

MSS30,000 Series

Low Barrier Silicon Schottky Diodes



Description

The Aeroflex / Metelics MSS30,000 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 -3 dBm to +3 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
MSS30,046-C15	Single Junction	0.29	2	0.10 / 0.12	10	18	160	C15
MSS30,050-C15	Single Junction	0.27	2	0.15 / 0.18	6	15	175	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
MSS30,142-B10B	Single Junction	.29	2	0.07 / 0.10	13	22	175	B10B
MSS30,148-B10B	Single Junction	.27	2	0.12 / 0.15	7	15	190	B10B
MSS30,154-B10B	Single Junction	.25	2	0.22 / 0.25	3	12	240	B10B
MSS30,242-B20	Series Tee	.29	2	0.07 / 0.10	13	22	175	B20
MSS30,248-B20	Series Tee	.27	2	0.12 / 0.15	7	15	190	B20
MSS30,254-B20	Series Tee	.25	2	0.22 / 0.25	3	12	240	B20
MSS30,442-B41	Ring Quad	.29	2	0.07 / 0.10	13	22	175	B41
MSS30,448-B41	Ring Quad	.27	2	0.12 / 0.15	7	15	190	B41
MSS30,454-B40	Ring Quad	.25	2	0.22 / 0.25	3	12	240	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
MSS30,046-P55	Single Junction	0.29	2	0.23 / 0.30	10	18	160	P55
MSS30,046-P86	Single Junction	0.29	2	0.27 / 0.33	10	18	160	P86
MSS30,050-P55	Single Junction	0.27	2	0.28 / 0.35	6	15	175	P55
MSS30,050-P86	Single Junction	0.27	2	0.32 / 0.38	6	15	175	P86
MSS30,142-E25	Single Junction	0.29	2	0.20 / 0.26	13	22	175	E25
MSS30,142-H20	Single Junction	0.29	2	0.25 / 0.31	13	22	175	H20
MSS30,148-E25	Single Junction	0.27	2	0.25 / 0.31	7	15	190	E25
MSS30,148-H20	Single Junction	0.27	2	0.30 / 0.36	7	15	190	H20
MSS30,154-E25	Single Junction	0.25	2	0.35 / 0.41	3	12	240	E25
MSS30,154-H20	Single Junction	0.25	2	0.40 / 0.46	3	12	240	H20
MSS30,242-E35	Series Tee	0.29	2	0.15 / 0.21	13	22	175	E35
MSS30,242-H30	Series Tee	0.29	2	0.25 / 0.31	13	22	175	H30
MSS30,248-E35	Series Tee	0.27	2	0.25 / 0.31	7	15	190	E35
MSS30,248-H30	Series Tee	0.27	2	0.30 / 0.36	7	15	190	H30
MSS30,254-E35	Series Tee	0.25	2	0.35 / 0.41	3	12	240	E35
MSS30,254-H30	Series Tee	0.25	2	0.40 / 0.46	3	12	240	H30
MSS30,442-E45	Ring Quad	0.29	2	0.15 / 0.21	13	22	175	E45
MSS30,448-E45	Ring Quad	0.27	2	0.20 / 0.26	7	15	190	E45
MSS30,454-E45	Ring Quad	0.25	2	0.25 / 0.31	3	12	240	E45
MSS30,454-H40	Ring Quad	0.25	2	0.25 / 0.31	3	12	240	H40
Test Conditions		$I_F = 1\text{ mA}$	$I_R = 10\text{ }\mu\text{A}$	$V_R = 0\text{ V}$ $F = 1\text{ MHz}$	$I_F = 5\text{ mA}$			

MSS30,000 Series Low Barrier Silicon Schottky Diodes



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

Figure 1.

Forward Voltage vs. Current

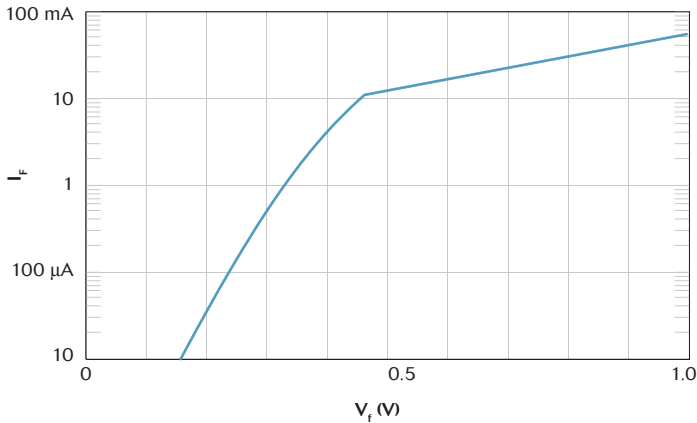


Figure 2.

Reverse Current vs. Voltage

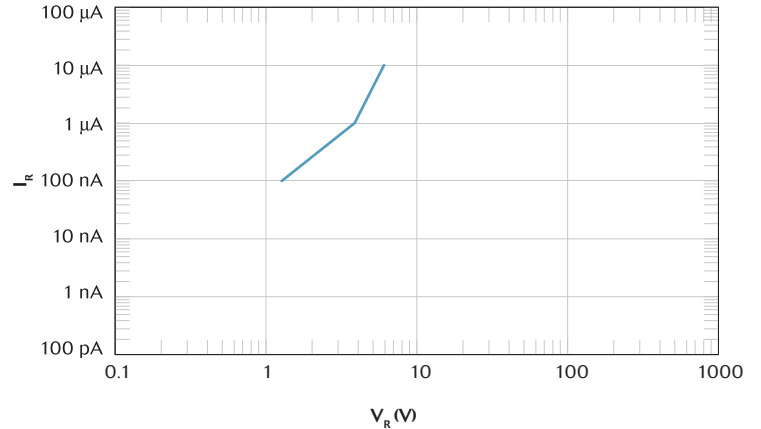


Figure 3.

NF & Z_{IF} vs. LO Power

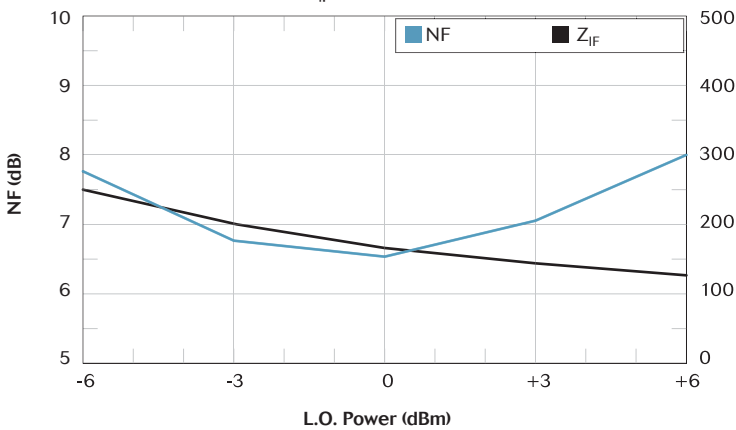
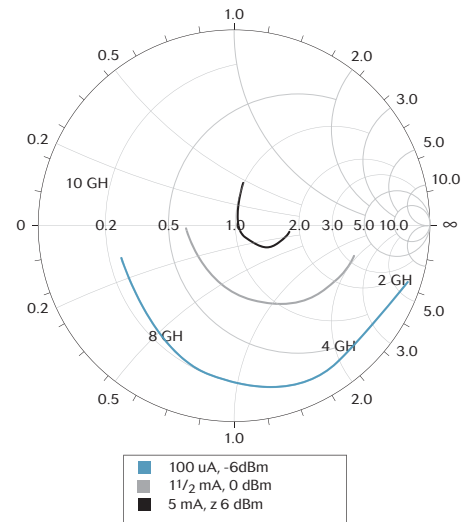
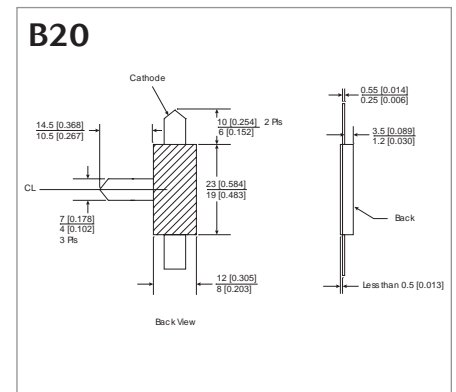
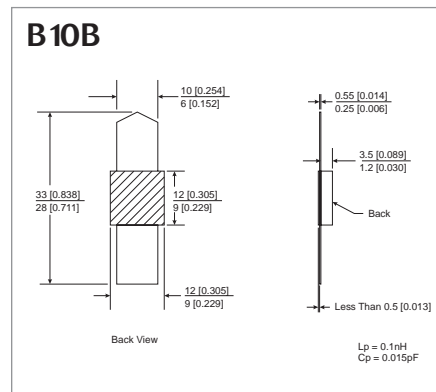
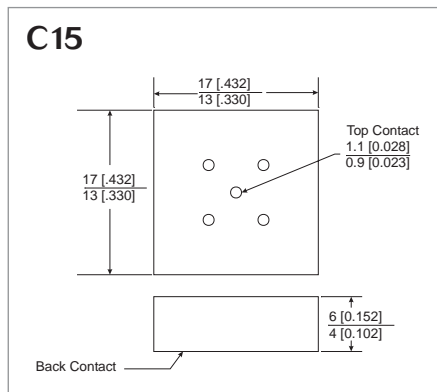


Figure 4.

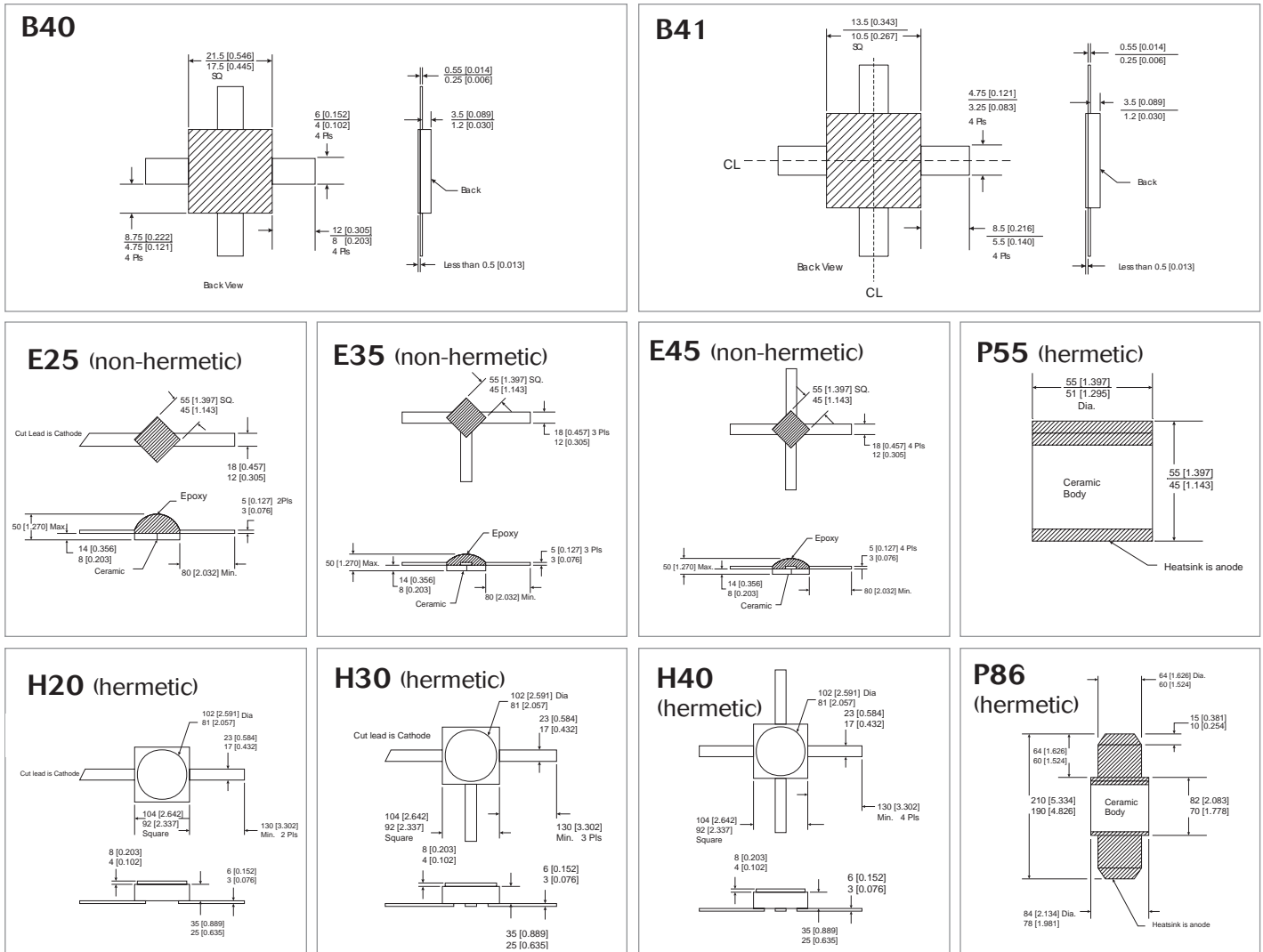
Smith Chart - 50 Ω Reference



Outline Drawings



Outline Drawings



Aeroflex / Metelics
 Aeroflex Microelectronic Solutions
 975 Stewart Drive, Sunnyvale, CA 94085
 TEL: 408-737-8181
 Fax: 408-733-7645

www.aeroflex-metelics.com sales@eroflex-metelics.com

Aeroflex / Metelics, Inc. reserves the right to make changes to any products and services herein at any time without notice. Consult Aeroflex or an authorized sales representative to verify that the information in this data sheet is current before using this product. Aeroflex does not assume any responsibility or liability arising out of the application or use of any product or service described herein, except as expressly agreed to in writing by Aeroflex; nor does the purchase, lease, or use of a product or service from Aeroflex convey a license under any patent rights, copyrights, trademark rights, or any other of the intellectual rights of Aeroflex or of third parties. Copyright 2003 Aeroflex / Metelics. All rights reserved.



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