# ON Semiconductor

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# MUR620CTG

# Switch Mode Power Rectifier

These state−of−the−art Switch Mode power rectifiers are designed for use in switching power supplies, inverters and as free wheeling diodes.

### Features

- Ultrafast 35 Nanosecond Recovery Time
- 175°C Operating Junction Temperature
- Popular TO−220 Package
- These are Pb−Free Devices*

### 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

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 200 | V |
| Average Rectified Forward Voltage (Rated $V_R$, $T_C$ = 130°C) Per Diode<br>Total Device | $I_{F(AV)}$ | 3.0<br>6.0 | A |
| Peak Repetitive Forward Current per Diode Leg (Rated $V_R$, Square Wave, 20 kHz, $T_C$ = 130°C) | $I_{FRM}$ | 6.0 | A |
| Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | $I_{FSM}$ | 75 | A |
| Operating Junction and Storage Temperature Range | $T_J$, $T_{stg}$ | −65 to +175 | °C |

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.

*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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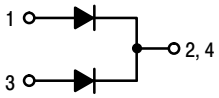
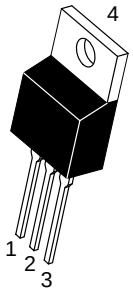
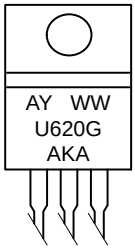
## ULTRAFAST RECTIFIER
## 6.0 AMPERES, 200 VOLTS




**TO−220AB**
**CASE 221A**

### MARKING DIAGRAM




A = Assembly Location
Y = Year
WW = Work Week
U620 = Device Code
G = Pb−Free Package
AKA = Diode Polarity

### ORDERING INFORMATION

| Device | Package | Shipping |
|---|---|---|
| MUR620CTG | TO−220 (Pb−Free) | 50 Units/Rail |

**THERMAL CHARACTERISTICS** (Per Diode Leg)

| Rating | Symbol | Typical | Maximum | Unit |
|---|---|---|---|---|
| Thermal Resistance, Junction−to−Case | $R_{\theta JC}$ | 5.0−6.0 | 7.0 | °C/W |

**ELECTRICAL CHARACTERISTICS** (Per Diode Leg)

| Rating | Symbol | Typical | Maximum | Unit |
|---|---|---|---|---|
| Instantaneous Forward Voltage (Note 1)<br>($i_F$ = 3.0 A, $T_C$ = 150°C)<br>($i_F$ = 3.0 A, $T_C$ = 25°C) | $v_F$ | <br>0.80<br>0.94 | <br>0.895<br>0.975 | V |
| Instantaneous Reverse Current (Note 1)<br>(Rated DC Voltage, $T_C$ = 150°C)<br>(Rated DC Voltage, $T_C$ = 25°C) | $i_R$ | <br>2.0−10<br>0.01−3.0 | <br>250<br>5.0 | μA |
| Reverse Recovery Time<br>($I_F$ = 1.0 A, di/dt = 50 A/μs) | $t_{rr}$ | 20−30 | 35 | 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.

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

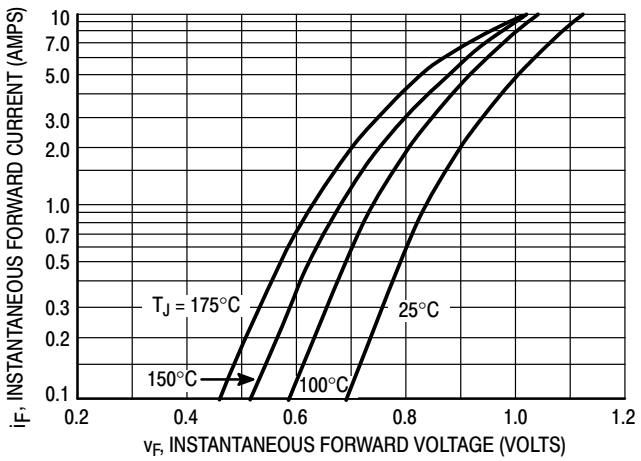



**Figure 1. Typical Forward Voltage**

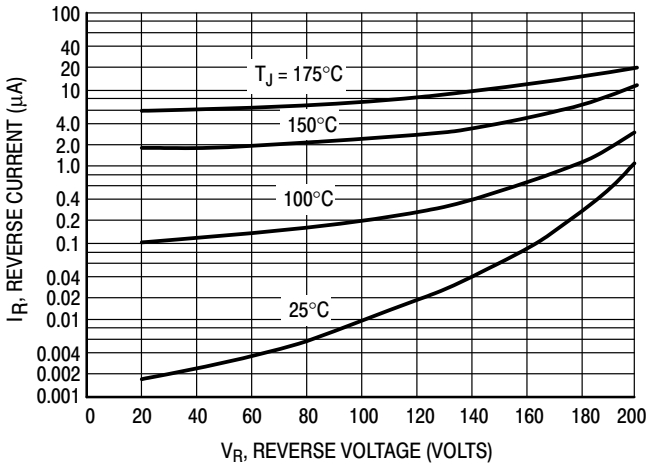



**Figure 2. Typical Reverse Current**

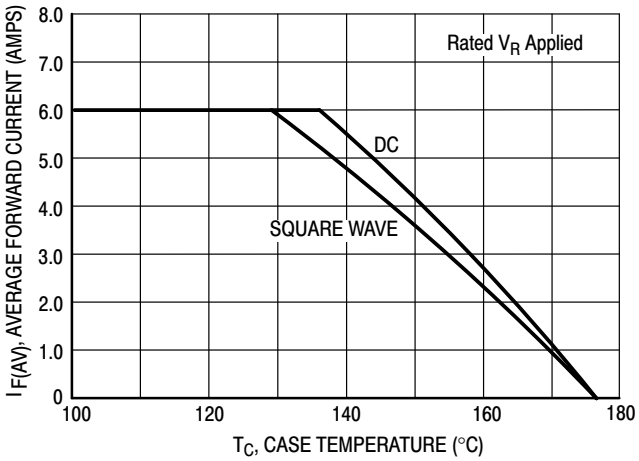



**Figure 3. Total Device Current Derating, Case**

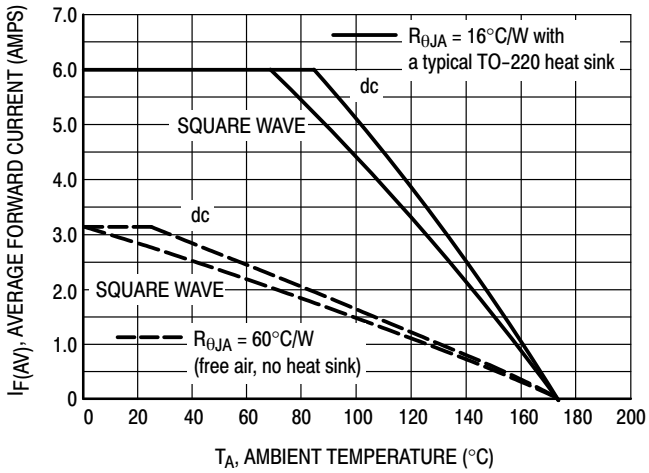



**Figure 4. Total Device Current Derating, Ambient**

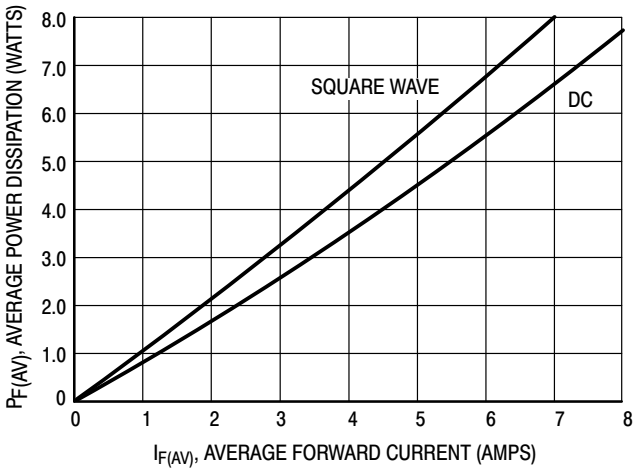


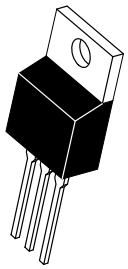

**Figure 5. Power Dissipation**

# MECHANICAL CASE OUTLINE
## PACKAGE DIMENSIONS

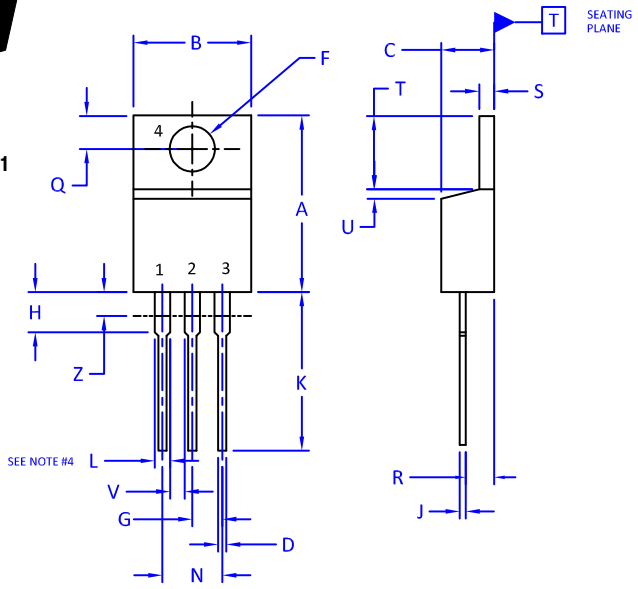
ON Semiconductor®

**TO−220**
CASE 221A−09
ISSUE AJ

DATE 05 NOV 2019



SCALE 1:1




NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 2009.
2. CONTROLLING DIMENSION: INCHES
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.
4. MAX WIDTH FOR F102 DEVICE = 1.35MM

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | MIN. | MAX. | MIN. | MAX. |
| A | 0.570 | 0.620 | 14.48 | 15.75 |
| B | 0.380 | 0.415 | 9.66 | 10.53 |
| C | 0.160 | 0.190 | 4.07 | 4.83 |
| D | 0.025 | 0.038 | 0.64 | 0.96 |
| F | 0.142 | 0.161 | 3.60 | 4.09 |
| G | 0.095 | 0.105 | 2.42 | 2.66 |
| H | 0.110 | 0.161 | 2.80 | 4.10 |
| J | 0.014 | 0.024 | 0.36 | 0.61 |
| K | 0.500 | 0.562 | 12.70 | 14.27 |
| L | 0.045 | 0.060 | 1.15 | 1.52 |
| N | 0.190 | 0.210 | 4.83 | 5.33 |
| Q | 0.100 | 0.120 | 2.54 | 3.04 |
| R | 0.080 | 0.110 | 2.04 | 2.79 |
| S | 0.045 | 0.055 | 1.15 | 1.41 |
| T | 0.235 | 0.255 | 5.97 | 6.47 |
| U | 0.000 | 0.050 | 0.00 | 1.27 |
| V | 0.045 | ---- | 1.15 | --- |
| Z | ---- | 0.080 | --- | 2.04 |

STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 2:
PIN 1. BASE
2. EMITTER
3. COLLECTOR
4. EMITTER

STYLE 3:
PIN 1. CATHODE
2. ANODE
3. GATE
4. ANODE

STYLE 4:
PIN 1. MAIN TERMINAL 1
2. MAIN TERMINAL 2
3. GATE
4. MAIN TERMINAL 2

STYLE 5:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

STYLE 6:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

STYLE 7:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. ANODE

STYLE 8:
PIN 1. CATHODE
2. ANODE
3. EXTERNAL TRIP/DELAY
4. ANODE

STYLE 9:
PIN 1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 10:
PIN 1. GATE
2. SOURCE
3. DRAIN
4. SOURCE

STYLE 11:
PIN 1. DRAIN
2. SOURCE
3. GATE
4. SOURCE

STYLE 12:
PIN 1. MAIN TERMINAL 1
2. MAIN TERMINAL 2
3. GATE
4. NOT CONNECTED

| | | |
|---|---|---|
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| **DESCRIPTION:** | **TO−220** | **PAGE 1 OF 1** |

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