SMS05T1 Series

SC-74 Quad Transient Voltage Suppressor

for ESD Protection

This quad monolithic silicon voltage suppressor is designed for applications requiring transient overvoltage protection capability. It is intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems and other applications. This quad device provides superior surge protection over current quad Zener MMQA series by providing up to 350 watts peak power.

Features:

- SC-74 Package Allows Four Separate Unidirectional Configurations
- Peak Power – 350 Watts, 8 x 20 μS
- ESD Rating of Class N (Exceeding 25 kV) per the Human Body Model
- ESD Rating:
  IEC 61000–4–2 (ESD) 15 kV (air) 8 kV (contact)
  IEC 61000–4–4 (EFT) 40 Amps (5/50 ns)
  IEC 61000–4–5 (lightning) 23 Amps (8/20 μs)
- UL Flammability Rating of 94V–0

Typical Applications:

- Hand Held Portable Applications such as Cell Phones, Pagers, Notebooks and Notebook Computers

MAXIMUM RATINGS

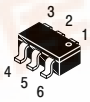
Rating	Symbol	Value	Unit
Peak Power Dissipation 8 x 20 μS @ T_A = 25°C (Note 1)	P_{pk}	350	W
Total Power Dissipation on FR–5 Board @ T_A = 25°C (Note 2)	P_D	225	mW
Derate Above 25°C		1.8	mW/°C
Thermal Resistance, Junction–to–Ambient	$R_{\theta JA}$	556	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	–55 to +150	°C
Lead Solder Temperature – Maximum 10 Seconds Duration	T_L	260	°C

1. Non–repetitive current pulse 8 x 20 μS exponential decay waveform
2. FR–5 = 1.0 x 0.75 x 0.62 in.

ON Semiconductor®

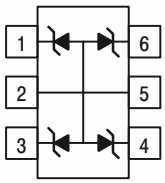
http://onsemi.com

SC–74 QUAD TRANSIENT VOLTAGE SUPPRESSOR 350 WATTS PEAK POWER 5 VOLTS



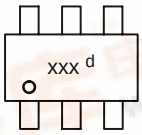
SC–74
CASE 318F
STYLE 1

PIN ASSIGNMENT



PIN 1. CATHODE
2. ANODE
3. CATHODE
4. CATHODE
5. ANODE
6. CATHODE

MARKING DIAGRAM



xxx = Device Code
d = Date Code

ORDERING INFORMATION

Device	Package	Shipping
SMS05T1	SC–74	3000/Tape & Reel
SMS12T1	SC–74	3000/Tape & Reel
SMS15T1	SC–74	3000/Tape & Reel
SMS24T1	SC–74	3000/Tape & Reel

DEVICE MARKING INFORMATION

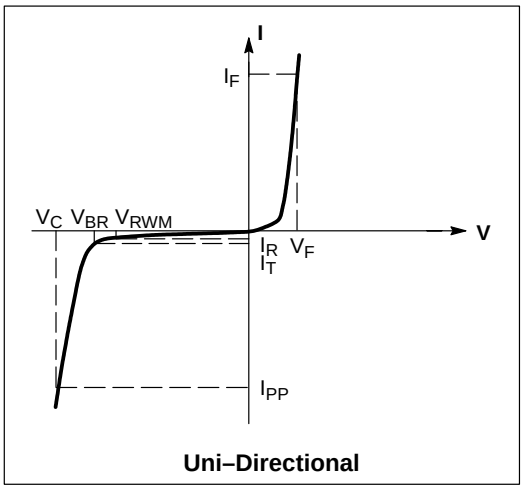
See specific marking information in the device marking column of the Electrical Characteristics table on page 2 of this data sheet.

SMS05T1 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
ΘV_{BR}	Maximum Temperature Coefficient of V_{BR}
I_F	Forward Current
V_F	Forward Voltage @ I_F
Z_{ZT}	Maximum Zener Impedance @ I_{ZT}
I_{ZK}	Reverse Current
Z_{ZK}	Maximum Zener Impedance @ I_{ZK}



Uni–Directional

ELECTRICAL CHARACTERISTICS – UNIDIRECTIONAL

Device	Device Marking	Breakdown Voltage				Max Reverse Leakage Current		Max Reverse Voltage (Clamping Voltage) At Specified Reverse Surge Current (I_{RSM})		Max Reverse Voltage (Clamping Voltage) At Specified Reverse Surge Current (I_{RSM})		Capacitance @ 0 Volt Bias, 1 MHz	
		V_{BR}(V)			I_T	I_R	V_R	I_{RSM} (8x20 μs)	V_{RSM} (8x20 μs)	I_{RSM} (8x20 μs)	V_{RSM} (8x20 μs)	(pF)	
		Min	Nom	Max	(mA)	(μA)	(V)	(A)	(V)	(A)	(V)	Min	Max
SMS05T1	5V0	6.0	–	7.2	1.0	20	5.0	5.0	9.8	23	15.5	250	400
SMS12T1	12V	13.3	–	15	1.0	1.0	12	5.0	19.0	15	23.0	80	150
SMS15T1	15V	16.7	–	18.5	1.0	1.0	15	5.0	24.0	12	29.0	60	125
SMS24T1	24V	26.7	–	32	1.0	1.0	24	5.0	40.0	8	44.0	40	75

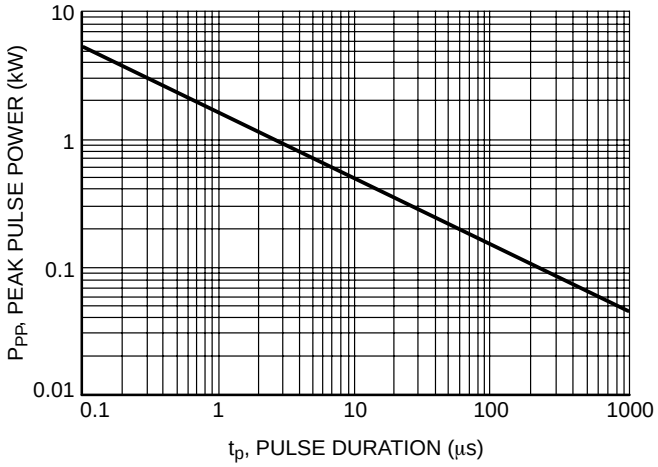


Figure 1. Non–Repetitive Peak Pulse Power versus Pulse Time

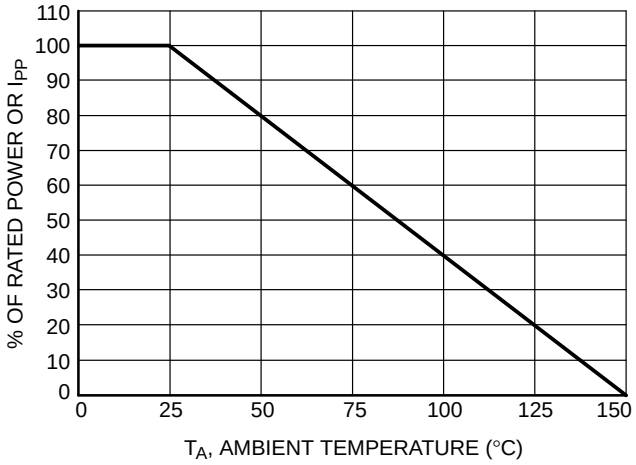


Figure 2. Power Derating Curve

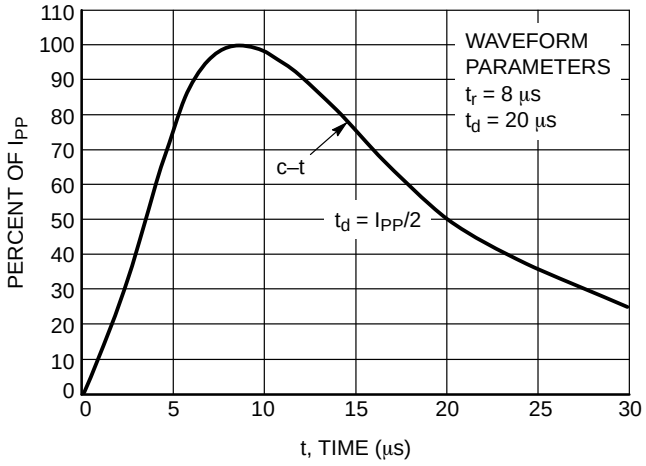


Figure 3. Pulse Waveform

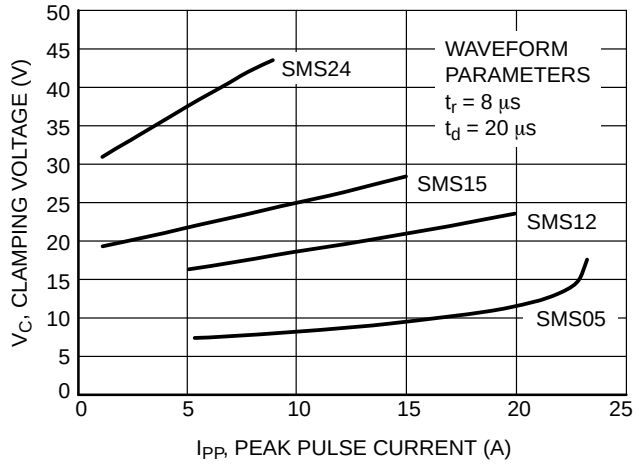


Figure 4. Clamping Voltage versus Peak Pulse Current

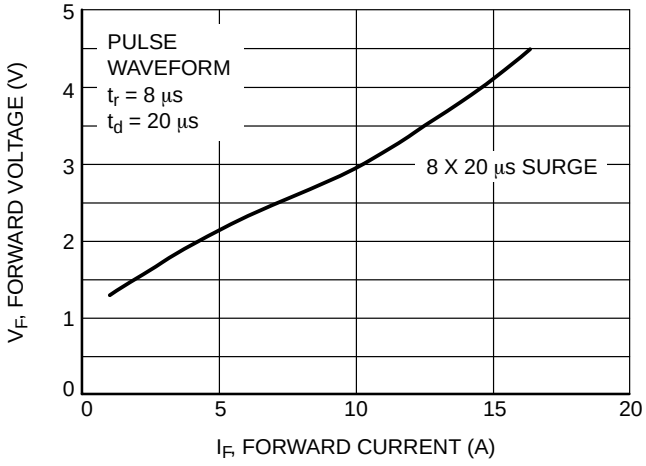


Figure 5. 8 x 20 μs V_F

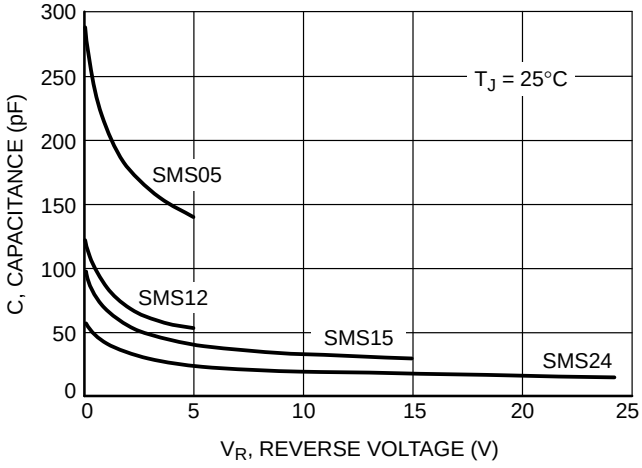


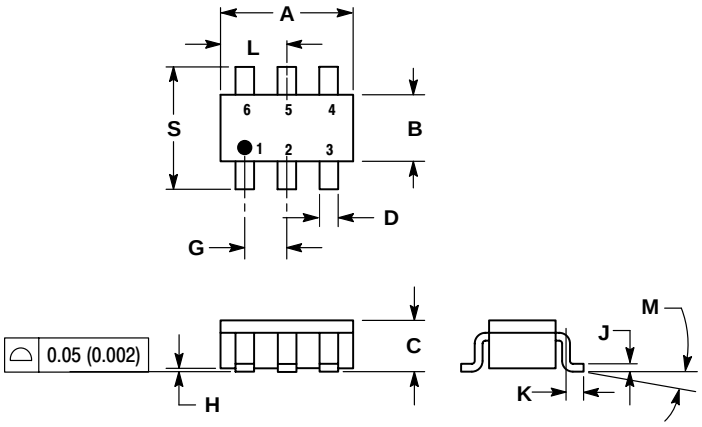
Figure 6. Typical Capacitance (SMS05 Series)

SMS05T1 Series

Transient Voltage Suppressors – Surface Mount

350 Watts Peak Power

SC–74 (SC–59ML)
CASE 318F–03
ISSUE F



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318F–01 AND –02 OBSOLETE. NEW STANDARD 318F–03.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.1142	0.1220	2.90	3.10
B	0.0512	0.0669	1.30	1.70
C	0.0354	0.0433	0.90	1.10
D	0.0098	0.0197	0.25	0.50
G	0.0335	0.0413	0.85	1.05
H	0.0005	0.0040	0.013	0.100
J	0.0040	0.0102	0.10	0.26
K	0.0079	0.0236	0.20	0.60
L	0.0493	0.0649	1.25	1.65
M	0 °	10 °	0 °	10 °
S	0.0985	0.1181	2.50	3.00

STYLE 1:
PIN 1. CATHODE
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PUBLICATION ORDERING INFORMATION

Literature Fulfillment:
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