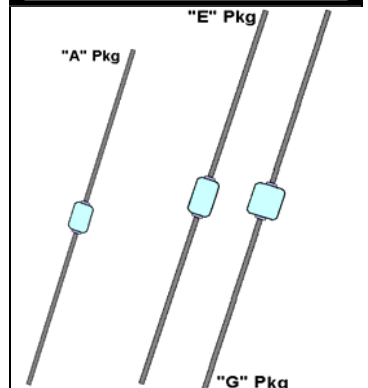


**VOIDLESS HERMETICALLY SEALED  
ULTRA FAST RECOVERY GLASS  
POWER RECTIFIERS**
**ALSO  
AVAILABLE IN  
SURFACE  
MOUNT**
**DESCRIPTION**

This "Ultrafast Recovery" rectifier diode series is military qualified to MIL-PRF-19500/503 and is ideal for high-reliability applications where a failure cannot be tolerated. These industry-recognized 3, 6, and 12 Amp rated rectifiers ( $T_L = 70^\circ\text{C}$ ) in different package sizes for working peak reverse voltages from 50 to 150 volts are hermetically sealed with voidless-glass construction using an internal "Category I" metallurgical bond. These devices are also available in surface mount MELF package configurations by adding a "US" suffix (see separate data sheet for 1N6073US thru 1N6081US). Microsemi also offers numerous other rectifier products to meet higher and lower current ratings with various recovery time speed requirements including standard, fast and ultrafast device types in both through-hole and surface mount packages.

**APPEARANCE**


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

**FEATURES**

- Popular JEDEC registered 1N6073 to 1N6081 series
- Voidless hermetically sealed glass package
- Extremely robust construction
- Triple-layer passivation
- Internal "Category I" Metallurgical bonds
- JAN, JANTX, and JANTXV available for 1N6074 and 1N6075 per MIL-PRF-19500/503
- Further options for screening in accordance with MIL-PRF-19500 for JAN, JANTX, JANTXV, or JANS by using a MQ, MX, MV or SP prefix respectively, e.g. MX6076, MV6079, SP6081, etc.
- Surface mount equivalents also available in a square end-cap MELF configuration with "US" suffix

**APPLICATIONS / BENEFITS**

- Ultrafast recovery rectifier series 50 to 150 V
- Military and other high-reliability applications
- Switching power supplies or other applications requiring extremely fast switching & low forward loss
- High forward surge current capability
- Low thermal resistance
- Controlled avalanche with peak reverse power capability
- Inherently radiation hard as described in Microsemi MicroNote 050

**MAXIMUM RATINGS**

- Junction Temperature:  $-65^\circ\text{C}$  to  $+155^\circ\text{C}$
- Storage Temperature:  $-65^\circ\text{C}$  to  $+155^\circ\text{C}$
- Peak Forward Surge Current @  $25^\circ\text{C}$ : 35 Amps for 1N6073-6075, 75 Amps for 1N6076-6078, and 175 Amps for 1N6079-6081 at 8.3 ms half-sine wave
- Average Rectified Forward Current ( $I_O$ ) at  $T_L = +70^\circ\text{C}$  ( $L = 0$  inch from body):
  - 1N6073 thru 1N6075: 3.0 Amps
  - 1N6076 thru 1N6078: 6.0 Amps
  - 1N6079 thru 1N6081: 12.0 Amps
- Average Rectified Forward Current ( $I_O$ ) at  $T_A = 55^\circ\text{C}$ :
  - 1N6073 thru 1N6075: 0.85 Amps
  - 1N6076 thru 1N6078: 1.3 Amps
  - 1N6079 thru 1N6081: 2.0 Amps
- Thermal Resistance  $L = 0$  inch ( $R_{\theta JL}$ ):  $13^\circ\text{C/W}$  for 1N6073-6075,  $8.5^\circ\text{C/W}$  for 1N6076-6078, and  $5.0^\circ\text{C/W}$  for 1N6079-6081
- Solder temperature:  $260^\circ\text{C}$  for 10 s (maximum)

**MECHANICAL AND PACKAGING**

- CASE: Hermetically sealed voidless hard glass with Tungsten slugs
- TERMINATIONS: Axial-leads are Copper with Tin/Lead (Sn/Pb) finish
- MARKING: Body painted and part number, etc.
- POLARITY: Cathode indicated by band
- Tape & Reel option: Standard per EIA-296
- Weight: 1N6073 thru 1N6075: 340 mg  
1N6076 thru 1N6078: 750 mg  
1N6079 thru 1N6081: 1270 mg
- See package dimensions on last page

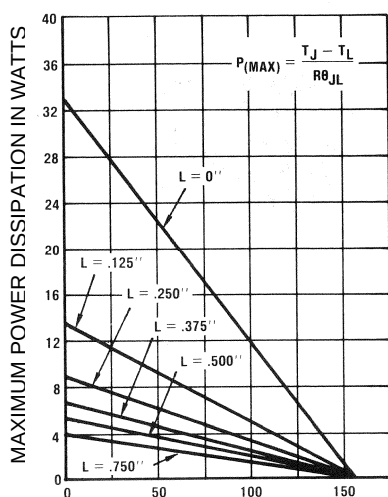
**ELECTRICAL CHARACTERISTICS @ 25°C unless otherwise specified**

| TYPE   | WORKING<br>PEAK<br>REVERSE<br>VOLTAGE<br>$V_{RWM}$ | MAXIMUM<br>FORWARD<br>VOLTAGE<br>(PULSED)<br>$V_F$ @ | PULSED<br>TEST<br>CURRENT<br>$I_F$ | AVERAGE<br>RECTIFIED<br>CURRENT $I_O$<br>@ $T_L = 70^\circ\text{C}$ | AVERAGE<br>RECTIFIED<br>CURRENT $I_O$<br>@ $T_A = 55^\circ\text{C}$ | MAXIMUM<br>REVERSE<br>CURRENT<br>$I_R$ @ $V_{RWM}$ | MAXIMUM<br>REVERSE<br>RECOVERY<br>TIME*<br>$t_{rr}$ | MAXIMUM<br>SURGE<br>CURRENT<br>$I_{FSM}$ |
|--------|----------------------------------------------------|------------------------------------------------------|------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------|------------------------------------------|
|        |                                                    |                                                      |                                    |                                                                     |                                                                     |                                                    |                                                     |                                          |
|        | VOLTS                                              | VOLTS                                                | AMPS                               | AMPS                                                                | AMPS                                                                | $\mu\text{A}$                                      | ns                                                  | AMPS                                     |
| 1N6073 | 50                                                 | 2.04                                                 | 9.4                                | 3.0                                                                 | 0.85                                                                | 1.0                                                | 30                                                  | 35                                       |
| 1N6074 | 100                                                | 2.04                                                 | 9.4                                | 3.0                                                                 | 0.85                                                                | 1.0                                                | 30                                                  | 35                                       |
| 1N6075 | 150                                                | 2.04                                                 | 9.4                                | 3.0                                                                 | 0.85                                                                | 1.0                                                | 30                                                  | 35                                       |
| 1N6076 | 50                                                 | 1.76                                                 | 18.8                               | 6.0                                                                 | 1.3                                                                 | 5.0                                                | 30                                                  | 75                                       |
| 1N6077 | 100                                                | 1.76                                                 | 18.8                               | 6.0                                                                 | 1.3                                                                 | 5.0                                                | 30                                                  | 75                                       |
| 1N6078 | 150                                                | 1.76                                                 | 18.8                               | 6.0                                                                 | 1.3                                                                 | 5.0                                                | 30                                                  | 75                                       |
| 1N6079 | 50                                                 | 1.50                                                 | 37.7                               | 12.0                                                                | 2.0                                                                 | 10.0                                               | 30                                                  | 175                                      |
| 1N6080 | 100                                                | 1.50                                                 | 37.7                               | 12.0                                                                | 2.0                                                                 | 10.0                                               | 30                                                  | 175                                      |
| 1N6081 | 150                                                | 1.50                                                 | 37.7                               | 12.0                                                                | 2.0                                                                 | 10.0                                               | 30                                                  | 175                                      |

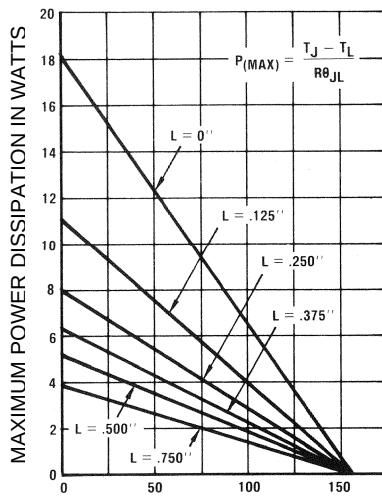
\*NOTE:  $I_F = 0.5\text{ A}$ ,  $I_{RM} = 1.0\text{ A}$ , and  $I_{R(REC)} = 0.25\text{ A}$

**SYMBOLS & DEFINITIONS**

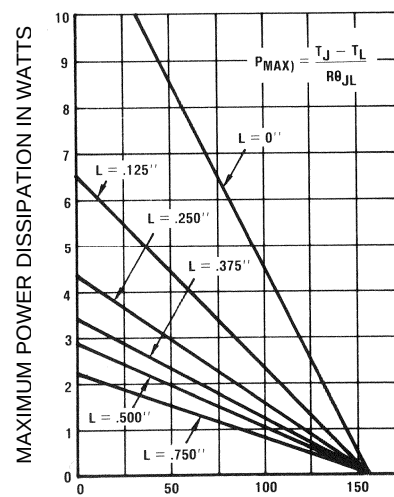
| Symbol    | Definition                                                                                                                                                                                                                                   |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $V_{BR}$  | Minimum Breakdown Voltage: The minimum voltage the device will exhibit at a specified current.                                                                                                                                               |
| $V_{RWM}$ | Working Peak Reverse Voltage: The maximum peak voltage that can be applied over the operating temperature range.                                                                                                                             |
| $V_F$     | Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current.                                                                                                                                         |
| $I_R$     | Maximum Leakage Current: The maximum leakage current that will flow at the specified voltage and temperature.                                                                                                                                |
| $t_{rr}$  | Reverse Recovery Time: The time interval between the instant the current passes through zero when changing from the forward direction to the reverse direction and a specified recovery decay point after a peak reverse current is reached. |

**GRAPHS**

**FIGURE 1**

Maximum power in watts vs lead temperature  
For 1N6079, 1N6080 and 1N6081


**FIGURE 2**

Maximum power in watts vs lead temperature  
for 1N6076, 1N6077 and 1N6078


**FIGURE 3**

Maximum power in watts vs lead temperature  
for 1N6073, 1N6074 and 1N6075

Maximum lead temperature in °C ( $T_L$ ) at point "L" from body (for maximum operating junction temperature with equal two-lead conditions).

| Lead Length<br>INCHES (mm) | R <sub>θJL</sub><br>°C/W |
|----------------------------|--------------------------|
| 0.000                      | 5.0                      |
| 0.125 (3.17)               | 11.5                     |
| 0.250 (6.35)               | 17.5                     |
| 0.375 (9.53)               | 23.5                     |
| 0.500 (12.70)              | 29.0                     |
| 0.750 (19.05)              | 40.0                     |

1N6079, 1N6080 and 1N6081

| Lead Length<br>INCHES (mm) | R <sub>θJL</sub><br>°C/W |
|----------------------------|--------------------------|
| 0.000                      | 8.5                      |
| 0.125 (3.17)               | 14.0                     |
| 0.250 (6.35)               | 19.5                     |
| 0.375 (9.53)               | 25.0                     |
| 0.500 (12.70)              | 30.0                     |
| 0.750 (19.05)              | 40.0                     |

1N6076, 1N6077 and 1N6078

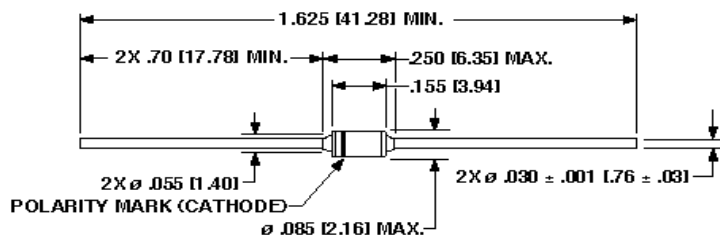
| Lead Length<br>INCHES (mm) | R <sub>θJL</sub><br>°C/W |
|----------------------------|--------------------------|
| 0.000                      | 13                       |
| 0.125 (3.17)               | 24                       |
| 0.250 (6.35)               | 35                       |
| 0.375 (9.53)               | 46                       |
| 0.500 (12.70)              | 54                       |
| 0.750 (19.05)              | 70                       |

1N6073, 1N6074 and 1N6075

NOTES:

1. Dimensions are in inches
2. Metric equivalents (to the nearest .01mm) are given for general information only and are based upon 1 inch = 25.4 mm.

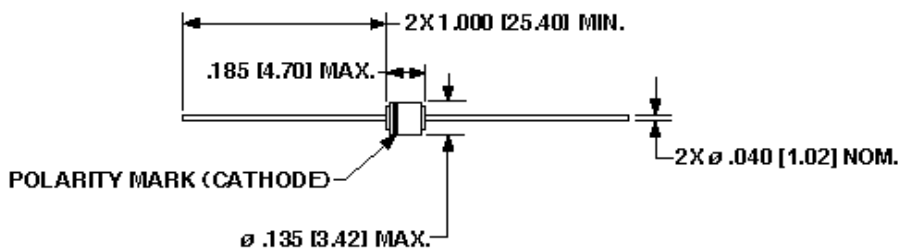
PACKAGE DIMENSIONS



NOTE: DIMENSIONS IN INCHES [mm]

PACKAGE A (1N6073-75)

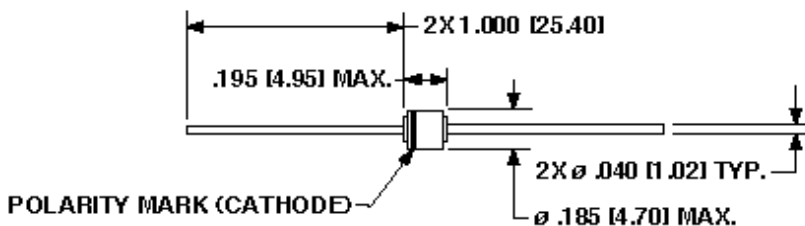
NOTE: Lead diameter tolerance = +0.003/-0.004 inches



NOTE: DIMENSIONS IN INCHES [mm]

PACKAGE E (1N6076-78)

NOTE: Lead diameter tolerance = +0.002/-0.003 inches



NOTE: DIMENSIONS IN INCHES [mm]

PACKAGE G (1N6079-81)

NOTE: Lead diameter tolerance = +0.002/-0.003 inches