

### INTRODUCTION

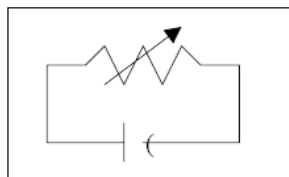
Metal Oxide based chip varistors (JMV's) are used for transient voltage suppression. JMV's have non-linear voltage-current behavior, which is similar to that of Zener Diode. Each grain in JMV exhibits small p-n junction and has much better electrical reliability than Zener Diode. JMV's exhibit better electrical properties such as excellent clamping voltage and low leakage current.

### FEATURES

- Small size and SMD compatibility
- Excellent clamping performance
- High transient current capability
- Fastest response time
- Low voltage available

### APPLICATIONS

- IC and transistor protection
- Computer ESD and I/O protection
- Telecommunication transient protection
- Automotive circuitry applications



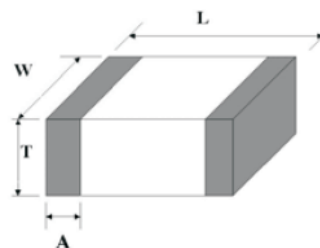
### ELECTRICAL DATA

Item	General Specification
Continuous Rating	Steady State of Applied Voltage: DC Voltage Range ( $V_{wbc}$ ) 3.3 V to 65 V
Transient Rating	Non-Repetitive Surge Current (8/20 $\mu$ S) 20A to 100A Non-Repetitive Energy (10/1000 $\mu$ s) Waveform ( $E_T$ ) 0.05 J to 12J Operating Ambient Temperature Range -55 °C to 125 °C Storage Temperature Range -55 °C to 150 °C

### DIMENSIONS & CONSTRUCTION

Dimensions mm

Chip Size	L	W	T	A
0402	1.0 ± 0.1	0.5 ± 0.10	0.6 max	0.25 ± 0.15
0603	1.6 ± 0.15	0.8 ± 0.15	0.9 max	0.35 ± 0.15
0805	2.0 ± 0.2	1.25 ± 0.20	1.02 max	0.71 max
1206	3.2 ± 0.2	1.6 ± 0.20	1.8 max	0.71 max
1210	3.2 ± 0.2	2.5 ± 0.20	1.8 max	0.71 max
1812	4.5 ± 0.4	3.2 ± 0.40	2.0 max	0.8 max
2220	5.7 ± 0.4	5.0 ± 0.40	2.5 max	0.8 max



### PART NUMBER EXAMPLE JMV 0805 S 090 T 781

Multilayer Varistor

Multilayer Varistor Size  
(See Dimension Table)

Multilayer Varistor Series  
S = Surge Series  
E = ESD Series

#### Capacitance Value:

Sym.	Cap.	Sym.	Cap.	Sym.	Cap.	Sym.	Cap.
150	15	141	140	351	350	651	650
300	30	181	180	361	360	781	780
900	90	201	200	381	380	102	1000
101	100	231	230	501	500	132	1300
121	120	281	280	531	530	182	1800

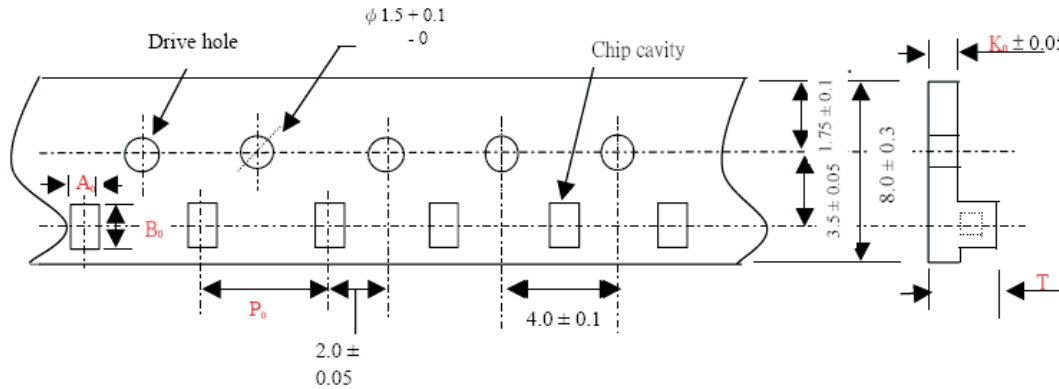
Packaging: T = Tape in Reel

#### Working Voltage:

Sym.	Voltage	Sym.	Voltage
3R3	3.3 V	5R6	5.6 V
090	9.0 V	140	14 V
180	18 V	260	26 V
270	27 V	300	30 V

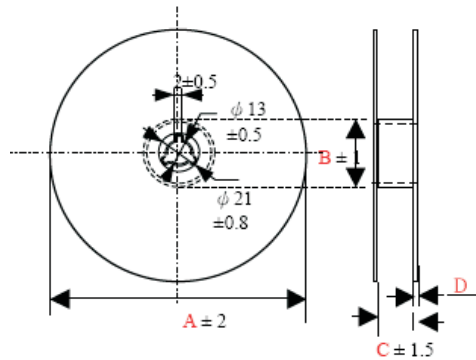
■ **TAPE SPECIFICATIONS**

Dimensions		mm			
Size	A + 0.1	B + 0.1	P + 0.1	K (max)	T (max)
0402	0.6	1.10	2.0	0.2	1.0
0603	1.1	1.75	4.0	0.2	1.15
0805	1.5	2.30	4.0	0.2	2.5



■ **REEL SPECIFICATIONS**

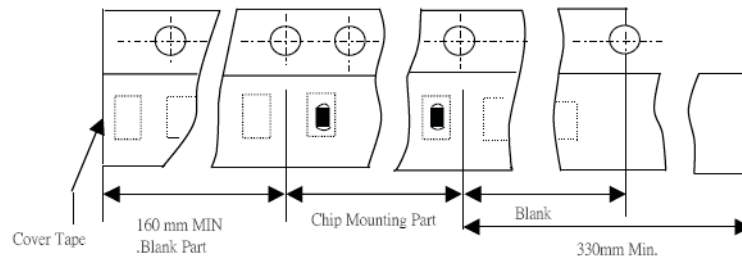
Dimensions		mm			
Size	A	B	C	D	
0402	178	60	10	2	
0603	178	60	10	2	
0805	178	60	10	2	



■ **PACKAGING**

Size	Bulk	Pcs/RL
0402	v	10000
0603	v	4000

Carrier Tape: Polystyrene  
Cover Tape: Polystyrene



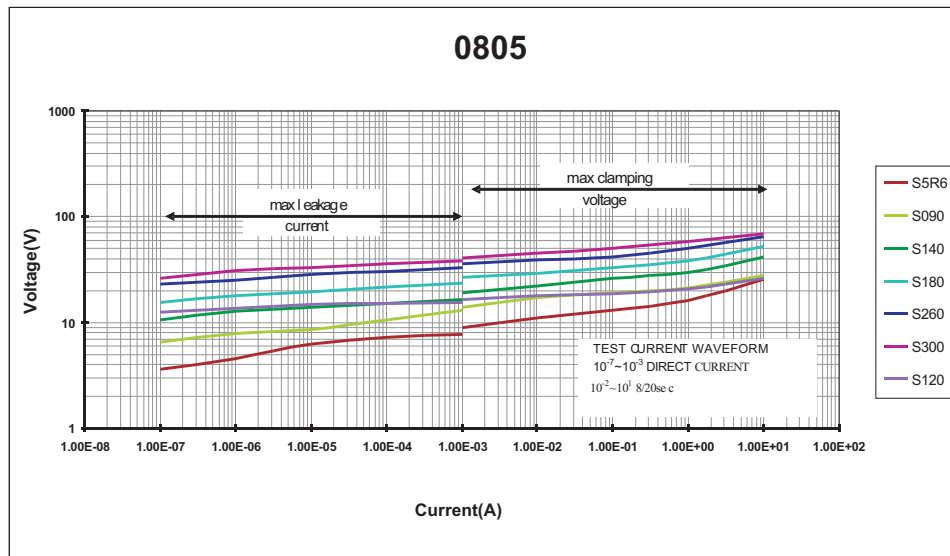
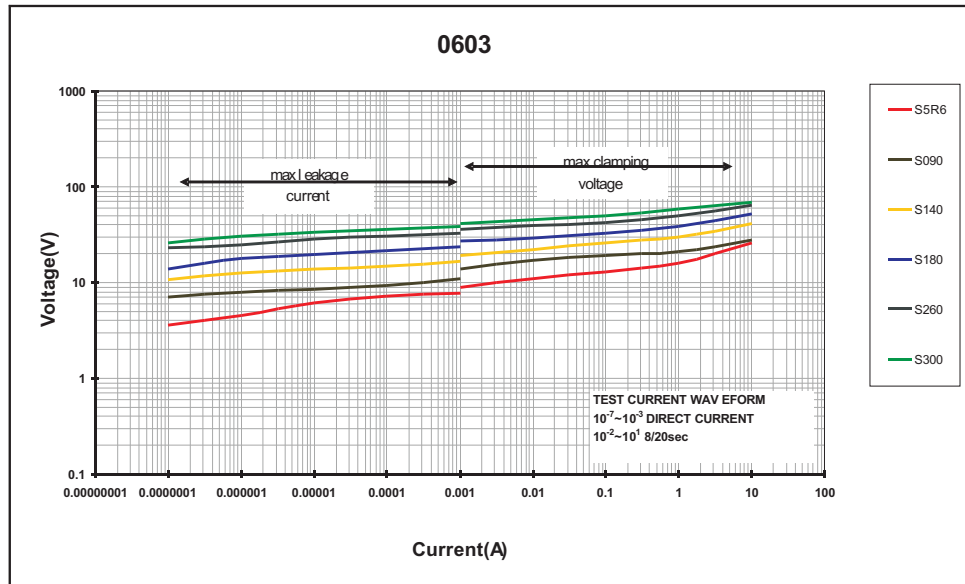
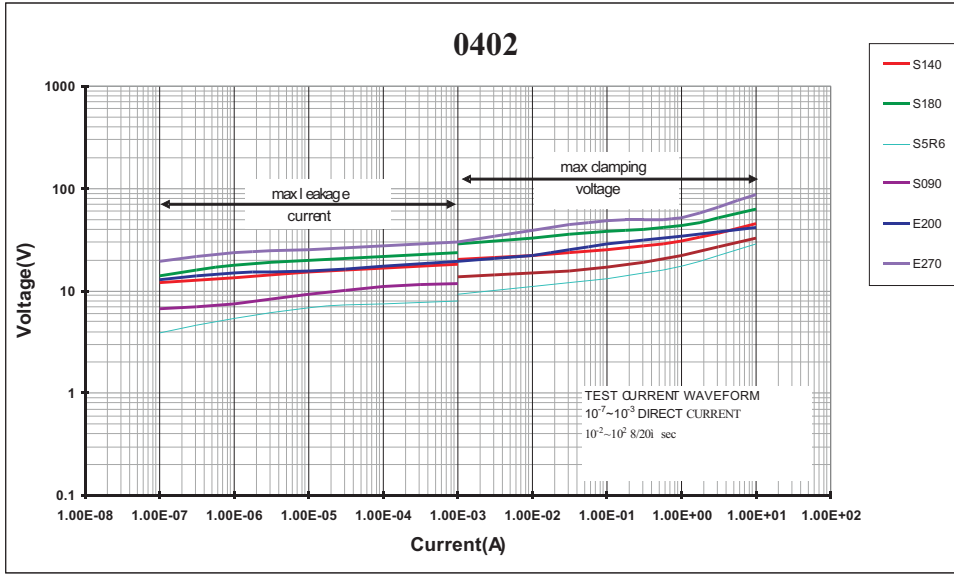
### ELECTRICAL CHARACTERISTICS

0402 Size Part Number	Working Voltage (Vw)	Breakdown Voltage (Vb)	Clamping Voltage (Vc)	Peak Current (Ip)	Transient Energy (Et)	Typical Capacitance (C)	
	Volt	Volt	Volt	Amp	Joule	pF	
	<15μA	1mA (DC)	1A, 8/20μs	8/20 s	10/1000 s	1kHz	1MHz
JMV0402S5R6T301	5.6	8.0~10	22.0	20	0.05	-	300
JMV0402S090T201	9.0	10.0~15.0	32.0	20	0.05	-	200
JMV0402S140T850	14.0	16.2~19.8	38.0	20	0.05	-	85
JMV0402S180T550	18.0	21.6~26.0	45.0	20	0.05	-	55
JMV0402E200T220	12.0	15.0~25.0	50.0	1max	0.05max	-	22
JMV0402E270T150	17.0	21.6~32.4	66.0	1max	0.05max	-	15
JMV0402E270T300	17.0	21.6~32.4	66.0	1max	0.05max	-	30
JMV0402E520T030	34.0	41.6~62.4	130.0	1max	0.05max	-	3

0603 Size Part Number	Working Voltage (Vw)	Breakdown Voltage (Vb)	Clamping Voltage (Vc)	Peak Current (Ip)	Transient Energy (Et)	Typical Capacitance (C)	
	Volt	Volt	Volt	Amp	Joule	pF	
	<15μA	1mA (DC)	1A, 8/20μs	8/20 s	10/1000 s	1kHz	1MHz
JMV0603S5R6T102	5.6	6.4~9.6	19.0	30	0.1	1000	-
JMV0603S5R6T351	5.6	6.4~9.6	19.0	30	0.1	350	-
JMV0603S090T651	9.0	10.0~15.0	27.0	30	0.1	650	-
JMV0603S090T331	9.0	10.0~15.0	27.0	30	0.1	330	-
JMV0603S140T451	14.0	16.2~19.8	37.0	30	0.1	450	-
JMV0603S140T181	14.0	16.2~19.8	37.0	30	0.1	180	-
JMV0603S180T281	18.0	21.6~26.0	46.0	30	0.1	280	-
JMV0603S180T111	18.0	21.6~26.0	46.0	30	0.1	110	-
JMV0603S260T151	26.0	31.0~38	62.0	30	0.1	150	-
JMV0603S260T800	26.0	31.0~38	62.0	30	0.1	80	-
JMV0603S300T101	30.0	37.0~46.0	73.0	30	0.1	100	-
JMV0603E270T150	17.0	21.6~32.4	66.0	2max.	0.05 max.	-	15
JMV0603E270T300	17.0	21.6~32.4	66.0	2max.	0.05 max.	-	30
JMV0603E520T030	34.0	41.6~62.4	130.0	2max.	0.05 max.	-	3
JMV0603E620T150	45.0	55.8~68.2	120.0	2max.	0.05 max.	-	15
JMV0603E520T300	45.0	55.8~68.2	120.0	2max.	0.05 max.	-	30

0805 Size Part Number	Working Voltage (Vw)	Breakdown Voltage (Vb)	Clamping Voltage (Vc)	Peak Current (Ip)	Transient Energy (Et)	Typical Capacitance (C)	
	Volt	Volt	Volt	Amp	Joule	pF	
	<15μA	1mA (DC)	1A, 8/20μs	8/20 s	10/1000 s	1kHz	1MHz
JMV0805S5R6T132	5.6	6.4~9.6	19.0	40	0.1	1300	-
JMV0805S5R6T451	5.6	6.4~9.6	19.0	40	0.1	450	-
JMV0805S5R6T661	5.6	6.4~9.6	19.0	40	0.1	660	-
JMV0805S090T781	9.0	10.0~15.0	27.0	40	0.1	780	-
JMV0805S090T271	9.0	10.0~15.0	27.0	40	0.1	270	-
JMV0805S120T531	12.0	14.0~18.3	34.0	40	0.1	530	-
JMV0805S120T431	12.0	14.0~18.3	34.0	40	0.1	430	-
JMV0805S120T251	12.0	14.0~18.3	34.0	40	0.1	250	-
JMV0805S140T381	14.0	16.2~19.8	37.0	40	0.1	380	-
JMV0805S140T201	14.0	16.2~19.8	37.0	40	0.1	200	-
JMV0805S180T351	18.0	21.6~26.0	46.0	40	0.1	350	-
JMV0805S180T111	18.0	21.6~26.0	46.0	40	0.1	110	-
JMV0805S260T161	26.0	31.1~38.0	62.0	40	0.1	160	-
JMV0805S260T101	26.0	31.1~38.0	62.0	40	0.1	100	-
JMV0805S300T101	30.0	37.0~46.0	73.0	40	0.1	100	-
JMV0805S300T311	30.0	37.0~46.0	73.0	100	0.1	310	-

■ ELECTRICAL CHARACTERISTICS



### ELECTRICAL CHARACTERISTICS

1206 Size Part Number	Working Voltage (Vw)	Breakdown Voltage (Vb)	Clamping Voltage (Vc)	Peak Current (Ip)	Transient Energy (Et)	Typical Capacitance (C)	
	Volt	Volt	Volt	Amp	Joule	pF	
	<50μA	1mA (DC)	1A, 8/20 s	8/20 s	10/1000 s	1kHz	1MHz
JMV1206S5R6T152	5.6	6.4~9.6	19.0	150	1.0	1500	-
JMV1206S120T801	12.0	14.0~18.3	34.0	150	0.6	800	-
JMV1206S140T401	14.0	16.2~19.8	37.0	100	0.3	400	-
JMV1206S140T801	14.0	16.2~19.8	37.0	200	0.5	800	-
JMV1206S160T132	16.0	19.8~24.2	40.0	200	1.0	1300	-
JMV1206S180T132	18.0	21.6~26.0	46.0	200	1.0	1300	-
JMV1206S180T901	18.0	21.6~26.0	46.0	100	0.3	900	-
JMV1206S260T901	26.0	31.0~38.0	62.0	200	1.0	900	-
JMV1206S300T201	30.0	37.0~46.0	73.0	100	1.0	200	-
JMV1206S300T401	30.0	37.0~46.0	73.0	100	0.3	400	-
JMV1206S300T501	30.0	37.0~46.0	73.0	200	0.3	500	-
JMV1206S330T551	33.0	39.0~47.0	75.0	180	1.0	550	-
JMV1206S450T551	45.0	50.4~61.6	95.0	100	0.8	550	-
JMV1206S480T251	48.0	55.8~68.2	100.0	100	0.8	250	-
JMV1206S560T101	56.0	61.0~77.0	120.0	100	0.3	100	-
JMV1206S560T381	56.0	61.0~77.0	120.0	180	1.0	380	-
JMV1206S650T241	65.0	73.8~90.2	135.0	100	0.6	240	-

1210 Size Part Number	Working Voltage (Vw)	Breakdown Voltage (Vb)	Clamping Voltage (Vc)	Peak Current (Ip)	Transient Energy (Et)	Typical Capacitance (C)	
	Volt	Volt	Volt	Amp	Joule	pF	
	<50μA	1mA (DC)	1A, 8/20 s	8/20 s	10/1000 s	1kHz	1MHz
JMV1210S180T202	18.0	21.6~26.0	46 @ 2.5A	400	1.5	2000	-
JMV1210S220T182	22.0	24.3~29.7	52 @ 2.5A	400	1.7	1800	-
JMV1210S260T112	26.0	31.0~38.0	62 @ 2.5A	250	1.2	1100	-
JMV1210S260T152	26.0	31.0~38.0	62 @ 2.5A	400	1.9	1500	-
JMV1210S300T901	30.0	37.0~46.0	77 @ 2.6A	250	1.7	900	-
JMV1210S300T122	30.0	37.0~46.0	77 @ 2.7A	400	1.9	1200	-
JMV1210S450T951	45.0	50.4~61.6	95 @ 2.5A	250	202	950	-

1812 Size Part Number	Working Voltage (Vw)	Breakdown Voltage (Vb)	Clamping Voltage (Vc)	Peak Current (Ip)	Transient Energy (Et)	Typical Capacitance (C)	
	Volt	Volt	Volt	Amp	Joule	pF	
	<50μA	1mA (DC)	1A, 8/20 s	8/20 s	10/1000 s	1kHz	1MHz
JMV1812S220T352	22.0	24.3~29.7	52 @ 5A	500	2	3500	-
JMV1812S220T402	22.0	24.3~29.7	52 @ 5A	800	2.7	4000	-
JMV1812S260T282	26.0	31.0~38.0	62 @ 5A	500	2.5	2800	-
JMV1812S260T302	26.0	31.0~38.0	62 @ 5A	800	3	3000	-
JMV1812S300T252	30.0	37.0~46.0	77 @ 5A	800	3.7	2500	-
JMV1812S380T202	38.0	42.3~51.7	88 @ 5A	800	4.2	2000	-

2220 Size Part Number	Working Voltage (Vw)	Breakdown Voltage (Vb)	Clamping Voltage (Vc)	Peak Current (Ip)	Transient Energy (Et)	Typical Capacitance (C)	
	Volt	Volt	Volt	Amp	Joule	pF	
	<50μA	1mA (DC)	1A, 8/20 s	8/20 s	10/1000 s	1kHz	1MHz
JMV2220S5R6T203	5.6	6.4~9.6	19 @ 10A	1200	1.4	20000	-
JMV2220S180T153	18.0	21.6~26.0	56 @ 11A	1200	5.8	15000	-
JMV2220S300T502	30.0	37.0~46.0	65 @ 10A	1200	9.6	5000	-
JMV2220S380T402	38.0	42.3~51.7	77 @ 10A	1200	12	4000	-

■ ELECTRICAL CHARACTERISTICS (Cont'd.)

