

SMF05C, SMF12C, SMF15C, SMF24C

5 Line Transient Voltage Suppressor Array

This 5-line voltage transient suppressor array is designed for application requiring transient voltage protection capability. It is intended for use in over-transient voltage and ESD sensitive equipment such as computers, printers, automotive electronics, networking communication and other applications. This device features a monolithic common cathode design which protects five independent lines in a single SC-88 package.

Features

- Protects up to 5 Line in a Single SC-88 Package
- Peak Power Dissipation – 100 W (8 X20 μ s Waveform)
- ESD Rating of Class 3B (Exceeding 8 kV) per Human Body Model and Class C (Exceeding 400 V) per Machine Model.
- Compliance with IEC 61000-4-2 (ESD) 15 kV (Air), 8 kV (Contact)
- UL Flammability Rating of 94V-0

Applications

- Hand Held Portable Applications
- Networking and Telecom
- Automotive Electronics
- Serial and Parallel Ports
- Notebooks, Desktops, Servers

MAXIMUM RATINGS ($T_J=25^\circ\text{C}$ unless otherwise specified)

Symbol	Rating	Value	Unit
P_{PK} 1	Peak Power Dissipation 8x20 μ s Double Exponential Waveform (Note 1)	100	W
T_J	Operating Junction Temperature Range	-40 to 125	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_L	Lead Solder Temperature (10 s)	260	$^\circ\text{C}$
ESD	Human Body Model (HBM) Machine Model (MM) IEC 61000-4-2 Air (ESD) IEC 61000-4-2 Contact (ESD)	16000 400 15000 15000	V

1. Non-repetitive current pulse per Figure 3.



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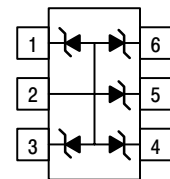
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SC-88 FIVE TRANSIENT VOLTAGE SUPPRESSOR 100 W PEAK POWER

PIN ASSIGNMENT

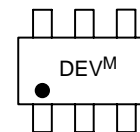


SC-88
CASE 419B
STYLE 24



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

MARKING DIAGRAM



6J = SMF05C
6K = SMF12C
6L = SMF15C
6M = SMF24C
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping
SMF05CT1	SC-88	3000/Tape & Reel
SMF12CT1	SC-88	3000/Tape & Reel
SMF15CT1	SC-88	3000/Tape & Reel
SMF24CT1	SC-88	3000/Tape & Reel

SMF05C, SMF12C, SMF15C, SMF24C

SMF05C ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V _{RWM}	(Note 2)			5.0	V
Breakdown Voltage	V _{BR}	I _T =1 mA, (Note 3)	6.2		7.2	V
Reverse Leakage Current	I _R	V _{RWM} = 5 V		0.07	5.0	μA
Clamping Voltage	V _C	I _{PP} = 5 A (8x20 μs Waveform)			9.8	V
Clamping Voltage	V _C	I _{PP} = 8 A (8x20 μs Waveform)			12.5	V
Maximum Peak Pulse Current	I _{PP}	8x20 μs Waveform			8.0	A
Capacitance	C _J	V _R = 0 V, f=1 MHz (Line to GND)		80	130	pF

SMF12C ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V _{RWM}	(Note 2)			12	V
Breakdown Voltage	V _{BR}	I _T =1 mA, (Note 3)	13.3		15	V
Reverse Leakage Current	I _R	V _{RWM} = 12 V		0.01	1.0	μA
Clamping Voltage	V _C	I _{PP} = 3 A (8x20 μs Waveform)			21	V
Clamping Voltage	V _C	I _{PP} = 6 A (8x20 μs Waveform)			23	V
Maximum Peak Pulse Current	I _{PP}	8x20 μs Waveform			6.0	A
Capacitance	C _J	V _R = 0 V, f=1 MHz (Line to GND)		40	60	pF

SMF15C ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V _{RWM}	(Note 2)			15	V
Breakdown Voltage	V _{BR}	I _T =1 mA, (Note 3)	17		19	V
Reverse Leakage Current	I _R	V _{RWM} = 15 V		0.01	1.0	μA
Clamping Voltage	V _C	I _{PP} = 1 A (8x20 μs Waveform)			23	V
Clamping Voltage	V _C	I _{PP} = 5 A (8x20 μs Waveform)			29	V
Maximum Peak Pulse Current	I _{PP}	8x20 μs Waveform			5.0	A
Capacitance	C _J	V _R = 0 V, f=1 MHz (Line to GND)		33	45	pF

SMF24C ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V _{RWM}	(Note 2)			24	V
Breakdown Voltage	V _{BR}	I _T =1 mA, (Note 3)	26.7		32	V
Reverse Leakage Current	I _R	V _{RWM} = 24 V		0.01	1.0	μA
Clamping Voltage	V _C	I _{PP} = 1 A (8x20 μs Waveform)			40	V
Clamping Voltage	V _C	I _{PP} = 2.5 A (8x20 μs Waveform)			44	V
Maximum Peak Pulse Current	I _{PP}	8x20 μs Waveform			2.5	A
Capacitance	C _J	V _R = 0 V, f=1 MHz (Line to GND)		21	25	pF

2. TVS devices are normally selected according to the working peak reverse voltage (V_{RWM}), which should be equal or greater than the DC or continuous peak operating voltage level.
3. V_{BR} is measured at pulse test current I_T.

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TYPICAL PERFORMANCE CURVES ($T_J=25^\circ\text{C}$ unless otherwise specified)

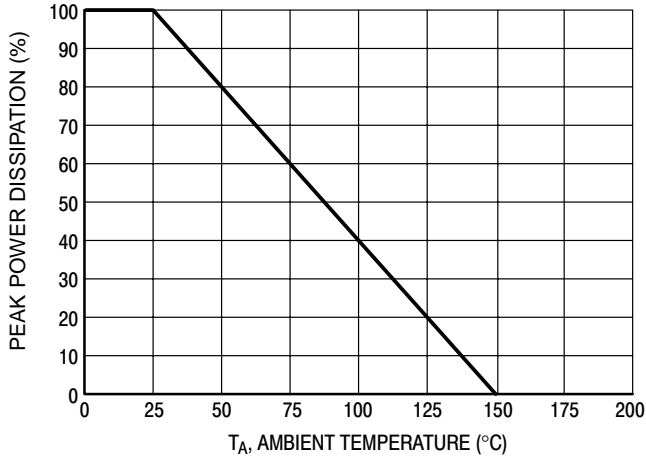


Figure 1. Pulse Derating Curve

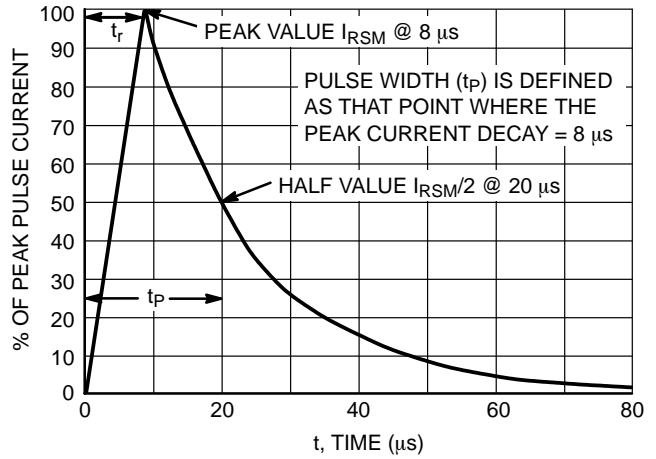


Figure 2. $8 \times 20 \mu\text{s}$ Pulse Waveform

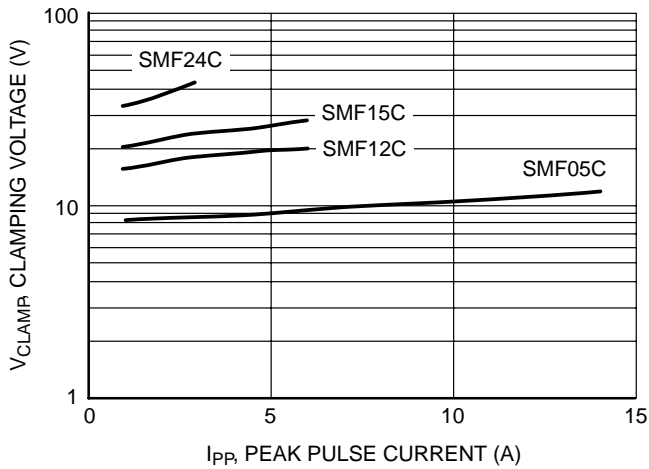


Figure 3. Clamping Voltage vs Peak Pulse Current

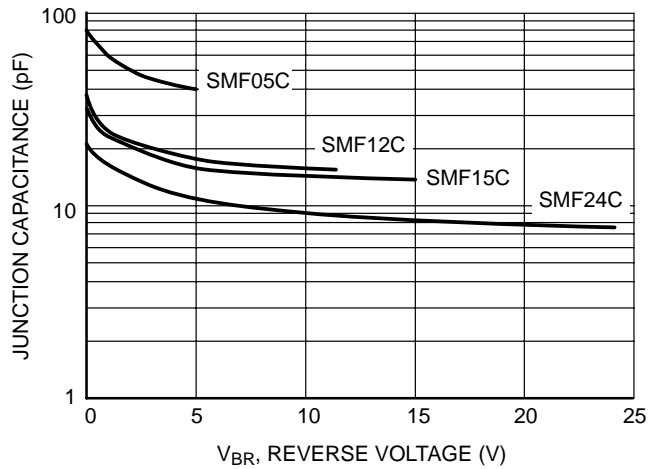
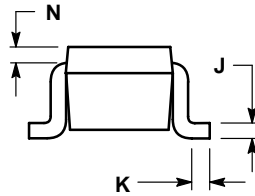
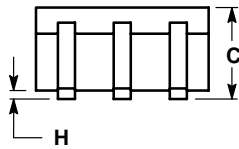
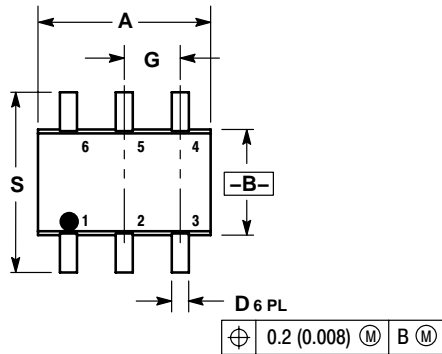


Figure 4. Junction Capacitance vs Reverse Voltage

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PACKAGE DIMENSIONS

SC-88/SOT-363
6-LEAD PLASTIC PACKAGE
CASE 419B-02
ISSUE S




NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 419B-01 OBSOLETE, NEW STANDARD 419B-02.

DIM	INCHES		MILLIMETERS	
	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 24:

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