Medium Barrier Silicon Schottky Diode

MSS40-xxx-x Series
Rev. V2

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°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 µA	V_R = 0 V F = 1 MHz	I = 5 mA			

Beam Lead

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
MSS40-141-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
MSS40-CR46-B49	Crossover Ring Quad	0.35	3	0.12 / 0.20	10	22	177	B49
Test Conditions		I_F = 1 mA	I_R = 10 µA	V_R = 0 V F = 1 MHz	I = 5 mA			

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Packaged
Electrical Specifications: T_A = 25°C

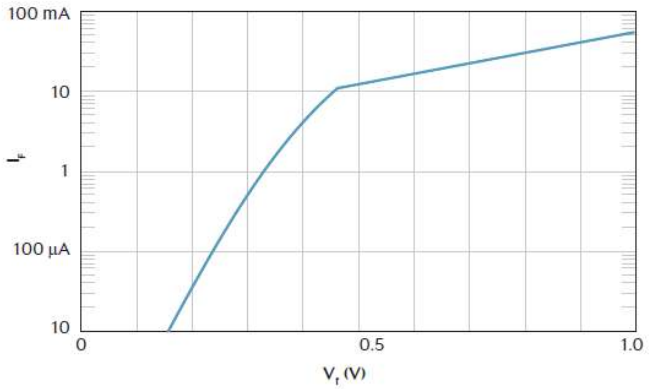
Model	Configuration	V_F Typ. V	V_{BR} Min. V	C_J Typ. / Max. pF	R_S Typ. Ω	R_D Max. Ω	F_{CO} Typ. GHz	Outline
MSS40-045-P55	Single Junction	0.42	3	0.21 / 0.27	7		253	P55
MSS40-045-P86	Single Junction	0.42	3	0.24 / 0.30	7		253	P86
MSS40-048-P55	Single Junction	0.40	3	0.24 / 0.30	7		190	P55
MSS40-048-P86	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 mA	I_R = 10 µA	V_R = 0 V F = 1 MHz	I = 5 mA			

Absolute Maximum Ratings

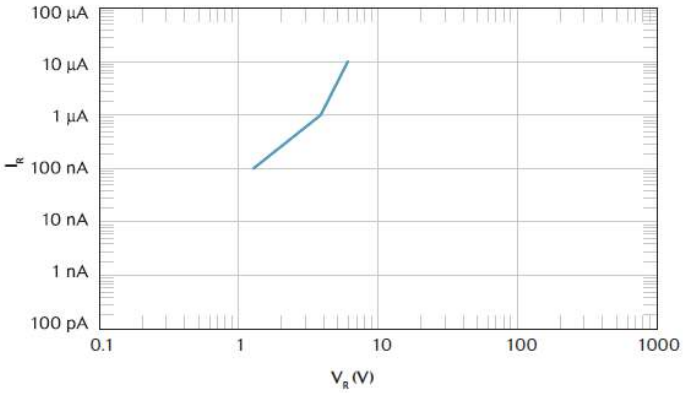
Parameters	Rating
Reverse Voltage	Rated V_{BR}
Forward Current	50 mA
Power Dissipation	100 mW, per junction @ T_A = 25°C, derate linearly to 0 @ T_A = +150°C
Operating Temperature	-65°C to +150°C
Storage Temperature	-65°C to +150°C
Soldering Temperature (packaged)	+230°C for 5 seconds
Beam Lead Pull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

Typical Performance Curves: T_A = 25°C

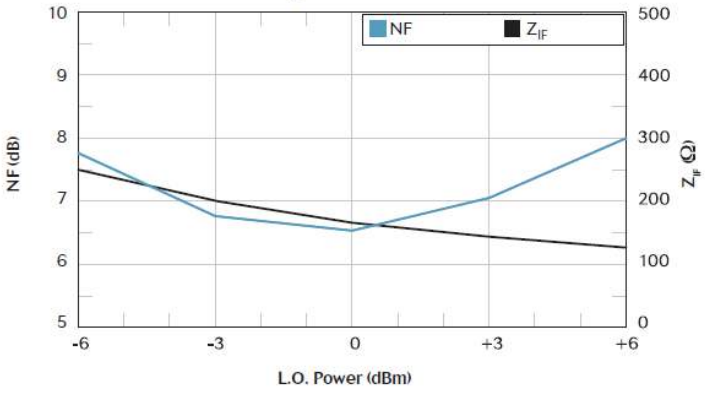
Forward Voltage vs. Current



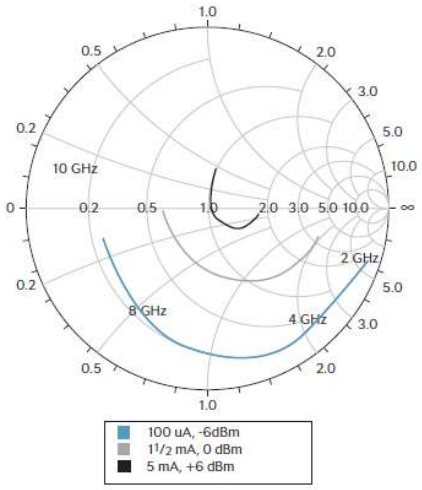
Reverse Current vs. Voltage



NF & Z_{IF} vs. LO Power

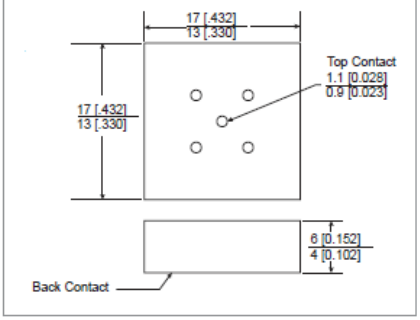


Smith Chart - 50 Ω Reference

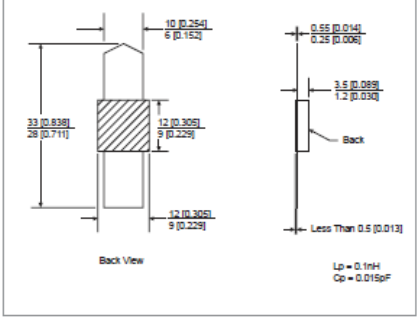


Outline Drawings

C15



B10B



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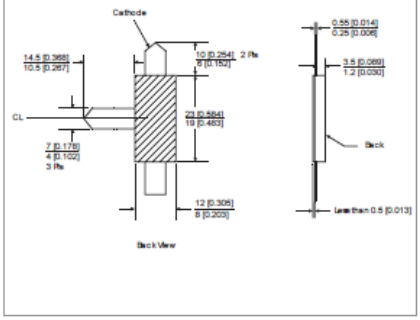
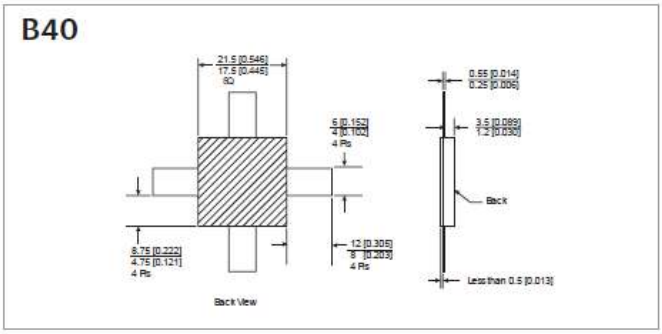


B40



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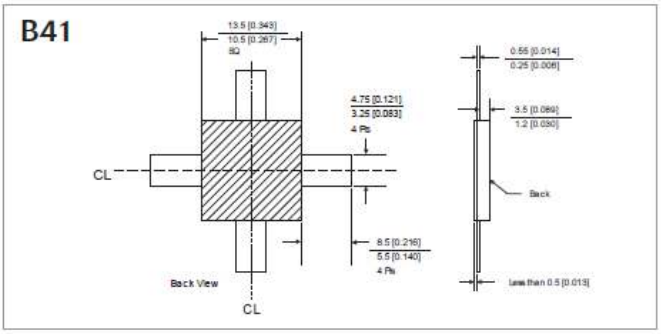

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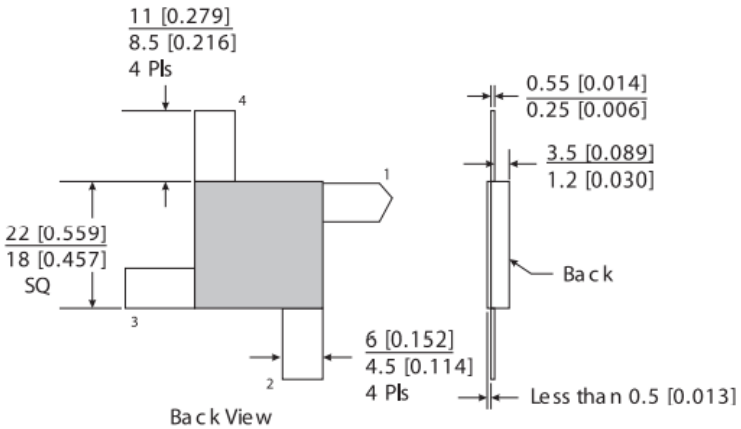

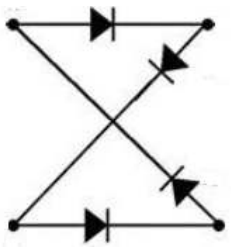

B49 Schematic

mils (mm)

Outline Drawings