Microsemi
SCOTTSDALE DIVISION

1N6073 thru 1N6081

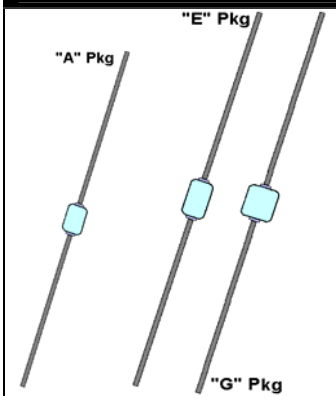
VOIDLESS HERMETICALLY SEALED ULTRA FAST RECOVERY GLASS POWER RECTIFIERS

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 =70ºC) 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°C to +155°C
- Storage Temperature: -65°C to +155°C
- Peak Forward Surge Current @ 25°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°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°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°C/W for 1N6073-6075, 8.5°C/W for 1N6076-6078, and 5.0°C/W for 1N6079-6081
- Solder temperature: 260°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

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1N6073 thru 1N6081

VOIDLESS HERMETICALLY SEALED ULTRA FAST RECOVERY GLASS POWER RECTIFIERS

ELECTRICAL CHARACTERISTICS @ 25°C unless otherwise specified

TYPE	WORKING PEAK REVERSE VOLTAGE V_{RWM}	MAXIMUM FORWARD VOLTAGE (PULSED) V_F @	PULSED TEST CURRENT I_F	AVERAGE RECTIFIED CURRENT I_O @ T_L = 70°C	AVERAGE RECTIFIED CURRENT I_O @ T_A = 55°C	MAXIMUM REVERSE CURRENT I_R @ V_{RWM}	MAXIMUM REVERSE RECOVERY TIME* t_{rr}	MAXIMUM SURGE CURRENT I_{FSM}
	VOLTS	VOLTS	AMPS	AMPS	AMPS	µA	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 A, I_{RM} = 1.0 A, and $I_{R(REC)}$ = 0.25 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

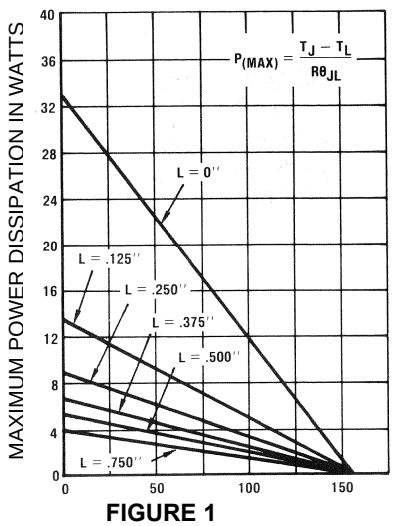

FIGURE 1
Maximum power in watts vs lead temperature
For 1N6079, 1N6080 and 1N6081

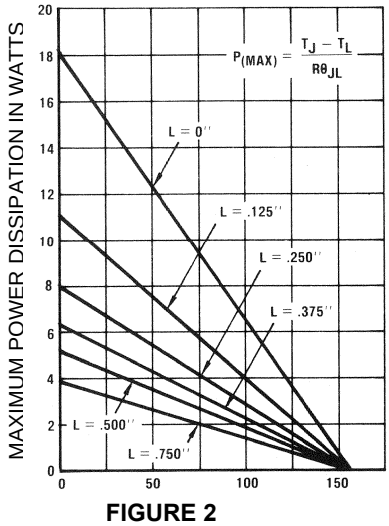

FIGURE 2
Maximum power in watts vs lead temperature
for 1N6076, 1N6077 and 1N6078

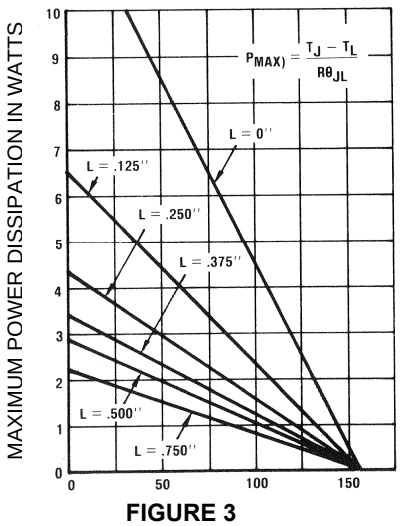

FIGURE 3
Maximum power in watts vs lead temperature
for 1N6073, 1N6074 and 1N6075

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

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Lead Length	$R_{\theta JL}$
INCHES (mm)	°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	$R_{\theta JL}$
INCHES (mm)	°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

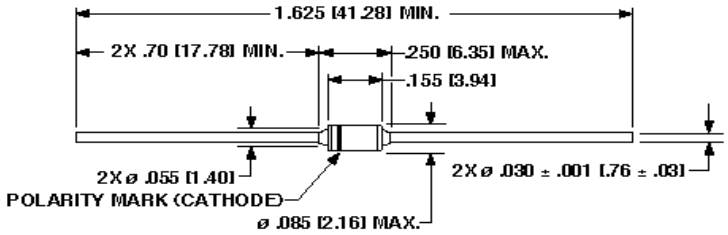
1N6076, 1N6077 and 1N6078

Lead Length	$R_{\theta JL}$
INCHES (mm)	°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.

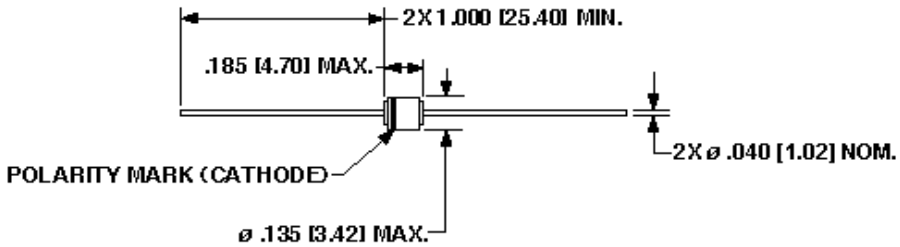
PACKAGE DIMENSIONS



NOTE: DIMENSIONS IN INCHES [mm]

PACKAGE A (1N6073-75)

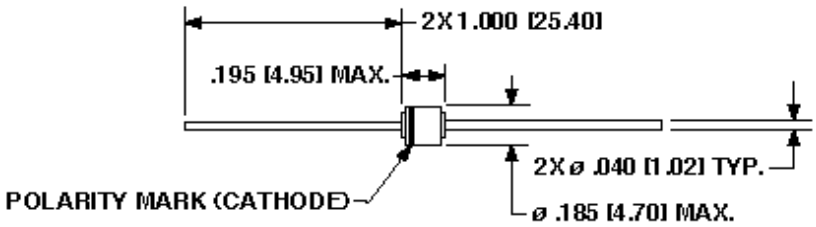
NOTE: Lead diameter tolerance = +0.003/-0.004 inches



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