

# MUR1510, MUR1515, MUR1520, MUR1540, MUR1560

Preferred Devices

## SWITCHMODE™ Power Rectifiers

This series is designed for use in switching power supplies, inverters and as free wheeling diodes, these state-of-the-art devices have the following features:

### Features

- Ultrafast 35 and 60 Nanosecond Recovery Time
- 175°C Operating Junction Temperature
- Popular TO-220 Package
- High Voltage Capability to 600 Volts
- Low Forward Drop
- Low Leakage Specified @ 150°C Case Temperature
- Current Derating Specified @ Both Case and Ambient Temperatures
- 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
- Shipped 50 units per plastic tube

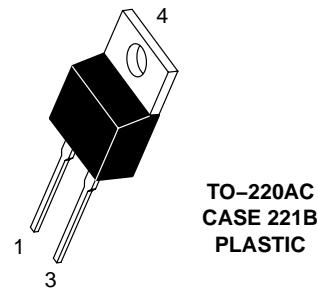
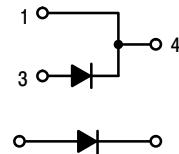


ON Semiconductor®

<http://onsemi.com>

### ULTRAFAST RECTIFIERS

### 15 AMPERES, 100–600 VOLTS



TO-220AC  
CASE 221B  
PLASTIC

### MARKING DIAGRAM



A = Assembly Location  
Y = Year  
WW = Work Week  
U15 = Device Code  
xx = 10, 15, 20, 40 or 60  
KA = Location Code

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 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, SOLDERMM/D.

# MUR1510, MUR1515, MUR1520, MUR1540, MUR1560

## MAXIMUM RATINGS

Rating	Symbol	MUR					Unit
		1510	1515	1520	1540	1560	
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	100	150	200	400	600	V
Average Rectified Forward Current (Rated $V_R$ )	$I_{F(AV)}$	15 @ $T_C = 150^\circ\text{C}$			15 @ $T_C = 145^\circ\text{C}$		A
Peak Rectified Forward Current (Rated $V_R$ , Square Wave, 20 kHz)	$I_{FRM}$	30 @ $T_C = 150^\circ\text{C}$			30 @ $T_C = 145^\circ\text{C}$		A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	$I_{FSM}$	200		150			A
Operating Junction Temperature and Storage Temperature Range	$T_J, T_{stg}$	-65 to +175				$^\circ\text{C}$	

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

## THERMAL CHARACTERISTICS

Maximum Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.5	$^\circ\text{C/W}$
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## ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 1) ( $I_F = 15$ Amps, $T_C = 150^\circ\text{C}$ ) ( $I_F = 15$ Amps, $T_C = 25^\circ\text{C}$ )	$V_F$	0.85 1.05	1.12 1.25	1.20 1.50	V
Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, $T_C = 150^\circ\text{C}$ ) (Rated dc Voltage, $T_C = 25^\circ\text{C}$ )	$i_R$	500 10	500 10	1000 10	$\mu\text{A}$
Maximum Reverse Recovery Time ( $I_F = 1.0$ Amp, $di/dt = 50$ Amps/ $\mu\text{s}$ )	$t_{rr}$	35	60		ns

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

## ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MUR1510	TO-220	50 Units / Rail
MUR1510G	TO-220 (Pb-Free)	50 Units / Rail
MUR1515	TO-220	50 Units / Rail
MUR1520	TO-220	50 Units / Rail
MUR1520G	TO-220 (Pb-Free)	50 Units / Rail
MUR1540	TO-220	50 Units / Rail
MUR1540G	TO-220 (Pb-Free)	50 Units / Rail
MUR1560	TO-220	50 Units / Rail
MUR1560G	TO-220 (Pb-Free)	50 Units / Rail

<sup>†</sup>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.

# MUR1510, MUR1515, MUR1520, MUR1540, MUR1560

## MUR1510, MUR1515, MUR1520

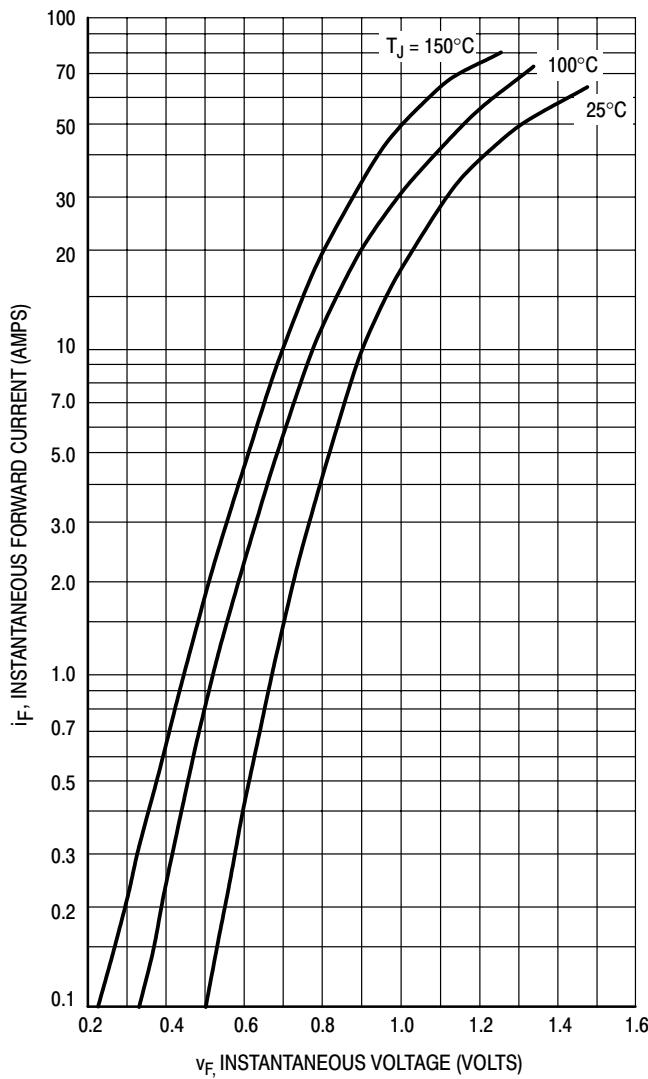


Figure 1. Typical Forward Voltage

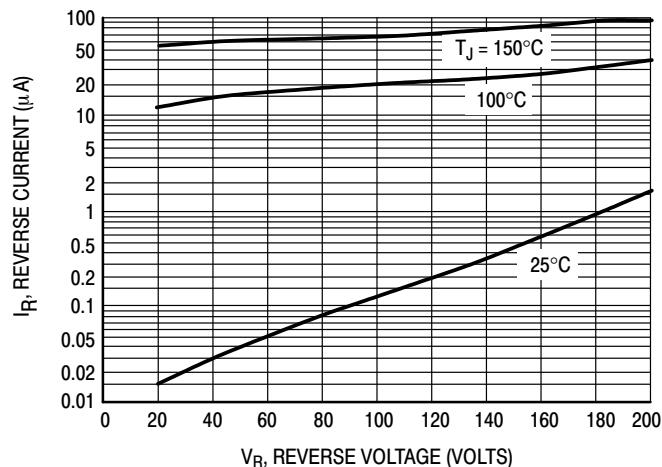


Figure 2. Typical Reverse Current

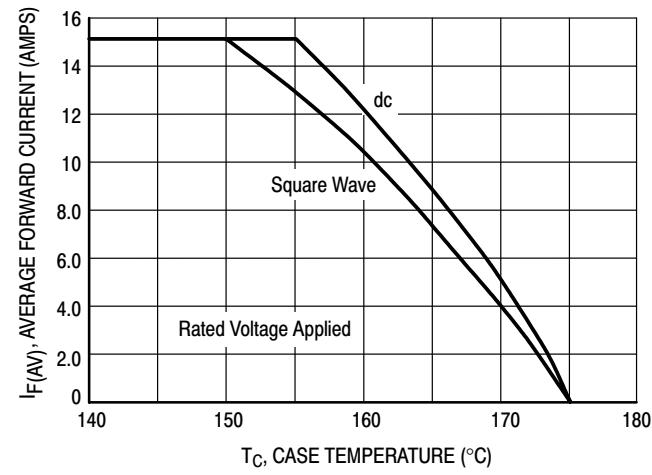


Figure 3. Current Derating, Case

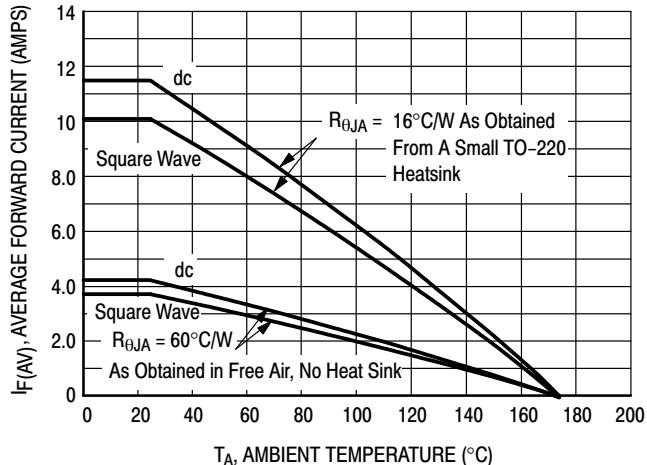


Figure 4. Current Derating, Ambient

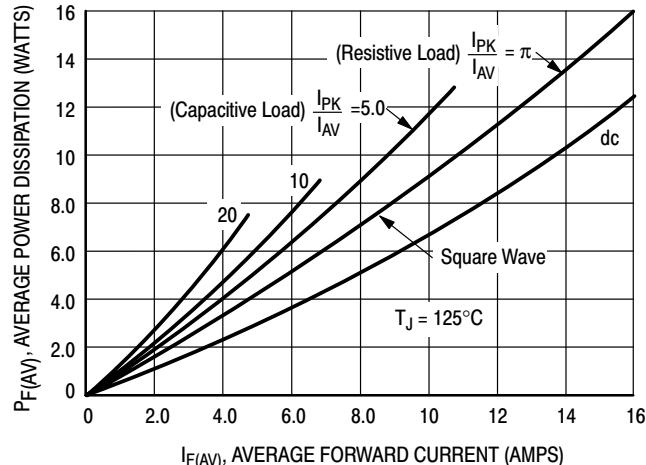


Figure 5. Power Dissipation

# MUR1510, MUR1515, MUR1520, MUR1540, MUR1560

## MUR1540

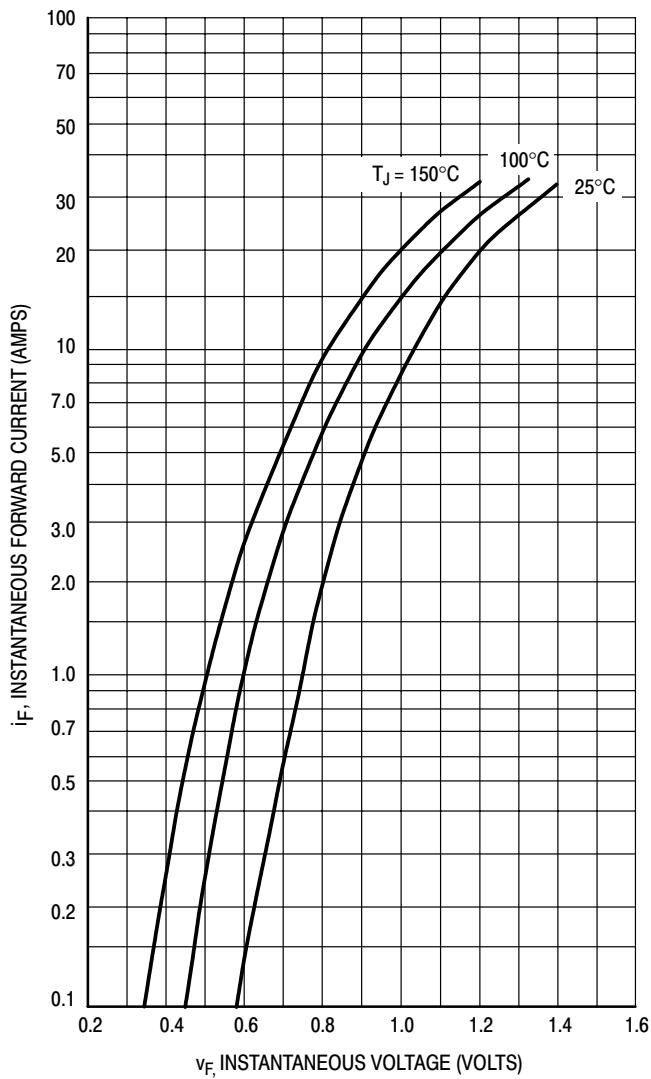


Figure 6. Typical Forward Voltage

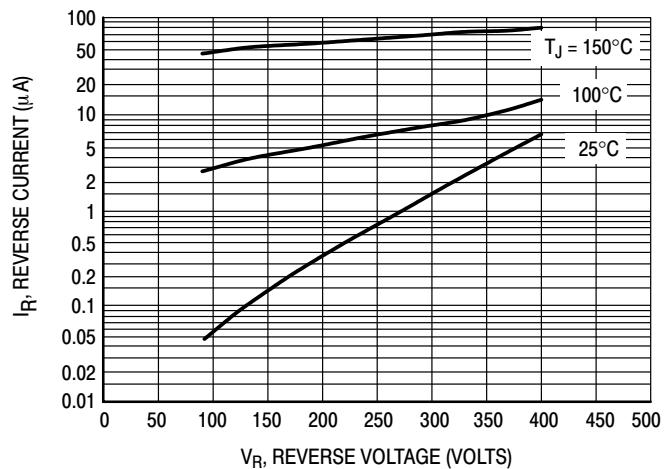


Figure 7. Typical Reverse Current

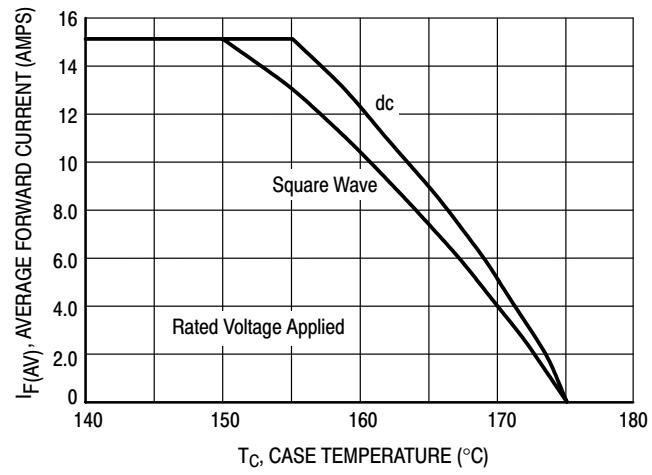


Figure 8. Current Derating, Case

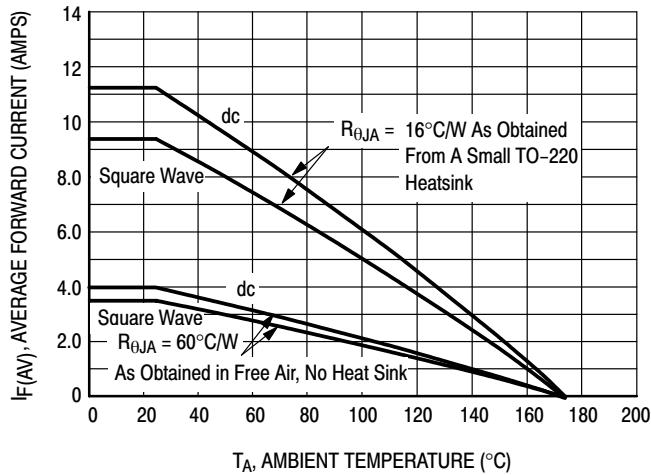


Figure 9. Current Derating, Ambient

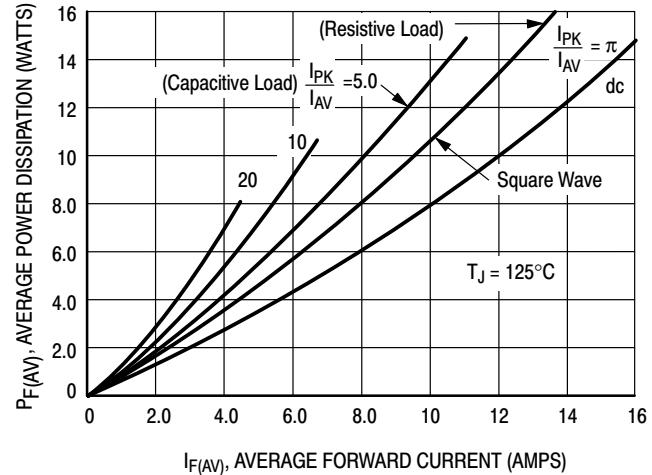


Figure 10. Power Dissipation

# MUR1510, MUR1515, MUR1520, MUR1540, MUR1560

## MUR1560

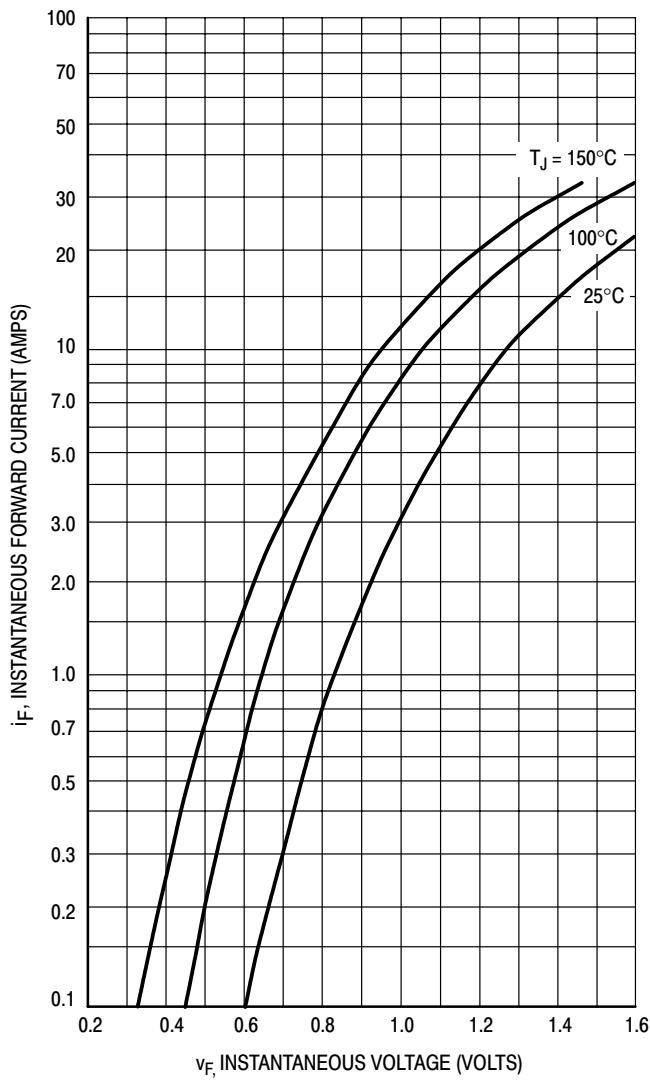


Figure 11. Typical Forward Voltage

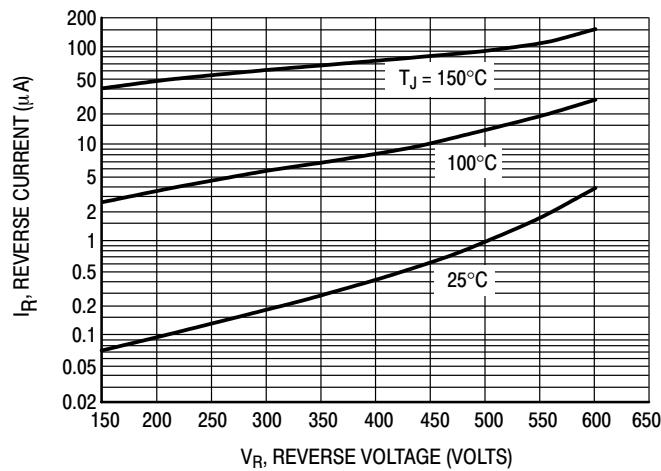


Figure 12. Typical Reverse Current

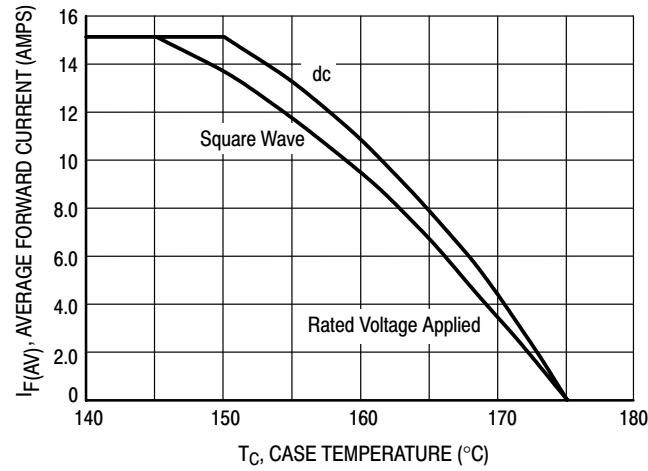


Figure 13. Current Derating, Case

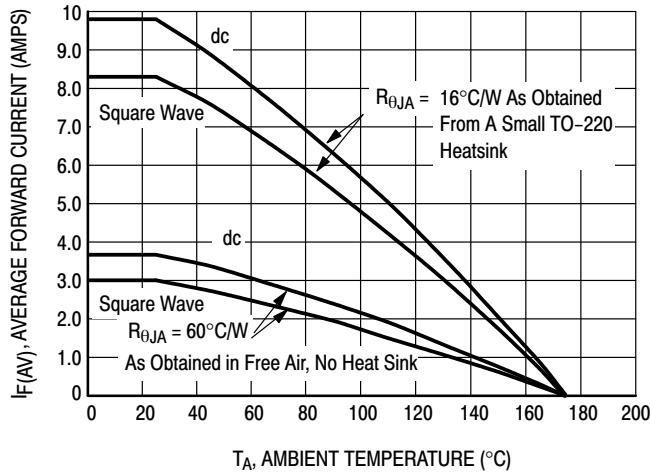


Figure 14. Current Derating, Ambient

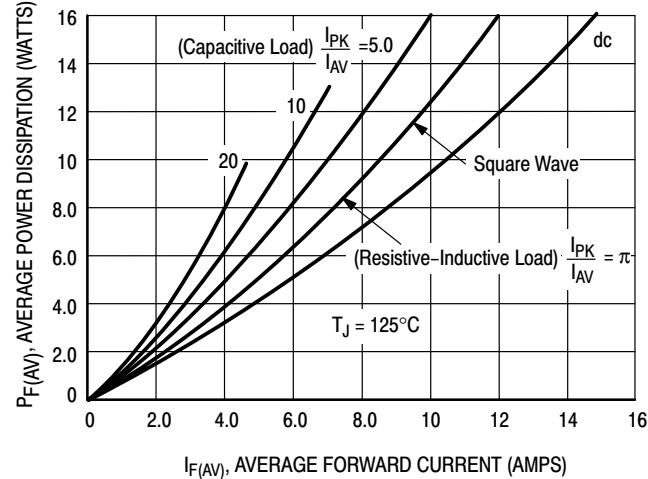


Figure 15. Power Dissipation

## MUR1510, MUR1515, MUR1520, MUR1540, MUR1560

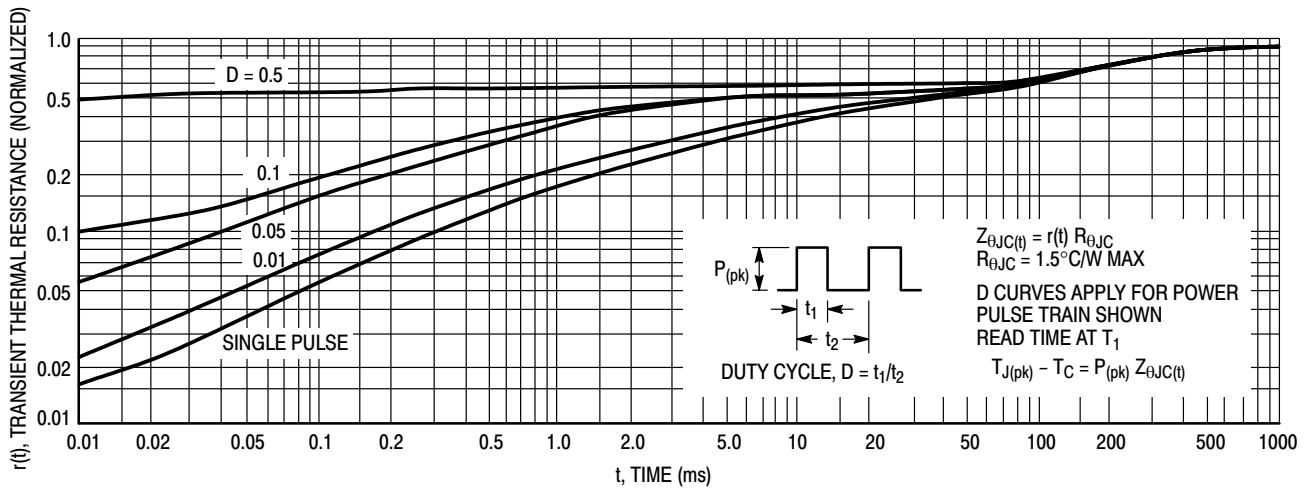


Figure 16. Thermal Response

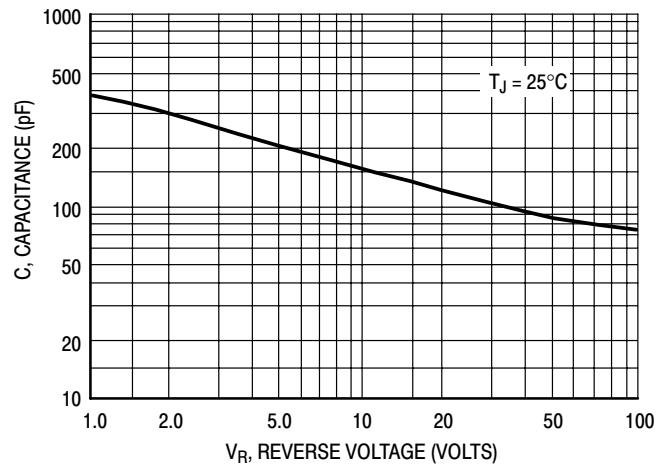
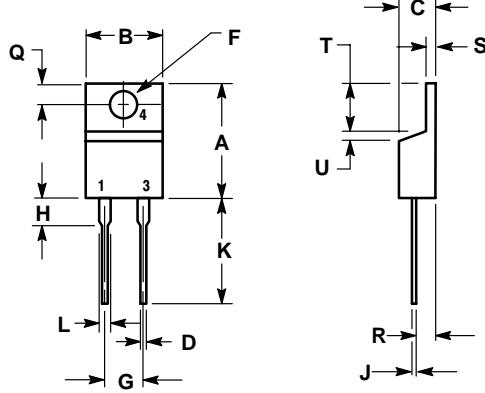


Figure 17. Typical Capacitance

**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

# MUR1510, MUR1515, MUR1520, MUR1540, MUR1560

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