

# MSS40-xxx-x Series



## Medium Barrier Silicon Schottky Diodes

Rev. V1

### Features

- $V_F$ ,  $R_D$  and  $C_J$  Matching Options
- Chip, Beam Lead and Packaged Devices
- Hi-Rel Screening per MIL-PRF-19500 and MIL-PRF-38534 Available



### Description

The MSS40-xxx-x 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.

### Chip

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

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
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		$I_F = 1 \text{ mA}$	$I_R = 10 \mu\text{A}$	$V_R = 0 \text{ V}$ $F = 1 \text{ MHz}$	$I = 5 \text{ mA}$			

### Beam Lead

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

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
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		$I_F = 1 \text{ mA}$	$I_R = 10 \mu\text{A}$	$V_R = 0 \text{ V}$ $F = 1 \text{ MHz}$	$I = 5 \text{ mA}$			

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### Packaged

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

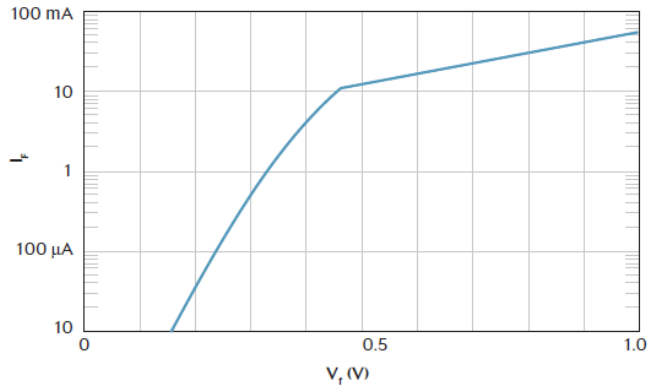
Model	Configuration	$V_F$ Typ. V	$V_{BR}$ Min. V	$C_J$ Typ. / Max. pF	$R_S$ Typ. $\Omega$	$R_D$ Max. $\Omega$	$F_{CO}$ Typ. GHz	Outline
MSS40-045-P55	Single Junction	0.42	3	0.21 / 0.27	7		253	P55
MSS40-045-P86	Single Junction	0.42	3	0.24 / 0.30	7		253	P86
MSS40-048-P55	Single Junction	0.40	3	0.24 / 0.30	7		190	P55
MSS40-048-P86	Single Junction	0.40	3	0.27 / 0.33	7		190	P86
MSS40-141-E25	Single Junction	0.42	3	0.16 / 0.22	10		265	E25
MSS40-141-H20	Single Junction	0.42	3	0.24 / 0.30	10		265	H20
MSS40-148-E25	Single Junction	0.40	3	0.22 / 0.28	7		190	E25
MSS40-148-H20	Single Junction	0.40	3	0.30 / 0.36	7		190	H20
MSS40-155-E25	Single Junction	0.38	3	0.35 / 0.41	5		127	E25
MSS40-155-H20	Single Junction	0.38	3	0.43 / 0.50	5		127	H20
MSS40-244-E35	Series Tee	0.44	3	0.18 / 0.24	19		105	E35
MSS40-248-E35	Series Tee	0.44	3	0.22 / 0.28	10		133	E35
MSS40-255-E35	Series Tee	0.38	3	0.35 / 0.41	5		127	E35
MSS40-448-E45	Ring Quad	0.40	3	0.24 / 0.30	7		190	E45
MSS40-455-E45	Ring Quad	0.38	3	0.32 / 0.38	5		127	E45
MSS40-455-H40	Ring Quad	0.38	3	0.42 / 0.48	5		127	H40
Test Conditions		$I_F = 1 \text{ mA}$	$I_R = 10 \mu\text{A}$	$V_R = 0 \text{ V}$ $F = 1 \text{ MHz}$	$I = 5 \text{ mA}$			

### Absolute Maximum Ratings

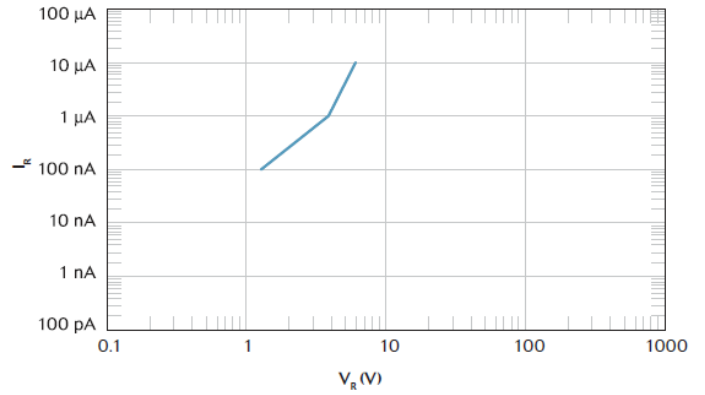
Parameters	Rating
Reverse Voltage	Rated $V_{BR}$
Forward Current	50 mA
Power Dissipation	100 mW, per junction @ $T_A = 25^\circ\text{C}$ , derate linearly to 0 @ $T_A = +150^\circ\text{C}$
Operating Temperature	$-65^\circ\text{C}$ to $+150^\circ\text{C}$
Storage Temperature	$-65^\circ\text{C}$ to $+150^\circ\text{C}$
Soldering Temperature (packaged)	$+230^\circ\text{C}$ for 5 seconds
Beam Lead Pull Strength	4 G minimum

### Typical Performance Curves: $T_A = 25^\circ\text{C}$

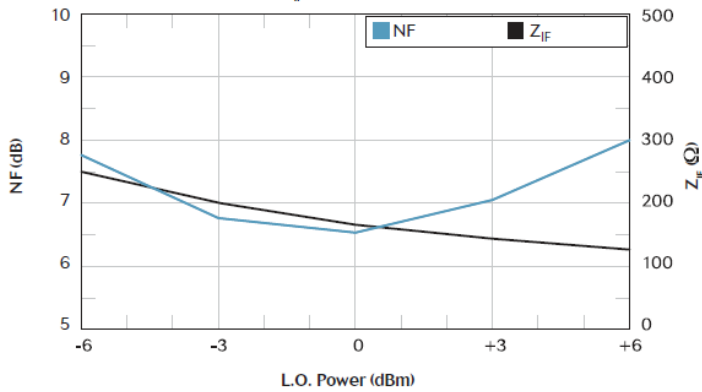
Forward Voltage vs. Current



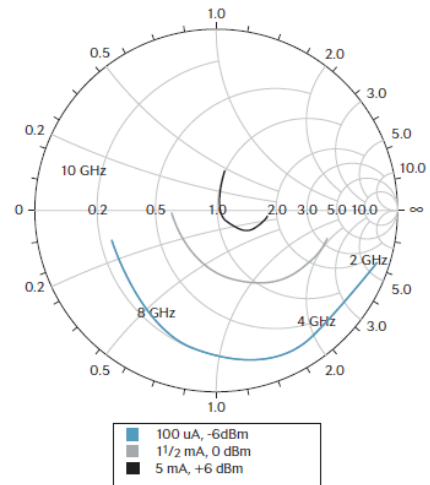
Reverse Current vs. Voltage



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



Smith Chart - 50  $\Omega$  Reference



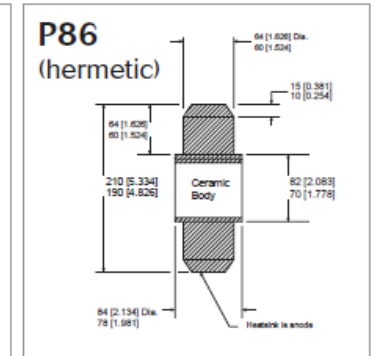
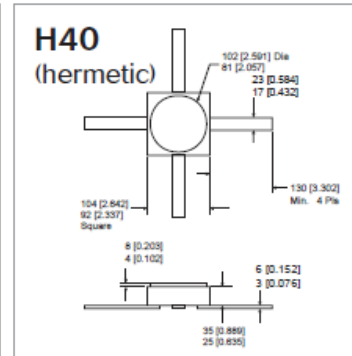
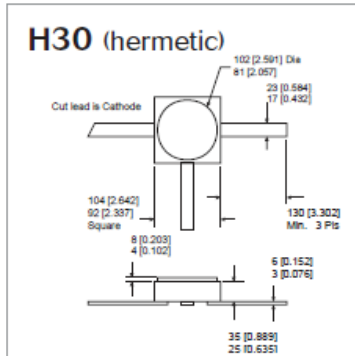
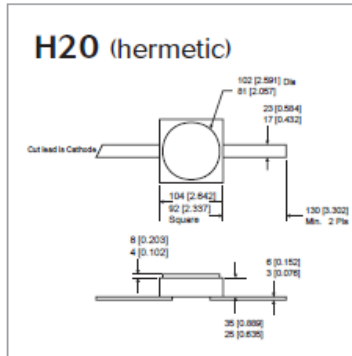
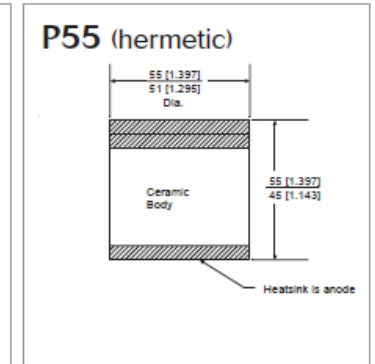
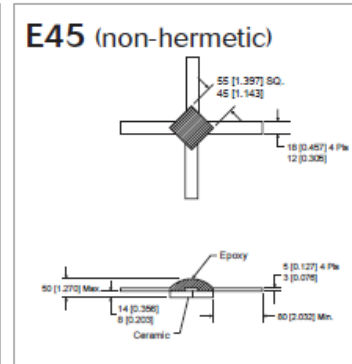
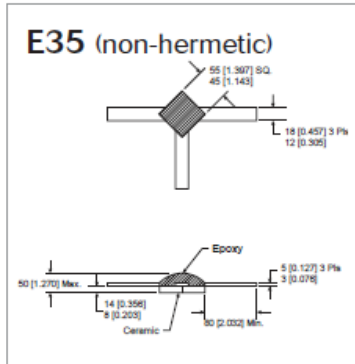
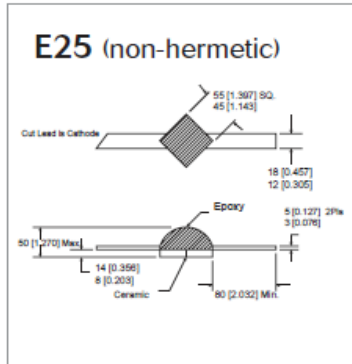
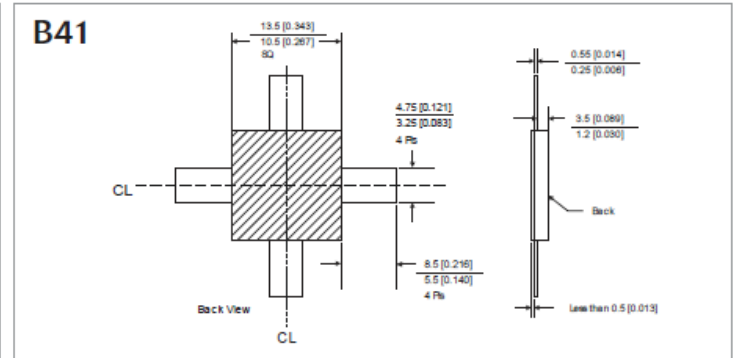
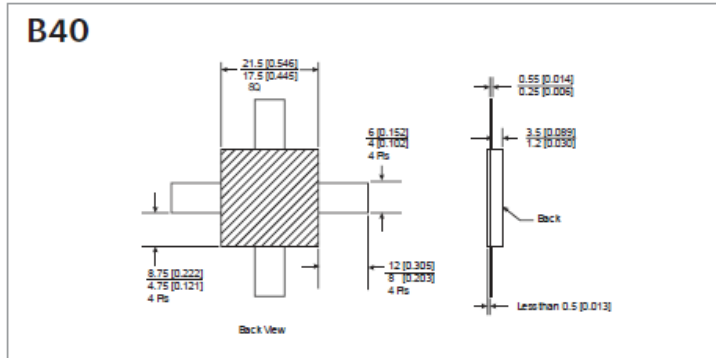
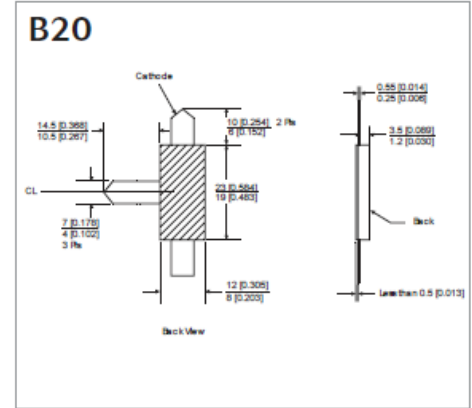
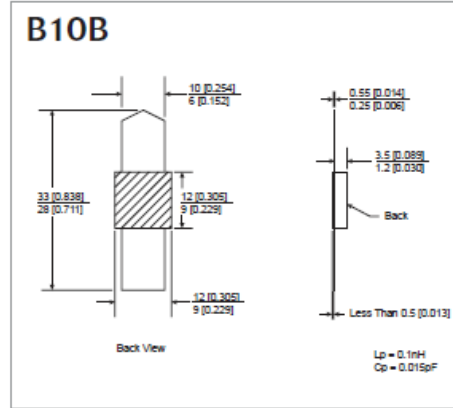
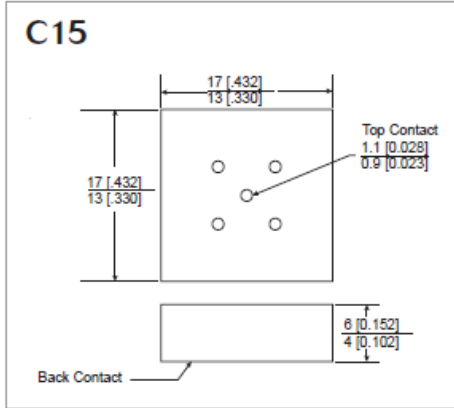
# MSS40-xxx-x Series



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Rev. V1

### Outline Drawings



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