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3 Amp Axial Schottky Barrier Rectifiers

Qualified per MIL-PRF-19500/620

Qualified Levels:*
 JAN, JANTX,
 JANTXV and JANS

DESCRIPTION

This series of 3 amp Schottky rectifiers in their axial-leaded “B” packaging offer flexible thru-hole mounting. The 1N5822 and 1N6864 are military qualified for high-reliability applications.

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

FEATURES

- JEDEC registered 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 1N6822 and 1N6864 only.
 (See [Part Nomenclature](#) for all available options.)
- RoHS compliant devices available (commercial grade only).

APPLICATIONS / BENEFITS

- Flexible axial leads for thru-hole 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-Lead @ .375 inch (9.52 mm) lead length	R _{θJL}	30	°C/W
Surge Peak Forward Current @ T _A = +25 °C (Test pulse = 8.3 ms, half-sine wave.)	I _{FSM}	80	A
Average Rectified Output Current @ T _L = +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.



“B” Package

Also available in:

 **“B” MELF Package**
 (surface mount)
[1N5820US – 1N5822US](#),
[1N6864US](#)

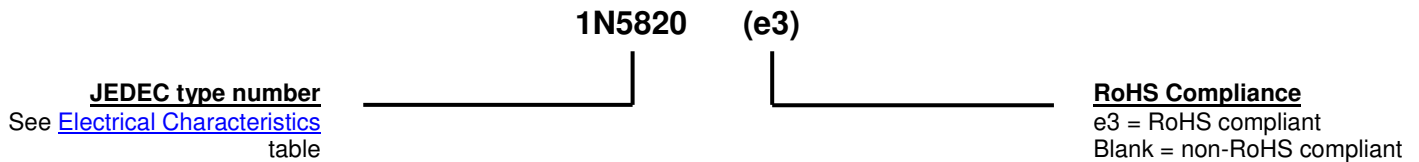
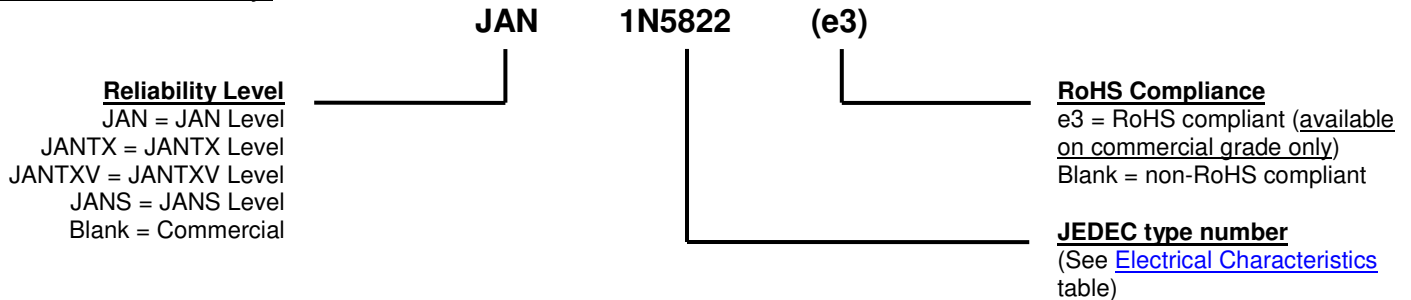
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MECHANICAL and PACKAGING

- CASE: Hermetically sealed voidless hard glass with tungsten slugs.
- TERMINALS: Tin/lead or RoHS compliant matte/tin on commercial grade only (no JAN levels) over nickel plate over copper.
- MARKING: Body coated in blue with part number.
- POLARITY: Cathode indicated by band.
- TAPE & REEL option: Standard per EIA-296. Consult factory for quantities.
- WEIGHT: Approximately 750 milligrams.
- See [Package Dimensions](#) on last page.

PART NOMENCLATURE
1N5820 – 1N5821

1N5822 and 1N6864 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
1N5820	20	0.40	0.50	0.70	0.10 @ 20 V	12.5 @ 20 V
1N5821	30	0.40	0.50	0.70	0.10 @ 30 V	12.5 @ 30 V
1N5822	40	0.40	0.50	0.70	0.10 @ 40 V	12.5 @ 40 V
1N6864	80	0.50	0.70	N/A	0.15 @ 80 V	18.0 @ 80 V

GRAPHS

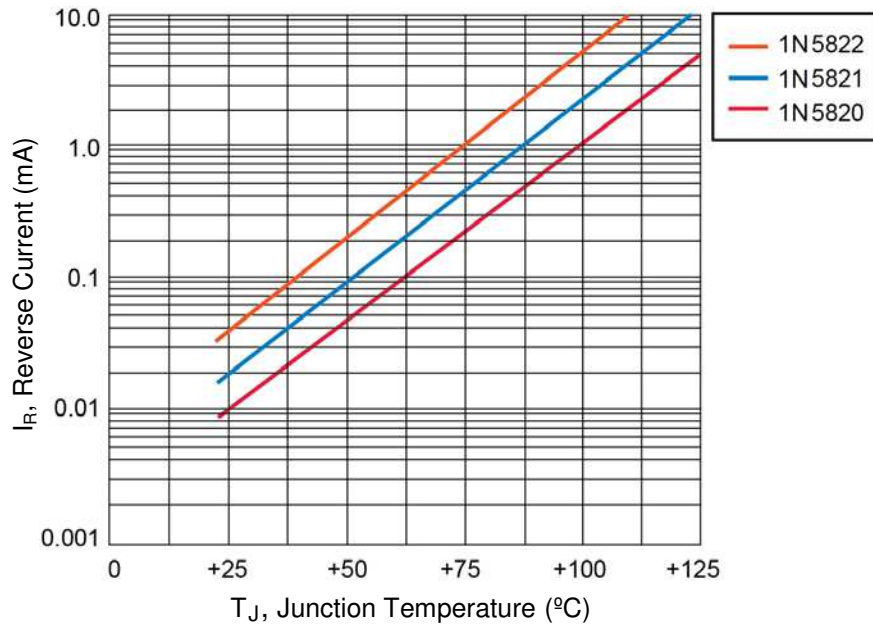


FIGURE 1
Typical Reverse Leakage Current at Rated PIV (PULSED)

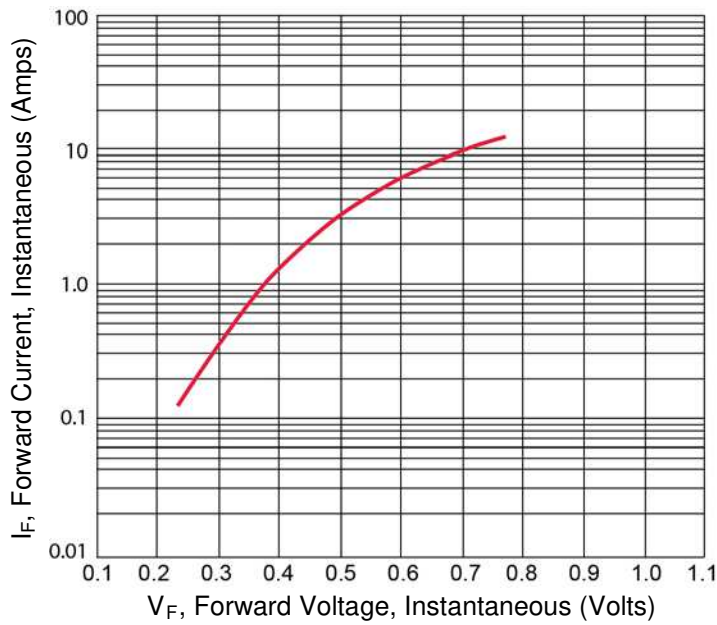


FIGURE 2
Typical Forward Voltage

GRAPHS (continued)

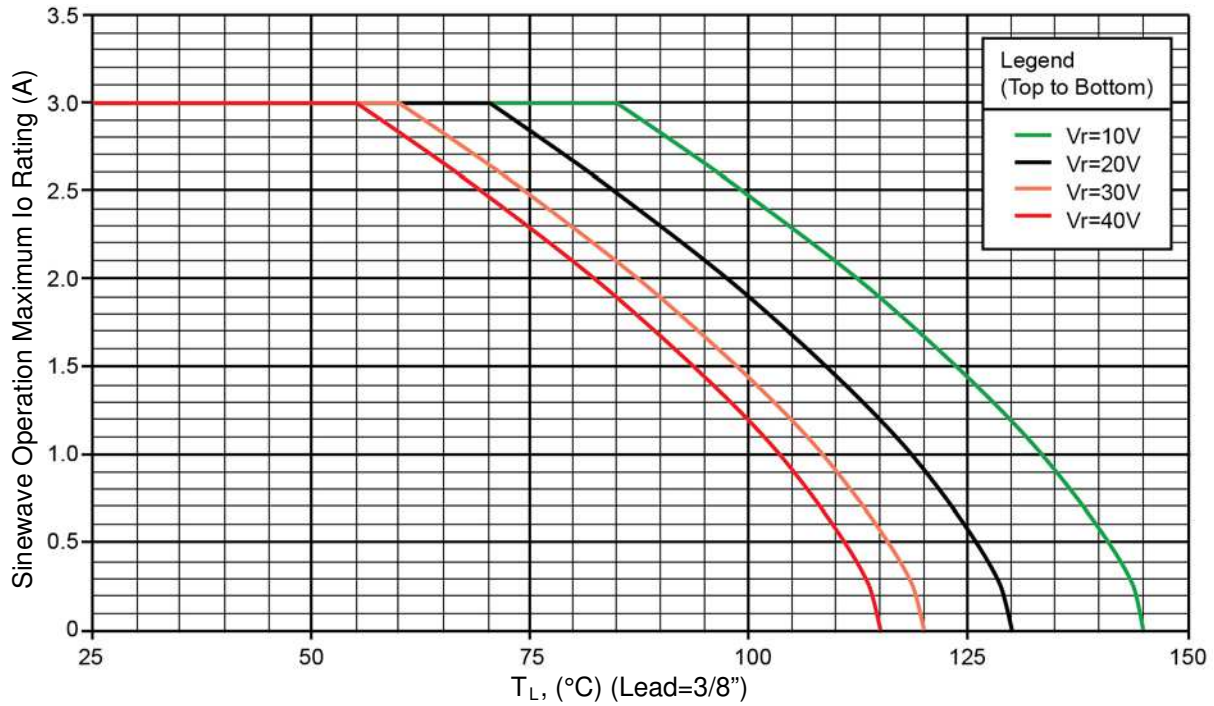


FIGURE 3
Temperature current derating for 1N5822

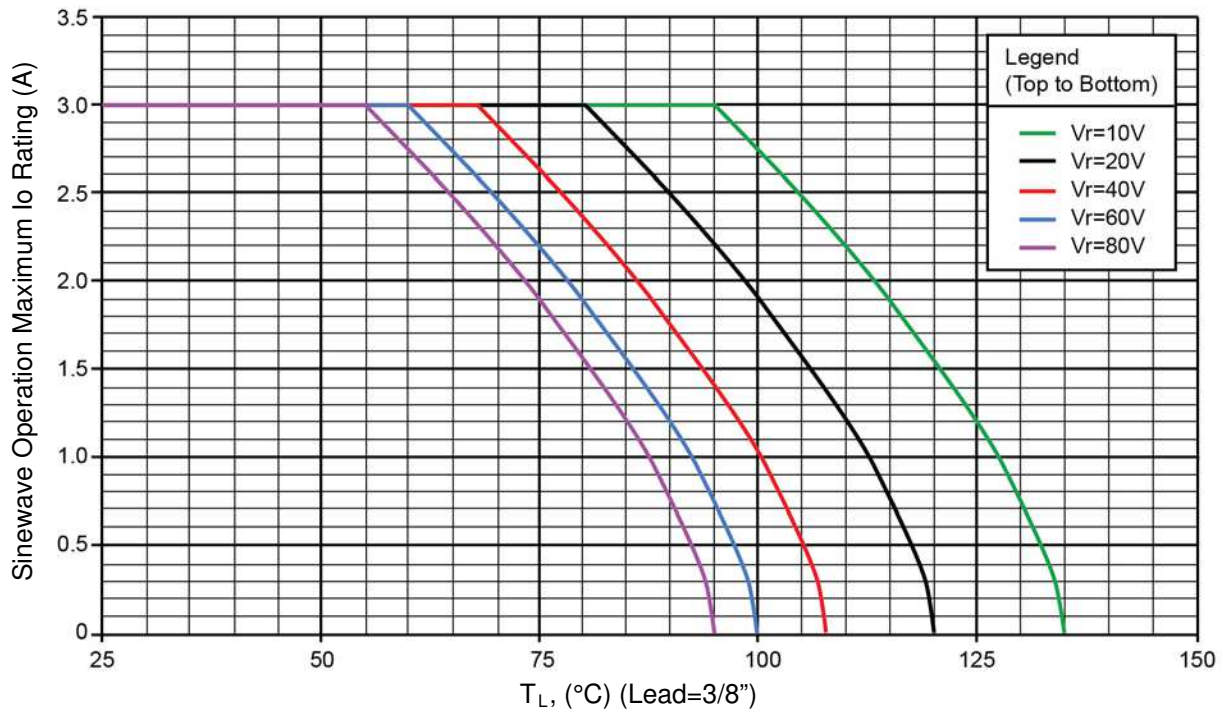


FIGURE 4
Temperature current derating for 1N6864

GRAPHS (continued)

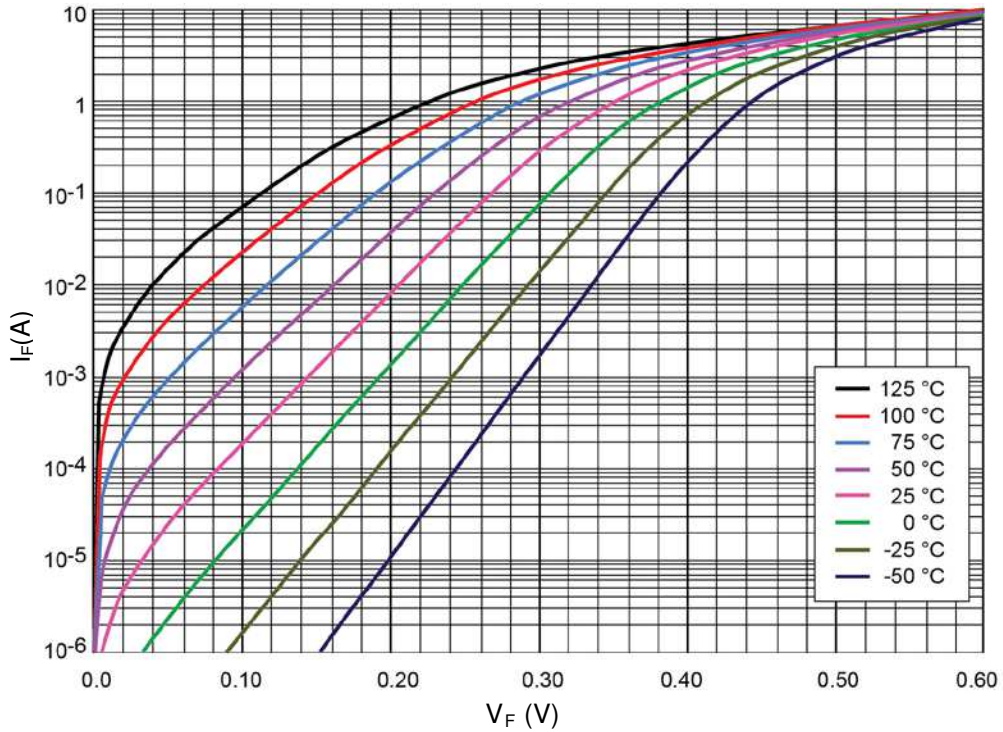


FIGURE 5
Schottky $V_F - I_F$ Characteristics (Typical 1N5822)

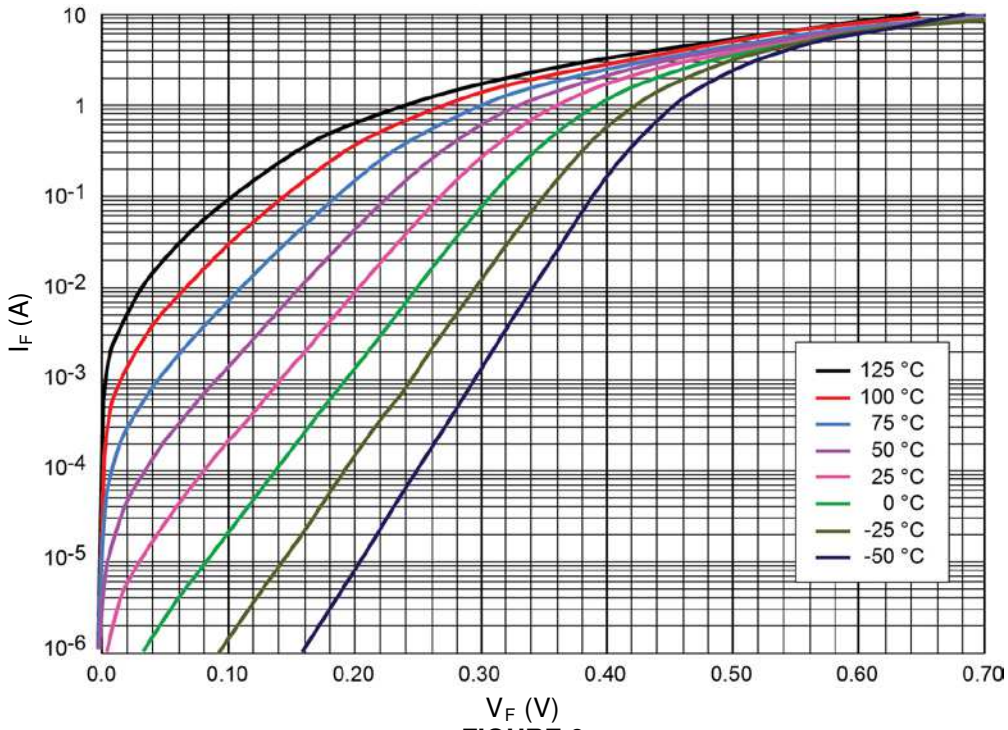


FIGURE 6
Schottky $V_F - I_F$ Characteristics (Typical 1N6864)

GRAPHS (continued)

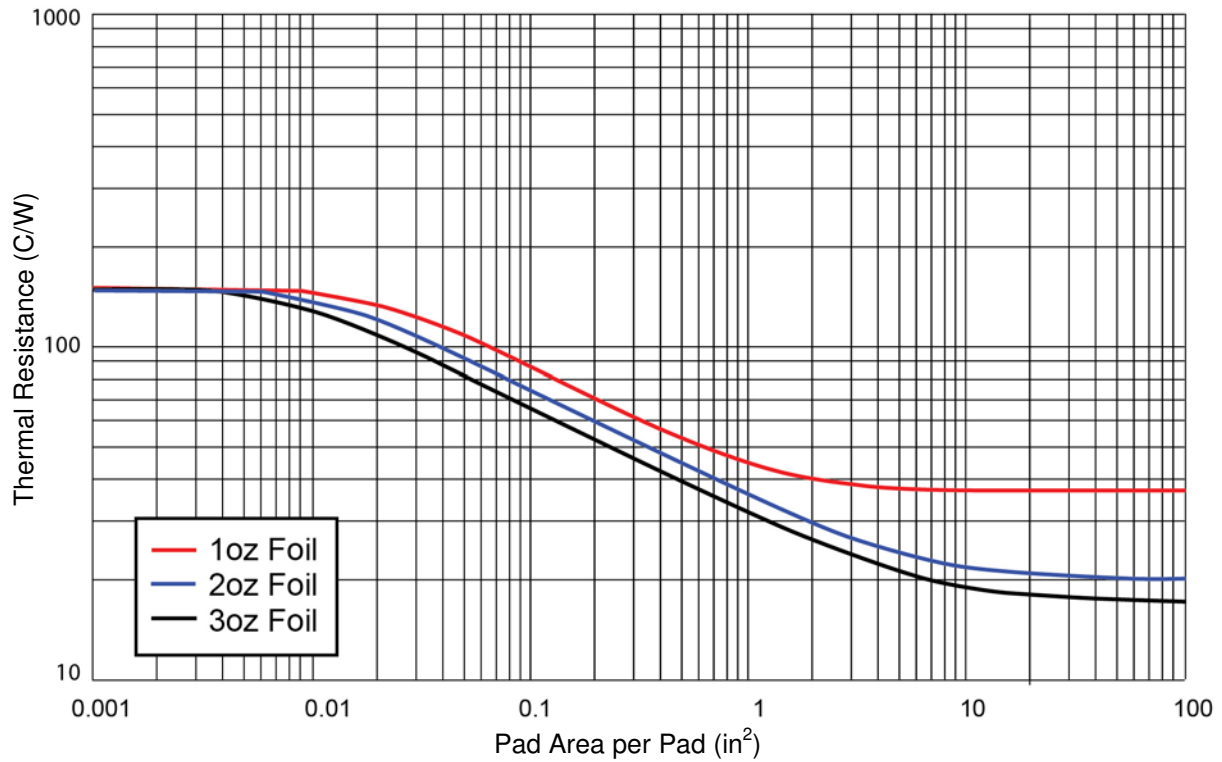
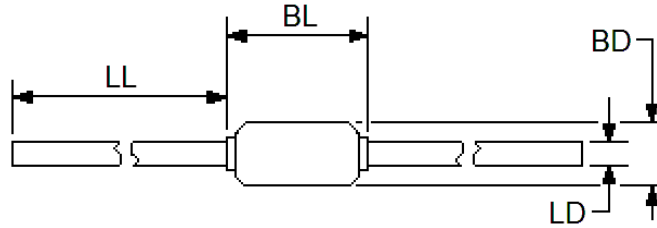


FIGURE 7
Thermal resistance vs FR4 Pad Area Still Air with the PCB horizontal
 (At lead length = 0.187 inch)

PACKAGE DIMENSIONS

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for information only.
3. Dimension BL shall include the entire body including slugs and sections of the lead over which the diameter is uncontrolled. This uncontrolled area is defined as the zone between the edge of the diode body and extending .050 inch (1.27 mm) onto the leads.
4. Dimension BD shall be measured at the largest diameter.
5. In accordance with ASME Y14.5M, diameters are equivalent to Φ x symbology.

Ltr	DIMENSIONS				Notes
	INCH		MILLIMETERS		
	Min	Max	Min	Max	
BD	0.115	0.142	2.92	3.61	4
BL	0.130	0.300	3.30	7.62	3
LD	0.036	0.042	0.91	1.07	3
LL	0.900	1.30	22.86	33.02	

Lead Tolerance = $+.002 - .003$ in.

(Includes sections of the lead or fillet over which the lead diameter is uncontrolled.)