

**MLL3016B  
thru  
MLL3051B**

**Description / Features**

- LEADLESS PACKAGE FOR SURFACE MOUNT EQUIVALENT TO IN3016 THRU IN3051
- IDEAL FOR HIGH DENSITY MOUNTING
- VOLTAGE RANGE: 6.8 TO 200 VOLTS
- HERMETICALLY SEALED, DOUBLE-SLUG GLASS CONSTRUCTION
- METALLURGICALLY ENHANCED CONTACT CONSTRUCTION
- AVAILABLE IN JANTX OR JANTXV EQUIVALENTS TO MIL-S-19500/115 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**

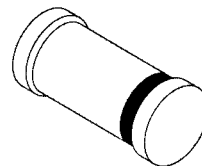
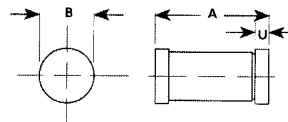
This surface mountable zener diode series is similar to the IN3016 thru IN3051 registration in the DO-13 package except that it meets the new JEDEC surface mount outline DO-213AB. It is an ideal selection for applications of high density and low parasitic requirements. Due to its glass hermetic qualities, 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	NOMINAL ZENER VOLTAGE V <sub>Z</sub> @ I <sub>ZT</sub> (Note 1)	ZENER TEST CURRENT I <sub>ZT</sub>	MAXIMUM ZENER IMPEDANCE (Note 2)			MAXIMUM ZENER CURRENT I <sub>ZM</sub> (Note 3)	MAXIMUM REVERSE LEAKAGE CURRENT I <sub>R</sub> @ V <sub>R</sub>	TYPICAL TEMP. COEFF. OF ZENER VOLTAGE α <sub>VZ</sub>	
			Z <sub>T</sub> @ I <sub>ZT</sub>	Z <sub>ZK</sub> @ I <sub>ZK</sub> (mA)					
				OHMS	OHMS				mA
MLL3016B	6.8	37	3.5	750	1.0	140	150	5.2	.040
MLL3017B	7.5	34	4	750	.5	125	100	5.7	.045
MLL3018B	8.2	31	4.5	750	.5	115	50	6.2	.048
MLL3019B	9.1	28	5	750	.5	105	25	6.9	.050
MLL3020B	10	25	7	750	.25	95	25	7.6	.055
MLL3021B	11	23	8	750	.25	85	10	8.4	.060
MLL3022B	12	21	9	750	.25	80	10	9.1	.065
MLL3023B	13	19	10	1000	.25	74	10	9.9	.065
MLL3024B	15	17	14	750	.25	63	10	44.4	.070
MLL3025B	16	15.5	16	750	.25	60	10	12.2	.070
MLL3026B	18	14	20	750	.25	52	10	13.7	.075
MLL3027B	20	12.5	22	1000	.25	47	10	15.2	.075
MLL3028B	22	11.5	23	750	.25	43	10	16.7	.080
MLL3029B	24	10.5	25	750	.25	40	10	18.2	.080
MLL3030B	27	9.5	35	750	.25	34	10	20.6	.085
MLL3031B	30	8.5	40	1000	.25	31	10	22.8	.085
MLL3032B	33	7.5	45	750	.25	28	10	25.1	.085
MLL3033B	36	7.0	50	750	.25	26	10	27.4	.085
MLL3034B	39	6.5	60	750	.25	23	10	29.7	.090
MLL3035B	40	6.0	70	1000	.25	21	10	32.7	.090
MLL3036B	47	5.5	80	1500	.25	19	10	35.8	.090
MLL3037B	51	5.0	95	1500	.25	18	10	38.8	.090
MLL3038B	56	4.5	110	2000	.25	17	10	42.6	.090
MLL3039B	62	4.0	125	2000	.25	15	10	47.1	.090
MLL3040B	68	3.7	150	2000	.25	14	10	51.7	.090
MLL3041B	75	3.3	175	2000	.25	12	10	56.0	.090
MLL3042B	82	3.0	200	3000	.25	11	10	62.2	.090
MLL3043B	91	2.8	250	3000	.25	10	10	69.2	.090
MLL3044B	100	2.5	350	3000	.25	9.0	10	76.0	.090
MLL3045B	110	2.3	450	4000	.25	8.3	10	83.6	.095
MLL3046B	120	2.0	550	4500	.25	8.0	10	91.2	.095
MLL3047B	130	1.9	700	5000	.25	6.9	10	98.8	.095
MLL3048B	150	1.7	1000	6000	.25	5.7	10	114.0	.095
MLL3049B	160	1.6	1100	6500	.25	5.4	10	121.6	.095
MLL3050B	180	1.4	1200	7000	.25	4.9	10	136.8	.095
MLL3051B	200	1.2	1500	8000	.25	4.6	10	152.0	.100

\*\* JEDEC equivalent data for IN3021 thru 3030A equivalent.  
\*\*\* Where applicable, replace MLX prefix with MLX or MLXV for 3821A to 3828A. † Not JEDEC Data

**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.

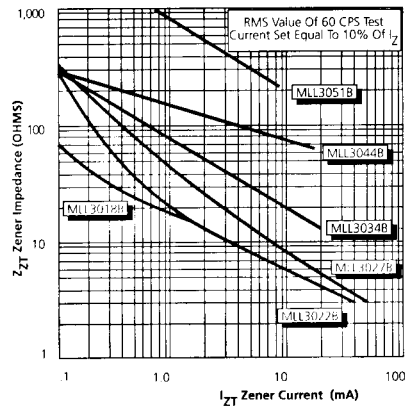
# MLL3016B thru MLL3051B

## NOTE 1:

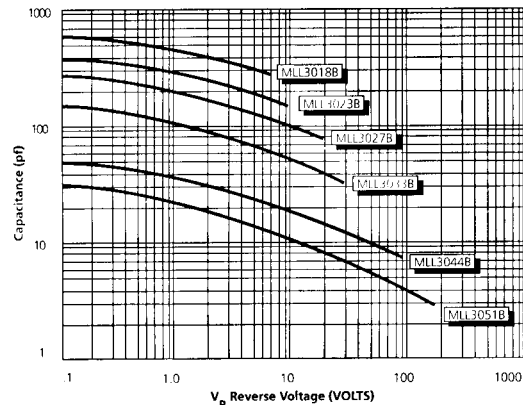
Suffix A signifies a  $\pm 5\%$  tolerance on nominal zener voltage. If tighter tolerance is required, consult factory. Zener Voltage ( $V_Z$ ) is measured with junction in thermal equilibrium with still air at a temperature of  $25^\circ\text{C}$ . The test currents ( $I_{ZT}$ ) at nominal voltages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

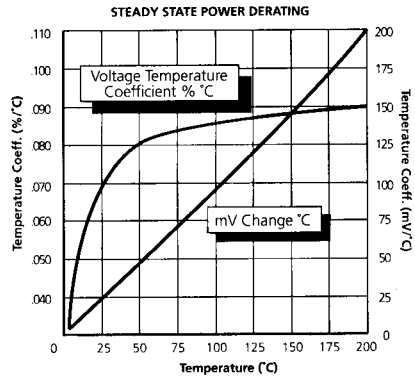


**FIGURE 4** Typical Capacitance vs. Reverse Voltage

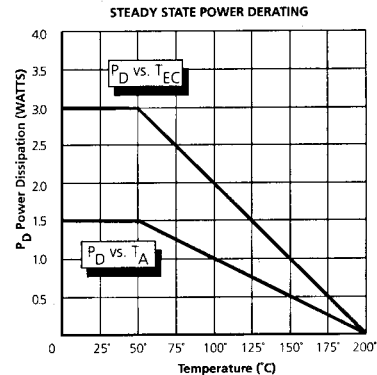
Zener impedance is measured at 2 points to insure a sharp knee on the breakdown curve and to eliminate unstable units. A curve showing the variation of zener impedance vs. zener current for four representative types is shown in Figure 2.

## 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