

Very Low Forward Voltage Trench-based Schottky Rectifier

NRVTS2H60ESF, NRVTSM260EV2

Features

- Fine Lithography Trench-based Schottky Technology for Very Low Forward Voltage and Low Leakage
- Fast Switching with Exceptional Temperature Stability
- Low Power Loss and Lower Operating Temperature
- Higher Efficiency for Achieving Regulatory Compliance
- Low Thermal Resistance
- High Surge Capability
- NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

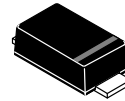
Mechanical Characteristics:

- Case: Molded Epoxy
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 11.7 mg (Approximately)
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Maximum for 10 Seconds
- MSL 1

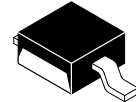
Typical Applications

- Switching Power Supplies including Compact Adapters and Flat Panel Display
- High Frequency and DC-DC Converters
- Freewheeling and OR-ing diodes
- Reverse Battery Protection
- Instrumentation

TRENCH SCHOTTKY RECTIFIER 2.0 AMPERES 60 VOLTS

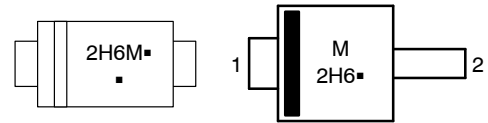


SOD-123FL
CASE 498



POWERMITE
CASE 457

MARKING DIAGRAMS



2H6 = Specific Device Code
M = Date Code
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

| Device | Package | Shipping [†] |
|-----------------|------------------------|-------------------------|
| NRVTS2H60ESFT1G | SOD-123FL (Pb-Free) | 3,000 / Tape & Reel |
| NRVTS2H60ESFT3G | SOD-123FL (Pb-Free) | 10,000 / Tape & Reel |
| NRVTSM260EV2T1G | Powermite (Pb-Free) | 3,000 / Tape & Reel |
| NRVTSM260EV2T3G | Powermite (Pb-Free) | 12,000 / Tape & Reel |

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

NRVTS2H60ESF, NRVTSM260EV2

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 60 | V |
| Average Rectified Forward Current ($T_L = 125^\circ\text{C}$) | I_O | 2.0 | A |
| Peak Repetitive Forward Current (Square Wave, 20 kHz, $T_L = 139^\circ\text{C}$) | I_{FRM} | 4.0 | A |
| Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | I_{FSM} | 50 | A |
| Storage and Operating Junction Temperature Range (Note 1) | T_{stg}, T_J | -65 to +175 | $^\circ\text{C}$ |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

- The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------|--------------------|
| SOD-123FL | | | |
| Thermal Resistance, Junction-to-Lead (Note 2) | Ψ_{JCL} | 24.4 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 85 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 3) | $R_{\theta JA}$ | 330 | $^\circ\text{C/W}$ |

POWERMITE

| | | | |
|--|-----------------|-----|--------------------|
| Thermal Resistance, Junction-to-Lead (Note 2) | Ψ_{JCL} | 8.6 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 80 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 3) | $R_{\theta JA}$ | 237 | $^\circ\text{C/W}$ |

ELECTRICAL CHARACTERISTICS

| Characteristic | Symbol | Value | Unit |
|--|--------|------------------------------|---------------------|
| Maximum Instantaneous Forward Voltage (Note 4) ($I_F = 1.0\text{ A}, T_J = 25^\circ\text{C}$) ($I_F = 2.0\text{ A}, T_J = 25^\circ\text{C}$) ($I_F = 1.0\text{ A}, T_J = 125^\circ\text{C}$) ($I_F = 2.0\text{ A}, T_J = 125^\circ\text{C}$) | V_F | 0.55 0.65 0.47 0.58 | V |
| Maximum Instantaneous Reverse Current (Note 4) (Rated dc Voltage, $T_J = 25^\circ\text{C}$) (Rated dc Voltage, $T_J = 125^\circ\text{C}$) | I_R | 12 3 | μA mA |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

- Mounted with 700 mm² copper pad size (Approximately 1 in²) 1 oz FR4 Board.
- Mounted with pad size approximately 20 mm² copper, 1 oz FR4 Board.
- Pulse Test: Pulse Width $\leq 380\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

TYPICAL CHARACTERISTICS

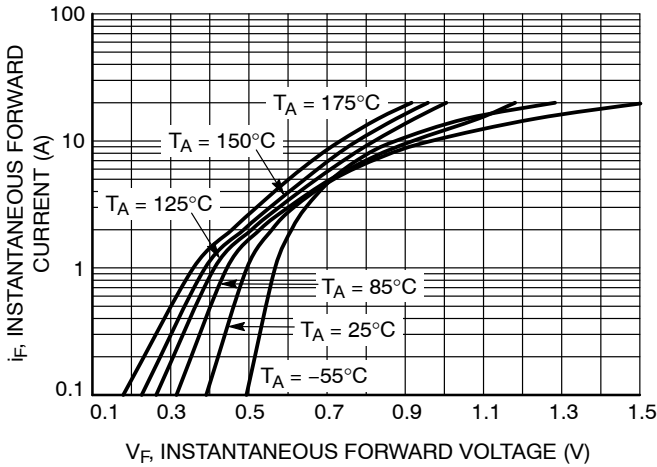


Figure 1. Typical Instantaneous Forward Characteristics

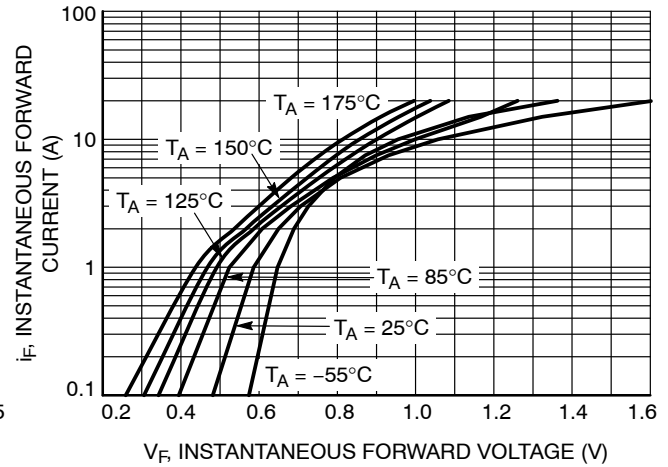


Figure 2. Maximum Instantaneous Forward Characteristics

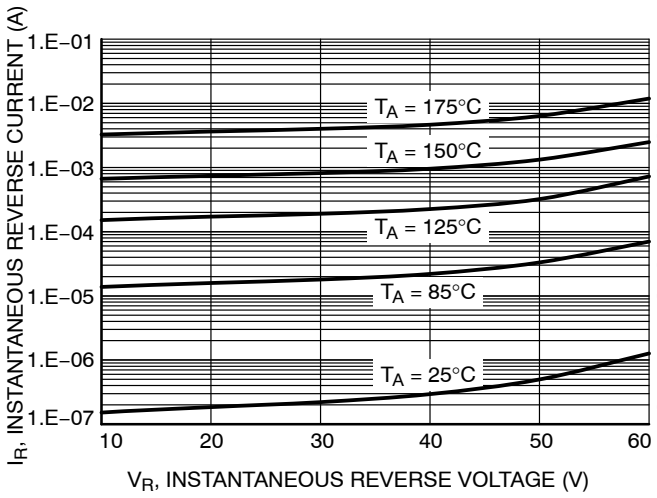


Figure 3. Typical Reverse Characteristics

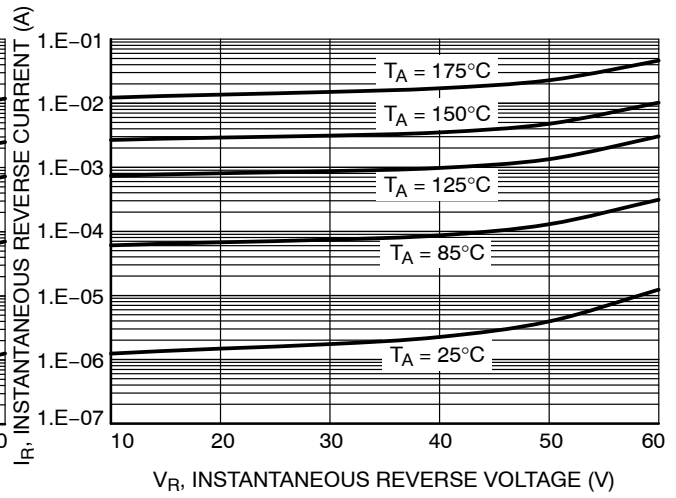


Figure 4. Maximum Reverse Characteristics

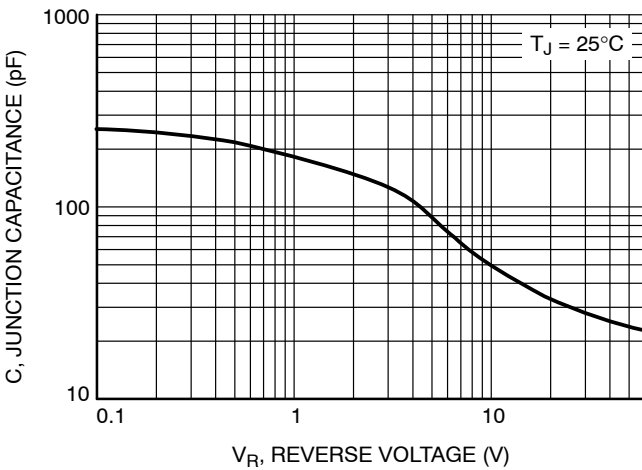


Figure 5. Typical Junction Capacitance

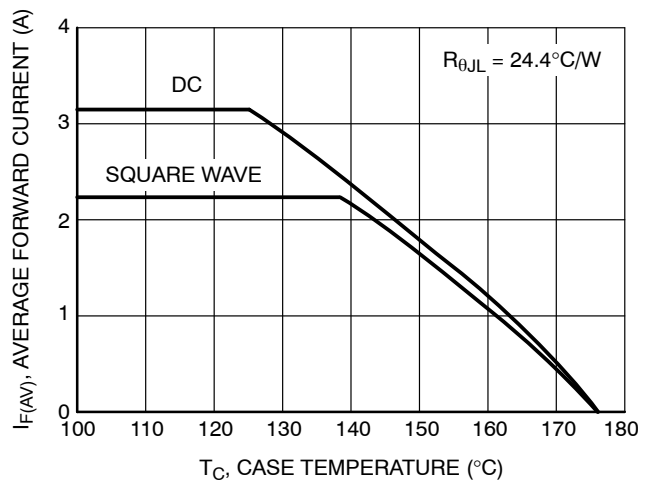


Figure 6. Current Derating

NRVTS2H60ESF, NRVTSM260EV2

TYPICAL CHARACTERISTICS

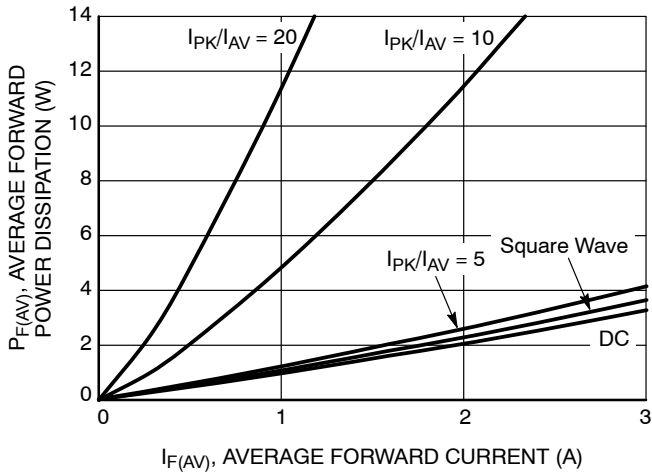


Figure 7. Forward Power Dissipation

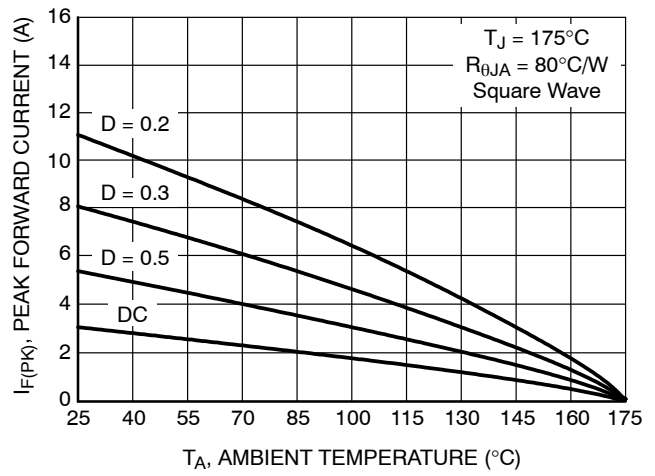


Figure 8. Forward Current Derating of Ambient Temperature

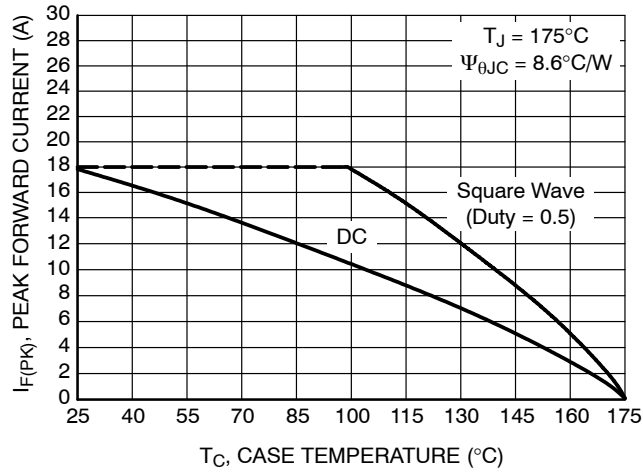


Figure 9. Forward Current Derating of Case Temperature

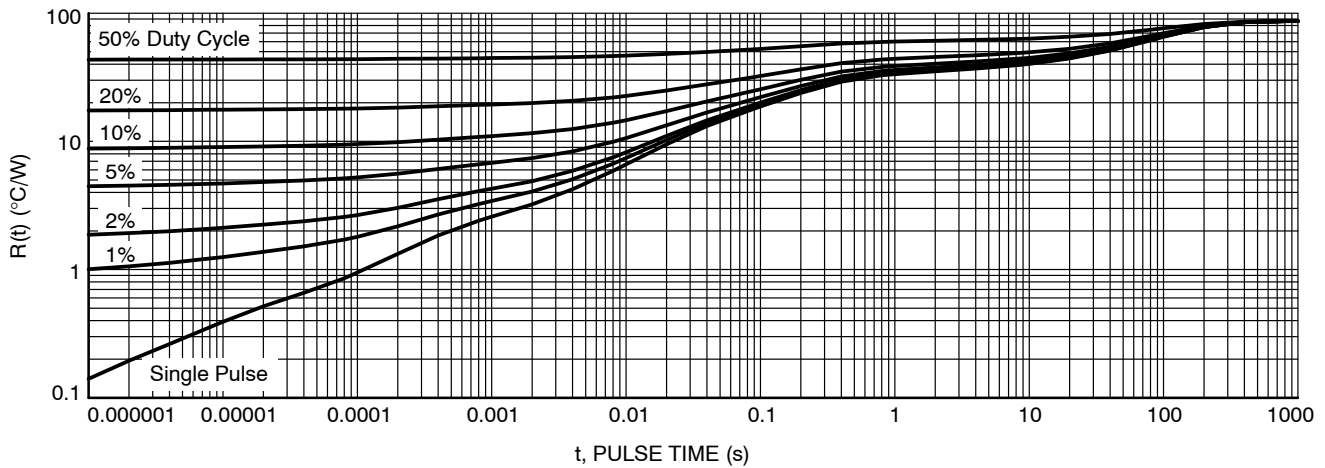
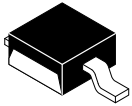


Figure 10. Thermal Characteristics

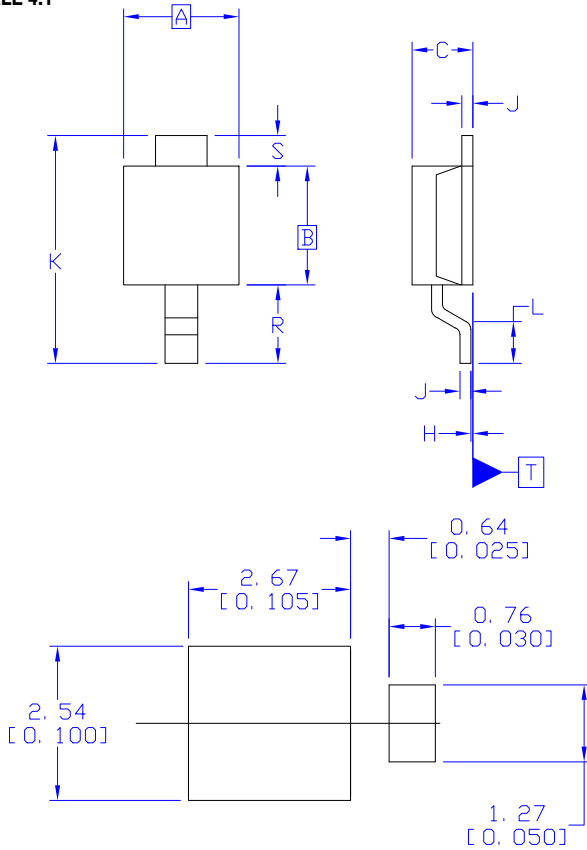
MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



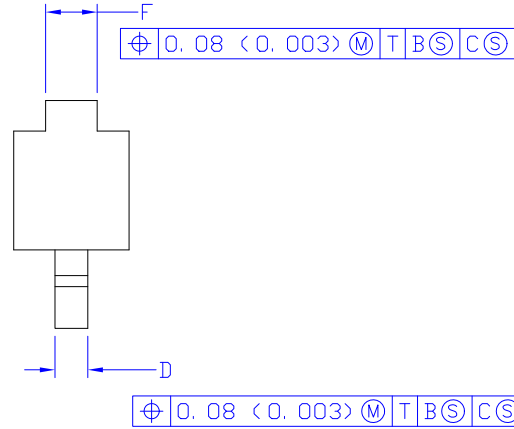
SCALE 4:1

POWERMITE CASE 457 ISSUE G

DATE 12 JAN 2022

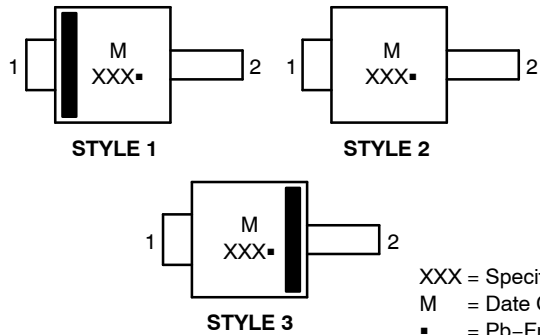


RECOMMENDED
MOUNTING FOOTPRINT



| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|------|-----------|-------|
| | MIN. | MAX. | MIN. | MAX. |
| A | 1.75 | 2.05 | 0.069 | 0.081 |
| B | 1.75 | 2.18 | 0.069 | 0.086 |
| C | 0.85 | 1.15 | 0.033 | 0.045 |
| D | 0.40 | 0.69 | 0.016 | 0.027 |
| F | 0.70 | 1.00 | 0.028 | 0.039 |
| H | -0.05 | 0.10 | -0.002 | 0.004 |
| J | 0.10 | 0.25 | 0.004 | 0.010 |
| K | 3.60 | 3.90 | 0.142 | 0.154 |
| L | 0.50 | 0.80 | 0.020 | 0.031 |
| R | 1.20 | 1.50 | 0.047 | 0.059 |
| S | 0.50 REF | | 0.019 REF | |

GENERIC MARKING DIAGRAMS*



XXX = Specific Device Code
M = Date Code
■ = Pb-Free Package

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30mm FROM THE TERMINAL TIP.

| | | |
|--|--|--|
| STYLE 1: PIN 1. CATHODE 2. ANODE | STYLE 2: PIN 1. ANODE OR CATHODE 2. CATHODE OR ANODE (BI-DIRECTIONAL) | STYLE 3: PIN 1. ANODE 2. CATHODE |
|--|--|--|

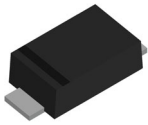
*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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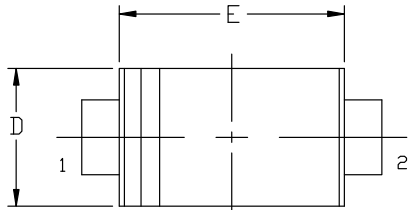
MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

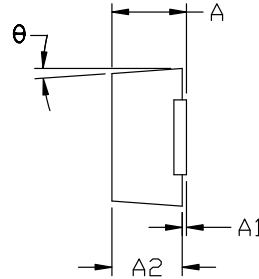


SOD-123-2 1.65x2.70x0.90
CASE 498
ISSUE E

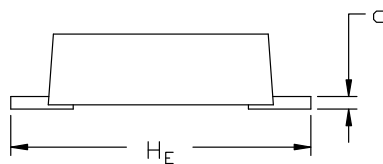
DATE 22 AUG 2023



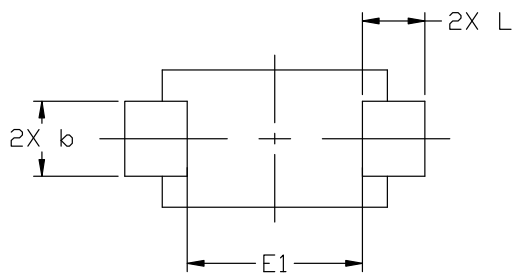
TOP VIEW



END VIEW

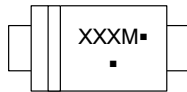


SIDE VIEW



BOTTOM VIEW

GENERIC MARKING DIAGRAM*



XXX = Specific Device Code
 M = Date Code
 ■ = Pb-Free Package

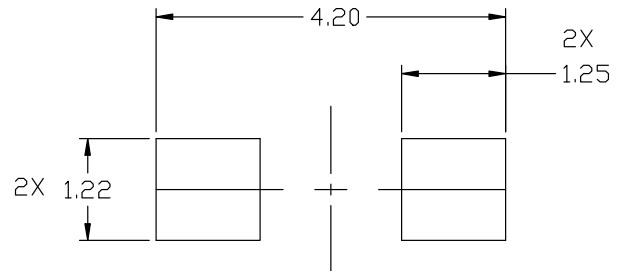
(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "■", may or may not be present. Some products may not follow the Generic Marking.

| DIM | MILLIMETERS | | |
|----------------|-------------|------|------|
| | MIN. | NDM. | MAX. |
| A | 0.90 | 0.95 | 0.98 |
| A1 | 0.00 | 0.05 | 0.10 |
| A2 | 0.85 | 0.90 | 0.95 |
| b | 0.70 | 0.90 | 1.10 |
| c | 0.10 | 0.15 | 0.20 |
| D | 1.50 | 1.65 | 1.80 |
| E | 2.50 | 2.70 | 2.90 |
| E1 | 1.70 | 2.10 | 2.50 |
| H _E | 3.40 | 3.60 | 3.80 |
| L | 0.55 | 0.75 | 0.95 |
| θ | 0° | --- | 8° |

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS b AND L ARE TO BE MEASURED ON A FLAT SECTION OF THE LEAD BETWEEN 0.10 AND 0.25 FROM THE LEAD TIP.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH PROTRUSIONS, OR GATE BURRS.
5. FLAT LEAD.



RECOMMENDED MOUNTING FOOTPRINT

* For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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-  Alternative Solution
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