

MSS50,000 Series

High Barrier Silicon Schottky Diodes



Description

The Aeroflex / Metelics MSS50,000 Series of Schottky diodes are fabricated on N-Type epitaxial substrates using proprietary processes that yield the highest FCOs in the industry. Optimum mixer performance is obtained with LO power of +2 dBm to +8 dBm per diode.

Features

- V_F , R_D and C_J matching options
- Chip, beam lead or packaged devices
- Hi-Rel screening per MIL-PRF-19500 and MIL-PRF-38534 available

Absolute Maximum Ratings

Parameters	Rating
Reverse Voltage	Rated V_{BR}
Forward Current	50 mA
Operation Temperature	-65 °C to +150 °C
Storage Temperature	-65 °C to +150 °C
Power Dissipation	100 mW per junction at $T_A = 25$ °C, derate linearly to zero at $T_A = +150$ °C
Soldering Temperature (Packaged)	+ 260 °C for 5 sec.
Beam Lead Pull Strength	4 grams minimum

Chip

Electrical Specifications, $T_A = 25$ °C

Model	Configuration	V_F TYP V	V_{BR} MIN V	C_J TYP / MAX pF	R_S TYP Ω	R_D MAX Ω	F_{CO} TYP GHz	Outline
MSS50,048-C15	Single Junction	0.5	4	0.12 / 0.15	7	15	190	C15
MSS50,062-C16	Single Junction	0.5	5	0.50 / 0.55	2	12	160	C16
Test Conditions		$I_F = 1$ mA	$I_R =$ 10 μ A	$V_R = 0$ V $F = 1$ MHz	$I_F = 5$ mA			



Beam Lead

Electrical Specifications, $T_A = 25\text{ }^\circ\text{C}$

Model	Configuration	V_F TYP V	V_{BR} MIN V	C_J TYP / MAX pF	R_S TYP Ω	R_D MAX Ω	F_{CO} TYP GHz	Outline
MSS50,146-B10B	Single Junction	0.52	5	0.07 / 0.12	9	18	253	B10B
MSS50,244-B20	Series Tee	0.52	4	0.15 / 0.20	7	16	183	B20
MSS50,448-B40	Ring Quad	0.52	10	0.20 / 0.25	6	14	133	B40
Test Conditions		$I_F = 1\text{ mA}$	$I_R = 10\text{ }\mu\text{A}$	$V_R = 0\text{ V}$ $F = 1\text{ MHz}$	$I_F = 5\text{ mA}$			

Packaged

Electrical Specifications, $T_A = 25\text{ }^\circ\text{C}$

Model	Configuration	V_F TYP V	V_{BR} MIN V	C_T TYP / MAX pF	R_S TYP Ω	R_D MAX Ω	F_{CO} TYP GHz	Outline
MSS50,048-P55	Single Junction	0.50	4	0.24 / 0.30	12	10	190	P55
MSS50,048-P86	Single Junction	0.50	4	0.27 / 0.33	12	10	190	P86
MSS50,146-E25	Single Junction	0.52	5	0.20 / 0.26	15	12	253	E25
MSS50,146-H20	Single Junction	0.52	5	0.28 / 0.34	15	12	253	H20
MSS50,244-E30	Series Tee	0.52	5	0.30 / 0.36	7	16	183	E30
MSS50,244-H30	Series Tee	0.52	5	0.36 / 0.42	7	16	183	H30
MSS50,448-E45	Ring Quad	0.52	5	0.30 / 0.36	10	10	133	E45
MSS50,448-H40	Ring Quad	0.52	5	0.36 / 0.42	10	10	133	H40
Test Conditions		$I_F = 1\text{ mA}$	$I_R = 10\text{ }\mu\text{A}$	$V_R = 0\text{ V}$ $F = 1\text{ MHz}$	$I_F = 5\text{ mA}$			

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Typical Performance, $T_A = 25^\circ\text{C}$

Figure 1.

Forward Voltage vs. Current

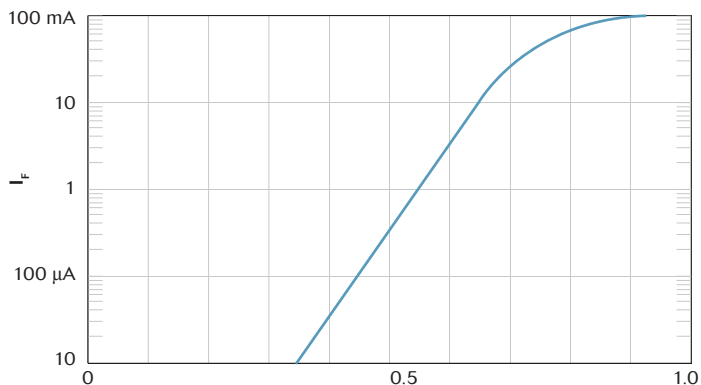


Figure 2.

Reverse Current vs. Voltage

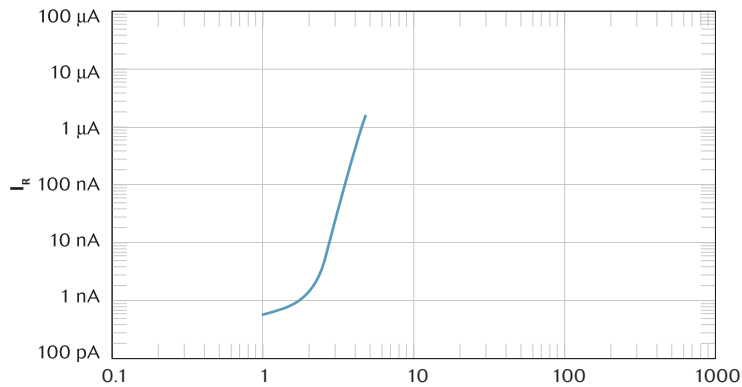


Figure 3.

NF & Z_{IF} vs. LO Power

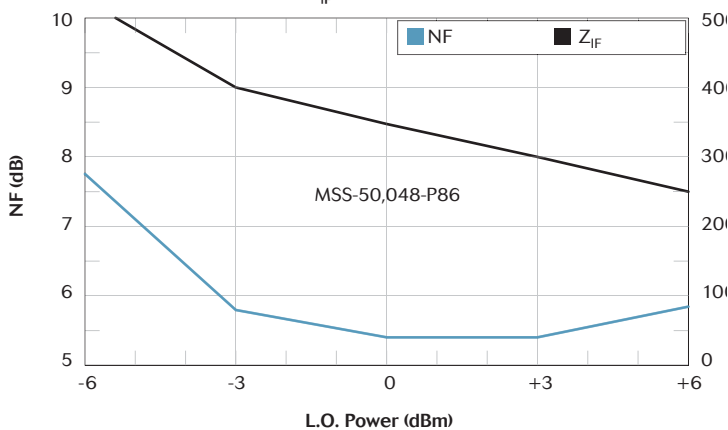
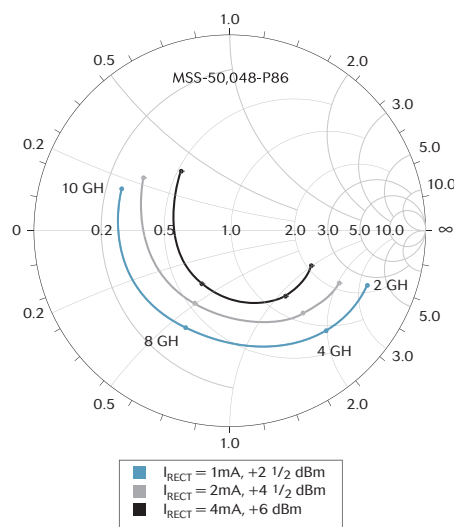
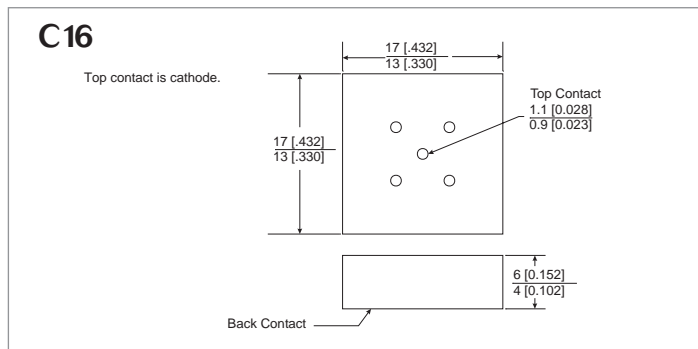
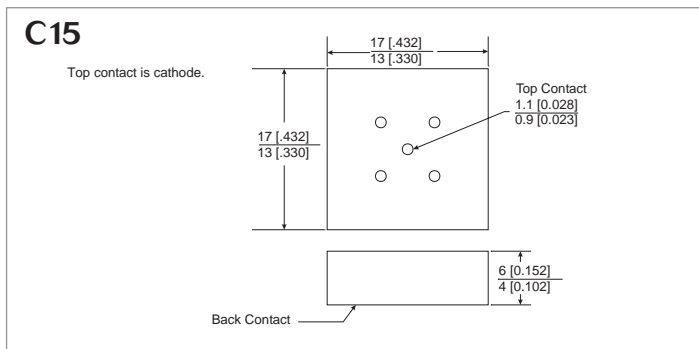


Figure 4.

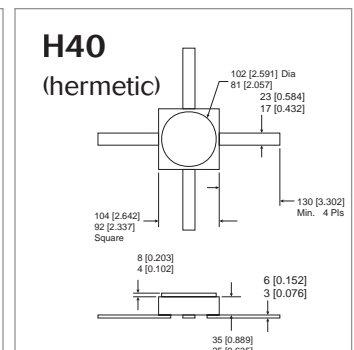
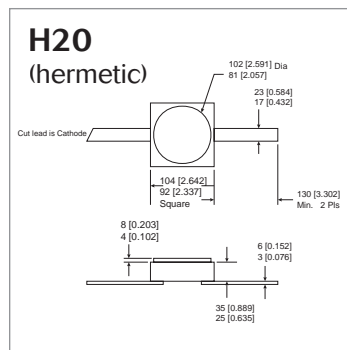
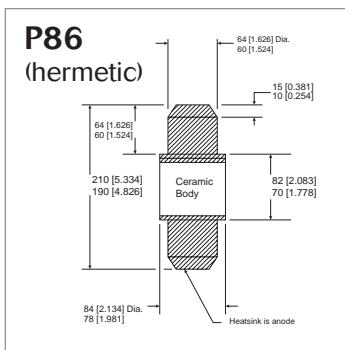
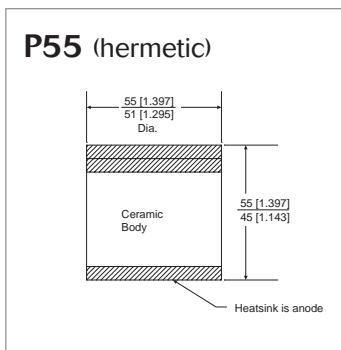
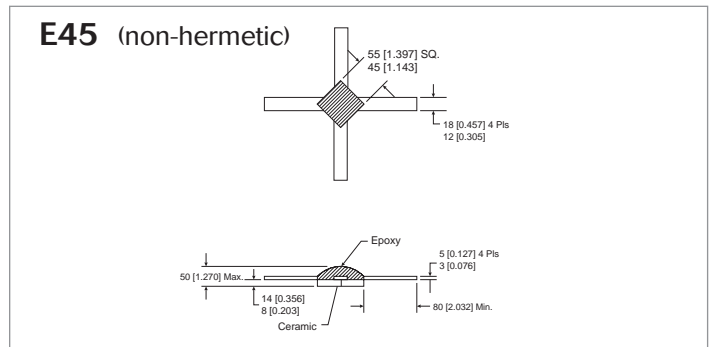
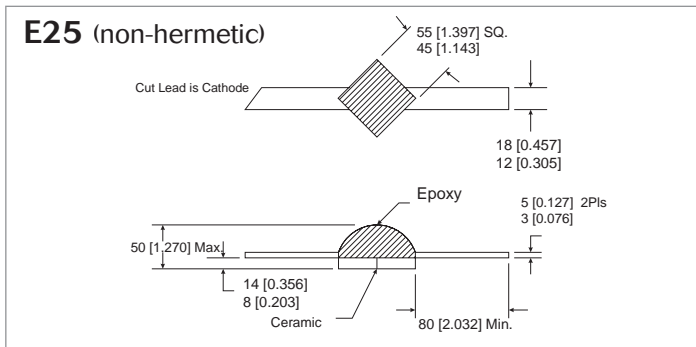
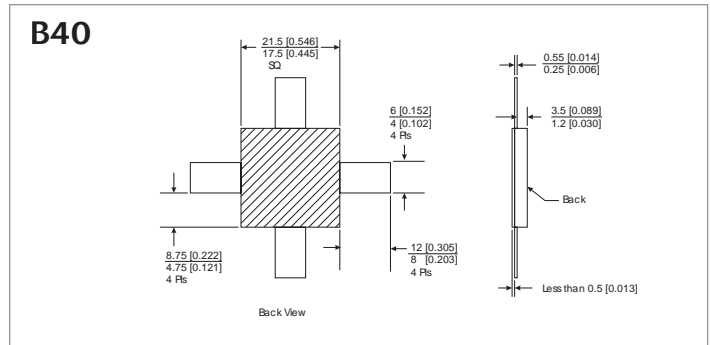
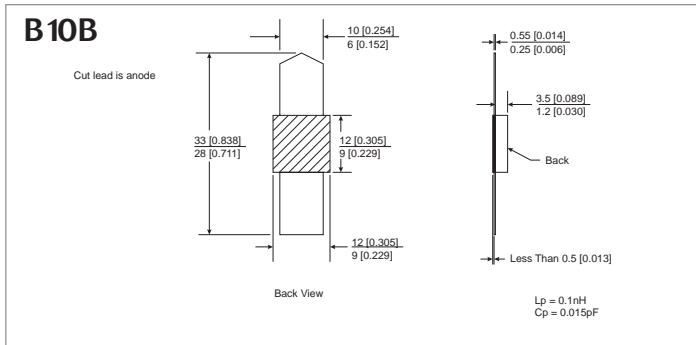
Smith Chart - 50 Ω Reference



Outline Drawings



Outline Drawings



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