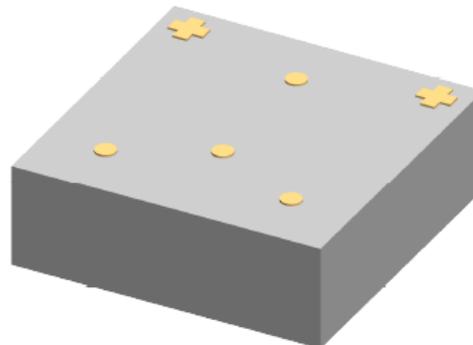


Description

The SBD Series of Back (Tunnel) Diodes are fabricated on planar germanium substrates. They are available as die or hermetically packaged.

Features

- Excellent temperature stability
- Bias not required
- Wide video bandwidth



Applications

These devices require zero bias as a detector diode and are available in 5 values with varying sensitivity and video impedance.

Absolute Maximum Ratings^{1,2}

Parameter	Absolute Maximum
P_{IN}	+17dBm
Mounting Temperature	+320°C for 10 seconds
Operating Temperature	-55°C to +110°C
Storage Temperature	-65°C to +125°C
Moisture Sensitivity Rating	MSL 1

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. SemiGen does not recommend sustained operation near these survivability limits.

Static Sensitivity

These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Moisture Sensitivity

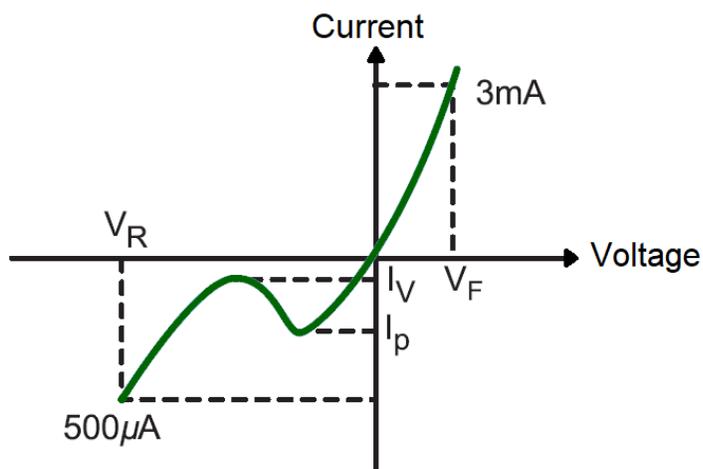
SemiGen die are MSL 1.

Electrical Specification

Conditions	I_p	C_j^* $V_R=V_V$ $f=100\text{MHz}$	K $P_{IN}=-20\text{dBm}$ $R_L=10\text{k}\Omega, f=10\text{GHz}$	R_V	I_p/I_V	V_R $I_R=500\mu\text{A}$	V_F $I_F=3\text{mA}$
Part	(μA)	pF (Max)	mV/mW (Typ.)	Ω (Typ.)	(Min)	mV(Min)	mV(Max)
SBD1057-XX	100-200	0.30	1000	180	2.5	420	135
SBD2057-XX	200-300	0.30	750	130	2.5	410	130
SBD3057-XX	300-400	0.30	500	80	2.5	400	125
SBD4057-XX	400-500	0.30	275	65	2.5	400	120
SBD5057-XX	500-600	0.30	250	60	2.5	400	110

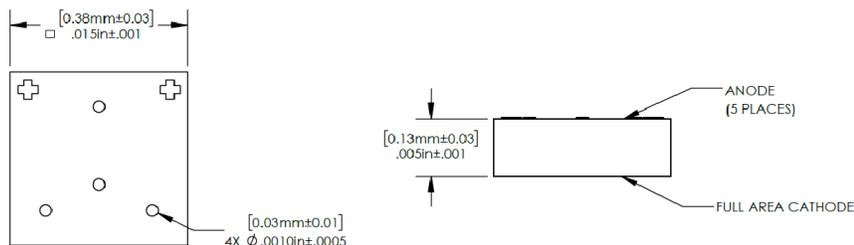
*For packaged devices add 0.25pF to calculate total capacitance (C_T)

IV Curve

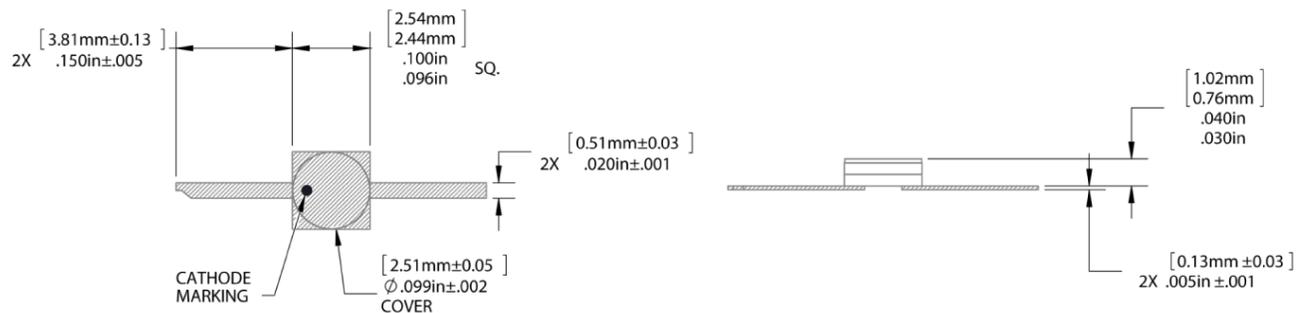


Outlines

PK18



PK20



Assembly Information

These germanium diodes are sensitive to the mechanical pressures present during assembly. Use the process parameters below to avoid damaging devices.

Die Attach: Conductive silver epoxy with a maximum cure temperature of +125°C

Wire Bonding: Bond to the offset bond pad as to not damage the junction
 0.7 mil thermocompression wedge bond
 Stage Temp: +155°C; device exposed to these temps for <20 seconds
 Tip temperature: +160°C maximum

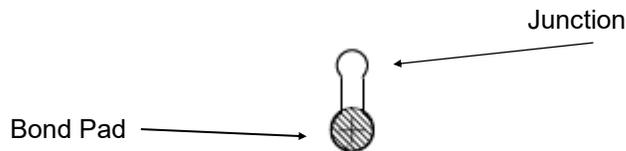
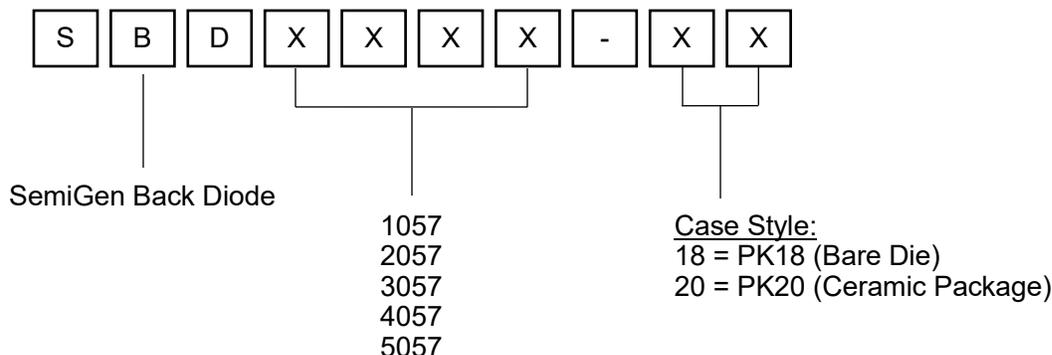


Figure 1

Ordering Information



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