

# MUR805G, MUR810G, MUR815G, MUR820G, MUR840G, MUR860G, MURF860G, SUR8820G, SUR8840G

Preferred Devices

## SWITCHMODE Power Rectifiers

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

### Features

- Ultrafast 25 and 50 Nanosecond Recovery Time
- 175°C Operating Junction Temperature
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Low Forward Voltage
- Low Leakage Current
- Reverse Voltage to 600 V
- ESD Ratings:
  - ◆ Machine Model = C (> 400 V)
  - ◆ Human Body Model = 3B (> 16,000 V)
- AEC-Q101 Qualified and PPAP Capable
- SUR8 Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- All Packages are Pb-Free\*

### Mechanical Characteristics:

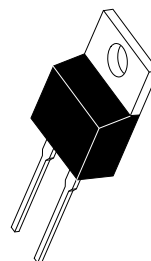
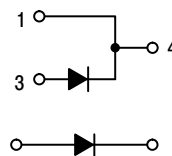
- Case: Epoxy, Molded
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max for 10 Seconds



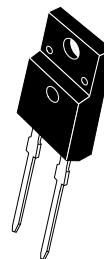
ON Semiconductor®

<http://onsemi.com>

## ULTRAFAST RECTIFIERS 8.0 AMPERES, 50–600 VOLTS

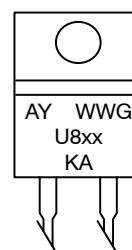


TO-220AC  
CASE 221B  
PLASTIC



TO-220 FULLPAK  
CASE 221E  
STYLE 1

### MARKING DIAGRAMS



|      |                                |
|------|--------------------------------|
| A    | = Assembly Location            |
| Y    | = Year                         |
| WW   | = Work Week                    |
| U8XX | = Device Code                  |
|      | xx = 05, 10, 15, 20, 40, or 60 |
| G    | = Pb-Free Package              |
| KA   | = Diode Polarity               |

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 7 of this data sheet.

**Preferred** devices are recommended choices for future use and best overall value.

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

# MUR805G, MUR810G, MUR815G, MUR820G, MUR840G, MUR860G, MURF860G, SUR8820G, SUR8840G

## MAXIMUM RATINGS

| Rating                                                                                                     | Symbol                          | MUR/SUR8    |     |     |     |     |     | Unit             |
|------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|-----|-----|-----|-----|-----|------------------|
|                                                                                                            |                                 | 805         | 810 | 815 | 820 | 840 | 860 |                  |
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                     | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 50          | 100 | 150 | 200 | 400 | 600 | V                |
| Average Rectified Forward Current<br>Total Device, (Rated $V_R$ ), $T_C = 150^\circ\text{C}$               | $I_{F(AV)}$                     | 8.0         |     |     |     |     |     | A                |
| Peak Repetitive Forward Current<br>(Rated $V_R$ , Square Wave, 20 kHz), $T_C = 150^\circ\text{C}$          | $I_{FM}$                        | 16          |     |     |     |     |     | A                |
| Nonrepetitive Peak Surge Current<br>(Surge applied at rated load conditions halfwave, single phase, 60 Hz) | $I_{FSM}$                       | 100         |     |     |     |     |     | A                |
| Operating Junction Temperature and Storage Temperature Range                                               | $T_J, T_{stg}$                  | -65 to +175 |     |     |     |     |     | $^\circ\text{C}$ |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

## THERMAL CHARACTERISTICS

| Characteristic                                      | Symbol           | MUR/SUR8 |     |     |     |     |     | Unit |
|-----------------------------------------------------|------------------|----------|-----|-----|-----|-----|-----|------|
|                                                     |                  | 805      | 810 | 815 | 820 | 840 | 860 |      |
| Maximum Thermal Resistance, Junction-to-Case        | R <sub>θJC</sub> | 3.0      |     |     |     | 2.0 |     | °C/W |
| Thermal Resistance, Junction-to-Case<br>MURF860     | R <sub>θJC</sub> | 4.75     |     |     |     |     |     | °C/W |
| Thermal Resistance, Junction-to-Ambient             | R <sub>θJA</sub> | 73       |     |     |     |     |     | °C/W |
| Thermal Resistance, Junction-to-Ambiente<br>MURF860 | R <sub>θJA</sub> | 75       |     |     |     |     |     | °C/W |

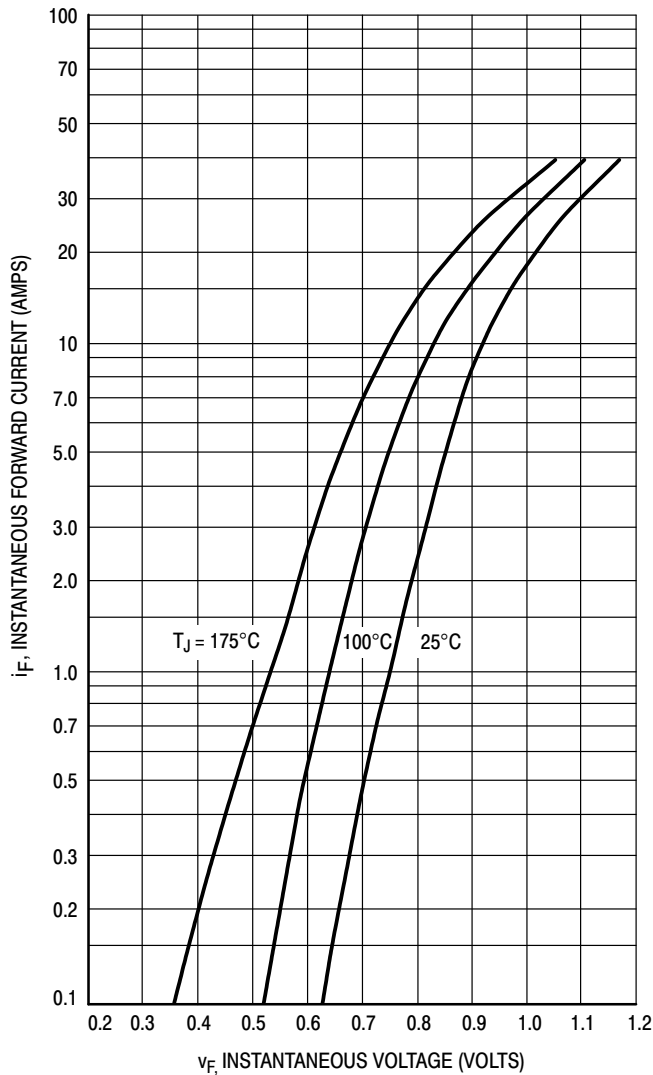
## ELECTRICAL CHARACTERISTICS

| Characteristic                                                                                                                                                               | Symbol   | MUR/SUR8       |     |     |     |              |              | Unit          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------|-----|-----|-----|--------------|--------------|---------------|
|                                                                                                                                                                              |          | 805            | 810 | 815 | 820 | 840          | 860          |               |
| Maximum Instantaneous Forward Voltage (Note 1)<br>( $I_F = 8.0\text{ A}$ , $T_C = 150^\circ\text{C}$ )<br>( $I_F = 8.0\text{ A}$ , $T_C = 25^\circ\text{C}$ )                | $V_F$    | 0.895<br>0.975 |     |     |     | 1.00<br>1.30 | 1.20<br>1.50 | V             |
| Maximum Instantaneous Reverse Current (Note 1)<br>(Rated DC Voltage, $T_J = 150^\circ\text{C}$ )<br>(Rated DC Voltage, $T_J = 25^\circ\text{C}$ )                            | $i_R$    | 250<br>5.0     |     |     |     | 500<br>10    |              | $\mu\text{A}$ |
| Maximum Reverse Recovery Time<br>( $I_F = 1.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ )<br>( $I_F = 0.5\text{ A}$ , $i_R = 1.0\text{ A}$ , $I_{REC} = 0.25\text{ A}$ ) | $t_{rr}$ | 35<br>25       |     |     |     | 60<br>50     |              | ns            |

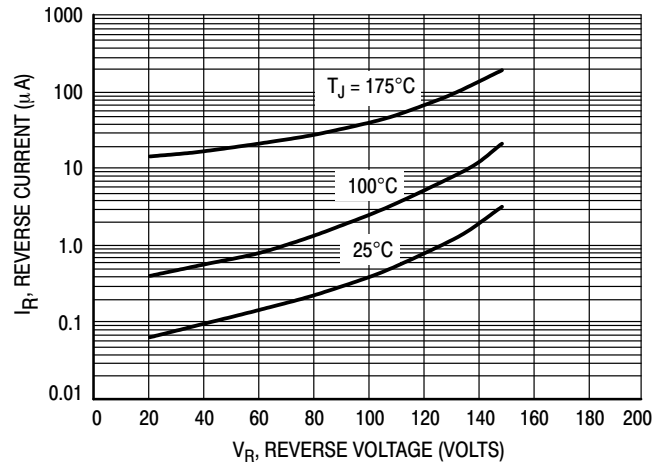
1. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

**MUR805G, MUR810G, MUR815G, MUR820G, MUR840G, MUR860G, MURF860G,  
SUR8820G, SUR8840G**

**MUR805G, MUR810G, MUR815G, MUR820G, SUR8820G**

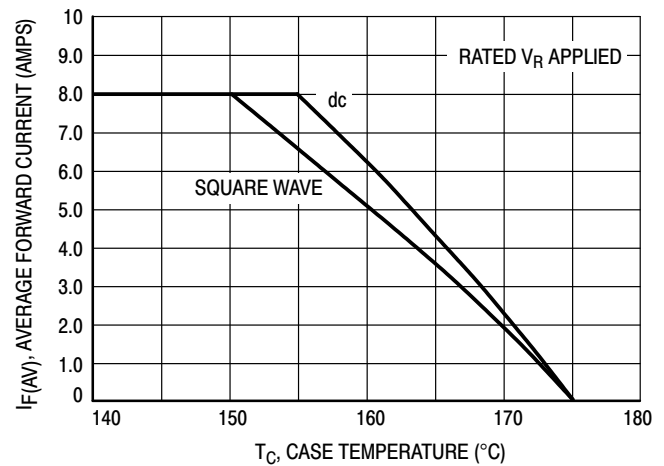


**Figure 1. Typical Forward Voltage**

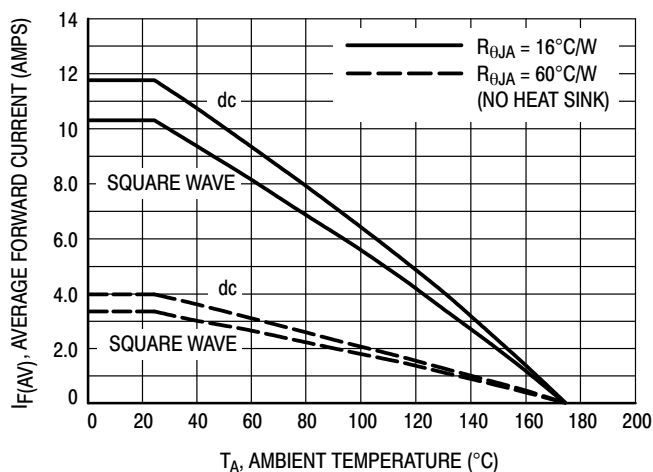


**Figure 2. Typical Reverse Current\***

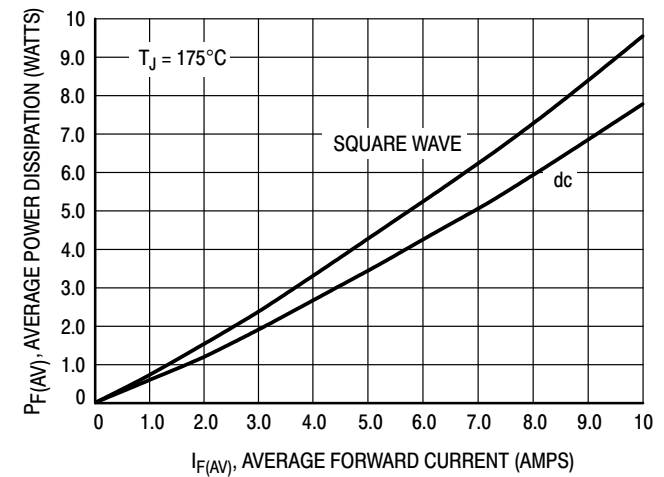
\* The curves shown are typical for the highest voltage device in the grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if  $V_R$  is sufficiently below rated  $V_R$ .



**Figure 3. Current Derating, Case**



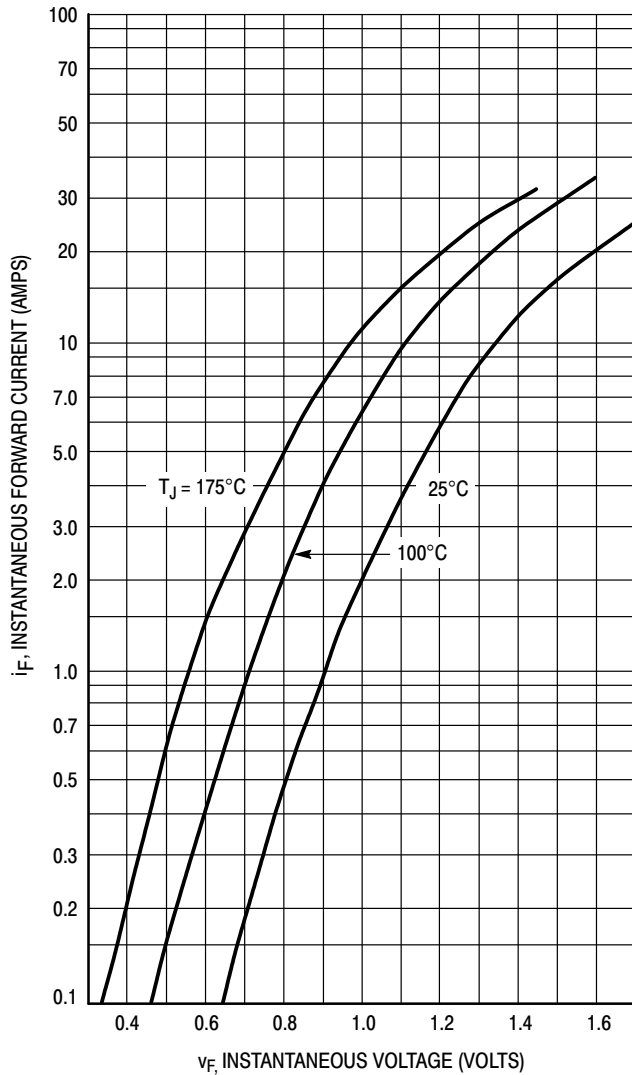
**Figure 4. Current Derating, Ambient**



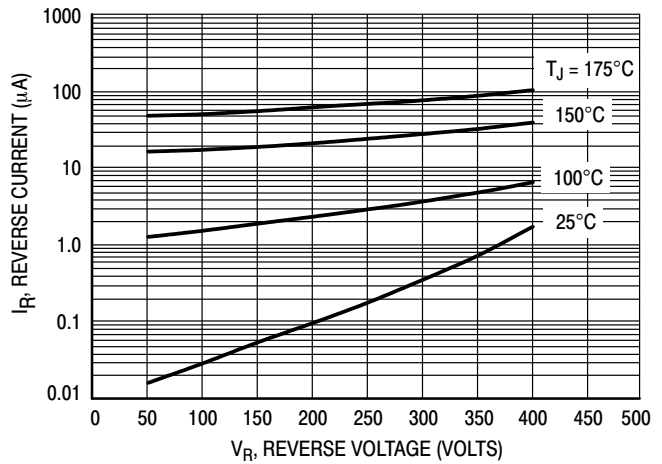
**Figure 5. Power Dissipation**

**MUR805G, MUR810G, MUR815G, MUR820G, MUR840G, MUR860G, MURF860G,  
SUR8820G, SUR8840G**

**MUR840G, SUR8840G**

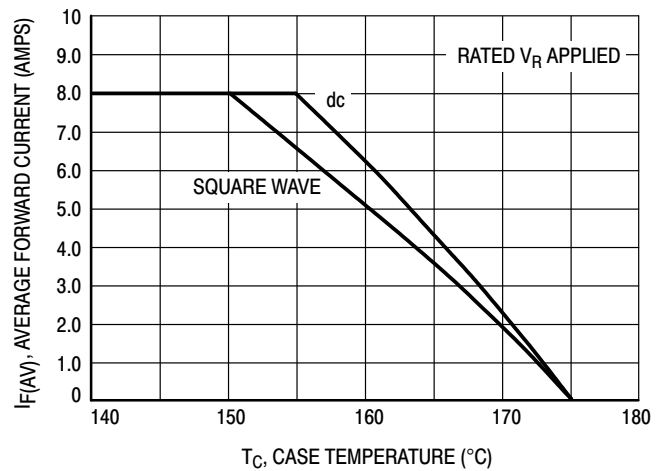


**Figure 6. Typical Forward Voltage**

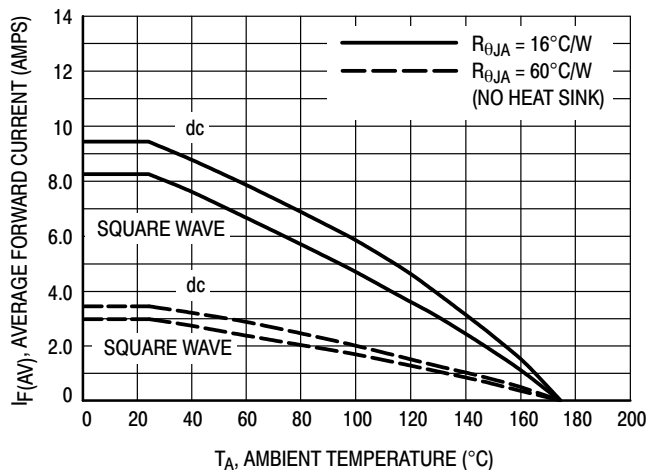


**Figure 7. Typical Reverse Current\***

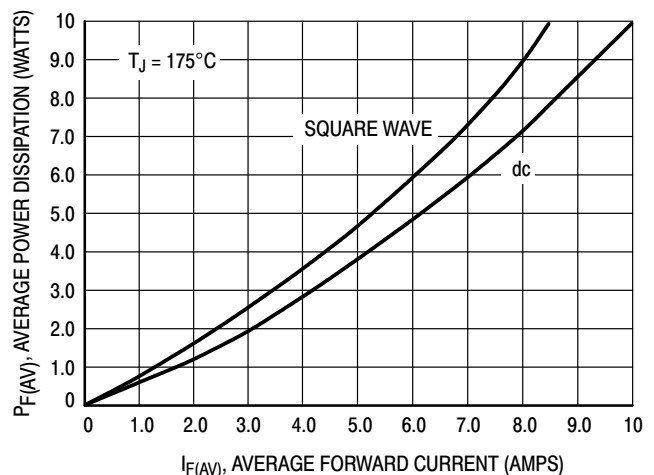
\* The curves shown are typical for the highest voltage device in the grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if  $V_R$  is sufficiently below rated  $V_R$ .



**Figure 8. Current Derating, Case**



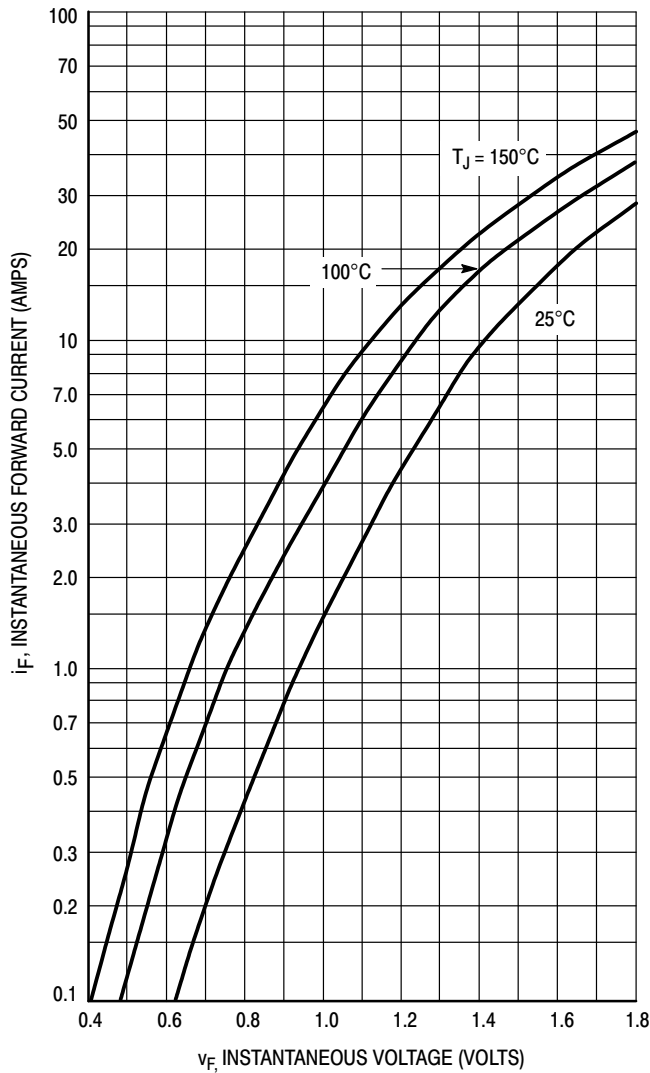
**Figure 9. Current Derating, Ambient**



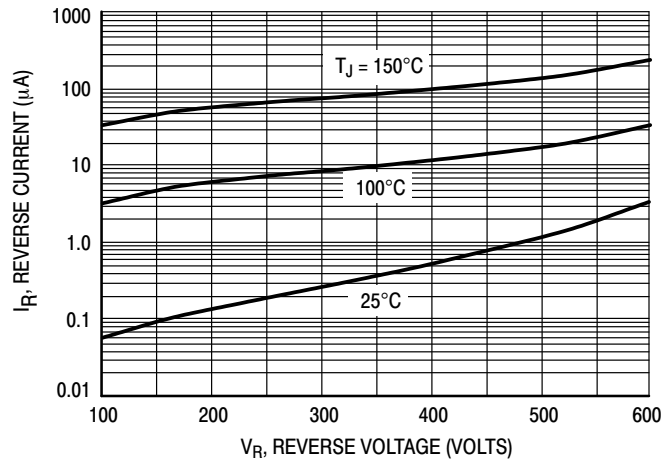
**Figure 10. Power Dissipation**

**MUR805G, MUR810G, MUR815G, MUR820G, MUR840G, MUR860G, MURF860G,  
SUR8820G, SUR8840G**

**MUR860G, MURF860G**

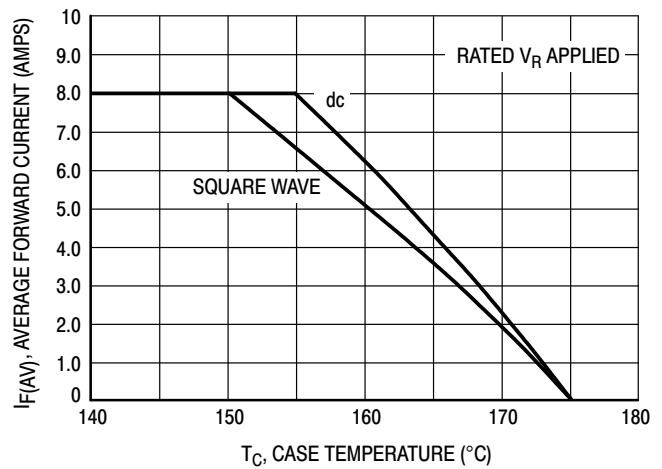


**Figure 11. Typical Forward Voltage**

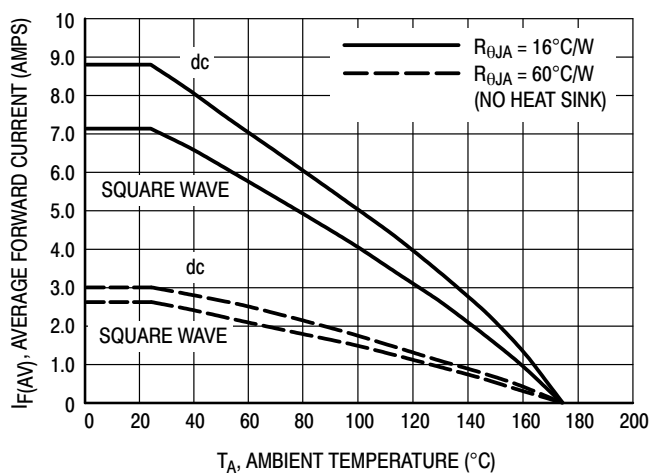


**Figure 12. Typical Reverse Current\***

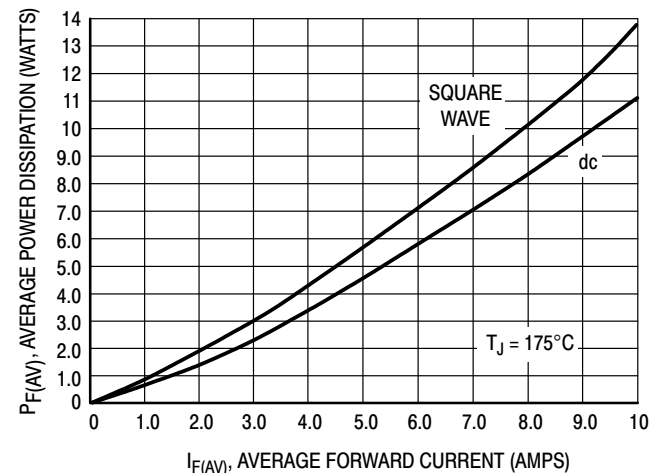
\* The curves shown are typical for the highest voltage device in the grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if  $V_R$  is sufficiently below rated  $V_R$ .



**Figure 13. Current Derating, Case**

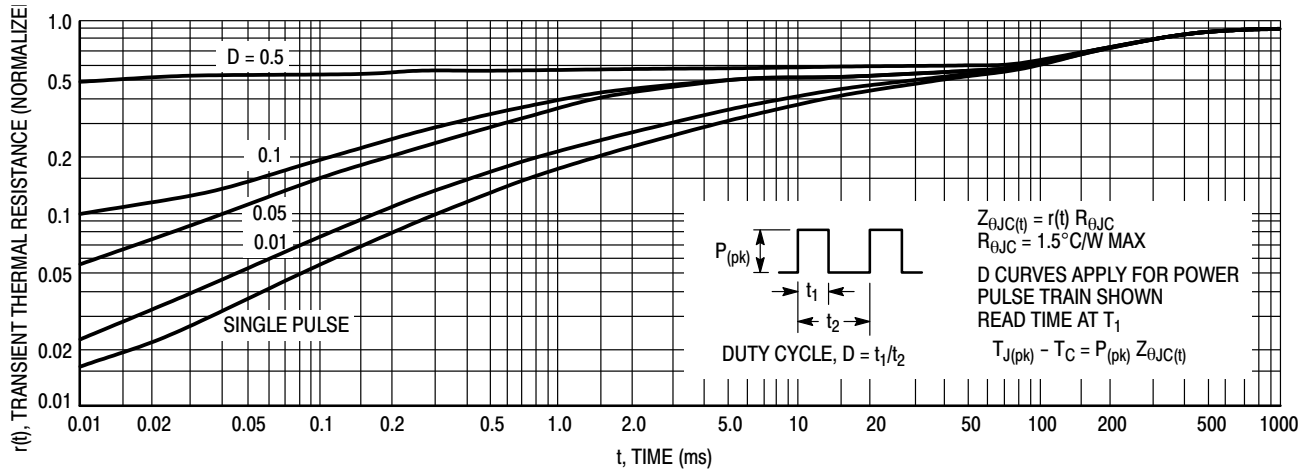


**Figure 14. Current Derating, Ambient**

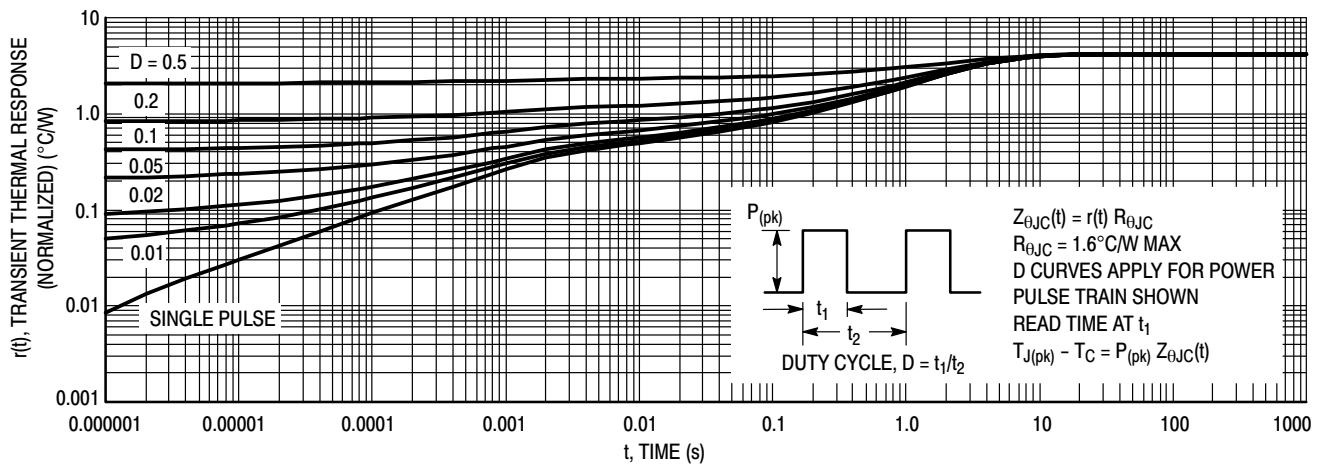


**Figure 15. Power Dissipation**

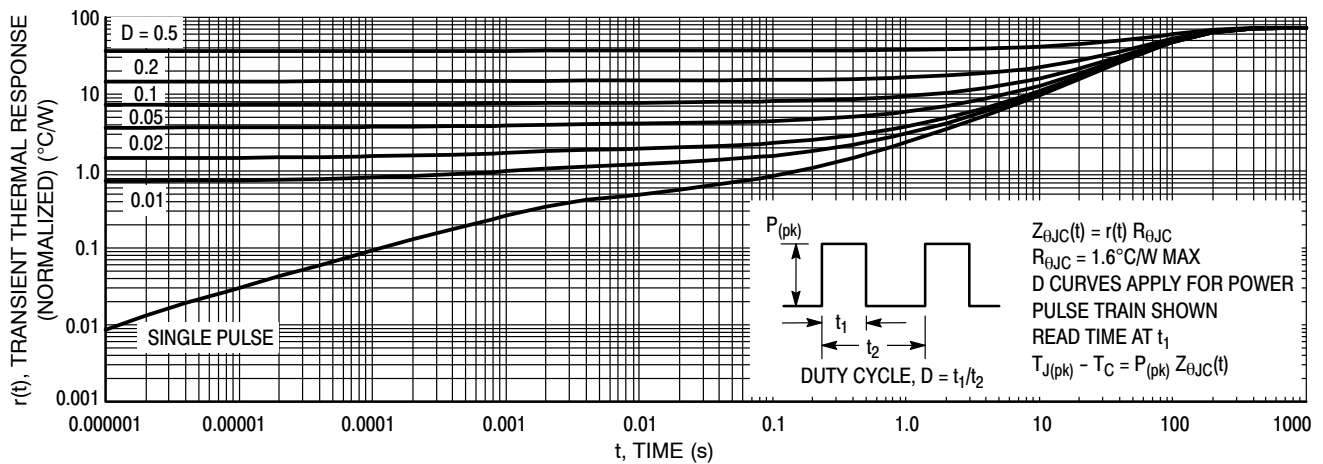
**MUR805G, MUR810G, MUR815G, MUR820G, MUR840G, MUR860G, MURF860G,  
SUR8820G, SUR8840G**



**Figure 16. Thermal Response**

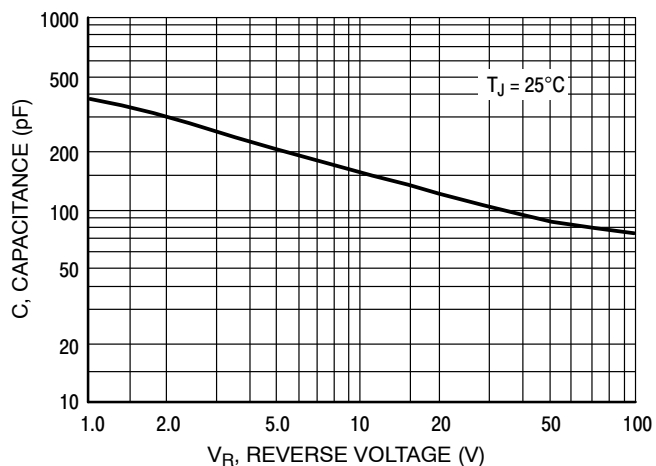


**Figure 17. Thermal Response, (MURF860G) Junction-to-Case ( $R_{\theta JC}$ )**



**Figure 18. Thermal Response, (MURF860G) Junction-to-Ambient ( $R_{\theta JA}$ )**

**MUR805G, MUR810G, MUR815G, MUR820G, MUR840G, MUR860G, MURF860G,  
SUR8820G, SUR8840G**



**Figure 19. Typical Capacitance**

**ORDERING INFORMATION**

| Device   | Package               | Shipping        |
|----------|-----------------------|-----------------|
| MUR805G  | TO-220AC<br>(Pb-Free) | 50 Units / Rail |
| MUR810G  | TO-220AC<br>(Pb-Free) | 50 Units / Rail |
| MUR815G  | TO-220AC<br>(Pb-Free) | 50 Units / Rail |
| MUR820G  | TO-220AC<br>(Pb-Free) | 50 Units / Rail |
| SUR8820G | TO-220AC<br>(Pb-Free) | 50 Units / Rail |
| MUR840G  | TO-220AC<br>(Pb-Free) | 50 Units / Rail |
| SUR8840G | TO-220AC<br>(Pb-Free) | 50 Units / Rail |
| MUR860G  | TO-220AC<br>(Pb-Free) | 50 Units / Rail |
| MURF860G | TO-220FP<br>(Pb-Free) | 50 Units / Rail |

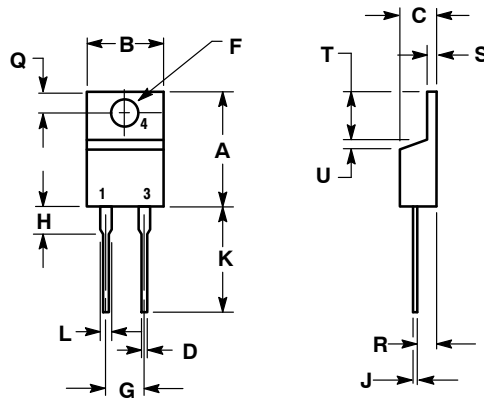
# MUR805G, MUR810G, MUR815G, MUR820G, MUR840G, MUR860G, MURF860G, SUR8820G, SUR8840G

## PACKAGE DIMENSIONS

### TO-220AC TWO-LEAD

CASE 221B-04

ISSUE E



#### NOTES:

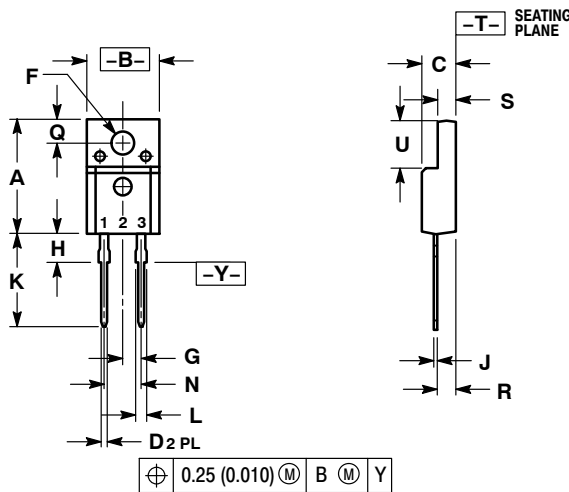
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES |       | MILLIMETERS |       |
|-----|--------|-------|-------------|-------|
|     | MIN    | MAX   | MIN         | MAX   |
| A   | 0.595  | 0.620 | 15.11       | 15.75 |
| B   | 0.380  | 0.405 | 9.65        | 10.29 |
| C   | 0.160  | 0.190 | 4.06        | 4.82  |
| D   | 0.025  | 0.035 | 0.64        | 0.89  |
| F   | 0.142  | 0.161 | 3.61        | 4.09  |
| G   | 0.190  | 0.210 | 4.83        | 5.33  |
| H   | 0.110  | 0.130 | 2.79        | 3.30  |
| J   | 0.014  | 0.025 | 0.36        | 0.64  |
| K   | 0.500  | 0.562 | 12.70       | 14.27 |
| L   | 0.045  | 0.060 | 1.14        | 1.52  |
| Q   | 0.100  | 0.120 | 2.54        | 3.04  |
| R   | 0.080  | 0.110 | 2.04        | 2.79  |
| S   | 0.045  | 0.055 | 1.14        | 1.39  |
| T   | 0.235  | 0.255 | 5.97        | 6.48  |
| U   | 0.000  | 0.050 | 0.000       | 1.27  |

### TO-220 FULLPAK, 2-LEAD

CASE 221E-01

ISSUE A



#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES    |       | MILLIMETERS |       |
|-----|-----------|-------|-------------|-------|
|     | MIN       | MAX   | MIN         | MAX   |
| A   | 0.617     | 0.633 | 15.67       | 16.07 |
| B   | 0.392     | 0.408 | 9.96        | 10.36 |
| C   | 0.177     | 0.193 | 4.50        | 4.90  |
| D   | 0.024     | 0.039 | 0.60        | 1.00  |
| F   | 0.121     | 0.129 | 3.08        | 3.28  |
| G   | 0.100 BSC |       | 2.54 BSC    |       |
| H   | 0.117     | 0.133 | 2.98        | 3.38  |
| J   | 0.018     | 0.025 | 0.45        | 0.64  |
| K   | 0.499     | 0.562 | 12.68       | 14.27 |
| L   | 0.045     | 0.060 | 1.14        | 1.52  |
| N   | 0.200 BSC |       | 5.08 BSC    |       |
| Q   | 0.122     | 0.138 | 3.10        | 3.50  |
| R   | 0.101     | 0.117 | 2.56        | 2.96  |
| S   | 0.092     | 0.108 | 2.34        | 2.74  |
| U   | 0.255     | 0.271 | 6.48        | 6.88  |

#### STYLE 1:

1. CATHODE
2. N/A
3. ANODE

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Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

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