

# MMT10B230T3, MMT10B260T3, MMT10B310T3

## MAXIMUM RATINGS (T<sub>J</sub> = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Off-State Voltage – Maximum MMT10B230T3 MMT10B260T3 MMT10B310T3	V <sub>DM</sub>	± 170 ± 200 ± 270	V
Maximum Pulse Surge Short Circuit Current Non-Repetitive Double Exponential Decay Waveform (Notes 1 and 2) (–20°C to +65°C) 2 x 10 µsec 10 x 700 µsec 10 x 1000 µsec	I <sub>PPS1</sub> I <sub>PPS2</sub> I <sub>PPS3</sub>	± 500 ± 180 ± 100	A(pk)
Maximum Non-Repetitive Rate of Change of On-State Current Double Exponential Waveform, R = 2.0, L = 1.5 µH, C = 1.67 µF, I <sub>pk</sub> = 110A	di/dt	± 100	A/µs

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. Allow cooling before testing second polarity.
2. Measured under pulse conditions to reduce heating.

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Operating Temperature Range Blocking or Conducting State	T <sub>J1</sub>	–40 to +125	°C
Overload Junction Temperature – Maximum Conducting State Only	T <sub>J2</sub>	+175	°C
Instantaneous Peak Power Dissipation (I <sub>pk</sub> = 100 A, 10x1000 µsec @ 25°C)	P <sub>PK</sub>	4000	W
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds	T <sub>L</sub>	260	°C

## ORDERING INFORMATION

Device	Package	Shipping†
MMT10B230T3	SMB	(12mm) Tape & Reel 2500 Units per Reel
MMT10B230T3G	SMB (Pb-Free)	
MMT10B260T3	SMB	
MMT10B260T3G	SMB (Pb-Free)	
MMT10B310T3	SMB	
MMT10B310T3G	SMB (Pb-Free)	

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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## ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise noted)

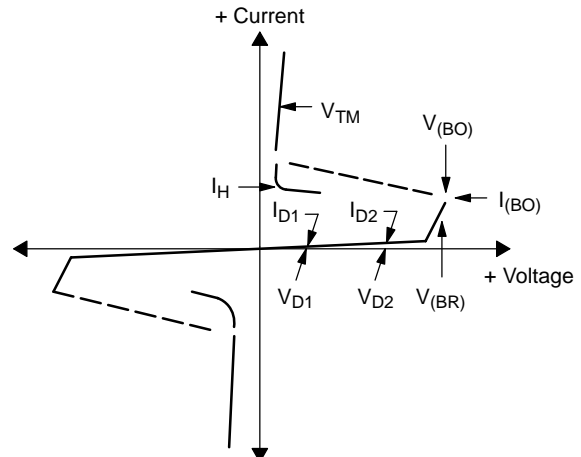
Devices are bidirectional. All electrical parameters apply to forward and reverse polarities.

Characteristic	Symbol	Min	Typ	Max	Unit
Breakover Voltage (Both polarities) (dv/dt = 100 V/μs, I <sub>SC</sub> = 1.0 A, V <sub>dc</sub> = 1000 V)  (+65°C)	V <sub>(BO)</sub>	–	–	265 320 365  290 340 400	V
Breakover Voltage (Both polarities) (f = 60 Hz, I <sub>SC</sub> = 1.0 A(rms), V <sub>OC</sub> = 1000 V(rms), R <sub>L</sub> = 1.0 kΩ, t = 0.5 cycle) (Note 3)  (+65°C)	V <sub>(BO)</sub>	–	–	265 320 365  290 340 400	V
Breakover Voltage Temperature Coefficient	dV <sub>(BO)</sub> /dT <sub>J</sub>	–	0.08	–	%/°C
Breakdown Voltage (I <sub>BR</sub> ) = 1.0 mA) Both polarities	V <sub>(BR)</sub>	–	190 240 280	–	V
Off State Current (V <sub>D1</sub> = 50 V) Both polarities (V <sub>D2</sub> = V <sub>DM</sub> ) Both polarities	I <sub>D1</sub> I <sub>D2</sub>	–	–	2.0 5.0	μA
On-State Voltage (I <sub>T</sub> = 1.0 A) (PW ≤ 300 μs, Duty Cycle ≤ 2%) (Note 3)	V <sub>T</sub>	–	1.53	5.0	V
Breakover Current (f = 60 Hz, V <sub>DM</sub> = 1000 V(rms), R <sub>S</sub> = 1.0 kΩ) Both polarities	I <sub>BO</sub>	–	260	–	mA
Holding Current (Both polarities) (Note 3) V <sub>S</sub> = 500 Volts; I <sub>T</sub> (Initiating Current) = ± 1.0 A	I <sub>H</sub>	150	270	–	mA
Critical Rate of Rise of Off-State Voltage (Linear waveform, V <sub>D</sub> = Rated V <sub>BR</sub> , T <sub>J</sub> = 25°C)	dv/dt	2000	–	–	V/μs
Capacitance (f = 1.0 MHz, 50 Vdc, 1.0 V rms Signal) (f = 1.0 MHz, 2.0 Vdc, 15 mV rms Signal)	C <sub>O</sub>	–	65 160	– 200	pF

3. Measured under pulse conditions to reduce heating.

## Voltage Current Characteristic of TSPD (Bidirectional Device)

Symbol	Parameter
I <sub>D1</sub> , I <sub>D2</sub>	Off State Leakage Current
V <sub>D1</sub> , V <sub>D2</sub>	Off State Blocking Voltage
V <sub>BR</sub>	Breakdown Voltage
V <sub>BO</sub>	Breakover Voltage
I <sub>BO</sub>	Breakover Current
I <sub>H</sub>	Holding Current
V <sub>TM</sub>	On State Voltage



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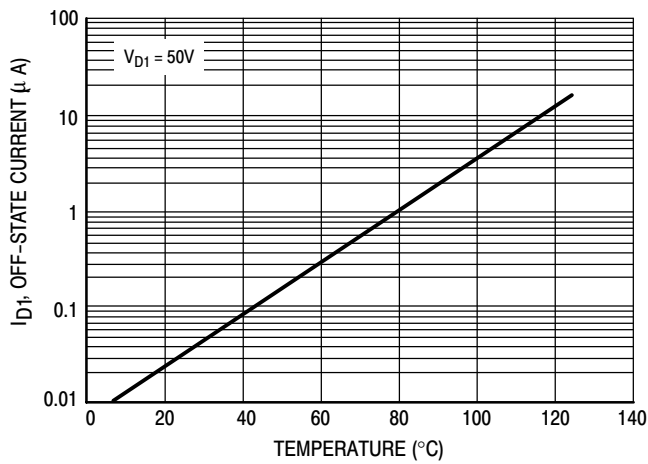


Figure 1. Off-State Current versus Temperature

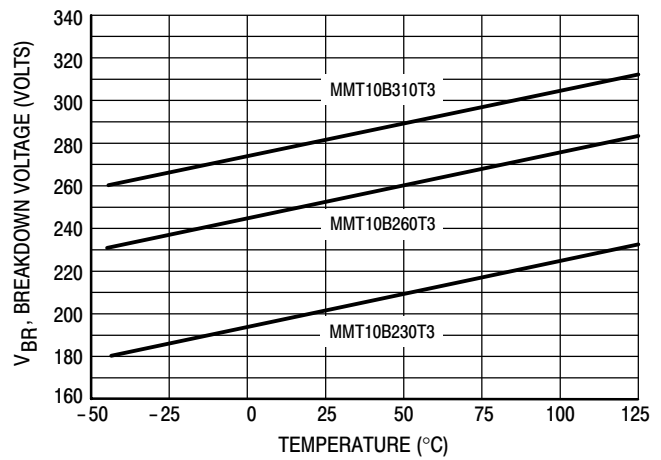


Figure 2. Breakdown Voltage versus Temperature

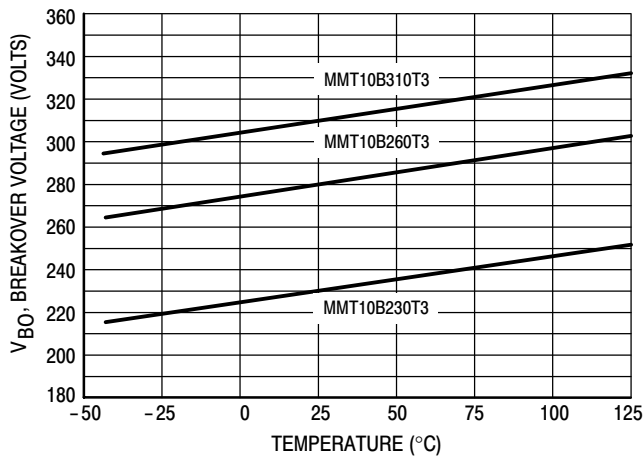


Figure 3. Breakover Voltage versus Temperature

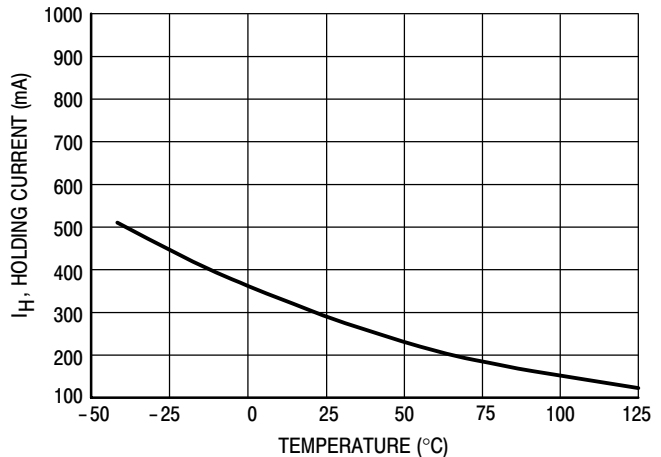


Figure 4. Holding Current versus Temperature

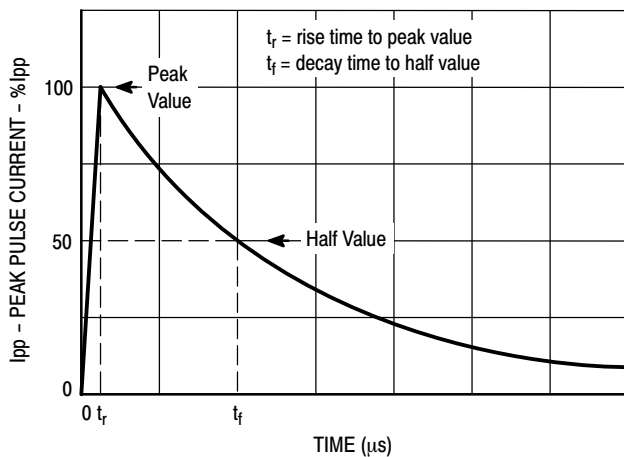


Figure 5. Exponential Decay Pulse Waveform

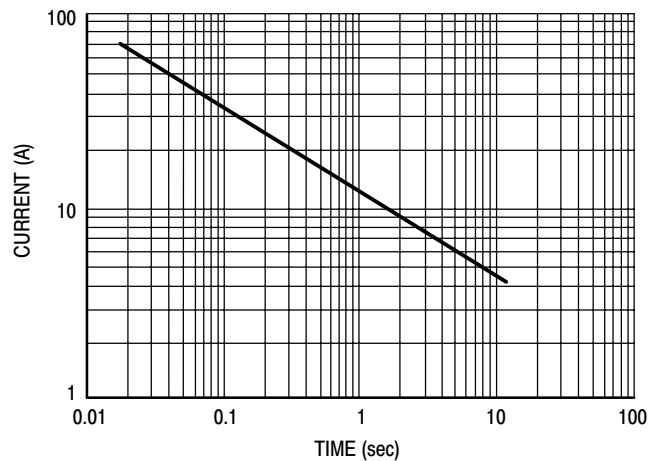
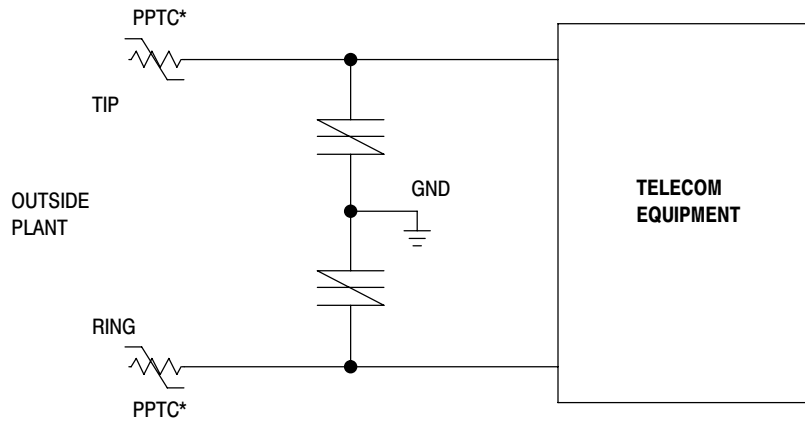
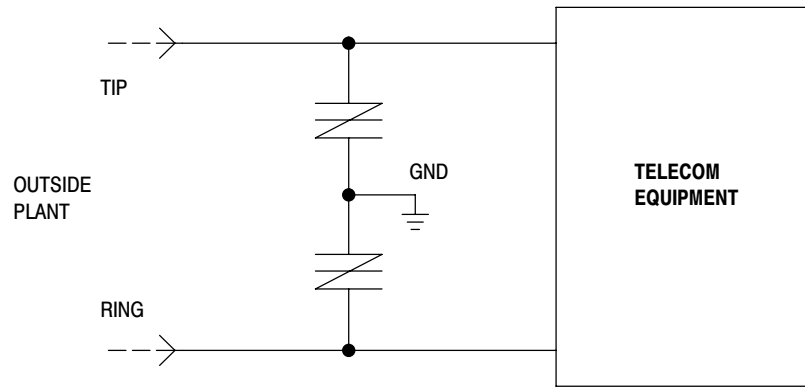
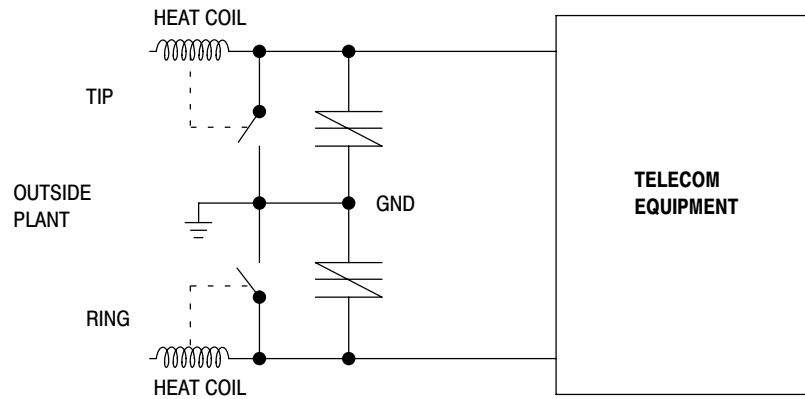


Figure 6. Peak Surge On-State Current versus Surge Current Duration, Sinusoidal Waveform

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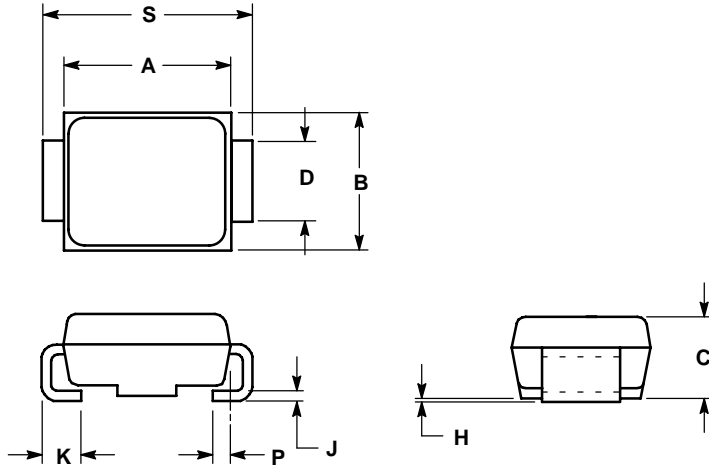
\*Polymeric PTC (positive temperature coefficient) overcurrent protection device



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## PACKAGE DIMENSIONS

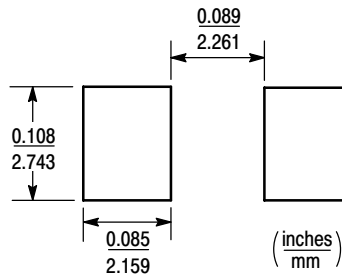
**SMB**  
(No Polarity)  
(Essentially JEDEC DO-214AA)  
CASE 403C-01  
ISSUE A




- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. D DIMENSION SHALL BE MEASURED WITHIN DIMENSION P.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.160	0.180	4.06	4.57
B	0.130	0.150	3.30	3.81
C	0.075	0.095	1.90	2.41
D	0.077	0.083	1.96	2.11
H	0.0020	0.0060	0.051	0.152
J	0.006	0.012	0.15	0.30
K	0.030	0.050	0.76	1.27
P	0.020	REF	0.51	REF
S	0.205	0.220	5.21	5.59

## SOLDERING FOOTPRINT\*



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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**MMT10B230T3/D**