



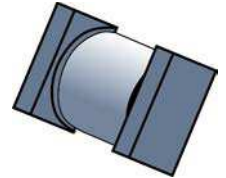
3 Amp SQ-MELF Schottky Barrier Rectifiers

Qualified per MIL-PRF-19500/620

Qualified Levels:*
JAN, JANTX,
JANTXV and JANS

DESCRIPTION

This series of 3 amp Schottky rectifiers are compact in their square MELF packaging for high density mounting. The 1N5822US and 1N6864US are military qualified for high-reliability applications.



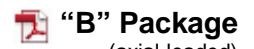
“B” SQ-MELF (D-5B) Package

Important: For the latest information, visit our website <http://www.microsemi.com>.

FEATURES

- JEDEC registered surface mount equivalents of 1N5820 – 1N5822 and 1N6864 numbers.
- Hermetically sealed.
- Metallurgically bonded.
- Double plug construction.
- *JAN, JANTX, JANTXV and JANS qualifications are available per MIL-PRF-19500/620 for 1N6822US and 1N6864US only.
(See [Part Nomenclature](#) for all available options.)
- RoHS compliant devices available (commercial grade only on the 1N6822US and 1N6864US).

Also available in:



“B” Package
(axial-leaded)

[1N5820 – 1N5822, 1N6864](#)

APPLICATIONS / BENEFITS

- Small size for high density mounting (see package illustration).
- Non-sensitive to ESD per MIL-STD-750 method 1020.

MAXIMUM RATINGS @ T_A = +25 °C unless otherwise noted.

| Parameters/Test Conditions | Symbol | Value | Unit |
|--|-------------------|-------------|-----------|
| Junction Temperature | T _J | -65 to +125 | °C |
| Storage Temperature | T _{STG} | -65 to +150 | °C |
| Thermal Resistance Junction-to-End Cap | R _{θJEC} | 10 | °C/W |
| Surge Peak Forward Current @ T _A = +25 °C (Test pulse = 8.3 ms, half-sine wave.) | I _{FSM} | 80 | A (pk) |
| Average Rectified Output Current @ T _{EC} = +55 °C ⁽¹⁾ | I _O | 3 | A |

NOTES: 1. See [Figures 3 and 4](#) for derating curves and for effects of V_R on T_J. The maximum T_J depends on the voltage applied.

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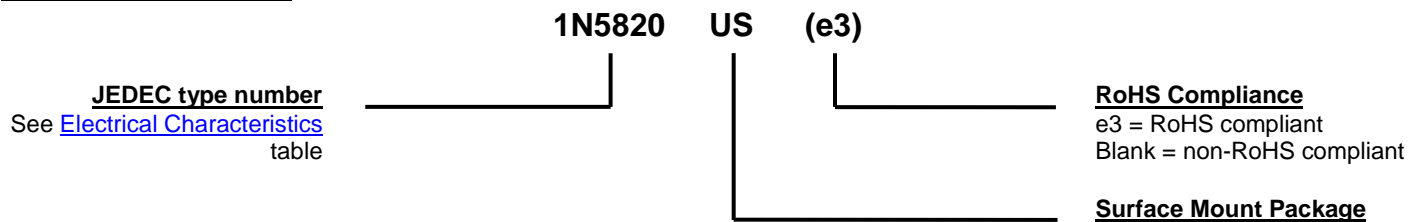
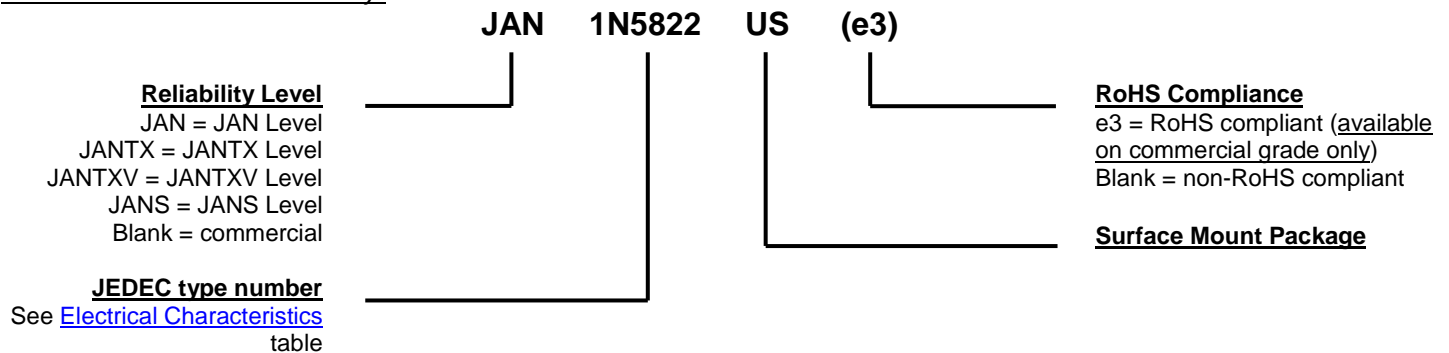
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MECHANICAL and PACKAGING

- CASE: Voidless hermetically sealed hard glass.
- TERMINALS: Tin-lead plate with >3% lead. Solder dip is available upon request. RoHS compliant matte-tin is available on commercial levels (no JAN levels).
- MARKING: Body painted and alpha numeric.
- POLARITY: Cathode indicated by band.
- Tape & Reel option: Standard per EIA-481-1-A with 12 mm tape. Consult factory for quantities.
- See [Package Dimensions](#) on last page.

PART NOMENCLATURE
1N5820US – 1N5821US

1N5822US and 1N6864US only:

SYMBOLS & DEFINITIONS

| Symbol | Definition |
|-----------|--|
| C_T | Capacitance: The capacitance in pF at a frequency of 1 MHz and specified voltage. |
| f | frequency |
| I_R | Maximum Reverse Current: The maximum reverse (leakage) current that will flow at the specified voltage and temperature. |
| I_O | Average Rectified Output Current: The output current averaged over a full cycle with a 50 Hz or 60 Hz sine-wave input and a 180 degree conduction angle. |
| V_F | Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current. |
| V_R | Reverse Voltage: The dc voltage applied in the reverse direction below the breakdown region. |
| V_{RWM} | Working Peak Reverse Voltage: The maximum peak voltage that can be applied over the operating temperature range. |

ELECTRICAL CHARACTERISTICS @ 25 °C unless otherwise noted.

| TYPE NUMBER | WORKING PEAK REVERSE VOLTAGE | MAXIMUM FORWARD VOLTAGE V_{FM1} | MAXIMUM FORWARD VOLTAGE V_{FM2} | MAXIMUM FORWARD VOLTAGE V_{FM3} | MAXIMUM REVERSE LEAKAGE CURRENT I_{RM} @ V_{RM} | |
|----------------|---------------------------------------|--|--|--|---|-----------------|
| | V_{RWM} | $I_{FM} = 1.0$ A | $I_{FM} = 3.0$ A | $I_{FM} = 9.4$ A | $T_J = +25$ °C | $T_J = +100$ °C |
| | V (pk) | Volts | Volts | Volts | mA | mA |
| 1N5820US | 20 | 0.40 | 0.50 | 0.70 | 0.10 @ 20 V | 12.5 @ 20 V |
| 1N5821US | 30 | 0.40 | 0.50 | 0.70 | 0.10 @ 30 V | 12.5 @ 30 V |
| 1N5822US | 40 | 0.40 | 0.50 | 0.70 | 0.10 @ 40 V | 12.5 @ 40 V |
| 1N6864US | 80 | 0.50 | 0.70 | N/A | 0.15 @ 80 V | 18.0 @ 80 V |

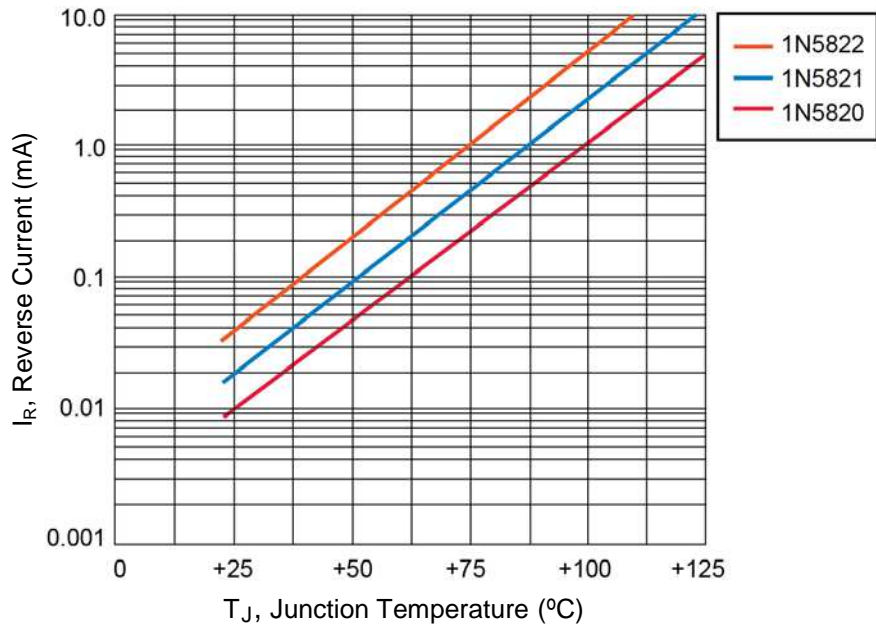
GRAPHS


FIGURE 1
Typical Reverse Leakage Current at Rated PIV (PULSED)

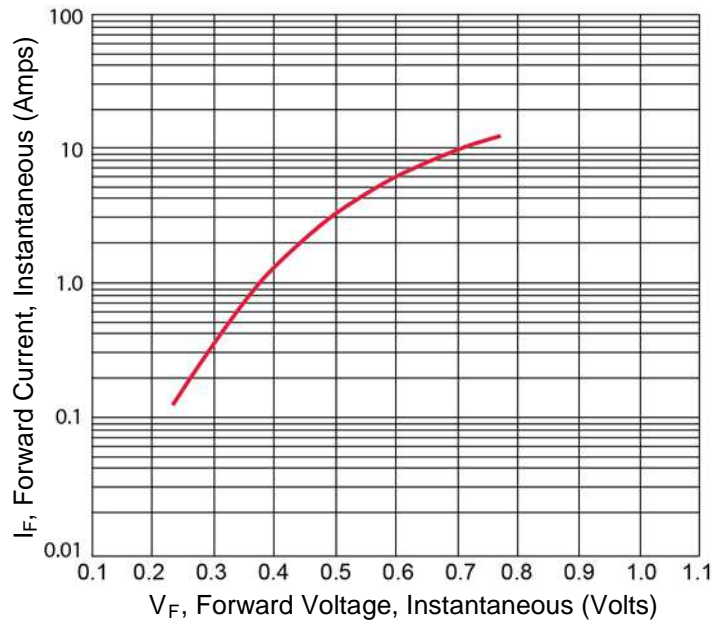


FIGURE 2
Typical Forward Voltage

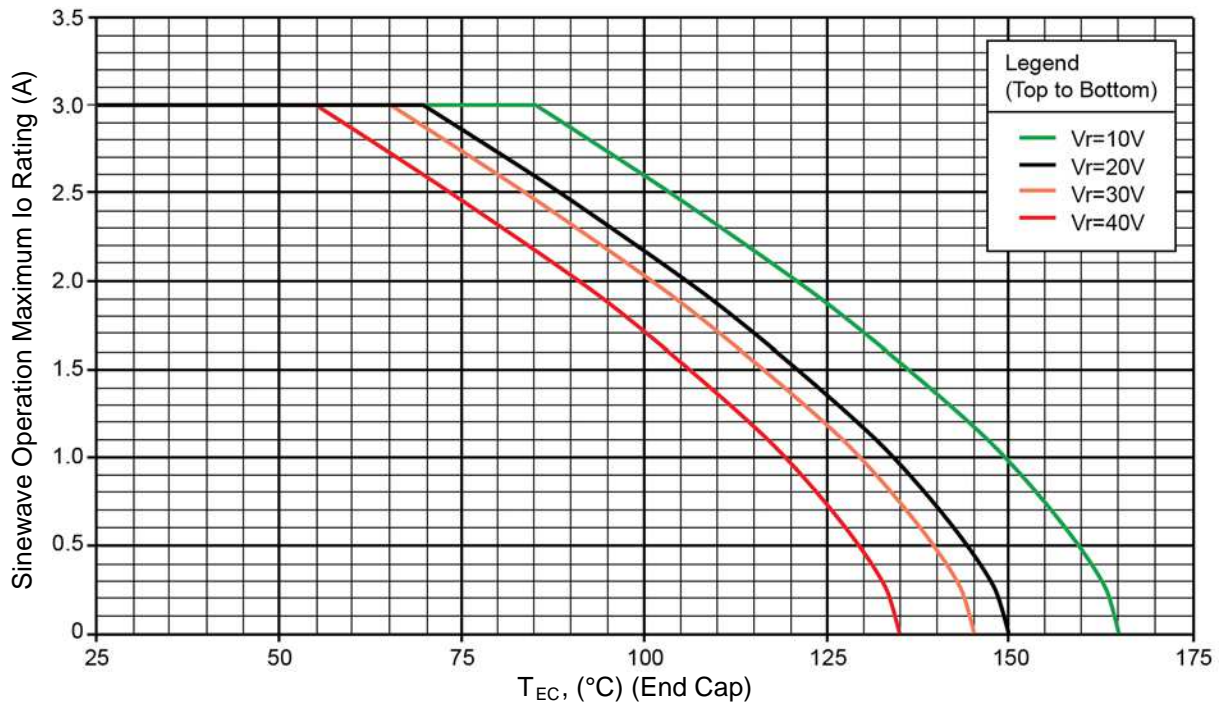
GRAPHS (continued)


FIGURE 3
Temperature Current Derating For 1N5822US

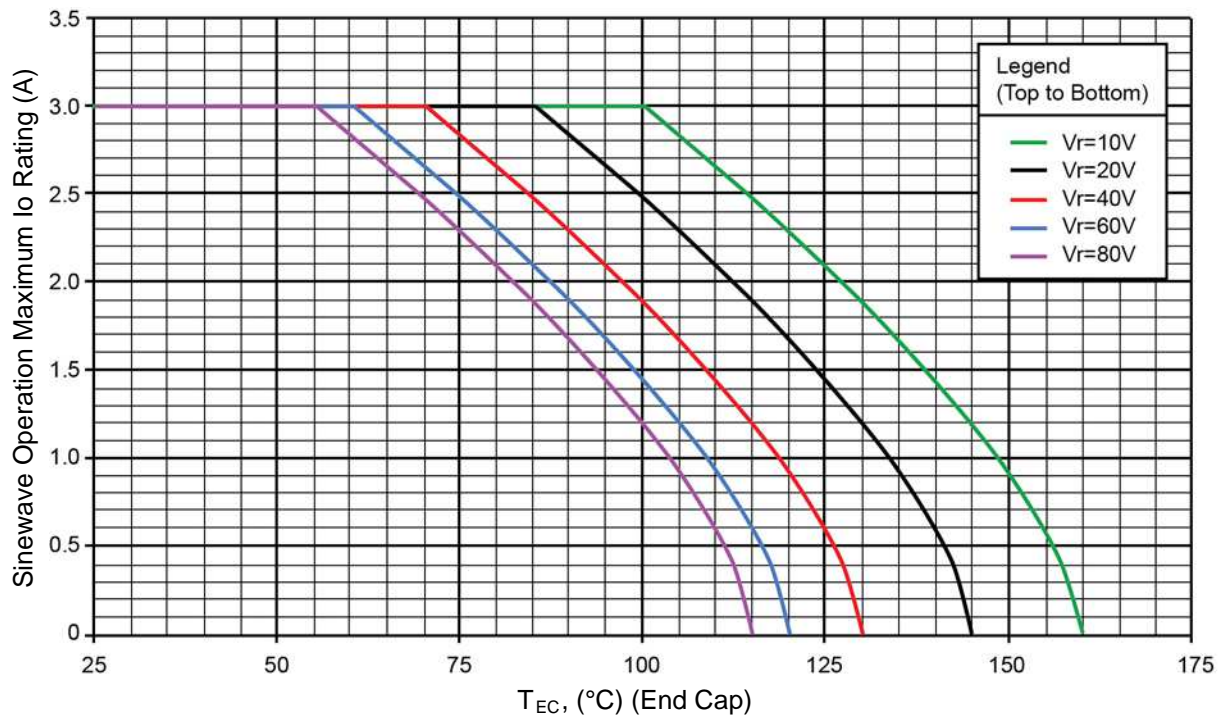


FIGURE 4
Temperature Current Derating For 1N6864US

GRAPHS (continued)

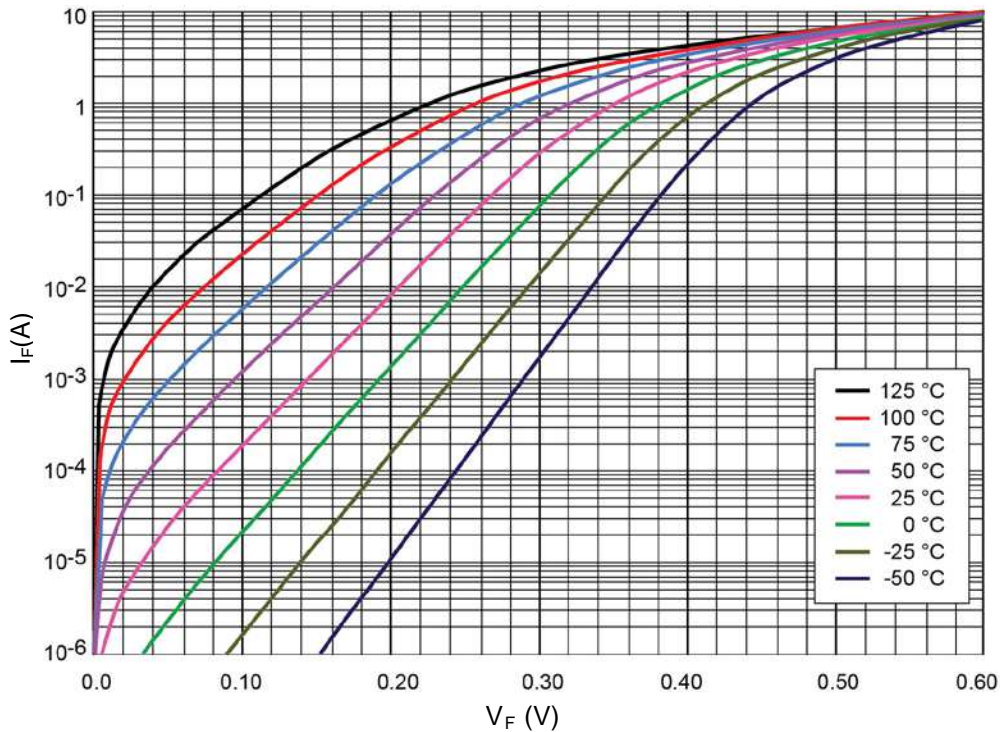


FIGURE 5
Schottky $V_F - I_F$ Characteristics (Typical 1N5822US)

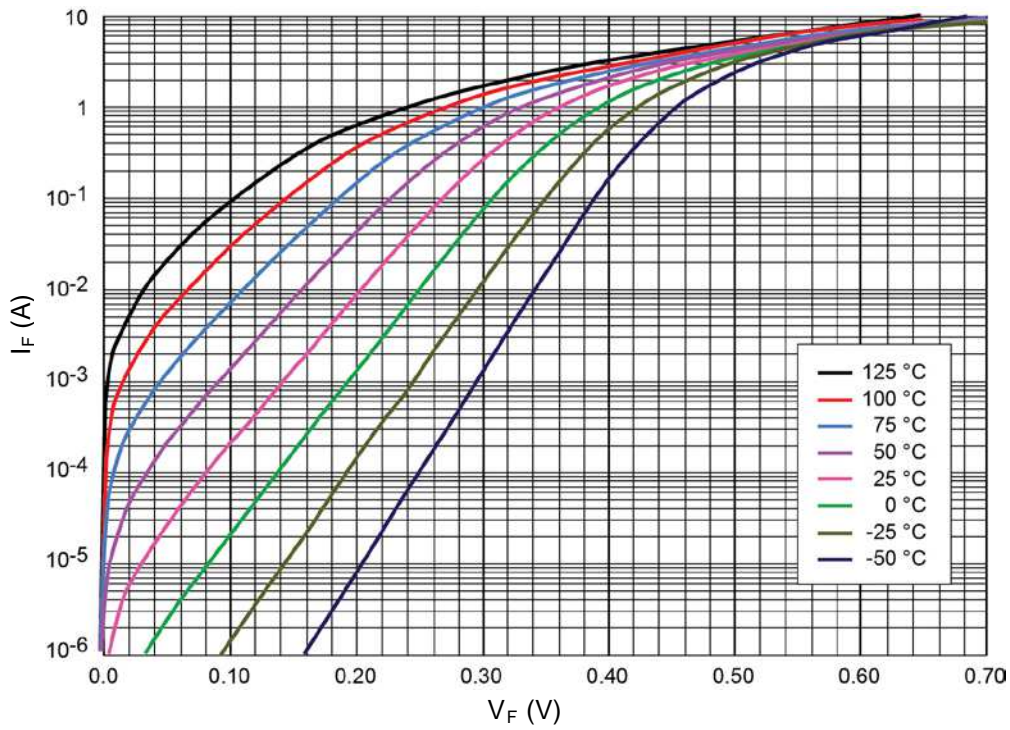


FIGURE 6
Schottky $V_F - I_F$ Characteristics (Typical 1N6864US)

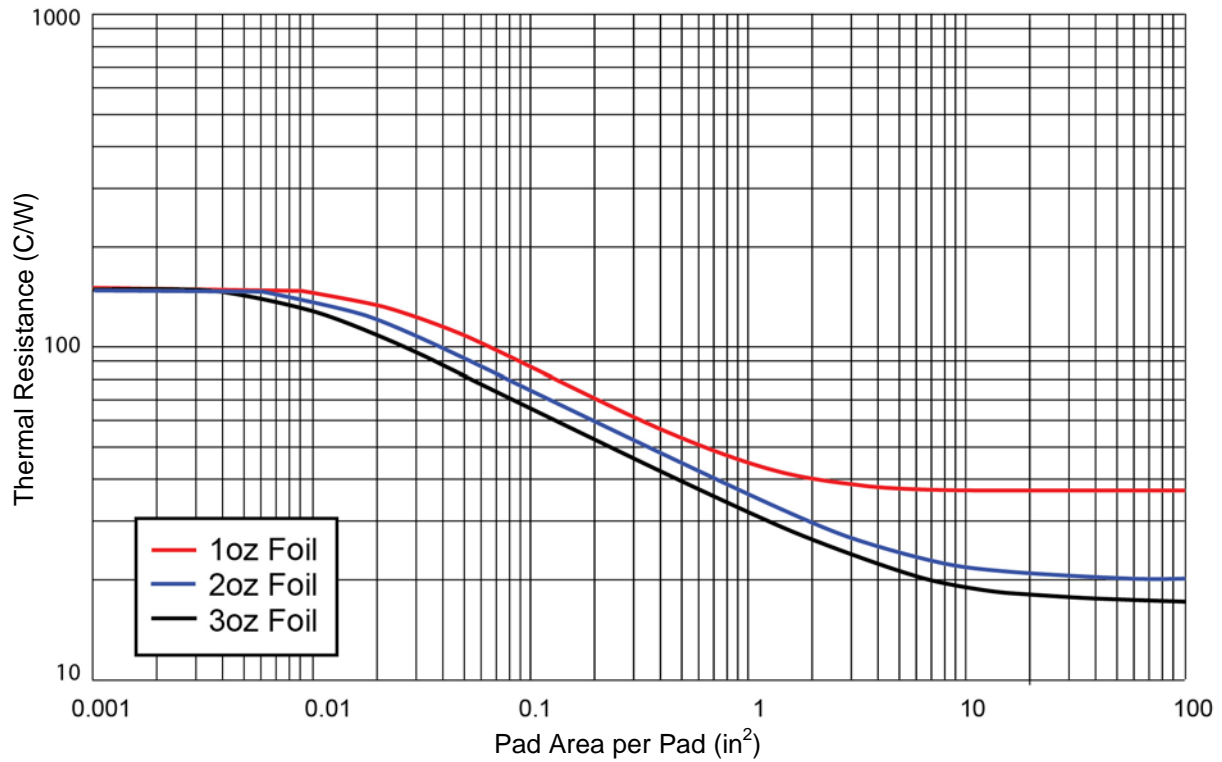
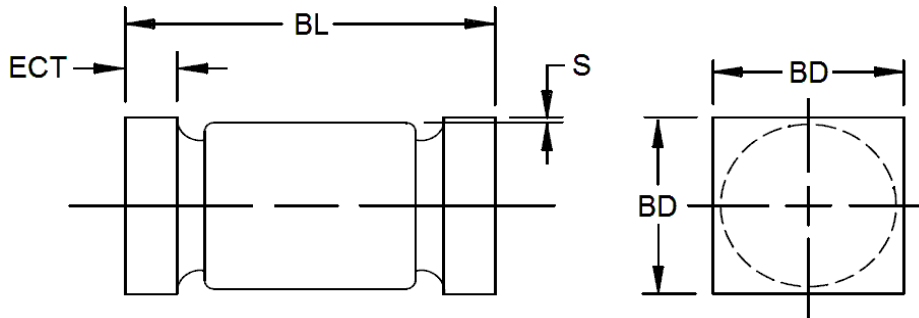
GRAPHS (continued)


FIGURE 7
Thermal Resistance vs FR4 Pad Area Still Air with the PCB horizontal

PACKAGE DIMENSIONS


| DIM | INCH | | MILLIMETERS | |
|-----|------------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| BD | 0.137 | 0.148 | 3.48 | 3.76 |
| ECT | 0.019 | 0.028 | 0.48 | 0.71 |
| BL | 0.200 | 0.225 | 5.08 | 5.72 |
| S | 0.003 MIN. | | 0.08 MIN. | |

NOTES:

1. Dimensions are in inches. Millimeters are given for information only.
2. Dimensions are pre-solder dip.
3. U-suffix parts are structurally identical to the US-suffix parts.
4. In accordance with ASME Y14.5M, diameters are equivalent to Φ x symbology.