

# MMT05B230T3, MMT05B260T3, MMT05B310T3

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Operating Temperature Range Blocking or Conducting State	$T_{J1}$	-40 to +125	°C
Overload Junction Temperature – Maximum Conducting State Only	$T_{J2}$	+175	°C
Instantaneous Peak Power Dissipation ( $I_{pk} = 50$ A, $10 \times 1000$ $\mu$ sec @ 25°C)	$P_{PK}$	2000	W
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds	$T_L$	260	°C

**ELECTRICAL CHARACTERISTICS** ( $T_J = 25^\circ\text{C}$  unless otherwise noted) Devices are bidirectional. All electrical parameters apply to forward and reverse polarities.

Characteristics	Symbol	Min	Typ	Max	Unit
Breakover Voltage (Both polarities) ( $dv/dt = 100$ V/ $\mu$ s, $I_{SC} = 1.0$ A, $V_{dc} = 1000$ V)  (+65°C)	$V_{(BO)}$	-	-	265 320 365  280 340 400	V
Breakover Voltage (Both polarities) ( $f = 60$ Hz, $I_{SC} = 1.0$ A(rms), $V_{OC} = 1000$ V(rms), $R_f = 1.0$ k $\Omega$ , $t = 0.5$ cycle) (Note 3)  (+65°C)	$V_{(BO)}$	-	-	265 320 365  280 340 400	V
Breakover Voltage Temperature Coefficient	$dV_{(BO)}/dT_J$	-	0.08	-	%/°C
Breakdown Voltage ( $I_{(BR)} = 1.0$ mA) Both polarities	$V_{(BR)}$	-	190 240 280	-	V
Off State Current ( $V_{D1} = 50$ V) Both polarities ( $V_{D2} = V_{DM}$ ) Both polarities	$I_{D1}$ $I_{D2}$	-	-	2.0 5.0	$\mu$ A
On-State Voltage ( $I_T = 1.0$ A) ( $PW \leq 300$ $\mu$ s, Duty Cycle $\leq 2\%$ ) (Note 3)	$V_T$	-	1.53	3.0	V
Breakover Current ( $f = 60$ Hz, $V_{DM} = 1000$ V(rms), $R_S = 1.0$ k $\Omega$ ) – Both polarities	$I_{BO}$	-	230	-	mA
Holding Current (Both polarities) (Note 3) $V_S = 500$ V; $I_T$ (Initiating Current) = $\pm 1.0$ A	$I_H$	150	340	-	mA
Critical Rate of Rise of Off-State Voltage (Linear waveform, $V_D = \text{Rated } V_{BR}$ , $T_J = 25^\circ\text{C}$ )	$dv/dt$	2000	-	-	V/ $\mu$ s
Capacitance ( $f = 1.0$ MHz, 50 Vdc, 1.0 V rms Signal) ( $f = 1.0$ MHz, 2.0 Vdc, 15 mV rms Signal)	$C_O$	-	22 53	- 75	pF

3. Measured under pulse conditions to reduce heating.

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## Voltage Current Characteristic of TSPD (Bidirectional Device)

Symbol	Parameter
$I_{D1}, I_{D2}$	Off State Leakage Current
$V_{D1}, V_{D2}$	Off State Blocking Voltage
$V_{BR}$	Breakdown Voltage
$V_{BO}$	Breakover Voltage
$I_{BO}$	Breakover Current
$I_H$	Holding Current
$V_{TM}$	On State Voltage

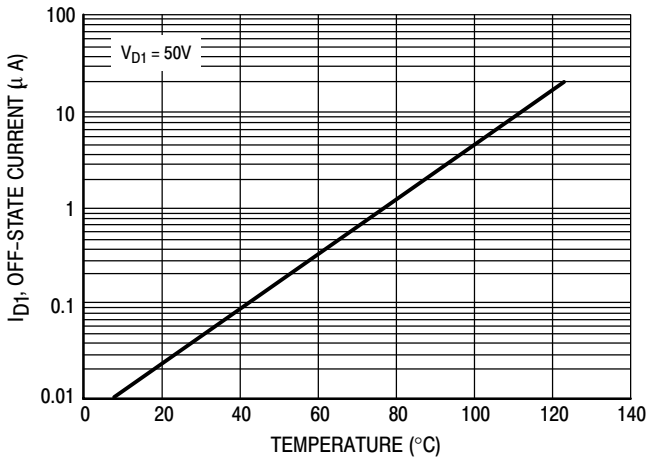
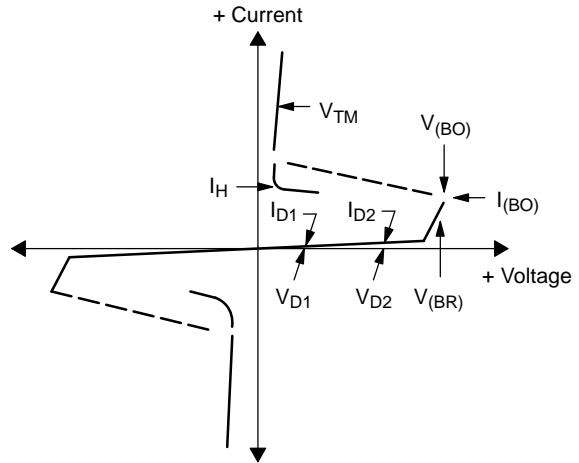


Figure 1. Off-State Current versus Temperature

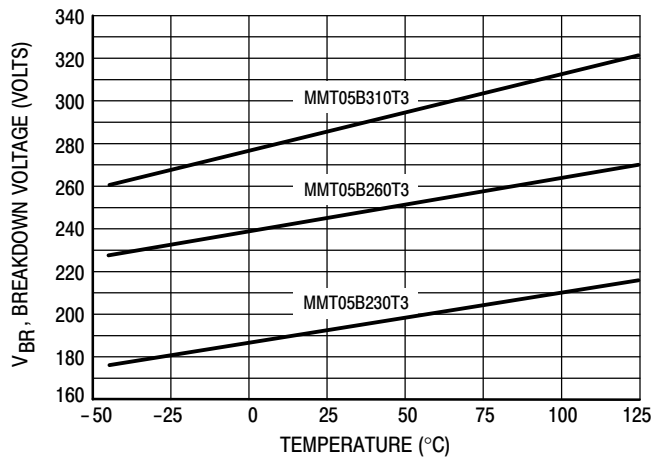


Figure 2. Breakdown Voltage versus Temperature

# MMT05B230T3, MMT05B260T3, MMT05B310T3

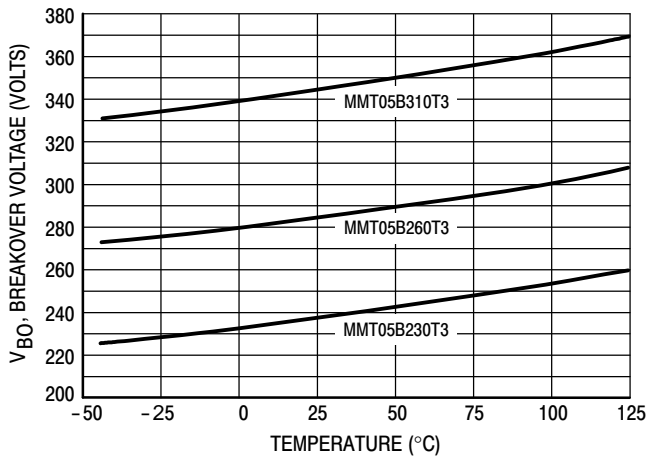


Figure 3. Breakover Voltage versus Temperature

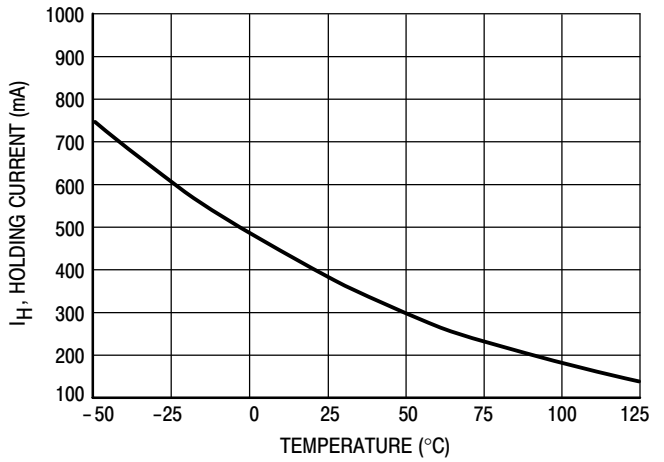


Figure 4. Holding Current versus Temperature

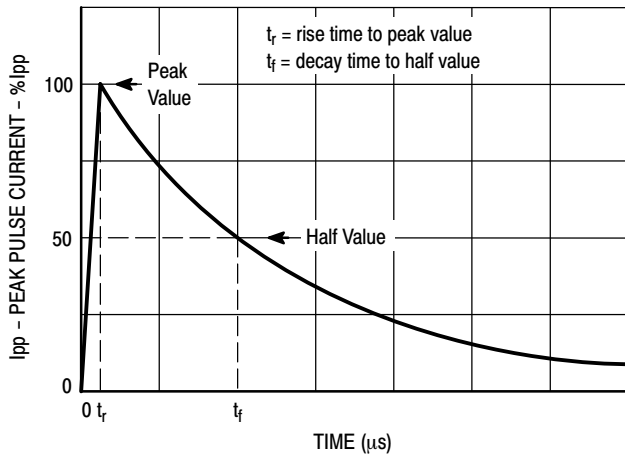


Figure 5. Exponential Decay Pulse Waveform

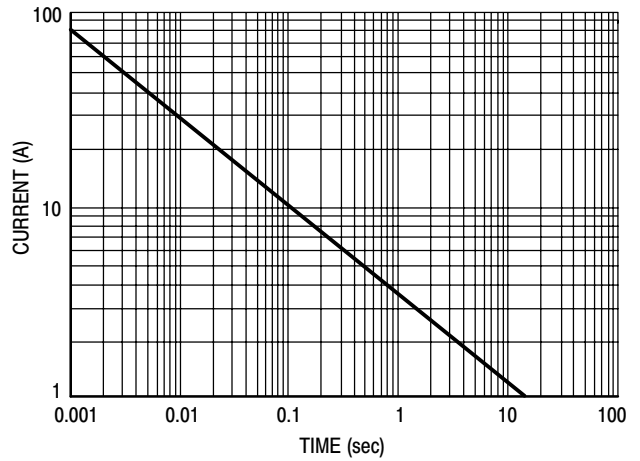
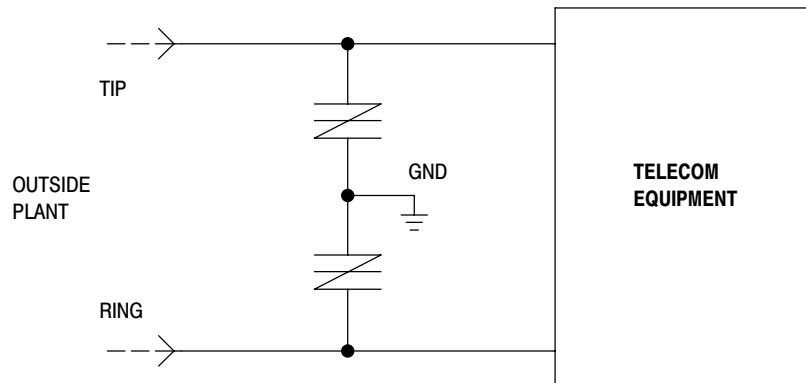
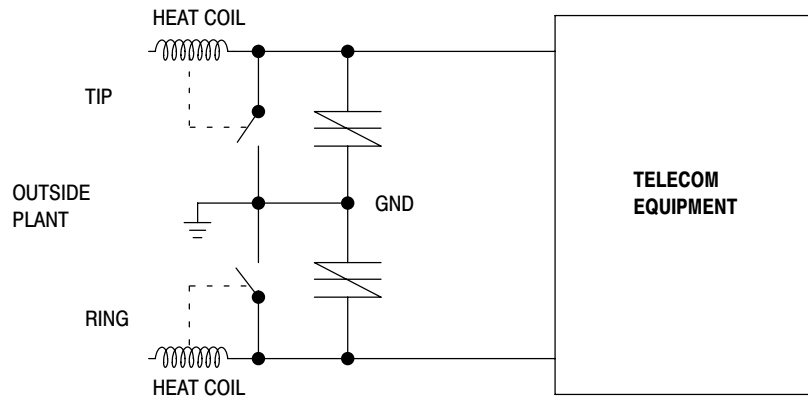
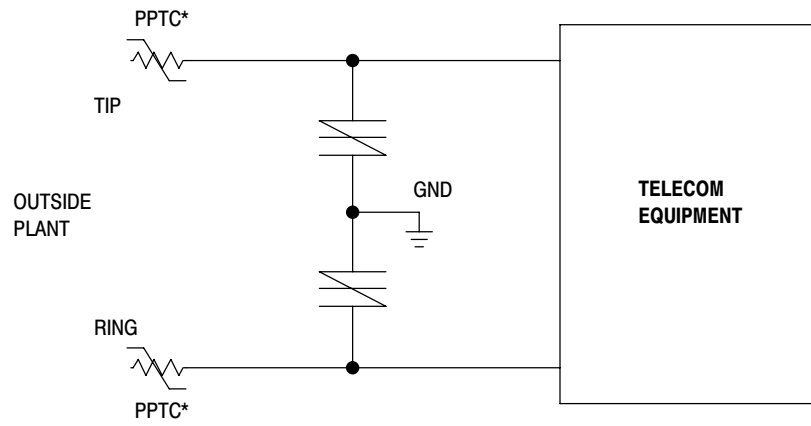


Figure 6. Peak Surge On-State Current versus Surge Current Duration, Sinusoidal Waveform



## MMT05B230T3, MMT05B260T3, MMT05B310T3



### ORDERING INFORMATION

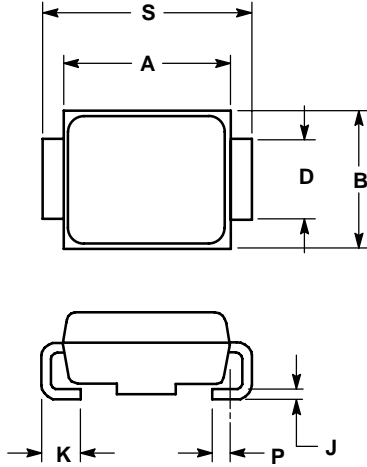
Device	Package	Shipping <sup>†</sup>
MMT05B230T3	SMB	2500 / Tape & Reel
MMT05B230T3G	SMB (Pb-Free)	
MMT05B260T3	SMB	
MMT05B260T3G	SMB (Pb-Free)	
MMT05B310T3	SMB	
MMT05B310T3G	SMB (Pb-Free)	

<sup>†</sup>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.

# MMT05B230T3, MMT05B260T3, MMT05B310T3

## PACKAGE DIMENSIONS

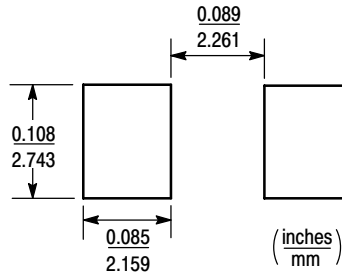
**SMB**  
(No Polarity)  
(Essentially JEDEC DO-214AA)  
CASE 403C-01  
ISSUE A



- 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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