

Switch-mode Power Rectifier

MURF1660CTG

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.

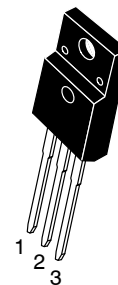
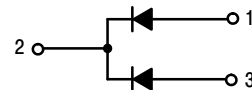
*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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ULTRAFAST RECTIFIER 16 AMPERES, 600 VOLTS



TO-220 FULLPAK™
CASE 221D

MARKING DIAGRAM



- 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 | $^{\circ}C/W$ |
| Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds | T_L | 260 | $^{\circ}C$ |

ELECTRICAL CHARACTERISTICS (Per Leg)

| Characteristic | Symbol | Value | Unit |
|--|----------|--------------|---------|
| Maximum Instantaneous Forward Voltage (Note 2) ($I_F = 8.0\text{ A}$, $T_C = 150^{\circ}C$) ($I_F = 8.0\text{ A}$, $T_C = 25^{\circ}C$) | V_F | 1.20 1.50 | V |
| Maximum Instantaneous Reverse Current (Note 2) (Rated DC Voltage, $T_C = 150^{\circ}C$) (Rated DC Voltage, $T_C = 25^{\circ}C$) | I_R | 500 10 | μA |
| Maximum Reverse Recovery Time ($I_F = 1.0\text{ A}$, $di/dt = 50\text{ A}/\mu s$) ($I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{REC} = 0.25\text{ A}$) | 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 μs , Duty Cycle $\leq 2.0\%$.

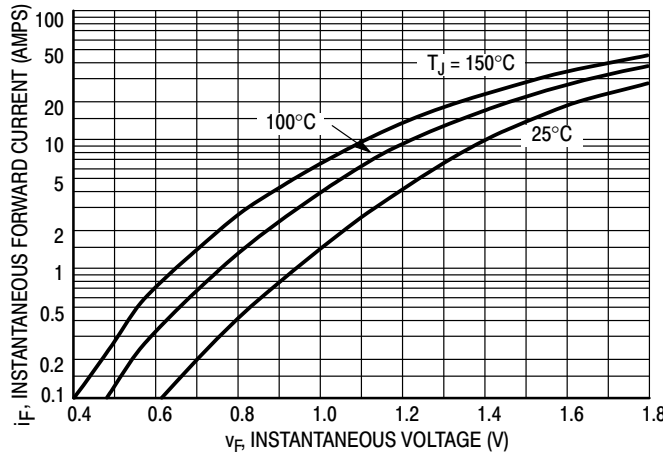


Figure 1. Typical Forward Voltage, Per Leg

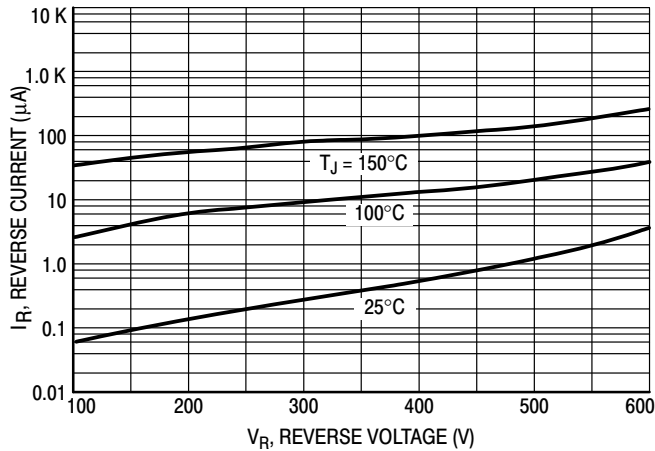


Figure 2. Typical Reverse Current, Per Leg*

MURF1660CTG

TEST CONDITION FOR ISOLATION TEST*

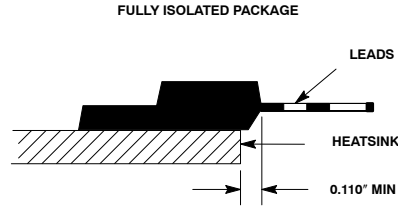
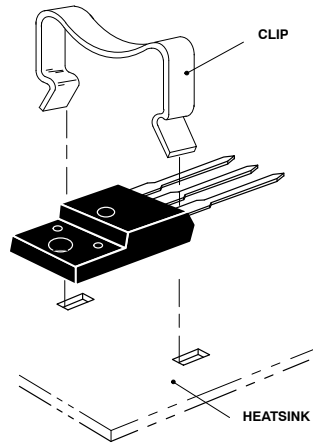


Figure 3. Mounting Position

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

MOUNTING INFORMATION



Clip-Mounted

Figure 4. Typical Mounting Technique

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

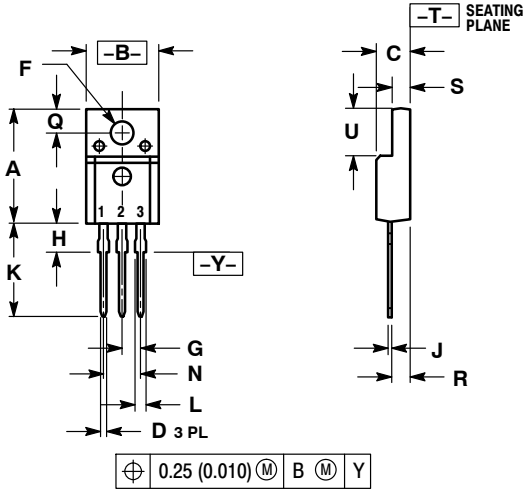
ON Semiconductor®



SCALE 1:1

TO-220 FULLPAK CASE 221D-03 ISSUE K

DATE 27 FEB 2009



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH
 3. 221D-01 THRU 221D-02 OBSOLETE, NEW STANDARD 221D-03.

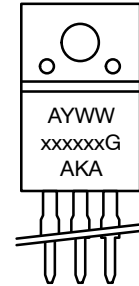
| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.617 | 0.635 | 15.67 | 16.12 |
| B | 0.392 | 0.419 | 9.96 | 10.63 |
| C | 0.177 | 0.193 | 4.50 | 4.90 |
| D | 0.024 | 0.039 | 0.60 | 1.00 |
| F | 0.116 | 0.129 | 2.95 | 3.28 |
| G | 0.100 BSC | | 2.54 BSC | |
| H | 0.118 | 0.135 | 3.00 | 3.43 |
| J | 0.018 | 0.025 | 0.45 | 0.63 |
| K | 0.503 | 0.541 | 12.78 | 13.73 |
| L | 0.048 | 0.058 | 1.23 | 1.47 |
| N | 0.200 BSC | | 5.08 BSC | |
| Q | 0.122 | 0.138 | 3.10 | 3.50 |
| R | 0.099 | 0.117 | 2.51 | 2.96 |
| S | 0.092 | 0.113 | 2.34 | 2.87 |
| U | 0.239 | 0.271 | 6.06 | 6.88 |

MARKING DIAGRAMS

- | | | |
|--|---|--|
| STYLE 1: PIN 1. GATE 2. DRAIN 3. SOURCE | STYLE 2: PIN 1. BASE 2. COLLECTOR 3. EMITTER | STYLE 3: PIN 1. ANODE 2. CATHODE 3. ANODE |
| STYLE 4: PIN 1. CATHODE 2. ANODE 3. CATHODE | STYLE 5: PIN 1. CATHODE 2. ANODE 3. GATE | STYLE 6: PIN 1. MT 1 2. MT 2 3. GATE |



Bipolar



Rectifier

- | | |
|-------------------------------|---------------------------|
| xxxxxx = Specific Device Code | A = Assembly Location |
| G = Pb-Free Package | Y = Year |
| A = Assembly Location | WW = Work Week |
| Y = Year | xxxxxx = Device Code |
| WW = Work Week | G = Pb-Free Package |
| | AKA = Polarity Designator |

| | | |
|-------------------------|-----------------------|---|
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| DESCRIPTION: | TO-220 FULLPAK | PAGE 1 OF 1 |

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