

# Zener Transient Voltage Suppressors

**1SMA10CAT3  
through  
1SMA78CAT3**

## Specification Features:

- Reverse Stand-Off Voltage Range: 10–78 V
- Bidirectional Operation
- Peak Power — 400 Watts @ 1.0 ms
- ESD Rating of Class 3 (>16 kV) per Human Body Model
- Pico Seconds Response Time (0 V to BV)
- Flat Handling Surface for Accurate Placement
- Package Design for Top Side or Bottom Circuit Board Mounting
- Available in Tape and Reel
- Low Profile Package

**PLASTIC SURFACE MOUNT  
BIDIRECTIONAL  
ZENER OVERVOLTAGE  
TRANSIENT SUPPRESSORS  
10–78 VOLTS  $V_R$   
400 WATTS PEAK POWER**

## Mechanical Characteristics:

- Case: Void-free, transfer-molded plastic
- Maximum Case Temperature for Soldering Purposes: 260°C for 10 seconds
- Finish: All external surfaces are corrosion resistant with readily solderable leads
- Polarity: None
- Mounted Position: Any



**SMA  
CASE 403B-01  
PLASTIC**

## MAXIMUM RATINGS AND CHARACTERISTICS

Rating	Symbol	Value	Unit
Peak Power Dissipation @ $T_L = 25^\circ\text{C}$ , $PW = 10/1000 \mu\text{s}$ (Note 1)	$P_{pk}$	400	Watts
Thermal Resistance from Junction to Lead	$R_{\theta JL}$	29	$^\circ\text{C/W}$
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	150	$^\circ\text{C/W}$
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.

## ELECTRICAL CHARACTERISTICS

Device	Reverse Stand-off Voltage $V_{RWM}$ (Volts)	Breakdown Voltage		Maximum Reverse Voltage @ $I_{RSM}$ (Clamping Voltage) $V_{RSM}$ (Volts)	Maximum Reverse Surge Current $I_{RSM}$ (Amps)	Maximum Reverse Leakage @ $V_{RWM}$ $I_R$ ( $\mu\text{A}$ )	Device Marking
		$V_{BR}$ Volts (Min)	$I_T$ mA				
1SMA10CAT3	10	11.1	1	17.0	23.5	2.5	QXC
1SMA11CAT3	11	12.2	1	18.2	22.0	2.5	QZC
1SMA12CAT3	12	13.3	1	19.9	20.1	2.5	REC
1SMA13CAT3	13	14.4	1	21.5	18.6	2.5	RG C
1SMA14CAT3	14	15.6	1	23.2	17.2	2.5	RKC
1SMA15CAT3	15	16.7	1	24.4	16.4	2.5	RMC
1SMA16CAT3	16	17.8	1	26.0	15.4	2.5	RPC
1SMA17CAT3	17	18.9	1	27.6	14.5	2.5	RRC

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

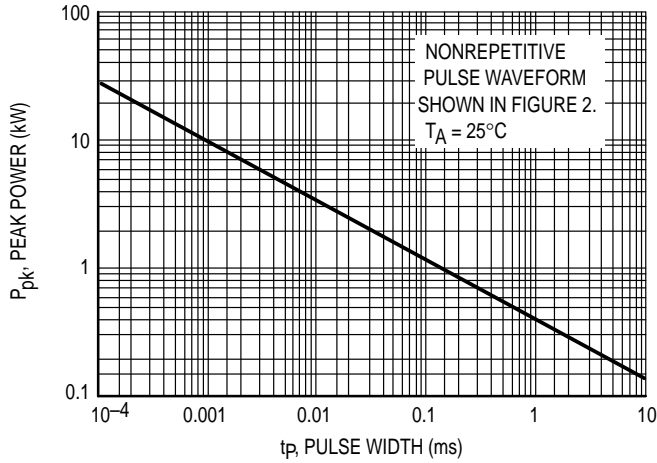


**ELECTRICAL CHARACTERISTICS — continued**

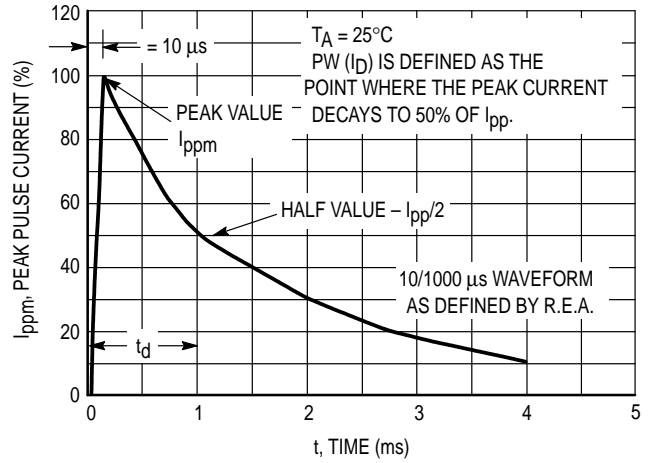
Device	Reverse Stand-off Voltage $V_{RWM}$ (Volts)	Breakdown Voltage		Maximum Reverse Voltage @ $I_{RSM}$ (Clamping Voltage) $V_{RSM}$ (Volts)	Maximum Reverse Surge Current $I_{RSM}$ (Amps)	Maximum Reverse Leakage @ $V_{RWM}$ $I_R$ ( $\mu A$ )	Device Marking
		$V_{BR}$ Volts (Min)	$I_T$ mA				
1SMA18CAT3	18	20	1	29.2	13.7	2.5	RTC
1SMA20CAT3	20	22.2	1	32.4	12.3	2.5	RVC
1SMA22CAT3	22	24.4	1	35.5	11.3	2.5	RXC
1SMA24CAT3	24	26.7	1	38.9	10.3	2.5	RZC
1SMA26CAT3	26	28.9	1	42.1	9.5	2.5	SEC
1SMA28CAT3	28	31.1	1	45.4	8.8	2.5	SGC
1SMA30CAT3	30	33.3	1	48.4	8.3	2.5	SKC
1SMA33CAT3	33	36.7	1	53.3	7.5	2.5	SMC
1SMA36CAT3	36	40	1	58.1	6.9	2.5	SPC
1SMA40CAT3	40	44.4	1	64.5	6.2	2.5	SRC
1SMA43CAT3	43	47.8	1	69.4	5.8	2.5	STC
1SMA45CAT3	45	50	1	72.2	5.5	2.5	SVC
1SMA48CAT3	48	53.3	1	77.4	5.2	2.5	SXC
1SMA51CAT3	51	56.7	1	82.4	4.9	2.5	SZC
1SMA54CAT3	54	60	1	87.1	4.6	2.5	TEC
1SMA58CAT3	58	64.4	1	93.6	4.3	2.5	TGC
1SMA60CAT3	60	66.7	1	96.8	4.1	2.5	TKC
1SMA64CAT3	64	71.1	1	103.0	3.9	2.5	TMC
1SMA70CAT3	70	77.8	1	113.0	3.5	2.5	TPC
1SMA75CAT3	75	83.3	1	121.0	3.3	2.5	TRC
1SMA78CAT3	78	86.7	1	126.0	3.2	2.5	TSC

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

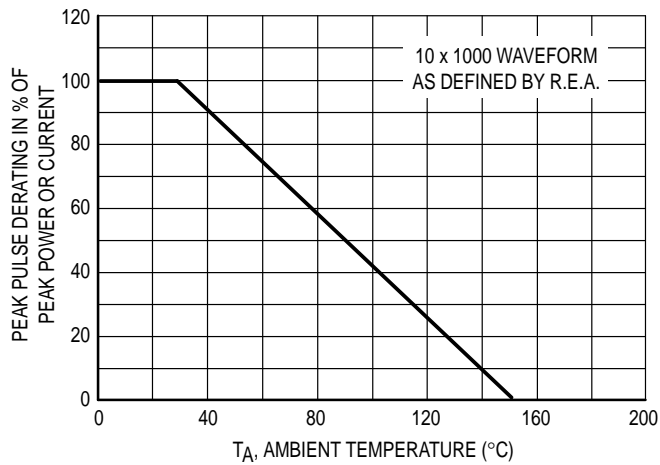
## RATING AND TYPICAL CHARACTERISTIC CURVES



**Figure 1. Pulse Rating Curve**

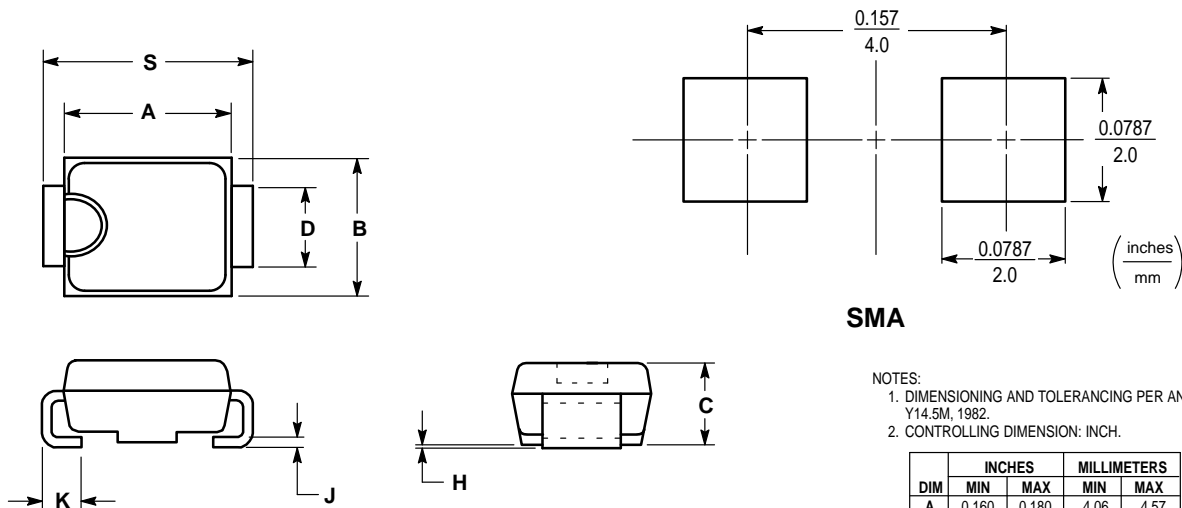


**Figure 2. Pulse Waveform**



**Figure 3. Pulse Derating Curve**

# 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

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

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

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



1SMA10CAT3/D





LittleDiode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

[LittleDiode.com](http://LittleDiode.com)

Looking forward to providing you with the best possible service.