

MR5059 MR5060 MR5061



MOTOROLA

AVALANCHE RECTIFIERS

... subminiature size, axial lead-mounted rectifiers for general-purpose, low-power applications requiring avalanche protection.

- Avalanche power capability
 - 1000 Watts at 20 μ s
 - 450 Watts at 100 μ s
- Low Forward Voltage
- Low Cost

| Cross Reference Guide | | |
|-----------------------|--------|----------|
| Motorola | JEDEC | G.I. |
| MR5059 | 1N5059 | 1N5059GP |
| MR5060 | 1N5060 | 1N5060GP |
| MR5061 | 1N5061 | 1N5061GP |

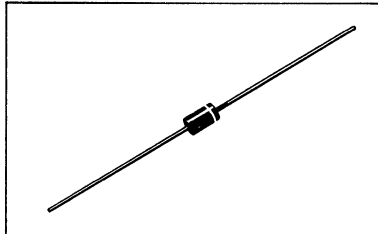
LEAD-MOUNTED AVALANCHE RECTIFIERS

200-400-600 VOLTS
1.5 AMPS

3

MAXIMUM RATINGS

| Rating | Symbol | MR5059 | MR5060 | MR5061 | Unit |
|---|---------------------------------|------------------|--------|------------------|-------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 200 | 400 | 600 | Volts |
| Nonrepetitive Peak Reverse Voltage (Halfwave, Single Phase, 60 Hz) | V_{RSM} | 300 | 525 | 800 | Volts |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 140 | 280 | 420 | Volts |
| Average Rectified Forward Current (Single Phase, Resistive Load, 60 Hz, $T_L = 70^\circ\text{C}$, 1/2" From Body) | I_O | 1.5 | | Amp | |
| Nonrepetitive Peak Surge Current (Surge Applied at Rated Load Conditions) | I_{FSM} | 50 (for 1 cycle) | | Amp | |
| Junction & Storage Temperature Range | T_J, T_{stg} | -65 to +175 | | $^\circ\text{C}$ | |
| Nonrepetitive Peak Reverse Surge Power ($t = 20 \mu\text{s}$) | P_{RM} | 1000 | | Watts | |



ELECTRICAL CHARACTERISTICS

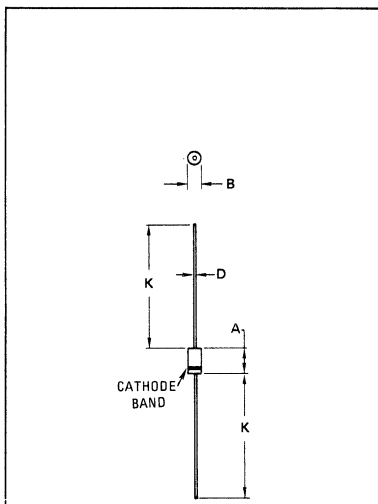
| Characteristic and Conditions | Symbol | Typ | Max | Unit |
|---|--------|---|------------|---------------|
| Instantaneous Forward Voltage ($i_f = 1.5 \text{ Amp}$, $T_J = 25^\circ\text{C}$) | v_f | 0.93 | 1.04 | Volts |
| Reverse Current (Rated dc Voltage) | I_R | $T_J = 150^\circ\text{C}$: 250 $T_J = 25^\circ\text{C}$: 3.0 | 300 5.0 | μA |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Typ | Max | Unit |
|--|-----------------|-----|-----|---------------------------|
| Thermal Resistance, Junction to Lead 1/4" | $R_{\theta JL}$ | 21 | 38 | $^\circ\text{C}/\text{W}$ |
| 1/2" | | 31 | 50 | |

MECHANICAL CHARACTERISTICS

CASE: Void free, transfer molded plastic
MAXIMUM LEAD TEMPERATURE FOR SOLDERING PURPOSES:
 240 $^\circ\text{C}$, 1/8" from case for 10 seconds at 5 lbs. tension
FINISH: All external surfaces are corrosion-resistant, leads are readily solderable
POLARITY: Cathode indicated by color band
WEIGHT: 0.40 grams (approximately)



| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 5.97 | 6.60 | 0.235 | 0.260 |
| B | 2.79 | 3.05 | 0.110 | 0.120 |
| D | 0.76 | 0.86 | 0.030 | 0.034 |
| K | 27.94 | — | 1.100 | — |

CASE 59-04
Dimensions Within JEDEC DO-15 Outline.

FIGURE 1 — FORWARD VOLTAGE

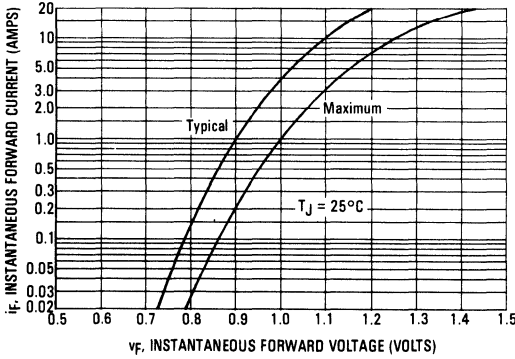


FIGURE 2 — MAXIMUM NON-REPETITIVE AVALANCHE SURGE POWER

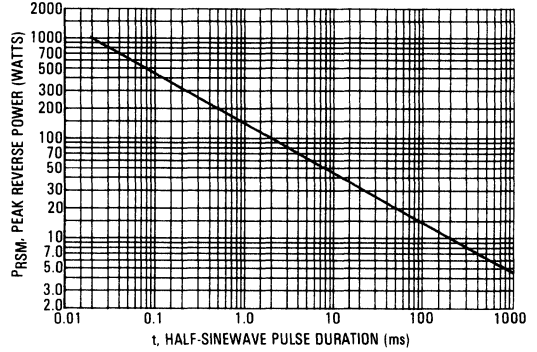


FIGURE 3 — POWER DISSIPATION

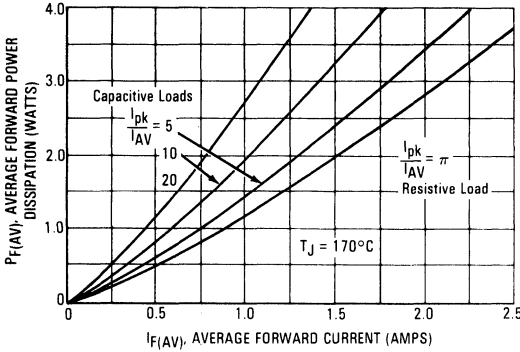


FIGURE 4 — EFFECT OF LEAD LENGTHS, RESISTIVE LOAD

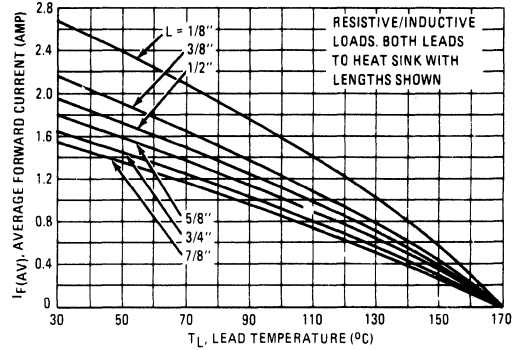
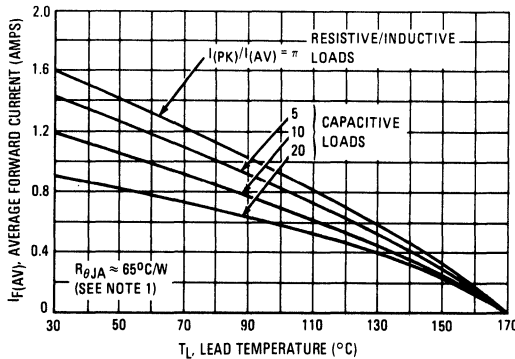


FIGURE 5 — PRINTED CIRCUIT BOARD MOUNTING, VARIOUS LOADS



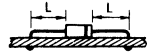
NOTE 1

Data shown for thermal resistance junction-to-ambient (θ_{JA}) for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

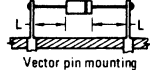
TYPICAL VALUES FOR θ_{JA} IN STILL AIR

| MOUNTING METHOD | LEAD LENGTH, L (IN) | | | | $R_{\theta JA}$ |
|-----------------|---------------------|-----|-----|-----|-----------------|
| | 1/8 | 1/4 | 1/2 | 3/4 | |
| 1 | 65 | 72 | 82 | 92 | $^{\circ}C/W$ |
| 2 | 74 | 81 | 91 | 101 | $^{\circ}C/W$ |
| 3 | 40 | | | | $^{\circ}C/W$ |

MOUNTING METHOD 1



MOUNTING METHOD 2



MOUNTING METHOD 3

