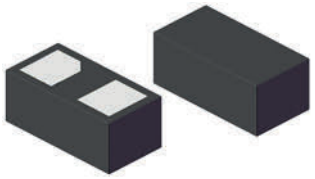
GOOD-ARK SEMICONDUCTOR

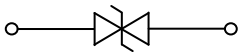
GSEN5B0013
ESD Protection Diode

Features

- 100 Watts peak pulse power (T_p=8/20μs)
- Tiny DFN0603 package
- Bidirectional configurations
- Solid-state silicon-avalanche technology
- Low clamping voltage
- Low Leakage current
- Ultra low capacitance (C_J=0.13pF typ.)
- Protection one data/power line to:
  IEC 61000-4-2 ±15kV contact ±15kV air
  IEC 61000-4-4 (EFT) 40A (5/50ns)
  IEC 61000-4-5 (Lightning) 5A (8/20μs)
- RoHS compliant



DFN0603



Schematic Diagram

Applications

- USB3.0, firewire, DVI, HDMI, S-ATA
- Thunderbolt, display port
- Mobile HDMI Link, MDDI, MIPI, SWP / NFC

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Rating	Symbol	Value	Units
Peak Pulse Power (t_p=8/20μs)	P_{PP}	100	W
Peak Pulse Current (t_p=8/20μs)	I_{PP}	5	A
ESD per IEC 61000-4-2 (Air)	V_{ESD}	15	kV
ESD per IEC 61000-4-2 (Contact)		15	
Maximum Lead Soldering Temperature	T_L	260 (10seconds)	°C
Junction Temperature	T_J	-55 to +125	°C
Storage Temperature	T_{stg}	-55 to +150	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameterer	Symbol	Condition	Min	Typ	Max	Unit
Reverse Stand-Off Voltage	V_{RWM}	-	-	-	5	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	6.5	8.5	-	V
Reverse Leakage Current	I_R	V_R=5V	-	5	100	nA
Clamping Voltage (IEC 61000-4-5)	V_C	I_{PP}=5A	-	-	20.5	V
Dynamic Resistance	R_{DYN}	I_{TLP}=0A to 20A	-	0.29	-	Ω
Trigger Voltage (IEC 61000-4-2)	V_T	V_{ESD}=8kV	-	135	-	V
Clamping Voltage (IEC 61000-4-2)	V_C	V_{ESD}=8kV	-	20	-	V
Junction Capacitance	C_J	V_R=0V, F=1MHz	-	0.13	0.2	pF
		V_R=0V, F=1GHz	-	0.1	-	

Typical Characteristic Curves

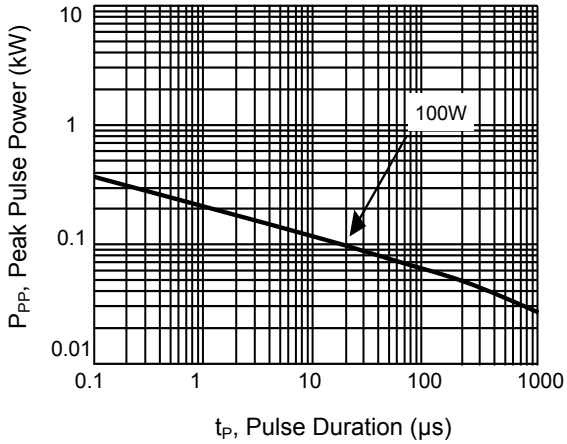


Figure 1. Peak Pulse Power Rating Curve

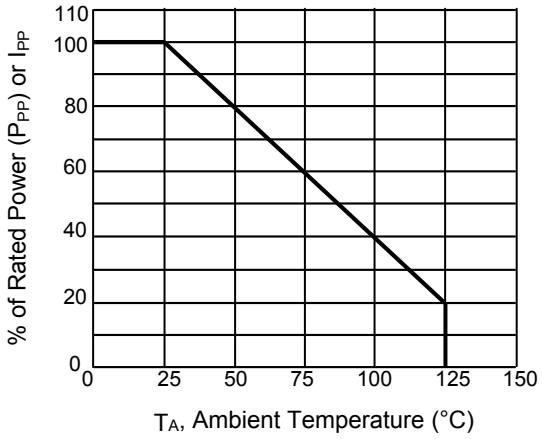


Figure 2. Pulse Derating Curve

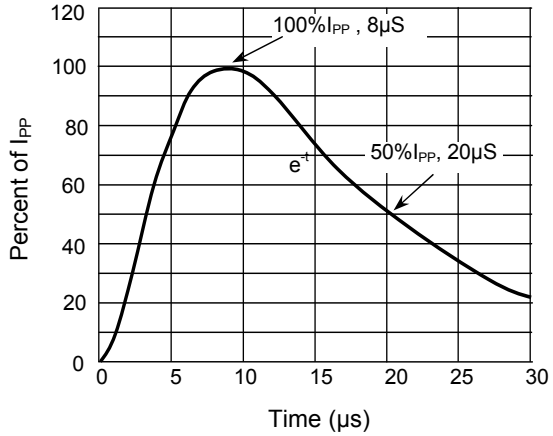


Figure 3. Pulse Waveform-8/20μs

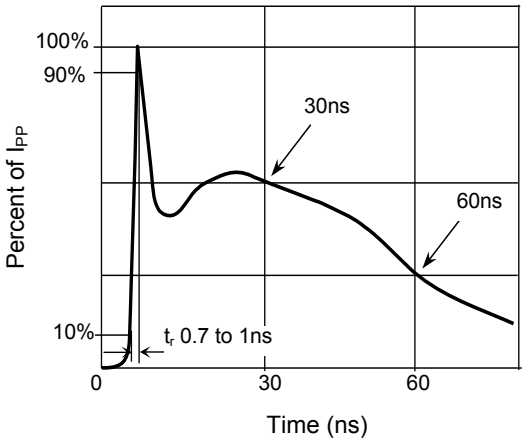


Figure 4. Pulse Waveform-ESD (IEC61000-4-2)

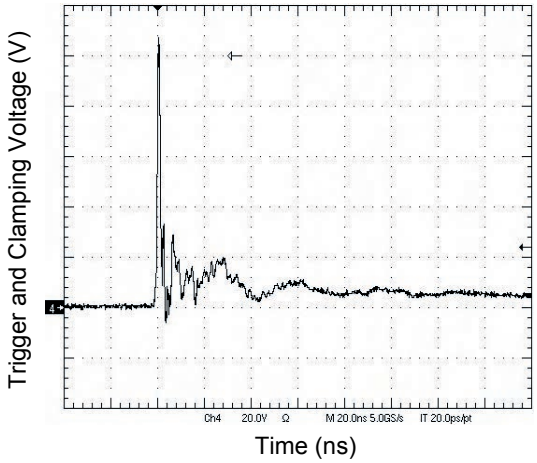


Figure 5. IEC61000-4-2 +8kV Contact Discharge

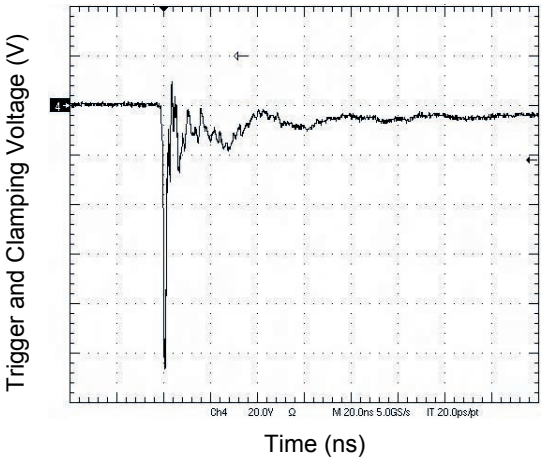


Figure 6. IEC61000-4-2 -8kV Contact Discharge

Typical Characteristic Curves

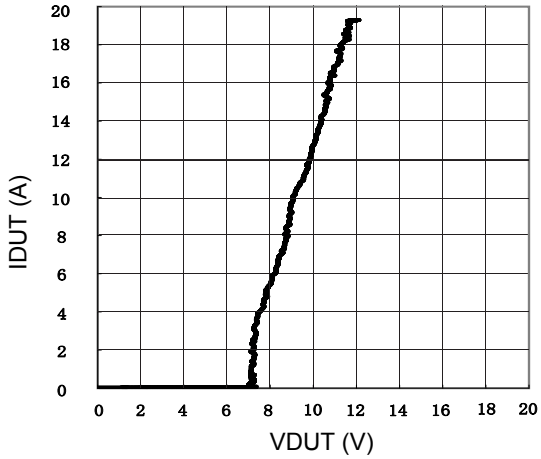


Figure 7. Transmission Line Pulse (t_p=100ns)

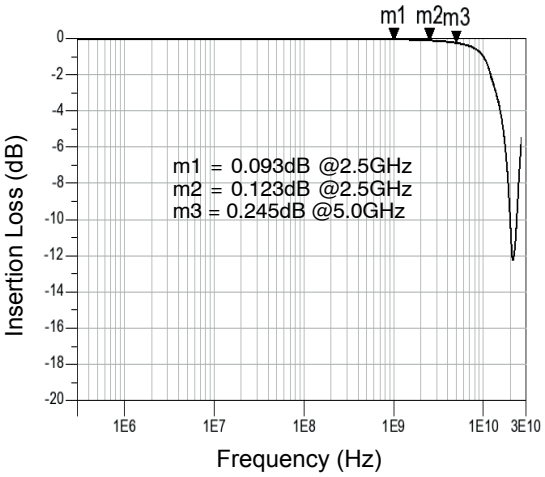
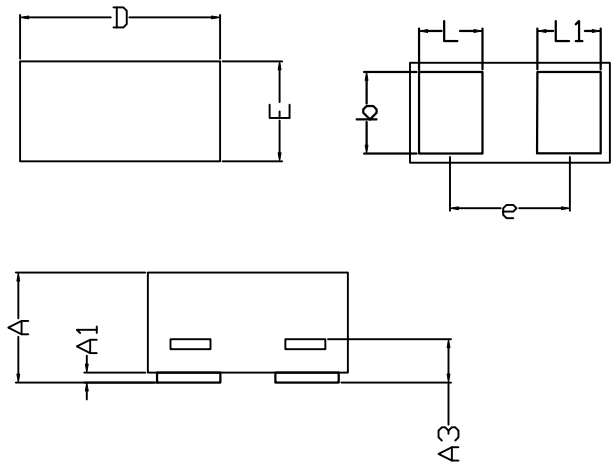


Figure 8. Insertion Loss S21

Product Outline Dimensions (DFN0603)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.230	0.330	0.009	0.013
A1	0.000	0.050	0.000	0.002
A3	0.102 REF		0.004 REF	
D	0.550	0.650	0.022	0.026
E	0.250	0.350	0.010	0.014
b	0.215	0.275	0.008	0.011
L	0.130	0.230	0.005	0.009
L1	0.130	0.230	0.005	0.009
e	0.355 BSC		0.014 BSC	

Order Information

Device	Package	Marking	Carrier	Quantity
GSEN5B0013	DFN0603	B	Tape & Reel	10,000pcs / Reel