

Features

- For Sensitive ESD Protection
- Excellent Clamping Capability
- Low Leakage
- For Space Saving Application
- 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: 625°C/W Junction to Ambient

MCC Part Number	Device Marking
ESD3V3D5	ZE
ESD5V0D5	ZF
ESD7V0D5	ZH
ESD12VD5	ZM

IEC61000-4-2(ESD)	Air Contact	±30KV ±30KV
JESD22-A114-B(ESD)	Machine Human Body	±0.4KV ±16KV

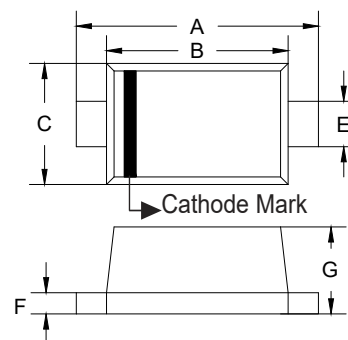
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Internal Structure

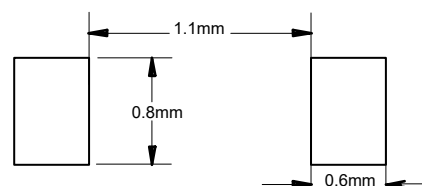


ESD Protection Device

SOD-523

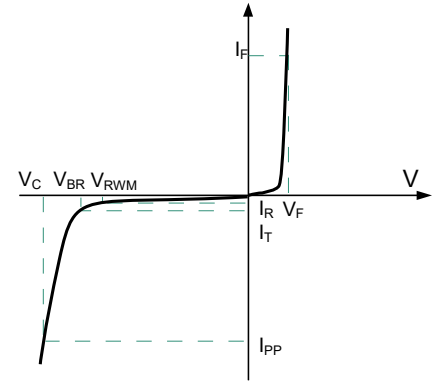


DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.059	0.067	1.50	1.70	
B	0.043	0.051	1.10	1.30	
C	0.030	0.033	0.75	0.85	
E	0.010	0.014	0.25	0.35	
F	0.003	0.008	0.08	0.20	
G	0.020	0.026	0.50	0.65	



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)

ESD3V3D5

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	V_{RWM}				3.3	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	5			V
Reverse Leakage Current	I_R	$V_{RWM} = 3.3\text{V}$			0.08	μA
Forward Voltage	V_F	$I_F = 10\text{mA}$			0.9	V
Peak Pulse Current	I_{PP}	$t_p = 8/20\mu\text{s}$			16	A
Clamping Voltage	V_C	$I_{PP} = 5\text{A}, t_p = 8/20\mu\text{s}$			9.4	V
Clamping Voltage	V_C	$I_{PP} = 16\text{A}, t_p = 8/20\mu\text{s}$			13	V
Peak Pulse Power	P_{PK}	$t_p = 8/20\mu\text{s}$			220	W
Junction Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$		105		pF

ESD5V0D5

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			V
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{V}$			0.05	μA
Forward Voltage	V_F	$I_F = 10\text{mA}$			0.9	V
Peak Pulse Current	I_{PP}	$t_p = 8/20\mu\text{s}$			9.4	A
Clamping Voltage	V_C	$I_{PP} = 5\text{A}, t_p = 8/20\mu\text{s}$			11.6	V
Clamping Voltage	V_C	$I_{PP} = 9.4\text{A}, t_p = 8/20\mu\text{s}$			18.6	V
Peak Pulse Power	P_{PK}	$t_p = 8/20\mu\text{s}$			174	W
Junction Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$		80		pF

Electrical Characteristics @ 25°C (Unless Otherwise Specified)

ESD7V0D5

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	V_{RWM}				7	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1mA$	7.5			V
Reverse Leakage Current	I_R	$V_{RWM} = 7V$			0.03	μA
Forward Voltage	V_F	$I_F = 10mA$			0.9	V
Peak Pulse Current	I_{PP}	$t_p = 8/20\mu s$			8.8	A
Clamping Voltage	V_C	$I_{PP} = 5A, t_p = 8/20\mu s$			13.5	V
Clamping Voltage	V_C	$I_{PP} = 8.8A, t_p = 8/20\mu s$			22.7	V
Peak Pulse Power	P_{PK}	$t_p = 8/20\mu s$			200	W
Junction Capacitance	C_J	$V_R = 0V, f = 1MHz$		65		pF

ESD12VD5

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	V_{RWM}				12	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1mA$	14.1			V
Reverse Leakage Current	I_R	$V_{RWM} = 12V$			0.02	μA
Forward Voltage	V_F	$I_F = 10mA$			0.9	V
Peak Pulse Current	I_{PP}	$t_p = 8/20\mu s$			9.6	A
Clamping Voltage	V_C	$I_{PP} = 5A, t_p = 8/20\mu s$			23	V
Clamping Voltage	V_C	$I_{PP} = 9.6A, t_p = 8/20\mu s$			25	V
Peak Pulse Power	P_{PK}	$t_p = 8/20\mu s$			240	W
Junction Capacitance	C_J	$V_R = 0V, f = 1MHz$		55		pF

Curve Characteristics

Fig. 1 - 8 X 20 μ s Pulse Waveform

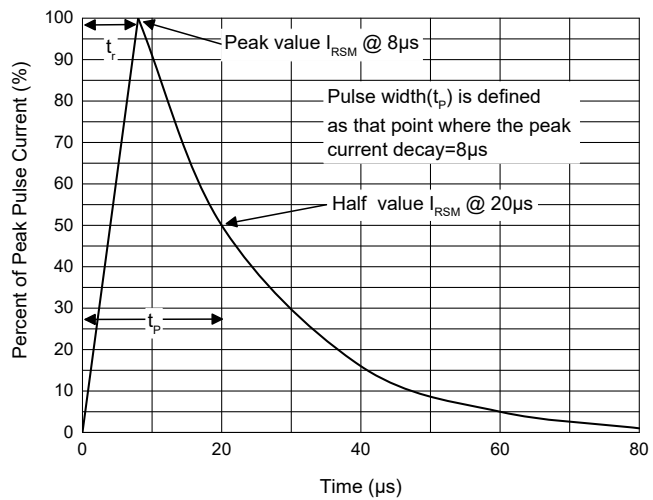
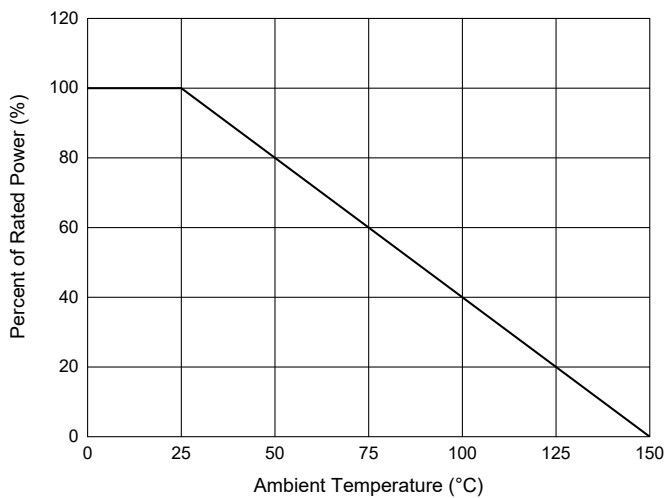


Fig. 2 - Pulse Derating Curve



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 8Kpcs/Reel

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