MLL4678 thru MLL4717

MOTOROLA

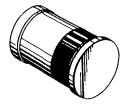
250 MILLIWATT HERMETICALLY SEALED GLASS SILICON ZENER DIODES

Low level nitride passivated zener diodes for applications requiring extremely low operating currents, low leakage, and sharp breakdown voltage.

- Complete Voltage Range — 1.8 to 43 Volts
- Zener Voltage Specified @ I_{ZT} = 50 μA
- Leadless Package for Surface Mount Technology
- Maximum Delta V_Z Given from 10 to 100 μA
- Available in 8 mm Tape and Reel
  T1 Cathode Facing Sprocket Holes
  T2 Anode Facing Sprocket Holes

LEADLESS GLASS ZENER DIODES

250 MILLIWATTS



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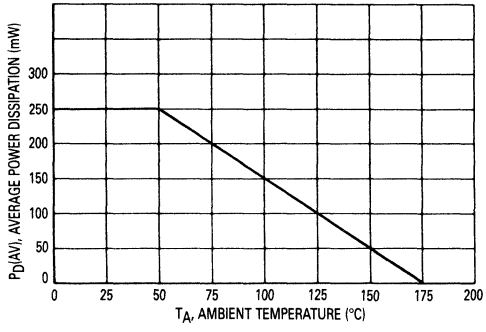
ABSOLUTE MAXIMUM RATINGS

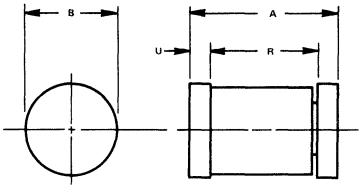
Rating	Symbol	Value	Unit
DC Power Dissipation @ T_A = 50°C Derate above T_A = 50°C	P_D	250 1.67	mW mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +175	°C

MECHANICAL CHARACTERISTICS

CASE: Double slug, hermetically sealed glass
MAXIMUM LEAD TEMPERATURE FOR SOLDERING PURPOSES: 230°C for 10 seconds
FINISH: All external surfaces are corrosion resistant and readily solderable
POLARITY: Cathode end indicated by color band. When operated in zener mode, the cathode will be positive with respect to anode
MOUNTING POSITION: Any

FIGURE 1 — POWER TEMPERATURE DERATING CURVE





DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	3.30	3.70	0.130	0.146
B	1.60	1.70	0.063	0.067
R	2.49	2.59	0.098	0.102
U	0.41	0.55	0.016	0.022

CASE 362-01

ELECTRICAL CHARACTERISTICS (T_A = 25°C, V_F = 1.5 V max at I_F = 100 mA for all types)

Type Number (Note 1)	Zener Voltage V_Z @ I_{ZT} = 50 μA Volts			Maximum Reverse Current I_R μA (Note 3)	Test Voltage V_R Volts	Maximum Zener Current I_{ZM} mA (Note 2)	Maximum Voltage Change ΔV_Z Volts (Note 4)
	Nom (Note 1)	Min	Max				
MLL4678	1.8	1.710	1.890	7.5	1.0	120	0.70
MLL4679	2.0	1.900	2.100	5.0	1.0	110	0.70
MLL4680	2.2	2.090	2.310	4.0	1.0	100	0.75
MLL4681	2.4	2.280	2.520	2.0	1.0	95	0.80
MLL4682	2.7	2.565	2.835	1.0	1.0	90	0.85
MLL4683	3.0	2.850	3.150	0.8	1.0	85	0.90
MLL4684	3.3	3.135	3.465	7.5	1.5	80	0.95
MLL4685	3.6	3.420	3.780	7.5	2.0	75	0.95
MLL4686	3.9	3.705	4.095	5.0	2.0	70	0.97
MLL4687	4.3	4.085	4.515	4.0	2.0	65	0.99
MLL4688	4.7	4.465	4.935	10	3.0	60	0.99
MLL4689	5.1	4.845	5.355	10	3.0	55	0.97
MLL4690	5.6	5.320	5.880	10	4.0	50	0.96
MLL4691	6.2	5.890	6.510	10	5.0	45	0.95
MLL4692	6.8	6.460	7.140	10	5.1	35	0.90
MLL4693	7.5	7.125	7.875	10	5.7	31.8	0.75
MLL4694	8.2	7.790	8.610	1.0	6.2	29.0	0.50
MLL4695	8.7	8.265	9.135	1.0	6.6	27.4	0.10
MLL4696	9.1	8.645	9.555	1.0	6.9	26.2	0.08
MLL4697	10	9.500	10.50	1.0	7.6	24.8	0.10
MLL4698	11	10.45	11.55	0.05	8.4	21.6	0.11
MLL4699	12	11.40	12.60	0.05	9.1	20.4	0.12
MLL4700	13	12.35	13.65	0.05	9.8	19.0	0.13
MLL4701	14	13.30	14.70	0.05	10.6	17.5	0.14
MLL4702	15	14.25	15.75	0.05	11.4	16.3	0.15
MLL4703	16	15.20	16.80	0.05	12.1	15.4	0.16
MLL4704	17	16.15	17.85	0.05	12.9	14.5	0.17
MLL4705	18	17.10	18.90	0.05	13.6	13.2	0.18
MLL4706	19	18.05	19.95	0.05	14.4	12.5	0.19
MLL4707	20	19.00	21.00	0.01	15.2	11.9	0.20
MLL4708	22	20.90	23.10	0.01	16.7	10.8	0.22
MLL4709	24	22.80	25.20	0.01	18.2	9.9	0.24
MLL4710	25	23.75	26.25	0.01	19.0	9.5	0.25
MLL4711	27	25.65	28.35	0.01	20.4	8.8	0.27
MLL4712	28	26.60	29.40	0.01	21.2	8.5	0.28
MLL4713	30	28.50	31.50	0.01	22.8	7.9	0.30
MLL4714	33	31.35	34.65	0.01	25.0	7.2	0.33
MLL4715	36	34.20	37.80	0.01	27.3	6.6	0.36
MLL4716	39	37.05	40.95	0.01	29.6	6.1	0.39
MLL4717	43	40.85	45.15	0.01	32.6	5.5	0.43

NOTES: 1. TOLERANCE AND VOLTAGE DESIGNATION (V_Z)
The type numbers shown have a standard tolerance of ±5% on the nominal zener voltage.

2. MAXIMUM ZENER CURRENT RATINGS (I_{ZM})
Maximum Zener current ratings are based on maximum Zener voltage of the individual units.

3. REVERSE LEAKAGE CURRENT (I_R)
Reverse leakage currents are guaranteed and are measured at V_R as shown on the table.

4. MAXIMUM VOLTAGE CHANGE (ΔV_Z)
Voltage change is equal to the difference between V_Z at 100 μA and V_Z at 10 μA.