

### 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   | $V_F$<br>Typ.<br>V   | $V_{BR}$<br>Min.<br>V  | $C_J$<br>Typ. / Max.<br>pF                 | $R_S$<br>Typ.<br>$\Omega$ | $R_D$<br>Max.<br>$\Omega$ | $F_{CO}$<br>Typ.<br>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 |                 | $I_F = 1 \text{ mA}$ | $I_R = 10 \mu\text{A}$ | $V_R = 0 \text{ V}$<br>$F = 1 \text{ MHz}$ | $I = 5 \text{ mA}$        |                           |                         |         |

### Beam Lead

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

| Model           | Configuration      | $V_F$<br>Typ.<br>V   | $V_{BR}$<br>Min.<br>V  | $C_J$<br>Typ. / Max.<br>pF                 | $R_S$<br>Typ.<br>$\Omega$ | $R_D$<br>Max.<br>$\Omega$ | $F_{CO}$<br>Typ.<br>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 |                    | $I_F = 1 \text{ mA}$ | $I_R = 10 \mu\text{A}$ | $V_R = 0 \text{ V}$<br>$F = 1 \text{ MHz}$ | $I = 5 \text{ mA}$        |                           |                         |         |

### Packaged

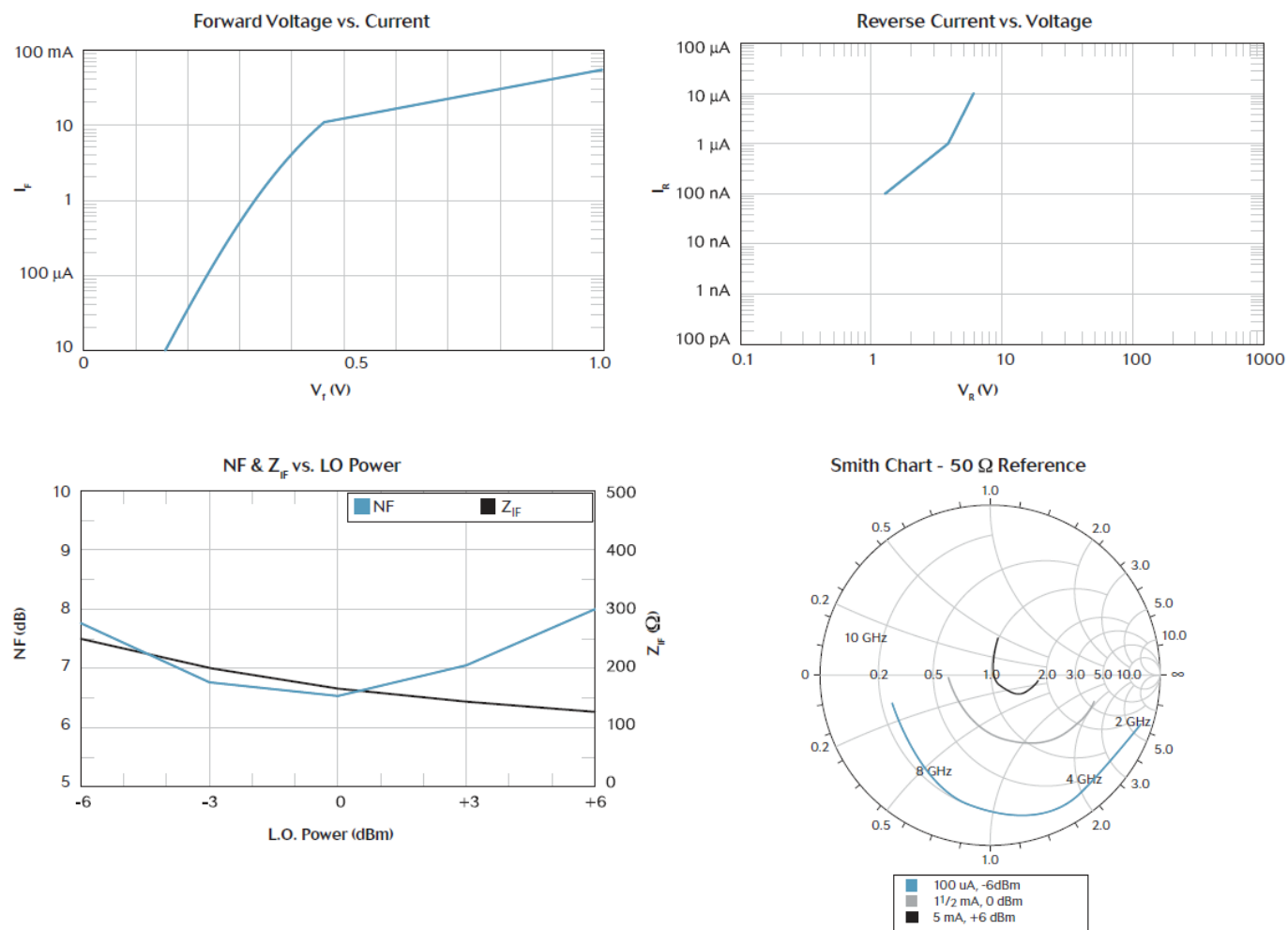
### Electrical Specifications: $T_A = 25^\circ\text{C}$

| Model           | Configuration      | $V_F$<br>Typ.<br>V  | $V_{BR}$<br>Min.<br>V         | $C_T$<br>Typ. / Max.<br>pF               | $R_S$<br>Typ.<br>$\Omega$ | $R_D$<br>Max.<br>$\Omega$ | $F_{CO}$<br>Typ.<br>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 |                    | $I_F = 1\text{ mA}$ | $I_R = 10\text{ }\mu\text{A}$ | $V_R = 0\text{ V}$<br>$F = 1\text{ MHz}$ | $I = 5\text{ mA}$         |                           |                         |         |

### Absolute Maximum Ratings

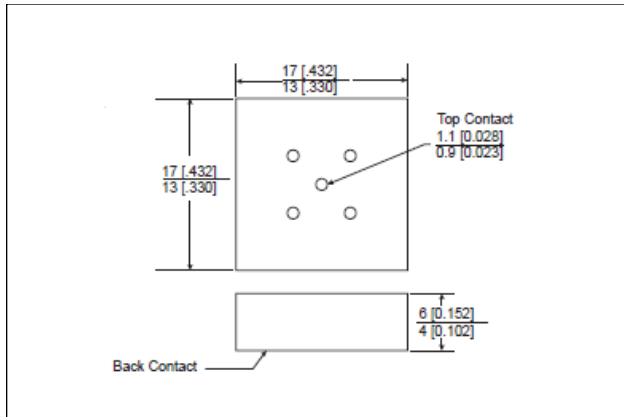
| Parameters                       | Rating                                                                                                 |
|----------------------------------|--------------------------------------------------------------------------------------------------------|
| Reverse Voltage                  | Rated $V_{BR}$                                                                                         |
| Forward Current                  | 50 mA                                                                                                  |
| Power Dissipation                | 100 mW, per junction @ $T_A = 25^\circ\text{C}$ ,<br>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: $T_A = 25^\circ\text{C}$

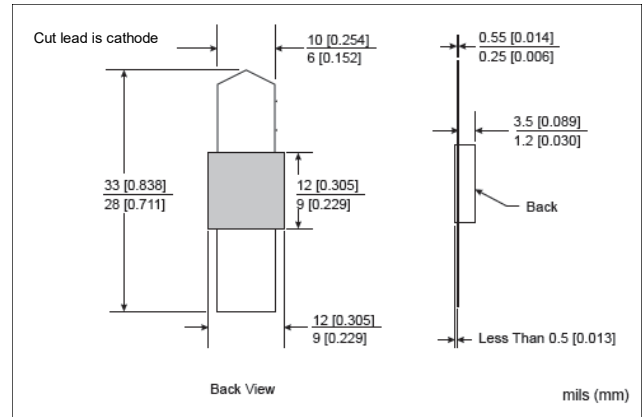


## Outline Drawings

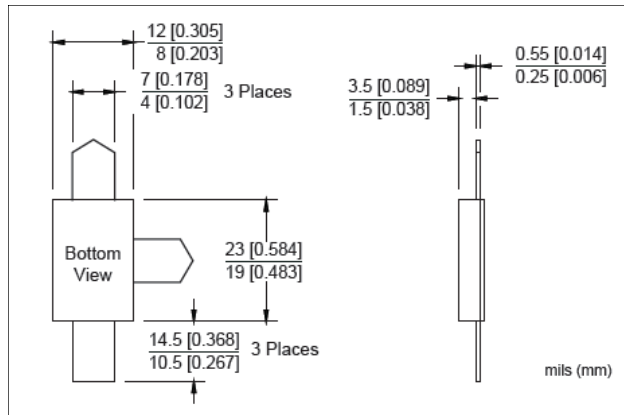
**C15**



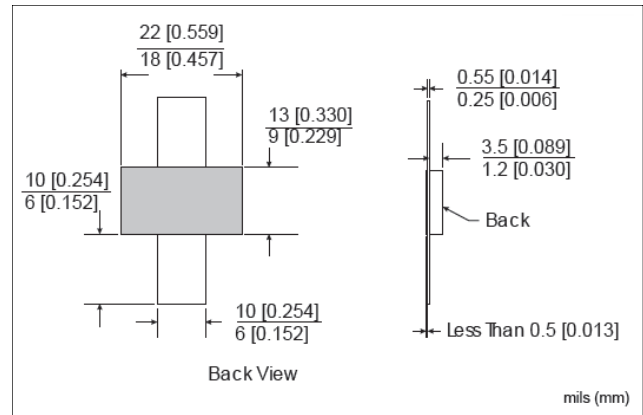
**B10B**



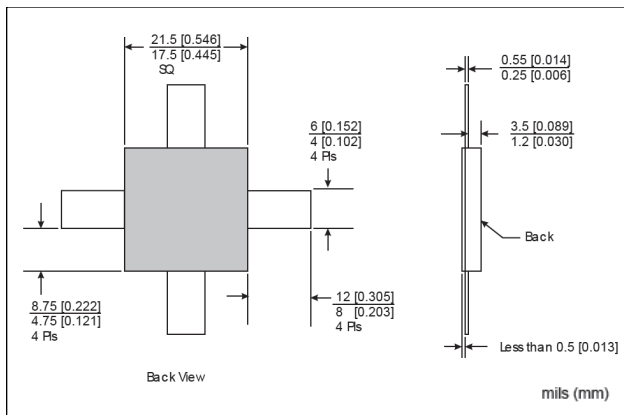
**B20**



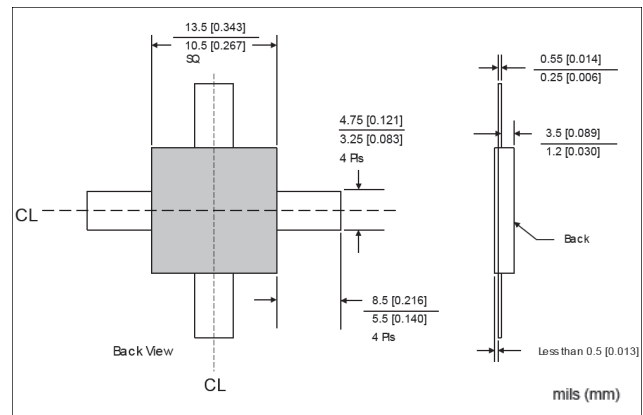
**B21**

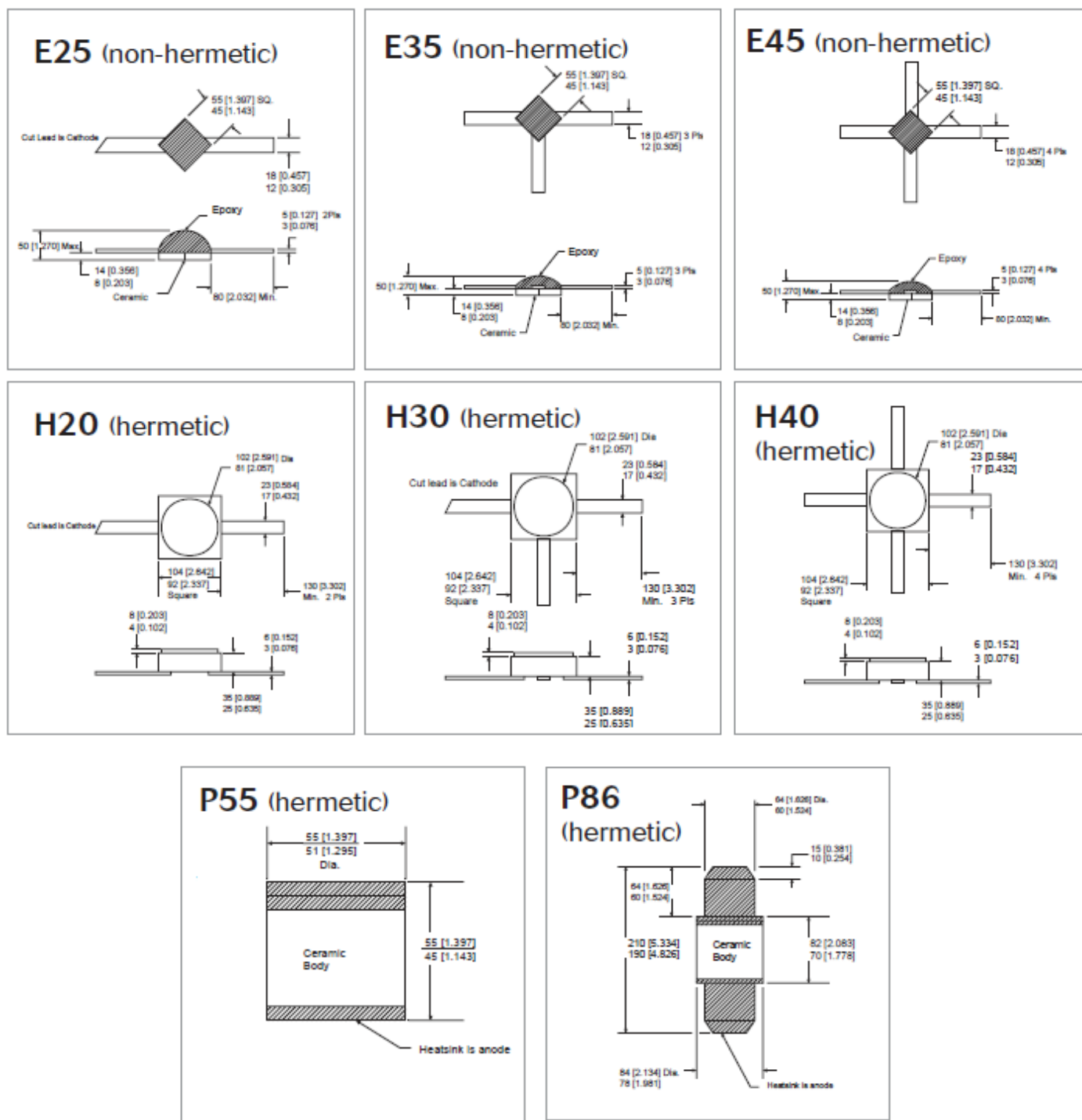


**B40**



**B41**





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