

# MURF1660CTG

## Switch-mode Power Rectifier

These state-of-the-art devices are designed for use in switching power supplies, inverters and as free wheeling diodes.

### Features

- Ultrafast 60 Nanosecond Recovery Times
- 150°C Operating Junction Temperature
- Epoxy Meets UL 94 V-0 @ 0.125 in
- High Temperature Glass Passivated Junction
- Low Leakage Specified @ 150°C Case Temperature
- Current Derating @ Both Case and Ambient Temperatures
- Electrically Isolated. No Isolation Hardware Required.
- This is a Pb-Free Package\*

### Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

### MAXIMUM RATINGS (Per Leg)

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	600	V
Average Rectified Forward Current Total Device, (Rated $V_R$ ), $T_C = 150^\circ\text{C}$ Per Diode Per Device	$I_{F(AV)}$	8 16	A
Peak Repetitive Forward Current (Rated $V_R$ , Square Wave, 20 kHz), $T_C = 150^\circ\text{C}$	$I_{FM}$	16	A
Non-repetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	$I_{FSM}$	100	A
Operating Junction and Storage Temperature	$T_J, T_{stg}$	-65 to +150	°C
RMS Isolation Voltage ( $t = 0.3$ second, R.H. $\leq 30\%$ , $T_A = 25^\circ\text{C}$ ) (Note 1) Per Figure 3	$V_{iso1}$	4500	V

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Proper strike and creepage distance must be provided.

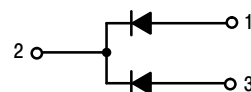
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



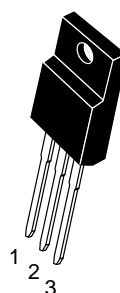
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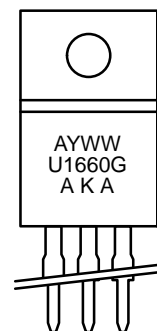
## ULTRAFAST RECTIFIER 16 AMPERES, 600 VOLTS



### MARKING DIAGRAM



ISOLATED TO-220  
CASE 221AH



A = Assembly Location  
Y = Year  
WW = Work Week  
U1660 = Device Code  
G = Pb-Free Package  
AKA = Diode Polarity

### ORDERING INFORMATION

Device	Package	Shipping
MURF1660CTG	TO-220 (Pb-Free)	50 Units / Rail

# MURF1660CTG

## THERMAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.0	$^{\circ}\text{C}/\text{W}$
Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	$T_L$	260	$^{\circ}\text{C}$

## ELECTRICAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 2) ( $i_F = 8.0 \text{ A}$ , $T_C = 150^{\circ}\text{C}$ ) ( $i_F = 8.0 \text{ A}$ , $T_C = 25^{\circ}\text{C}$ )	$v_F$	1.20 1.50	V
Maximum Instantaneous Reverse Current (Note 2) (Rated DC Voltage, $T_C = 150^{\circ}\text{C}$ ) (Rated DC Voltage, $T_C = 25^{\circ}\text{C}$ )	$i_R$	500 10	$\mu\text{A}$
Maximum Reverse Recovery Time ( $I_F = 1.0 \text{ A}$ , $di/dt = 50 \text{ A}/\mu\text{s}$ ) ( $I_F = 0.5 \text{ A}$ , $i_R = 1.0 \text{ A}$ , $I_{REC} = 0.25 \text{ A}$ )	$t_{rr}$	60 50	ns

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

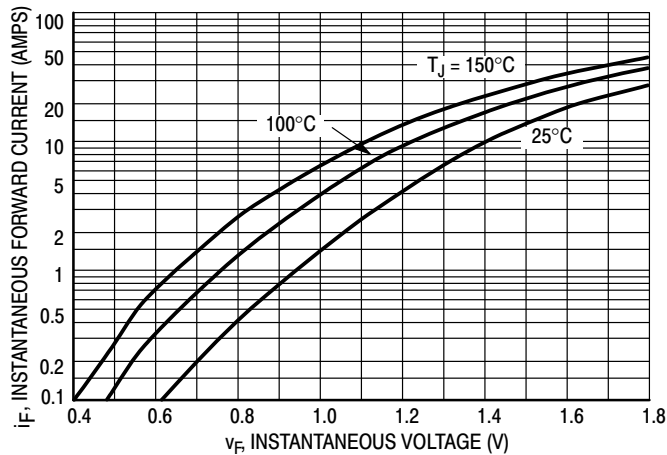


Figure 1. Typical Forward Voltage, Per Leg

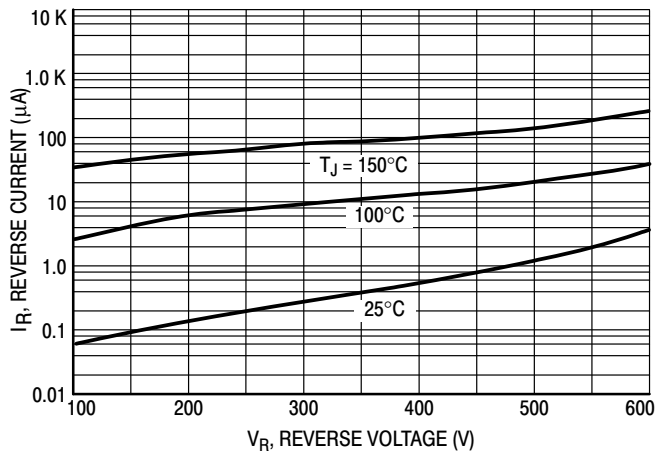
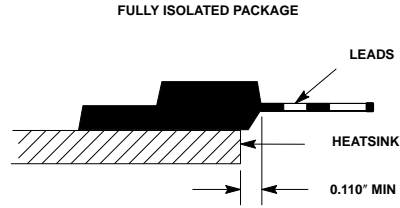


Figure 2. Typical Reverse Current, Per Leg\*

# MURF1660CTG

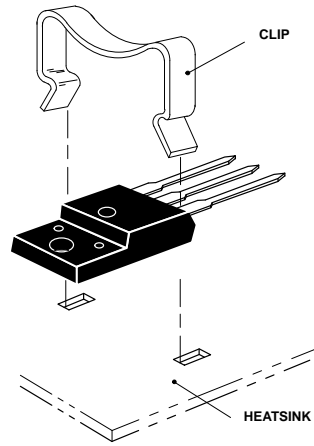
## TEST CONDITION FOR ISOLATION TEST\*



**Figure 3. Mounting Position**

\* Measurement made between leads and heatsink with all leads shorted together.

## MOUNTING INFORMATION



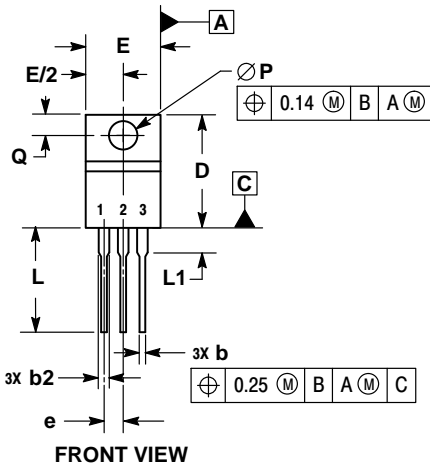
**Clip-Mounted**

**Figure 4. Typical Mounting Technique**

# MURF1660CTG

## PACKAGE DIMENSIONS

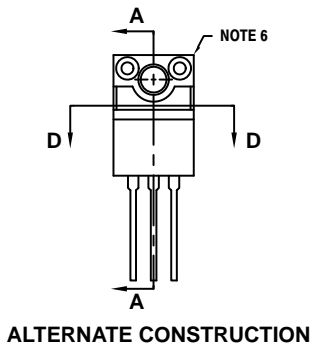
### TO-220 FULLPACK, 3-LEAD CASE 221AH ISSUE F



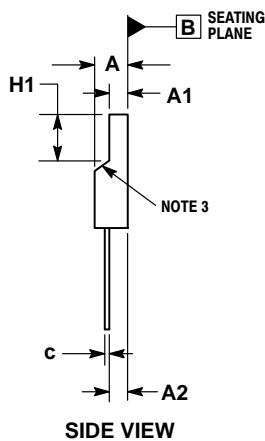
FRONT VIEW



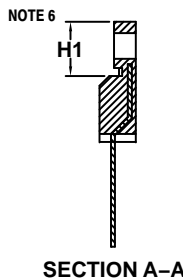
SECTION D-D



ALTERNATE CONSTRUCTION



SIDE VIEW



SECTION A-A

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR UNCONTROLLED IN THIS AREA.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH AND GATE PROTRUSIONS. MOLD FLASH AND GATE PROTRUSIONS NOT TO EXCEED 0.13 PER SIDE. THESE DIMENSIONS ARE TO BE MEASURED AT OUTERMOST EXTREME OF THE PLASTIC BODY.
5. DIMENSION b2 DOES NOT INCLUDE DAMBAR PROTRUSION. LEAD WIDTH INCLUDING PROTRUSION SHALL NOT EXCEED 2.00.
6. CONTOURS AND FEATURES OF THE MOLDED PACKAGE BODY MAY VARY WITHIN THE ENVELOPE DEFINED BY DIMENSIONS A1 AND H1 FOR MANUFACTURING PURPOSES.

DIM	MILLIMETERS	
	MIN	MAX
A	4.30	4.70
A1	2.50	2.90
A2	2.50	2.90
b	0.54	0.84
b2	1.10	1.40
c	0.49	0.79
D	14.70	15.30
E	9.70	10.30
e	2.54 BSC	
H1	6.60	7.10
L	12.50	14.73
L1	---	2.80
P	3.00	3.40
Q	2.80	3.20

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