

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.

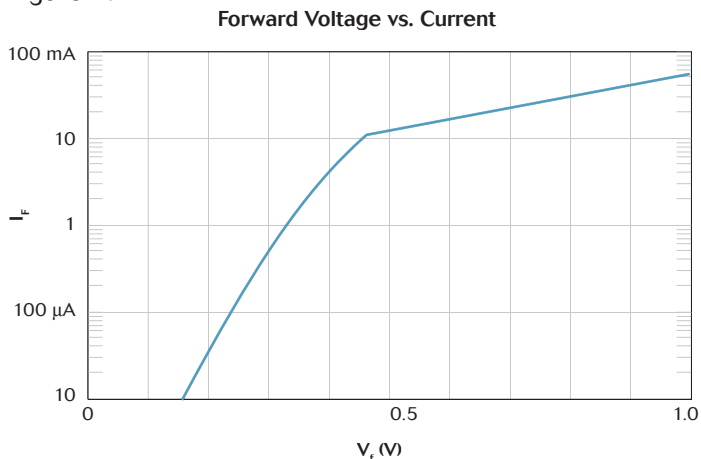


Figure 2.

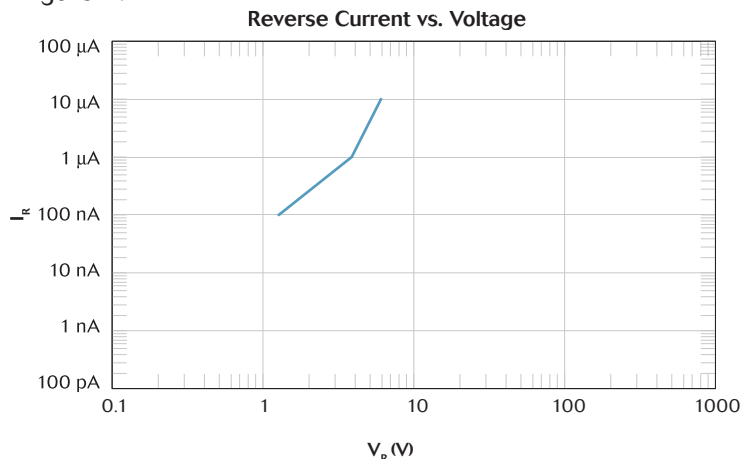


Figure 3.

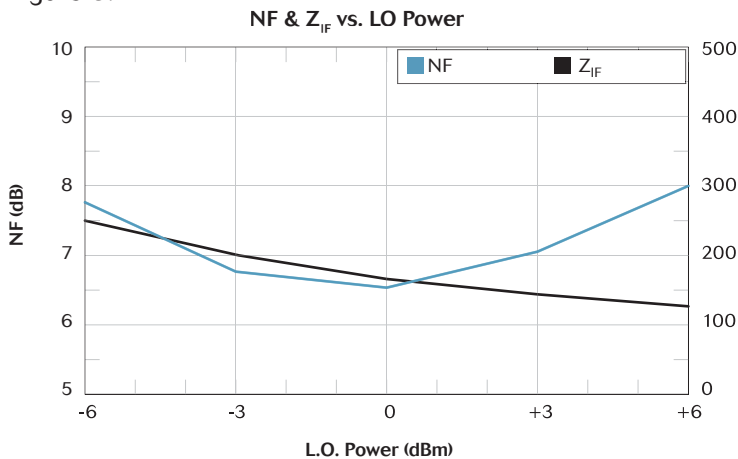
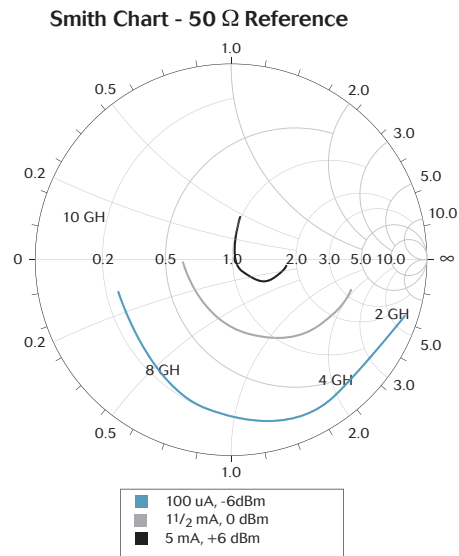
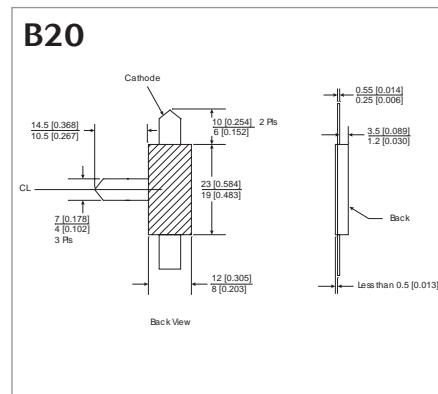
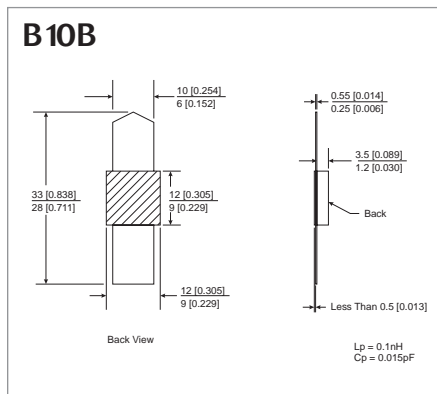
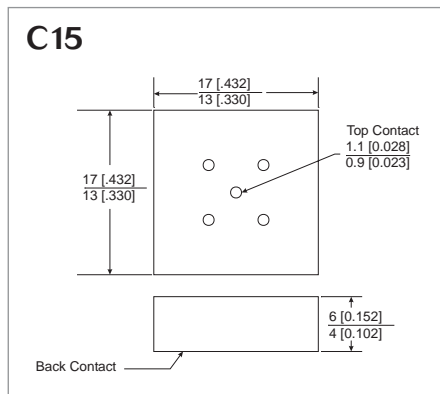


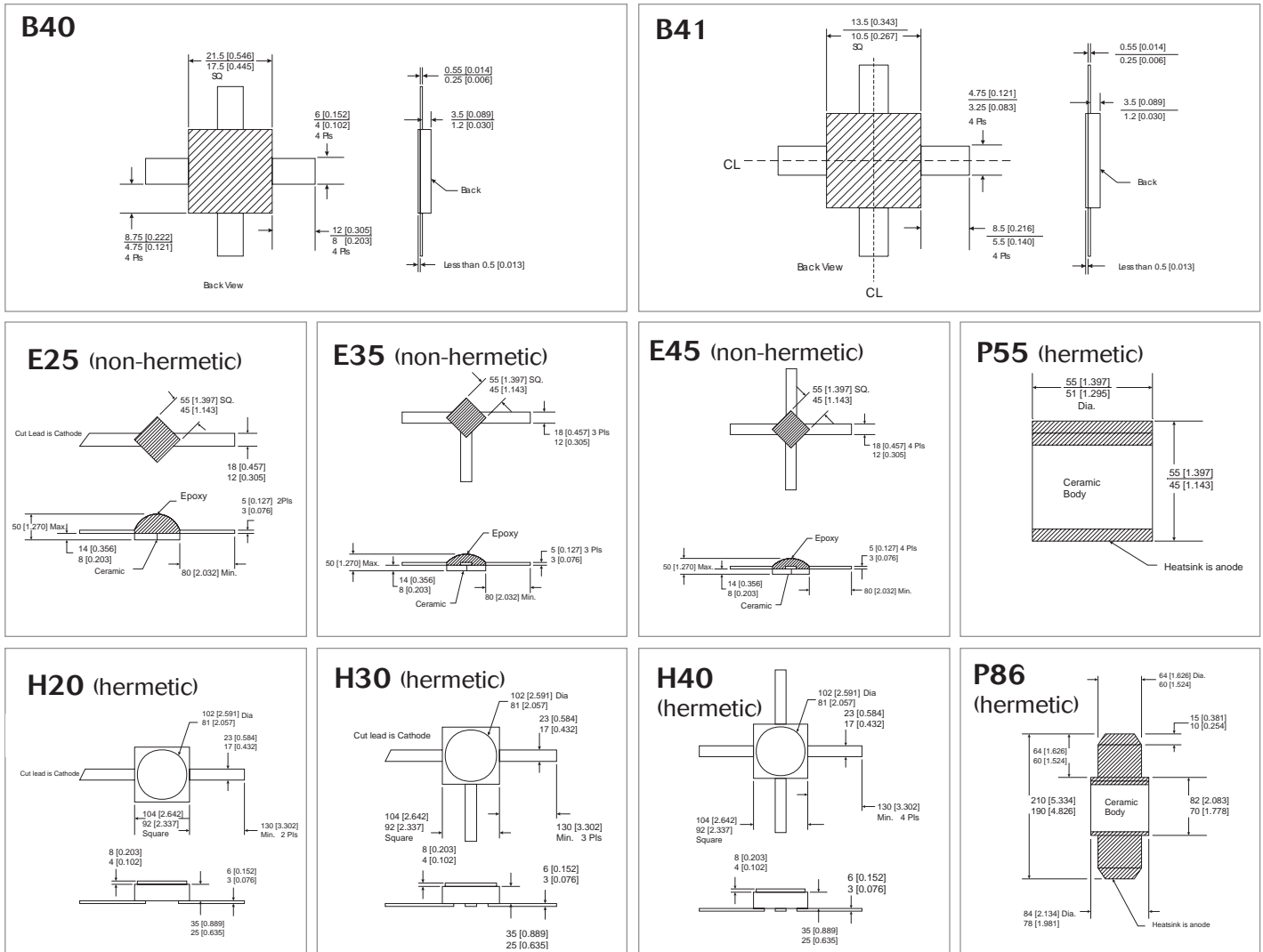
Figure 4.



Outline Drawings



Outline Drawings



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