

1SMA10CAT3 Series

400 Watt Peak Power Zener Transient Voltage Suppressors

Bidirectional*

The SMA series is designed to protect voltage sensitive components from high voltage, high energy transients. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The SMA series is supplied in ON Semiconductor's exclusive, cost-effective, highly reliable Surmetic™ package and is ideally suited for use in communication systems, automotive, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer applications.

Specification Features:

- Working Peak Reverse Voltage Range – 10 V to 78 V
- Standard Zener Breakdown Voltage Range – 11.7 V to 91.3 V
- Peak Power – 400 Watts @ 1 ms
- ESD Rating of Class 3 (> 16 kV) per Human Body Model
- Response Time is Typically < 1 ns
- Flat Handling Surface for Accurate Placement
- Package Design for Top Slide or Bottom Circuit Board Mounting
- Low Profile Package

Mechanical Characteristics:

CASE: Void-free, transfer-molded plastic

FINISH: All external surfaces are corrosion resistant and leads are readily solderable

MAXIMUM CASE TEMPERATURE FOR SOLDERING PURPOSES:
260°C for 10 Seconds

POLARITY: Cathode polarity notch does not indicate polarity

MOUNTING POSITION: Any

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Power Dissipation (Note 1) @ $T_L = 25^\circ\text{C}$, Pulse Width = 1 ms	P_{PK}	400	W
DC Power Dissipation @ $T_L = 75^\circ\text{C}$ Measured Zero Lead Length (Note 2) Derate Above 75°C	P_D	1.5	W
Thermal Resistance from Junction to Lead	$R_{\theta JL}$	20 50	mW/°C °C/W
DC Power Dissipation (Note 3) @ $T_A = 25^\circ\text{C}$ Derate Above 25°C	P_D	0.5	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	4.0 250	mW/°C °C/W
Operating and Storage Temperature Range	T_J, T_{stg}	-65 to +150	°C

1. 10 X 1000 μs , non-repetitive
2. 1" square copper pad, FR-4 board
3. FR-4 board, using ON Semiconductor minimum recommended footprint, as shown in 403B case outline dimensions spec.

*Please see 1SMA5.0AT3 to 1SMA78AT3 for Unidirectional devices.



ON Semiconductor®

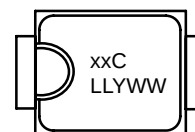
<http://onsemi.com>

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



SMA
CASE 403B
PLASTIC

MARKING DIAGRAM



xxC = Specific Device Code
(See Table Next Page)
LL = Assembly Location
Y = Year
WW = Work Week

ORDERING INFORMATION

Device †	Package	Shipping
1SMAxxCAT3	SMA	5000/Tape & Reel

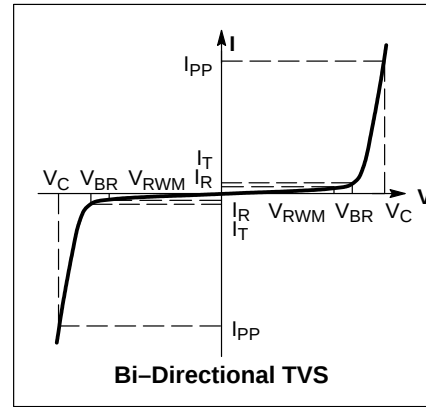
†The "T3" suffix refers to a 13 inch reel.

1SMA10CAT3 Series

ELECTRICAL CHARACTERISTICS

(T_A = 25°C unless otherwise noted)

Symbol	Parameter
I _{PP}	Maximum Reverse Peak Pulse Current
V _C	Clamping Voltage @ I _{PP}
V _{RWM}	Working Peak Reverse Voltage
I _R	Maximum Reverse Leakage Current @ V _{RWM}
V _{BR}	Breakdown Voltage @ I _T
I _T	Test Current



ELECTRICAL CHARACTERISTICS

Device	Device Marking	V _{RWM} (Note 4)	I _R @ V _{RWM}	Breakdown Voltage				V _C @ I _{PP} (Note 6)	
				V _{BR} (Volts) (Note 5)			@ I _T	V _C	I _{PP}
		Volts	μA	Min	Nom	Max	mA	Volts	Amps
1SMA10CAT3	QXC	10	2.5	11.1	11.69	12.27	1.0	17.0	23.5
1SMA11CAT3	QZC	11	2.5	12.2	12.84	13.48	1.0	18.2	22.0
1SMA12CAT3	REC	12	2.5	13.3	14.00	14.70	1.0	19.9	20.1
1SMA13CAT3	RGC	13	2.5	14.4	15.16	15.92	1.0	21.5	18.6
1SMA14CAT3	RKC	14	2.5	15.6	16.42	17.24	1.0	23.2	17.2
1SMA15CAT3	RMC	15	2.5	16.7	17.58	18.46	1.0	24.4	16.4
1SMA16CAT3	RPC	16	2.5	17.8	18.74	19.67	1.0	26.0	15.4
1SMA18CAT3	RTC	18	2.5	20	21.06	22.11	1.0	29.2	13.7
1SMA20CAT3	RVC	20	2.5	22.2	23.37	24.54	1.0	32.4	12.3
1SMA22CAT3	RXC	22	2.5	24.4	25.69	26.97	1.0	35.5	11.3
1SMA24CAT3	RZC	24	2.5	26.7	28.11	29.51	1.0	38.9	10.3
1SMA26CAT3	SEC	26	2.5	28.9	30.42	31.94	1.0	42.1	9.5
1SMA28CAT3	SGC	28	2.5	31.1	32.74	34.37	1.0	45.4	8.8
1SMA30CAT3	SKC	30	2.5	33.3	35.06	36.81	1.0	48.4	8.3
1SMA33CAT3	SMC	33	2.5	36.7	38.63	40.56	1.0	53.3	7.5
1SMA36CAT3	SPC	36	2.5	40	42.11	44.21	1.0	58.1	6.9
1SMA40CAT3	SRC	40	2.5	44.4	46.74	49.07	1.0	64.5	6.2
1SMA43CAT3	STC	43	2.5	47.8	50.32	52.83	1.0	69.4	5.8
1SMA48CAT3	SXC	48	2.5	53.3	56.11	58.91	1.0	77.4	5.2
1SMA51CAT3	SZC	51	2.5	56.7	59.69	62.67	1.0	82.4	4.9
1SMA54CAT3	TEC	54	2.5	60	63.16	66.32	1.0	87.1	4.6
1SMA58CAT3	TGC	58	2.5	64.4	67.79	71.18	1.0	93.6	4.3
1SMA60CAT3	TKC	60	2.5	66.7	70.21	73.72	1.0	96.8	4.1
1SMA64CAT3	TMC	64	2.5	71.1	74.84	78.58	1.0	103	3.9
1SMA70CAT3	TPC	70	2.5	77.8	81.90	85.99	1.0	113	3.5
1SMA78CAT3	TTC	78	2.5	86.7	91.27	95.83	1.0	126	3.2

4. A transient suppressor is normally selected according to the working peak reverse voltage (V_{RWM}), which should be equal to or greater than the DC or continuous peak operating voltage level
5. V_{BR} measured at pulse test current I_T at an ambient temperature of 25°C
6. Surge current waveform per Figure 2 and derate per Figure 3

RATING AND TYPICAL CHARACTERISTIC CURVES

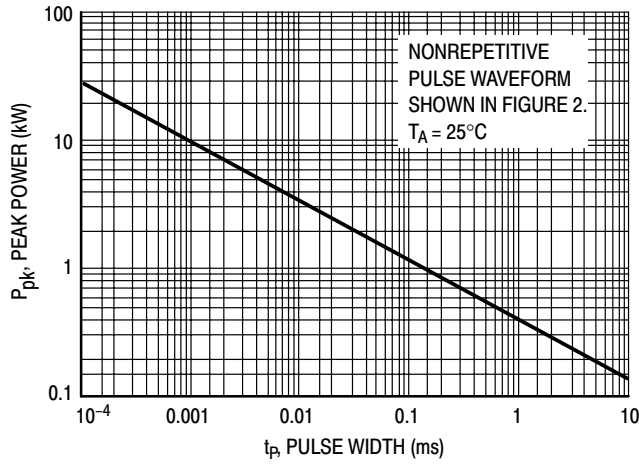


Figure 1. Pulse Rating Curve

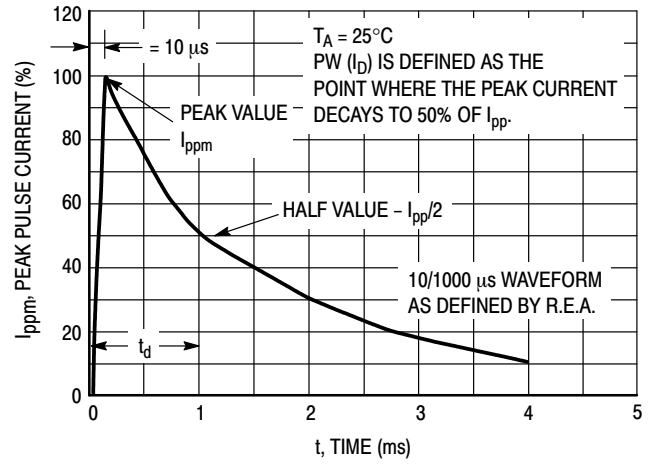


Figure 2. Pulse Waveform

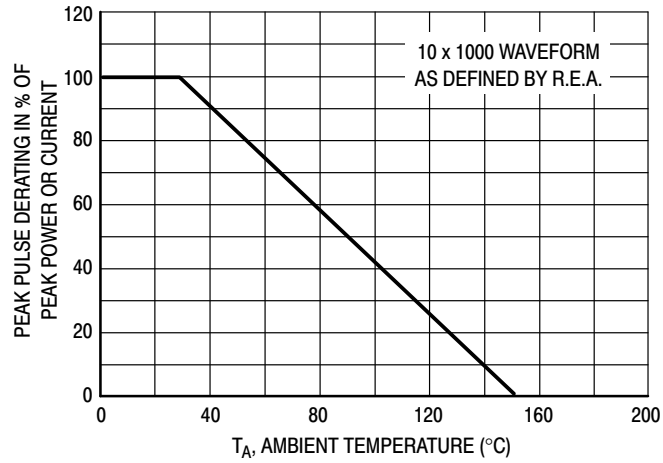


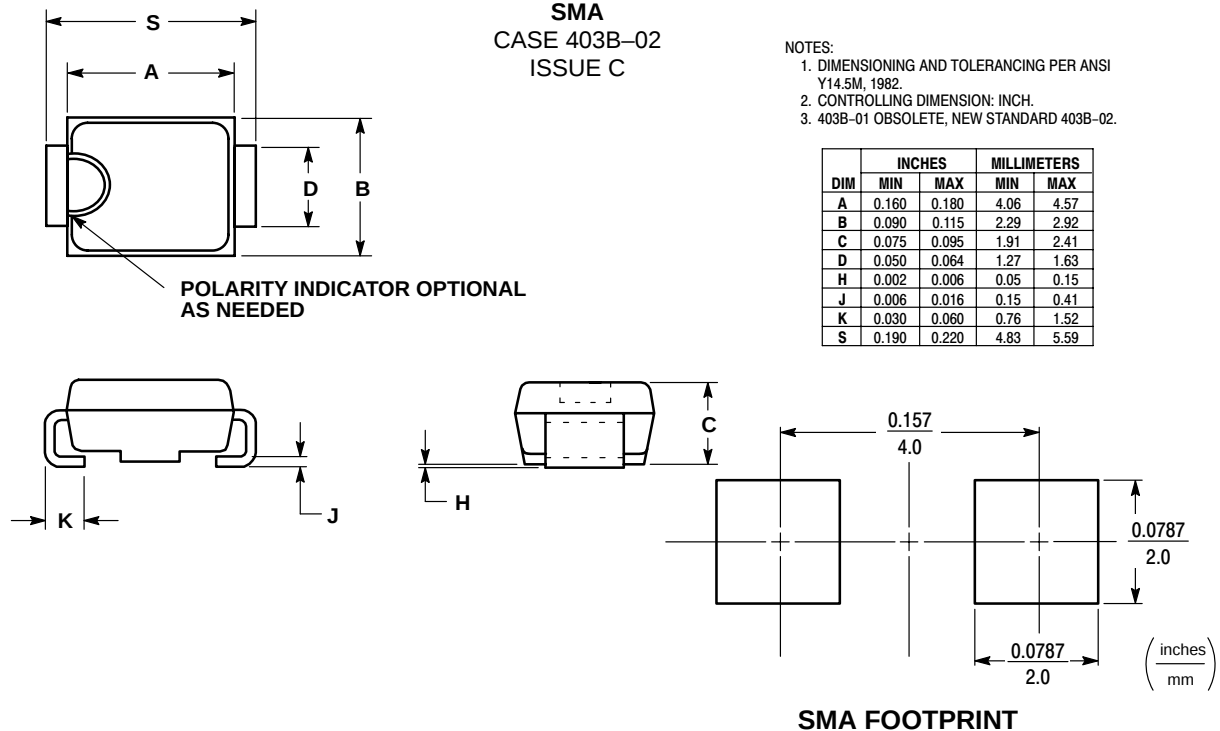
Figure 3. Pulse Derating Curve

1SMA10CAT3 Series

OUTLINE DIMENSIONS

Transient Voltage Suppressors – Surface Mounted

400 Watt Peak Power



Surmetic is a trademark of Semiconductor Components Industries, LLC.

ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC 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 special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC 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. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC 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 SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC 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 SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer.

PUBLICATION ORDERING INFORMATION

Literature Fulfillment:

Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: ONlit@hibbertco.com

N. American Technical Support: 800-282-9855 Toll Free USA/Canada

JAPAN: ON Semiconductor, Japan Customer Focus Center
4-32-1 Nishi-Gotanda, Shinagawa-ku, Tokyo, Japan 141-0031
Phone: 81-3-5740-2700
Email: r14525@onsemi.com

ON Semiconductor Website: <http://onsemi.com>

For additional information, please contact your local
Sales Representative.