SC-74 Quad ESD and Surge Protector

Surge Protection Up to 350 W Peak Power



This quad monolithic silicon ESD and Surge Protector is designed for applications requiring ESD protection. 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 W, 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 A (5/5 ns)

IEC 61000-4-5 (Surge) 23 A (8/20 μs)

- UL Flammability Rating of 94 V-0
- These Devices are Pb-Free and are RoHS Compliant
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable

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) Derate Above 25°C	P _D	225 1.8	mW 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	TL	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 pulse 8 x 20 μs exponential decay waveform.
- 2. FR-5 = 1.0 x 0.75 x 0.62 in.



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SC-74 QUAD ESD AND SURGE PROTECTOR 350 WATTS PEAK POWER 5 VOLTS



SC-74 CASE 318F STYLE 1

MARKING DIAGRAM



xxx = Specific Device Code

M = Date Code*

= Pb-Free Package

(Note: Microdot may be in either location)
*Date Code orientation and/or position may
vary depending upon manufacturing location.

PIN ASSIGNMENT



PIN 1. CATHODE

- 2. ANODE
- 3. CATHODE
- 4. CATHODE
- 5. ANODE6. CATHODE

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

DEVICE MARKING INFORMATION

ORDERING INFORMATION

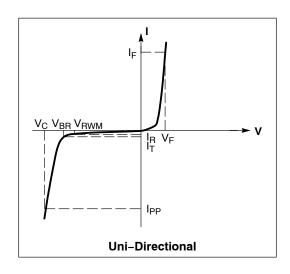
See detailed ordering, marking and shipping information in the ordering information section on page 2 of this data sheet.

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}



ELECTRICAL CHARACTERISTICS - UNIDIRECTIONAL

	Rev Breakdown Lea				Ma Reve Leak Curr	rse age	(Clampin At Specifi	rse Voltage g Voltage) ed Reverse rrent (I _{RSM})	(Clampin At Specific	rse Voltage g Voltage) ed Reverse rent (I _{RSM})	@ 0 Vo	citance olt Bias, MHz	
	Device		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)	(р	oF)
Device*	Marking	Min	Nom	Max	(mA)	(μΑ)	(V)	(A)	(V)	(A)	(V)	Min	Max
SMS05T1G	5V0	6.0	-	7.2	1.0	20	5.0	5.0	9.8	23	15.5	250	400
SMS12T1G	12V	13.3	-	15	1.0	1.0	12	5.0	19.0	15	23.0	80	150
SMS15T1G	15V	16.7	-	18.5	1.0	1.0	15	5.0	24.0	12	29.0	60	125
SMS24T1G	24V	26.7	-	32	1.0	1.0	24	5.0	40.0	8	44.0	40	75

^{*}Includes SZ-prefix devices where applicable.

ORDERING INFORMATION

Device	Package	Shipping [†]
SMS05T1G, SZSMS05T1G**	SC-74 (Pb-Free)	3000 / Tape & Reel
SMS12T1G	SC-74 (Pb-Free)	3000 / Tape & Reel
SMS15T1G, SZSMS15T1G**	SC-74 (Pb-Free)	3000 / Tape & Reel
SMS24T1G, SZSMS24T1G**	SC-74 (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

Specifications Brochure, BRD8011/D.

**SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

SMS05T1 Series

TYPICAL CHARACTERISTICS

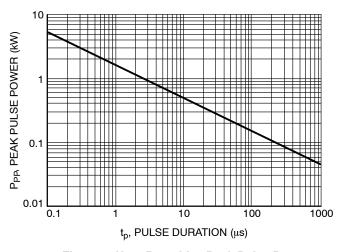


Figure 1. Non-Repetitive Peak Pulse Power versus Pulse Time

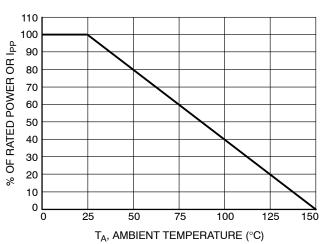


Figure 2. Power Derating Curve

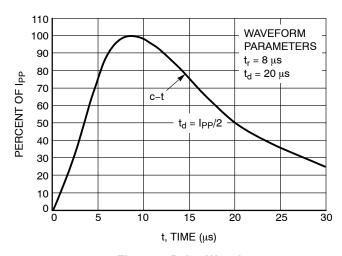


Figure 3. Pulse Waveform

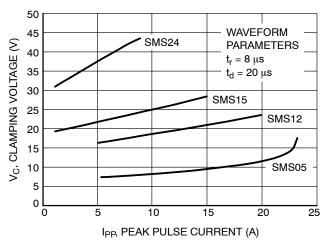


Figure 4. Clamping Voltage versus
Peak Pulse Current

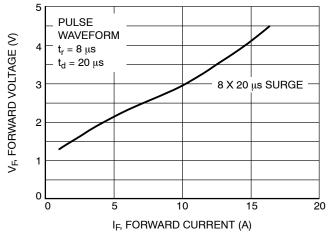


Figure 5. 8 x 20 μ s V_F

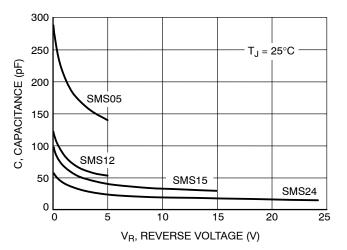


Figure 6. Typical Capacitance (SMS05 Series)





CTVLE 1.

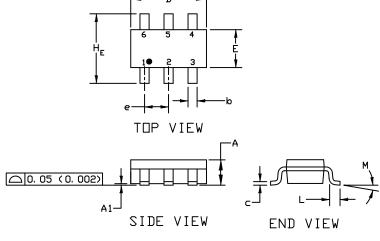
SC-74 CASE 318F ISSUE P

DATE 07 OCT 2021

NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994
- 2. CONTROLLING DIMENSION: INCHES
- MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.

	MI	LLIMETER	25	INCHES			
DIM	MIN.	N□M.	MAX.	MIN.	N□M.	MAX.	
Α	0. 90	1. 00	1. 10	0. 035	0. 039	0. 043	
A1	0. 01	0. 06	0. 10	0. 001	0. 002	0. 004	
b	0. 25	0. 37	0. 50	0. 010	0. 015	0. 020	
С	0.10	0. 18	0. 26	0. 004	0. 007	0. 010	
D	2. 90	3. 00	3. 10	0. 114	0. 118	0. 122	
E	1. 30	1. 50	1. 70	0. 051	0. 059	0. 067	
е	0. 85	0. 95	1. 05	0. 034	0. 037	0. 041	
Η _E	2. 50	2. 75	3. 00	0. 099	0. 108	0. 118	
L	0. 20	0. 40	0. 60	0. 008	0. 016	0. 024	
М	0*		10*	0*		10*	



GENERIC MARKING DIAGRAM*



XXX = Specific Device Code

M = Date Code

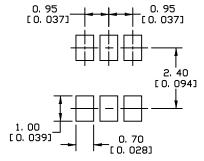
CTVLE O

■ = Pb-Free Package

(Note: Microdot may be in either location)

This information is generic. Please refer to

CTVI F O



For additional information on our Pb-Free strategy and soldering details, please download the UN Seniconductor Soldering and Mounting Techniques Reference Manual, SULDERRM/D.

SOLDERING FOOTPRINT

CTVLE 6

CTVLE F.

STYLE 1:	STYLE 2:	STYLE 3:	STYLE 4:	STYLE 5:	STYLE 6:
PIN 1. CATHODE	PIN 1. NO CONNECTION	PIN 1. EMITTER 1	PIN 1. COLLECTOR 2	PIN 1. CHANNEL 1	PIN 1. CATHODE
2. ANODE	2. COLLECTOR	2. BASE 1	2. EMITTER 1/EMITTER 2	2. ANODE	ANODE
CATHODE	EMITTER	COLLECTOR 2	COLLECTOR 1	CHANNEL 2	CATHODE
CATHODE	NO CONNECTION	4. EMITTER 2	4. EMITTER 3	CHANNEL 3	CATHODE
5. ANODE	COLLECTOR	5. BASE 2	BASE 1/BASE 2/COLLECTOR 3	CATHODE	CATHODE
CATHODE	6. BASE	COLLECTOR 1	6. BASE 3	CHANNEL 4	CATHODE
STYLE 7: PIN 1. SOURCE 1 2. GATE 1 3. DRAIN 2 4. SOURCE 2 5. GATE 2 6. DRAIN 1	STYLE 8: PIN 1. EMITTER 1 2. BASE 2 3. COLLECTOR 2 4. EMITTER 2 5. BASE 1 6. COLLECTOR 1	STYLE 9: PIN 1. EMITTER 2 2. BASE 2 3. COLLECTOR 1 4. EMITTER 1 5. BASE 1 6. COLLECTOR 2	STYLE 10: PIN 1. ANODE/CATHODE 2. BASE 3. EMITTER 4. COLLECTOR 5. ANODE 6. CATHODE	STYLE 11: PIN 1. EMITTER 2. BASE 3. ANODE/CATHODI 4. ANODE 5. CATHODE 6. COLLECTOR	E

CTVLE 4.

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^{*}This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "•", may or may not be present. Some products may not follow the Generic Marking.

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ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at

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