MMT05A230T3,
MMT05A260T3,
MMT05A310T3

Preferred Devices

Thyristor Surge Protectors

High Voltage Bidirectional TSPD

These Thyristor Surge Protective devices (TSPD) prevent overvoltage damage to sensitive circuits by lightning, induction and power line crossings. They are breakover−triggered crowbar protectors. Turn−off occurs when the surge current falls below the holding current value.

Secondary protection applications for electronic telecom equipment at customer premises.

- High Surge Current Capability: **50 Amps** 10 x 1000 μsec; for Controlled Temperature Environments in the **SMA** package
- The MMT05A230T3 Series is used to help equipment meet various regulatory requirements including: Telcordia 1089, ITU K.20 & K.21, IEC 950 and FCC Part 68
- Bidirectional Protection in a Single Device
- Little Change of Voltage Limit with Transient Amplitude or Rate
- Freedom from Wearout Mechanisms Present in Non−Semiconductor Devices
- Fail−Safe, Shorts When Overstressed, Preventing Continued Unprotected Operation
- Surface Mount Technology (SMT)
- ЯU Indicates UL Registered − File #E210057
- Pb−Free Packages are Available

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Off−State Voltage − Maximum MMT05A230T3 MMT05A260T3 MMT05A310T3	V_{DM}	 ±170 ±200 ±270	Volts
Maximum Pulse Surge Short Circuit Current Non−Repetitive Double Exponential Decay Waveform (Notes 1 and 2) 8 x 20 μsec 10 x 160 μsec 10 x 560 μsec 10 x 1000 μsec	 I_{PPS1} I_{PPS2} I_{PPS3} I_{PPS4}	 ±150 ±100 ±70 ±50	A(pk)
Maximum Non−Repetitive Rate of Change of On−State Current Double Exponential Waveform, I_{PK} = 50 A, P_W = 15 μs	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.

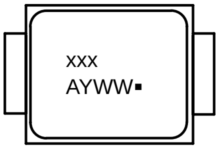
ON Semiconductor®

http://onsemi.com

BIDIRECTIONAL TSPD
50 AMP SURGE
265 thru 365 VOLTS

SMA
(No Polarity)
CASE 403D

MARKING DIAGRAM



xxx	= Specific Device Code
A	= Assembly Location
Y	= Year
WW	= Work Week
▪	= Pb−Free Package

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 6 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

January, 2006 − Rev. 5

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} = 50A, 10x1000 µsec @ 25°C)	P_{PK}	2000	W
Maximum Lead Temperature for Soldering Purposes 1/8″ from Case for 10 Seconds	T_L	260	°C

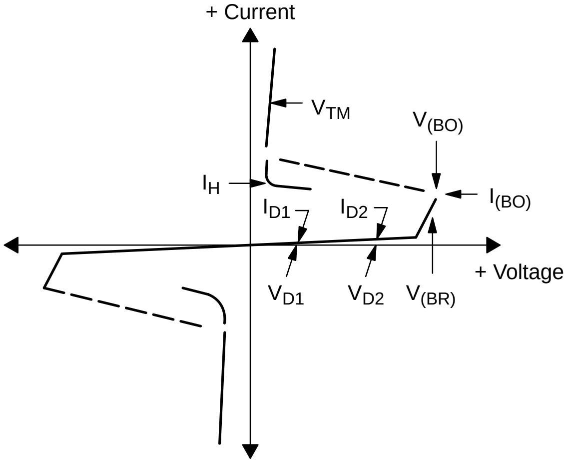
ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)
Devices are bidirectional. All electrical parameters apply to forward and reverse polarities.

Characteristics		Symbol	Min	Typ	Max	Unit
Breakover Voltage (Both polarities)		$V_{(BO)}$				Volts
(dv/dt = 100 V/µs, I_{SC} = 1.0 A, Vdc = 1000 V)	MMT05A230T3		−	−	265	
	MMT05A260T3		−	−	320	
	MMT05A310T3		−	−	365	
(+65°C)						
	MMT05A230T3		−	−	280	
	MMT05A260T3		−	−	340	
	MMT05A310T3		−	−	400	
Breakover Voltage (Both polarities)		$V_{(BO)}$				Volts
(f = 60 Hz, I_{SC} = 1.0 A(rms), V_{OC} = 1000 V(rms),	MMT05A230T3		−	−	265	
R_I = 1.0 kΩ, t = 0.5 cycle) (Note 3)	MMT05A260T3		−	−	320	
	MMT05A310T3		−	−	365	
(+65°C)						
	MMT05A230T3		−	−	280	
	MMT05A260T3		−	−	340	
	MMT05A310T3		−	−	400	
Breakover Voltage Temperature Coefficient		$dV_{(BO)}/dT_J$	−	0.08	−	%/°C
Breakdown Voltage ($I_{(BR)}$ = 1.0 mA) Both polarities		$V_{(BR)}$				Volts
	MMT05A230T3		−	190	−	
	MMT05A260T3		−	240	−	
	MMT05A310T3		−	280	−	
Off State Current (V_{D1} = 50 V) Both polarities (V_{D2} = V_{DM}) Both polarities		I_{D1} I_{D2}	− −	− −	2.0 5.0	µA
On−State Voltage (I_T = 1.0 A) (PW ≤ 300 µs, Duty Cycle ≤ 2%) (Note 3)		V_T	−	1.53	3.0	Volts
Breakover Current (f = 60 Hz, V_{DM} = 1000 V(rms), R_S = 1.0 kΩ) Both polarities		I_{BO}	−	230	−	mA
Holding Current (Both polarities) V_S = 500 Volts; I_T (Initiating Current) = ±1.0 Amp	(Note 3)	I_H	150	340	−	mA
Critical Rate of Rise of Off−State Voltage (Linear waveform, V_D = Rated V_{BR}, T_J = 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, 1.0 V(rms) Signal)		C_O	− −	22 35	− 50	pF

3. Measured under pulse conditions to reduce heating.

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



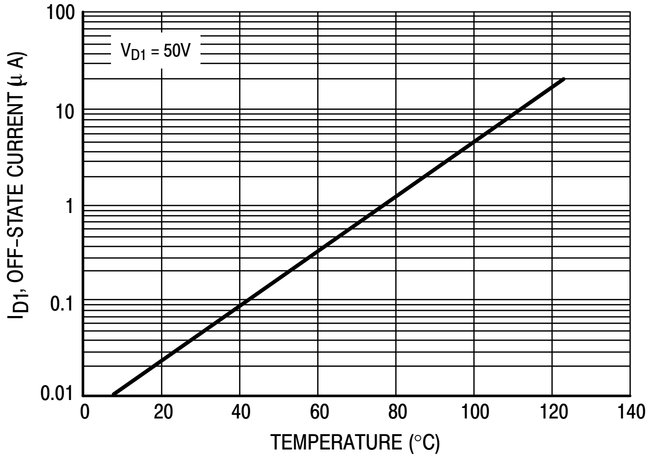


Figure 1. Off−State Current versus Temperature

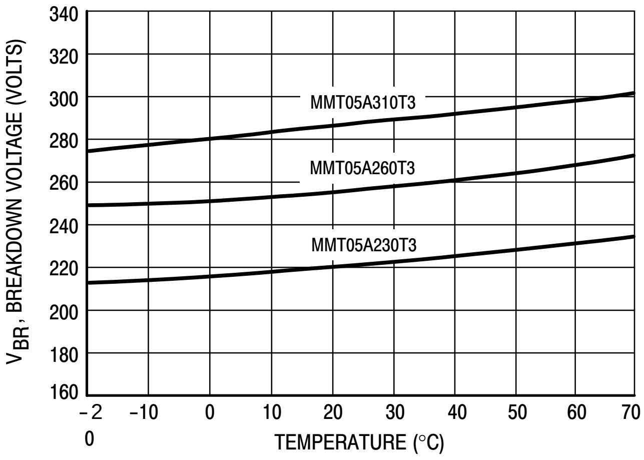


Figure 2. Typical Breakdown Voltage versus Temperature

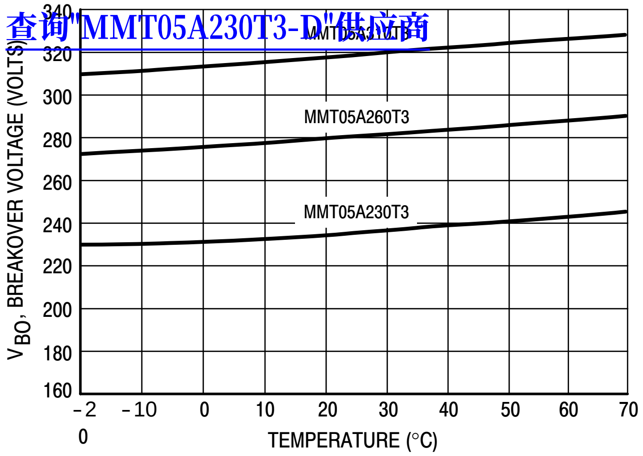


Figure 3. Typical Breakover Voltage versus Temperature

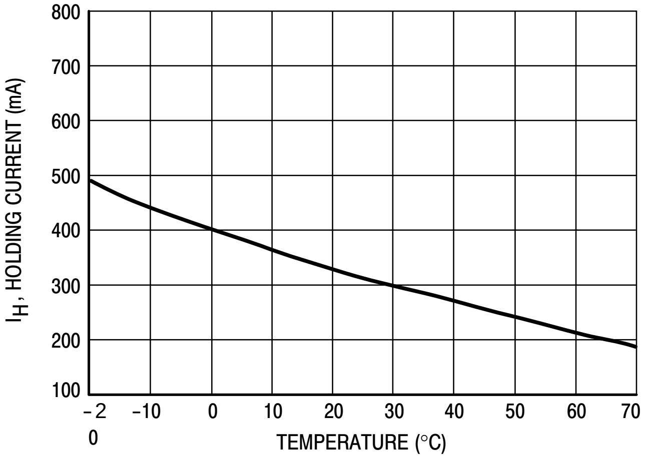


Figure 4. Typical Holding Current versus Temperature

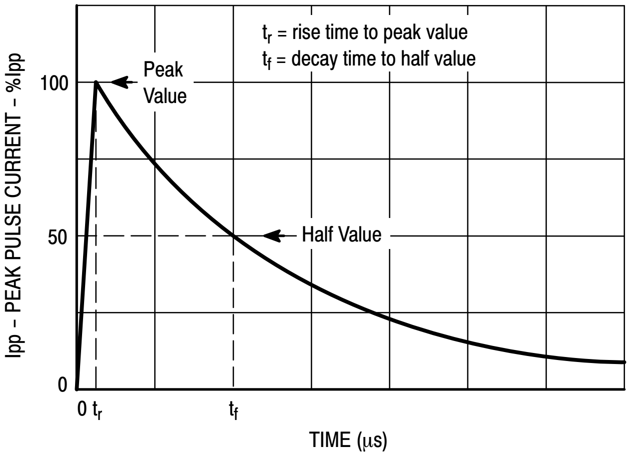


Figure 5. Exponential Decay Pulse Waveform

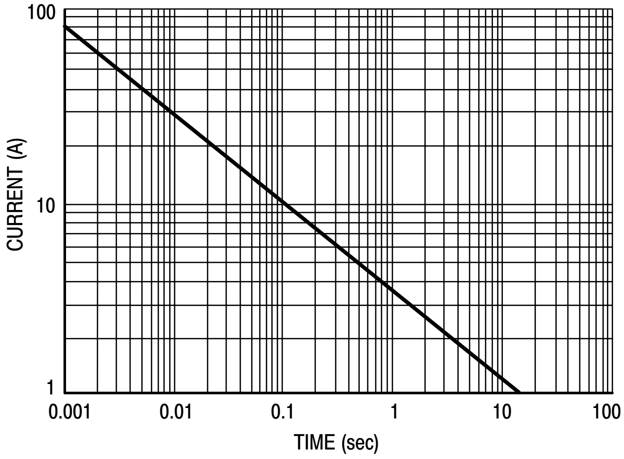
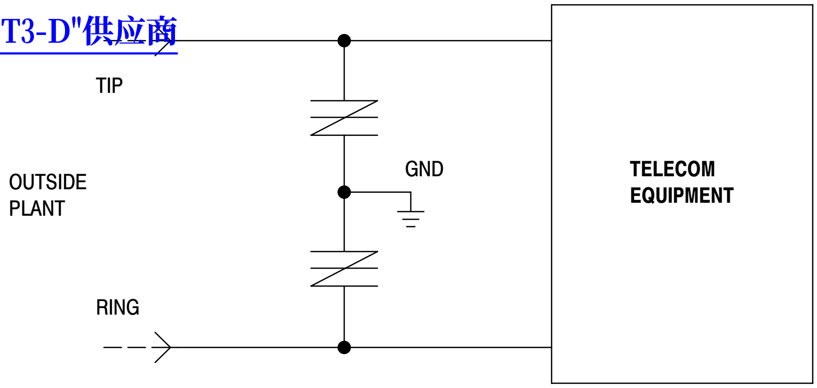
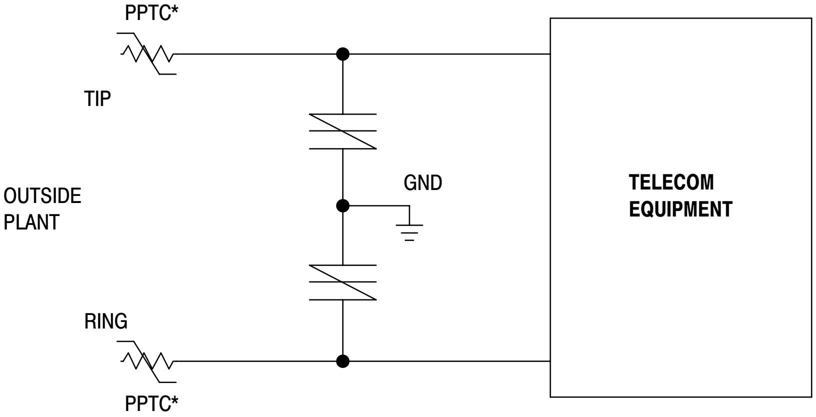
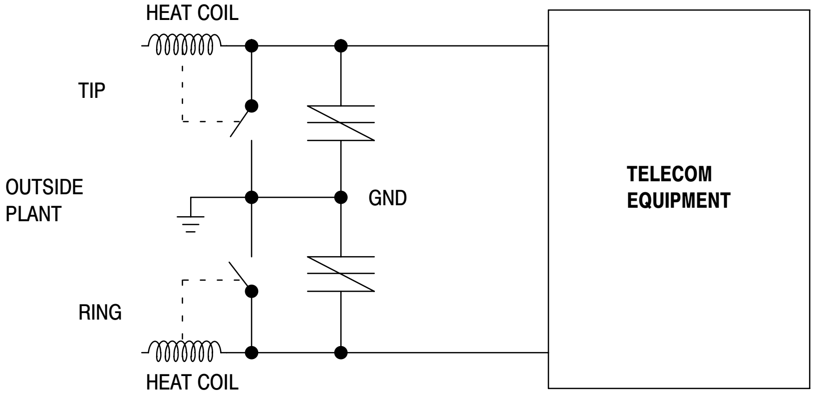


Figure 6. Peak Surge On−State Current versus Surge Current Duration, Sinusoidal Waveform





*Polymeric PTC (positive temperature coefficient) overcurrent protection device



ORDERING INFORMATION

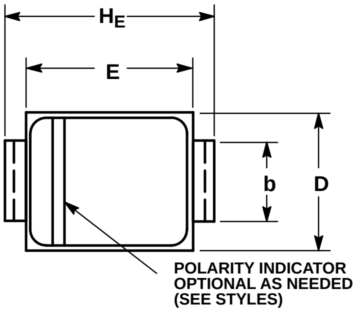
Device	Package	Device Marking	Shipping†
MMT05A230T3	SMA	PBF	5000 / Tape & Reel (12 mm Reel)
MMT05A230T3G	SMA (Pb−Free)	PBF	5000 / Tape & Reel (12 mm Reel)
MMT05A260T3	SMA	PBG	5000 / Tape & Reel (12 mm Reel)
MMT05A260T3G	SMA (Pb−Free)	PBG	5000 / Tape & Reel (12 mm Reel)
MMT05A310T3	SMA	PBJ	5000 / Tape & Reel (12 mm Reel)
MMT05A310T3G	SMA (Pb−Free)	PBJ	5000 / Tape & Reel (12 mm Reel)

†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.

查询"MMT05A230T3-D"供应商

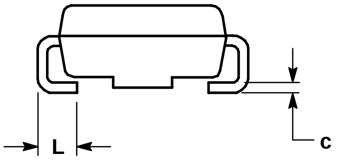
PACKAGE DIMENSIONS

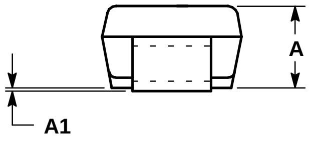
SMA
CASE 403D−02
ISSUE C



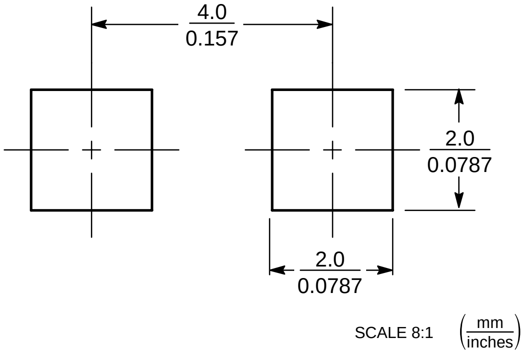
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 403D−01 OBSOLETE, NEW STANDARD IS 403D−02.

	MILLIMETERS			INCHES		
DIM	**MIN**	**NOM**	**MAX**	**MIN**	**NOM**	**MAX**
A	1.91	2.16	2.41	0.075	0.085	0.095
A1	0.05	0.10	0.15	0.002	0.004	0.006
b	1.27	1.45	1.63	0.050	0.057	0.064
c	0.15	0.28	0.41	0.006	0.011	0.016
D	2.29	2.60	2.92	0.090	0.103	0.115
E	4.06	4.32	4.57	0.160	0.170	0.180
H_E	4.83	5.21	5.59	0.190	0.205	0.220
L	0.76	1.14	1.52	0.030	0.045	0.060





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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