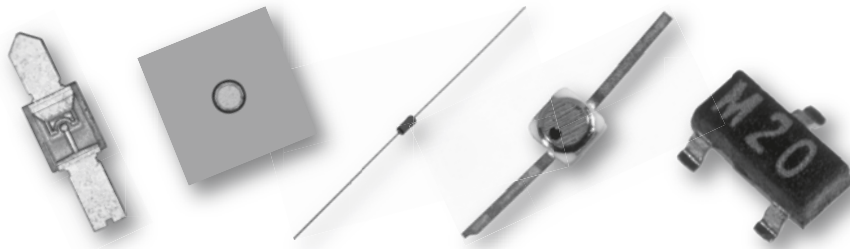


Silicon Step Recovery Diodes



Description

The diodes feature fully passivated, true mesa construction for sharp transitions and improved stability. The beam lead SRDs have the industry's fastest transition times for millimeter wave multiplication and picosecond pulse forming.

Features

- Output combs to 40+ GHz
- Transition times down to 35 ps
- Screening per MIL-PRF-19500 and MIL-PRF-38534 available

Absolute Maximum Ratings (Chip and Beam Lead)

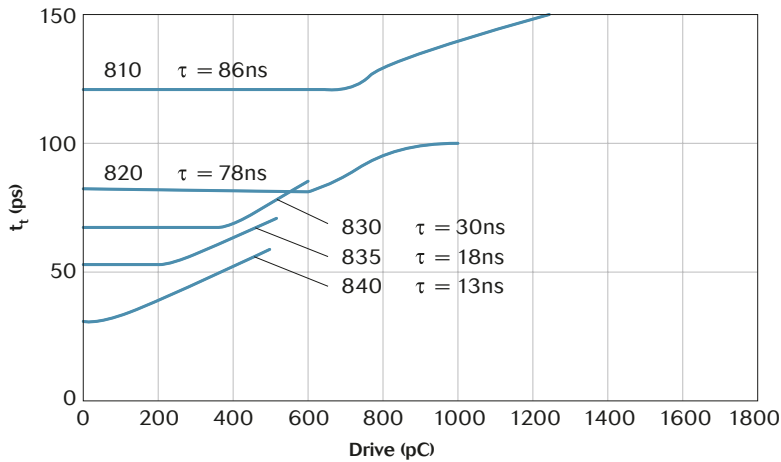
| Parameters | Rating |
|--------------------------------|--|
| Reverse Voltage | Rated V_{BR} |
| Forward Current | 50 mA (Beam Lead) 150 mA (Chip) |
| Power Dissipation | 150 °C / θ_{JC} at $T_{HSK} = +25$ °C Derate linearly to zero at $T_{HSK} = +175$ °C |
| Junction Temperature | -65 °C to +175 °C |
| Storage Temperature | -65 °C to +175 °C |
| Mounting / Bonding Temperature | +235 °C for 10 seconds (Beam Lead) +310 °C for 30 seconds (Chip) |

Chip and Beam Lead

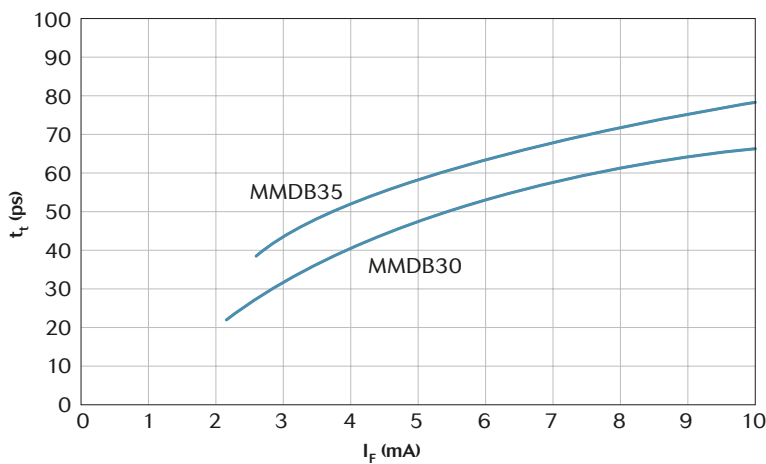
| Model | V_{BR} MIN V | C_J MIN pF | C_J MAX pF | τ MIN ns | τ TYP ns | t_t TYP ps | t_t MAX ps | F_{CO} TYP GHz | θ_{JC} MAX °C/W | Package |
|-----------------|----------------------|----------------------------|--------------------|--|---------------------|--|--------------------|-------------------------|------------------------------|---------|
| MMD830-B11 | 14 | 0.15 | 0.25 | 1.0 | 4.0 | 30 | 38 | 530 | 600 | B11 |
| MMD835-B11 | 16 | 0.13 | 0.20 | 1.0 | 4.0 | 35 | 45 | 482 | 600 | B11 |
| MMD845-B11 | 25 | 0.11 | 0.20 | 3.0 | 8.0 | 45 | 58 | 410 | 600 | B11 |
| MMD805-C12 | 60 | 2.5 | 3.5 | 80 | 100 | 250 | 300 | 130 | 15 | C12 |
| MMD810-C12 | 50 | 1.5 | 2.5 | 40 | 70 | 200 | 250 | 200 | 22 | C12 |
| MMD820-C12 | 40 | 1.0 | 1.7 | 30 | 60 | 80 | 100 | 390 | 25 | C12 |
| MMD830-C11 | 25 | 0.5 | 1.0 | 15 | 30 | 60 | 80 | 700 | 45 | C11 |
| MMD832-C11 | 20 | 0.4 | 0.8 | 10 | 15 | 60 | 80 | 660 | 50 | C11 |
| MMD835-C11 | 15 | 0.3 | 0.7 | 10 | 20 | 60 | 70 | 800 | 60 | C11 |
| MMD837-C11 | 20 | 0.2 | 0.4 | 5 | 10 | 60 | 70 | 1,300 | 60 | C11 |
| MMD840-C11 | 15 | 0.2 | 0.4 | 7 | 15 | 60 | 70 | 880 | 60 | C11 |
| Test Conditions | $I_R = 10 \mu A$ | $V_R = 6 V$ $F = 1 MHz$ | | $I_F = 10 mA$ $I_R = 6 mA$ Measured at 50% Recovery | | $I_F = 3 mA$ $V_R = 7 V$ $I_F = 10 mA$ $V_R = 10 V$ | | $F_{CO} = 1 / 2\pi R_S$ | | |



Transition Time vs. Drive



Transition Time vs. Forward Current



Absolute Maximum Ratings (Ceramic Packaged)

| Parameters | Rating |
|-----------------------|------------------------------------|
| Reverse Voltage | Rated V_{BR} |
| Forward Current | 50 mA (MMDB) 150 mA (MMD) |
| Power Dissipation | See individual detailed data sheet |
| Junction Temperature | -65 °C to +175 °C |
| Storage Temperature | -65 °C to +175 °C |
| Soldering Temperature | +260 °C peak per JEDEC J-STD-20C |

Silicon Step Recovery Diodes



Ceramic Packaged

| Model | V _{BR} MIN V | C _J MIN pF | C _J MAX pF | τ MIN ns | τ TYP ns | t _t TYP ps | t _t MAX ps | C _P TYP pF | L _P TYP pF | Package |
|------------------|-----------------------------|-----------------------------------|-----------------------------|--|----------------|--|-----------------------------|-----------------------------|-----------------------------|-----------|
| MMD805-E28 / 28X | 60 | 3.1 | 3.6 | 80 | 100 | 250 | 300 | 0.08 | 0.4 | E28 / 28X |
| MMD805-H20 | 60 | 3.2 | 3.7 | 80 | 100 | 250 | 300 | 0.18 | 0.5 | H20 |
| MMD805-T86 | 60 | 3.2 | 3.7 | 80 | 100 | 250 | 300 | 0.18 | 1.0 | T86 |
| MMD805-T89 | 60 | 3.3 | 3.8 | 80 | 100 | 250 | 300 | 0.25 | 0.4 | T89 |
| MMD805-0805-2 | 60 | 3.1 | 3.6 | 80 | 100 | 250 | 300 | 0.06 | 0.4 | 0805-2 |
| MMD810-E28 / 28X | 50 | 2.1 | 2.6 | 40 | 70 | 200 | 250 | 0.08 | 0.4 | E28 / 28X |
| MMD810-H20 | 50 | 2.2 | 2.7 | 40 | 70 | 200 | 250 | 0.18 | 0.5 | H20 |
| MMD810-T86 | 50 | 2.2 | 2.7 | 40 | 70 | 200 | 250 | 0.18 | 1.0 | T86 |
| MMD810-T89 | 50 | 2.3 | 2.8 | 40 | 70 | 200 | 250 | 0.25 | 0.4 | T89 |
| MMD820-E28 / 28X | 40 | 1.4 | 1.8 | 30 | 60 | 80 | 100 | 0.08 | 0.4 | E28 / 28X |
| MMD820-H20 | 40 | 1.5 | 1.9 | 30 | 60 | 80 | 100 | 0.18 | 0.5 | H20 |
| MMD820-T86 | 40 | 1.5 | 1.9 | 30 | 60 | 80 | 100 | 0.18 | 1.0 | T86 |
| MMD820-0805-2 | 40 | 1.4 | 1.8 | 30 | 60 | 80 | 100 | 0.06 | 0.4 | 805-2 |
| MMD830-E28 / 28X | 25 | 0.83 | 1.1 | 15 | 30 | 60 | 80 | 0.08 | 0.4 | E28 / 28X |
| MMD830-H20 | 25 | 0.93 | 1.2 | 15 | 30 | 60 | 80 | 0.18 | 0.5 | H20 |
| MMD830-T86 | 25 | 0.93 | 1.2 | 15 | 30 | 60 | 80 | 0.18 | 1.0 | T86 |
| MMD830-0805-2 | 25 | 0.81 | 1.1 | 15 | 30 | 60 | 80 | 0.06 | 0.4 | 805-2 |
| MMD832-E28 / 28X | 20 | 0.68 | 0.9 | 10 | 15 | 60 | 80 | 0.08 | 0.4 | E28 / 28X |
| MMD832-H20 | 20 | 0.78 | 1.0 | 10 | 15 | 60 | 80 | 0.18 | 0.5 | H20 |
| MMD832-T86 | 20 | 0.78 | 1.0 | 10 | 15 | 60 | 80 | 0.18 | 1.0 | T86 |
| MMD832-0805-2 | 20 | 0.66 | 0.88 | 10 | 15 | 60 | 80 | 0.06 | 0.4 | 805-2 |
| MMD835-E28 / 28X | 15 | 0.58 | 0.81 | 10 | 20 | 50 | 70 | 0.08 | 0.4 | E28 / 28X |
| MMD835-H20 | 15 | 0.62 | 0.85 | 10 | 20 | 50 | 70 | 0.12 | 0.4 | H27 |
| MMD835-T86 | 15 | 0.68 | 0.91 | 10 | 20 | 50 | 70 | 0.18 | 1.0 | T86 |
| MMD835-0805-2 | 15 | 0.56 | 0.78 | 10 | 20 | 50 | 70 | 0.06 | 0.4 | 805-2 |
| MMD837-E28 / 28X | 20 | 0.38 | 0.51 | 5 | 10 | 50 | 70 | 0.08 | 0.4 | E28 / 28X |
| MMD837-H27 | 20 | 0.42 | 0.55 | 5 | 10 | 50 | 70 | 0.12 | 0.4 | H27 |
| MMD837-T86 | 20 | 0.48 | 0.61 | 5 | 10 | 50 | 70 | 0.18 | 1.0 | T86 |
| MMD837-0805-2 | 20 | 0.36 | 0.48 | 5 | 10 | 50 | 70 | 0.06 | 0.4 | 805-2 |
| MMD840-E28 / 28X | 15 | 0.38 | 0.51 | 7 | 15 | 50 | 70 | 0.08 | 0.4 | E28 / 28X |
| MMD840-H27 | 15 | 0.42 | 0.55 | 7 | 15 | 50 | 70 | 0.12 | 0.4 | H27 |
| MMD840-T86 | 15 | 0.48 | 0.61 | 7 | 15 | 50 | 70 | 0.18 | 1.0 | T86 |
| MMD840-0805-2 | 15 | 0.36 | 0.48 | 7 | 15 | 50 | 70 | 0.06 | 0.4 | 0805-2 |
| MMDB30-E28 / 28X | 14 | 0.28 | 0.36 | 1.0 | 4.0 | 30 | 38 | 0.08 | 0.4 | E28 / 28X |
| MMDB30-0402 | 14 | 0.25 | 0.32 | 1.0 | 4.0 | 30 | 38 | 0.05 | 0.2 | 0402 |
| MMDB30-0805-2 | 14 | 0.26 | 0.33 | 1.0 | 4.0 | 30 | 38 | 0.06 | 0.4 | 0805-2 |
| MMDB35-E28 / 28X | 16 | 0.25 | 0.31 | 1.0 | 4.0 | 35 | 45 | 0.08 | 0.4 | E28 / 28X |
| MMDB35-T86 | 16 | 0.22 | 0.28 | 1.0 | 4.0 | 35 | 45 | 0.05 | 0.2 | 0402 |
| MMDB35-0805-2 | 16 | 0.23 | 0.29 | 1.0 | 4.0 | 35 | 45 | 0.06 | 0.4 | 0805-2 |
| MMDB45-E28 / 28X | 25 | 0.24 | 0.31 | 3.0 | 8.0 | 45 | 58 | 0.08 | 0.4 | E28 / 28X |
| MMDB45-T86 | 25 | 0.21 | 0.28 | 3.0 | 8.0 | 45 | 58 | 0.05 | 0.2 | 0402 |
| MMDB45-0805-2 | 25 | 0.22 | 0.29 | 3.0 | 8.0 | 45 | 58 | 0.06 | 0.4 | 0805-2 |
| Test Conditions | I _R = 10 μA | V _R = 6 V F = 1 MHz | | I _F = 10 mA I _R = 6 mA Measured at 50% Recovery | | I _F = 10 mA V _R = 10 V I _F = 3 mA V _R = 7 V | | F = 1 MHz | | |

Absolute Maximum Ratings (Glass Packaged)

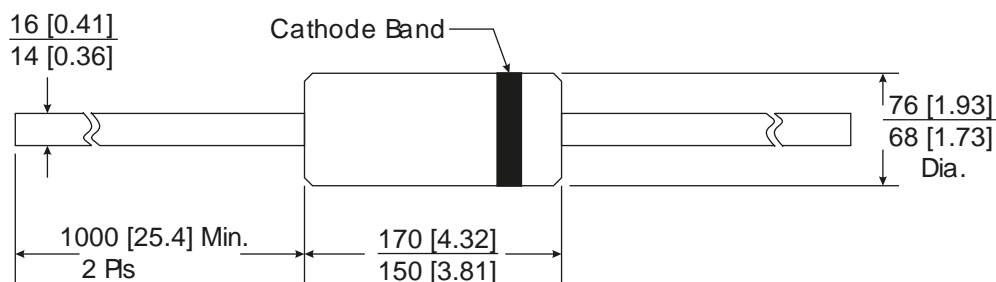
| Parameters | Rating |
|--------------------------------------|------------------------|
| Reverse Voltage | Rated V_{BR} |
| Forward Current | 100 mA |
| Thermal Resistance, Junction to Case | 600 °C / W |
| Junction Temperature | -65 °C to +200 °C |
| Storage Temperature | -65 °C to +200 °C |
| Soldering Temperature | +230 °C for 10 seconds |

Glass Packaged

| Model | V_{BR} MIN V | C_J MAX pF | C_T TYP pF | τ MIN ns | τ TYP ns | t_t TYP ps | t_t MAX ps | C_p TYP pF | L_p TYP nH | Package |
|-----------------|----------------------|--|--------------------|--|---------------------|---|--------------------|--------------------|--------------------|---------|
| MMD0151 | 15 | 0.65 | 0.55 | 10 | 15 | 100 | --- | 0.15 | 2.5 | A15 |
| MMD0153 | 25 | 0.40 | 0.40 | 10 | 15 | 95 | --- | 0.15 | 2.5 | A15 |
| MMD0803 | 70 | 6.0 | 4.0 | 200 | 250 | 275 | 400 | 0.15 | 2.5 | A15 |
| MMD0815 | 50 | 4.0 | 3.0 | 100 | 135 | 180 | 320 | 0.15 | 2.5 | A15 |
| MMD0825 | 45 | 2.0 | 1.0 | 30 | 50 | 130 | 160 | 0.15 | 2.5 | A15 |
| MMD0833 | 25 | 1.6 | 1.65 | 10 | 15 | 90 | --- | 0.15 | 2.5 | A15 |
| MMD0840 | 15 | 0.60 | 0.60 | 10 | 20 | 75 | --- | 0.15 | 2.5 | A15 |
| Test Conditions | $I_R = 10 \mu A$ | $V_R = 6 V$ $V_R = 10 V$ $F = 1 MHz$ | | $I_F = 10 mA$ $I_R = 6 mA$ Measured at 50% Recovery | | $I_F = 10 mA$ $V_R = 10 V$ Chip data, package limited to 100 ps | | $F = 1 MHz$ | | |

Outline Drawing

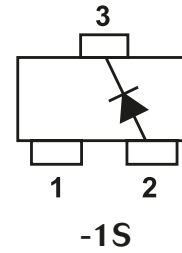
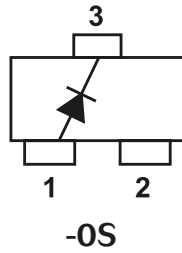
A15



Silicon Step Recovery Diodes



Configuration Code



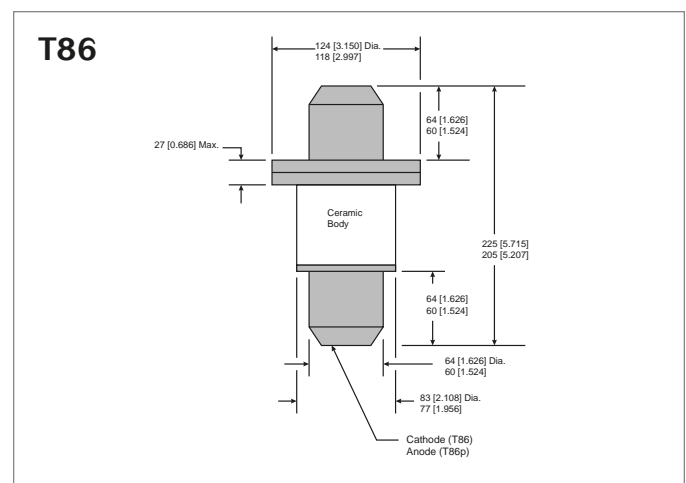
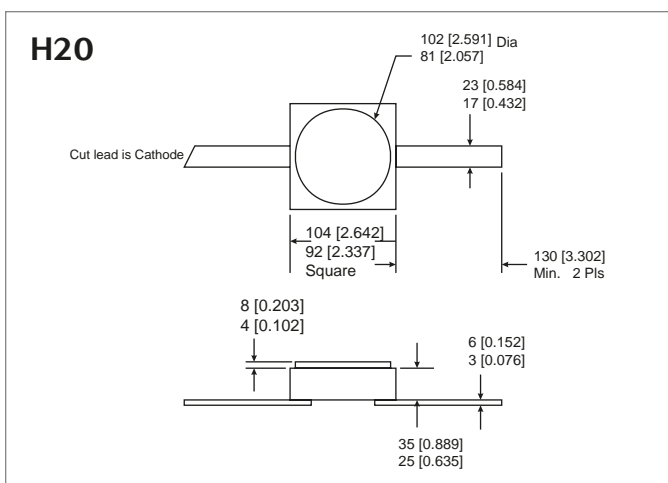
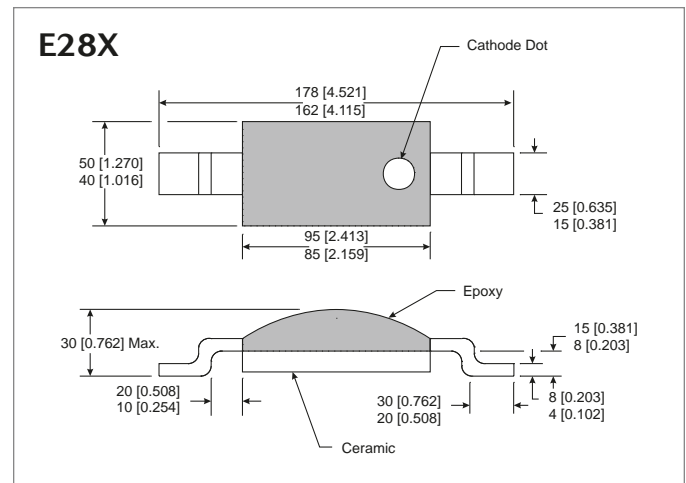
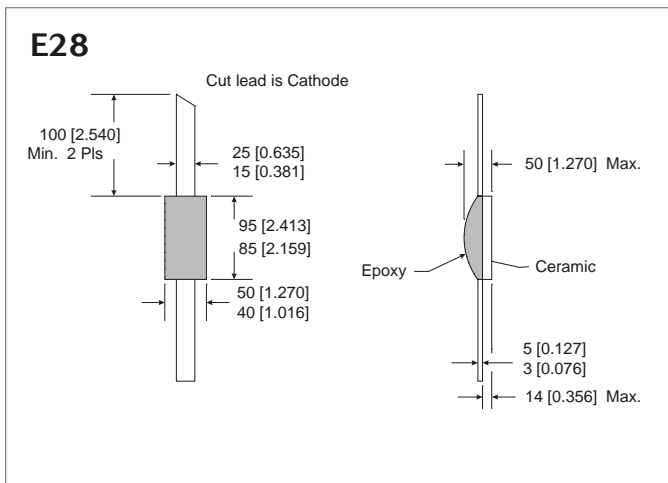
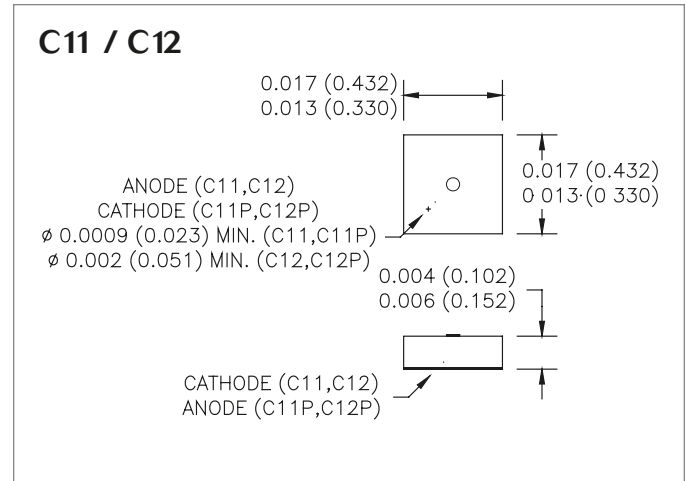
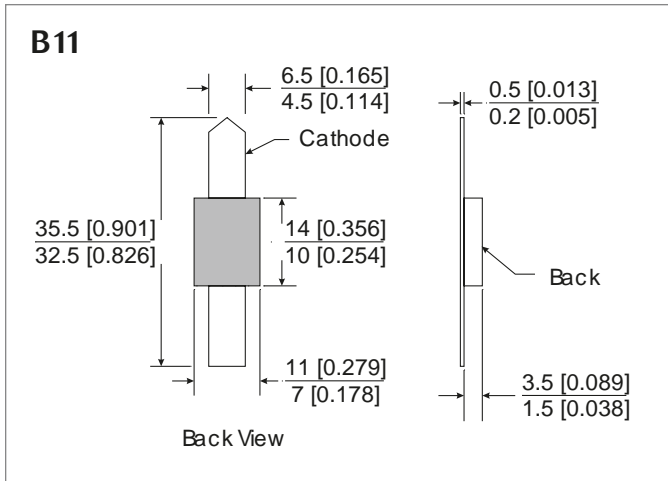
Absolute Maximum Ratings (Plastic Packaged)

| Parameters | Rating |
|-----------------------|---|
| Reverse Voltage | Rated V_{BR} |
| Forward Current | 100 mA |
| Power Dissipation | 250 mW, Derate linearly to zero at $T_A = +150\text{ }^\circ\text{C}$ |
| Operating Temperature | $-65\text{ }^\circ\text{C}$ to $+150\text{ }^\circ\text{C}$ |
| Storage Temperature | $-65\text{ }^\circ\text{C}$ to $+150\text{ }^\circ\text{C}$ |
| Soldering Temperature | $+260\text{ }^\circ\text{C}$ peak per JEDEC J-STD-20C |

Plastic Packaged

| Model | Configuration | V_{BR} | C_J | C_J | τ | τ | t_t | t_t | Package |
|-----------------|---------------|-------------------------------|--|-----------|--|-----------|---|-----------|---------|
| | | MIN V | MIN pF | MAX pF | MIN ns | TYP ns | TYP ps | MAX ps | |
| SMMD805-SOT23 | -0S, 1S | 60 | 2.5 | 3.5 | 80 | 100 | 250 | 300 | SOT23 |
| SMMD810-SOT23 | -0S, 1S | 50 | 1.5 | 2.5 | 40 | 70 | 200 | 250 | SOT23 |
| SMMD820-SOT23 | -0S, 1S | 40 | 1.0 | 1.7 | 30 | 60 | 110 | 125 | SOT23 |
| SMMD830-SOT23 | -0S, 1S | 25 | 0.5 | 1.0 | 15 | 30 | 90 | 110 | SOT23 |
| SMMD832-SOT23 | -0S, 1S | 20 | 0.4 | 0.8 | 10 | 20 | 85 | 100 | SOT23 |
| SMMD835-SOT23 | -0S, 1S | 20 | 0.3 | 0.7 | 10 | 15 | 80 | 100 | SOT23 |
| SMMD837-SOT23 | -0S, 1S | 20 | 0.2 | 0.4 | 5 | 12 | 75 | 90 | SOT23 |
| SMMD840-SOT23 | -0S, 1S | 15 | 0.2 | 0.4 | 5 | 10 | 70 | 90 | SOT23 |
| SMMD805-SOD323 | --- | 60 | 2.5 | 3.5 | 80 | 100 | 250 | 300 | SOD323 |
| SMMD810-SOD323 | --- | 50 | 1.5 | 2.5 | 40 | 70 | 200 | 250 | SOD323 |
| SMMD820-SOD323 | --- | 40 | 1.0 | 1.7 | 30 | 60 | 110 | 125 | SOD323 |
| SMMD830-SOD323 | --- | 25 | 0.5 | 1.0 | 15 | 30 | 90 | 110 | SOD323 |
| SMMD832-SOD323 | --- | 20 | 0.4 | 0.8 | 10 | 20 | 85 | 100 | SOD323 |
| SMMD835-SOD323 | --- | 20 | 0.3 | 0.7 | 10 | 15 | 80 | 100 | SOD323 |
| SMMD837-SOD323 | --- | 20 | 0.2 | 0.4 | 5 | 12 | 75 | 90 | SOD323 |
| SMMD840-SOD323 | --- | 15 | 0.2 | 0.4 | 5 | 10 | 70 | 90 | SOD323 |
| Test Conditions | | $I_R = 10\text{ }\mu\text{A}$ | $V_R = 6\text{ V}$ $F = 1\text{ MHz}$ | | $I_F = 10\text{ mA}$ $I_R = 6\text{ mA}$ Measured at 50% Recovery | | $I_F = 10\text{ mA}$ $V_R = 10\text{ V}$ | | |

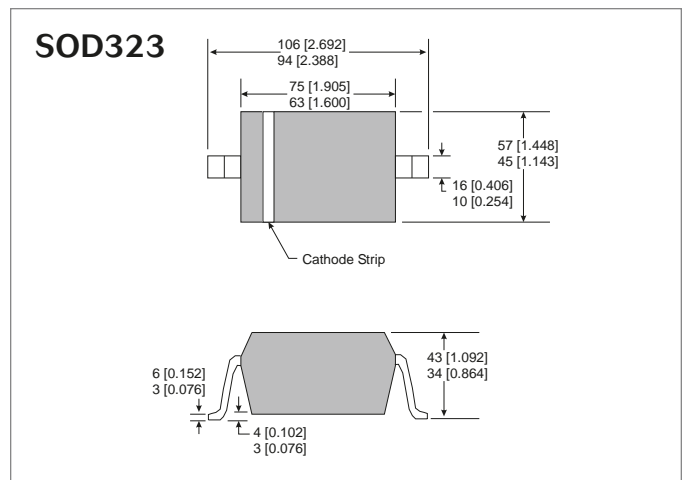
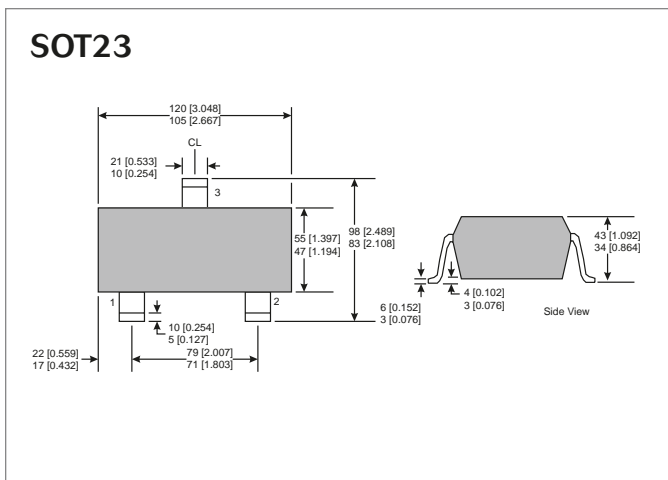
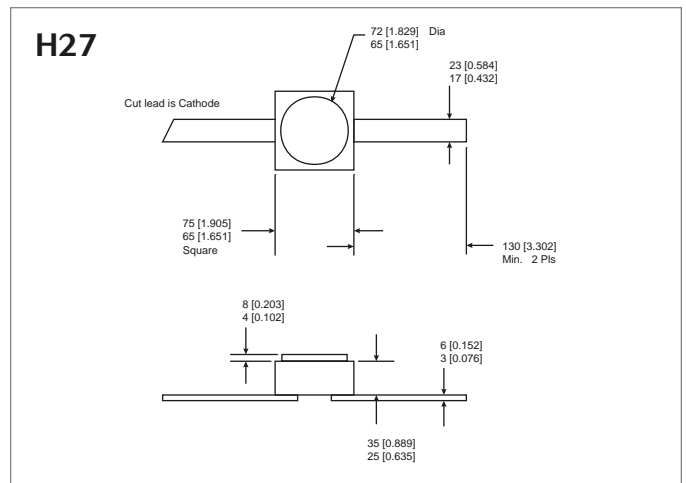
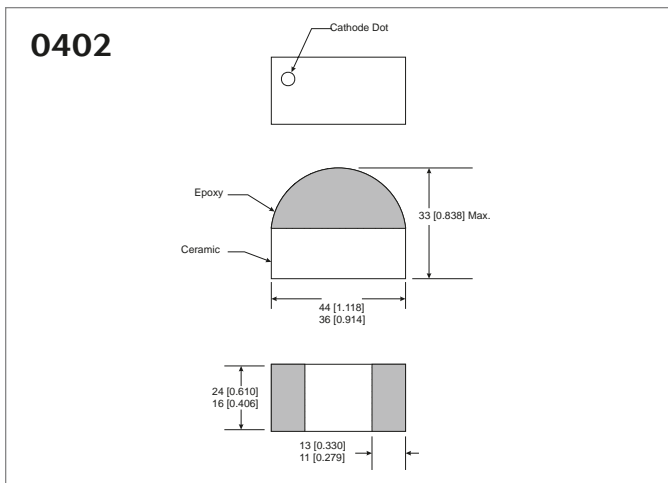
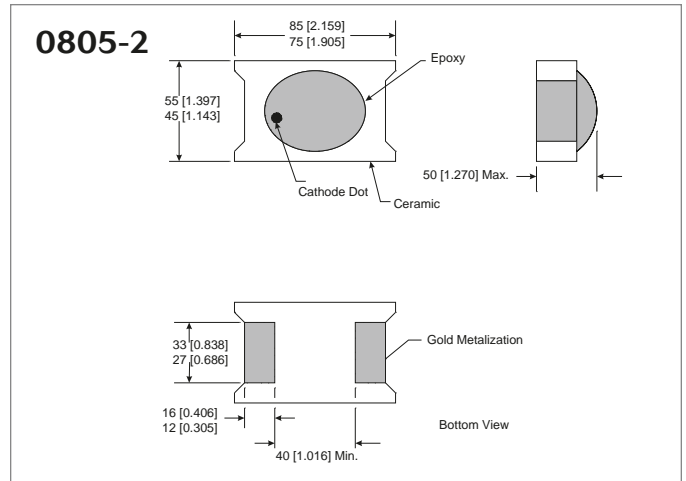
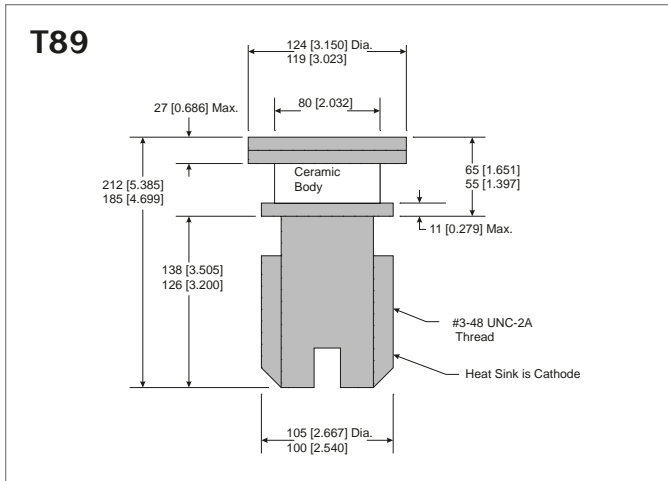
Outline Drawings



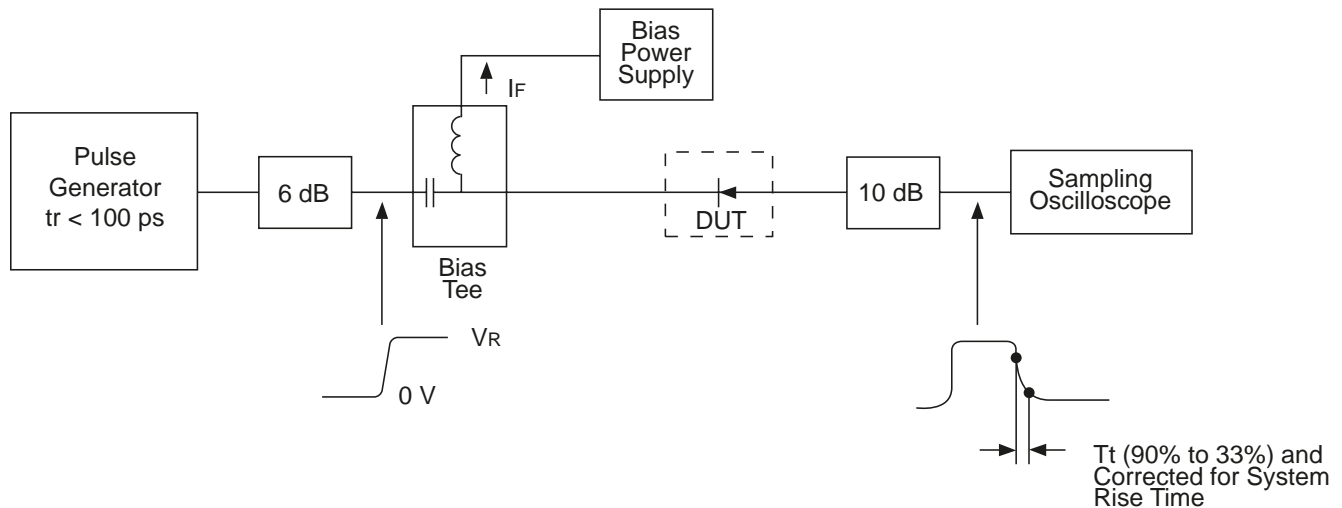
Silicon Step Recovery Diodes



Outline Drawings



Transition Time Test Circuit



Aeroflex / Metelics

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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.