



**THE DATASHEET OF  
MURS140-13-F**



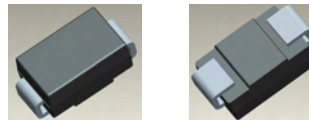
**Features**

- Glass Passivated Die Construction
- Super-Fast Recovery Time For High Efficiency
- Surge Overload Rating to 35A Peak
- Ideally Suited for Automated Assembly
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3 & 4)**

**Mechanical Data**

- Case: SMB
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish (Lead Free Plating). Solder Plated Terminal - Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band or Cathode Notch
- Weight: 0.093 grams (approximate)

SMB



Top View

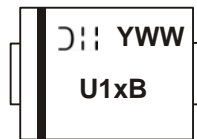
Bottom View

**Ordering Information** (Note 5)

Part Number	Case	Packaging
MURS140-13-F	SMB	3000/Tape & Reel
MURS160-13-F	SMB	3000/Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
  2. See <http://www.diodes.com> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. Product manufactured with Date Code 0924 (week 24, 2009) and newer are built with Green Molding Compound.
  5. For packaging details, go to our website at <http://www.diodes.com>.

**Marking Information**



- U1xB = Product type marking code
  - U1GB = MURS140
  - U1JB = MURS160
- YWW = Manufacturers' code marking
- YWW = Date code marking
- Y = Last digit of year (ex: 2 for 2002)
- WW = Week code (01 to 53)

**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitance load, derate current by 20%.

Characteristic	Symbol	MURS140	MURS160	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$	400	600	V
Working Peak Reverse Voltage	$V_{RWM}$			
DC Blocking Voltage (Note 10)	$V_R$			
RMS Reverse Voltage	$V_{R(RMS)}$	283	424	V
Average Rectified Output Current @ $T_T = +135^\circ\text{C}$	$I_O$	1.0		A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	35		A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Terminal (Note 6)	$R_{\theta JT}$	15	$^\circ\text{C/W}$
Operating Temperature Range	$T_J$	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +175	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Forward Voltage	$V_{FM}$	@ $I_F = 1.0\text{A}$ , $T_J = +25^\circ\text{C}$	1.25
		@ $I_F = 1.0\text{A}$ , $T_J = +150^\circ\text{C}$	1.05
Peak Reverse Current at Rated DC Blocking Voltage (Note 10)	$I_{RM}$	@ $T_A = +25^\circ\text{C}$	5.0
		@ $T_A = +150^\circ\text{C}$	150
Reverse Recovery Time (Note 8)	$t_{rr}$	50	ns
Forward Recovery Time (Note 9)	$t_{fr}$	50	ns
Typical Total Capacitance (Note 7)	$C_T$	10	pF

- Notes:
6. Unit mounted on PC board with 5.0 mm<sup>2</sup> (0.013 mm thick) copper pads as heat sink.
  7. Measured at 1.0MHz and applied reverse voltage of 4V DC.
  8. Measured with  $I_F = 0.5\text{A}$ ,  $I_R = 1.0\text{A}$ ,  $I_{rr} = 0.25\text{A}$ . See Figure 5.
  9. Measured with  $I_F = 1.0\text{A}$ ,  $di/dt = 100\text{A}/\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .
  10. Short duration pulse test used to minimize self-heating effect.

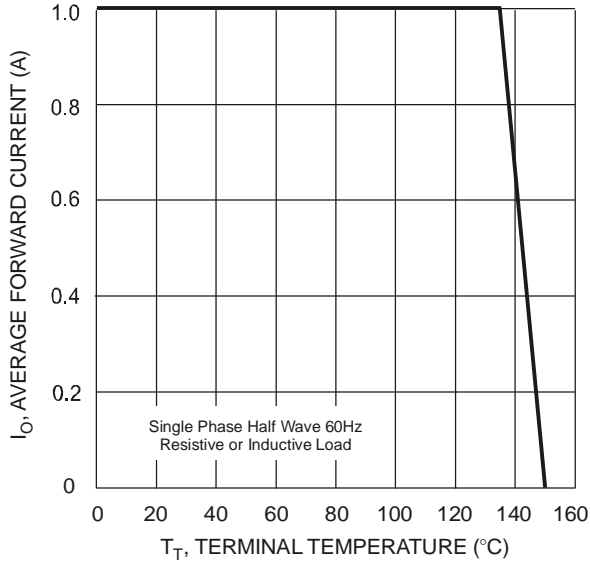


Fig. 1 Forward Current Derating Curve

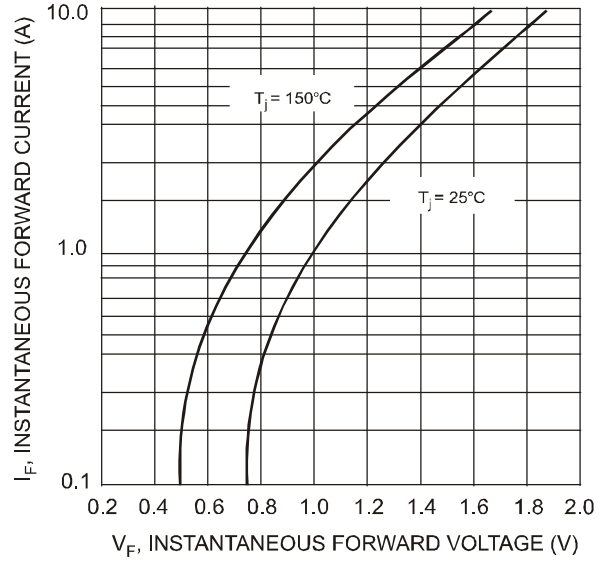


Fig. 2 Typical Forward Characteristics

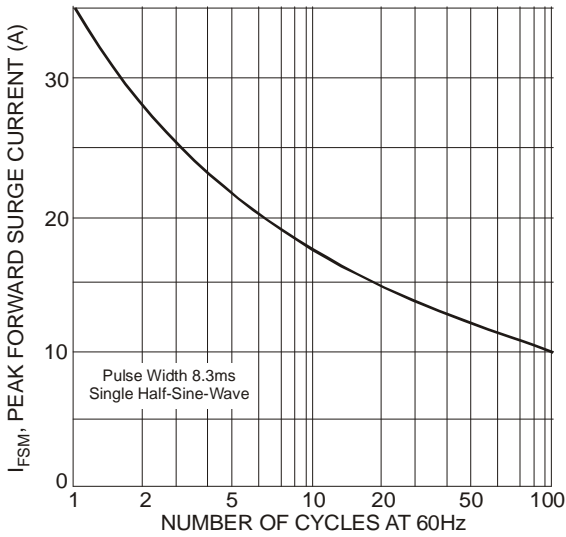


Fig. 3 Surge Current Derating Curve

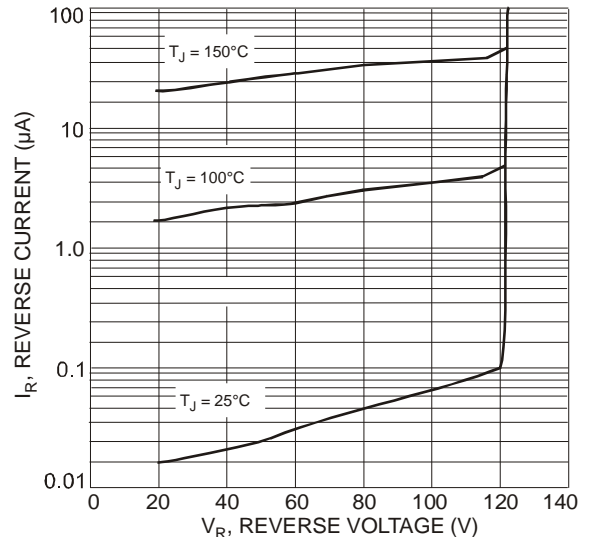
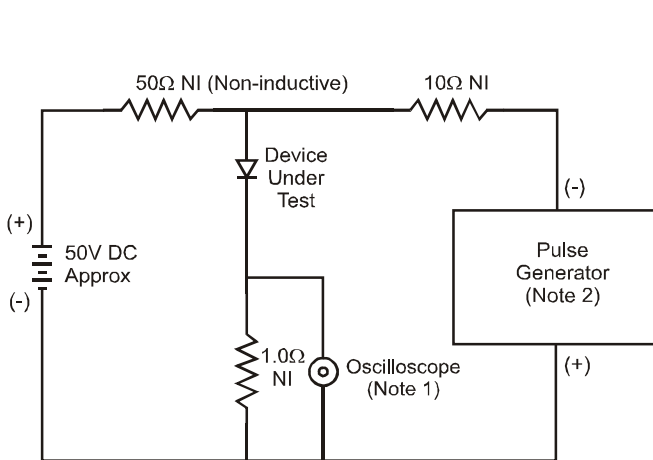
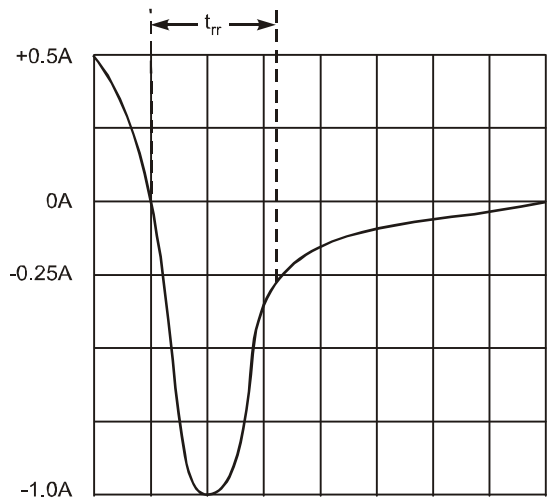


Fig. 4 Typical Reverse Characteristics



Notes:

1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
2. Rise Time = 10ns max. Input Impedance = 50Ω.

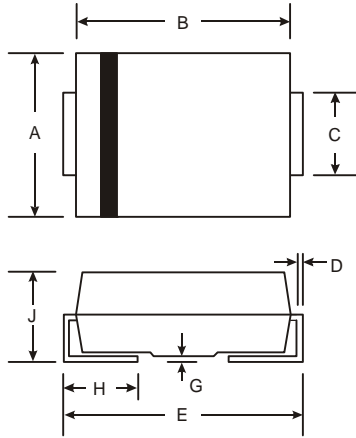


Set time base for 50/100 ns/cm

Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

## Package Outline Dimensions

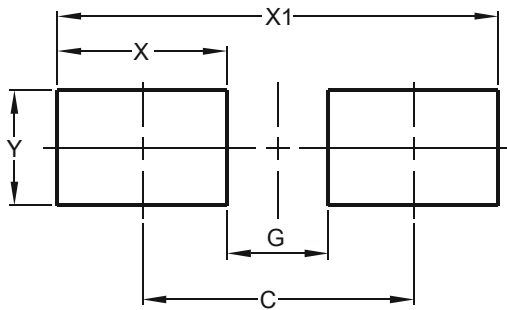
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SMB		
Dim	Min	Max
A	3.30	3.94
B	4.06	4.57
C	1.96	2.21
D	0.15	0.31
E	5.00	5.59
G	0.05	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
C	4.30
G	1.80
X	2.50
X1	6.80
Y	2.30

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