SMF05

ESD Protection Diode Array

Quad, Low Clamping Voltage

This quad monolithic silicon overvoltage suppressor is designed for applications requiring transient voltage protection capability. It is intended for use in ESD sensitive equipment such as computers, printers, cell phones, medical equipment, and other applications. Its quad junction common anode design protects four separate lines using only one package. These devices are ideal for situations where board space is at a premium.

Specification Features

- SC−88A Package Allows Four Separate Unidirectional Configurations
- Low Leakage < 5 μA @ 5 V
- Breakdown Voltage: 6.1 V − 7.2 V @ 1 mA
- Low Capacitance (90 pF TYP)
- Provides Protection for IEC61000−4−2
- Pb−Free Packages are Available*

Mechanical Characteristics

- Void Free, Transfer−Molded, Thermosetting Plastic Case
- Corrosion Resistant Finish, Easily Solderable
- Package Designed for Optimal Automated Board Assembly
- Small Package Size for High Density Applications

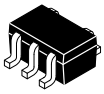
Applications

- Computers
- Printers
- Cell Phones
- Medical Equipment

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

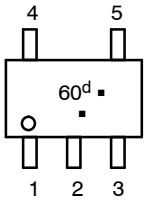
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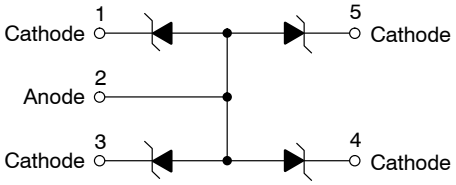


SC−88A/SOT−353
CASE 419A−02
STYLE 5
SCALE 2:1

MARKING DIAGRAM



60 = Specific Device Code
d = Date Code
▪ = Pb−Free Package
(Note: Microdot may be in either location)



ORDERING INFORMATION

Device	Package	Shipping†
SMF05T1	SC−88A	3000 Tape & Reel
SMF05T1G	SC−88A (Pb−Free)	3000 Tape & Reel
SMF05T2G	SC−88A (Pb−Free)	3000 Tape & Reel
SMF05CT1	SC−88A	3000 Tape & Reel
SMF05CT1G	SC−88A (Pb−Free)	3000 Tape & Reel
SMF05CT2	SC−88A	3000 Tape & Reel
SMF05CT2G	SC−88A (Pb−Free)	3000 Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

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

Characteristic		Symbol	Value	Unit
Peak Power Dissipation @ 8 X 20 μs @$T_A \le$ 25°C (Note 1)		P_{pk}	200	W
Maximum Junction Temperature		T_{Jmax}	150	°C
Operating Junction and Storage Temperature Range		T_J, T_{stg}	−55 to +150	°C
ESD Discharge	IEC61000−4−2, Air Discharge IEC61000−4−2, Contact Discharge	V_{PP}	16 9	kV
Lead Solder Temperature (10 seconds duration)		T_L	260	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Non−repetitive current per Figure 2. Derate per Figure 3.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Device	Breakdown Voltage V_{BR} @ 1 mA (Volts)		Leakage Current I_R @ V_{RWM} = 5 V (μA)	Capacitance @ 0 V Bias (pF)	Max V_F @ I_F = 200 mA (V)	Max Clamping Voltage (V_C) @ I_{PP}		Max Clamping Voltage (V_C) @ I_{PP}	
	Min	Max				I_{PP} (A)	V_C (V)	I_{PP} (A)	V_C (V)
SMF05	6.0	7.2	5.0	90	1.25	1.0	9.5	12	12.5

TYPICAL PERFORMANCE CURVES

(T_A = 25°C unless otherwise noted)

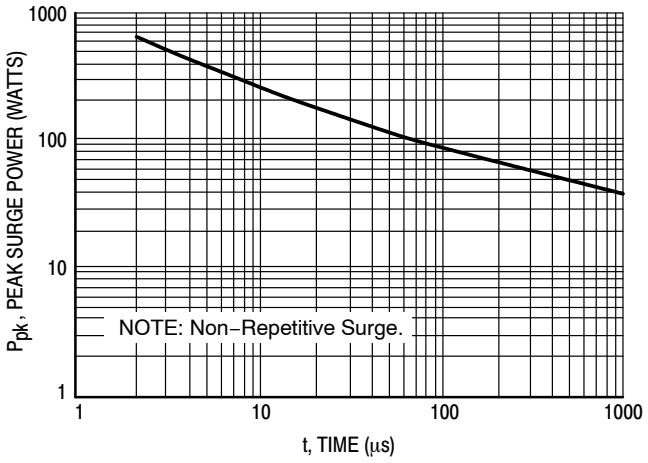


Figure 1. Peak Power Dissipation versus Pulse Width

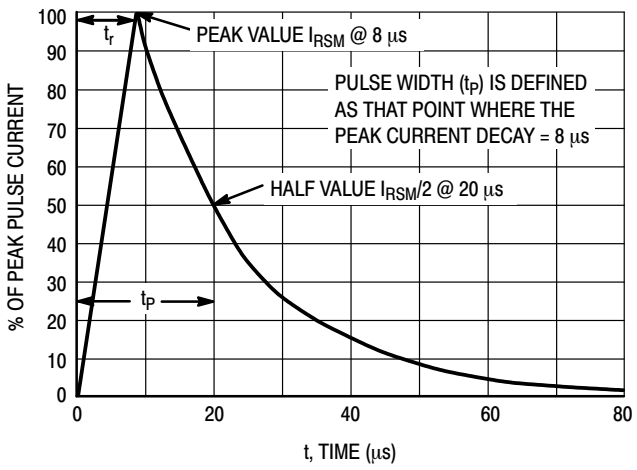


Figure 2. Pulse Waveform 8 x 20 μs

TYPICAL PERFORMANCE CURVES

(T_A = 25°C unless otherwise noted)

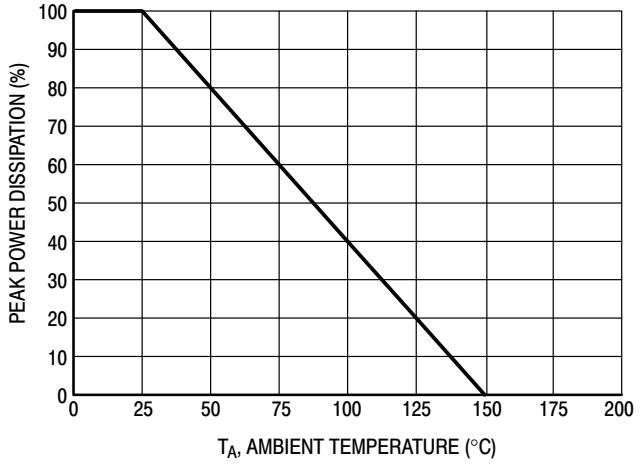


Figure 3. Power Derating Curve

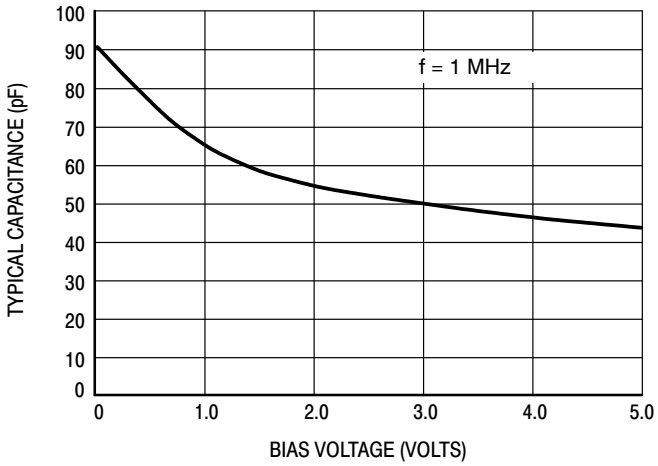


Figure 4. Junction Capacitance versus Reverse Voltage

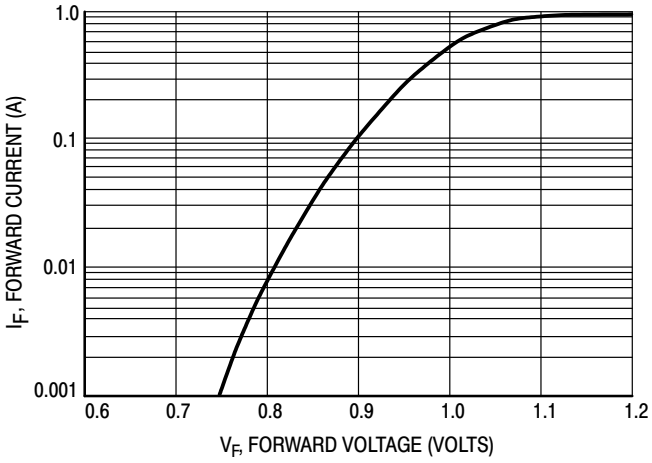


Figure 5. Forward Voltage Curve

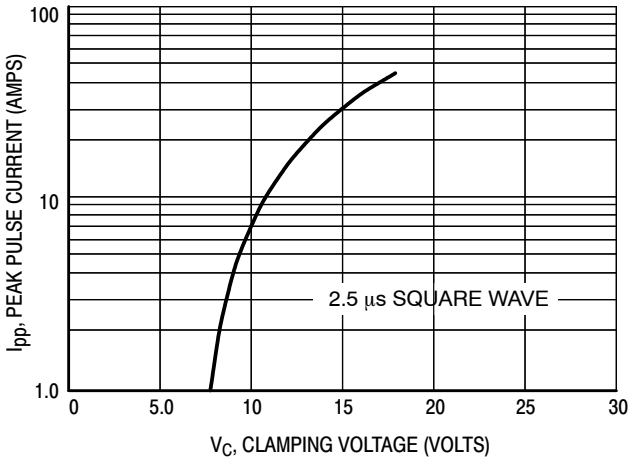


Figure 6. Clamping Voltage versus Peak Pulse Current (Reverse Direction)

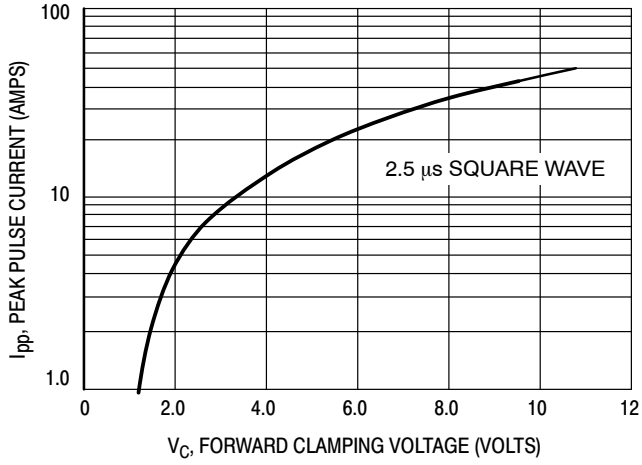
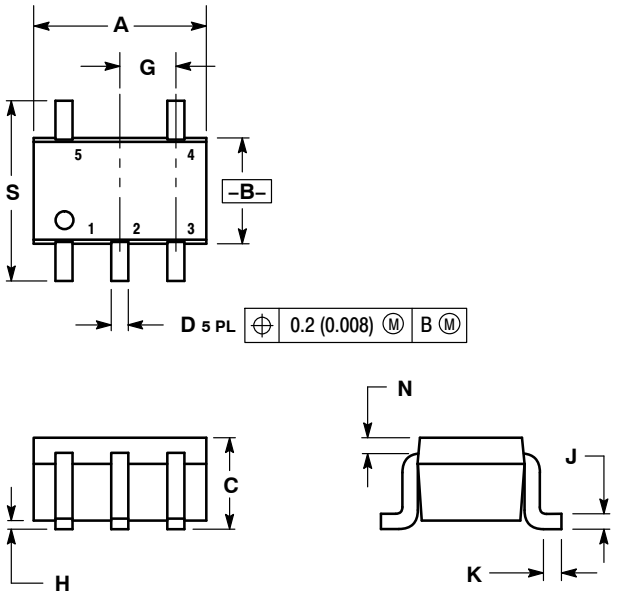


Figure 7. Clamping Voltage versus Peak Pulse Current (Forward Direction)

PACKAGE DIMENSIONS

SC−88A (SC−70−5/SOT−353)
CASE 419A−02
ISSUE L

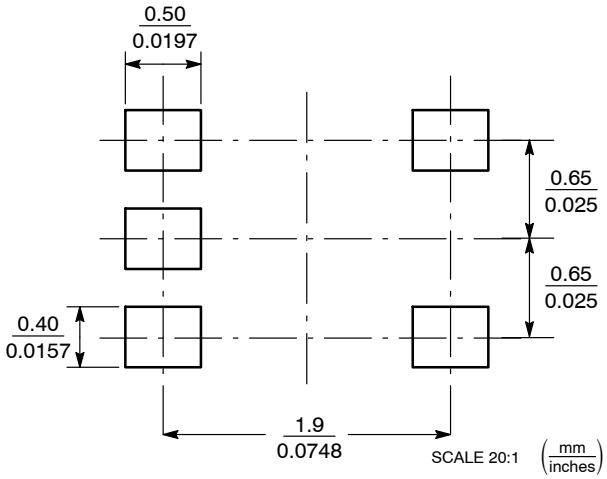


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 419A−01 OBSOLETE. NEW STANDARD 419A−02.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026 BSC		0.65 BSC	
H	---	0.004	---	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20

STYLE 5:
PIN 1. CATHODE
2. COMMON ANODE
3. CATHODE 2
4. CATHODE 3
5. CATHODE 4

SOLDER FOOTPRINT



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