

# 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 $\Omega$	$R_D$ MAX $\Omega$	$F_{CO}$ 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 $\mu$ 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 $\Omega$	$R_D$ MAX $\Omega$	$F_{CO}$ 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 $\Omega$	$R_D$ MAX $\Omega$	$F_{CO}$ 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

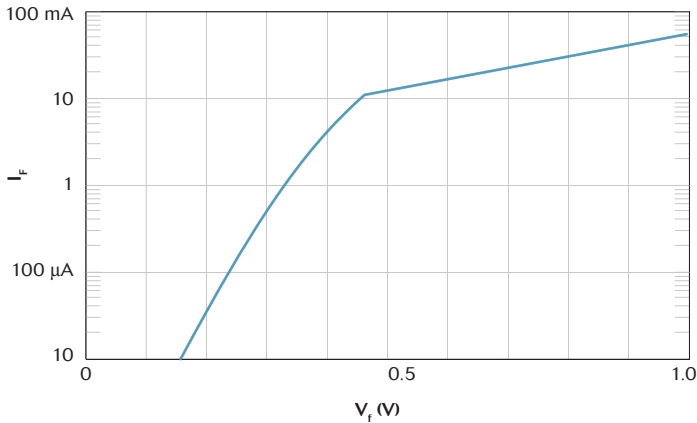


Figure 2.

Reverse Current vs. Voltage

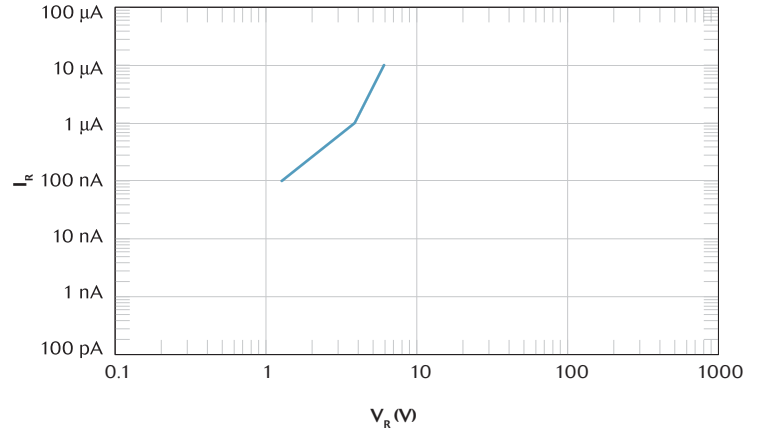


Figure 3.

NF &  $Z_{IF}$  vs. LO Power

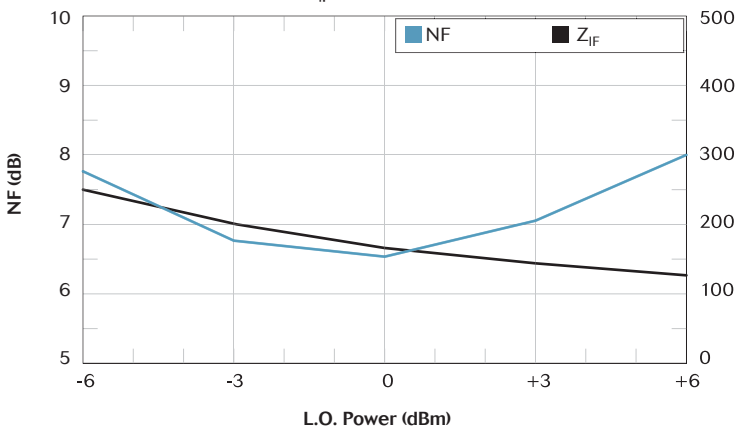
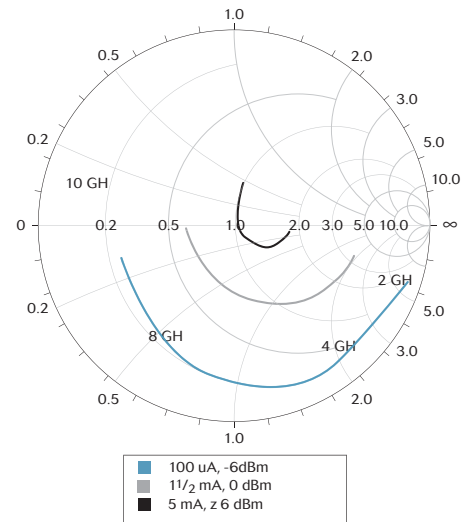
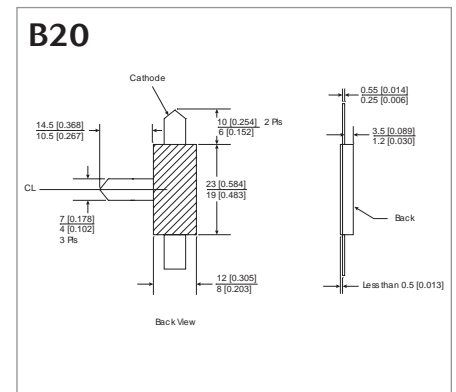
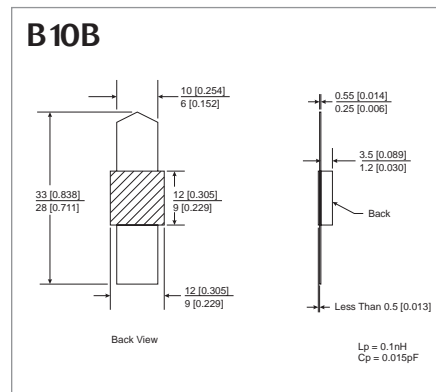
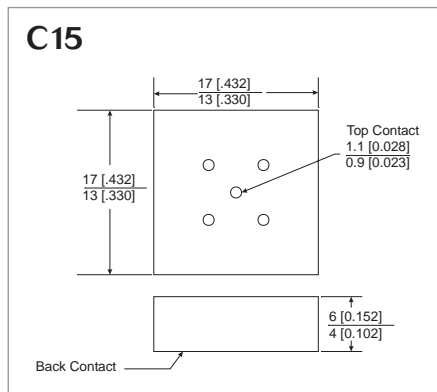


Figure 4.

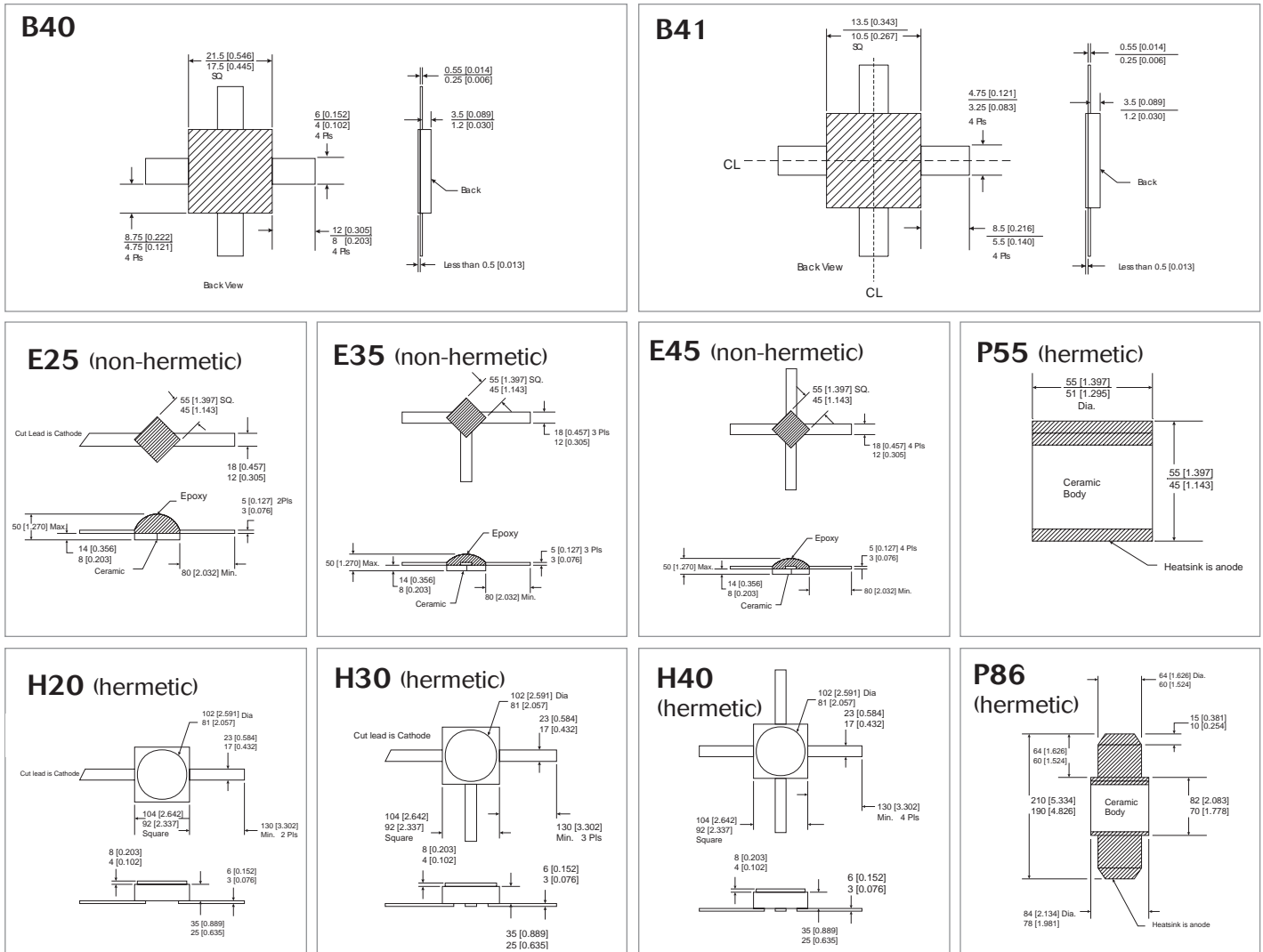
Smith Chart - 50 Ω Reference



## Outline Drawings



### Outline Drawings



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