



**THE DATASHEET OF  
MSS30-B53-E45**



## 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 MSS30-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 -3 dBm to +3 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
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		$I_F = 1 \text{ mA}$	$I_R = 10 \mu\text{A}$	$V_R = 0 \text{ V}$ $F = 1 \text{ MHz}$	$I = 5 \text{ mA}$			

## 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
MSS30-142-B10B	Single Junction	0.29	2	0.07 / 0.10	13	22	175	B10B
MSS30-148-B10B	Single Junction	0.27	2	0.12 / 0.15	7	15	190	B10B
MSS30-154-B10B	Single Junction	0.25	2	0.22 / 0.25	3	12	240	B10B
MSS30-242-B20	Series Tee	0.29	2	0.07 / 0.10	13	22	175	B20
MSS30-248-B20	Series Tee	0.27	2	0.12 / 0.15	7	15	190	B20
MSS30-254-B20	Series Tee	0.25	2	0.22 / 0.25	3	12	240	B20
MSS30-346-B21	Anti Parallel Pair	0.27	-	0.27 / 0.30	11	16	55	B21
MSS30-442-B41	Ring Quad	0.29	2	0.07 / 0.10	13	22	175	B41
MSS30-448-B41	Ring Quad	0.27	2	0.12 / 0.15	7	15	190	B41
MSS30-454-B40	Ring Quad	0.25	2	0.22 / 0.25	3	12	240	B40
Test Conditions		$I_F = 1 \text{ mA}$	$I_R = 10 \mu\text{A}$	$V_R = 0 \text{ V}$ $F = 1 \text{ MHz}$	$I = 5 \text{ mA}$			

### Packaged

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

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
MSS30-346-E25	Anti-Parallel Pair	0.27	-	0.35 / 0.40	11	16	55	E25
MSS30-346-H20	Anti-Parallel Pair	0.27	-	0.45 / 0.50	11	16	55	H20
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		$I_F = 1 \text{ mA}$	$I_R = 10 \mu\text{A}$	$V_R = 0 \text{ V}$ $F = 1 \text{ MHz}$	$I = 5 \text{ mA}$			

### Absolute Maximum Ratings

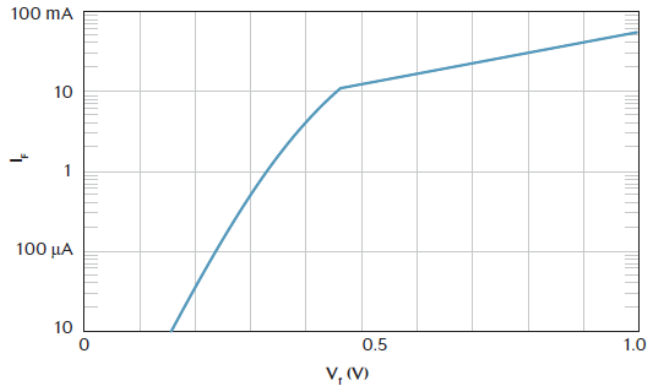
Parameters	Rating
Reverse Voltage	Rated $V_{BR}$
Forward Current	50 mA
Power Dissipation	100 mW, per junction @ $T_A = 25^\circ\text{C}$ , derate linearly to 0 @ $T_A = +150^\circ\text{C}$
Operating Temperature	$-65^\circ\text{C}$ to $+150^\circ\text{C}$
Storage Temperature	$-65^\circ\text{C}$ to $+150^\circ\text{C}$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

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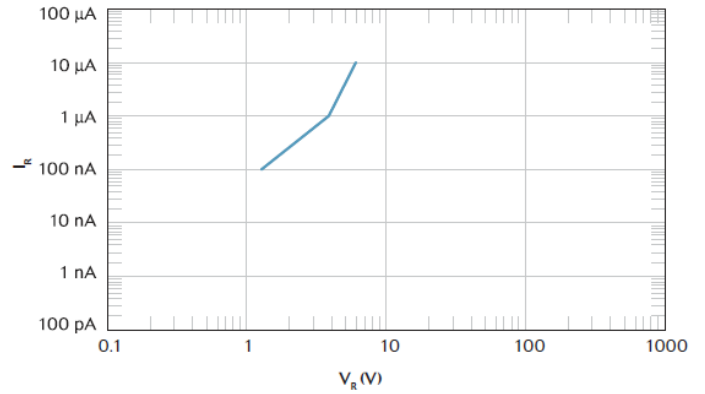
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## Typical Performance Curves: $T_A = 25^\circ\text{C}$

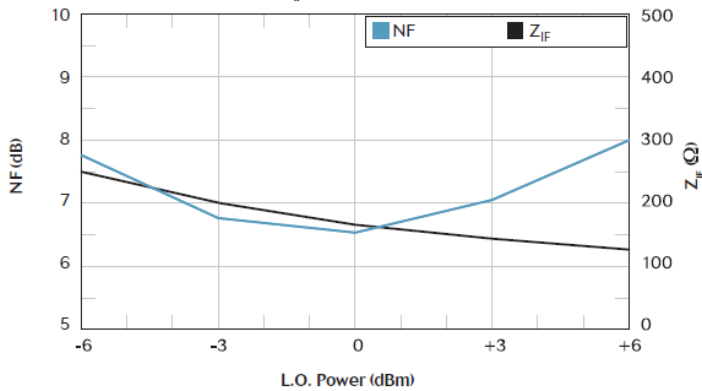
Forward Voltage vs. Current



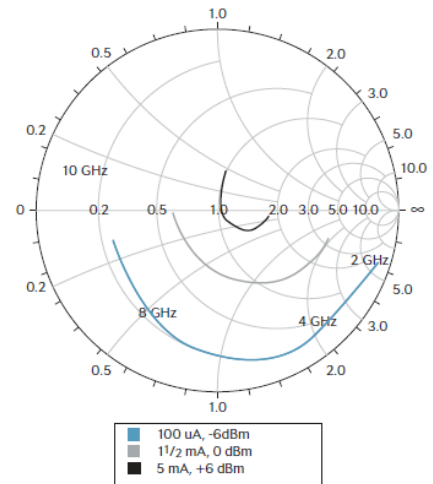
Reverse Current vs. Voltage



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

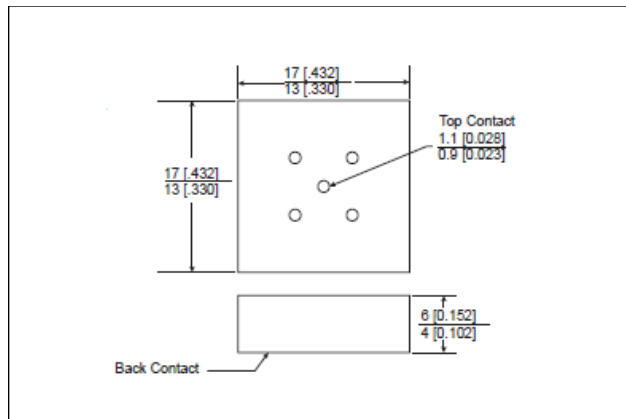


Smith Chart - 50 Ω Reference

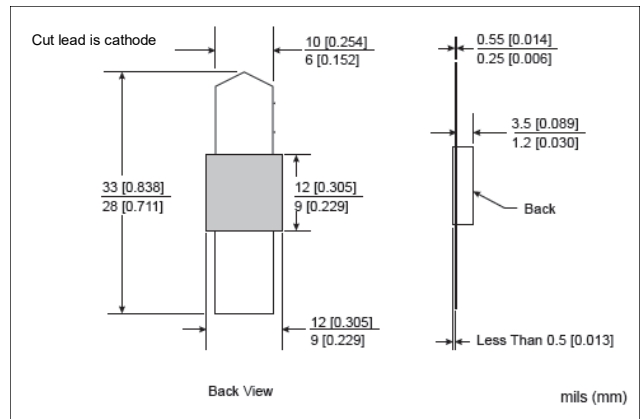


### Outline Drawings

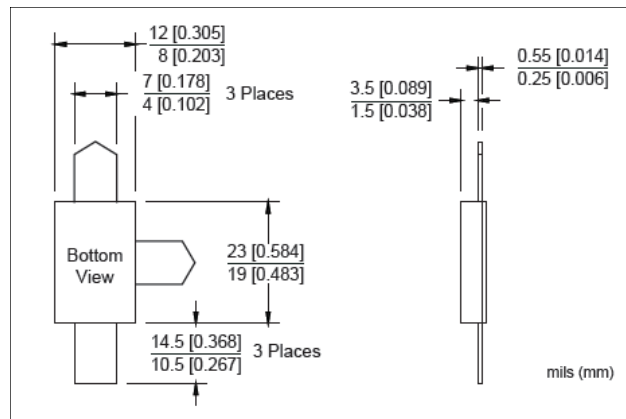
**C15**



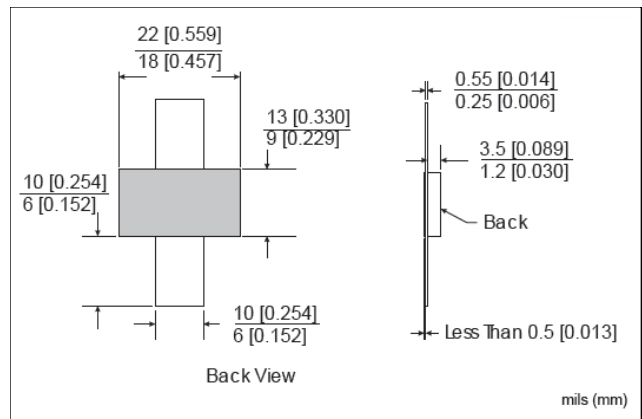
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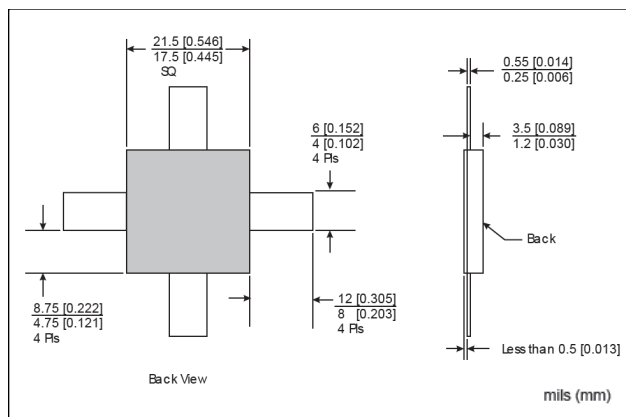
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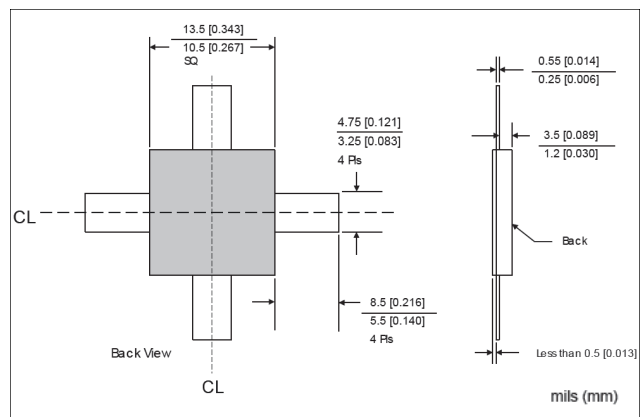
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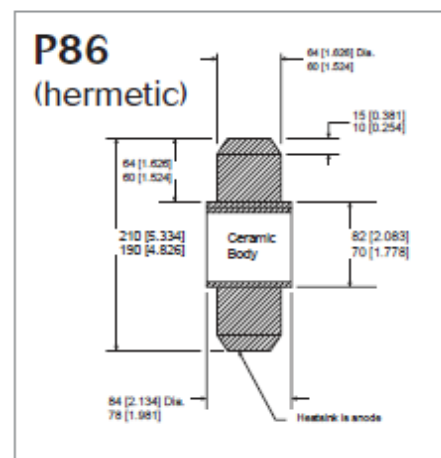
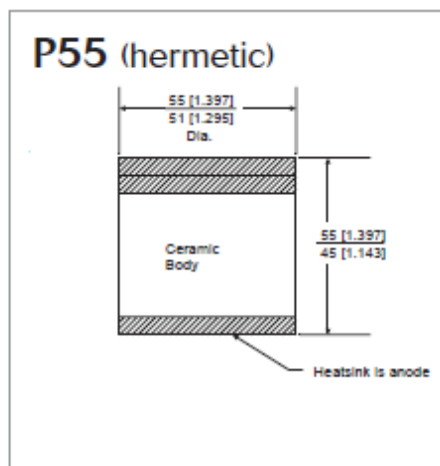
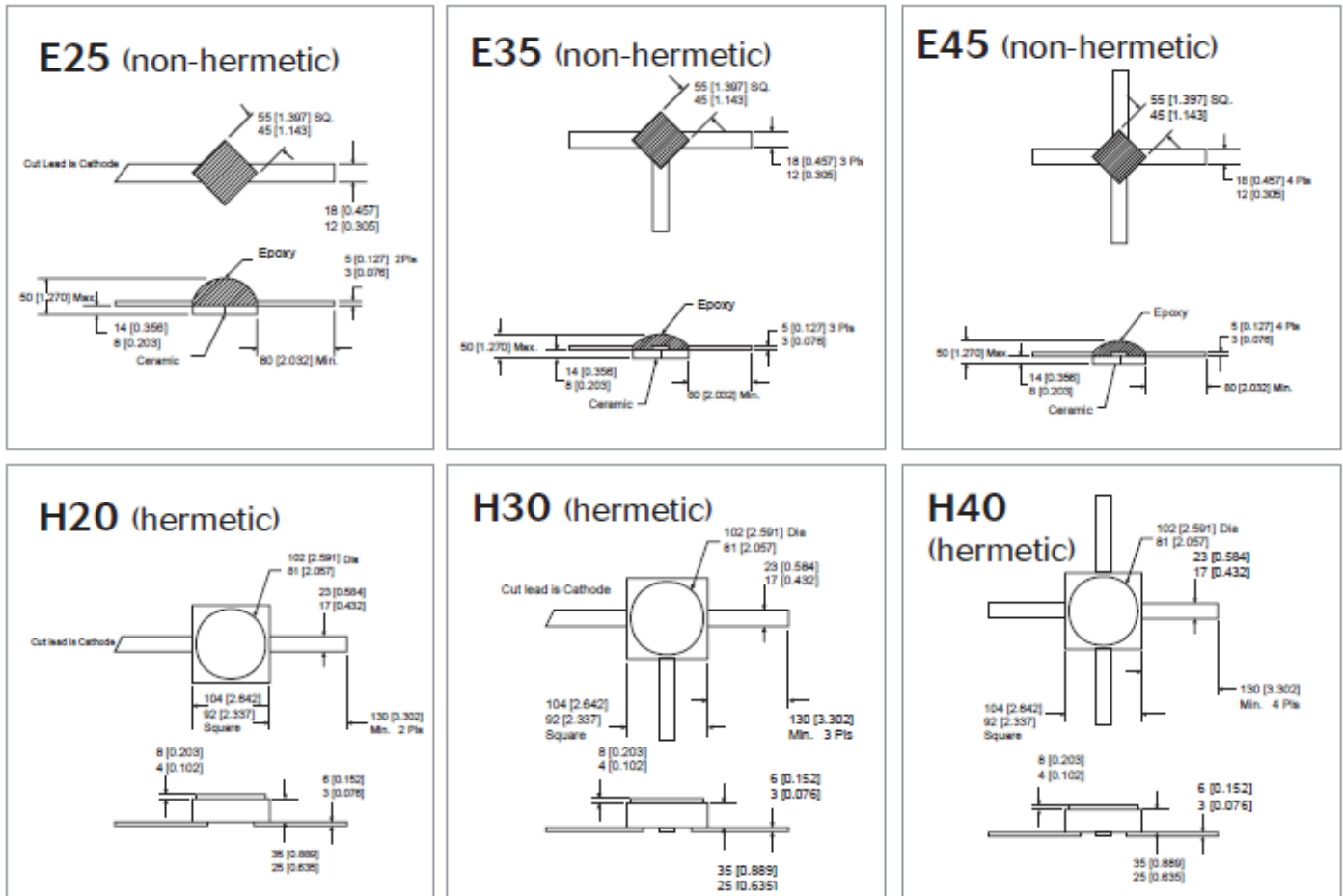


**B40**



**B41**





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