Microsemi
SCOTTSDALE DIVISION

MC5610 thru MC5619

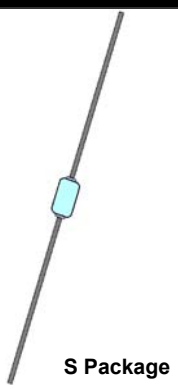
FAST RECOVERY, HIGH POWER, MICRO, HIGH VOLTAGE RECTIFIERS

ALSO AVAILABLE IN SURFACE MOUNT

DESCRIPTION

The MC5610 through MC5619 series of fast recovery high voltage silicon rectifiers feature the smallest packages available. They are ideal for high-reliability where a failure cannot be tolerated. These 0.275 to 0.790 Amp rated rectifiers for working peak reverse voltages from 1500 to 5000 volts are hermetically sealed with voidless-glass construction using an internal "Category I" metallurgical bond. Typical applications include transmitters, power supplies, radar equipment and X-ray machines. 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

- 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
- Surface mount equivalents also available in a square end-cap MELF configuration with "SM" suffix

APPLICATIONS / BENEFITS

- High voltage fast recovery rectifiers 1500 to 5000 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
- Inherently radiation hard as described in Microsemi MicroNote 050

MAXIMUM RATINGS

- Operating Temperature Range:
  MC5610 – MC5612……-55°C to 150°C
  MC5613 – MC5616……-65°C to 150°C
  MC5617 – MC5619……-65°C to 125°C
- Storage Temperature Range: -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): See Electrical Characteristics for maximum rating at 55°C and 100°C. Also see typical linear derating in Fig 1.
- Forward Surge Current: See Electrical Characteristics for surge at 8.3 ms half-sine wave
- Solder Temperatures: 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 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

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ELECTRICAL CHARACTERISTICS

MICROSEMI PART NUMBER	WORKING PEAK REVERSE VOLTAGE V_{RWM}	RMS VOLTAGE $V_{R(RMS)}$	AVERAGE RECTIFIED CURRENT @ T_L = Note 2		MAXIMUM FORWARD VOLTAGE V_F @ 100mA	MAXIMUM REVERSE CURRENT I_R @ V_{RWM}	MAXIMUM REVERSE CURRENT I_R @ V_{RWM}	MAXIMUM FORWARD SURGE @ 8.3 ms	MAXIMUM REVERSE RECOVERY TIME t_{rr} Note 1
			55°C	100°C		25°C	100°C		
	VOLTS	VOLTS	mA	mA	VOLTS	µA	µA	AMPS	ns
MC5610	1500	1050	790	415	3.0	1.0	25	8	300
MC5611	2000	1400	630	330	4.0	1.0	25	6	300
MC5612	2500	1750	530	280	5.0	1.0	25	5	300
MC5613	1500	1050	975	515	3.0	1.0	20	8	300
MC5614	2000	1400	790	415	4.0	1.0	20	6	300
MC5615	2500	1750	665	350	5.0	1.0	20	5	300
MC5616	3000	2100	570	300	6.0	1.0	20	4	300
MC5617	4000	2800	330	120	8.0	2.5	50	3	300
MC5618	4500	3150	300	110	9.0	2.5	50	2.7	300
MC5619	5000	3500	275	100	10.0	2.5	50	2.5	300

NOTE 1: I_F = 50 mA, I_{RM} = 100 mA, $I_{R(REC)}$ = 25 mA.
NOTE 2: Heat sink 3/8" from body.

GRAPHS

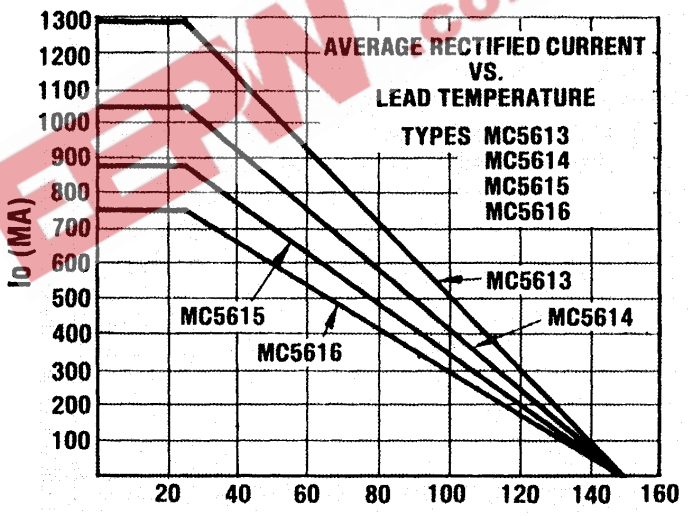
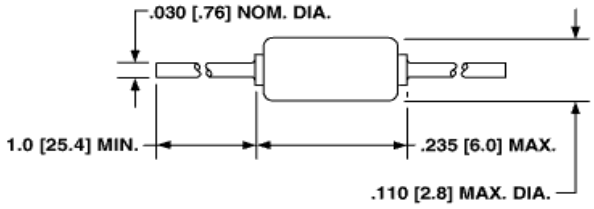


FIGURE 1
LEAD TEMPERATURE (°C) (L = 3/8 INCH)

PACKAGE DIMENSIONS



NOTE: DIMENSIONS IN INCHES [MM]

NOTE: Lead tolerance is +0.003/-0.004 inches