

MSS39,000 Series P-Type Silicon Schottky Diodes



Description

The Aeroflex / Metelics MSS39,000 series of Schottky diodes is fabricated on P-Type epitaxial substrates for superior 1/f noise performance in microwave biased-detector applications up to 40 GHz.

Features

- Very low 1/f Noise
- Detector applications to 40 GHz
- Chip, beam lead or packaged devices

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, derated linearly to zero at $T_A = +150$ °C |
| Soldering Temperature (Packaged) | + 230 °C for 5 sec. |
| Beam Lead Pull Strength, Min | 4 grams |

Chip

Electrical Specifications, $T_A = 25$ °C

| Model | V_{BR} MIN V | V_F TYP V | C_J MAX pF | T_{SS} TYP dBm | γ TYP mV / mW | Frequency MAX GHz | Outline |
|--------------------|----------------------|-------------------|--------------------------|---|--------------------------------|-------------------------|---------|
| MSS39,045-C15 | 5.0 | 0.40 | 0.10 | -58 | 5,000 | 18 | C15 |
| MSS39,048-C15 | 5.0 | 0.39 | 0.15 | -58 | 5,000 | 12 | C15 |
| Test Conditions | $I_R = 10 \mu A$ | $I_F = 1 mA$ | $V_R = 0 V$ F = 1 MHz | DC Bias = 10 μA $R_L = 100 K\Omega$ | F = 10 GHz Video BW = 2 MHz | | |



Beam Lead

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

| Model | V_{BR} MIN V | V_F TYP V | C_J MAX pF | T_{ss} TYP dBm | γ TYP mV / mW | Frequency MAX GHz | Outline |
|-----------------|-------------------------------|---------------------|--|---|----------------------------|-------------------------|---------|
| MSS39,144-B10B | 3.5 | 0.38 | 0.08 | -58 | 5,000 | 40 | B10B |
| MSS39,146-B10B | 3.5 | 0.38 | 0.10 | -58 | 5,000 | 26 | B10B |
| MSS39,148-B10B | 3.5 | 0.39 | 0.12 | -58 | 5,000 | 18 | B10B |
| MSS39,152-B10B | 3.5 | 0.38 | 0.18 | -58 | 5,000 | 12 | B10B |
| Test Conditions | $I_R = 10\text{ }\mu\text{A}$ | $I_F = 1\text{ mA}$ | $V_R = 0\text{ V}$ $F = 1\text{ MHz}$ | DC Bias = $10\text{ }\mu\text{A}$ $F = 10\text{ GHz}$ $R_L = 100\text{ K}\Omega$ Video BW = 2 MHz | | | |

Packaged

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

| Model | V_{BR} MIN V | V_F TYP V | C_T MAX pF | T_{ss} TYP dBm | γ TYP mV / mW | Frequency MAX GHz | Outline |
|-----------------|-------------------------------|---------------------|--|---|----------------------------|-------------------------|---------|
| MSS39,045-P55 | 5.0 | 0.40 | 0.25 | -58 | 5000 | 18 | P55 |
| MSS39,045-P86 | 5.0 | 0.40 | 0.27 | -58 | 5000 | 18 | P86 |
| MSS39,048-P55 | 5.0 | 0.39 | 0.30 | -58 | 5000 | 12 | P55 |
| MSS39,048-P86 | 5.0 | 0.39 | 0.32 | -58 | 5000 | 12 | P86 |
| MSS39,148-E25 | 3.5 | 0.39 | 0.22 | -58 | 5000 | 18 | E25 |
| MSS39,148-H20 | 3.5 | 0.39 | 0.30 | -58 | 5000 | 12 | H20 |
| MSS39,152-E25 | 3.5 | 0.38 | 0.28 | -58 | 5000 | 12 | E25 |
| MSS39,152-H20 | 3.5 | 0.38 | 0.36 | -58 | 5000 | 18 | H20 |
| Test Conditions | $I_R = 10\text{ }\mu\text{A}$ | $I_F = 1\text{ mA}$ | $V_R = 0\text{ V}$ $F = 1\text{ MHz}$ | DC Bias = $10\text{ }\mu\text{A}$ $F = 10\text{ GHz}$ $R_L = 100\text{ K}\Omega$ Video BW = 2 MHz | | | |

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Typical Performance, $T_A = 25^\circ\text{C}$

Figure 1.

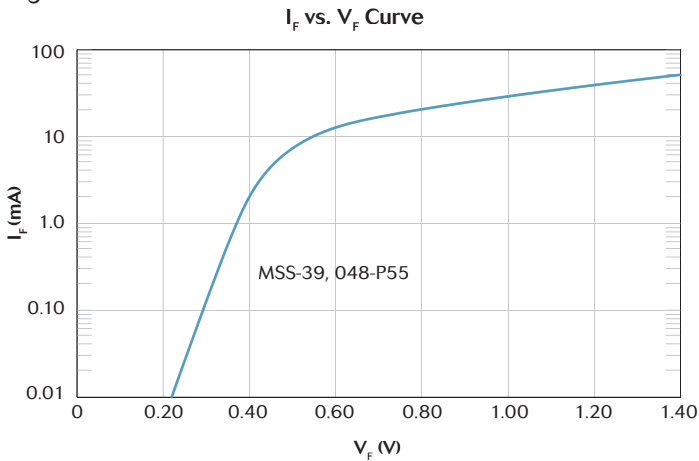


Figure 2.

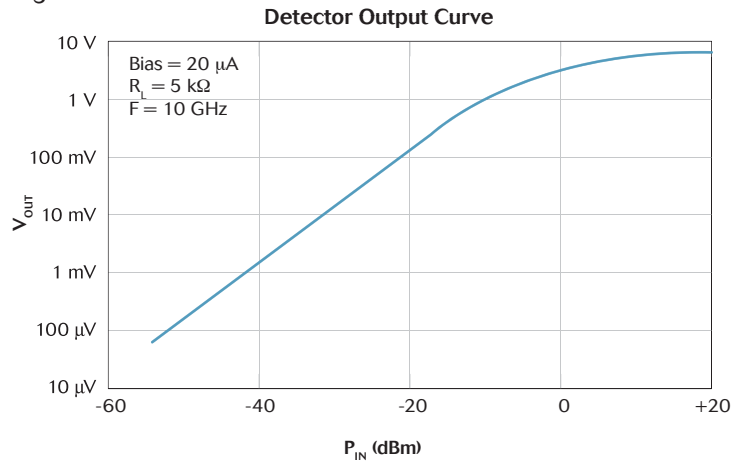
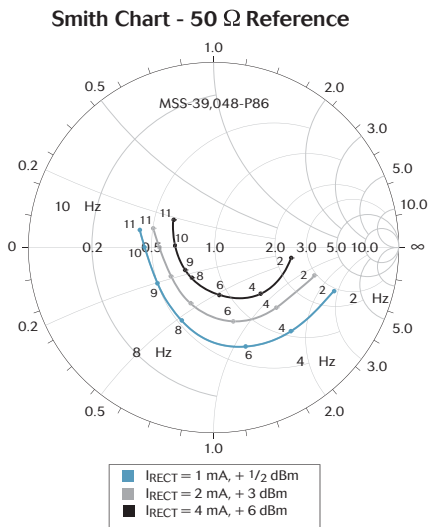
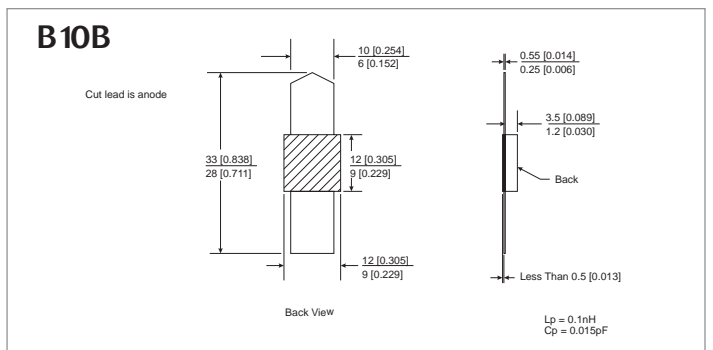
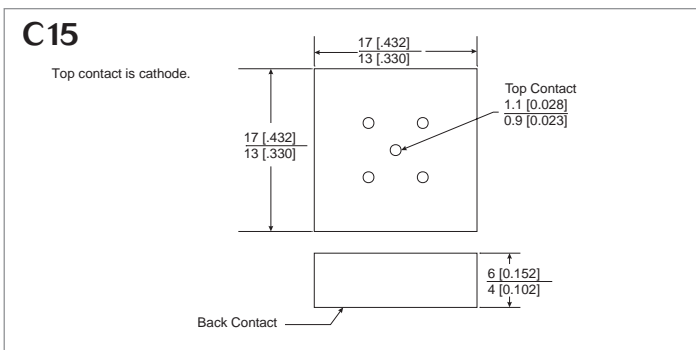


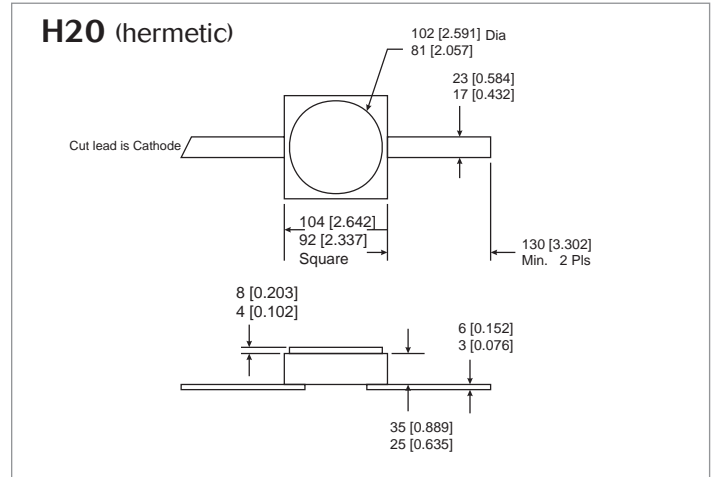
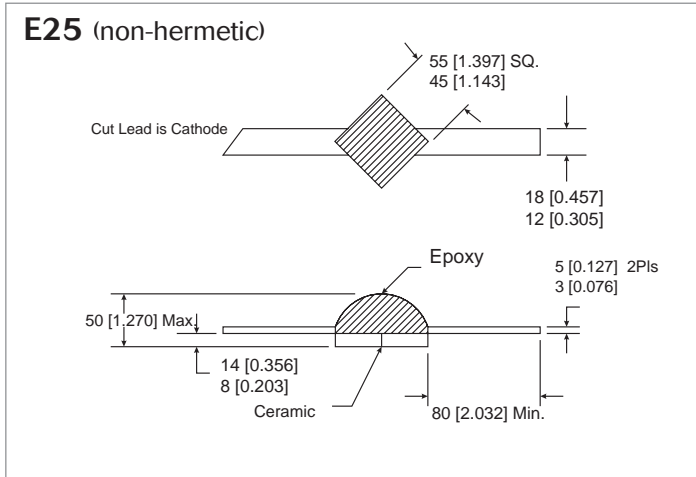
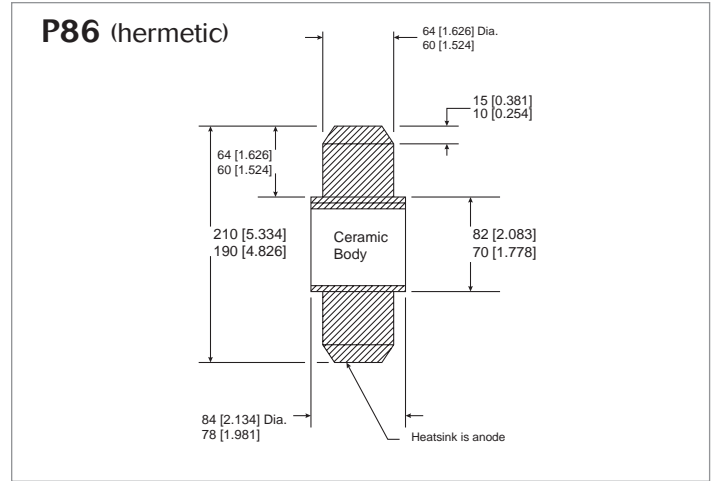
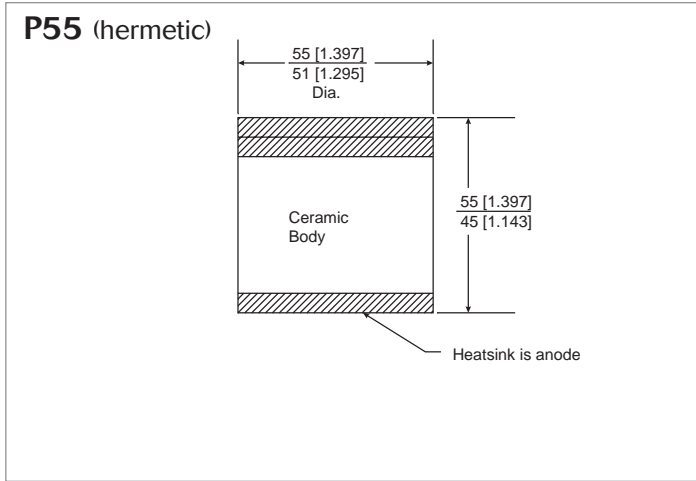
Figure 4.



Outline Drawings



Outline Drawings



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