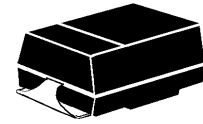


DESCRIPTION

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, JANTXV, and JANS are available by adding MQ, MX, MV, or MSP prefixes respectively to part numbers. For example, designate a MXSMAJ4460 for a JANTX screen.

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

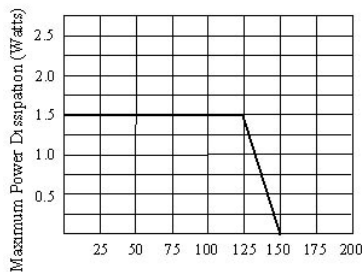
MAXIMUM RATINGS

- Operating temperature: -55°C to +150°C
- Storage temperature: -55°C to +150°C
- 1.5 watt steady-state maximum power
- Thermal resistance, $R_{\theta JI} = 15\text{ }^{\circ}\text{C/W}$

MECHANICAL AND PACKAGING

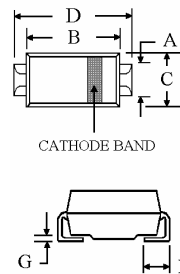
- Molded epoxy package meets UL94V-0
- Terminals: solderable per MIL-STD-750 Method 2026. (max 260 °C for 10 sec.)
- Body marked with P/N without SMAJ letters (ie. 4460, 4496, 6485, 4460, etc.)
- Polarity is indicated by cathode band
- Weight: 0.064 grams (approximate)
- Tape & Reel packaging per EIA-481-2 with 12 mm tape and 2500 units per reel (13 inch reel)

POWER DERATING - OUTLINE - MOUNTING PAD



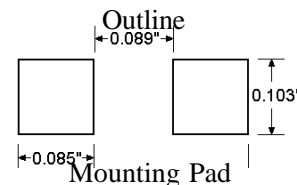
T_L , Lead Temperature (°C) 3/8" from body

Figure 1. Power Derating Curve



| DIM | DIMENSIONS | | | |
|-----|------------|------|-------------|------|
| | 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





**SMAJ4460 thru SMAJ4496
and SMAJ6485 thru SMAJ6491**

1.5 Watt Zener Diodes

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 μ A MAX | TEST VOLTAGE V_R VOLTS | MAXIMUM CONTINUOUS CURRENT mA | MAXIMUM SURGE CURRENT at 8.3 ms square wave $T_A = 25^\circ\text{C}$ A | MAXIMUM SURGE CURRENT at 8.3 ms square wave $T_A = 100^\circ\text{C}$ 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 $\pm 5\%$ tolerance on nominal V_z , C denotes a $\pm 2\%$ tolerance, and D denotes a $\pm 1\%$ tolerance.
2. Zener voltage (V_z) is measured at $T_L = 30^\circ\text{C}$. 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.

