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SCOTTSDALE DIVISION

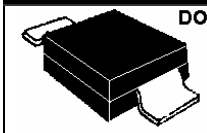
SMBG5333 thru SMBG5388B, e3
SMBJ5333 thru SMBJ5388B, e3

SURFACE MOUNT 5.0 Watt ZENER DIODES

DESCRIPTION

The SMBJ5333-5388B or SMBG5333-5388B series of surface mount 5.0 watt Zeners provides voltage regulation in a selection from 3.3 to 200 volts with different tolerances as identified by suffix letter on the part number. It is equivalent to the JEDEC registered 1N5333 thru 1N5388B with identical electrical characteristics and testing as well as RoHS Compliant with an e3 suffix. 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. These plastic encapsulated Zeners have a moisture classification of Level 1 with no dry pack required and are also available in military equivalent screening levels by adding a prefix identifier as further described in the Features section. Microsemi also offers numerous other Zener products to meet higher and lower power applications.

APPEARANCE





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

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

FEATURES

- Surface mount equivalent to 1N5333 to 1N5388B
- Ideal for high-density and low-profile mounting
- Zener voltage available 3.3V to 200V
- Standard voltage tolerances are plus/minus 5% with B suffix and 10 % with A 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, and JANTXV are available by adding MQ, MX, or MV prefixes respectively to part numbers.
- RoHS compliant devices available by adding an "e3" suffix

APPLICATIONS / BENEFITS

- Regulates voltage over a broad operating current and temperature range
- Wide selection from 3.3 to 200 V
- Nonsensitive to ESD
- Withstands high surge stresses
- Minimal changes of voltage versus current as specified by voltage regulation (ΔV_Z)
- High specified maximum current (I_{ZM}) when adequately heat sinking
- Moisture classification is Level 1 with no dry pack required per IPC/JEDEC J-STD-020B

MAXIMUM RATINGS

- Power dissipation at 25°C: 5.0 watts (also see derating in Figure 1).
- Operating and Storage temperature: -65°C to +150°C
- Thermal Resistance: 25°C/W junction to lead, or 90°C/W junction to ambient when mounted on FR4 PC board (1oz Cu) with recommended footprint (see last page)
- Steady-State Power: 5 watts at $T_L \leq 25^oC$, or 1.38 watts at $T_A = 25^oC$ when mounted on FR4 PC board with recommended footprint (also see Figure 1)
- Forward voltage @1.0 A: 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) tin-lead 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.
- MARKING: Part number without SMBx prefix (e.g. 5333B, 5333Be3, MX5348C, 5376D, 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

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SMBG5333 thru SMBG5388B, e3
SMBJ5333 thru SMBJ5388B, e3

SURFACE MOUNT 5.0 Watt ZENER DIODES

ELECTRICAL CHARACTERISTICS @ T_L = 30°C

TYPE NUMBER		REGULATOR VOLTAGE (V_Z)	TEST CURRENT (I_Z)	MAXIMUM DYNAMIC IMPEDANCE (Z_Z) (A&B Suffix)	MAXIMUM REVERSE CURRENT (I_R)	I_R TEST VOLTAGE (V_R) (Non-Suffix & A Suffix)	I_R TEST VOLTAGE (V_R) (B,C,D Suffix)	MAXIMUM REGULATOR CURRENT (I_{ZM}) (B,C,D Suffix)	MAXIMUM DYNAMIC KNEE IMPEDANCE Z_{ZK} AT 1.0Ma (A,B,C,D Suffix)	MAXIMUM SURGE CURRENT (I_{ZSM})	MAXIMUM VOLTAGE REGULATION (ΔV_Z) (A,B,C,D Suffix)
GULL-WING LEAD	C-BEND (MOD. "J")	V	mA dc	OHMS	µA	V	V	mA	OHMS	AMPS	VOLTS
SMBG5333B	SMBJ5333B	3.3	380	3.0	300	1.0	1.0	1440	400	20	0.85
SMBG5334B	SMBJ5334B	3.6	350	2.5	150	1.0	1.0	1320	500	18.7	0.80
SMBG5335B	SMBJ5335B	3.9	320	2.0	50	1.0	1.0	1220	500	17.6	0.54
SMBG5336B	SMBJ5336B	4.3	290	2.0	10	1.0	1.0	1100	500	16.4	0.49
SMBG5337B	SMBJ5337B	4.7	260	2.0	5.0	1.0	1.0	1010	450	15.3	0.44
SMBG5338B	SMBJ5338B	5.1	240	1.5	1.0	1.0	1.0	930	400	14.4	0.39
SMBG5339B	SMBJ5339B	5.6	220	1.0	1.0	2.0	2.0	865	400	13.4	0.25
SMBG5340B	SMBJ5340B	6.0	200	1.0	1.0	3.0	3.0	790	300	12.7	0.19
SMBG5341B	SMBJ5341B	6.2	200	1.0	1.0	3.0	3.0	765	200	12.4	0.10
SMBG5342B	SMBJ5342B	6.8	175	1.0	10	4.9	5.2	700	200	11.5	0.15
SMBG5343B	SMBJ5343B	7.5	175	1.5	10	5.4	5.7	630	200	10.7	0.15
SMBG5344B	SMBJ5344B	8.2	150	1.5	10	5.9	6.2	580	200	10	0.20
SMBG5345B	SMBJ5345B	8.7	150	2.0	10	6.25	6.6	545	200	9.5	0.20
SMBG5346B	SMBJ5346B	9.1	150	2.0	7.5	6.6	6.9	520	150	9.2	0.22
SMBG5347B	SMBJ5347B	10	125	2.0	5.0	7.2	7.6	475	125	8.6	0.22
SMBG5348B	SMBJ5348B	11	125	2.5	5.0	8.0	8.4	430	125	8.0	0.25
SMBG5349B	SMBJ5349B	12	100	2.5	2.0	8.6	9.1	395	125	7.5	0.25
SMBG5350B	SMBJ5350B	13	100	2.5	1.0	9.4	9.9	365	100	7.0	0.25
SMBG5351B	SMBJ5351B	14	100	2.5	1.0	10.1	10.6	340	75	6.7	0.25
SMBG5352B	SMBJ5352B	15	75	2.5	1.0	10.8	11.5	315	75	6.3	0.25
SMBG5353B	SMBJ5353B	16	75	2.5	1.0	11.5	12.2	295	75	6.0	0.30
SMBG5354B	SMBJ5354B	17	70	2.5	0.5	12.2	12.9	280	75	5.8	0.35
SMBG5355B	SMBJ5355B	18	65	2.5	0.5	13	13.7	264	75	5.5	0.40
SMBG5356B	SMBJ5356B	19	65	3.0	0.5	13.7	14.4	250	75	5.3	0.40
SMBG5357B	SMBJ5357B	20	65	3.0	0.5	14.4	15.2	237	75	5.1	0.40
SMBG5358B	SMBJ5358B	22	50	3.5	0.5	15.8	16.7	216	75	4.7	0.45
SMBG5359B	SMBJ5359B	24	50	3.5	0.5	17.3	18.2	198	100	4.4	0.55
SMBG5360B	SMBJ5360B	25	50	4.0	0.5	18	19	190	110	4.3	0.55
SMBG5361B	SMBJ5361B	27	50	5.0	0.5	19.4	20.6	176	120	4.1	0.60
SMBG5362B	SMBJ5362B	28	50	6.0	0.5	20.1	21.2	170	130	3.9	0.60
SMBG5363B	SMBJ5363B	30	40	8.0	0.5	21.6	22.8	158	140	3.7	0.60
SMBG5364B	SMBJ5364B	33	40	10	0.5	23.8	25.1	144	150	3.5	0.60
SMBG5365B	SMBJ5365B	36	30	11	0.5	25.9	27.4	132	160	3.3	0.65
SMBG5366B	SMBJ5366B	39	30	14	0.5	28.1	29.7	122	170	3.1	0.65
SMBG5367B	SMBJ5367B	43	30	20	0.5	31	32.7	110	190	2.8	0.70
SMBG5368B	SMBJ5368B	47	25	25	0.5	33.8	35.8	100	210	2.7	0.80
SMBG5369B	SMBJ5369B	51	25	27	0.5	36.7	38.8	93	230	2.5	0.90
SMBG5370B	SMBJ5370B	56	20	35	0.5	40.3	42.6	86	280	2.3	1.00
SMBG5371B	SMBJ5371B	60	20	40	0.5	43	45.5	79	350	2.2	1.20
SMBG5372B	SMBJ5372B	62	20	42	0.5	44.6	47.1	76	400	2.1	1.35
SMBG5373B	SMBJ5373B	68	20	44	0.5	49	51.7	70	500	2.0	1.50
SMBG5374B	SMBJ5374B	75	20	45	0.5	54	56	63	620	1.9	1.60
SMBG5375B	SMBJ5375B	82	15	65	0.5	59	62.2	58	720	1.8	1.80
SMBG5376B	SMBJ5376B	87	15	75	0.5	63	66	54.5	760	1.7	2.00
SMBG5377B	SMBJ5377B	91	15	75	0.5	65.5	69.2	52.5	760	1.6	2.20
SMBG5378B	SMBJ5378B	100	12	90	0.5	72	76	47.5	800	1.5	2.30
SMBG5379B	SMBJ5379B	110	12	125	0.5	79.2	83.6	43	1000	1.4	2.50
SMBG5380B	SMBJ5380B	120	10	170	0.5	86.4	91.2	39.5	1150	1.3	2.50
SMBG5381B	SMBJ5381B	130	10	190	0.5	93.6	98.8	36.6	1250	1.2	2.50
SMBG5382B	SMBJ5382B	140	8.0	230	0.5	101	106	34	1500	1.2	2.50
SMBG5383B	SMBJ5383B	150	8.0	330	0.5	108	114	31.6	1500	1.1	3.00
SMBG5384B	SMBJ5384B	160	8.0	350	0.5	115	122	29.4	1650	1.1	3.00
SMBG5385B	SMBJ5385B	170	8.0	380	0.5	122	129	28	1750	1.0	3.00
SMBG5386B	SMBJ5386B	180	5.0	430	0.5	130	137	26.4	1750	1.0	4.00
SMBG5387B	SMBJ5387B	190	5.0	450	0.5	137	144	25	1850	0.9	5.00
SMBG5388B	SMBJ5388B	200	5.0	480	0.5	144	152	23.6	1850	0.9	5.00

NOTE 1: Devices listed above with B suffix have ±5% tolerance, A suffix designates ±10% tolerance, C suffix designates ±2% tolerance, and D designates ±1% tolerance.

NOTE 2: Zener voltage (Vz) is measured at T_L = 25°C (+8, -2°C). Voltage measurement to be performed 40 ±10 milliseconds after application of dc current.

NOTE 3: The zener impedance is derived from 1 kHz ac voltage resulting from an ac current modulation having an rms value equal to 10% of the dc zener current (I_{ZT} or I_{ZK}) superimposed on I_{ZT} or I_{ZK}. See Micro Note 202 for zener impedance variation with different operating currents.

NOTE 4: The maximum current (I_{ZM}) shown is for a ±5% tolerance devices. The I_{ZM} for other tolerances can be calculated using the formula: $I_{ZM} = P/V_{ZM}$ where V_{ZM} is the V_Z at the high end of the voltage tolerance specified and P is the rated power for the method of mounting.

NOTE 5: The surge current (I_{ZSM}) is specified as the maximum peak of a non-recurrent half-sine wave of 8.3 ms duration.

NOTE 6: Voltage regulation (V_Z) is the difference between the voltage measured at 10% and 50% of I_{ZM}.

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GRAPHS

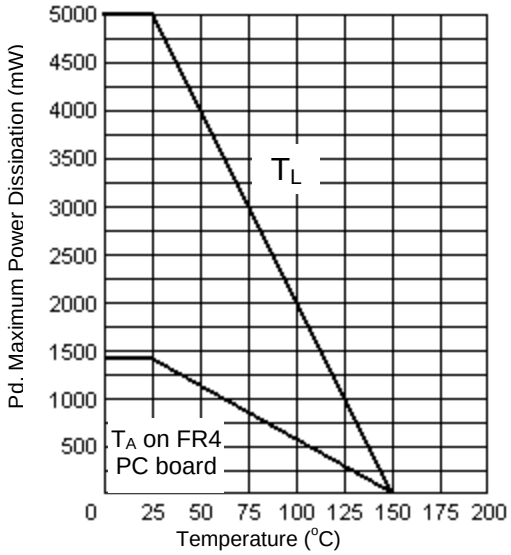


FIGURE 1 – Power Derating Curve

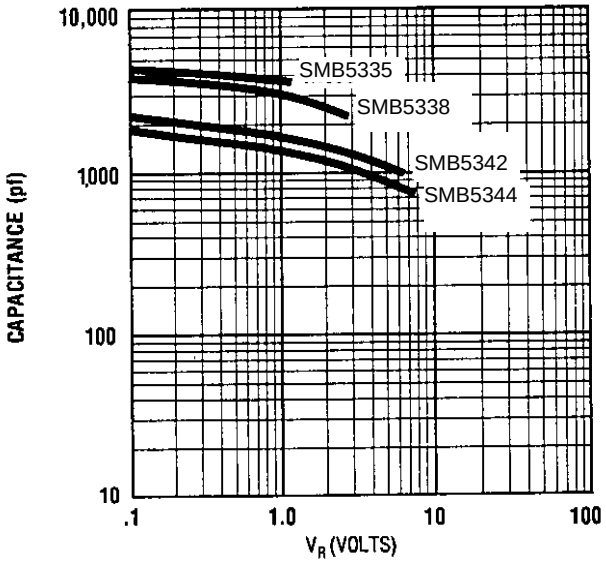


FIGURE 2 – Capacitance vs. Zener Voltage

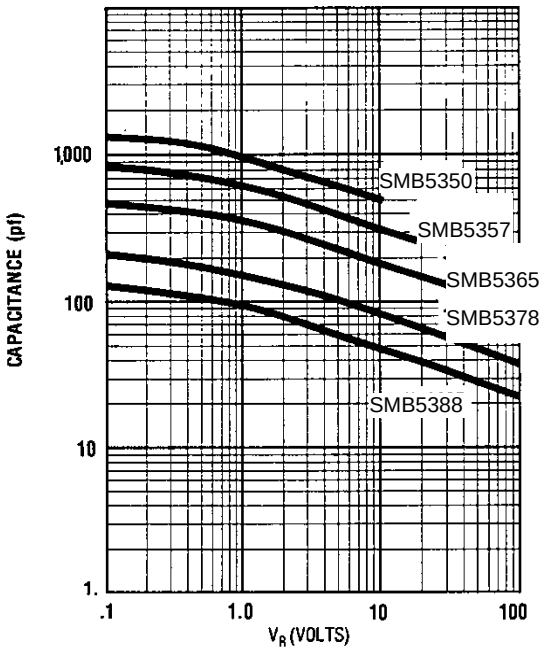
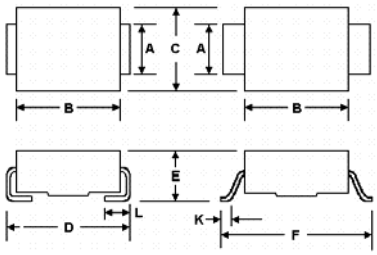


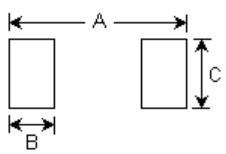
FIGURE 3
Typical Capacitance vs.
Reverse Voltage for 5 Watt Zeners

PACKAGE DIMENSIONS & PAD LAYOUT



SMBJ **SMBG**

	A	B	C	D	E	F	K	L
MIN	.077	.160	.130	.205	.077	.235	.015	.030
MAX	.083	.180	.155	.220	.104	.255	.030	.060
DIMENSIONS IN MILLIMETERS								
MIN	1.96	4.06	3.30	5.21	1.95	5.97	.381	.760
MAX	2.10	4.57	3.94	5.59	2.65	6.48	.762	1.520



	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

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SMBJ5359Be3/TR13 (#313298)

Zener Voltage Regulator Diode

Overview Docs & Specs Diagrams Buy & Sample

Description :

The SMBJ5333-5388B or SMBG5333-5388B series of surface mount 5.0 watt Zeners provides voltage regulation in a selection from 3.3 to 200 volts with different tolerances as identified by suffix letter on the part number. It is equivalent to the JEDEC registered 1N5333 thru 1N5388B with identical electrical characteristics and testing as well as RoHS Compliant with an e3 suffix. 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. These plastic encapsulated Zeners have a moisture classification of Level 1 with no dry pack required and are also available in military equivalent screening levels by adding a prefix identifier as further described in the Features section. Microsemi also offers numerous other Zener products to meet higher and lower power applications.

ROHS

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