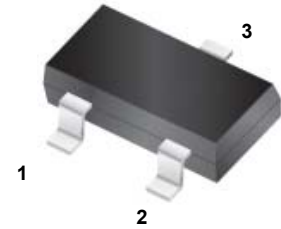
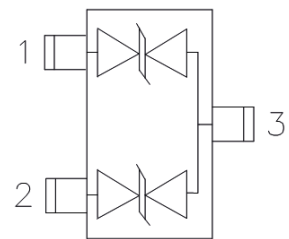


Features

- 300W peak pulse power (8/20 μ s)
- Protects two bi-directional lines
- Ultra low leakage: nA level
- Operating voltage: 3.3V, 5V, 12V, 15V, 24V, 32V, 36V
- Low clamping voltage
- Complies with following standards:
-IEC 61000-4-2 (ESD) immunity test
Air discharge: ± 30 kV
Contact discharge: ± 30 kV



SOT-23



Schematic Diagram

Applications

- Cellular handsets and accessories
- Notebooks and handhelds
- Portable instrumentation
- Set top box
- Industrial controls
- Server and desktop PC

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μ s)	P_{PK}	300	W
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Operating Temperature Range	T_J	-55 to +125	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

GSEC3B1000						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	-	-	-	3.3	V
Breakdown Voltage	V_{BR}	$I_T=1\text{mA}$	3.8	-	-	V
Reverse Leakage Current	I_R	$V_{RWM}=3.3\text{V}$	-	-	1.0	μA
Clamping Voltage	V_C	$I_{PP}=1\text{A}$ (8 x 20 μ s pulse)	-	-	6	V
		$I_{PP}=25\text{A}$ (8 x 20 μ s pulse)	-	-	12	V
Peak Pulse Current	I_{PP}	$t_p=8/20\mu\text{s}$	-	-	25	A
Junction Capacitance	C_J	$V_R=0\text{V}$, $f=1\text{MHz}$, Pin 1 to Pin 3 or Pin 2 to Pin 3	-	-	100	pF

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

GSEC5B800						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	-	-	-	5	V
Breakdown Voltage	V_{BR}	$I_T=1\text{mA}$	6	-	-	V
Reverse Leakage Current	I_R	$V_{RWM}=5\text{V}$	-	-	1.0	μA
Clamping Voltage	V_C	$I_{PP}=1\text{A}$ (8 x 20 μs pulse)	-	-	8	V
		$I_{PP}=20\text{A}$ (8 x 20 μs pulse)	-	-	15	V
Peak Pulse Current	I_{PP}	$t_p=8/20\mu\text{s}$	-	-	20	A
Junction Capacitance	C_J	$V_R=0\text{V}$, $f=1\text{MHz}$, Pin 1 to Pin 3 or Pin 2 to Pin 3	-	-	80	pF
GSEC12B500						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	-	-	-	12	V
Breakdown Voltage	V_{BR}	$I_T=1\text{mA}$	13.3	-	-	V
Reverse Leakage Current	I_R	$V_{RWM}=12\text{V}$	-	-	0.5	μA
Clamping Voltage	V_C	$I_{PP}=1\text{A}$ (8 x 20 μs pulse)	-	-	18	V
		$I_{PP}=12\text{A}$ (8 x 20 μs pulse)	-	-	25	V
Peak Pulse Current	I_{PP}	$t_p=8/20\mu\text{s}$	-	-	12	A
Junction Capacitance	C_J	$V_R=0\text{V}$, $f=1\text{MHz}$, Pin 1 to Pin 3 or Pin 2 to Pin 3	-	-	50	pF
GSEC15B400						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	-	-	-	15	V
Breakdown Voltage	V_{BR}	$I_T=1\text{mA}$	16.7	-	-	V
Reverse Leakage Current	I_R	$V_{RWM}=15\text{V}$	-	-	0.5	μA
Clamping Voltage	V_C	$I_{PP}=1\text{A}$ (8 x 20 μs pulse)	-	-	20	V
		$I_{PP}=8\text{A}$ (8 x 20 μs pulse)	-	-	37.5	V
Peak Pulse Current	I_{PP}	$t_p=8/20\mu\text{s}$	-	-	8	A
Junction Capacitance	C_J	$V_R=0\text{V}$, $f=1\text{MHz}$, Pin 1 to Pin 3 or Pin 2 to Pin 3	-	-	40	pF

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

GSEC24B150						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	-	-	-	24	V
Breakdown Voltage	V_{BR}	$I_T=1\text{mA}$	27	-	-	V
Reverse Leakage Current	I_R	$V_{RWM}=24\text{V}$	-	-	0.2	μA
Clamping Voltage	V_C	$I_{PP}=1\text{A}$ (8 x 20 μs pulse)	-	-	40	V
		$I_{PP}=5\text{A}$ (8 x 20 μs pulse)	-	-	60	V
Peak Pulse Current	I_{PP}	$t_p=8/20\mu\text{s}$	-	-	5	A
Junction Capacitance	C_J	$V_R=0\text{V}$, $f=1\text{MHz}$, Pin 1 to Pin 3 or Pin 2 to Pin 3	-	15	30	pF
GSEC32B150						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	-	-	-	32	V
Breakdown Voltage	V_{BR}	$I_T=1\text{mA}$	35.6	-	-	V
Reverse Leakage Current	I_R	$V_{RWM}=32\text{V}$	-	-	0.2	μA
Clamping Voltage	V_C	$I_{PP}=1\text{A}$ (8 x 20 μs pulse)	-	-	45	V
		$I_{PP}=4.5\text{A}$ (8 x 20 μs pulse)	-	-	67	V
Peak Pulse Current	I_{PP}	$t_p=8/20\mu\text{s}$	-	-	4	A
Junction Capacitance	C_J	$V_R=0\text{V}$, $f=1\text{MHz}$, Pin 1 to Pin 3 or Pin 2 to Pin 3	-	15	25	pF
GSEC36B120						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	-	-	-	36	V
Breakdown Voltage	V_{BR}	$I_T=1\text{mA}$	38	-	-	V
Reverse Leakage Current	I_R	$V_{RWM}=36\text{V}$	-	-	0.2	μA
Clamping Voltage	V_C	$I_{PP}=1\text{A}$ (8 x 20 μs pulse)	-	-	50	V
		$I_{PP}=4\text{A}$ (8 x 20 μs pulse)	-	-	75	V
Peak Pulse Current	I_{PP}	$t_p=8/20\mu\text{s}$	-	-	4	A
Junction Capacitance	C_J	$V_R=0\text{V}$, $f=1\text{MHz}$, Pin 1 to Pin 3 or Pin 2 to Pin 3	-	12	20	pF

Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)

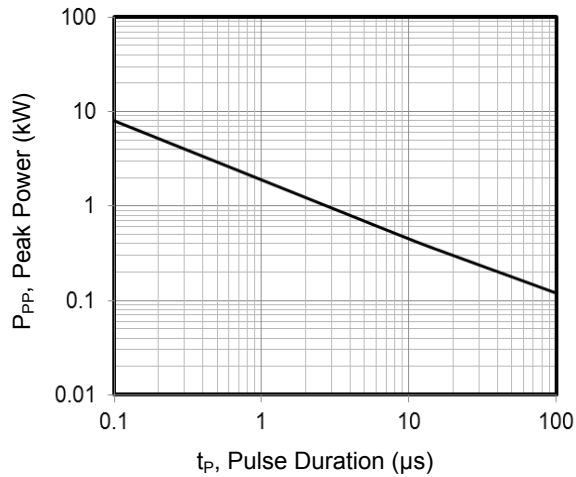


Figure 1. Peak Pulse Power vs. Pulse Time

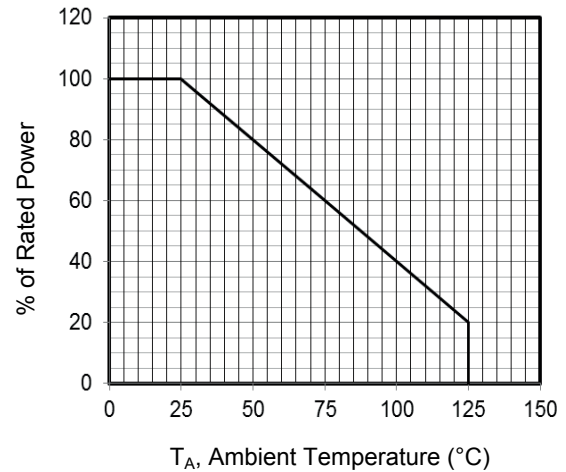


Figure 2. Power Derating Curve

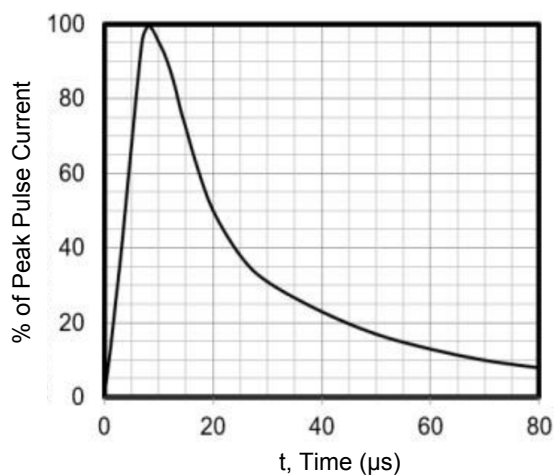
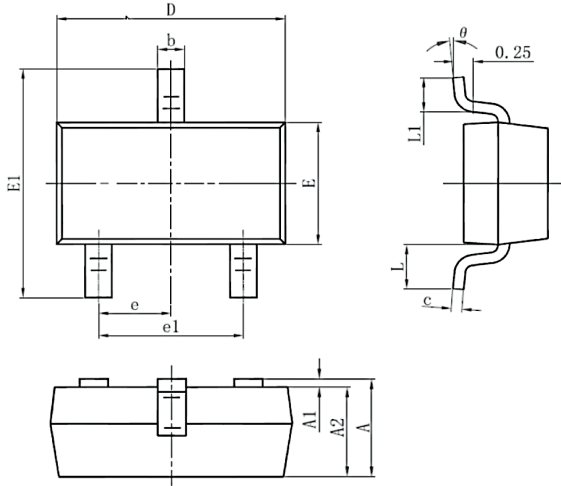


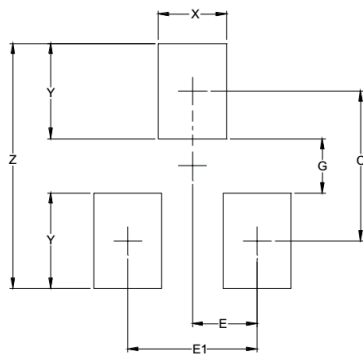
Figure 3. 8 X 20 μs Pulse Waveform

Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.95TYP		0.037TYP	
e1	1.80	2.00	0.071	0.079
L	0.55REF		0.022REF	
L1	0.30	0.50	0.012	0.020
θ	0°	8°	0°	8°

Recommended Pad Layout



Symbol	Dimensions	
	Millimeters	Inches
C	2.20	0.087
E	0.95	0.037
E1	1.90	0.075
G	0.80	0.031
X	1.00	0.039
Y	1.40	0.055
Z	3.60	0.141

Order Information

Device	Package	Marking	Carrier	Quantity
GSEC3B1000	SOT-23	33C	Tape & Reel	3,000pcs / Reel
GSEC5B800	SOT-23	05C	Tape & Reel	3,000pcs / Reel
GSEC12B500	SOT-23	12C	Tape & Reel	3,000pcs / Reel
GSEC15B400	SOT-23	15C	Tape & Reel	3,000pcs / Reel
GSEC24B150	SOT-23	24M	Tape & Reel	3,000pcs / Reel
GSEC32B150	SOT-23	32C	Tape & Reel	3,000pcs / Reel
GSEC36B120	SOT-23	36C	Tape & Reel	3,000pcs / Reel