

DESCRIPTION

This surface mountable 1 watt 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 and also includes enhanced internal contact design. 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
- RoHS Compliant devices available by adding "e3" suffix
- 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
- Metallurgically enhanced internal contact design for greater reliability and lower thermal resistance
- 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)
- Inherently radiation hard per MicroNote 050

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: 40°C/W junction to end cap, or 120°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 $T_{EC} \leq 135^{\circ}\text{C}$, or 1.00 watts at $T_A \leq 55^{\circ}\text{C}$ 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: Tin-Lead (Sn/Pb) or RohS Compliant annealed matte-Tin plating 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

ELECTRICAL CHARACTERISTICS @ T_c = 30°C

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

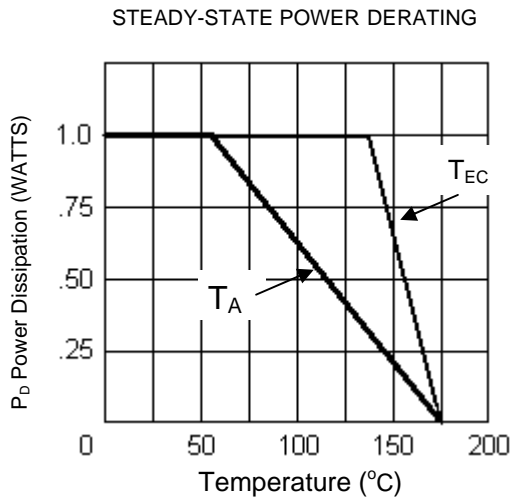
NOTE 2: The Zener impedance is derived from the 60Hz ac voltage, which results when an ac current having an rms value equal to 10% of the dc Zener current (I_{ZT} or I_{ZK}) is superimposed on I_{ZT} or I_{ZK}. Zener impedance is measured at two points to ensure a sharp knee on the breakdown curve and 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}.

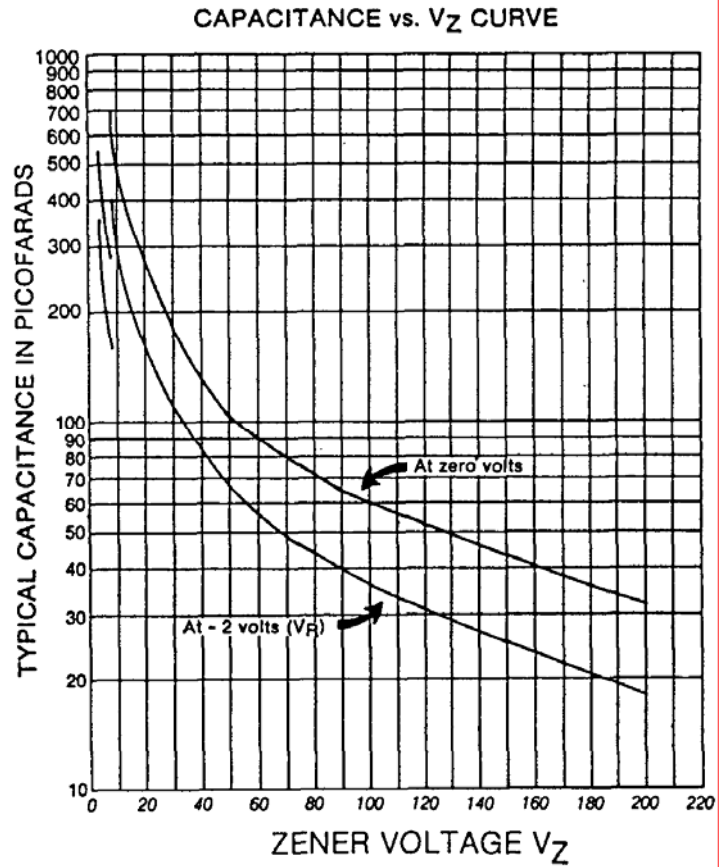
NOTE 4: Voltage measurements to be performed 90 seconds after application of dc current.

NOTE 5: This product series has also been previously identified as the MLL4728A-1 thru MLL4764A-1 series. This alternate name may still be used.

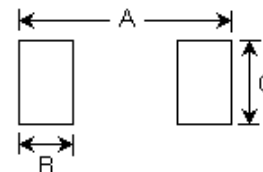
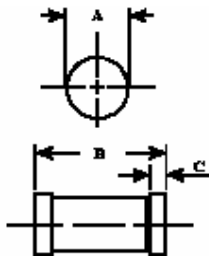
GRAPHS



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



PACKAGE DIMENSIONS



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

PAD LAYOUT

	INCHES	mm
	A	.276
B	0.070	1.8
C	0.110	2.8



Glass Diode Series Reliability & Qualification Data

This is the reliability and qualification data for the glass axial lead and surface mount Zener, rectifier and Schottky series.

Features

JAN/JANTX/JANTXV available for most
 Voltage range: 1.8 to 200 Volts
 .25 – 1.0 watt power rating
 Low noise, Low leakage and
 Tight tolerance available

Mechanical

Hermetically sealed, double slug glass
 Tin-Lead Plating
 DO-7, DO-35, DO-41, DO-213AA, DO-213AB
 Cathode indicated by band
 Metallurgical bond available

Maximum Ratings

Operating Temperatures: -65° C to 200° C
 Storage Temperature: -65° C to 200° C

Stress	Results
Moisture Classification	Level 1 Package - No Drypack Required Hermetically sealed
ESD Sensitivity	Non-sensitive – No special handling required
Estimated FIT 0.3	90% confidence, 70° C operating, 0.7 eV
Temperature Cycle	0/39936 @ 20 temp. cycles (-55° C to 175° C)
Steady State Life	0/83704 @ 25° C – Tj 150° (1000)
High Temperature Storage	0/675 @ 175° C (1000 Hours)

GLASS1101

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The following series are covered: 1N4370-4372, 1N746-1N759, 1N962-1N992, 1N4099-1N4135, 1N4614-1N4627, 1N4678-1N4717, 1N4728-1N4764, 1N5221-1N5281, 1N5518-

1N5546, 1N5817, 1N5819, 1N5728-1N5757, 1N5913-1N5956, 1N5985-1N6031, 1N4001-1N4006 and all MLL, DL, UR AND -1 versions.