

# MUR3020WT, MUR3040WTG, MUR3060WT

## SWITCHMODE™ Power Rectifiers

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

### Features

- Ultrafast 35 and 60 Nanosecond Recovery Time
- 175°C Operating Junction Temperature
- Popular TO-247 Package
- High Voltage Capability to 600 V
- Low Forward Drop
- Low Leakage Specified @ 150°C Case Temperature
- Current Derating Specified @ Both Case and Ambient Temperatures
- Epoxy Meets UL 94 V-0 @ 0.125 in
- High Temperature Glass Passivated Junction
- Pb-Free Packages are Available\*

### Mechanical Characteristics:

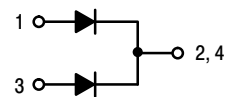
- Case: Epoxy, Molded
- Weight: 4.3 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 30 Units Per Plastic Tube



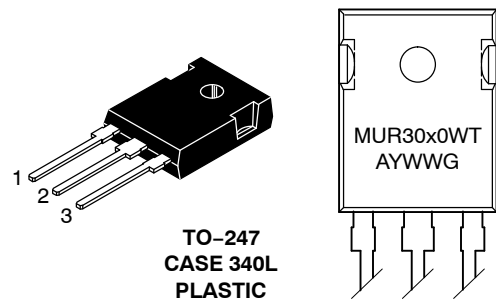
**ON Semiconductor®**

<http://onsemi.com>

## ULTRAFAST RECTIFIERS 30 AMPERES, 200-600 VOLTS



### MARKING DIAGRAM



MUR30x0WT = Device Code  
 x = 2, 4 or 6  
 A = Assembly Location  
 Y = Year  
 WW = Work Week  
 G = Pb-Free Package

### ORDERING INFORMATION

Device	Package	Shipping
MUR3020WT	TO-247	30 Units/Rail
MUR3020WTG	TO-247 (Pb-Free)	30 Units/Rail
MUR3040WTG	TO-247 (Pb-Free)	30 Units/Rail
MUR3060WT	TO-247	30 Units/Rail
MUR3060WTG	TO-247 (Pb-Free)	30 Units/Rail

\*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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## MAXIMUM RATINGS (Per Leg)

Rating	Symbol	MUR3020WT	MUR3040WT	MUR3060WT	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	200	400	600	V
Average Rectified Forward Current @ 145°C Total Device	$I_{F(AV)}$	15 30			A
Peak Repetitive Surge Current (Rated $V_R$ , Square Wave, 20 kHz, $T_C = 145^\circ\text{C}$ )	$I_{FM}$	30			A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz)	$I_{FSM}$	200	150	150	A
Operating Junction and Storage Temperature	$T_J, T_{stg}$	- 65 to +175			°C

## THERMAL CHARACTERISTICS (Per Leg)

Maximum Thermal Resistance, - Junction-to-Case - Junction-to-Ambient	$R_{\theta JC}$ $R_{\theta JA}$	1.5 40			°C/W
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## ELECTRICAL CHARACTERISTICS (Per 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	1.4 1.7	V
Maximum Instantaneous Reverse Current (Note 1) (Rated DC Voltage, $T_J = 150^\circ\text{C}$ ) (Rated DC Voltage, $T_J = 25^\circ\text{C}$ )	$i_R$	500 10	500 10	1000 10	$\mu\text{A}$
Maximum Reverse Recovery Time ( $i_F = 1.0$ A, $di/dt = 50$ Amps/ $\mu\text{s}$ )	$t_{rr}$	35	60	60	ns

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

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## MUR3020WT

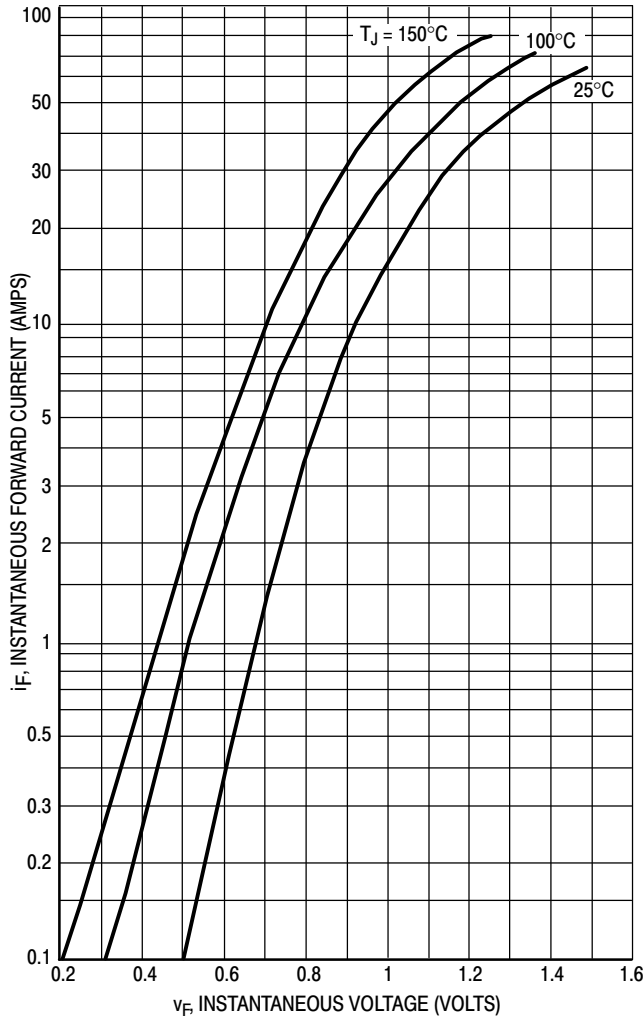
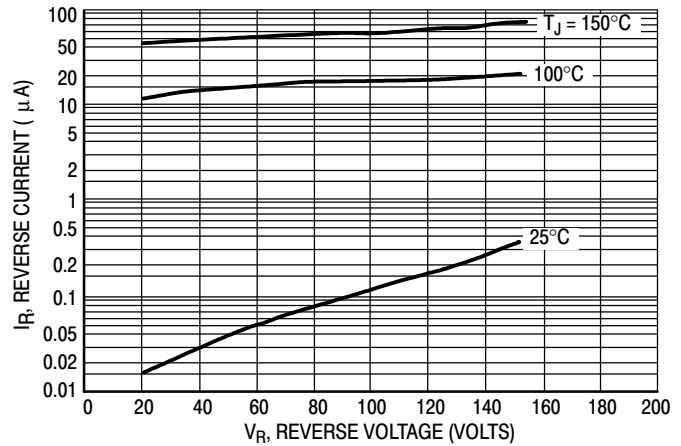


Figure 1. Typical Forward Voltage (Per Leg)



\*The curves shown are typical for the highest voltage device in the voltage 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 2. Typical Reverse Current (Per Leg)\*

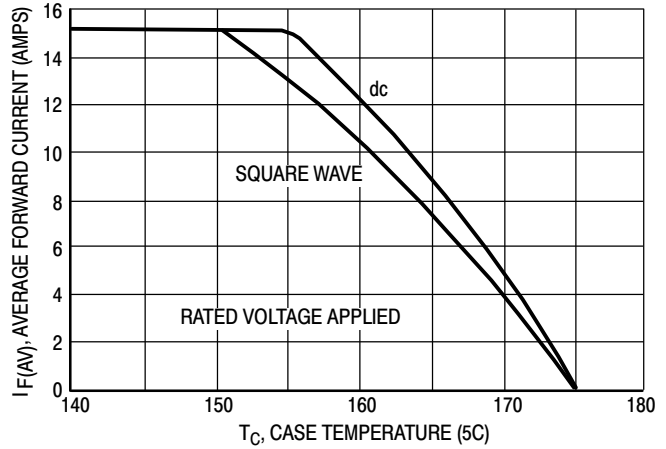


Figure 3. Current Derating, Case (Per Leg)

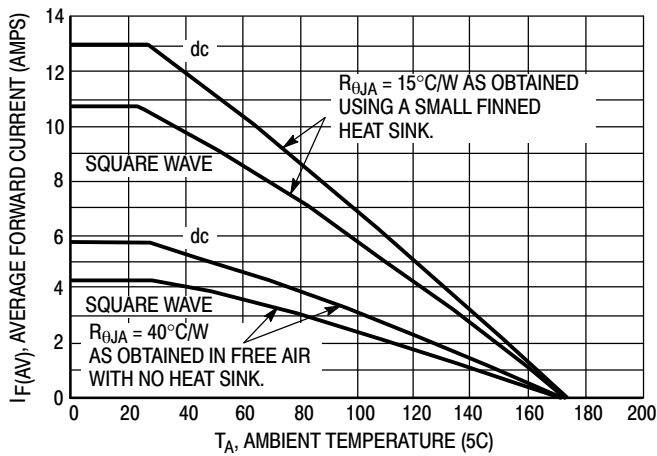


Figure 4. Current Derating, Ambient (Per Leg)

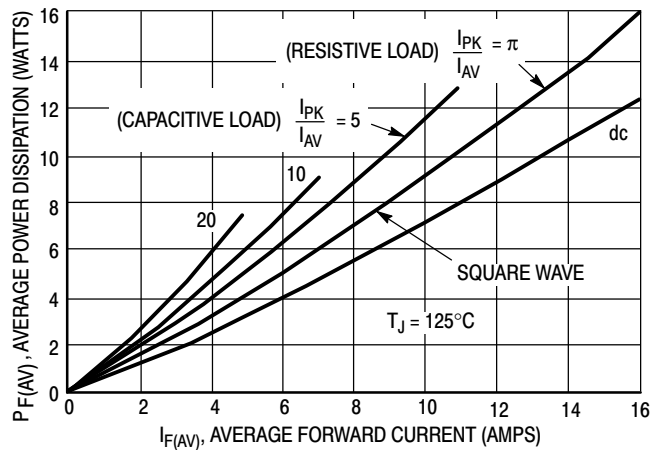


Figure 5. Power Dissipation (Per Leg)

MUR3040WTG

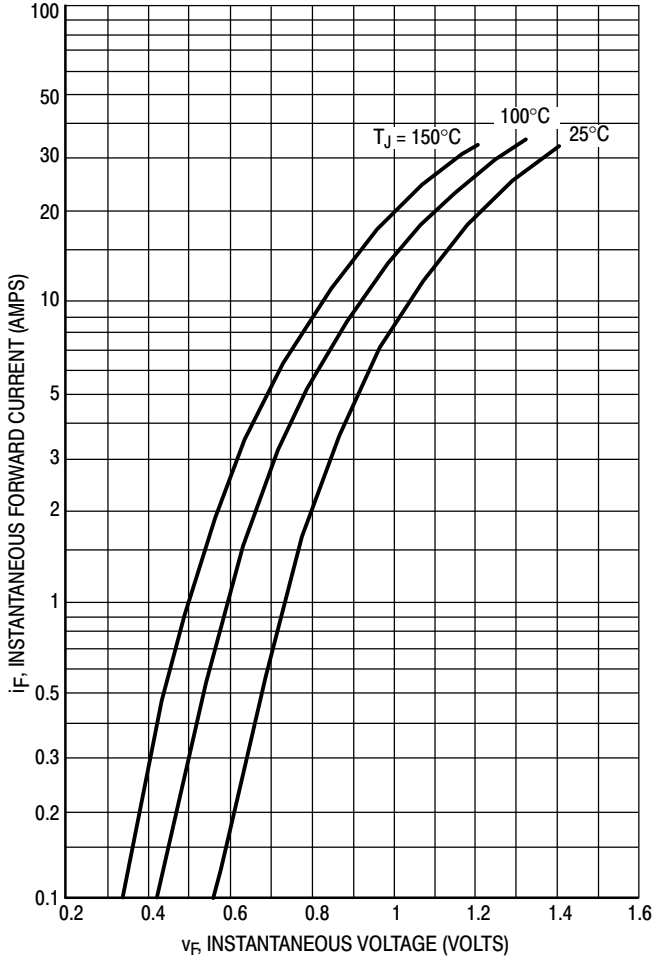
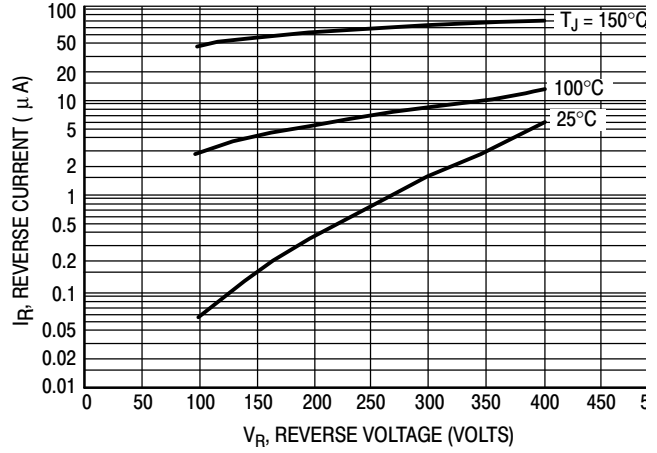


Figure 6. Typical Forward Voltage (Per Leg)



\*The curves shown are typical for the highest voltage device in the voltage 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 7. Typical Reverse Current (Per Leg)\*

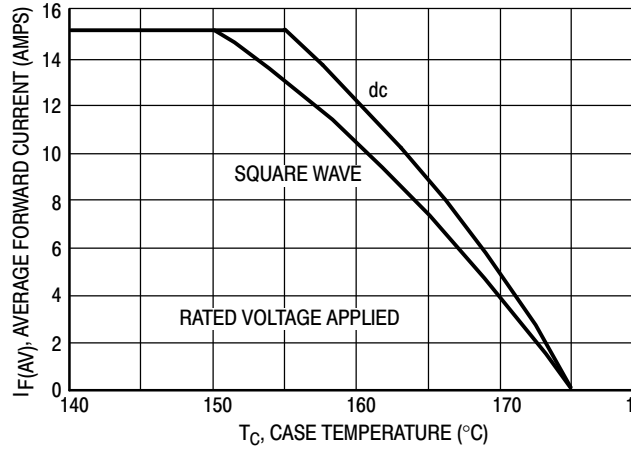


Figure 8. Current Derating, Case (Per Leg)

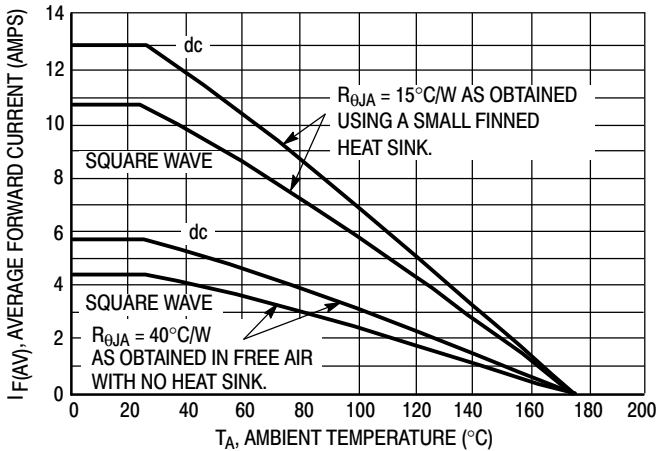


Figure 9. Current Derating, Ambient (Per Leg)

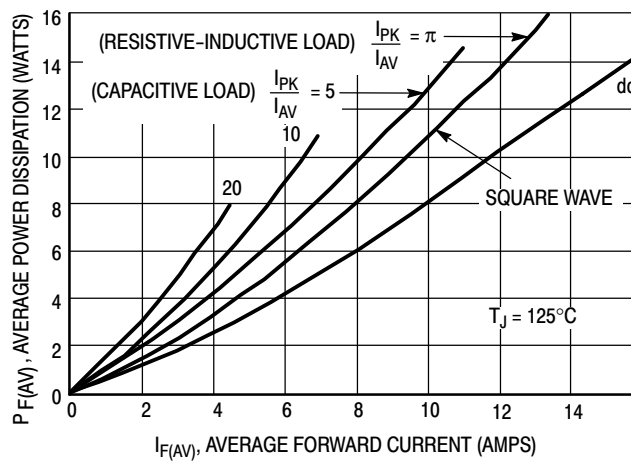


Figure 10. Power Dissipation (Per Leg)

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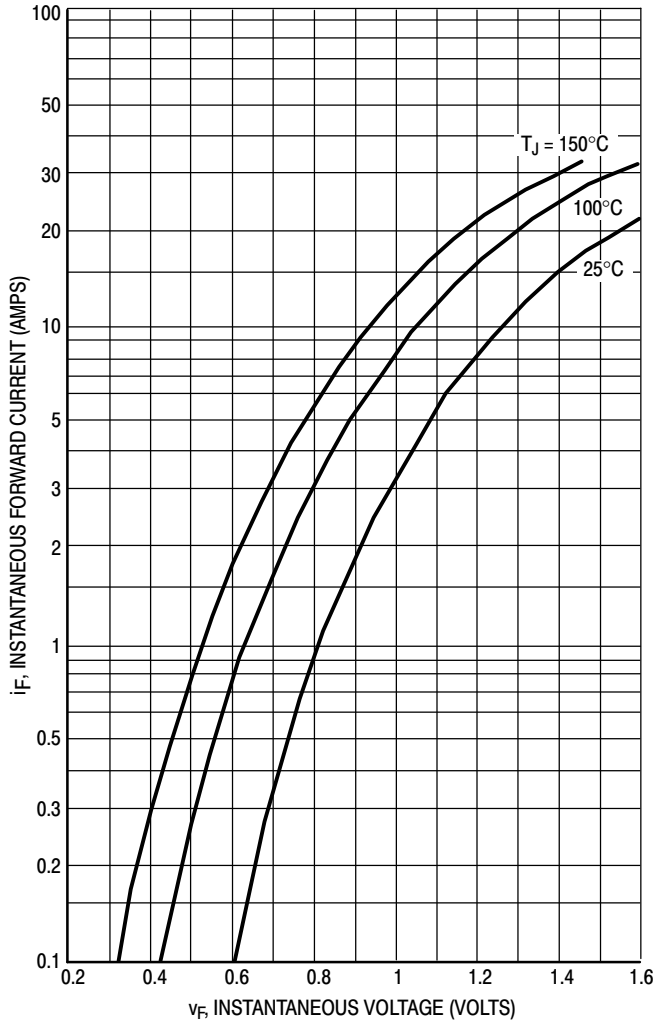
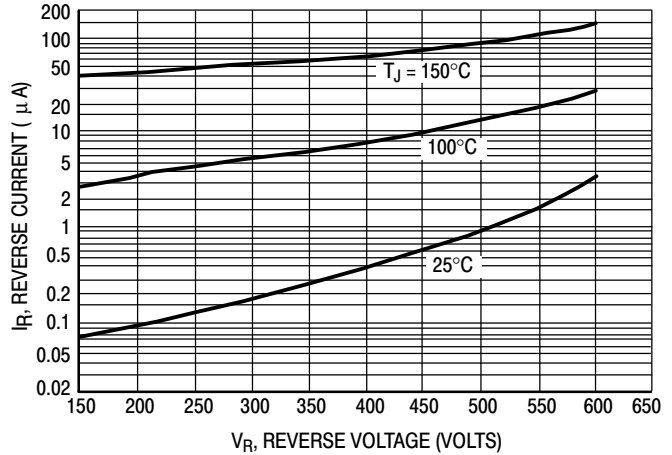


Figure 11. Typical Forward Voltage (Per Leg)



\*The curves shown are typical for the highest voltage device in the voltage 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 12. Typical Reverse Current (Per Leg)\*

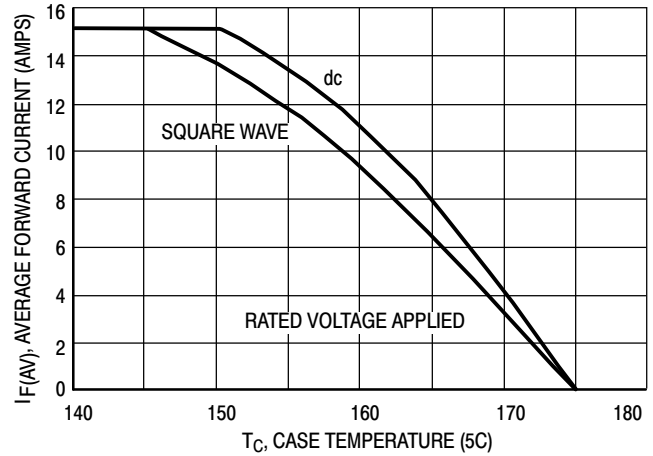


Figure 13. Current Derating, Case (Per Leg)

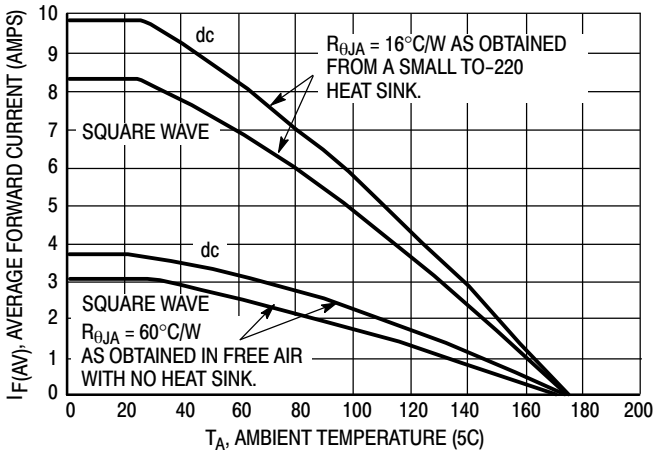


Figure 14. Current Derating, Ambient (Per Leg)

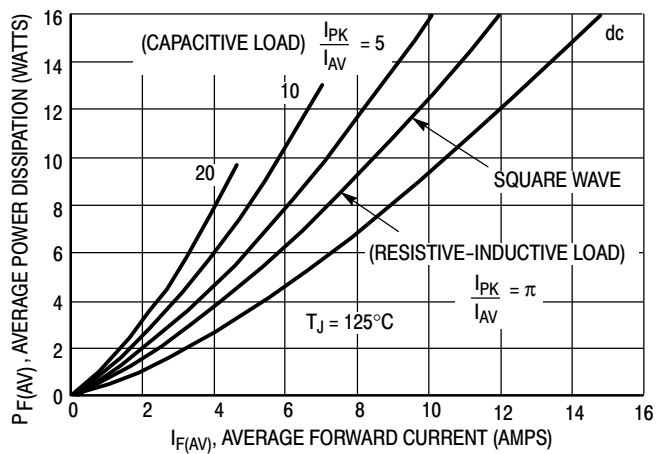


Figure 15. Power Dissipation (Per Leg)

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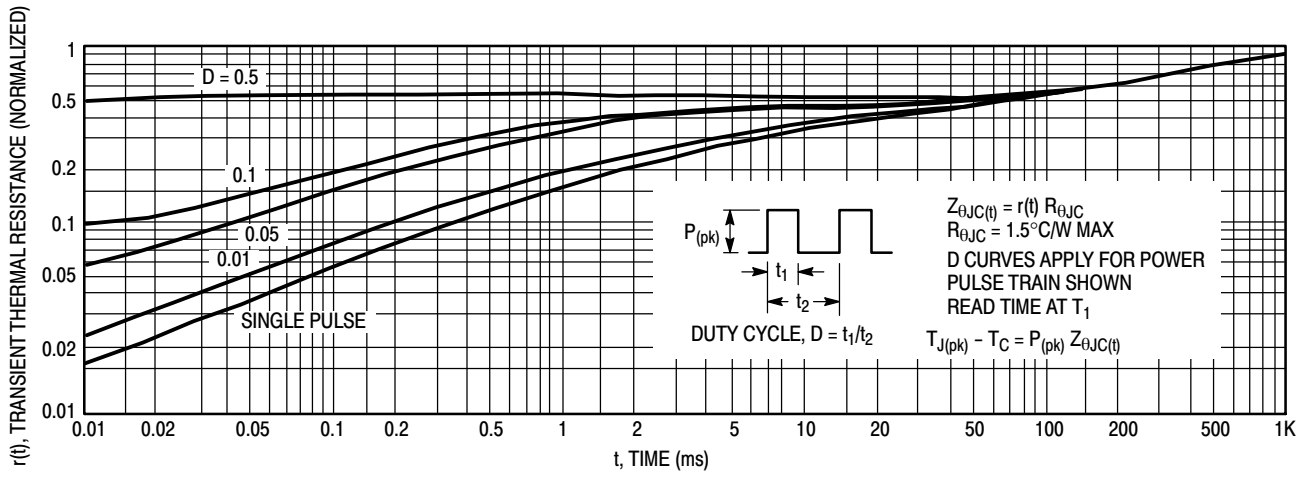


Figure 16. Thermal Response

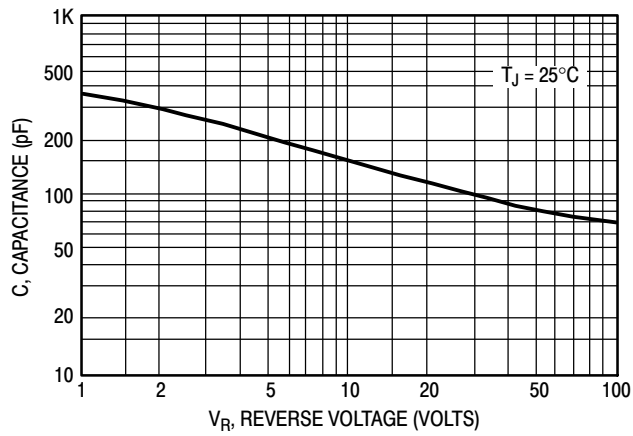
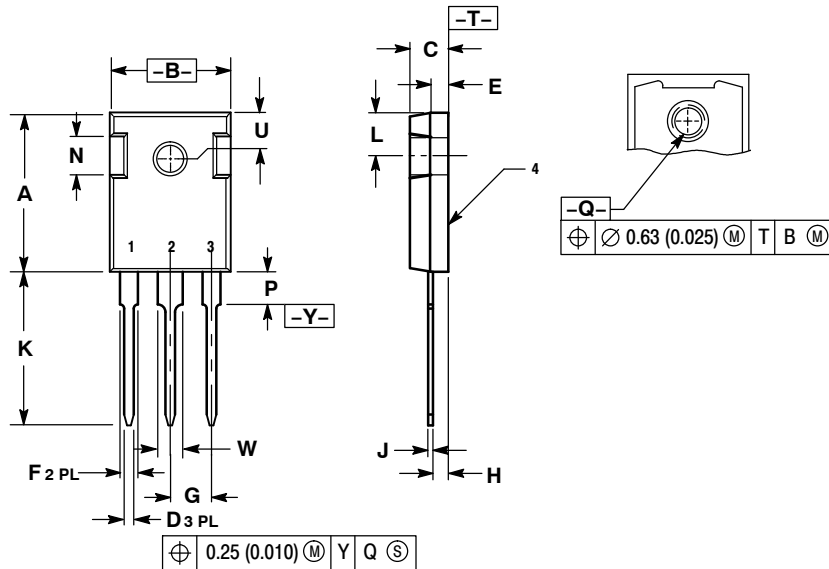


Figure 17. Typical Capacitance (Per Leg)

# MUR3020WT, MUR3040WTG, MUR3060WT

## PACKAGE DIMENSIONS

TO-247  
CASE 340L-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	20.32	21.08	0.800	0.830
B	15.75	16.26	0.620	0.640
C	4.70	5.30	0.185	0.209
D	1.00	1.40	0.040	0.055
E	1.90	2.60	0.075	0.102
F	1.65	2.13	0.065	0.084
G	5.45 BSC		0.215 BSC	
H	1.50	2.49	0.059	0.098
J	0.40	0.80	0.016	0.031
K	19.81	20.83	0.780	0.820
L	5.40	6.20	0.212	0.244
N	4.32	5.49	0.170	0.216
P	---	4.50	---	0.177
Q	3.55	3.65	0.140	0.144
U	6.15 BSC		0.242 BSC	
W	2.87	3.12	0.113	0.123

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