

MSS40,000 Series

Medium Barrier Silicon Schottky Diodes



Description

The Aeroflex / Metelics MSS40,000 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 0 dBm to +6 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
MSS40,045-C15	Single Junction	0.42	3	0.09 / 0.12	7	15	253	C15
MSS40,048-C15	Single Junction	0.40	3	0.12 / 0.15	7	15	190	C15
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
MSS40,141-B10B	Single Junction	0.42	3	0.06 / 0.10	10	22	265	B10B
MSS40,148-B10B	Single Junction	0.40	3	0.12 / 0.15	7	17	190	B10B
MSS40,155-B10B	Single Junction	0.38	3	0.25 / 0.30	5	13	127	B10B
MSS40,244-B20	Series Tee	0.44	3	0.08 / 0.12	19	22	105	B20
MSS40,248-B20	Series Tee	0.44	3	0.12 / 0.15	10	17	133	B20
MSS40,255-B20	Series Tee	0.38	3	0.25 / 0.30	5	15	127	B20
MSS40,448-B41	Ring Quad	0.40	3	0.12 / 0.15	7	17	190	B41
MSS40,455-B40	Ring Quad	0.38	3	0.25 / 0.30	5	17	127	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
MSS40,045-P55	Single Junction	0.42	3	0.21 / 0.27	7	15	253	P55
MSS40,045-P86	Single Junction	0.42	3	0.24 / 0.30	7	15	253	P86
MSS40,048-P55	Single Junction	0.40	3	0.24 / 0.30	7	15	190	P55
MSS40,048-P86	Single Junction	0.40	3	0.27 / 0.33	7	15	190	P86
MSS40,141-E25	Single Junction	0.42	3	0.16 / 0.22	10	18	265	E25
MSS40,141-H20	Single Junction	0.42	3	0.24 / 0.30	10	18	265	H20
MSS40,148-E25	Single Junction	0.40	3	0.22 / 0.28	7	15	190	E25
MSS40,148-H20	Single Junction	0.40	3	0.30 / 0.36	7	15	190	H20
MSS40,155-E25	Single Junction	0.38	3	0.35 / 0.41	5	14	127	E25
MSS40,155-H20	Single Junction	0.38	3	0.43 / 0.50	5	14	127	H20
MSS40,244-E35	Series Tee	0.44	3	0.18 / 0.24	19	28	105	E35
MSS40,248-E35	Series Tee	0.44	3	0.22 / 0.28	10	18	133	E35
MSS40,255-E35	Series Tee	0.38	3	0.35 / 0.41	5	14	127	E35
MSS40,448-E45	Ring Quad	0.40	3	0.24 / 0.30	7	15	190	E45
MSS40,455-E45	Ring Quad	0.38	3	0.32 / 0.38	5	14	127	E45
MSS40,455-H40	Ring Quad	0.38	3	0.42 / 0.48	5	14	127	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

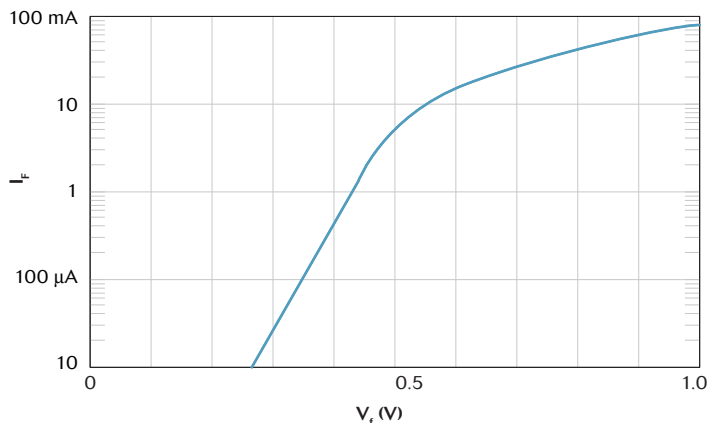


Figure 2.

Reverse Current vs. Voltage

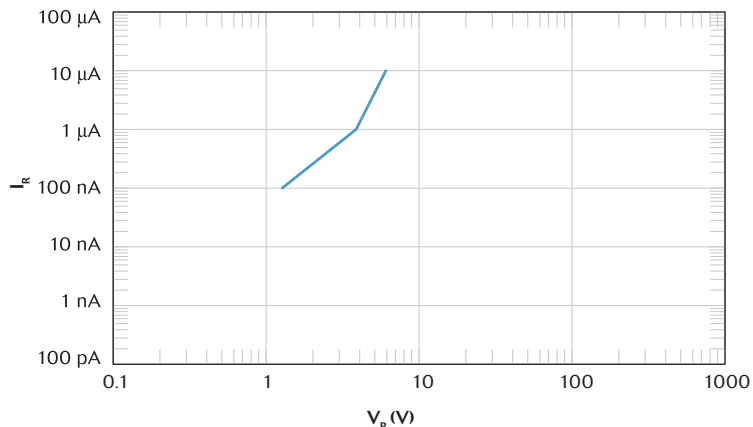


Figure 3.

NF & Z_{IF} vs. LO Power

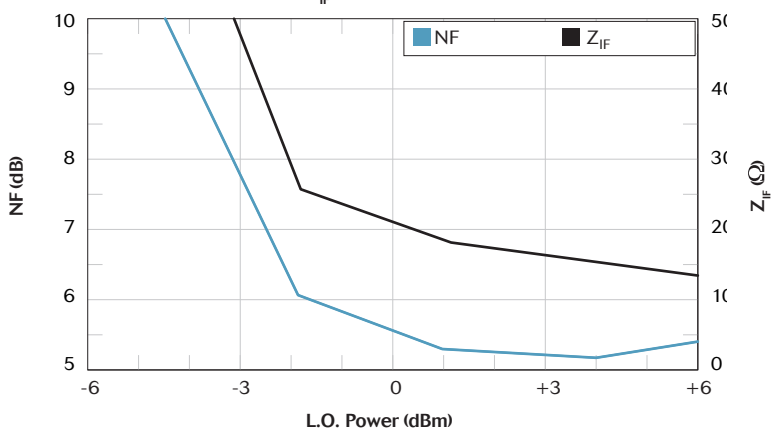
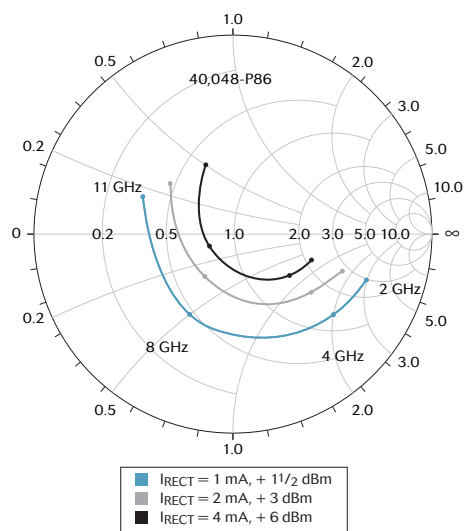
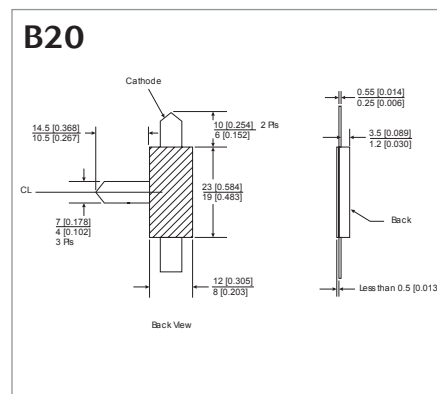
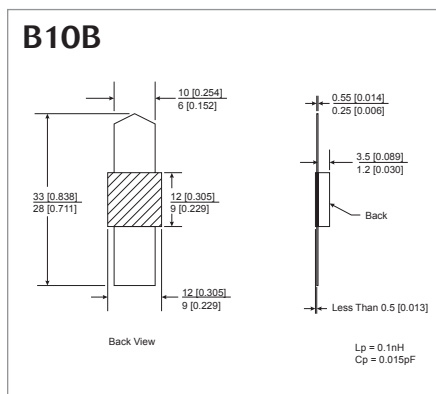
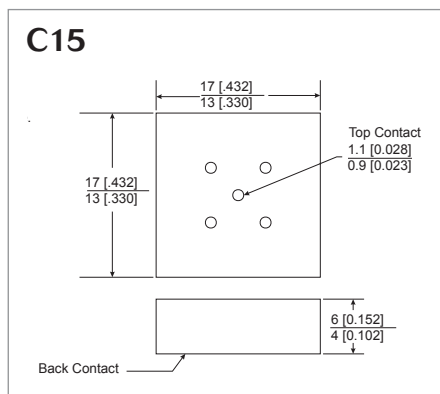


Figure 4.

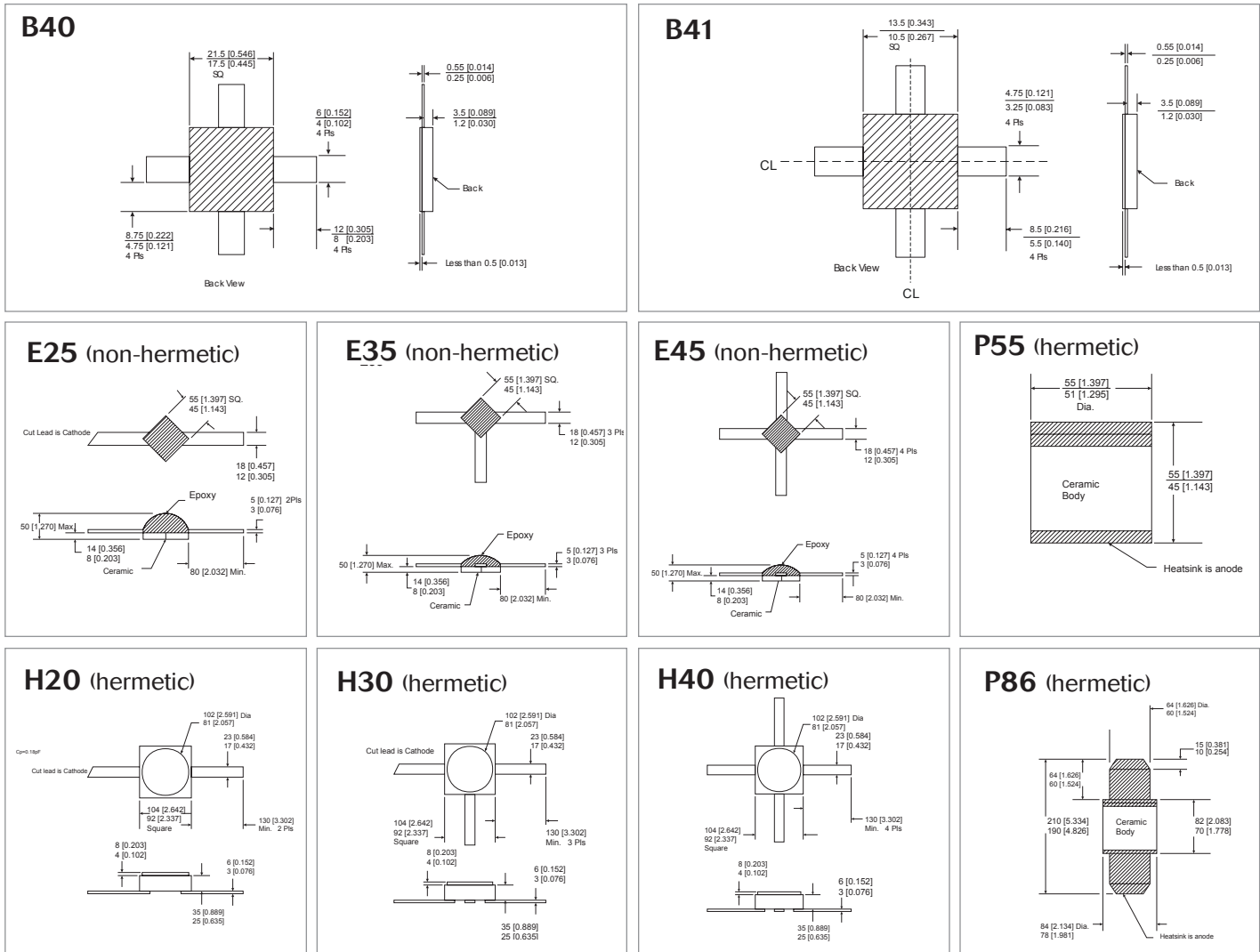
Smith Chart - 50 Ω Reference



Outline Drawings



Outline Drawings



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Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.