

# MLL3821 thru MLL3830A

## Description / Features

- LEADLESS PACKAGE FOR SURFACE MOUNT EQUIVALENT TO IN3821 THRU IN3830A
- IDEAL FOR HIGH DENSITY MOUNTING
- VOLTAGE RANGE: 3.3 TO 7.5 VOLTS
- HERMETICALLY SEALED, DOUBLE-SLUG GLASS CONSTRUCTION
- METALLURGICALLY BONDED CONSTRUCTION
- AVAILABLE IN JANTX OR JANTXV EQUIVALENTS TO MIL-S-19500/115 FOR 3821A THRU 3828A WITH MLX OR MLXV PREFIX.

## Maximum Ratings

1.50 Watts DC Power Rating (See Power Derating Curve)  
-65°C to +200°C Operating and Storage Junction Temperature  
Power Derating 10.0 mW/°C above 50°C  
Forward Voltage @ 200 mA is less than 1.50 Volts

## Application

This surface mountable zener diode series is similar to the IN3821 thru IN3830 registration in the DO-13 package except that it meets the new JEDEC surface mount outline DO-213AB. It is an ideal selection for applications of high density and low parasitic requirements. Due to its glass hermetic qualities, it is also suited for high reliability applications. This can be acquired by a source control drawing (SCD), or simply by ordering device types with a MLX or MLXV prefix for equivalent screening to JANTX or JANTXV.

## \*Electrical Characteristics @ 25° C

** TYPE NUMBER (Note 1)	NOMINAL ZENER VOLTAGE $V_Z @ I_{ZT}$ (Note 1)	ZENER TEST CURRENT $I_{ZT}$ mA	MAXIMUM ZENER IMPEDANCE (Note 2)		MAXIMUM ZENER CURRENT $I_{ZM}$ (Note 3)	MAXIMUM REVERSE LEAKAGE CURRENT $I_R @ V_R$ µA Volts	TYPICAL TEMP. COEFF. OF ZENER VOLTAGE $\alpha_{VZ}$ %/°C	
			$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK=1mA}$				
								OHMS
MLL3821	3.3	76	10	400	276	100	1	-0.66
MLL3821A	3.3	76	10	400	276	100	1	-0.66
MLL3822	3.6	69	10	400	252	100	1	-0.58
MLL3822A	3.6	69	10	400	252	100	1	-0.58
MLL3823	3.9	64	9	400	238	50	1	-0.46
MLL3823A	3.9	64	9	400	238	50	1	-0.46
MLL3824	4.3	58	9	400	213	10	1	-0.33
MLL3824A	4.3	58	9	400	213	10	1	-0.33
MLL3825	4.7	53	8	500	194	10	1	-0.15
MLL3825A	4.7	53	8	500	194	10	1	-0.15
MLL3826	5.1	49	7	550	178	10	1	±0.10
MLL3826A	5.1	49	7	550	178	10	1	±0.10
MLL3827	5.6	45	5	600	162	10	2	+0.30
MLL3827A	5.6	45	5	600	162	10	2	+0.30
MLL3828	6.2	41	2	700	146	10	3	+0.49
MLL3828A	6.2	41	2	700	146	10	3	+0.49
MLL3829	6.8	37	1.5	500	133	10	3	+0.53
MLL3829A	6.8	37	1.5	500	133	10	3	+0.53
MLL3830	7.5	34	1.5	250	121	10	3	+0.57
MLL3830A	7.5	34	1.5	250	121	10	3	+0.57

\* JEDEC Registered Data for 1N3821 thru 3830A equivalents.

\*\* When applicable, replace MLL prefix with MLX or MLXV for 3821A to 3828A.

## LEADLESS GLASS ZENER DIODES

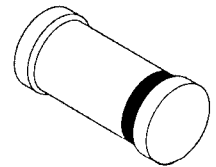
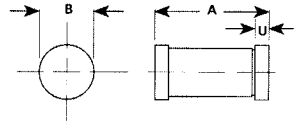


Figure 1

DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	4.80	5.20	.189	.205
B	2.39	2.66	.094	.105
U	0.41	0.55	.016	.022

DO-213AB

## Mechanical Characteristics

**CASE:** Hermetically sealed glass with solder contact tabs at each end.

**FINISH:** All external surfaces are corrosion resistant, readily solderable.

**POLARITY:** Banded end is cathode.

**THERMAL RESISTANCE:** 50°C/Watt typical junction to end caps. (See Power Derating Curve.)

**MOUNTING POSITION:** Any.

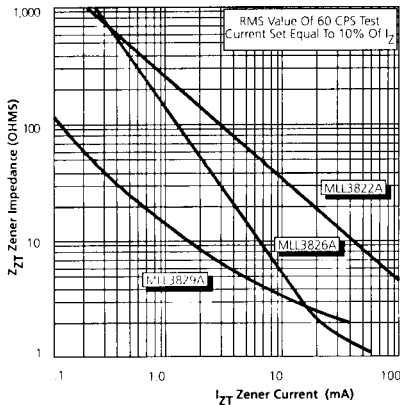
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## NOTE 1:

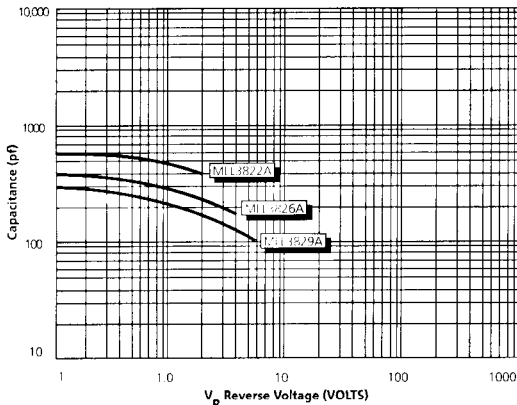
Suffix A signifies a  $\pm 5\%$  tolerance on nominal zener voltage. If tighter tolerance is required, consult factory. Zener Voltage ( $V_Z$ ) is measured with junction in thermal equilibrium with still air at a temperature of  $25^\circ\text{C}$ . The test currents ( $I_{ZT}$ ) at nominal voltages provide a constant 0.25 watts for this device series.

## NOTE 2:

The zener impedance is derived when a 60 cycle ac current having an rms value equal to 10% of the dc zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed on  $I_{ZT}$  or  $I_{ZK}$ .



**FIGURE 2** Typical Zener Impedance vs. Zener Current For Types Shown

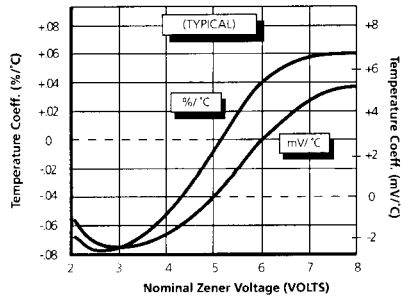


**FIGURE 4** Typical Capacitance vs. Reverse Voltage

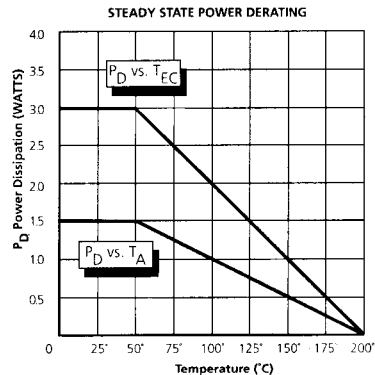
Zener impedance is measured at 2 points to insure a sharp knee on the breakdown curve and to eliminate unstable units. A curve showing the variation of zener impedance vs. zener current for four representative types is shown in Figure 2.

## NOTE 3:

These JEDEC values of  $I_{ZM}$  may be exceeded by 50% for the surface mount package shown. Further power capability exists by heatsinking for end cap temperature control ( $T_{EC}$ ) as shown in Figure 5.



**FIGURE 3** Typical Zener Voltage Temperature Coeff. vs. Zener Voltage



**FIGURE 5** Power Derating Curve Where  $T_A$  is Ambient Temperature And  $T_{EC}$  is End Cap Temperature