



Features

- RoHS compliant*
- Protects one line
- ESD protection 30 kV max.

Applications

- RS-232, RS-422 & RS-423 data lines
- Portable electronics
- Wireless bus protection
- Control & monitoring systems

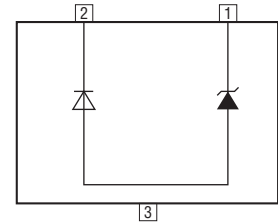
CDSOT23-T03LC~T36LC - Low Capacitance TVS Diode Array Series

General Information

Portable communications, computing and video equipment manufacturers are challenging the semiconductor industry to develop increasingly smaller electronic components.

Bourns offers Transient Voltage Suppressor Array Diodes for surge and ESD protection applications, in compact chip package SOT23 size format. The Transient Voltage Suppressor Array series offers a choice of voltage types ranging from 3 V to 36 V. Bourns® Chip Diodes conform to JEDEC standards, are easy to handle on standard pick and place equipment and their flat configuration minimizes roll away.

The Bourns® device will meet IEC 61000-4-2 (ESD), IEC 61000-4-4 (EFT) and IEC 61000-4-5 (Surge) requirements.



Thermal Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Operating Temperature	T _J	-55 to +150	°C
Storage Temperature	T _{STG}	-55 to +150	°C

Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

Parameter	Symbol	T03LC	T05LC	T08LC	T12LC	T15LC	T24LC	T36LC	Unit
Breakdown Voltage @ 1 mA	V _{BR}	4.0	6.0	8.5	13.3	16.7	26.7	40.0	V
Working Peak Voltage	V _{WM}	3.3	5.0	8.0	12.0	15.0	24.0	36.0	V
Maximum Clamping Voltage V _C @ I _P ¹	V _F	8.0	9.8	13.4	19.0	24.0	43.0	51.0	V
Maximum Clamping Voltage @ 8/20 μs V _C @ I _{PP} ¹	V _F	10.9 V @ 43 A	13.5 V @ 42 A	16.9 V @ 34 A	25.9 V @ 27 A	30.0 V @ 17 A	49.0 V @ 12 A	76.8 V @ 9 A	V
Maximum Leakage Current @ V _{WM}	I _D	125	20	10	2	1	1	1	μA
Typical Capacitance Bidirectional @ 0 V, 1 MHz	C _{J(SD)}	5							pF
ESD Protection (per IEC 61000-4-2) Contact - Min. Contact - Max. Air - Min. Air - Max.	ESD	±8 ±30 ±15 ±30							kV
Peak Pulse Power (t _p = 8/20 μs) ²	P _{PP}	500							W

Notes:

1. See Pulse Wave Form.
2. See Peak Pulse Power vs. Pulse Time.
3. Positive Potential is applied from Pin 1 to Pin 2 with Pin 2 as ground.
4. Do not test or surge from Pin 2 to Pin 1.

*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011. Specifications are subject to change without notice.

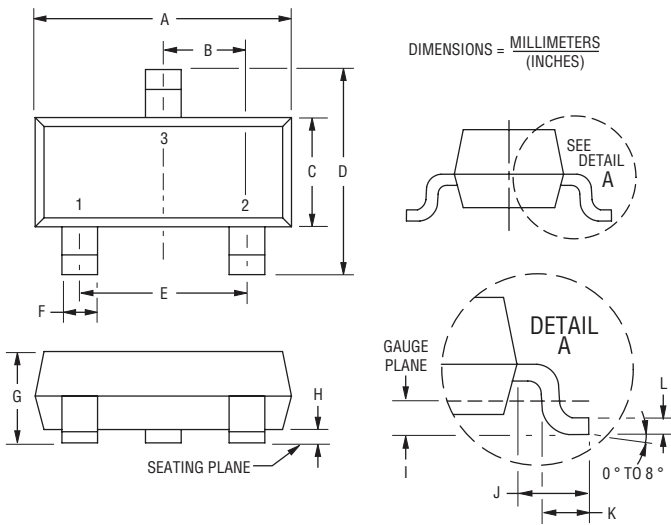
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CDSOT23-T03LC~T36LC - Low Capacitance TVS Diode Array Series



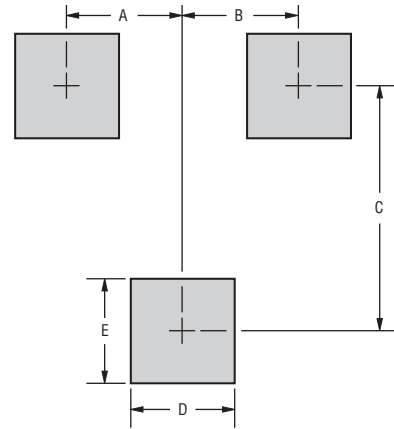
Product Dimensions

This is a molded JEDEC SOT23-6 package with lead free 100 % Sn plating on the lead frame. It weighs approximately 0.6 g and has a flammability rating of UL 94V-0.



Dimensions	
A	$\frac{2.80 - 3.00}{(0.110 - 0.118)}$
B	$\frac{0.95}{(0.037)}$ BSC
C	$\frac{1.20 - 1.40}{(0.047 - 0.055)}$
D	$\frac{2.10 - 2.49}{(0.083 - 0.098)}$
E	$\frac{1.90}{(0.075)}$ BSC
F	$\frac{0.30 - 0.50}{(0.012 - 0.019)}$
G	$\frac{0.89 - 1.17}{(0.035 - 0.046)}$
H	$\frac{0.05 - 0.015}{(0.002 - 0.006)}$
I	$\frac{0.25}{(0.010)}$ BSC
J	$\frac{0.46 - 0.64}{(0.018 - 0.025)}$
K	$\frac{0.40 - 0.58}{(0.016 - 0.023)}$
L	$\frac{0.08 - 0.20}{(0.003 - 0.008)}$

Recommended Footprint



DIMENSIONS = MILLIMETERS
(INCHES)

Dimensions	
A	$\frac{0.95}{(0.037)}$
B	$\frac{0.95}{(0.037)}$
C	$\frac{2.00}{(0.079)}$
D	$\frac{0.85}{(0.033)}$
E	$\frac{0.85}{(0.033)}$

How to Order

CD SOT23 - T 03 LC

Common Code _____
 CD = Chip Diode

Package _____
 SOT23 = SOT23 Package

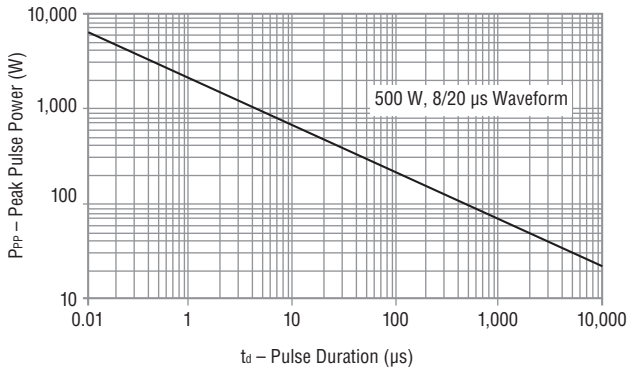
Model _____
 T = Transient Voltage Suppressor

Working Peak Voltage _____
 03 = 3 V_{RWM} (Volts)

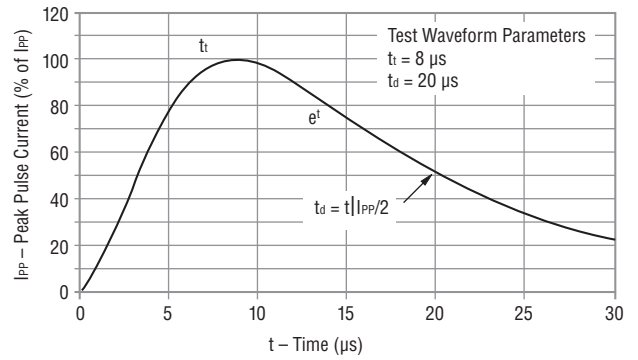
Suffix _____
 LC = Low Capacitance Diode

Performance Graphs

Peak Pulse Power vs. Pulse Time

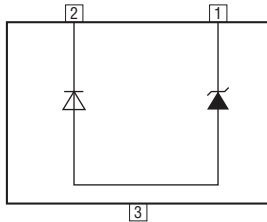


Pulse Waveform

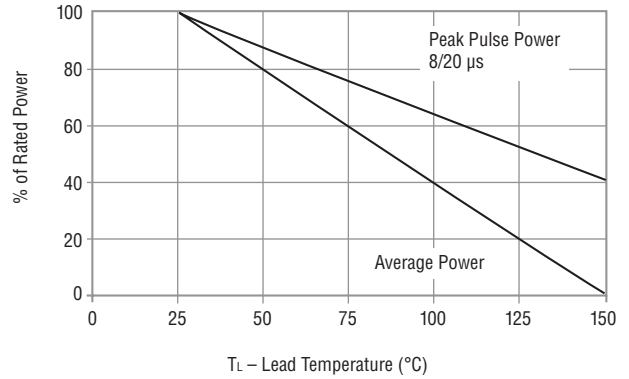


Block Diagram

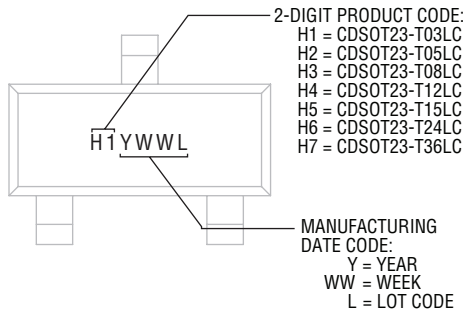
The device block diagram below includes the pin names and basic electrical connections.



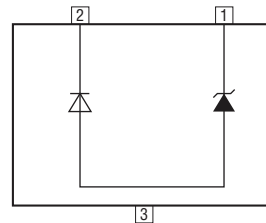
Power Derating Curve



Typical Part Marking



Pin Out



Pin	Function
1	I/O
2	I/O
3	N.C.

Environmental Specifications

Moisture Sensitivity Level..... 1
ESD Classification (HBM)..... 3B

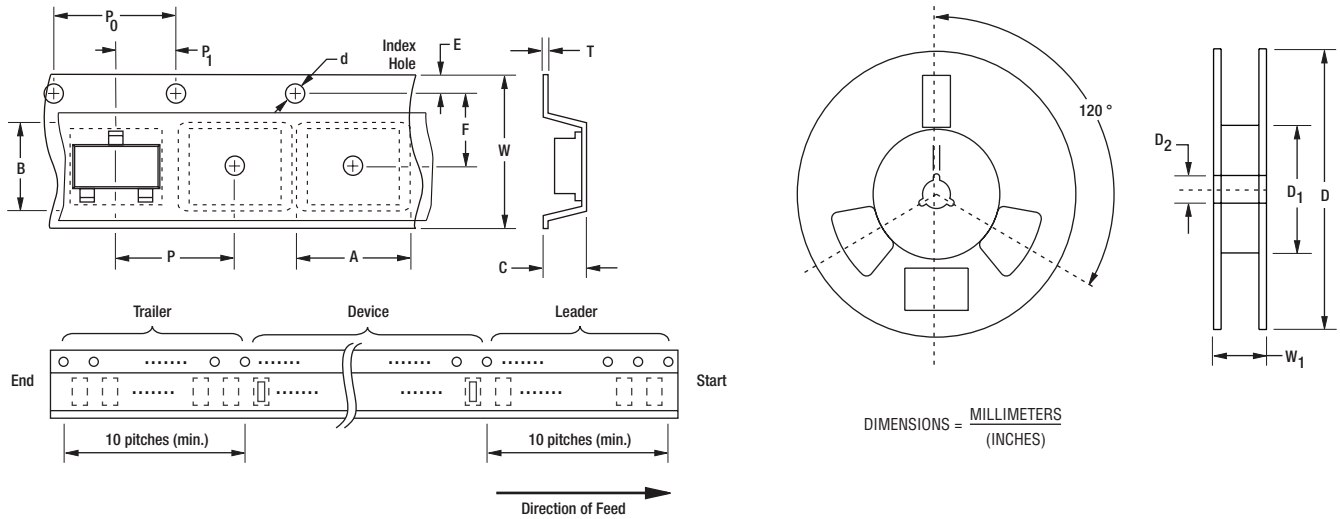
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Users should verify actual device performance in their specific applications.

CDSOT23-T03LC~T36LC - Low Capacitance TVS Diode Array Series

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Packaging Information

The surface mount product is packaged in a 12 mm x 8 mm tape and reel format per EIA-481 standard.



Item	Symbol	SOT23
Carrier Width	A	$\frac{2.25 \pm 0.10}{(0.088 \pm 0.004)}$
Carrier Length	B	$\frac{2.34 \pm 0.10}{(0.092 \pm 0.004)}$
Carrier Depth	C	$\frac{1.22 \pm 0.10}{(0.048 \pm 0.004)}$
Sprocket Hole	d	$\frac{1.55 \pm 0.05}{(0.061 \pm 0.002)}$
Reel Outside Diameter	D	$\frac{178}{(7.008)}$
Reel Inner Diameter	D ₁	$\frac{50.0}{(1.969)}$ Min.
Feed Hole Diameter	D ₂	$\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
Punch Hole Position	F	$\frac{3.50 \pm 0.05}{(0.138 \pm 0.002)}$
Punch Hole Pitch	P	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Sprocket Hole Pitch	P ₀	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Embossment Center	P ₁	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
Overall Tape Thickness	T	$\frac{0.20 \pm 0.10}{(0.008 \pm 0.004)}$
Tape Width	W	$\frac{8.00 \pm 0.20}{(0.315 \pm 0.008)}$
Reel Width	W ₁	$\frac{14.4}{(0.567)}$ Max.
Quantity per Reel	—	3,000

BOURNS®

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REV. 01/18

Specifications are subject to change without notice. The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.



Features

- Superior circuit protection
- Overcurrent and overvoltage protection
- Blocks surges up to rated limits
- High-speed performance
- Small SMT package
- Agency listing: [®]

Applications

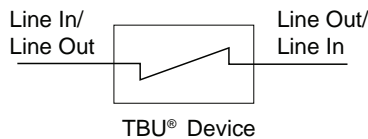
- Voice / VDSL cards
- Protection modules and dongles
- Process control equipment
- Test and measurement equipment
- General electronics

TBU-CA Series - TBU[®] High-Speed Protectors

General Information

The TBU-CA Series of Bourns[®] TBU[®] products are low capacitance single bidirectional high-speed protection components, constructed using MOSFET semiconductor technology, and designed to protect against faults caused by short circuits, AC power cross, induction and lightning surges.

The TBU[®] high-speed protector placed in the system circuit will monitor the current with the MOSFET detection circuit triggering to provide an effective barrier behind which sensitive electronics will not be exposed to large voltages or currents during surge events. The TBU[®] device is provided in a surface mount DFN package and meets industry standard requirements such as RoHS and Pb Free solder reflow profiles.



Agency Listing

Description	
UL	File Number: E315805

Absolute Maximum Ratings (@ T_A = 25 °C Unless Otherwise Noted)

Symbol	Parameter	Part Number	Value	Unit
V _{imp}	Peak impulse voltage withstand with duration less than 10 ms	TBU-CA025-xxx-WH	250	V
		TBU-CA040-xxx-WH	400	
		TBU-CA050-xxx-WH	500	
		TBU-CA065-xxx-WH	650	
		TBU-CA085-xxx-WH	850	
V _{rms}	Continuous A.C. RMS voltage	TBU-CA025-xxx-WH	100	V
		TBU-CA040-xxx-WH	200	
		TBU-CA050-xxx-WH	250	
		TBU-CA065-xxx-WH	300	
		TBU-CA085-xxx-WH	425	
T _{op}	Operating temperature range		-55 to +125	°C
T _{stg}	Storage temperature range		-65 to +150	°C
T _{jmax}	Maximum Junction Temperature		+125	°C
ESD	HBM ESD protection per IEC 61000-4-2		±2	kV

BOURNS[®]

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*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011. Specifications are subject to change without notice.

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TBU-CA Series - TBU® High-Speed Protectors

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Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

Symbol	Parameter	Part Number	Min.	Typ.	Max.	Unit	
I _{trigger}	Current required for the device to go from operating state to protected state	TBU-CAxxx-050-WH	50	75	100	mA	
		TBU-CAxxx-100-WH	100	150	200		
		TBU-CAxxx-200-WH	200	300	400		
		TBU-CAxxx-300-WH	300	450	600		
		TBU-CAxxx-500-WH	500	750	1000		
R _{device}	Series resistance of the TBU device	V _{imp} = 250 V I _{trigger} (min.) = 50 mA	TBU-CA025-050-WH		13.3	15.3	Ω
		V _{imp} = 250 V I _{trigger} (min.) = 100 mA	TBU-CA025-100-WH		7.1	8.2	
		V _{imp} = 250 V I _{trigger} (min.) = 200 mA	TBU-CA025-200-WH		4.2	4.8	
		V _{imp} = 250 V I _{trigger} (min.) = 300 mA	TBU-CA025-300-WH		3.2	3.8	
		V _{imp} = 250 V I _{trigger} (min.) = 500 mA	TBU-CA025-500-WH		2.6	3.0	
		V _{imp} = 400 V I _{trigger} (min.) = 50 mA	TBU-CA040-050-WH		14.3	16.5	
		V _{imp} = 400 V I _{trigger} (min.) = 100 mA	TBU-CA040-100-WH		8.1	9.4	
		V _{imp} = 400 V I _{trigger} (min.) = 200 mA	TBU-CA040-200-WH		5.2	6.0	
		V _{imp} = 400 V I _{trigger} (min.) = 300 mA	TBU-CA040-300-WH		4.3	5.0	
		V _{imp} = 400 V I _{trigger} (min.) = 500 mA	TBU-CA040-500-WH		3.6	4.2	
		V _{imp} = 500 V I _{trigger} (min.) = 50 mA	TBU-CA050-050-WH		15.7	18.0	
		V _{imp} = 500 V I _{trigger} (min.) = 100 mA	TBU-CA050-100-WH		9.5	10.9	
		V _{imp} = 500 V I _{trigger} (min.) = 200 mA	TBU-CA050-200-WH		6.6	7.5	
		V _{imp} = 500 V I _{trigger} (min.) = 300 mA	TBU-CA050-300-WH		5.6	6.5	
		V _{imp} = 500 V I _{trigger} (min.) = 500 mA	TBU-CA050-500-WH		5.0	5.7	
		V _{imp} = 650 V I _{trigger} (min.) = 50 mA	TBU-CA065-050-WH		17.7	20.3	
		V _{imp} = 650 V I _{trigger} (min.) = 100 mA	TBU-CA065-100-WH		11.5	13.2	
		V _{imp} = 650 V I _{trigger} (min.) = 200 mA	TBU-CA065-200-WH		8.6	9.8	
		V _{imp} = 650 V I _{trigger} (min.) = 300 mA	TBU-CA065-300-WH		7.6	8.8	
		V _{imp} = 650 V I _{trigger} (min.) = 500 mA	TBU-CA065-500-WH		7.0	8.0	
		V _{imp} = 850 V I _{trigger} (min.) = 50 mA	TBU-CA085-050-WH		21.4	24.5	
		V _{imp} = 850 V I _{trigger} (min.) = 100 mA	TBU-CA085-100-WH		15.2	17.4	
		V _{imp} = 850 V I _{trigger} (min.) = 200 mA	TBU-CA085-200-WH		12.3	14.0	
		V _{imp} = 850 V I _{trigger} (min.) = 300 mA	TBU-CA085-300-WH		11.3	13.0	
V _{imp} = 850 V I _{trigger} (min.) = 500 mA	TBU-CA085-500-WH		10.7	12.2			
t _{block}	Time for the device to go from normal operating state to protected state				1	μs	
I _Q	Current through the triggered TBU® device with 50 Vdc circuit voltage		0.25	0.50	1.00	mA	
V _{reset}	Voltage below which the triggered TBU® device will transition to normal operating state		12	16	20	V	
R _{th(j-l)}	Junction to package pads - FR4 using recommended pad layout			98		°C/W	
R _{th(j-l)}	Junction to package pads - FR4 using heat sink on board (6 cm ²) (1 in ²)			40		°C/W	

Environmental Characteristics

Parameter	Value
Moisture Sensitivity Level	1
ESD Classification (HBM)	1B

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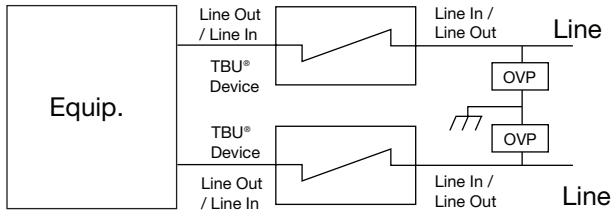
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TBU-CA Series - TBU® High-Speed Protectors

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Reference Application

The TBU® devices are general use protectors used in a wide variety of applications. The maximum voltage rating of the TBU® device should never be exceeded. Where necessary, an OVP should be employed to limit the maximum voltage. A cost-effective protection solution combines Bourns® TBU® protection devices with a pair of Bourns® MOVs. For bandwidth sensitive applications, a Bourns® GDT may be substituted for the MOV.



Basic TBU Operation

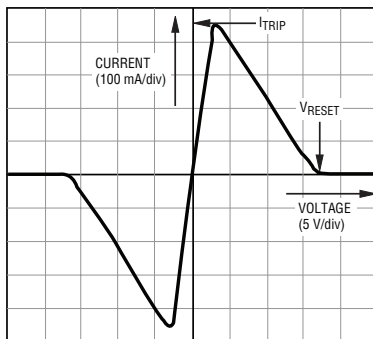
The TBU® device, constructed using MOSFET semiconductor technology, placed in the system circuit will monitor the current with the MOSFET detection circuit triggering to provide an effective barrier behind which sensitive electronics are not exposed to large voltages or currents during surge events. The TBU® device operates in approximately 1 μ s - once line current exceeds the TBU® device's trigger current $I_{trigger}$. When operated, the TBU® device will limit the current to less than the $I_{trigger}$ value within the t_{block} duration. If voltage above V_{reset} is continuously sustained, the TBU® device will subsequently reduce the current to a quiescent current level within a period of time that is dependent upon the applied voltage.

After the surge, the TBU® device resets when the voltage across the TBU® device falls to the V_{reset} level. The TBU® device will automatically reset on lines which have no DC bias or have DC bias below V_{reset} (such as unpowered signal lines).

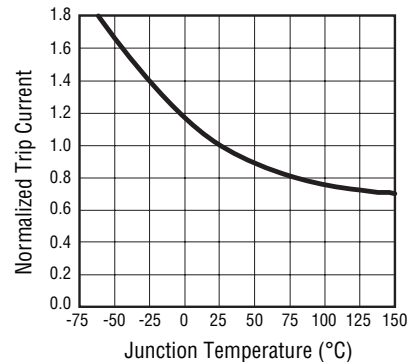
If the line has a normal DC bias above V_{reset} , the voltage across the TBU® device may not fall below V_{reset} after the surge. In such cases, special care needs to be taken to ensure that the TBU® device will reset, with software monitoring as one method used to accomplish this. Bourns application engineers can provide further assistance.

Performance Graphs

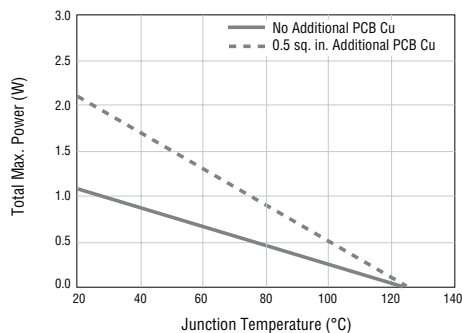
Typical V-I Characteristics (TBU-CA050-300-WH)



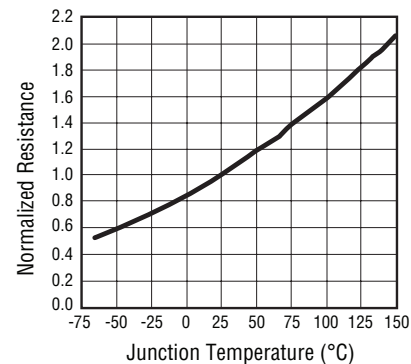
Typical Trigger Current vs. Temperature



Power Derating Curve



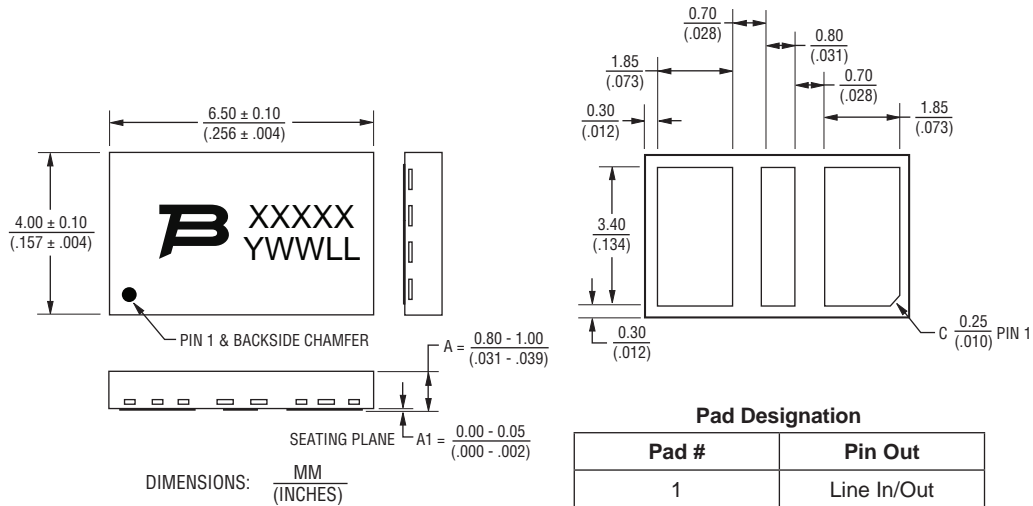
Typical Resistance vs. Temperature



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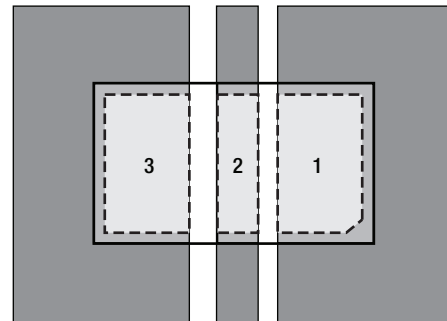
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Product Dimensions



Recommended Pad Layout

TBU® High-Speed Protectors have a 100 % matte-tin termination finish. For improved thermal dissipation, the recommended layout uses PCB copper areas which extend beyond the exposed solder pad. The exposed solder pads should be defined by a solder mask which matches the pad layout of the TBU® device in size and spacing. It is recommended that they should be the same dimension as the TBU® pads but if smaller solder pads are used, they should be centered on the TBU® package terminal pads and not more than 0.10-0.12 mm (0.004-0.005 in.) smaller in overall width or length. Solder pad areas should not be larger than the TBU® pad sizes to ensure adequate clearance is maintained. The recommended stencil thickness is 0.10-0.12 mm (0.004-0.005 in.) with a stencil opening size 0.025 mm (0.0010 in.) less than the solder pad size. Extended copper areas beyond the solder pad significantly improve the junction to ambient thermal resistance, resulting in operation at lower junction temperatures with a corresponding benefit of reliability. All pads should soldered to the PCB, including pads marked as NC or NU but no electrical connection should be made to these pads. For minimum parasitic capacitance, it is recommended that signal, ground or power signals are not routed beneath any pad.



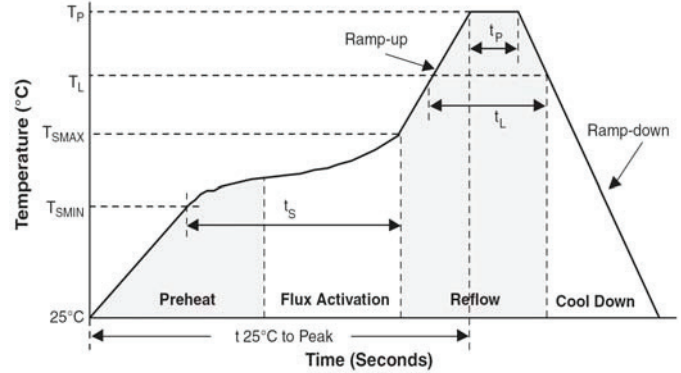
Dark grey areas show added PCB copper area for better thermal resistance.

TBU-CA Series - TBU® High-Speed Protectors

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Reflow Profile

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T _{smax} to T _p)	3 °C/sec. max.
Preheat <ul style="list-style-type: none"> - Temperature Min. (T_{smin}) - Temperature Max. (T_{smax}) - Time (t_{smin} to t_{smax}) 	150 °C 200 °C 60-180 sec.
Time maintained above: <ul style="list-style-type: none"> - Temperature (T_L) - Time (t_L) 	217 °C 60-150 sec.
Peak/Classification Temperature (T _p)	260 °C
Time within 5 °C of Actual Peak Temp. (t _p)	20-40 sec.
Ramp-Down Rate	6 °C/sec. max.
Time 25 °C to Peak Temperature	8 min. max.

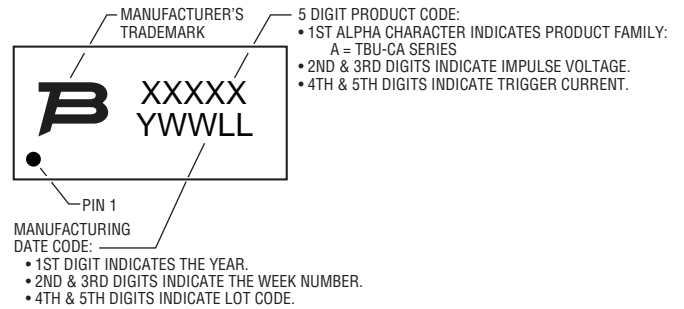


How to Order

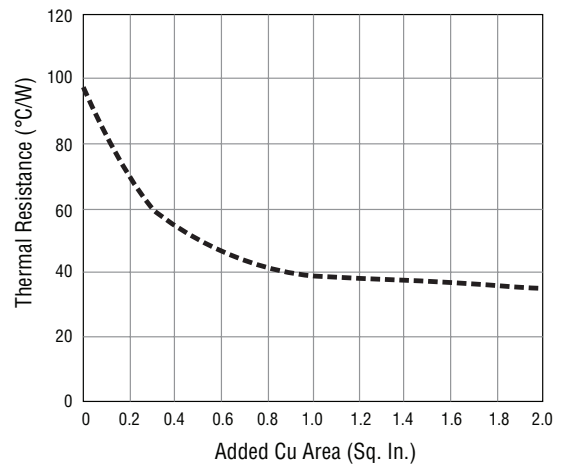
TBU - CA 085 - 500 - WH

TBU® Product	_____
Series	_____
CA = Bi-Series	
Impulse Voltage Rating	_____
025 = 250 V	
040 = 400 V	
050 = 500 V	
065 = 650 V	
085 = 850 V	
Trigger Current	_____
050 = 50 mA	
100 = 100 mA	
200 = 200 mA	
300 = 300 mA	
500 = 500 mA	
Hold to Trip Ratio Suffix	_____
W = Hold to Trip Ratio	
Package Suffix	_____
H = DFN Package	

Typical Part Marking



Thermal Resistance vs Additional PCB Cu Area



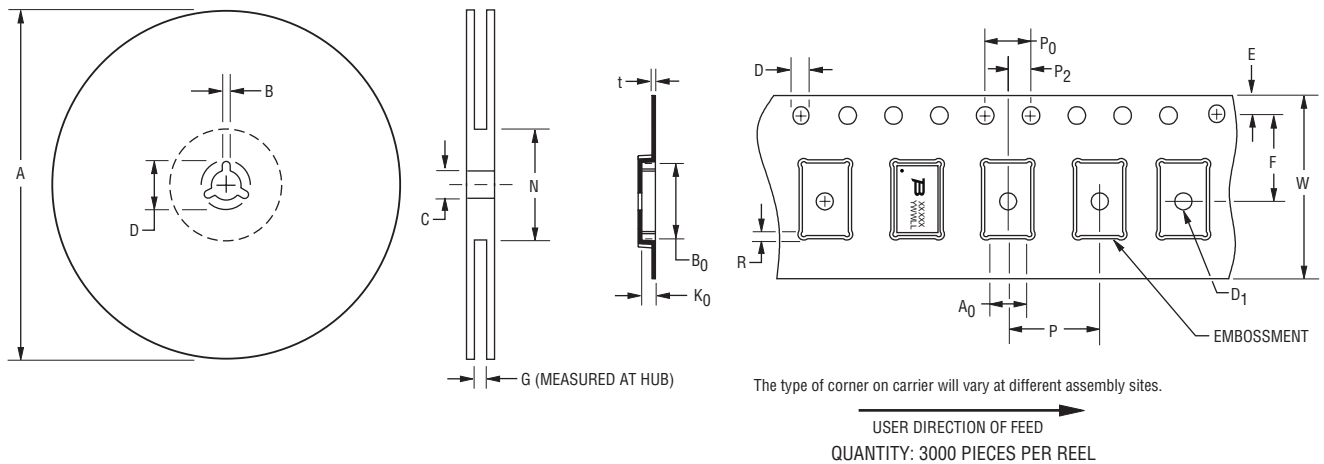
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TBU-CA Series - TBU® High-Speed Protectors

BOURNS®

Packaging Specifications



A		B		C		D		G	N
Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Ref.	Ref.
$\frac{326}{(12.835)}$	$\frac{330}{(13.002)}$	$\frac{1.5}{(.059)}$	$\frac{2.5}{(.098)}$	$\frac{12.8}{(.504)}$	$\frac{13.5}{(.531)}$	$\frac{20.2}{(.795)}$	-	$\frac{16.5}{(.650)}$	$\frac{102}{(4.016)}$

A ₀		B ₀		D		D ₁		E		F	
Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	max.
$\frac{4.3}{(.169)}$	$\frac{4.5}{(.177)}$	$\frac{6.7}{(.264)}$	$\frac{6.9}{(.272)}$	$\frac{1.5}{(.059)}$	$\frac{1.6}{(.063)}$	$\frac{1.5}{(.059)}$	-	$\frac{1.65}{(.065)}$	$\frac{1.85}{(.073)}$	$\frac{7.4}{(.291)}$	$\frac{7.6}{(.299)}$

K ₀		P		P ₀		P ₂		R		t	
Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
$\frac{1.0}{(.039)}$	$\frac{1.2}{(.047)}$	$\frac{7.9}{(.311)}$	$\frac{8.1}{(.319)}$	$\frac{3.9}{(.159)}$	$\frac{4.1}{(.161)}$	$\frac{1.9}{(.075)}$	$\frac{2.1}{(.083)}$	$\frac{0}{(0)}$	$\frac{0.5}{(.020)}$	$\frac{0.25}{(.010)}$	$\frac{0.35}{(.014)}$

W	
Min.	Max.
$\frac{15.7}{(.618)}$	$\frac{16.3}{(.642)}$

DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

REV. 03/18

“TBU” is a registered trademark of Bourns, Inc. in the United States and other countries. Specifications are subject to change without notice.

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Features

- High voltage rating
- High current rating
- Bidirectional
- Surge protection
- Fast response time
- RoHS compliant*
- Agency listing: US

Applications

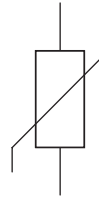
- Power supplies
- Power systems
- Line voltage
- Telecom systems
- White goods / appliances

MOV-10DxxxK Series - Metal Oxide Varistor

General Information

The MOV-10DxxxK Series of 10 mm radial leaded varistor devices protects against overvoltage transients such as lightning, power contact and power induction. The metal oxide varistors offer a choice of varistor voltages from 18 V to 820 V and V_{rms} voltages from 11 V to 510 V.

The devices have a high current handling, high energy absorption capability and fast response times to protect against transient faults up to rated limits.



Industry Standard Compliance

Standard	UL 1449
File Number	E313168

Standard	ITU-T K.20, K.21, K.45
MOV-10D201K MOV-10D361K MOV-10D391K MOV-10D431K	Will pass 600 V rms, 600 ohm, 1 A, 0.2 s, 5 cycles, every 1 minute condition.

Absolute Maximum Ratings (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Temperature	T_{OPR}	-40	25	+105	$^\circ\text{C}$
Storage Temperature	T_{STG}	-40	25	+125	$^\circ\text{C}$
Rated Wattage	P_w			0.40	Watt
Varistor Voltage Temperature Coefficient	V_{TC}	0		0.05	$\% / ^\circ\text{C}$
Response Time	T_r		10	25	ns
Varistor Voltage Tolerance	V_{tol}	-10		10	$\%$

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Bourns Part No.	Max. Continuous Voltage (V)		Voltage @ 1 mA DC (V)			Voltage @ Class Current (8/20 μs)		Max. Peak Current (8/20 μs)	Max. Energy (J)	Typ. Cap. (pF)
	r.m.s.	d.c.	Min.	Nom.	Max.	Class Current (A)	Max. Clamping Voltage (V)	One Time	8/20 μs	1 kHz
MOV-10D180K	11	14	16	18	20	5	36	500	2.1	8160
MOV-10D220K	14	18	20	22	24	5	43	500	2.5	6000
MOV-10D270K	17	22	24	27	30	5	53	500	3.0	5280
MOV-10D330K	20	26	30	33	36	5	65	500	4.0	4800
MOV-10D390K	25	31	35	39	43	5	77	500	4.6	3840
MOV-10D470K	30	38	42	47	52	5	93	500	5.5	3600
MOV-10D560K	35	45	50	56	62	5	110	500	7.0	2640
MOV-10D680K	40	56	61	68	75	5	135	500	8.2	1920
MOV-10D820K	50	65	74	82	90	25	135	2500	12	1440
MOV-10D101K	60	85	90	100	110	25	165	2500	15	1200
MOV-10D121K	75	100	108	120	132	25	200	2500	18	996
MOV-10D151K	95	125	135	150	165	25	250	2500	22	804
MOV-10D181K	115	150	162	180	198	25	300	2500	27	672
MOV-10D201K	130	170	185	200	225	25	340	2500	30	600
MOV-10D221K	140	180	198	220	242	25	360	2500	32	540
MOV-10D241K	150	200	216	240	264	25	395	2500	35	504
MOV-10D271K	175	225	243	270	297	25	455	2500	40	444
MOV-10D301K	190	250	270	300	330	25	500	2500	40	396
MOV-10D331K	210	275	297	330	363	25	550	2500	43	360
MOV-10D361K	230	300	324	360	396	25	595	2500	47	336
MOV-10D391K	250	320	351	390	429	25	650	2500	60	312
MOV-10D431K	275	350	387	430	473	25	710	2500	65	276
MOV-10D471K	300	385	423	470	517	25	775	2500	70	252
MOV-10D511K	320	415	459	510	561	25	845	2500	70	240
MOV-10D561K	350	460	504	560	616	25	925	2500	70	216
MOV-10D621K	385	505	558	620	682	25	1025	2500	70	192
MOV-10D681K	420	560	612	680	748	25	1120	2500	70	180
MOV-10D751K	460	615	675	750	825	25	1240	2500	75	156
MOV-10D781K	485	640	702	780	858	25	1290	2500	80	156
MOV-10D821K	510	670	738	820	902	25	1355	2500	85	132

*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

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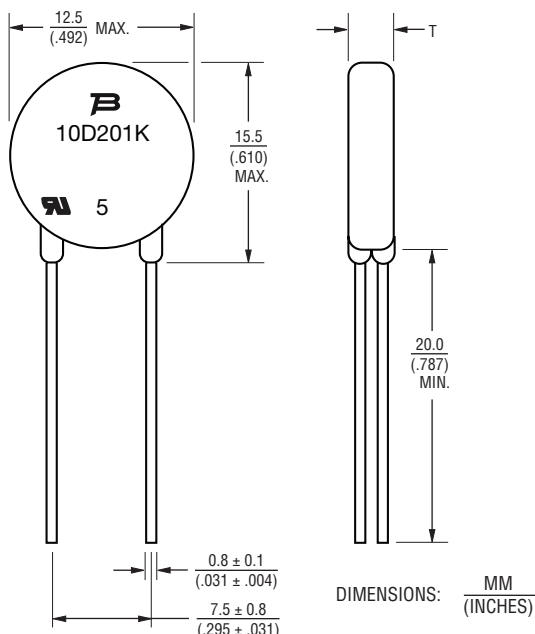
Users should verify actual device performance in their specific applications.

MOV-10DxxxK Series - Metal Oxide Varistor

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Product Dimensions

This is an RoHS compliant molded radial package with 100 % Sn plating on the terminations.



Bourns Part Number	Dim. T (Max.)
MOV-10D180K	3.8 (.150)
MOV-10D220K	3.9 (.154)
MOV-10D270K	4.2 (.165)
MOV-10D330K	3.8 (.150)
MOV-10D390K	4.0 (.157)
MOV-10D470K	4.2 (.165)
MOV-10D560K	4.3 (.169)
MOV-10D680K	4.4 (.173)
MOV-10D820K	3.8 (.150)
MOV-10D101K	4.0 (.157)
MOV-10D121K	4.2 (.165)
MOV-10D151K	4.4 (.173)
MOV-10D181K	3.6 (.142)
MOV-10D201K	3.8 (.150)
MOV-10D221K	3.9 (.154)

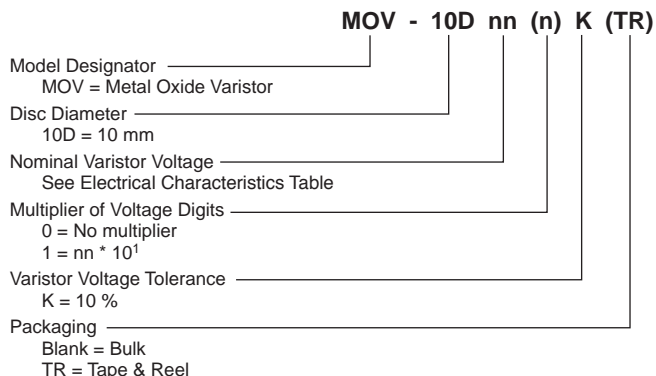
Bourns Part Number	Dim. T (Max.)
MOV-10D241K	4.0 (.157)
MOV-10D271K	4.2 (.165)
MOV-10D301K	4.4 (.173)
MOV-10D331K	4.6 (.181)
MOV-10D361K	4.8 (.189)
MOV-10D391K	5.0 (.197)
MOV-10D431K	5.2 (.205)
MOV-10D471K	5.4 (.213)
MOV-10D511K	5.5 (.217)
MOV-10D561K	5.9 (.232)
MOV-10D621K	6.2 (.244)
MOV-10D681K	6.4 (.252)
MOV-10D751K	6.6 (.260)
MOV-10D781K	6.8 (.268)
MOV-10D821K	7.2 (.283)

Typical Part Marking

Bourns Part Number	Bourns Part Marking
MOV-10D180K	10D180K
MOV-10D220K	10D220K
MOV-10D270K	10D270K
MOV-10D330K	10D330K
MOV-10D390K	10D390K
MOV-10D470K	10D470K
MOV-10D560K	10D560K
MOV-10D680K	10D680K
MOV-10D820K	10D820K
MOV-10D101K	10D101K
MOV-10D121K	10D121K
MOV-10D151K	10D151K
MOV-10D181K	10D181K
MOV-10D201K	10D201K
MOV-10D221K	10D221K
MOV-10D241K	10D241K
MOV-10D271K	10D271K
MOV-10D301K	10D301K
MOV-10D331K	10D331K
MOV-10D361K	10D361K
MOV-10D391K	10D391K
MOV-10D431K	10D431K
MOV-10D471K	10D471K
MOV-10D511K	10D511K
MOV-10D561K	10D561K
MOV-10D621K	10D621K
MOV-10D681K	10D681K
MOV-10D751K	10D751K
MOV-10D781K	10D781K
MOV-10D821K	10D821K

NOTE: The "5" marking on MOV products is for traceability of production assembly for quality assurance compliance.

How to Order



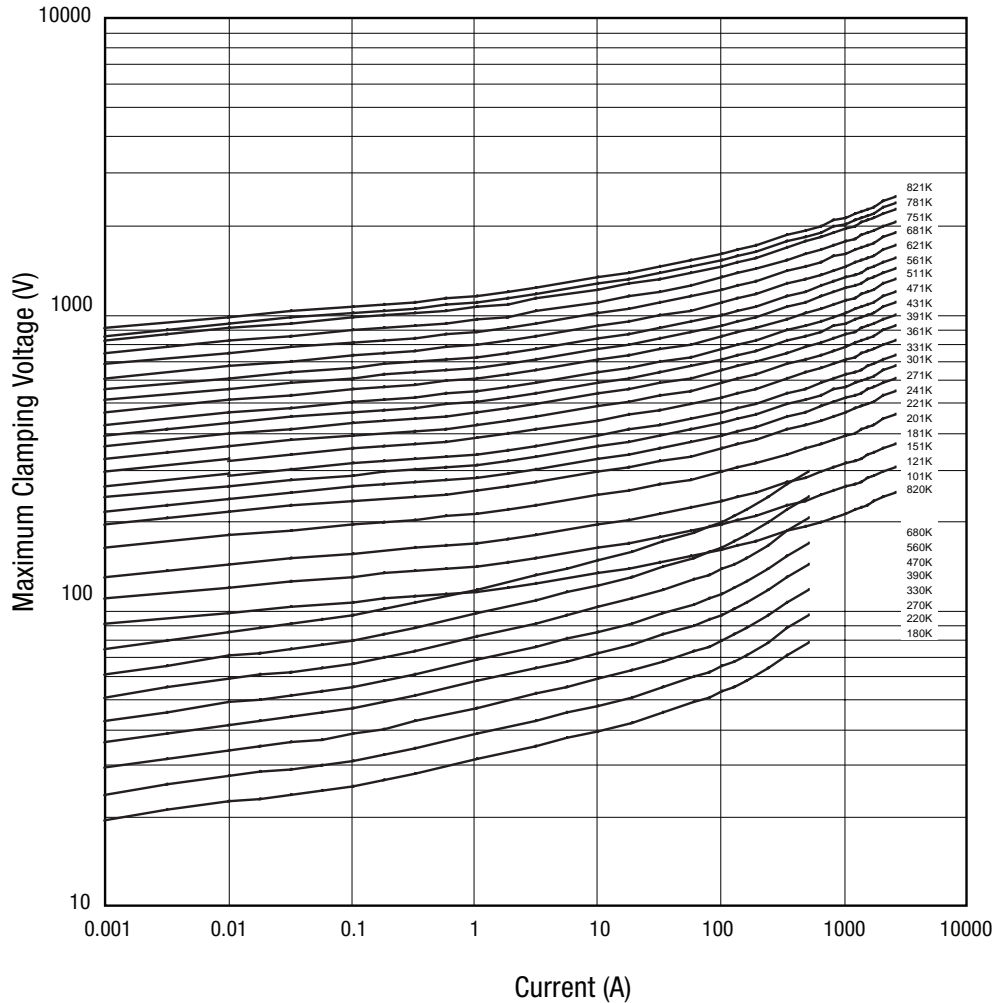
Examples: MOV-10D270K = 27 V, Bulk Pack
MOV-10D331KTR = 330 V, Tape & Reel

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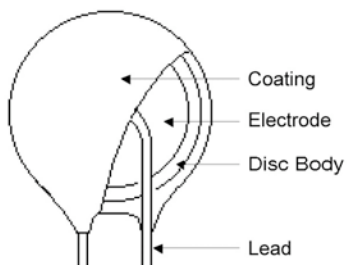
MOV-10DxxxK Series - Metal Oxide Varistor

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Performance Graphs



Internal Construction



Environmental Specifications

Moisture Sensitivity Level.....	1
ESD Classification (HBM).....	6

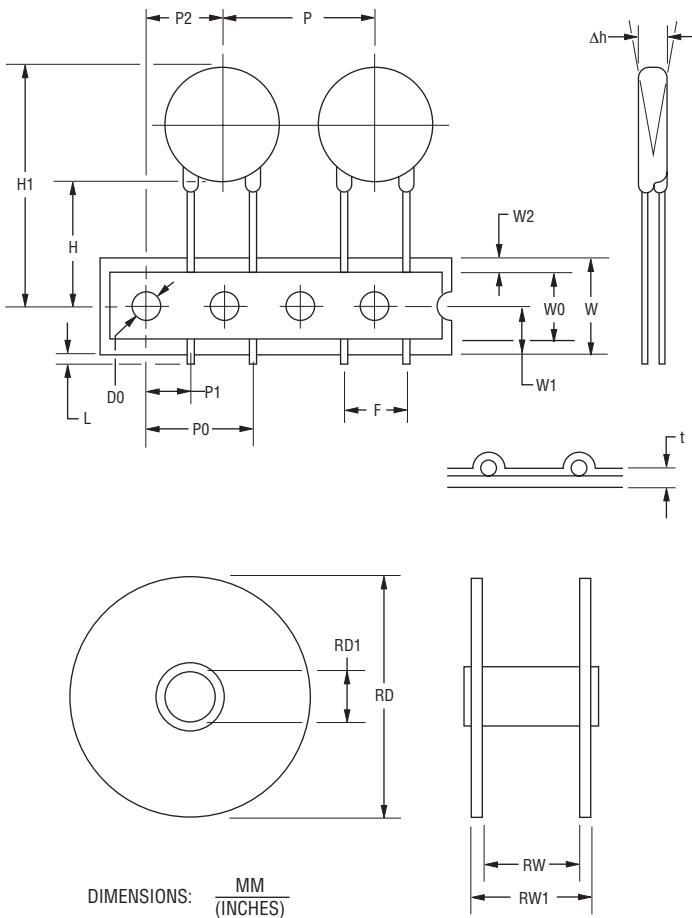
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MOV-10DxxxK Series - Metal Oxide Varistor

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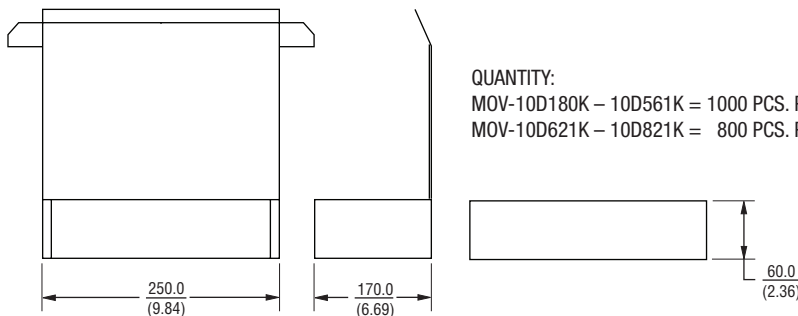
Packaging Information

TAPE & REEL



Item	Symbol	10 mm Disc
Reel Outside Diameter	RD	$\frac{355}{(13.98)}$
Reel Inner Diameter	RD1	$\frac{30}{(1.181)}$
Tape Width	RW	$\frac{55}{(2.16)}$
Reel Width	RW1	$\frac{63}{(2.48)}$ max.
Pitch of Component	P	$\frac{25.4 \pm 0.7}{(1.00 \pm 0.03)}$
Feed Hole Pitch	P0	$\frac{12.7 \pm 1.0}{(0.50 \pm 0.04)}$
Feed Hole Center to Pitch	P1	$\frac{8.95 \pm 0.7}{(0.352 \pm 0.03)}$
Feed Hole Center to Component Center	P2	$\frac{12.7 \pm 1.0}{(0.50 \pm 0.04)}$
Lead to Lead Distance	F	$\frac{7.50 \pm 0.8}{(0.30 \pm 0.03)}$
Component Alignment	Δh	$\frac{2.0}{(0.079)}$
Tape Width	W	$\frac{18.0 \pm 0.5}{(0.71 \pm 0.02)}$
Hole Down Tape Width	W0	$\frac{12.0 \pm 0.8}{(0.47 \pm 0.03)}$
Hole Position	W1	$\frac{9.0 \pm 0.5}{(0.35 \pm 0.02)}$
Hole Down Tape Position	W2	$\frac{3.0}{(0.12)}$ max.
Height From Center to Component Base	H	$\frac{19.0 \pm 1.0}{(0.75 \pm 0.04)}$
Seating Plane Height	H0	$\frac{16.0 \pm 1.0}{(0.63 \pm 0.04)}$
Component Height	H1	$\frac{36.0}{(1.42)}$ max.
Crimp Length	C	$\frac{2.60}{(0.10)}$ typ.
Feed Hole Diameter	D0	$\frac{4.0 \pm 0.2}{(0.16 \pm 0.08)}$
Total Tape Thickness	t	$\frac{0.6 \pm 0.3}{(0.02 \pm 0.01)}$
Length of Clipped Height	L	$\frac{1.0}{(0.04)}$ max.
Quantity per Reel (10D180K – 10D361K)	-	1000
Quantity per Reel (10D391K – 10D821K)	-	500

BULK



QUANTITY:
 MOV-10D180K – 10D561K = 1000 PCS. PER BOX
 MOV-10D621K – 10D821K = 800 PCS. PER BOX

REV. 08/17

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