Microsemi
SCOTTSDALE DIVISION

1N3643 thru 1N3647
1N4254 thru 1n4257
1N5181 thru 1N5184

VOIDLESS-HERMETICALLY-SEALED HIGH VOLTAGE RECTIFIERS

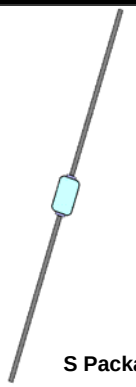
ALSO AVAILABLE IN SURFACE MOUNT

www.Microsemi.COM

DESCRIPTION

These "standard recovery" high voltage rectifier diode series are military qualified to MIL-PRF-19500/279 for the 1N3644 thru 1N3647. Others such as the 1N5181 thru 1N5184 meet or exceed requirements of MIL-PRF-19500/389. They are ideal for high-reliability where a failure cannot be tolerated for high voltage applications. These 0.10 and 0.25 Amp rated rectifiers at 55ºC for working peak reverse voltages from 1000 to 10,000 volts are hermetically sealed with voidless-glass construction using an internal "Category I" metallurgical bond. Surface mount MELF package configurations are also available by adding "SM" suffix. Microsemi also offers numerous other rectifier products to meet higher and lower current ratings with various recovery time speed requirements including fast and ultrafast device types in both through-hole and surface mount packages.

APPEARANCE



S Package

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

FEATURES

- JEDEC registered 1N3643 thru 1N3647, 1N4254 thru 1N4257, and 1N5181 thru 1N5187 series
- Voidless Hermetically Sealed Glass Package
- Triple Layer Passivation
- Internal "*Category I*" Metallurgical bonds
- Lowest Reverse Leakage Available
- Lowest Thermal Resistance Available
- Absolute High Voltage / High Temperature Stability
- 1N5181 thru 1N5184 meet or exceed requirements of MIL-S-19500/389
- 1N3644 thru 1N3647 JAN, JANTX types available per MIL-S19500/279
- Surface mount equivalents also available in a square end-cap MELF configuration with "SM" suffix

APPLICATIONS / BENEFITS

- High voltage standard recovery rectifiers 1000 to 10,000 V
- Military and other high-reliability applications
- Applications include bridges, half-bridges, catch diodes, voltage multipliers, X-ray machines, power supplies, transmitters, and radar equipment
- High forward surge current capability
- Extremely robust construction
- Low thermal resistance
- Inherently radiation hard as described in Microsemi MicroNote 050

MAXIMUM RATINGS

- Junction & Storage Temperature: -65°C to +175°C
- Thermal Resistance: 38°C/W junction to lead at 3/8 inch (10 mm) lead length from body
- Average Rectified Forward Current (I_O):
  - 1N3643 thru 1N3647: 0.250 Amps @ T_A = 55ºC
    0.150 Amps @ T_A = 100ºC
  - 1N4254 thru 1N4257: 0.250 Amps @ T_A = 55ºC
    0.150 Amps @ T_A = 100ºC
  - 1N5181 thru 1N5184: 0.100 Amps @ T_A = 55ºC
    0.060 Amps @ T_A = 100ºC
- Forward Surge Current: See Electrical Characteristics for surge at 8.3 ms half-sine wave
- Solder Temperatures: 260ºC 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 paint and part number, etc.
- POLARITY: Cathode band
- TAPE & REEL option: Standard per EIA-296
- WEIGHT: 400 mg (approx)
- See package dimensions on last page

Microsemi
Scottsdale Division
8700 E. Thomas Rd. PO Box 1390, Scottsdale, AZ 85252 USA, (480) 941-6300, Fax: (480) 947-1503

ELECTRICAL CHARACTERISTICS

TYPE	WORKING PEAK REVERSE VOLTAGE V_{RWM}	AVERAGE RECTIFIED CURRENT I_O		MAXIMUM FORWARD VOLTAGE V_F (See Notes 1 & 2)	REVERSE CURRENT (MAX.) I_R @ V_{RWM}				MAXIMUM SURGE CURRENT @ 8.3 ms
	VOLTS	mA		VOLTS	µA				AMPS
		55°C	100°C		25°C	55°C	125°C	175°C	
1N3643	1000	250	150	5.0 (1)	5	-	-	-	14
JAN1N3644	1500	250	150	5.0 (1)	5	-	-	-	14
JAN1N3645	2000	250	150	5.0 (1)	5	-	-	-	14
JAN1N3646	2500	250	150	5.0 (1)	5	-	-	-	14
JAN1N3647	3000	250	150	5.0 (1)	5	-	-	-	14
1N4254	1500	250	150	3.5 (2)	1	-	20	-	10
1N4255	2000	250	150	3.5 (2)	1	-	20	-	10
1N4256	2500	250	150	3.5 (2)	1	-	20	-	10
1N4257	3000	250	150	3.5 (2)	1	-	20	-	10
1N5181	4000	100	60	10 (2)	-	5	-	1000	4
1N5182	5000	100	60	10 (2)	-	5	-	1000	4
1N5183	7500	100	60	10 (2)	-	5	-	1000	4
1N5184	10,000	100	60	10 (2)	-	5	-	1000	4

NOTE 1: VF @ 250mA
NOTE 2: VF @ 100mA

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.

GRAPHS

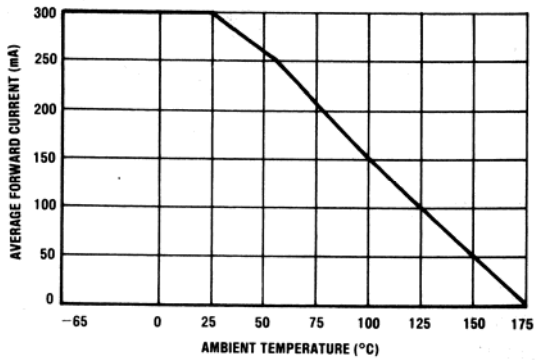


FIGURE 1
1N3643-47 and 1N4254-57

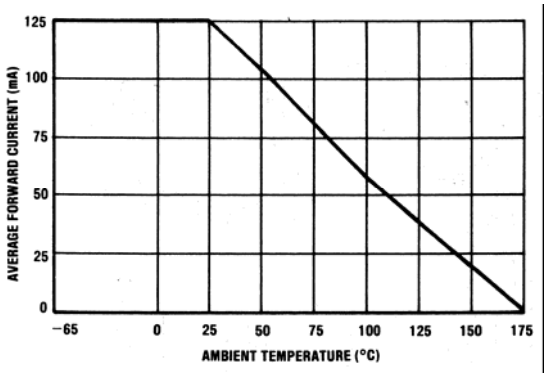
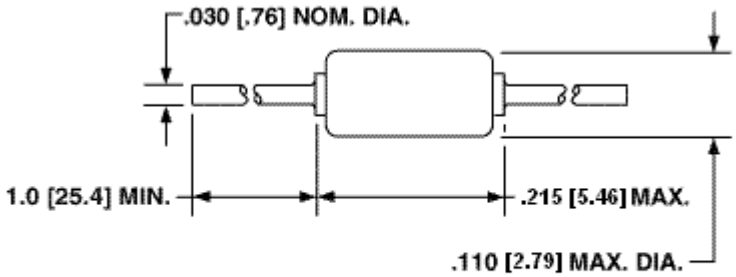


FIGURE 2
1N5181-84

PACKAGE DIMENSIONS



NOTE: DIMENSIONS IN INCHES [MM]

NOTE: Lead tolerance is +0.003/-0.001 inches