

### DESCRIPTION

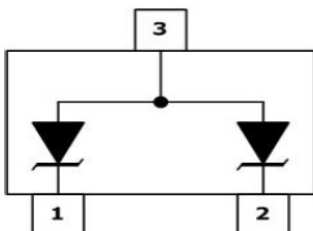
The SM12Z of transient voltage suppressors (TVS) are designed to protect components which are connected to data and transmission lines from voltage surges caused by electrostatic discharge (ESD), electrical fast transients (EFT), and lightning.

TVS diodes are characterized by their high surge capability, low operating and clamping voltages, and fast response time. This makes them ideal for use as board level protection of sensitive semiconductor components. The dual-junction common-anode design allows the user to protect one bidirectional data line or two unidirectional lines. The low profile SOT-23 package allows flexibility in the design of "crowded" circuit boards. The SM12Z will meet the surge requirements of IEC 61000-4-2 (Formerly IEC 801-2), Level 4, "Human Body Model" for air and contact discharge.

### ORDERING INFORMATION

- ✧ Device: SM12Z
- ✧ Package: SOT-23
- ✧ Marking: 12C
- ✧ Material: Halogen free
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 3,000pcs

### PIN CONFIGURATION



### FEATURES

- ✧ IEC61000-4-2 (ESD)  $\pm 15\text{kV}$  (air),  $\pm 8\text{kV}$  (contact)
- ✧ IEC61000-4-4 (EFT) 40A (5/50ns)
- ✧ 550 Watts Peak Pulse Power per (tp=8/20 $\mu$ s)
- ✧ Protects one bidirectional line or two unidirectional lines
- ✧ Low clamping voltage
- ✧ Working voltages : 12V
- ✧ Low leakage current

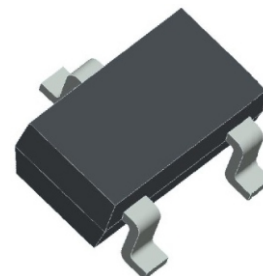
### MACHANICAL DATA

- ✧ SOT-23 package
- ✧ Flammability Rating: UL 94V-0
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed: 260°C/10s
- ✧ Reel size: 7 inch
- ✧ MSL 1

### APPLICATIONS

- ✧ Cellular Handsets and Accessories
- ✧ Portable Electronics
- ✧ Industrial Controls
- ✧ Set-Top Box
- ✧ Servers, Notebook, and Desktop PC

### PACKAGE OUTLINE



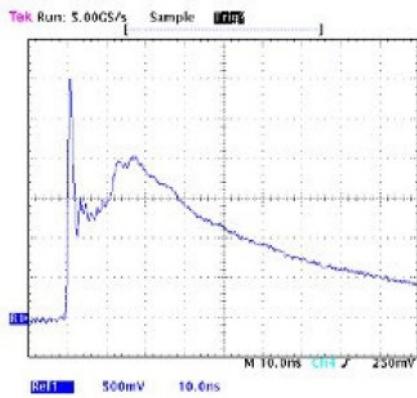
## ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
$V_{ESD}$	ESD per IEC 61000-4-2 (Air)	$\pm 30$	kV
	ESD per IEC 61000-4-2 (Contact)	$\pm 30$	
$P_{PP}$	Peak Pulse Power (8/20 $\mu$ s)	550	W
$T_{OPT}$	Operating Temperature	-55/+150	$^{\circ}$ C
$T_{STG}$	Storage Temperature	-55/+150	$^{\circ}$ C
$T_L$	Lead Soldering Temperature	260 (10 sec.)	$^{\circ}$ C

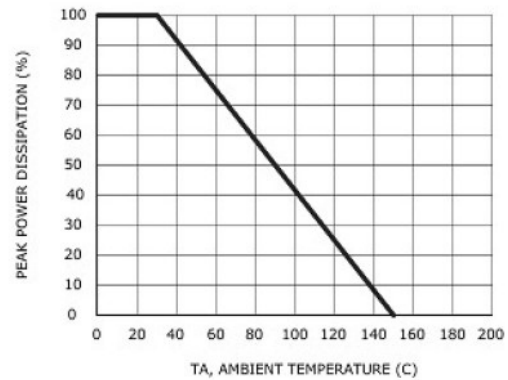
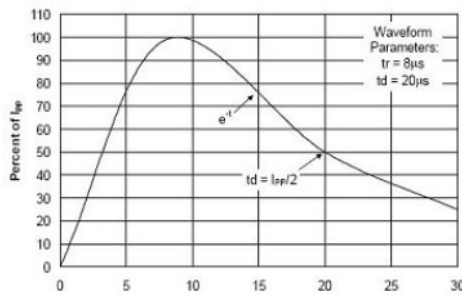
## ELECTRICAL CHARACTERISTICS (Tamb=25 $^{\circ}$ C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
$V_{RWM}$	Reverse Working Voltage				12	V
$V_{BR}$	Reverse Breakdown Voltage	$I_T = 1\text{mA}$	13.3			V
$I_R$	Reverse Leakage Current	$V_{RWM} = 12\text{V}$			1.0	$\mu$ A
$V_C$	Clamping Voltage	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$			19	V
$V_C$	Clamping Voltage	$I_{PP} = 22\text{A}, t_p = 8/20\mu\text{s}$			25	V
$C_J$	Junction Capacitance	$V_R = 0\text{V}, f = 1\text{MHz}$		110	150	pF

### ELECTRICAL CHARACTERISTICS CURVE

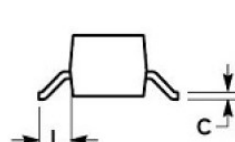
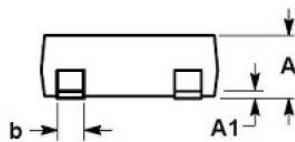
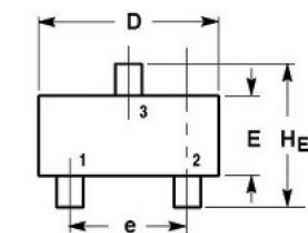


Pulse Waveform



Power Derating Curve

### SOT-23 PACKAGE OUTLINE DIMENSIONS



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.40	2.64	0.083	0.094	0.104