

ESD PROTECTION

Features

- For Sensitive ESD Protection
- Excellent Clamping Capability
- Low Leakage
- Fast Response, Response Time Less than 1ns
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

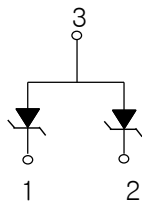
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 556°C/W Junction to Ambient

MCC Part Number	Device Marking
SM05	5M
SM12	12M

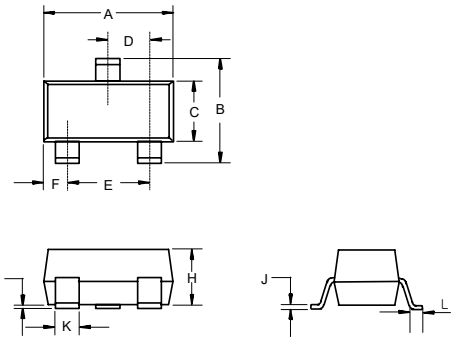
Parameter	Symbol	Limits
IEC61000-4-2(ESD)	Air Contact	±15KV ±8KV
JESD22-A114-B(ESD)	Human Body	16KV
Peak Pulse Power (8/20us)	P _{PK}	300W
Power Dissipation	P _D	225mW

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Internal Structure

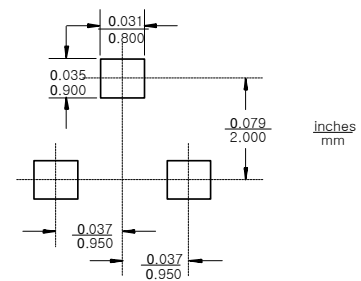


SOT-23



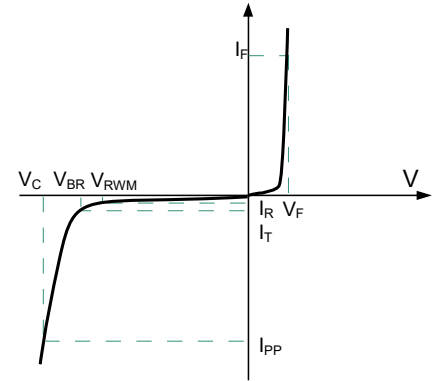
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

Suggested Solder Pad Layout



ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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



Electrical Characteristics @ 25°C (Unless Otherwise Specified)

SM05

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	V_{RWM}				5	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	6.2		7.3	V
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{V}$			10	μA
Forward Voltage	V_F	$I_F = 10\text{mA}$			0.9	V
Peak Pulse Current	I_{PP}	$t_p = 8/20\mu\text{s}$			12	A
Clamping Voltage	V_C	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$			9.8	V
Junction Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz},$ Pin 1 to Pin 3		110		pF

SM12

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	V_{RWM}				12	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	13.3		15.75	V
Reverse Leakage Current	I_R	$V_{RWM} = 12\text{V}$			1	μA
Forward Voltage	V_F	$I_F = 10\text{mA}$			0.9	V
Peak Pulse Current	I_{PP}	$t_p = 8/20\mu\text{s}$			11.2	A
Clamping Voltage	V_C	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$			19	V
Junction Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz},$ Pin 1 to Pin 3		60		pF

Curve Characteristics

Fig. 1 - 8 X 20 μ s Pulse Waveform

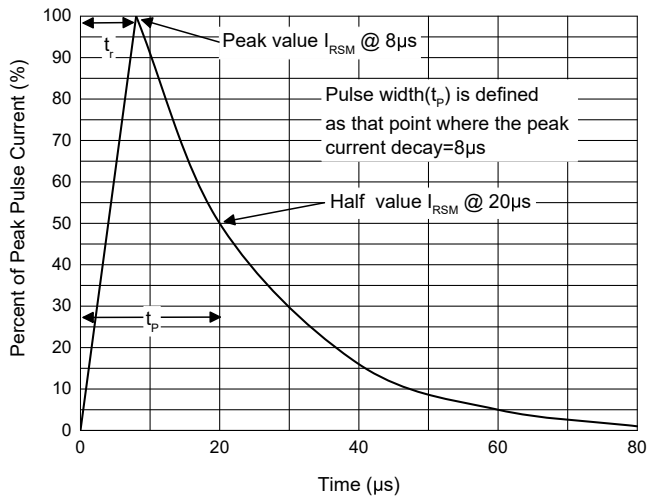


Fig. 2 - Pulse Derating Curve

