

# MUR805, MUR810, MUR815, MUR820, MUR840, MUR860

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, 50 and 75 Nanosecond Recovery Time
- 175°C Operating Junction Temperature
- Popular TO-220 Package
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Low Forward Voltage
- Low Leakage Current
- High Temperature Glass Passivated Junction
- Reverse Voltage to 600 V
- Pb-Free Packages are Available\*

### Mechanical Characteristics:

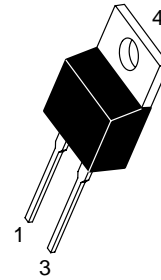
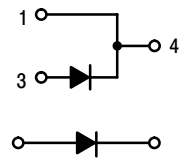
- Case: Epoxy, Molded
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max for 10 Seconds



ON Semiconductor®

<http://onsemi.com>

## ULTRAFAST RECTIFIERS 8.0 AMPERES, 50-600 VOLTS



TO-220AC  
CASE 221B  
PLASTIC

### MARKING DIAGRAM



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 6 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.

# MUR805, MUR810, MUR815, MUR820, MUR840, MUR860

## MAXIMUM RATINGS

Rating	Symbol	MUR						Unit
		805	810	815	820	840	860	
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	50	100	150	200	400	600	V
Average Rectified Forward Current Total Device, (Rated $V_R$ ), $T_C = 150^\circ\text{C}$	$I_{F(AV)}$	8.0						A
Peak Repetitive Forward Current (Rated $V_R$ , Square Wave, 20 kHz), $T_C = 150^\circ\text{C}$	$I_{FM}$	16						A
Nonrepetitive Peak Surge Current (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

Rating	Symbol	MUR						Unit
		805	810	815	820	840	860	
Maximum Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.0			2.0			$^\circ\text{C/W}$

## ELECTRICAL CHARACTERISTICS

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

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

# MUR805, MUR810, MUR815, MUR820, MUR840, MUR860

## MUR805, MUR810, MUR815, MUR820

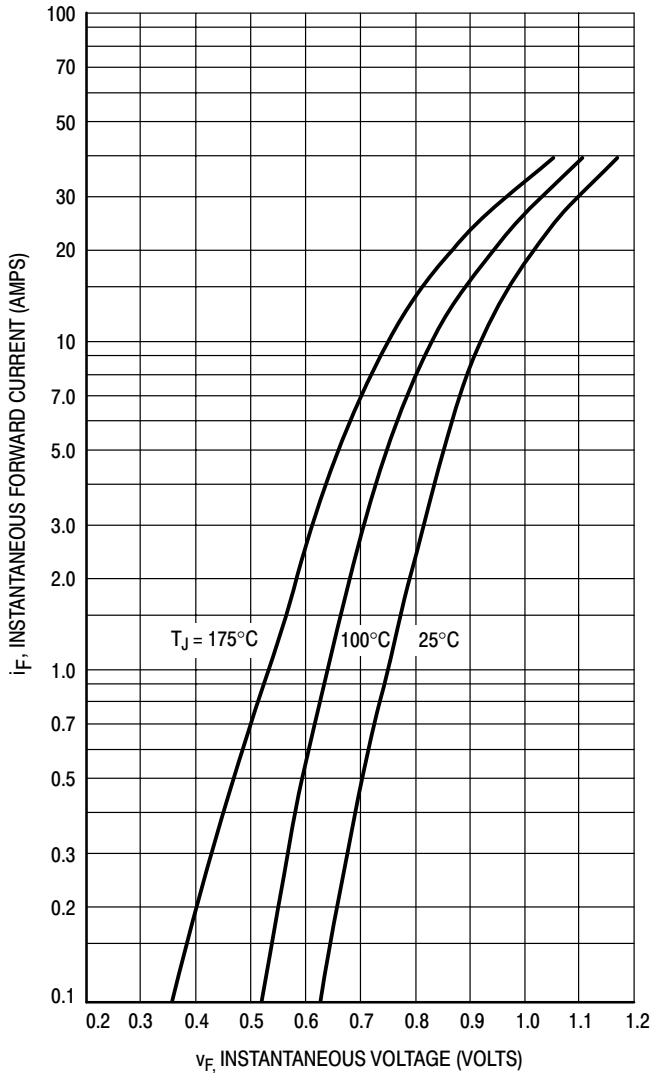


Figure 1. Typical Forward Voltage

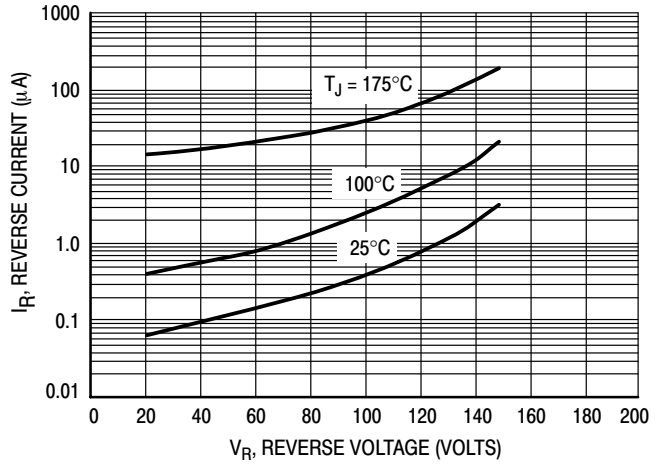


Figure 2. Typical Reverse Current\*

\* 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  $V_R$ .

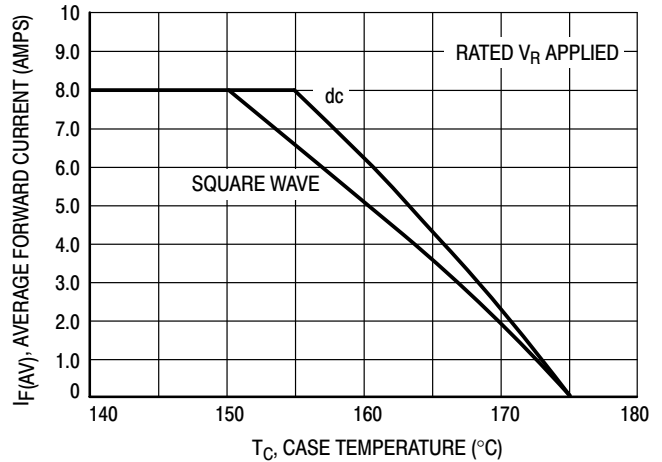


Figure 3. Current Derating, Case

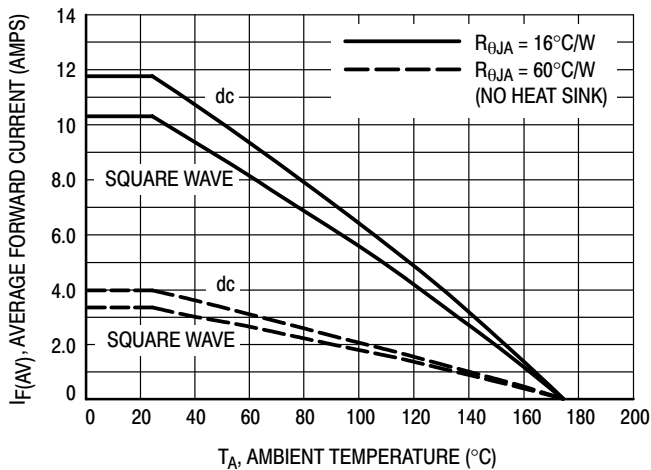


Figure 4. Current Derating, Ambient

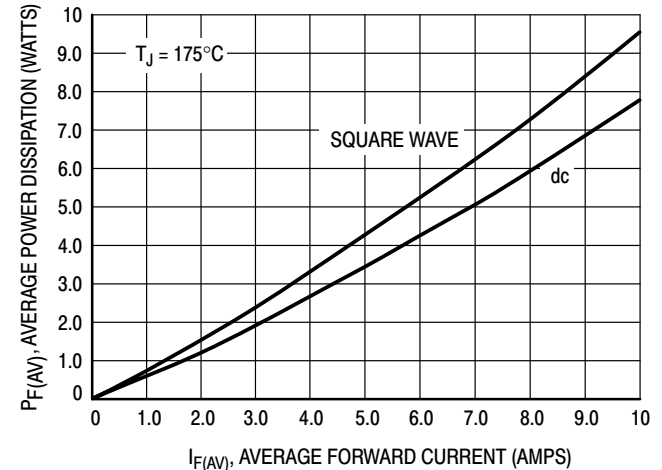


Figure 5. Power Dissipation

MUR840

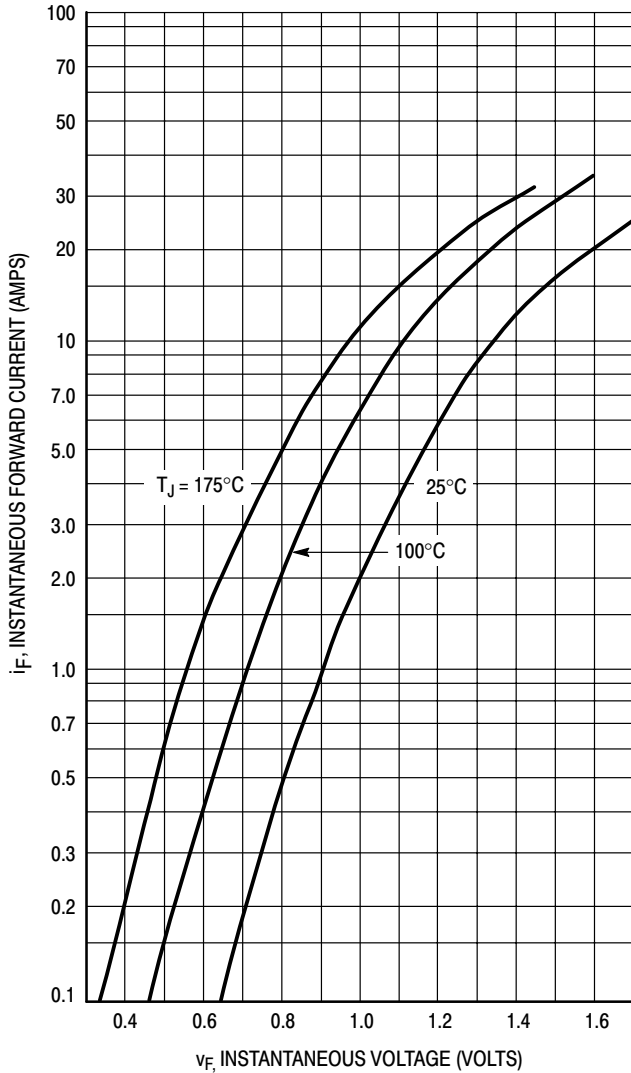


Figure 6. Typical Forward Voltage

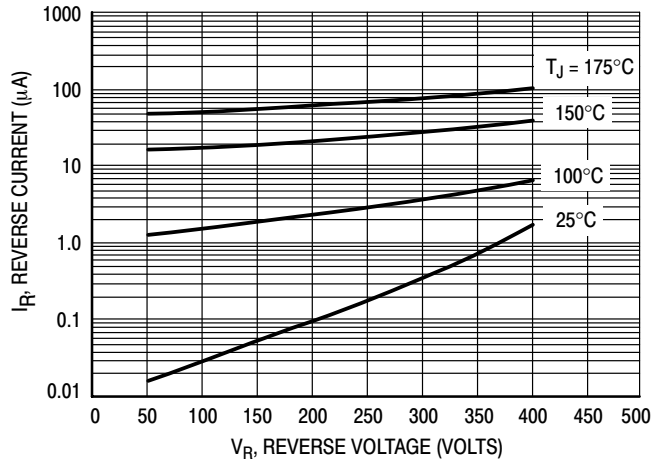


Figure 7. Typical Reverse Current\*

\* 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  $V_R$ .

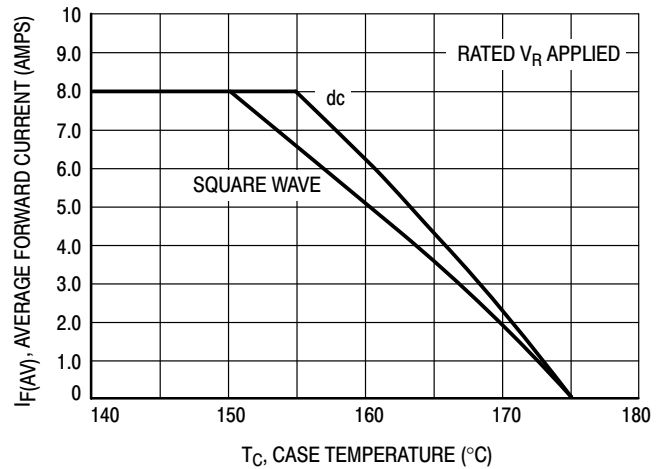


Figure 8. Current Derating, Case

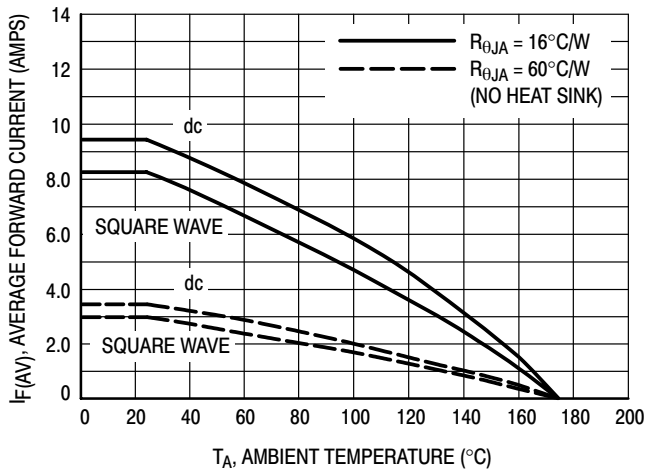


Figure 9. Current Derating, Ambient

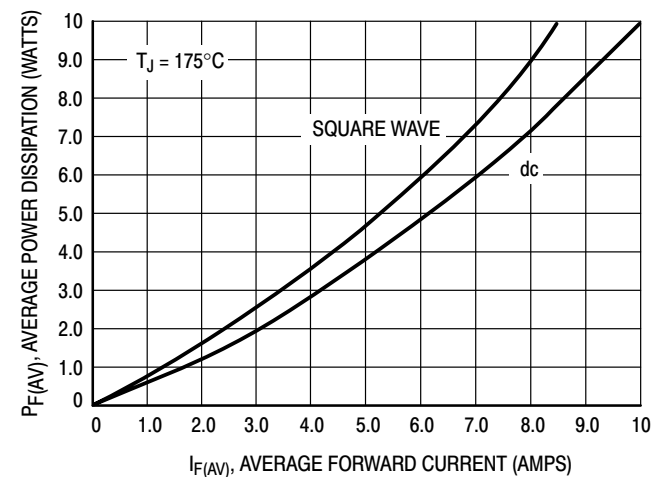


Figure 10. Power Dissipation

MUR860

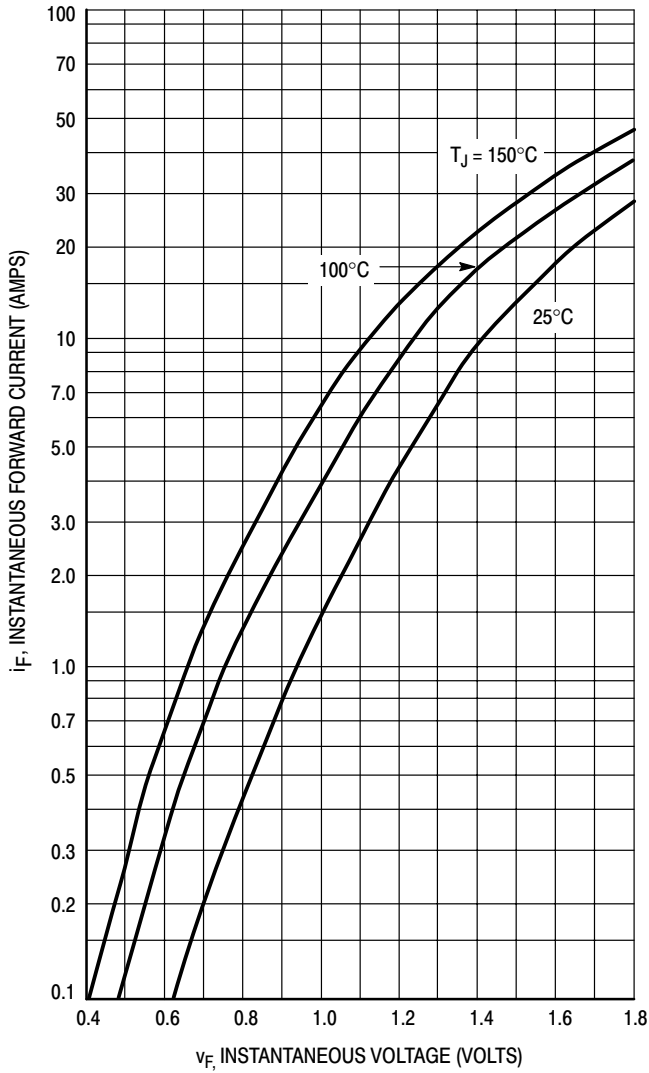


Figure 11. Typical Forward Voltage

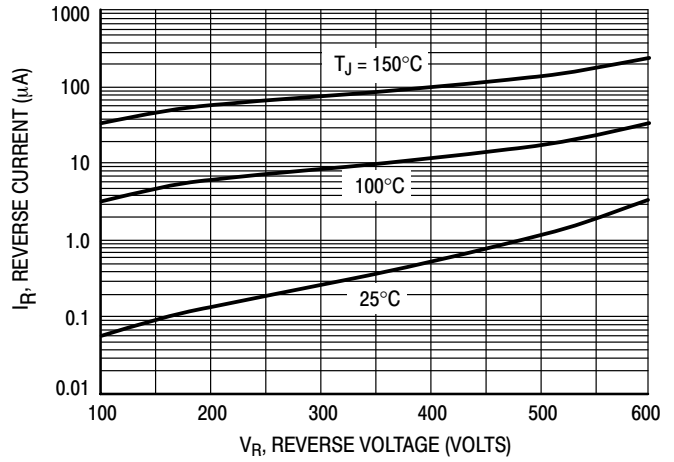


Figure 12. Typical Reverse Current\*

\* 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  $V_R$ .

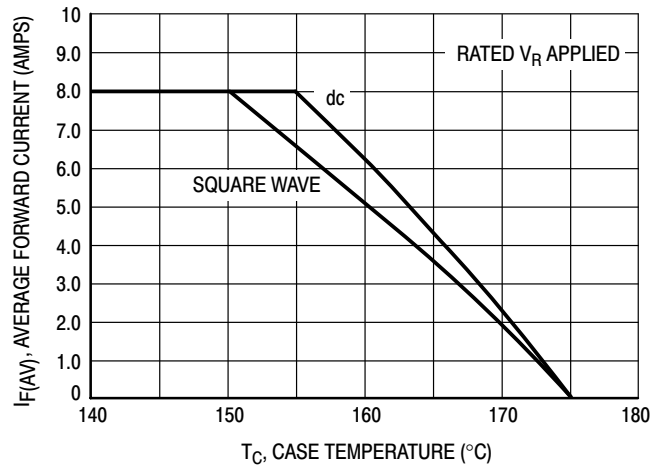


Figure 13. Current Derating, Case

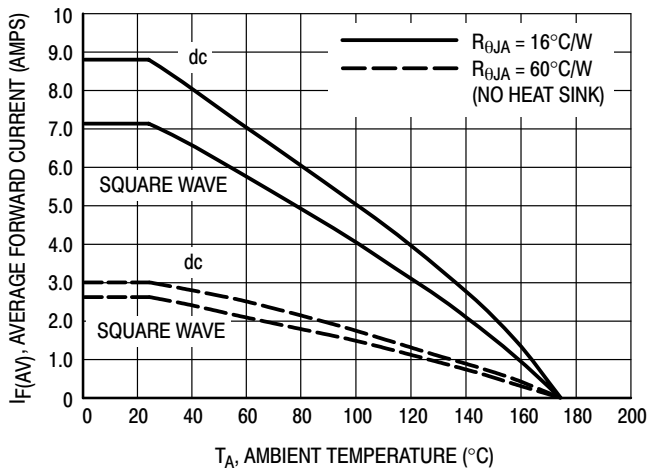


Figure 14. Current Derating, Ambient

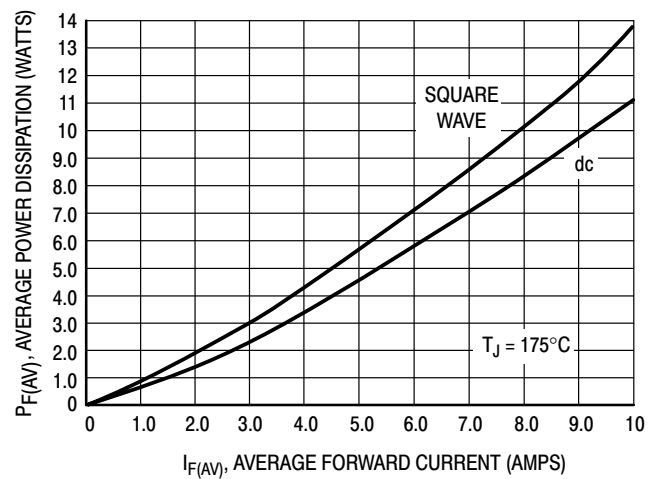


Figure 15. Power Dissipation

# MUR805, MUR810, MUR815, MUR820, MUR840, MUR860

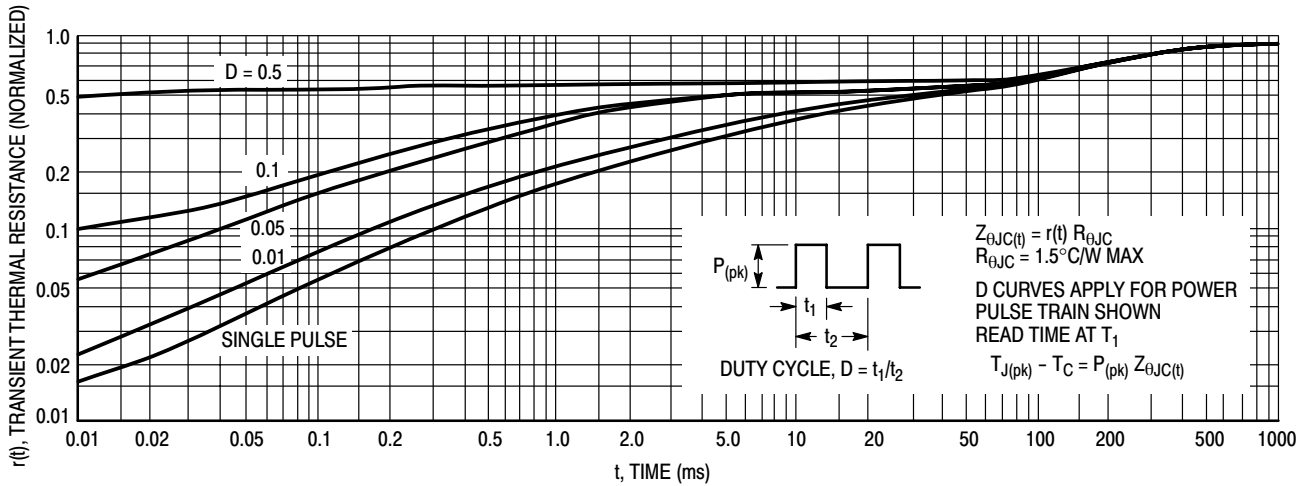


Figure 16. Thermal Response

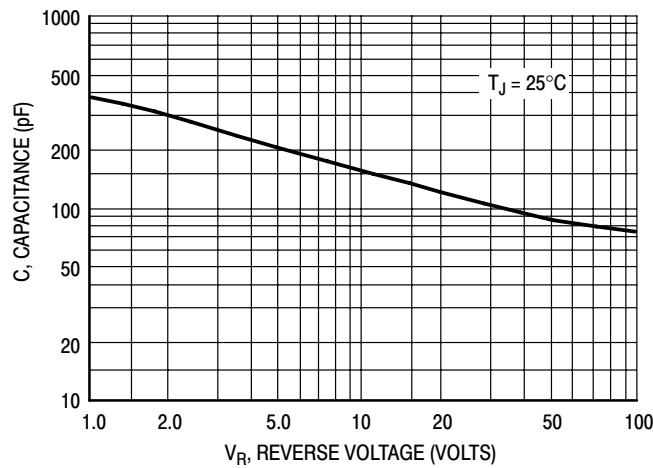


Figure 17. Typical Capacitance

## ORDERING INFORMATION

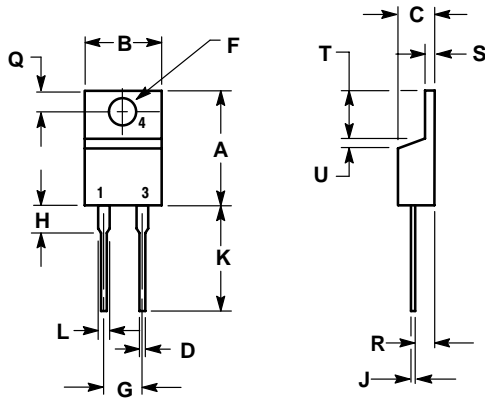
Device	Package	Shipping†
MUR805	TO-220	50 Units / Rail
MUR805G	TO-220 (Pb-Free)	
MUR810	TO-220	
MUR810G	TO-220 (Pb-Free)	
MUR815	TO-220	
MUR815G	TO-220 (Pb-Free)	
MUR820	TO-220	
MUR820G	TO-220 (Pb-Free)	
MUR840	TO-220	
MUR840G	TO-220 (Pb-Free)	
MUR860	TO-220	
MUR860G	TO-220 (Pb-Free)	

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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## PACKAGE DIMENSIONS

### TO-220 TWO-LEAD CASE 221B-04 ISSUE D



#### 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	0.147	3.61	3.73
G	0.190	0.210	4.83	5.33
H	0.110	0.130	2.79	3.30
J	0.018	0.025	0.46	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

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