

Transient Voltage Suppressors for ESD Protection

General Description

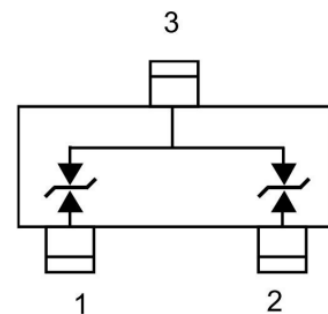
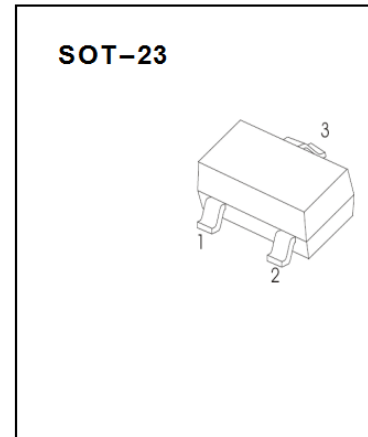
The SM12C is a Transient Voltage Suppressor Arrays that designed to protect components which are connected to data and transmission lines against electrostatic discharge (ESD), electrical fast Transients (EFT), and lightning. All pins are rated to withstand 30kV ESD pulses using the IEC61000-4-2 air discharge method.

Applications

- * Cellular handsets and accessories
- * Portable electronics
- * Control & monitoring systems
- * Servers, notebooks, and desktop PCs
- * Set-top box
- * Communication systems

Features

- * 450W peak pulse power ($t_p=8/20\mu s$)
- * Low clamping voltage
- * Protects one bidirectional or two unidirectional lines
- * Working voltage: 12V
- * Low leakage current
- * ESD Protection > 15kV
- * RoHS compliant
- * Transient protection for high speed data Lines to IEC61000-4-2(ESD) $\pm 30kV$ (air), $\pm 30kV$ (Contact)



Device	Marking	Shipping
SM12C	12C	3000/Tape & Reel

Absolute Ratings ($T_{amb}=25^{\circ}C$)

Parameter	Symbol	Rating	Unit
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	150	W
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	5	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 30	kV
ESD according to IEC61000-4-2 contact discharge		± 30	
Junction temperature	T_J	125	$^{\circ}C$
Operating temperature	T_{OP}	-40~85	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

Ordering Information per line@25(unless otherwise specified)

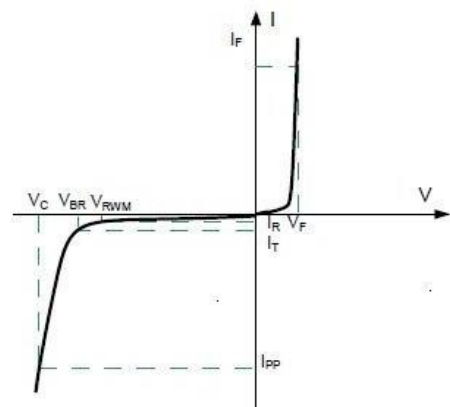
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Electrical Characteristics per line@25(unless otherwise specified)

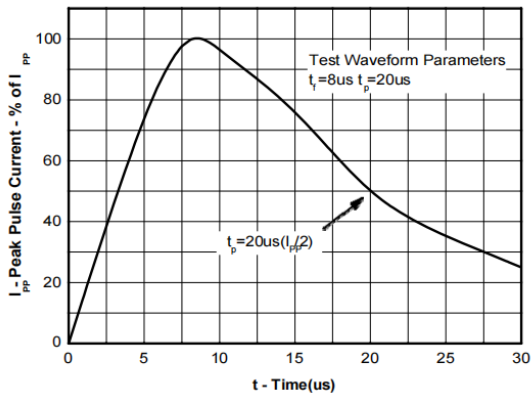
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				12	V
Reverse Breakdown Voltage	V_{BR}	$I_t=5mA$	13		17	V
Reverse Leakage Current	I_R	$V_{RWM}=12V$			1	μA
Clamping Voltage	V_C	$I_{PP}=1A$ $t_p=8/20\mu s$ Any I/O pin to Ground			20	V
Clamping Voltage	V_C	$I_{PP}=10A$ $t_p=8/20\mu s$ Any I/O pin to Ground			24	V
Junction Capacitance	C_J	$V_R=0V$, $f = 1MHz$ Any I/O pin to Ground			40	pF

Electronics Parameter

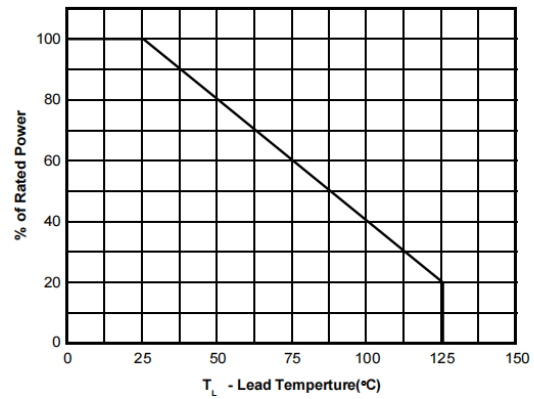
Symbol	Parameter
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
P_{PP}	Peak Pulse Power
C_J	Junction Capacitance
I_F	Forward Current
V_F	Forward Voltage @ I_F



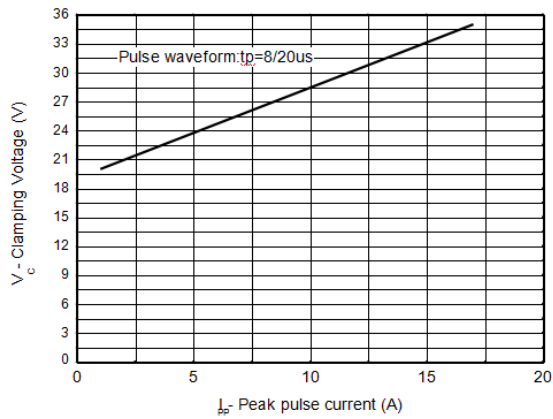
Typical Characteristics



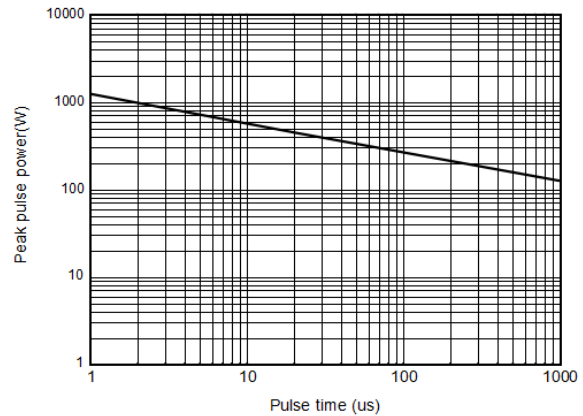
Pulse Waveform



Power Derating Curve



Clamping voltage vs. Peak pulse current

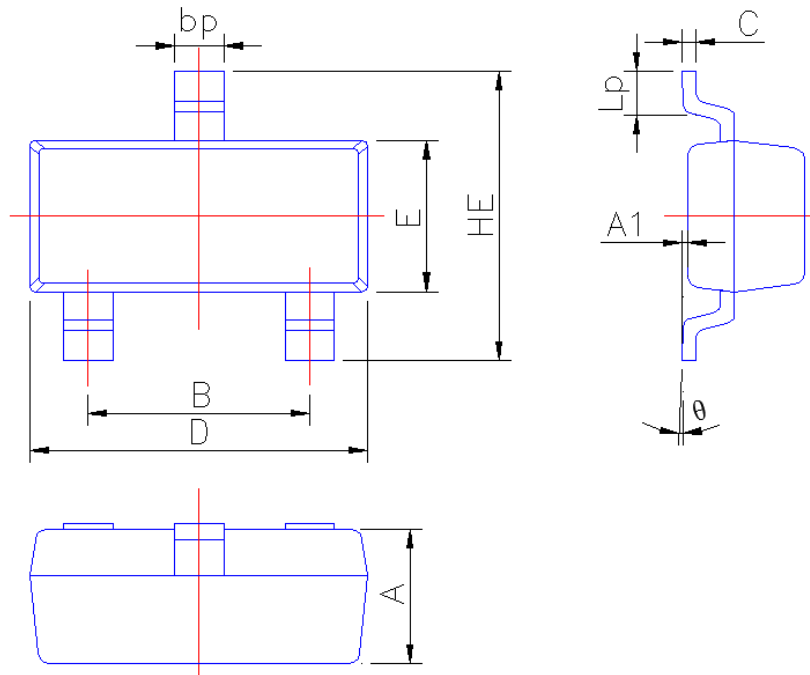


Non repetitive peak pulse power vs. Pulse time

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



Symbol	Dimension in Millimeters	
	Min	Max
A	0.90	1.10
A1	0.013	0.100
B	1.80	2.00
bp	0.35	0.50
C	0.09	0.150
D	2.80	3.00
E	1.20	1.40
HE	2.20	2.80
Lp	0.20	0.50
θ	0°	5°