



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.

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).

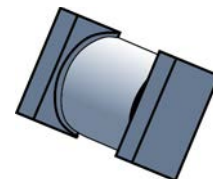
APPLICATIONS / BENEFITS

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

MAXIMUM RATINGS @ $T_A = +25^\circ\text{C}$ unless otherwise noted.

Parameters/Test Conditions	Symbol	Value	Unit
Junction Temperature	T_J	-65 to +125	$^\circ\text{C}$
Storage Temperature	T_{STG}	-65 to +150	$^\circ\text{C}$
Thermal Resistance Junction-to-End Cap	$R_{\theta JEC}$	10	$^\circ\text{C/W}$
Surge Peak Forward Current @ $T_A = +25^\circ\text{C}$ (Test pulse = 8.3 ms, half-sine wave.)	I_{FSM}	80	A (pk)
Average Rectified Output Current @ $T_{EC} = +55^\circ\text{C}$ ⁽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.



**“B” SQ-MELF
(D-5B) Package**

Also available in:



“B” Package
(axial-leaded)

[1N5820 – 1N5822, 1N6864](#)

MSC – Lawrence

6 Lake Street,
Lawrence, MA 01841
1-800-446-1158
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MSC – Ireland

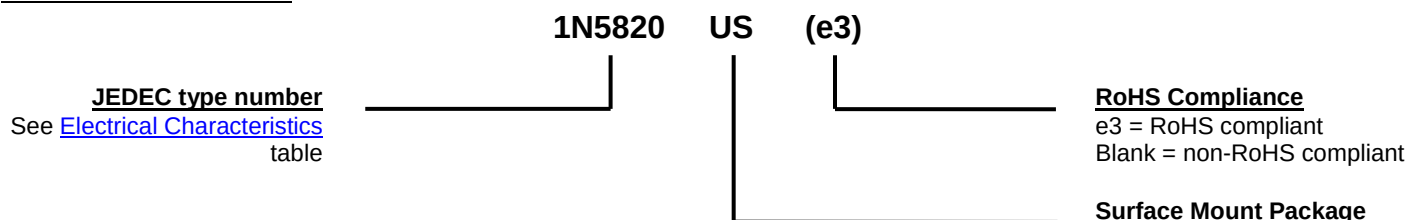
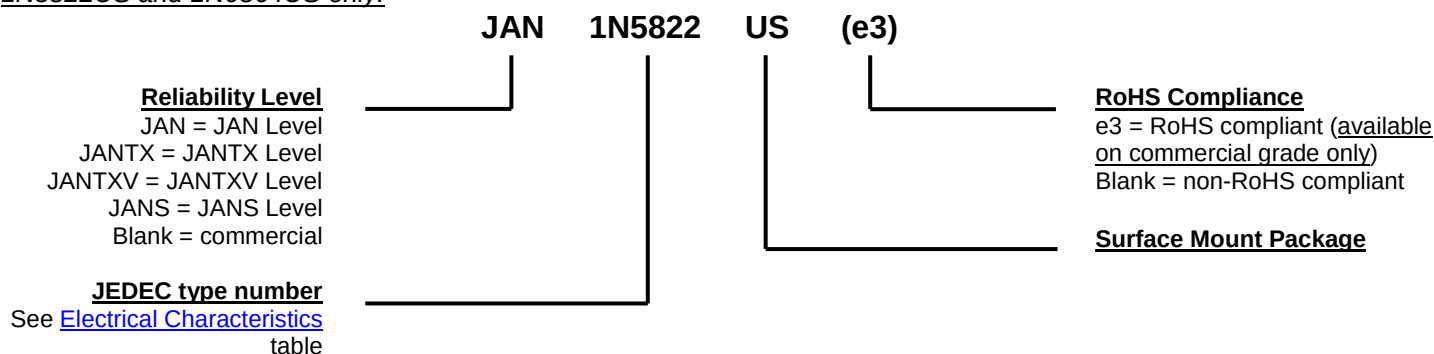
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MECHANICAL and PACKAGING

- 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

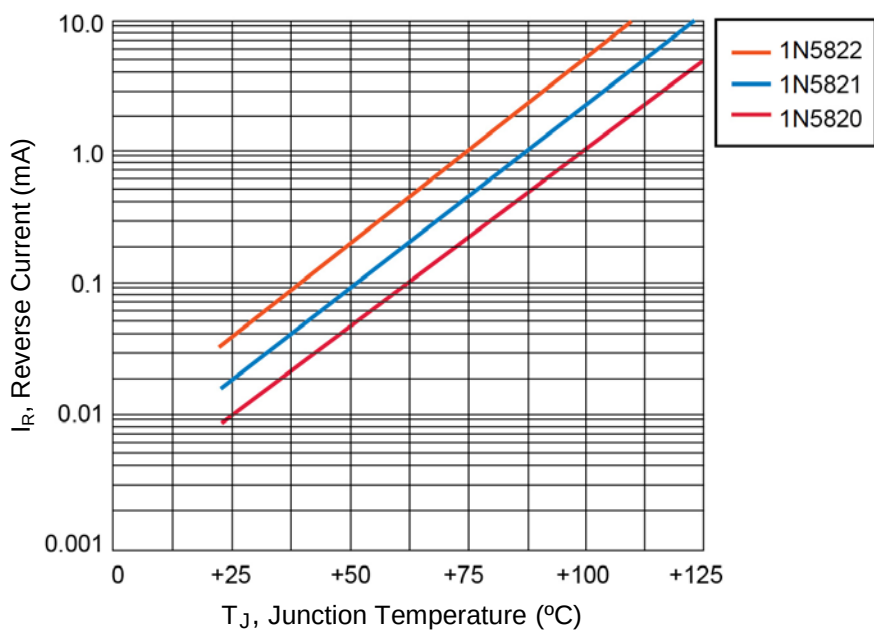
GRAPHS


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

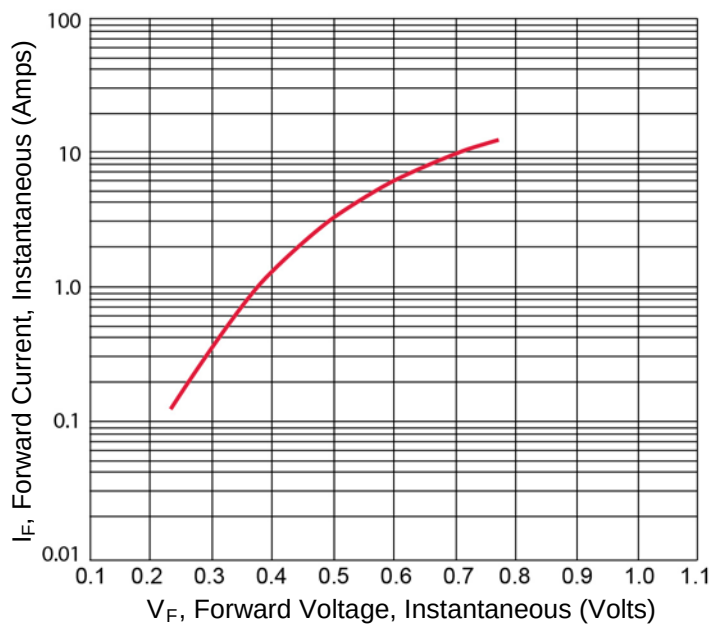


FIGURE 2
Typical Forward Voltage

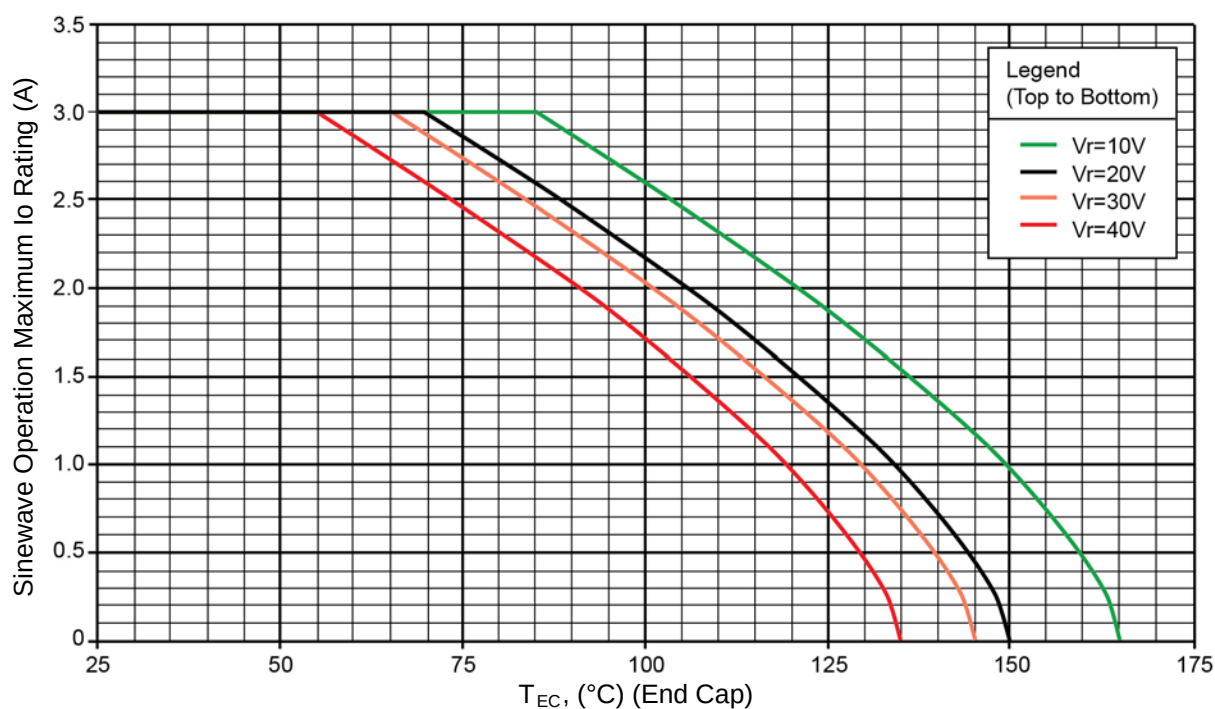
GRAPHS (continued)


FIGURE 3
Temperature Current Derating For 1N5822US

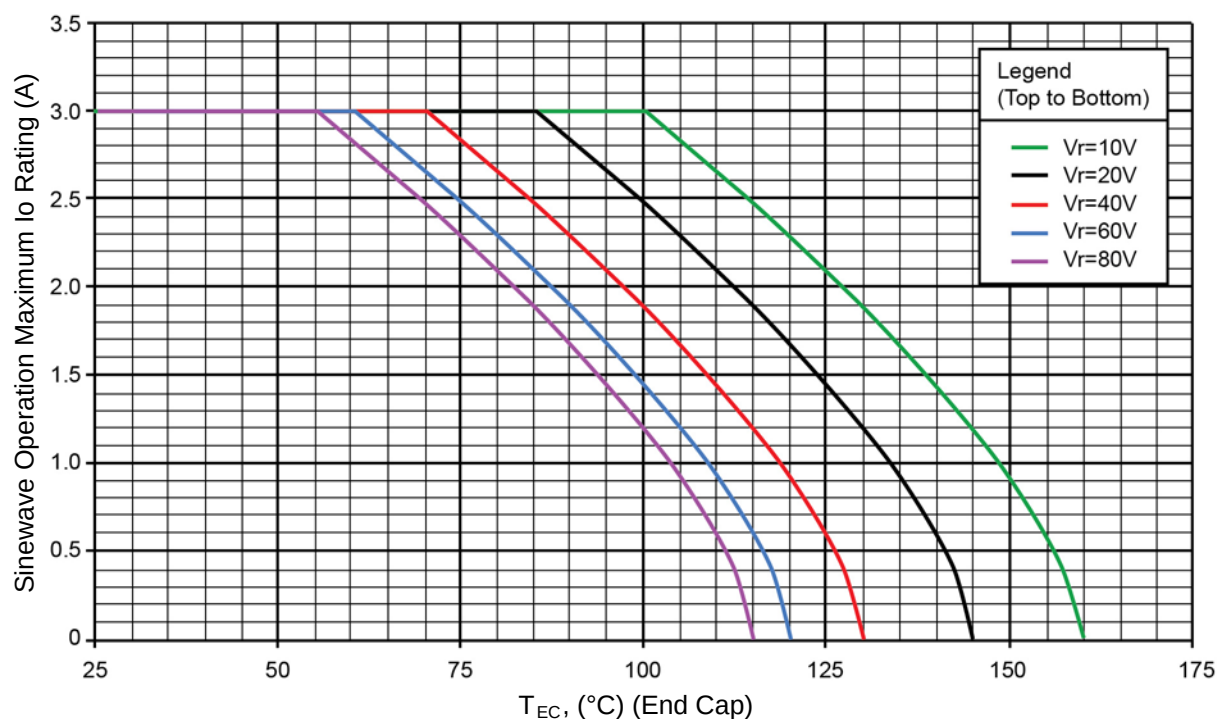
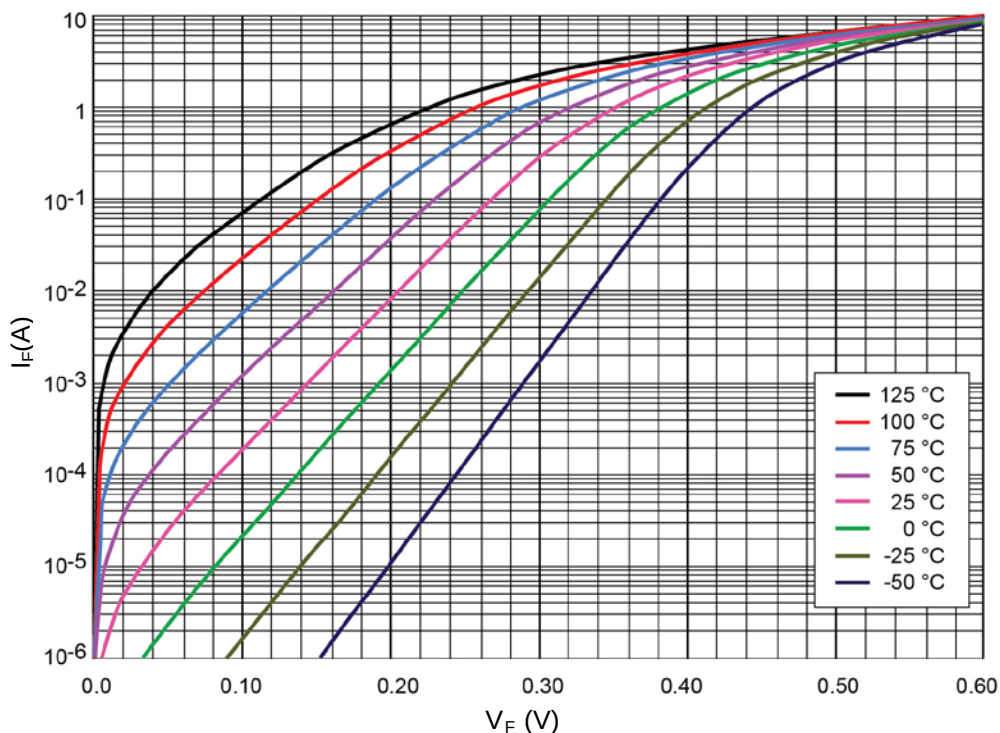
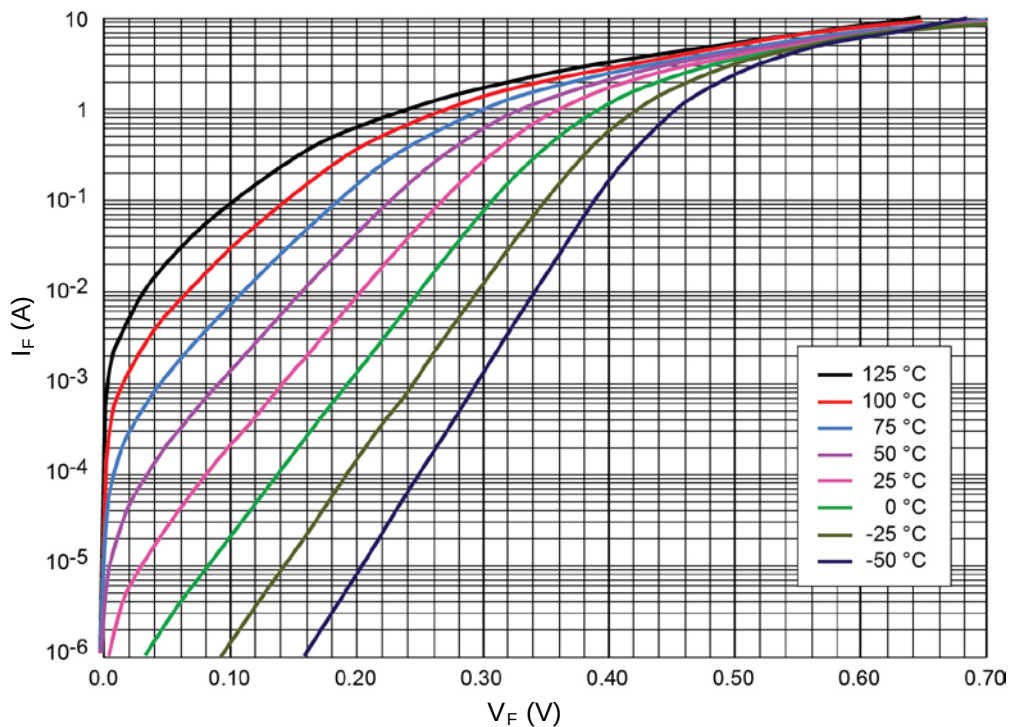


FIGURE 4
Temperature Current Derating For 1N6864US

GRAPHS (continued)

FIGURE 5

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


FIGURE 6

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

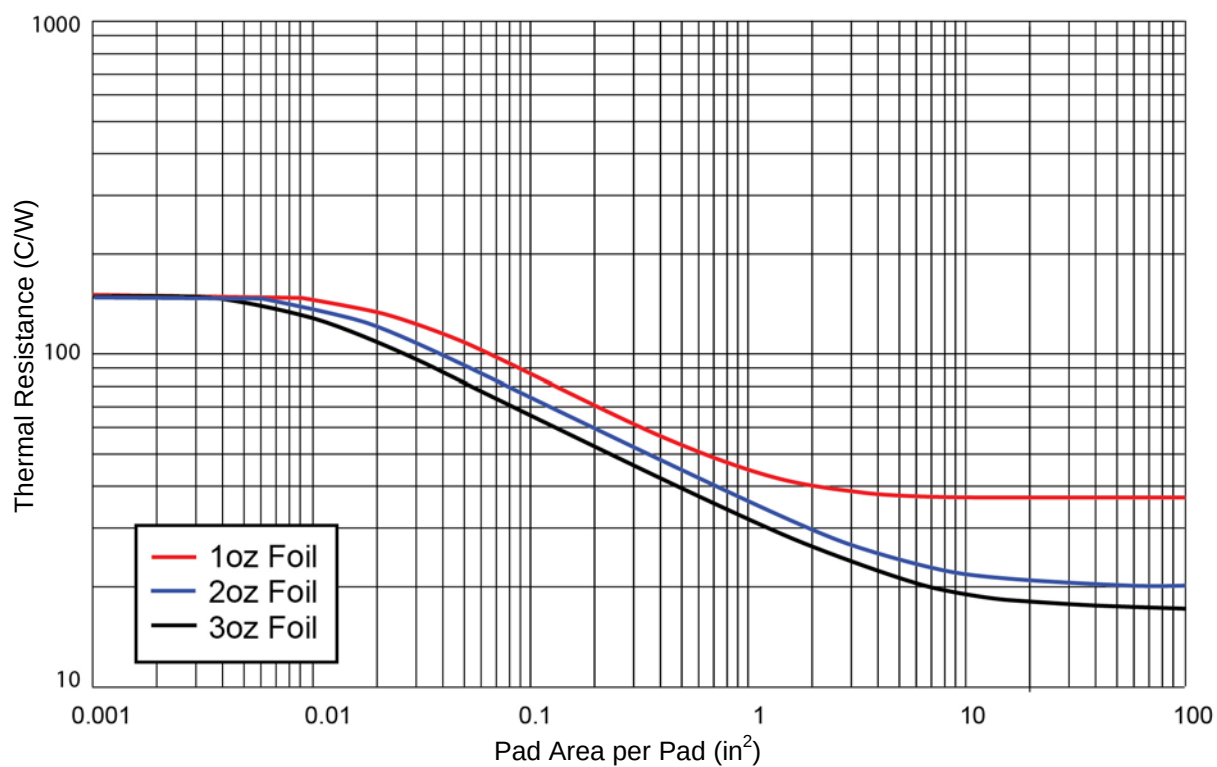
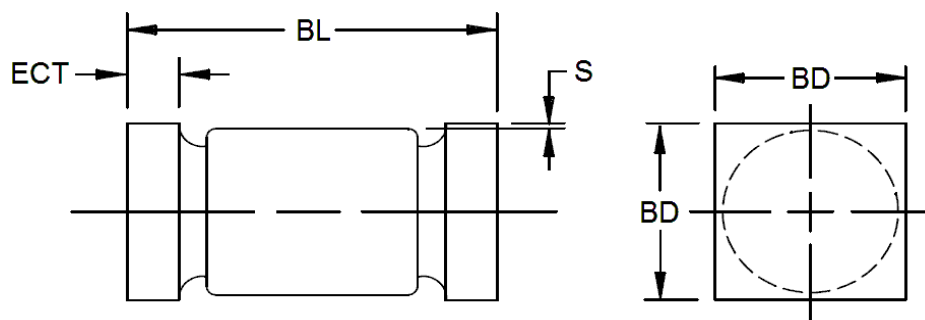
GRAPHS (continued)


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.