Microsemi
SCOTTSDALE DIVISION

1N4728UR thru 1N4764AUR
(or MLL4728A thru MLL4764A)

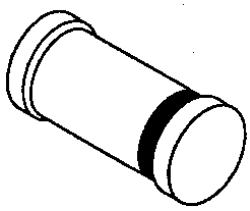
LEADLESS GLASS ZENER DIODES

DESCRIPTION

This surface mountable Zener diode series is electrically equivalent to the 1N4728A thru 1N4764A registration in the DO-41 equivalent package except that it meets the JEDEC surface mount outline DO-213AB. It is an ideal selection for applications of high density and low parasitic requirements for voltage regulation. Standard voltage tolerance is +/- 5% with tighter tolerances available down to 1%. With its glass hermetic qualities, it may also be used for high reliability applications when required by a source control drawing (SCD).

IMPORTANT: For the most current data, consult *MICROSEMI's* website: http://www.microsemi.com

APPEARANCE



DO-213AB

FEATURES

- Electrically similar to the JEDEC registered 1N4728 thru 1N4764 zener series
- Zener voltages available 3.3V to 100V
- Standard voltage tolerances are +/- 5% with "A" suffix and 10 % with no suffix identification
- Tight tolerances available in plus or minus 2% or 1% with C or D suffix respectively
- Options for screening in accordance with MIL-PRF-19500 for JAN, JANTX, JANTXV, and JANS are available by adding MQ, MX, MV, or MSP prefixes respectively to part numbers.
- Surface mount equivalents also available as SMAJ4728A to SMAJ4764A and SMAJ4728A to SMAJ4764A
- Plastic body axial-leaded Zener equivalents are also available as 1N4728A to 1N4764A

APPLICATIONS / BENEFITS

- Regulates voltage over a broad operating current and temperature range
- Wide selection from 3.3 to 100 V
- Leadless package for surface mounting
- Ideal for high density mounting
- Nonsensitive to ESD
- Hermetically sealed glass package
- Specified capacitance (see Figure 2)

MAXIMUM RATINGS

- Power dissipation at 25°C: 1.0 watts (also see derating in Figure 1).
- Operating and Storage temperature: -65°C to +175°C
- Thermal Resistance: 50 °C/W junction to end cap, or 130°C/W junction to ambient when mounted on FR4 PC board (1 oz Cu) with recommended footprint (see last page)
- Steady-State Power: 1.00 watts at $T_{EC} \leq 125$°C, or 1.00 watts at $T_A \leq 45$°C when mounted on FR4 PC board and recommended footprint as described for thermal resistance (also see Figure 1)
- Forward voltage @200 mA: 1.2 volts (maximum)
- Solder Temperatures: 260 °C for 10 s (max)

MECHANICAL AND PACKAGING

- CASE: Hermetically sealed DO-213AB glass MELF
- TERMINALS: Leads, tin-lead plated solderable per MIL-STD-750, method 2026
- POLARITY: Cathode indicated by band. Diode to be operated with the banded end positive with respect to the opposite end for Zener regulation
- MARKING: Cathode band only
- TAPE & REEL optional: Standard per EIA-481-B with 12 mm tape, 1500 per 7 inch reel or 5000 per 13 inch reel (add "TR" suffix to part number)
- WEIGHT: 0.05 grams
- See package dimensions & recommended mounting pad on last page

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Microsemi
Scottsdale Division
8700 E. Thomas Rd. PO Box 1390, Scottsdale, AZ 85252 USA, (480) 941-6300, Fax: (480) 947-1503

ELECTRICAL CHARACTERISTICS @ T_C = 30°C

TYPE NUMBER (NOTE 1 & 5)	ZENER VOLTAGE (NOTE 4) V_Z Volts	TEST CURRENT I_{ZT} mA	MAXIMUM DYNAMIC IMPEDANCE (Note 2) Z_{ZT} @ I_{ZT} Ohms	MAXIMUM REVERSE CURRENT I_R @ V_R µA	TEST VOLTAGE V_R Volts	MAXIMUM REGULATOR CURRENT T_A = 50°C I_{ZM} mA	MAXIMUM KNEE IMPEDANCE (NOTE2) Z_{ZK} @ I_{ZK} Ohms	TEST CURRENT I_{ZK} mA	MAXIMUM (SURGE) CURRENT (NOTE 3) I_S mA
1N4728AUR	3.3	76	10	100	1	276	400	1.0	1380
1N4729AUR	3.6	69	10	100	1	252	400	1.0	1260
1N4730AUR	3.9	64	9	50	1	234	400	1.0	1190
1N4731AUR	4.3	58	9	10	1	217	400	1.0	1070
1N4732AUR	4.7	53	8	10	1	193	500	1.0	970
1N4733AUR	5.1	49	7	10	1	178	550	1.0	890
1N4734AUR	5.6	45	5	10	2	162	600	1.0	810
1N4735AUR	6.2	41	2	10	3	146	700	1.0	730
1N4736AUR	6.8	37	3.5	10	4	133	700	1.0	660
1N4737AUR	7.5	34	4.0	10	5	121	700	0.5	605
1N4738AUR	8.2	31	4.5	10	6	110	700	0.5	550
1N4739AUR	9.1	28	5.0	10	7	100	700	0.5	500
1N4740AUR	10	25	7	10	7.6	91	700	0.25	454
1N4741AUR	11	23	8	5	8.4	83	700	0.25	414
1N4742AUR	12	21	9	5	9.1	76	700	0.25	380
1N4743AUR	13	19	10	5	9.9	69	700	0.25	344
1N4744AUR	15	17	14	5	11.4	61	700	0.25	304
1N4745AUR	16	15.5	16	5	12.2	57	700	0.25	285
1N4746AUR	18	14	20	5	13.7	50	750	0.25	250
1N4747AUR	20	12.5	22	5	15.2	45	750	0.25	225
1N4748AUR	22	11.5	23	5	16.7	41	750	0.25	205
1N4749AUR	24	10.5	25	5	18.2	38	750	0.25	190
1N4750AUR	27	9.5	35	5	20.6	34	750	0.25	170
1N4751AUR	30	8.5	40	5	22.8	30	1000	0.25	150
1N4752AUR	33	7.5	45	5	25.1	27	1000	0.25	135
1N4753AUR	36	7.0	50	5	27.4	25	1000	0.25	125
1N4754AUR	39	6.5	60	5	29.7	23	1000	0.25	115
1N4755AUR	43	6.0	70	5	32.7	22	1500	0.25	110
1N4756AUR	47	5.5	80	5	35.8	19	1500	0.25	95
1N4757AUR	51	5.0	95	5	38.8	18	1500	0.25	90
1N4758AUR	56	4.5	110	5	42.6	16	2000	0.25	80
1N4759AUR	62	4.0	125	5	47.1	14	2000	0.25	70
1N4760AUR	68	3.7	150	5	51.7	13	2000	0.25	65
1N4761AUR	75	3.3	175	5	56.0	12	2000	0.25	60
1N4762AUR	82	3.0	200	5	62.2	11	3000	0.25	55
1N4763AUR	91	2.8	250	5	69.2	10	3000	0.25	50
1N4764AUR	100	2.5	350	5	76.0	9	3000	0.25	45

NOTE 1: The type numbers shown with an "A" suffix have a +/-5% tolerance on the nominal Zener voltage. Also available with suffix "C" for +/-2%, and "D" for +/-1%, while the absence of a suffix letter denotes +/- 10% tolerance.

NOTE 2: The Zener impedance is derived from the 60Hz ac voltage, which results when an 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}. Zener impedance is measured at two points to ensure a sharp knee on the breakdown curve and eliminate unstable units.

NOTE 3: The reverse surge current is measured at 25°C ambient using a ½ square wave or equivalent sine wave pulse 1/120 second duration superimposed on I_{ZT}.

NOTE 4: Voltage measurements to be performed 90 seconds after application of dc current.

NOTE 5: This product series has also been previously identified as the MLL4728A thru MLL4764A series. This alternate name may still be used.

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GRAPHS

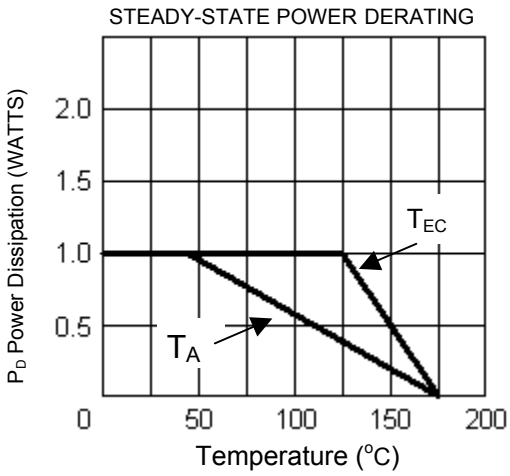


FIGURE 1

Power Derating Curve Where T_{EC} is End Cap Temp and T_A is Ambient Temperature on FR4 PC board.

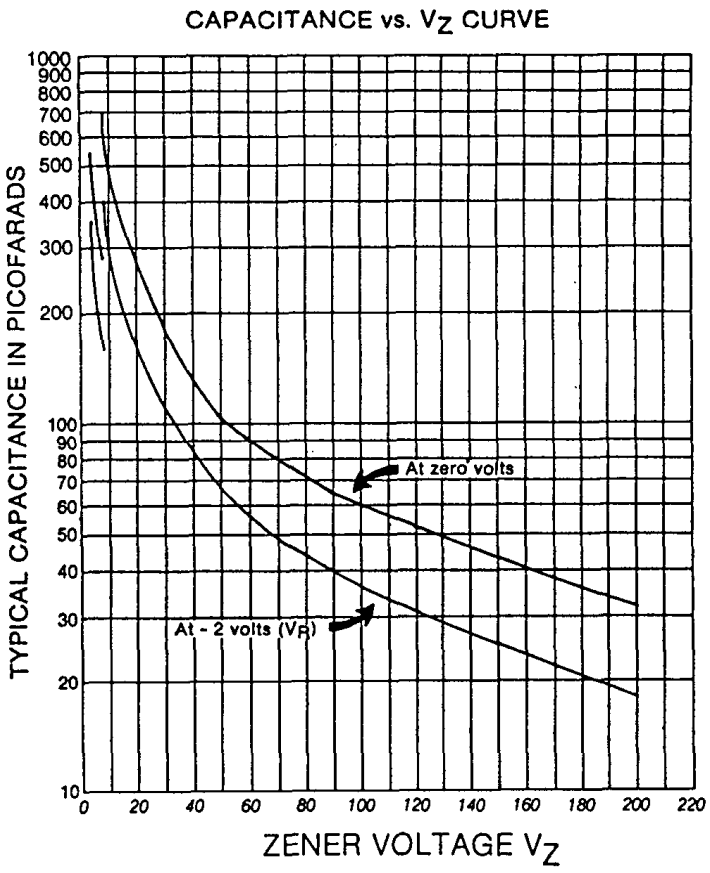
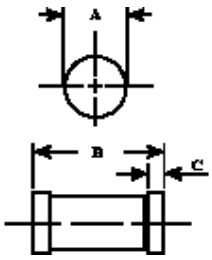
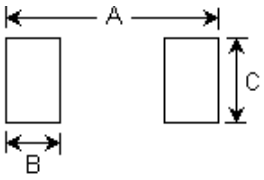


FIGURE 2

PACKAGE DIMENSIONS



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.189	0.205	4.80	5.20
B	0.094	0.105	2.39	2.66
C	0.016	0.022	0.41	0.55



PAD LAYOUT

	INCHES	mm
A	.276	7.00
B	0.070	1.8
C	0.110	2.8

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