

AUTOMOTIVE J1850 (CLASS 2) ESD IMMUNITY Surface Mount Transient Voltage Suppressors

P4SMA16AT3

**GENERAL DATA
400 WATT PEAK POWER**

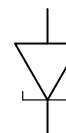
**PLASTIC SURFACE MOUNT
ESD OVERVOLTAGE
TRANSIENT SUPPRESSOR
400 WATT PEAK POWER**

Specification Features:

- Nominal Breakdown Voltage Range – 16 V
- Peak Power – 400 Watts @ 1ms
- > 16KV ESD IMMUNITY (Class 3 per Human Body Model)
- Pico Seconds Response Time. (0V to BV)
- Low Capacitance
- Low Lead Inductance
- Available in Tape and Reel
- Low Profile Package



SMA
CASE 403B-01
PLASTIC



Schematic

MAXIMUM RATINGS AND CHARACTERISTICS

Rating	Symbol	Value	Unit
Peak Power Dissipation @ $T_L = 25^\circ\text{C}$, $PW = 10/1000 \mu\text{s}$ (1)	P_{pk}	400	Watts
Peak Forward Surge @ $T_A = 25^\circ\text{C}$ (2)	I_{FSM}	40	Amps
Instantaneous Forward Voltage @ 40A	V_f	3.5	Volts
Operating and Storage Junction Temperature Range	T_J, T_{stg}	150	$^\circ\text{C}$

*FR4 Board, using Motorola minimum recommended footprint, as shown in case 403B outline dimensions spec.

1. Non-repetitive current pulse.
2. Measured on 0.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulse per minute maximum.

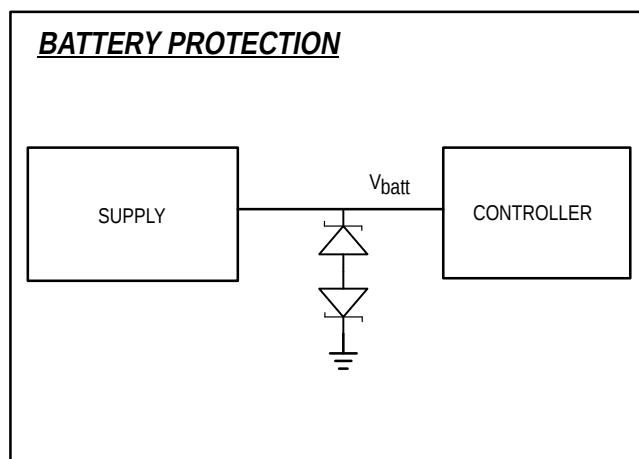
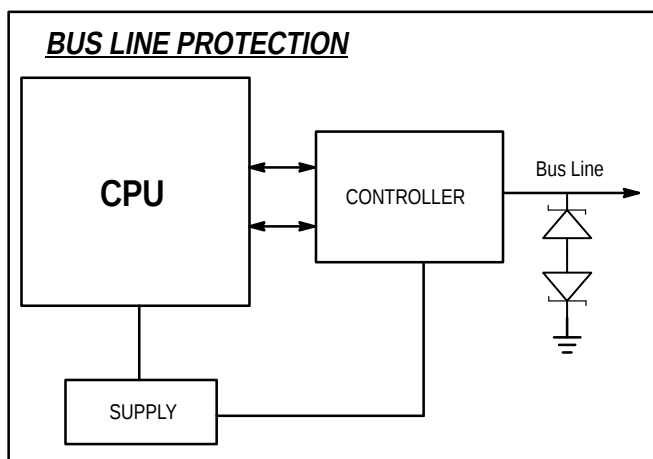
ELECTRICAL CHARACTERISTICS ($V_F = 3.5$ Volts @ $I_F = 40$ A)

Device	Nominal Zener Voltage V_Z @ I_{ZT} Volts (+/-5% tolerance) (Volts)	Test Current I_{ZT} (mA)	Reverse Stand-off Voltage V_{RWM} (Volts)	Maximum Reverse Leakage @ V_{RWM} I_r (μA)	Maximum Reverse Surge Current I_{RSM} (Amps)	Maximum Reverse Voltage @ I_{RSM} (Clamping Voltage) V_{rsm} (Volts)	Typical Junction Capacitance @ $V_{RWM}/2$ C_p (pf)
P4SMA16AT3	16	1	13.6	2.5	17.8	22.5	250

*TOLERANCE AND VOLTAGE DESIGNATION Tolerance designation – The type number listed indicates a tolerance of $\pm 5\%$.

APPLICATION DIAGRAMS

Back to back P4SMA16AT3 devices prevent ESD transient damage to the controller on both communication bus and power supply lines.



RATING AND TYPICAL CHARACTERISTIC CURVES ($T_A = 25^\circ\text{C}$)

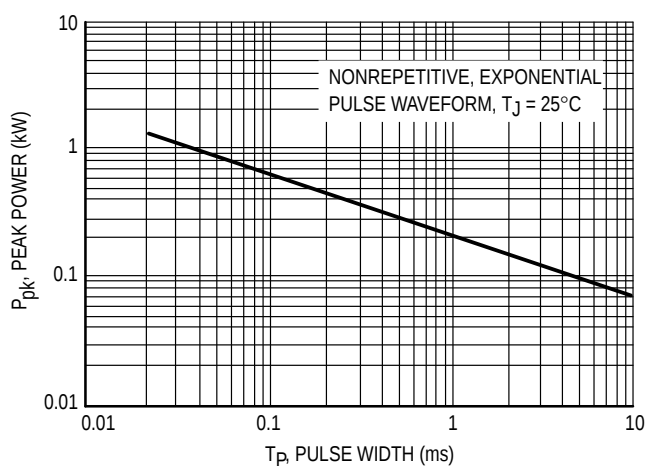


Figure 1. Typical Pulse Rating Curve

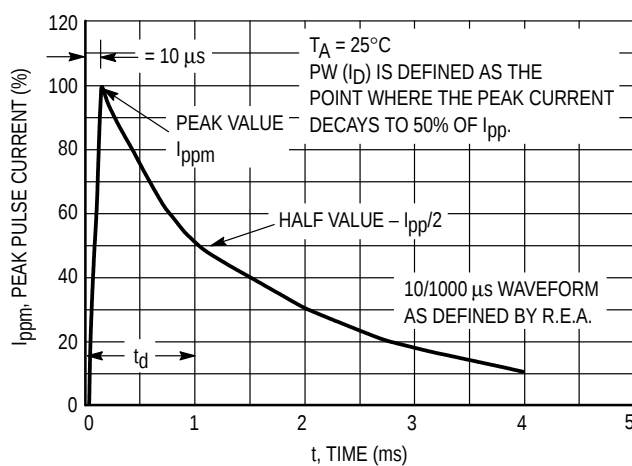


Figure 2. Pulse Waveform

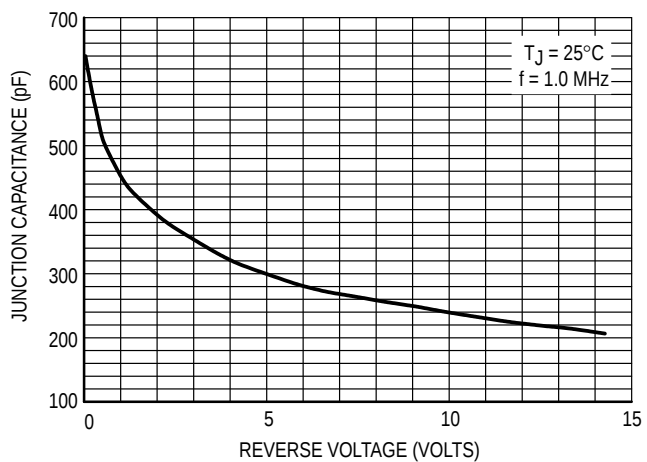


Figure 3. Typical Junction Capacitance

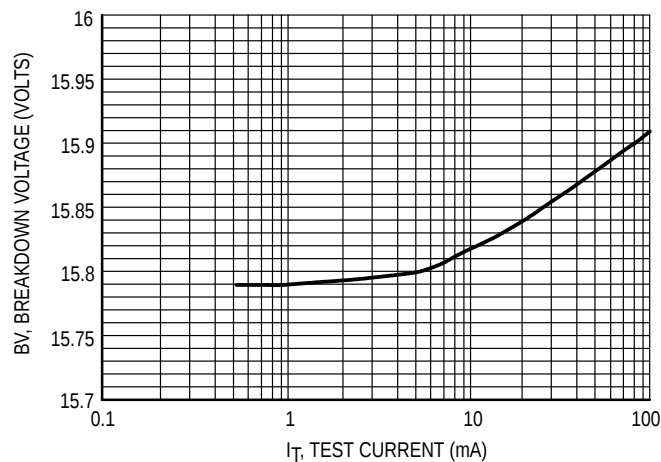


Figure 4. Breakdown Voltage Curve

RATING AND TYPICAL CHARACTERISTIC CURVES ($T_A = 25^\circ\text{C}$)

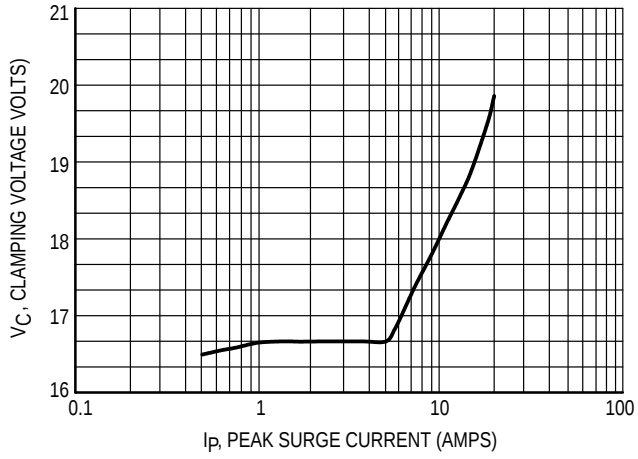


Figure 5. Clamping Voltage Curve

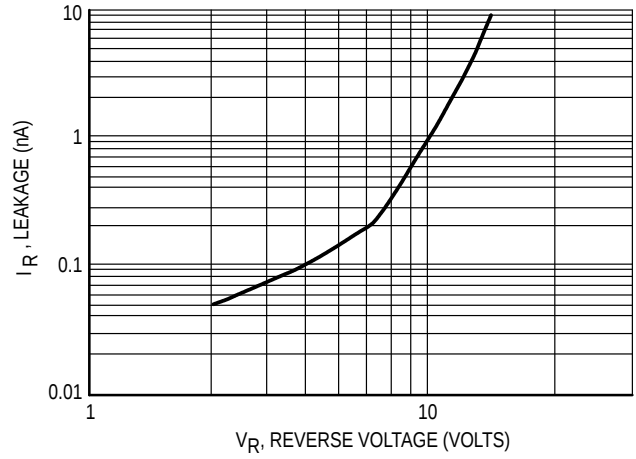


Figure 6. Reverse Leakage Curve

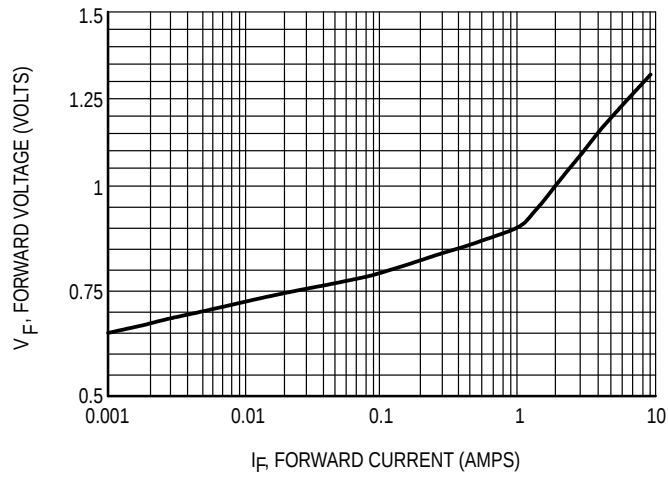
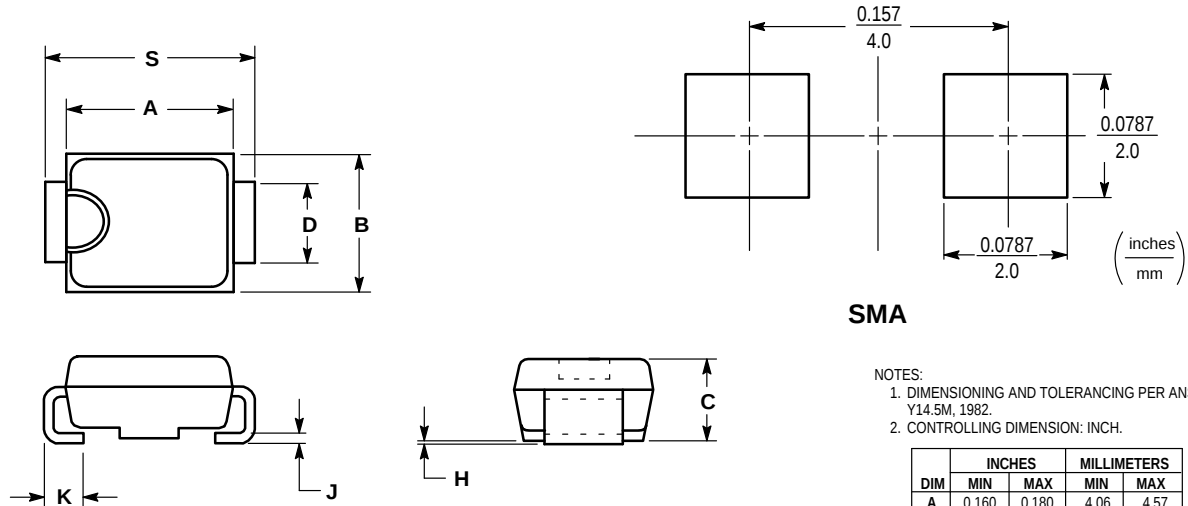


Figure 7. Forward Voltage Current

OUTLINE DIMENSIONS



SMA

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.160	0.180	4.06	4.57
B	0.090	0.115	2.29	2.92
C	0.075	0.105	1.91	2.67
D	0.050	0.064	1.27	1.63
H	0.004	0.008	0.10	0.20
J	0.006	0.016	0.15	0.41
K	0.030	0.060	0.76	1.52
S	0.190	0.220	4.83	5.59

CASE 403B-01 ISSUE O

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and  are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution;
P.O. Box 20912; Phoenix, Arizona 85036. 1-800-441-2447 or 602-303-5454

MFAX: RMFAX0@email.sps.mot.com – TOUCHTONE 602-244-6609
INTERNET: <http://Design-NET.com>

JAPAN: Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, 6F Seibu-Butsuryu-Center,
3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 03-81-3521-8315

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298



MOTOROLA



P4SMA16AT3/D

