

# MUR3020PT, MUR3040PT, MUR3060PT

## SWITCHMODE™ Power Rectifiers

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

- Ultrafast 35 and 60 Nanosecond Recovery Time
- 175°C Operating Junction Temperature
- High Voltage Capability to 600 Volts
- Low Forward Drop
- Low Leakage Specified @ 150°C Case Temperature
- Current Derating Specified @ Both Case and Ambient Temperatures
- Epoxy Meets UL94, V<sub>O</sub> @ 1/8"
- High Temperature Glass Passivated Junction

### Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 4.3 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 30 units per plastic tube
- Marking: U3020, U3040, U3060

### MAXIMUM RATINGS

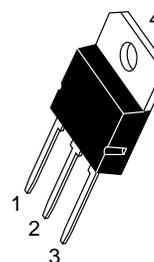
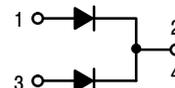
Please See the Table on the Following Page



ON Semiconductor™

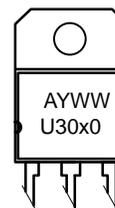
<http://onsemi.com>

**ULTRAFAST  
RECTIFIERS  
30 AMPERES  
200–600 VOLTS**



TO-218AC  
CASE 340D  
STYLE 2

### MARKING DIAGRAM



A = Assembly Location  
Y = Year  
WW = Work Week  
U30x0 = Device Code  
x = 2, 4 or 6

### ORDERING INFORMATION

Device	Package	Shipping
MUR3020PT	SOT-93	30 Units/Rail
MUR3040PT	SOT-93	30 Units/Rail
MUR3060PT	SOT-93	30 Units/Rail

# MUR3020PT, MUR3040PT, MUR3060PT

## MAXIMUM RATINGS (Per Leg)

Rating	Symbol	MUR3020PT	MUR3040PT	MUR3060PT	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	200	400	600	Volts
Average Rectified Forward Current (Rated $V_R$ ) Per Leg Per Device	$I_{F(AV)}$	15 @ $T_C = 150^\circ\text{C}$ 30 @ $T_C = 150^\circ\text{C}$		15 @ $T_C = 30$ 30 @ $T_C = 145^\circ\text{C}$	Amps
Peak Rectified Forward Current, Per Leg (Rated $V_R$ , Square Wave, 20 kHz, $T_C = 150^\circ\text{C}$ )	$I_{FRM}$	30 @ $T_C = 150^\circ\text{C}$		30 @ $T_C = 145^\circ\text{C}$	Amps
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz) Per Leg	$I_{FSM}$	200	150		Amps
Operating Junction and Storage Temperature	$T_J, T_{stg}$	- 65 to +175			$^\circ\text{C}$

## THERMAL CHARACTERISTICS (Per Diode Leg)

Maximum Thermal Resistance — Junction to Case — Junction to Ambient	$R_{\theta JC}$ $R_{\theta JA}$	1.5 40	$^\circ\text{C/W}$
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## ELECTRICAL CHARACTERISTICS (Per Diode Leg)

Maximum Instantaneous Forward Voltage (Note 1.) ( $I_F = 15$ Amp, $T_C = 150^\circ\text{C}$ ) ( $I_F = 15$ Amp, $T_C = 25^\circ\text{C}$ )	$V_F$	0.85 1.05	1.12 1.25	1.2 1.5	Volts
Maximum Instantaneous Reverse Current (Note 1.) (Rated DC Voltage, $T_J = 150^\circ\text{C}$ ) (Rated DC Voltage, $T_J = 25^\circ\text{C}$ )	$i_R$	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  $\leq 2.0\%$ .

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## MUR3020PT

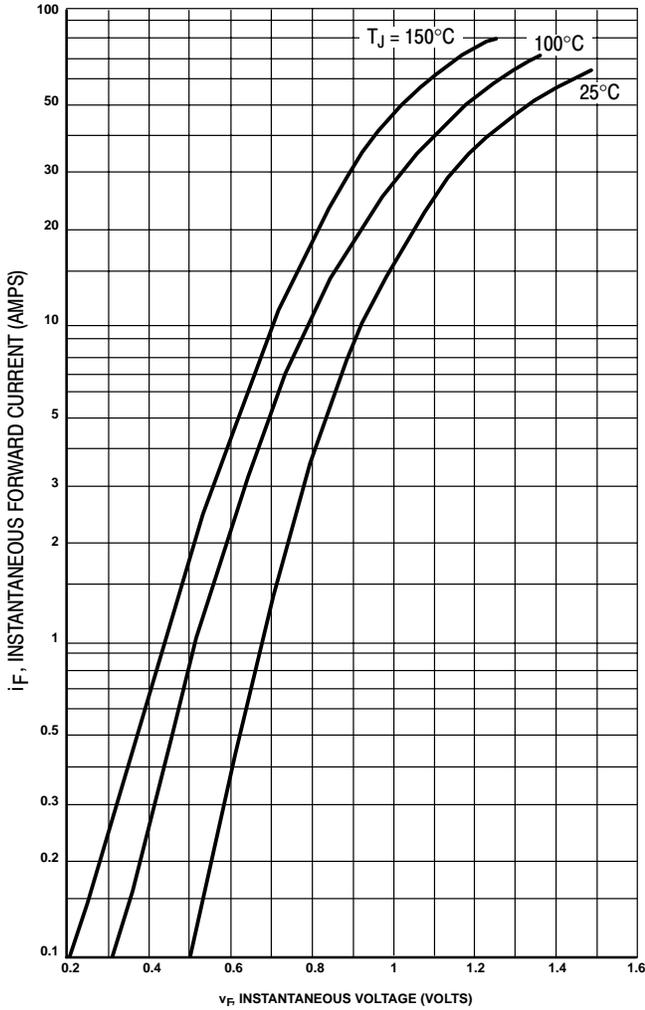


Figure 1. Typical Forward Voltage (Per Leg)

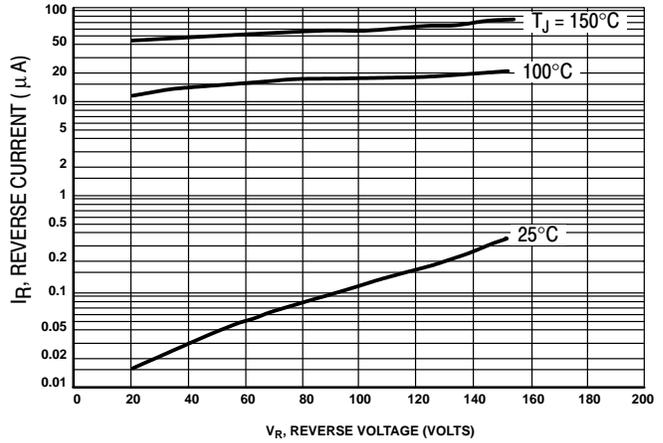


Figure 2. Typical Reverse Current (Per Leg)

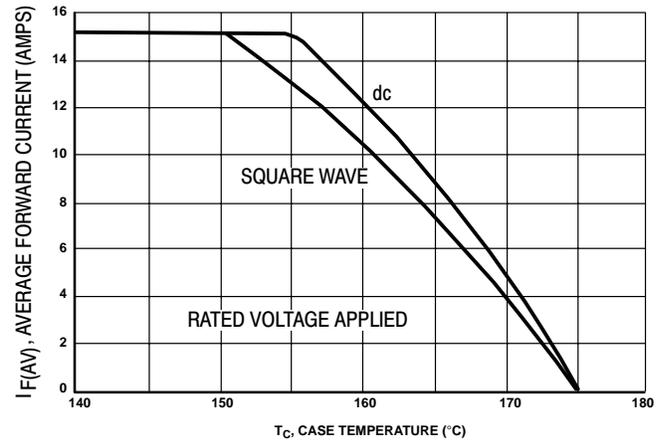


Figure 3. Current Derating, Case (Per Leg)

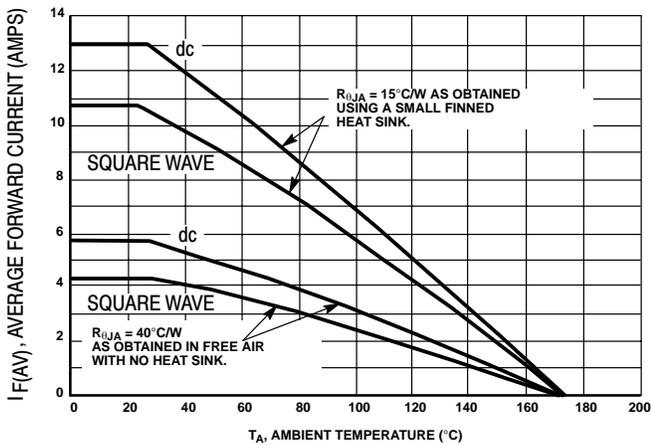


Figure 4. Current Derating, Ambient (Per Leg)

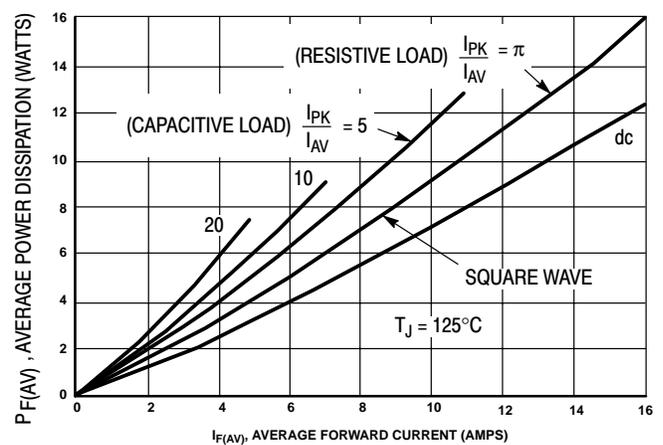


Figure 5. Power Dissipation (Per Leg)

# MUR3020PT, MUR3040PT, MUR3060PT

## MUR3040PT

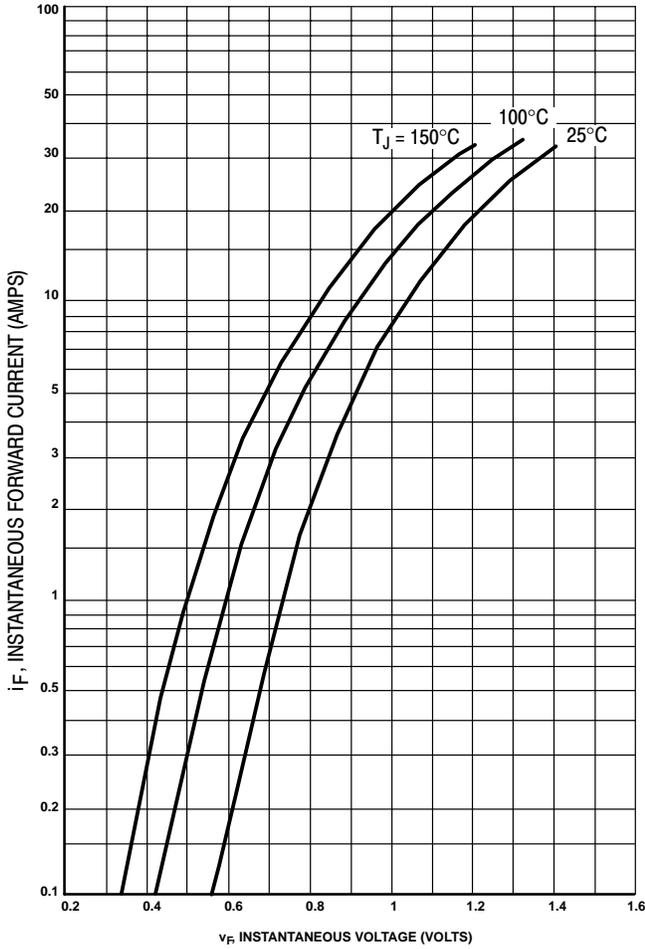


Figure 6. Typical Forward Voltage (Per Leg)

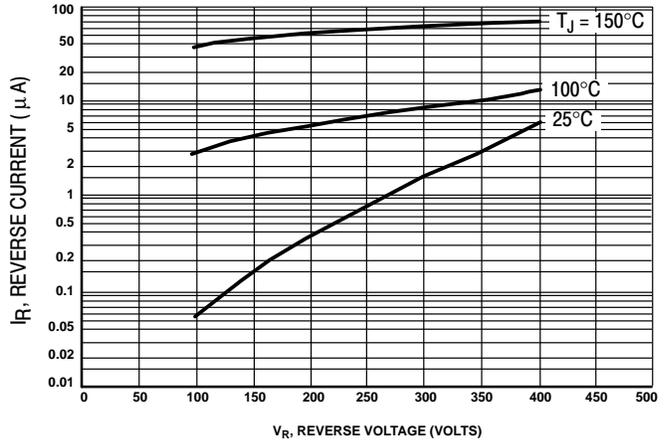


Figure 7. Typical Reverse Current (Per Leg)

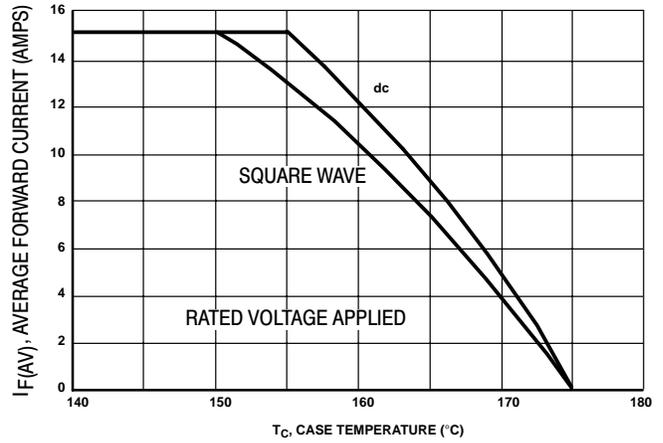


Figure 8. Current Derating, Case (Per Leg)

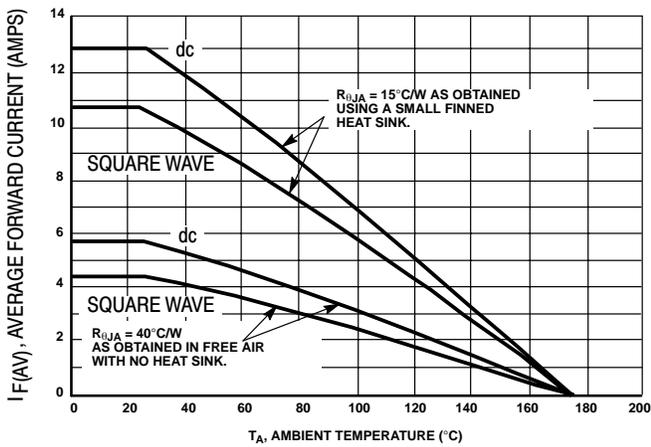


Figure 9. Current Derating, Ambient (Per Leg)

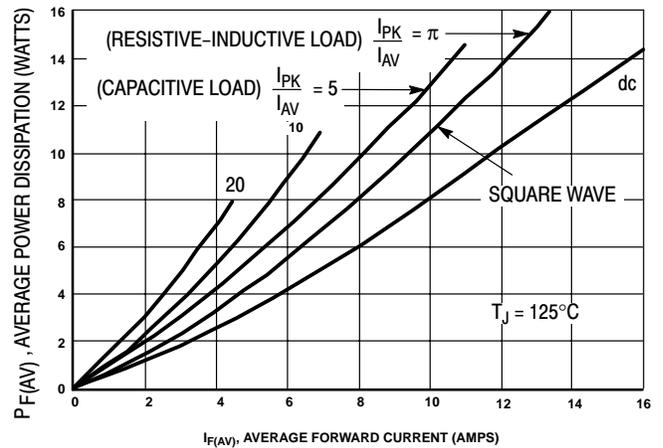


Figure 10. Power Dissipation (Per Leg)

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## MUR3060PT

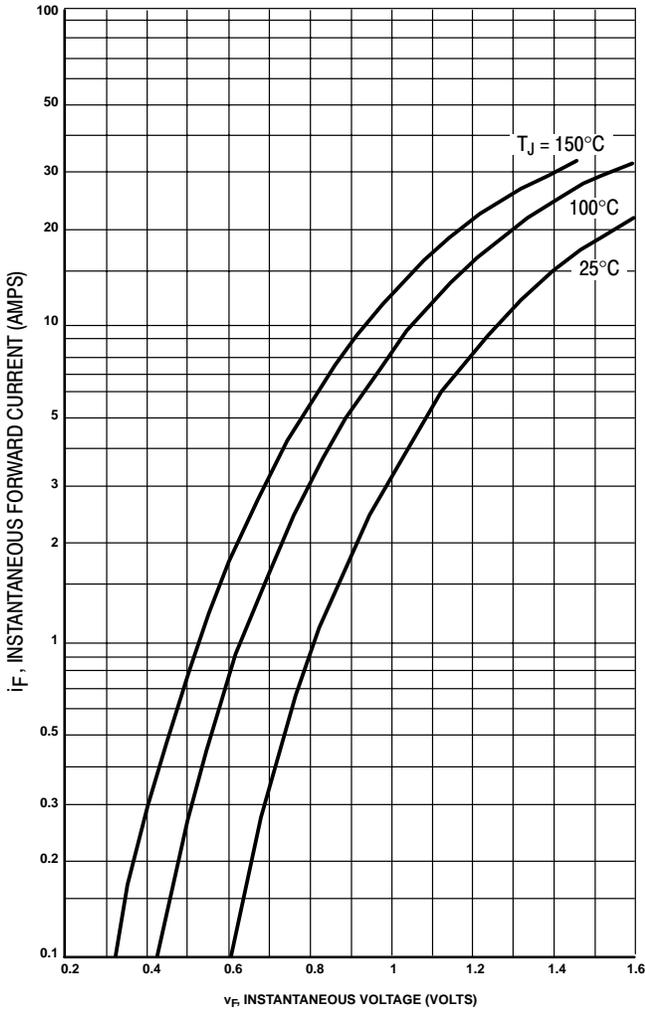


Figure 11. Typical Forward Voltage (Per Leg)

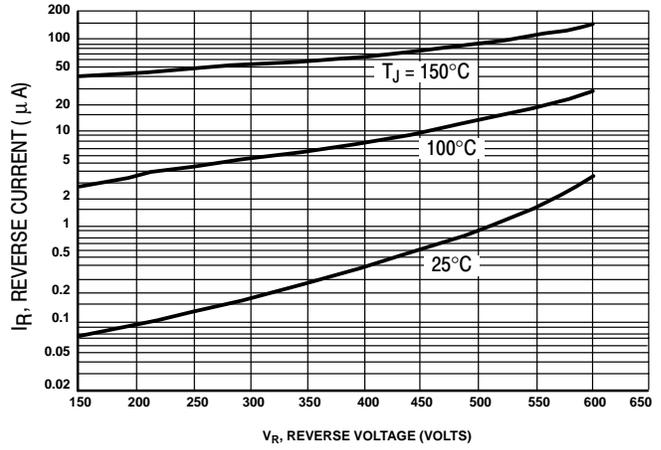


Figure 12. Typical Reverse Current (Per Leg)

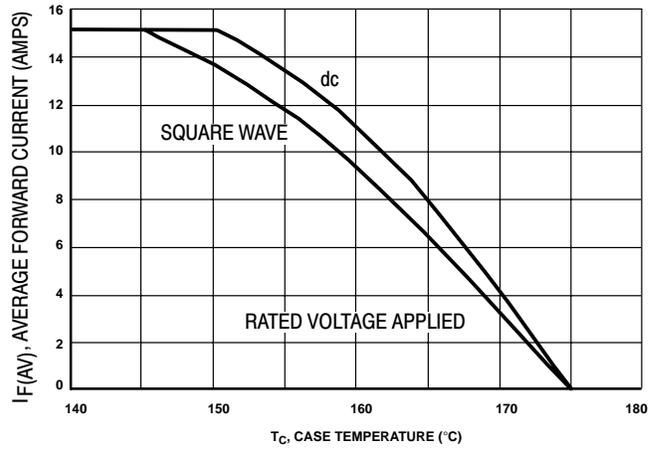


Figure 13. Current Derating, Case (Per Leg)

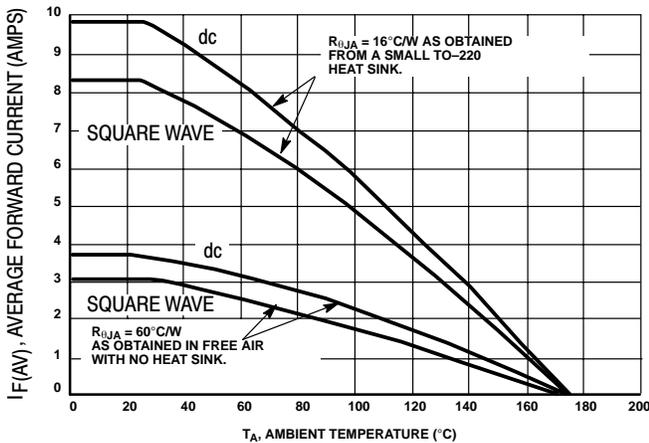


Figure 14. Current Derating, Ambient (Per Leg)

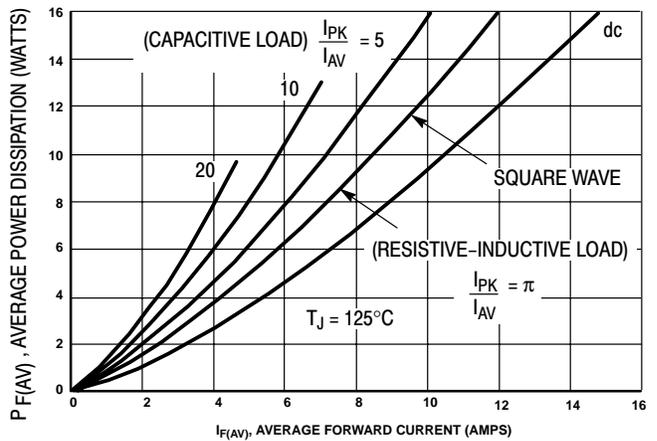


Figure 15. Power Dissipation (Per Leg)

# MUR3020PT, MUR3040PT, MUR3060PT

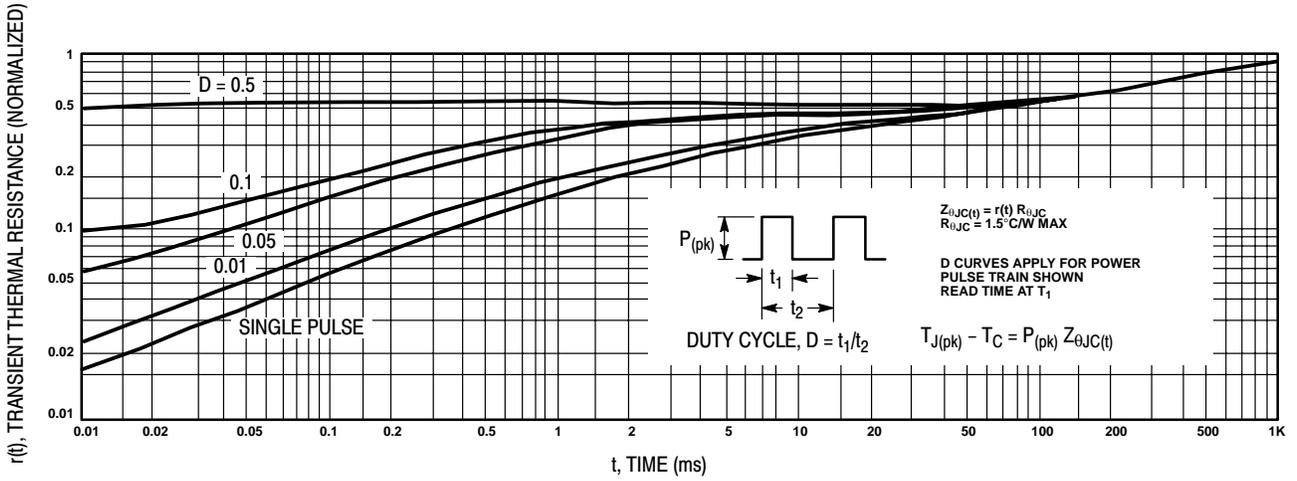


Figure 16. Thermal Response

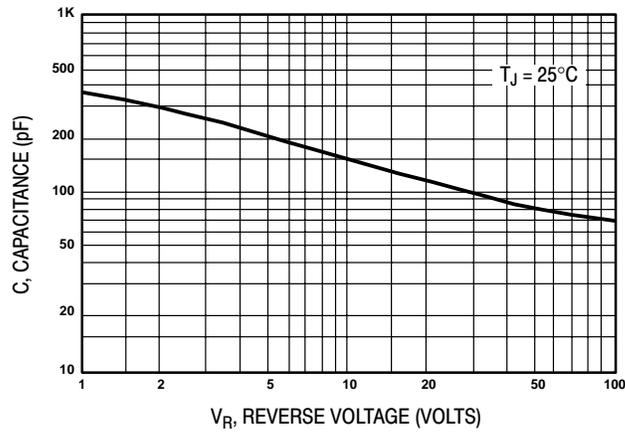
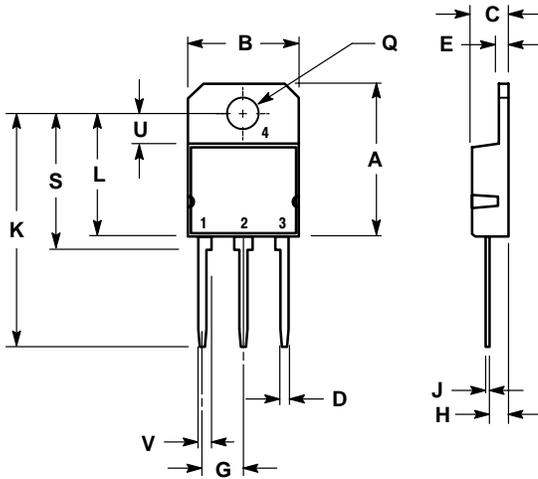


Figure 17. Typical Capacitance (Per Leg)

# MUR3020PT, MUR3040PT, MUR3060PT

## PACKAGE DIMENSIONS

TO-218 THREE LEAD  
 TO-218  
 CASE 340D-02  
 ISSUE E



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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	---	20.35	---	0.801
B	14.70	15.20	0.579	0.598
C	4.70	4.90	0.185	0.193
D	1.10	1.30	0.043	0.051
E	1.17	1.37	0.046	0.054
G	5.40	5.55	0.213	0.219
H	2.00	3.00	0.079	0.118
J	0.50	0.78	0.020	0.031
K	31.00 REF		1.220 REF	
L	---	16.20	---	0.638
Q	4.00	4.10	0.158	0.161
S	17.80	18.20	0.701	0.717
U	4.00 REF		0.157 REF	
V	1.75 REF		0.069	

- STYLE 2:  
 PIN 1. ANODE 1  
 2. CATHODE(S)  
 3. ANODE 2  
 4. CATHODE(S)

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