Microsemi
SCOTTSDALE DIVISION

SMBG4728 thru SMBG4764A
SMBJ4728 thru SMBJ4764A

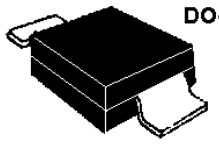
SILICON 2.0 Watt ZENER DIODES

DESCRIPTION

The SMBJ4728A-4764A and SMBG4728A-4764A series of surface mount 2.0 watt Zeners provides voltage regulation in a selection from 3.3 to 100 volts with different tolerances as identified by suffix letter on the part number. This surface mount product series with lower thermal resistance features is equivalent to the JEDEC registered 1N4728 thru 1N4764A with identical electrical characteristics except it is rated at 2.0 W instead of 1.0 W. It is available in J-bend design (SMBJ) with the DO-214AA package for greater PC board mounting density or in Gull-wing design (SMBG) in the DO-215AA for visible solder connections. Microsemi also offers numerous other Zener products to meet higher and lower power applications.

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

APPEARANCE



NOTE: All SMB series are equivalent to prior SMS package identifications.

FEATURES

- Surface mount equivalent to 1N4728 to 1N4764A
- Ideal for high-density and low-profile mounting
- Zener voltage available 3.3V to 200V
- Standard voltage tolerances are plus/minus 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.

APPLICATIONS / BENEFITS

- Regulates voltage over a broad operating current and temperature range
- Wide selection from 3.3 to 100 V
- Popular DO-214AA or DO-215AA packages and footprints for either high density J-bend or Gull-wing designs for visible solder joints
- Nonsensitive to ESD per MIL-STD-750 Method 1020
- Moisture classification: Level 1 per IPC/JEDEC J-STD-020B with no dry pack required

MAXIMUM RATINGS

- Power dissipation at 25°C: 2.0 watts (also see derating in Figure 1).
- Operating and Storage temperature: -65°C to +150°C
- Thermal Resistance: 35 °C/W junction to lead, or 100°C/W junction to ambient when mounted on FR4 PC board (1oz Cu) with recommended footprint (see last page)
- Steady-State Power: 2 watts at $T_L \leq 80^{\circ}C$, or 1.25 watts at $T_A = 25^{\circ}C$ when mounted on FR4 PC board with recommended footprint (also see Figure 1)
- Forward voltage @200 mA: 1.2 volts (maximum)
- Solder Temperatures: 260 °C for 10 s (maximum)

MECHANICAL AND PACKAGING

- CASE: Void-free transfer molded thermosetting epoxy body meeting UL94V-0
- TERMINALS: Gull-wing or C-bend (modified J-bend) 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 opposite end for Zener regulation
- MARKING: Includes part number without prefix (e.g. 4728A, 4734C, 4764D, etc.)
- TAPE & REEL option: Standard per EIA-481-1-A with 12 mm tape, 750 per 7 inch reel or 2500 per 13 inch reel (add "TR" suffix to part number)
- WEIGHT: 0.1 grams
- See package dimensions on last page

ELECTRICAL CHARACTERISTICS*

JEDEC TYPE NUMBER (Note 1)		ZENER VOLTAGE (Vz) (Note 4)	TEST CURRENT (I_{ZT})	MAXIMUM DYNAMIC IMPEDANCE (Z_{ZT} @ I_{ZT}) (Note 2)	MAXIMUM REVERSE CURRENT (I_R @ V_R)	TEST VOLTAGE (V_R)	MAXIMUM REGULATOR CURRENT (I_{ZM}) TA = 50°C	MAXIMUM KNEE IMPEDANCE (Z_{ZK} @ I_{ZK}) (Note 2)	TEST CURRENT (I_{ZK})	MAXIMUM (SURGE) CURRENT (I_S) (Note 3)
GULL-WING LEAD	C-BEND (MOD. "J")	VOLTS	mA	OHMS	µA	VOLTS	mA	OHMS	mA	mA
SMBG4728A	SMBJ4728A	3.3	76	10	100	1	276	400	1.0	1380
SMBG4729A	SMBJ4729A	3.6	69	10	100	1	252	400	1.0	1260
SMBG4730A	SMBJ4730A	3.9	64	9	50	1	234	400	1.0	1190
SMBG4731A	SMBJ4731A	4.3	58	9	10	1	217	400	1.0	1070
SMBG4732A	SMBJ4732A	4.7	53	8	10	1	193	500	1.0	970
SMBG4733A	SMBJ4733A	5.1	49	7	10	1	178	550	1.0	890
SMBG4734A	SMBJ4734A	5.6	45	5	10	2	162	600	1.0	810
SMBG4735A	SMBJ4735A	6.2	41	2	10	3	146	700	1.0	730
SMBG4736A	SMBJ4736A	6.8	37	3.5	10	4	133	700	1.0	660
SMBG4737A	SMBJ4737A	7.5	34	4.0	10	5	121	700	0.5	605
SMBG4738A	SMBJ4738A	8.2	31	4.5	10	6	110	700	0.5	550
SMBG4739A	SMBJ4739A	9.1	28	5.0	10	7	100	700	0.5	500
SMBG4740A	SMBJ4740A	10	25	7	10	7.6	91	700	0.25	454
SMBG4741A	SMBJ4741A	11	23	8	5	8.4	83	700	0.25	414
SMBG4742A	SMBJ4742A	12	21	9	5	9.1	76	700	0.25	380
SMBG4743A	SMBJ4743A	13	19	10	5	9.9	69	700	0.25	344
SMBG4744A	SMBJ4744A	15	17	14	5	11.4	61	700	0.25	304
SMBG4745A	SMBJ4745A	16	15.5	16	5	12.2	57	700	0.25	285
SMBG4746A	SMBJ4746A	18	14	20	5	13.7	50	750	0.25	250
SMBG4747A	SMBJ4747A	20	12.5	22	5	15.2	45	750	0.25	225
SMBG4748A	SMBJ4748A	22	11.5	23	5	16.7	41	750	0.25	205
SMBG4749A	SMBJ4749A	24	10.5	25	5	18.2	38	750	0.25	190
SMBG4750A	SMBJ4750A	27	9.5	35	5	20.6	34	750	0.25	170
SMBG4751A	SMBJ4751A	30	8.5	40	5	22.8	30	1000	0.25	150
SMBG4752A	SMBJ4752A	33	7.5	45	5	25.1	27	1000	0.25	135
SMBG4753A	SMBJ4753A	36	7.0	50	5	27.4	25	1000	0.25	125
SMBG4754A	SMBJ4754A	39	6.5	60	5	29.7	23	1000	0.25	115
SMBG4755A	SMBJ4755A	43	6.0	70	5	32.7	22	1500	0.25	110
SMBG4756A	SMBJ4756A	47	5.5	80	5	35.8	19	1500	0.25	95
SMBG4757A	SMBJ4757A	51	5.0	95	5	38.8	18	1500	0.25	90
SMBG4758A	SMBJ4758A	56	4.5	110	5	42.6	16	2000	0.25	80
SMBG4759A	SMBJ4759A	62	4.0	125	5	47.1	14	2000	0.25	70
SMBG4760A	SMBJ4760A	68	3.7	150	5	51.7	13	2000	0.25	65
SMBG4761A	SMBJ4761A	75	3.3	175	5	56.0	12	2000	0.25	60
SMBG4762A	SMBJ4762A	82	3.0	200	5	62.2	11	3000	0.25	55
SMBG4763A	SMBJ4763A	91	2.8	250	5	69.2	10	3000	0.25	50
SMBG4764A	SMBJ4764A	100	2.5	350	5	76.0	9	3000	0.25	45

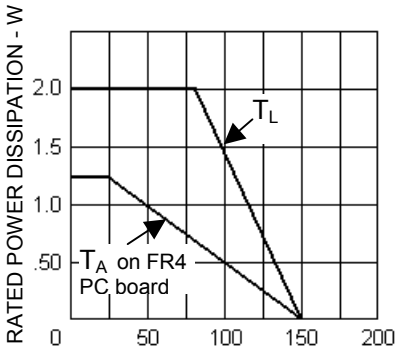
*JEDEC Registered Data

NOTES:

1. The JEDEC type numbers shown with an A suffix have a 5% tolerance on nominal zener voltage. No suffix signifies a 10% tolerance, C signifies 2%, and D signifies 1% tolerance. Also add a P suffix for designating plastic construction (or G suffix for glass body).
2. The Zener impedance is derived from the 60 Hz ac voltage that 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. See MicroNote 202 for zener impedance variation with different operating currents.
3. The reverse surge current is measured at 25°C ambient using a square wave or equivalent half-sine wave pulse 1/120 second duration superimposed on I_{ZT}.
4. Zener voltage (V_Z) is measured at T_L = 25ºC (+8, -2ºC) and 90 seconds after application of dc current.

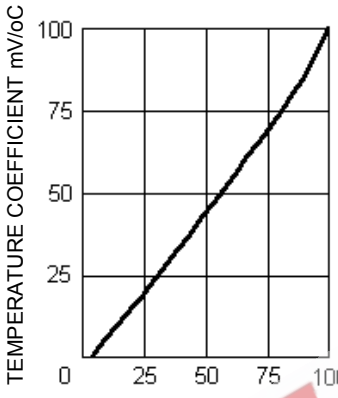
SILICON 2.0 Watt ZENER DIODES

GRAPHS



T_L, LEAD TEMP. (°C) or
T_A on FR4 PC Board

FIGURE 1
Power Derating Curve



NOMINAL ZENER VOLTAGE (VOLTS)

FIGURE 2
Temp. Coeff. vs. Zener Voltage

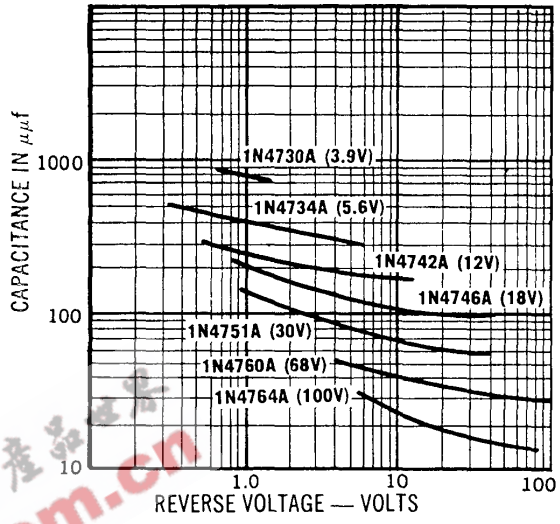
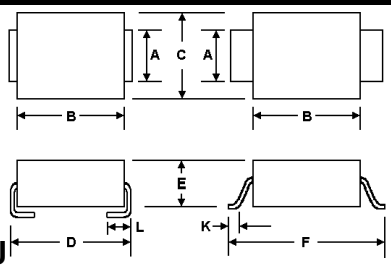


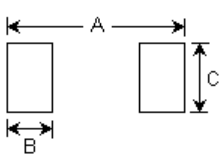
FIGURE 3
Typical Capacitance vs. Voltage
for Representative Types

PACKAGE DIMENSIONS & PAD LAYOUT



SMBJ SMBG

	A	B	C	D	E	F	K	L
MIN	.077	.160	.130	.205	.075	.235	.015	.030
MAX	.083	.180	.155	.220	.095	.255	.030	.060
DIMENSIONS IN MILLIMETERS								
MIN	1.96	4.06	3.30	5.21	1.90	5.97	.381	.760
MAX	2.10	4.57	3.94	5.59	2.41	6.48	.762	1.52 0



	INCHES	mm
A	0.320	8.13
B	0.085	2.16
C	0.110	2.79

SMBG

	INCHES	mm
A	.260	6.60
B	.085	2.16
C	.110	2.79

SMBJ