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Microsemi
SCOTTSDALE DIVISION

SMAJ4460 thru SMAJ4496, e3 and SMAJ6485 thru SMAJ6491, e3

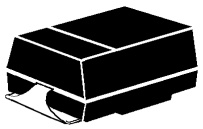
1.5 Watt Zener Diodes

DESCRIPTION

This 1.5 watt zener series in a low-profile light-weight plastic surface mount configuration, with stress-relief J-bend contacts, meets or exceeds the electrical performance of the 1N4460 thru 1N4496 and 1N6485 thru 1N6491. It also provides double the overall surge performance by using a larger active die element. This includes ESD protection per IEC61000-4-2, EFT protection per IEC61000-4-4, and higher surge levels defined herein. The low-flat profile provides easier insertion or automatic handling compared to other MELF style packages. Its thermally efficient design lowers junction temperatures and extends operating temperature range before derating begins. Power derates to zero at 150°C for these plastic packages.

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

SURFACE MOUNT ZENER



DO-214BA or AC (SMAJ)

FEATURES

- Zener voltages: 3.3 volts to 200 volts
- Metallurgically bonded
- Reliability data per JESD22-A108, JESD22-A104, JESD22-A113-B, JESD22-A101-B, and JESD22-A102
- Thermally efficient surface mount with J-bends for stress relief (flat handling surface for easier placement)
- Options for screening in accordance with MIL-PRF-19500/406 for JAN, JANTX, and JANTXV are available by adding MQ, MX, or MV prefixes respectively to part numbers. For example, designate a MXSMAJ4460 for a JANTX screen.
- RoHS Compliant devices available by adding "e3" suffix

APPLICATIONS / BENEFITS

- For high reliability voltage regulation in low profile surface mount locations requiring easy placement and strain relief
- Light weight for airborne or satellite applications
- Superior surge quality to protect from ESD and EFT transients per IEC61000-4-2 and -4-4 and higher surge levels defined herein

MAXIMUM RATINGS

- Operating temperature: -55°C to +150°C
- Storage temperature: -55°C to +150°C
- 1.5 watt steady-state maximum power
- Thermal resistance, $R_{\theta JL}$ = 15 °C/W
- Solder Temperatures: 260ºC for 10 s (maximum)

MECHANICAL AND PACKAGING

- Molded epoxy package meets UL94V-0
- Terminals: Tin-lead or RoHS compliant annealed matte-Tin plated solderable per MIL-STD-750, method 2026
- Body marked with P/N without SMAJ letters (ie. 4460, 4496, 6485, 4460, etc.)
- Polarity is indicated by cathode band
- Weight: 0.064 grams (approximate)
- Tape & Reel packaging per EIA-481-2 with 12 mm tape and 2500 units per reel (13 inch reel)

POWER DERATING – OUTLINE – MOUNTING PAD

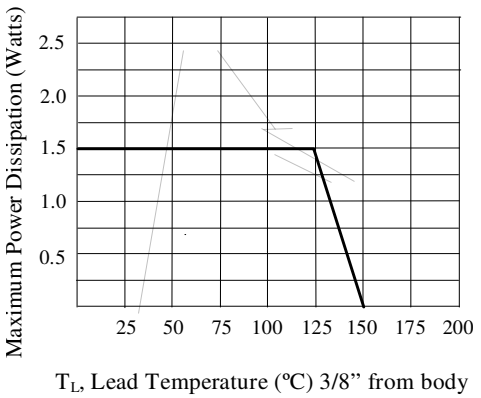
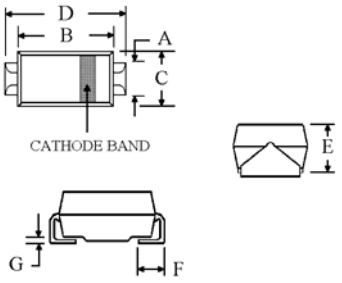


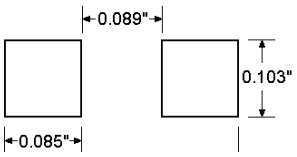
Figure 1. Power Derating Curve



DIMENSIONS				
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.052	.103	1.32	2.62
B	.160	.180	4.06	4.57
C	.100	.110	2.54	2.79
D	.194	.216	4.93	5.49
E	.078	.115	1.98	2.92
F	.030	.060	0.76	1.52
G	--	.005	--	0.13

DIMENSION A IS WITHIN DO-214BA BUT HIGHER THAN STANDARD JEDEC OUTLINES..DIMENSION B IS WIDER THAN BOTH JEDEC OUTLINES FOR LOWER THERMAL RESISTANCE

Outline



Mounting Pad

ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise specified)

MICROSEMI PART NUMBER	ZENER VOLTAGE V_Z @ I_{ZT} VOLTS NOM.	TEST CURRENT I_{ZT} mA	DYNAMIC IMPEDANCE $Z_{ZT} = I_{ZT}$ OHMS MAX	KNEE IMPEDANCE $Z_{ZK} = I_{ZK}$ OHMS MAX	TEST CURRENT I_{ZK} mA	REVERSE CURRENT I_R @ V_R µA MAX	TEST VOLTAGE V_R VOLTS	MAXIMUM CONTINOUS CURRENT mA	MAXIMUM SURGE CURRENT at 8.3 ms square wave T_A = 25 °C A	MAXIMUM SURGE CURRENT at 8.3 ms square wave T_A = 100 °C A
SMAJ6485	3.3	76.0	10	400	1.0	50	1.0	433	-	8.4
SMAJ6486	3.6	69.0	10	400	1.0	50	1.0	397	-	7.8
SMAJ6487	3.9	64.0	9	400	1.0	35	1.0	366	-	7.2
SMAJ6488	4.3	58.0	9	400	1.0	5	1.0	332	-	6.6
SMAJ6489	4.7	53.0	8	500	1.0	4	1.0	304	-	6.0
SMAJ6490	5.1	49.0	7	500	1.0	1	1.0	280	-	5.4
SMAJ6491	5.6	45.0	5	600	1.0	.50	2.0	255	-	5
SMAJ4460	6.2	40.0	4	200	1.0	10	3.72	230	-	4.6
SMAJ4461	6.8	37.0	2.5	200	1.0	5	4.08	210	10	4.2
SMAJ4462	7.5	34.0	2.5	400	0.5	1	4.50	191	9	3.8
SMAJ4463	8.2	31.0	3	400	0.5	.50	4.92	174	7.8	3.4
SMAJ4464	9.1	28.0	4	500	0.5	.30	5.46	157	6.8	3.2
SMAJ4465	10	25.0	5	500	.25	.30	8.0	143	6	2.8
SMAJ4466	11	23.0	6	550	.25	.30	8.8	130	5.2	2.6
SMAJ4467	12	21.0	7	550	.25	.20	9.6	119	4.8	2.4
SMAJ4468	13	19.0	8	550	.25	.05	10.4	110	4.4	2.2
SMAJ4469	15	17.0	9	600	.25	.05	12.0	95	3.6	1.9
SMAJ4470	16	15.5	10	600	.25	.05	12.8	90	3.2	1.6
SMAJ4471	18	14.0	11	650	.25	.05	14.4	79	2.8	1.58
SMAJ4472	20	12.5	12	650	.25	.05	16.0	71	2.4	1.42
SMAJ4473	22	11.5	14	650	.25	.05	17.6	65	2.2	1.3
SMAJ4474	24	10.5	16	700	.25	.05	19.2	60	1.8	1.2
SMAJ4475	27	9.5	18	700	.25	.05	21.6	53	1.6	1.06
SMAJ4476	30	8.5	20	750	.25	.05	24.0	48	1.5	.96
SMAJ4477	33	7.5	25	800	.25	.05	26.4	43	1.32	.86
SMAJ4478	36	7.0	27	850	.25	.05	28.8	40	1.20	.80
SMAJ4479	39	6.5	30	900	.25	.05	31.2	37	1.08	.74
SMAJ4480	43	6.0	40	950	.25	.05	34.4	33	.96	.66
SMAJ4481	47	5.5	50	1000	.25	.05	37.6	30	.90	.60
SMAJ4482	51	5.0	60	1100	.25	.05	40.8	28	.84	.56
SMAJ4483	56	4.5	70	1300	.25	.025	44.8	26	.78	.52
SMAJ4484	62	4.0	80	1500	.25	.025	49.6	23	.70	.46
SMAJ4485	68	3.7	100	1700	.25	.025	54.4	21	.64	.42
SMAJ4486	75	3.3	130	2000	.25	.025	60.4	19	.58	.38
SMAJ4487	82	3.0	160	2500	.25	.025	65.6	17	.52	.34
SMAJ4488	91	2.8	200	3000	.25	.025	72.8	16	.46	.32
SMAJ4489	100	2.5	250	3100	.25	.025	80.0	14	.40	.28
SMAJ4490	110	2.0	300	4000	.25	.025	88.0	13	.38	.26
SMAJ4491	120	2.0	400	4500	.25	.025	96.0	12	.36	.24
SMAJ4492	130	1.9	500	5000	.25	.025	104	11	.32	.22
SMAJ4493	150	1.7	700	6000	.25	.025	120	9.5	.28	.19
SMAJ4494	160	1.6	1000	6500	.25	.025	128	8.9	.24	.178
SMAJ4495	180	1.4	1300	7000	.25	.025	144	7.9	.20	.158
SMAJ4496	200	1.2	1500	8000	.25	.025	160	7.2	.16	.144

Notes:

1. No suffix indicates a ±5% tolerance on nominal V_Z, C denotes a ±2% tolerance, and D denotes a ±1% tolerance.
2. Zener voltage (V_z) is measured at T_L = 30 °C. Voltage measurement to be performed 90 seconds after application of dc current.
3. The zener impedance is derived from the 60 Hz 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}).
4. V_f at 200 mA 1.2 volts maximum and V_f at 1.0 A 1.5 volts maximum.