS

- What is the range of ACrms or DC Voltage in the application?
- How will the varistor be connected in the circuit?
- Calculate the required varistor voltage at 10% to 25% above the system RMS or DC Voltage.
- Calculate the varistor energy rating needed based on energy in transient voltage.
- Calculate the surge current wave form from the surge voltage and surge impedance.
- Check to make sure the withstanding surge current of the varistor is sufficient.
- Check whether the maximum energy and surge life of the varistor is enough.
- Check the relation: Maximum withstanding voltage of the protected device > Maximum clamping voltage of the varistor > The real clamping voltage > Breakdown voltage of the varistor > Operating voltage of the protected device.



10 JVR VARISTOR

Part Number	Maximum Allowable Voltage		Varistor Voltage V@0.1mA		Maximum Clamping Voltage V@ 5A (V)	Withstanding Surge Current		Rated Wattage (W)	Energy 10/1000 ms (J)	UL	CSA	VDE
	ACrms (V)	DC (V)	Tolerance Range (V)	1Time (A)		2 Times (A)						
							(V)					
JVR10S180M87□△△	11	14	18	± 20%	*36	1000	500	0.05	2.6	✓		✓
JVR10S220L87□△△	14	18	22	± 15%	*43				3.2	✓		✓
JVR10S270K87□△△	17	22	27		*53				3.9	✓		✓
JVR10S330K87□△△	20	26	33		*65				4.8	✓		✓
JVR10S390K87□△△	25	31	39		*77				5.6	✓		✓
JVR10S470K87□△△	30	38	47		*93				6.8	✓		✓
JVR10S560K87□△△	35	45	56		*110				8.1	✓		✓
JVR10S680K87□△△	40	56	68		*135				9.8	✓		✓
JVR10S820K87□△△	50	65	82		135				14.0	✓		✓
JVR10S101K87□△△	60	85	100		165				18.0	✓		✓
JVR10S121K87□△△	75	100	120		200	22.0	✓		✓			
JVR10S151K87□△△	95	125	150		250	25.0	✓		✓			
JVR10S181K87□△△	115	150	180		300	32.0	✓		✓			
JVR10S201K87□△△	130	170	200		340	35.0	✓	✓	✓			
JVR10S221K87□△△	140	180	220	±10%	360	39.0	✓	✓	✓			
JVR10S241K87□△△	150	200	240		395	42.0	✓	✓	✓			
JVR10S271K87□△△	175	225	270		455	49.0	✓	✓	✓			
JVR10S301K87□△△	195	250	300		505	52.0	✓	✓	✓			
JVR10S331K87□△△	210	275	330		550	58.0	✓	✓	✓			
JVR10S361K87□△△	230	300	360		595	65.0	✓	✓	✓			
JVR10S391K87□△△	250	320	390		650	70.0	✓	✓	✓			
JVR10S431K87□△△	275	350	430		710	80.0	✓	✓	✓			
JVR10S471K87□△△	300	385	470		775	85.0	✓	✓	✓			
JVR10S511K87□△△	320	418	510		842	92.0	✓	✓	✓			
JVR10S561K87□△△	350	460	560		920	102.0	✓	✓	✓			
JVR10S621K87□△△	385	505	620		1025	107.0	✓	✓	✓			
JVR10S681K87□△△	420	560	680		1120	112.0	✓	✓	✓			
JVR10S751K87□△△	460	615	750		1240	115.0	✓	✓	✓			
JVR10S781K87□△△	485	640	780		1290	116.0	✓	✓	✓			
JVR10S821K87□△△	510	670	820		1355	118.0	✓	✓	✓			
JVR10S911K87□△△	550	745	910		1500	127.0	✓	✓	✓			
JVR10S102K87□△△	625	825	1000		1650	140.0	✓	✓	✓			
JVR10S112K87□△△	680	895	1100		1815	155.0	✓	✓	✓			

1) The clamping voltage from 180M to 680K are tested with current 5A.
For application required ratings not shown, contact RFE application engineering.
* For Halogen Free use prefix code JVH

□ : Lead Style △△ : Lead Length / Packing Method
Y: vertical kink (standard)

P: straight leads

DIMENSION OF COMPONENT

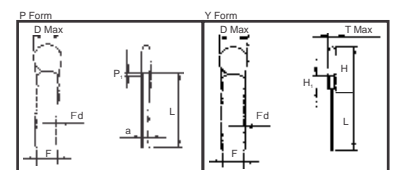
Dimension Table unit: mm

Table of T Max, & a

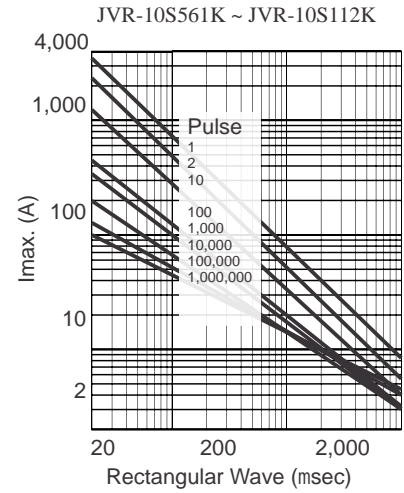
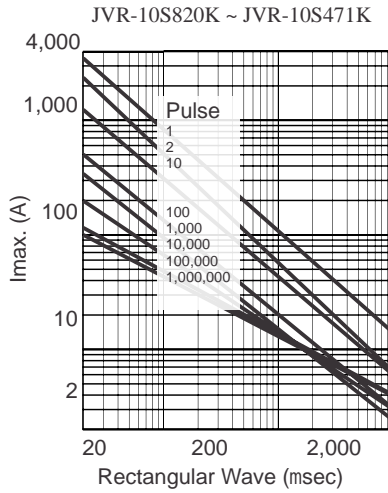
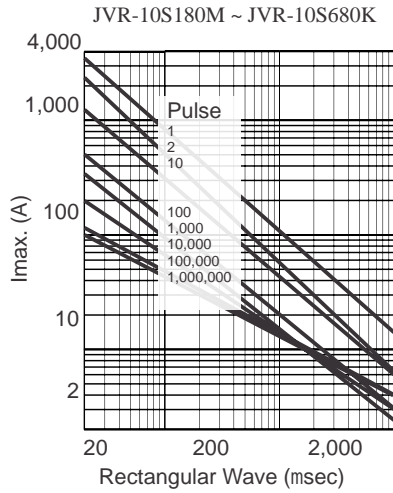
Diameter	10 f
D max	12.5
d (±0.5)	0.6 / 0.8
F (±1)	5.0 / 7.5
H Max	18 / *19
H _i Max	5.0
L Min (Y Type)	24.0
L Min (P Type)	25.0

*Just for 182K

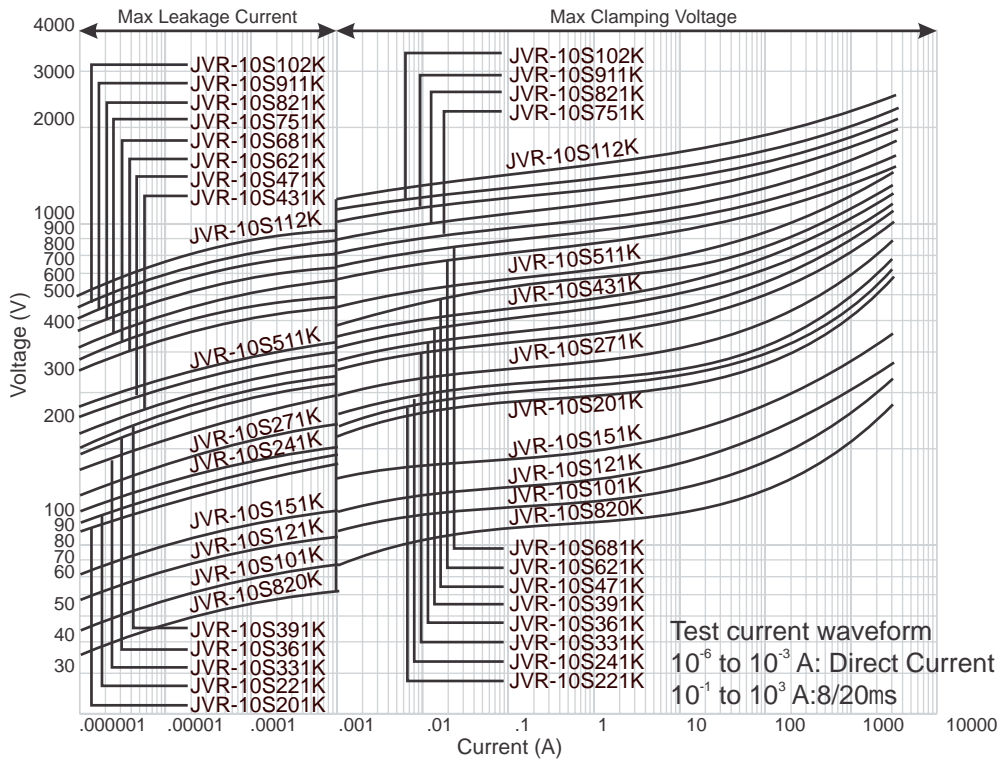
Diameter (F)	Dimension		Diameter (F)	Dimension		Diameter (F)	Dimension	
	Code	T Max a + 0.8		Code	T Max a + 0.8		Code	T Max a + 0.8
180M	4.9	0.8	181K	4.5	1.0	561K	7.3	3.4
220M/L	4.9	0.9	201K	4.6	1.0	621K	7.6	4.0
270M/K	5.1	0.9	221K	4.7	1.1	681K	8.0	4.4
330M/K	5.1	1.0	241K	4.8	1.3	751K	8.4	4.4
390L/K	5.1	1.2	271K	5.0	1.4	781K	8.6	4.6
470L/K	5.5	1.2	301K	5.2	1.6	821K	8.8	4.6
560L/K	5.5	1.4	331K	5.3	1.6	911K	9.4	5.4
680L/K	6.0	1.7	361K	5.5	1.9	102K	9.9	5.4
820K	4.3	0.8	391K	5.7	2.2	112K	10.5	5.7
101K	4.4	0.8	431K	6.5	2.5	182K	12.6	9.8
121K	4.5	0.9	471K	6.8	2.6			
151K	4.9	1.2	511K	7.0	3.1			



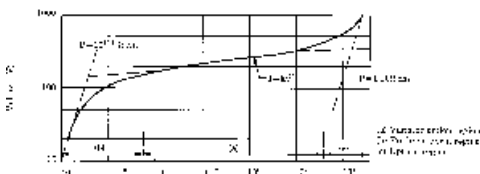
PULSE RATING CURVES



10mm V-I CHARACTERISTIC CURVE

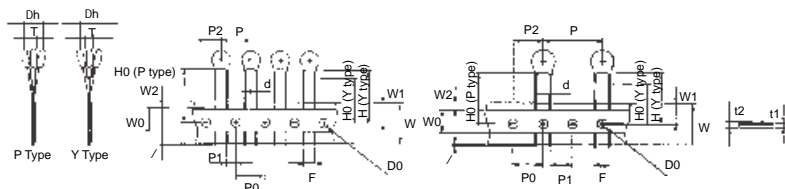


CURRENT - VOLTAGE CHARACTERISTICS



- Operating & Storage Temperature Range: -40 to +125°C
- Temp. Coefficient of voltage: 0 ~ 0.05% / °C max

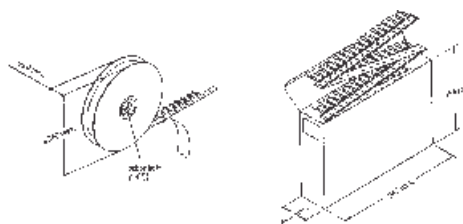
TAPING SPECIFICATIONS



Symbol	Item	Dimensions	Symbol	Item	Dimensions
/	Cut out length	1.1 max	P	Pitch of component	12.7 + 0.3
H (Y Type)	Height of component from hole center	21.5 max	P0	Sprocket hole pitch	12.7 + 0.3
H0 (Y Type)	Height to seating plane	16.0 + 0.5	P1	Lead length from hole center to lead	3.85 + 0.7
H0 (P Type)	Height of component from hole center	16.0 ~ 21.0	P2	Lead length from hole center to disk center	6.35 + 1.3
Δh	Front to back deveation	0 + 2.0	D0	Procket hole diameter	4.0 + 0.2
W	Carrier tape width	18.0 + 1 - .05	D0	Lead wire diameter	0.6 + 0.05
W0	Hold down tape width	12	T	Disk Thickness	See T mak table
W1	Sprocket hole position	9.0 0.75 - 0.5	t1	Total thickness tape	0.7 + 0.05
W2	Adhesive tape position	3.0 max	t2	Total thickness tape with tape	1.6 max
F	Component lead spacing	7.5 + 0.8 - 0.2			

REEL & AMMO SPECIFICATIONS

Voltage Code	Bulk (Box)	Reel	Ammo	
			F=7.5	F=5.0
180 ~ 331	2500	1000	500	1000
361	2500	1000	500	1000
391	2500	1000	500	1000
431 ~ 471	2000	750	500	750
511 ~ 751	1500	500	500	500
781 ~ 112	1500	500	500	500



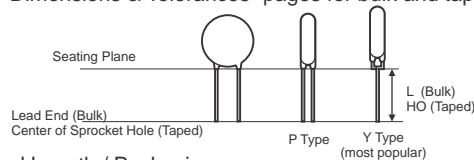
PART NUMBER EXAMPLE

JVR - 10 S 180 K 6 5 Y RW
(1) (2) (3) (4) (5)(6)(7)(8) (9)

- 1- Series (JVR) Metal Oxide Varistor
- 2- Disc Diameter or size
- 3- S for High Surge
- 4- Varistor Voltage
- 5- Tolerance:
K = $\pm 10\%$
L = $\pm 15\%$
M = $\pm 20\%$
- 6- Lead Diameter
6: $0.6 \pm 0.05\text{mm}$
8: $0.8 \pm 0.05\text{mm}$
- 7- Lead Spacing
5: 5.0mm
7: 7.5mm
- 8 - Y or P Type Lead Configurations

STANDARD LEAD CONFIGURATIONS

See "Dimensions & Tolerances" pages for bulk and taping specifications



9 - Lead Length / Packaging

Lead Type	Code	Dimension*	Packaging
Y Type Leads	50	L = $5 \pm 0.5\text{mm}$	Bulk
	U4	L = 24mm min.	Bulk
	AW	HO = 16mm	Ammo
	RW	HO = 16mm	Reel
	AX	HO = 18mm	Ammo
	RX	HO = 18mm	Reel
P Type Leads	AZ	HO = 20mm	Ammo
	50	L = $5 \pm 0.5\text{mm}$	Bulk
	U5	L = 25mm min.	Bulk
	AY	HO = 20mm	Ammo
	RY	HO = 20mm	Reel

* See "Dimensions & Tolerances" pages, for dimension illustration.
L - From seating plane to end of lead.
HO - From seating plane to center of sprocket feed hole.