

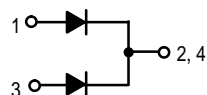
# SWITCHMODE™ Power Rectifiers

... 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
- Popular TO-247 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
- Epoxy Meets UL94, V<sub>0</sub> @ 1/8"
- High Temperature Glass Passivated Junction

## Mechanical Characteristics

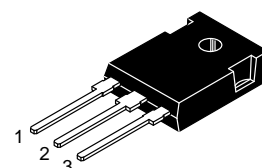
- Case: Epoxy, Molded
- Weight: 4.3 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 30 units per plastic tube
- Marking: U3020, U3040, U3060



**MUR3020WT**  
**MUR3040WT**  
**MUR3060WT**

Motorola Preferred Devices

**ULTRAFAST RECTIFIERS**  
**30 AMPERES**  
**200-400-600 VOLTS**



**CASE 340K-01**  
**TO-247AE**

## MAXIMUM RATINGS, PER LEG

Rating	Symbol	MUR3020WT	MUR3040WT	MUR3060WT	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>R</sub> RM V <sub>R</sub> RWM V <sub>R</sub>	200	400	600	Volts
Average Rectified Forward Current @ 145°C Total Device	I <sub>F</sub> (AV)	15 30			Amps
Peak Repetitive Surge Current (Rated V <sub>R</sub> , Square Wave, 20 kHz, T <sub>C</sub> = 145°C)	I <sub>FM</sub>	30			Amps
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz)	I <sub>FSM</sub>	200	150		Amps
Operating Junction and Storage Temperature	T <sub>J</sub> , T <sub>stg</sub>	- 65 to +175			°C

## THERMAL CHARACTERISTICS, PER LEG

Maximum Thermal Resistance — Junction to Case — Junction to Ambient	R <sub>θ</sub> JC R <sub>θ</sub> JA	1.5 40	°C/W
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## ELECTRICAL CHARACTERISTICS, PER LEG

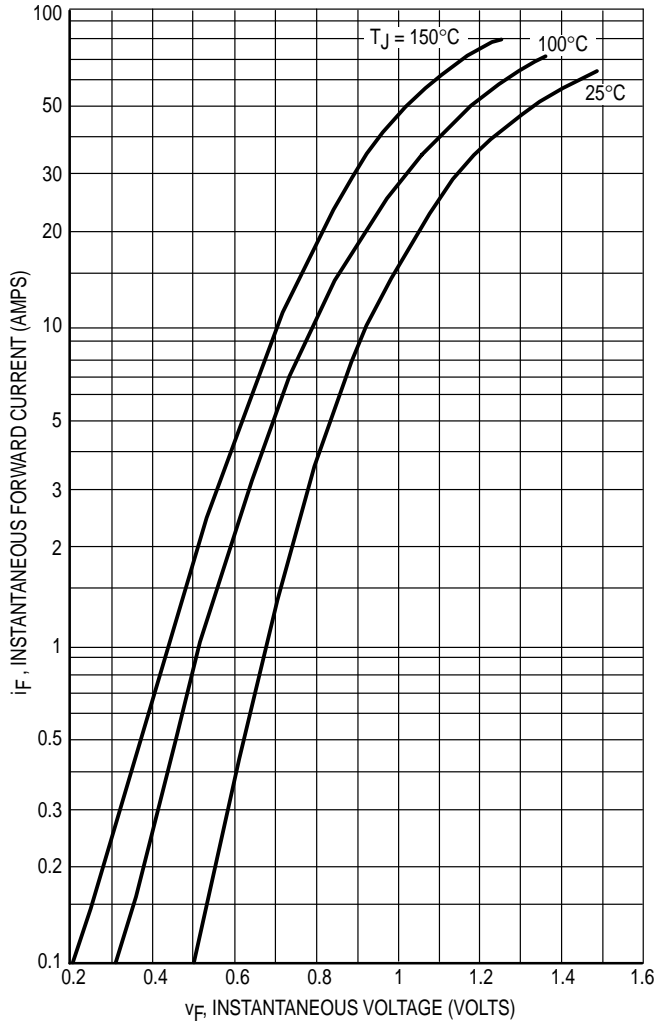
Maximum Instantaneous Forward Voltage (1) (I <sub>F</sub> = 15 Amp, T <sub>C</sub> = 150°C) (I <sub>F</sub> = 15 Amp, T <sub>C</sub> = 25°C)	V <sub>F</sub>	0.85 1.05	1.12 1.25	1.4 1.7	Volts
Maximum Instantaneous Reverse Current (1) (Rated DC Voltage, T <sub>J</sub> = 150°C) (Rated DC Voltage, T <sub>J</sub> = 25°C)	i <sub>R</sub>	500 10		1000 10	μA
Maximum Reverse Recovery Time (i <sub>F</sub> = 1.0 A, di/dt = 50 Amps/μs)	t <sub>rr</sub>	35	60		ns

(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

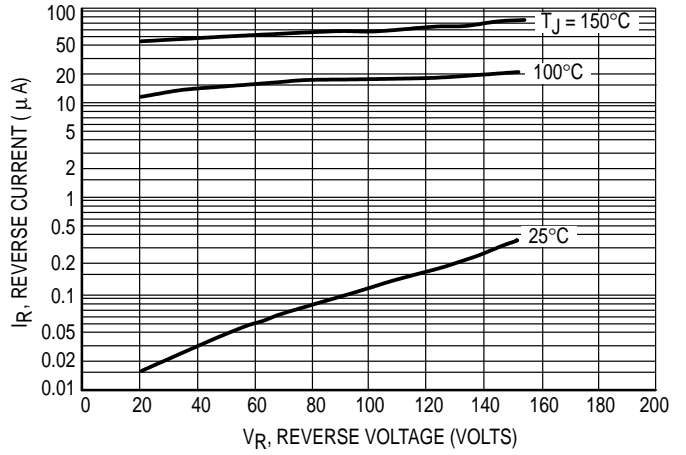
SWITCHMODE is a trademark of Motorola, Inc.

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

**MUR3020WT MUR3040WT MUR3060WT**

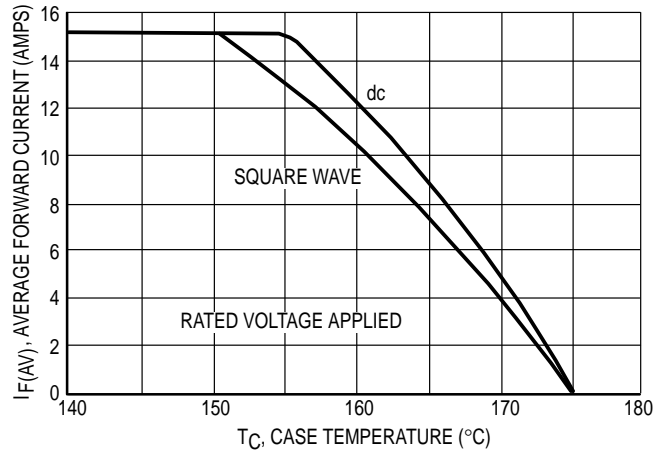


**Figure 1. Typical Forward Voltage (Per Leg)**

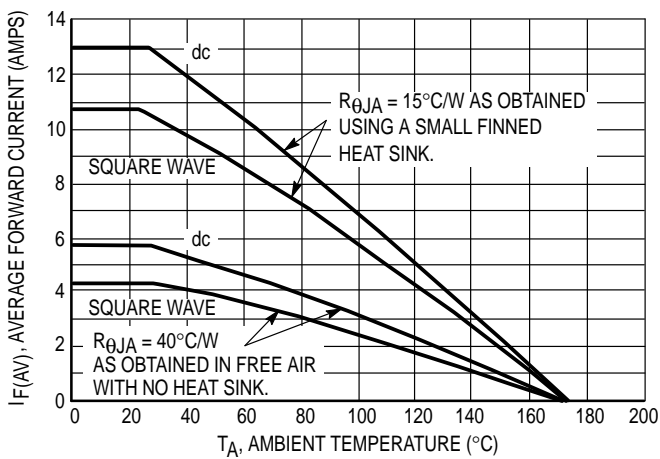


\*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if  $V_R$  is sufficiently below rated  $V_R$ .

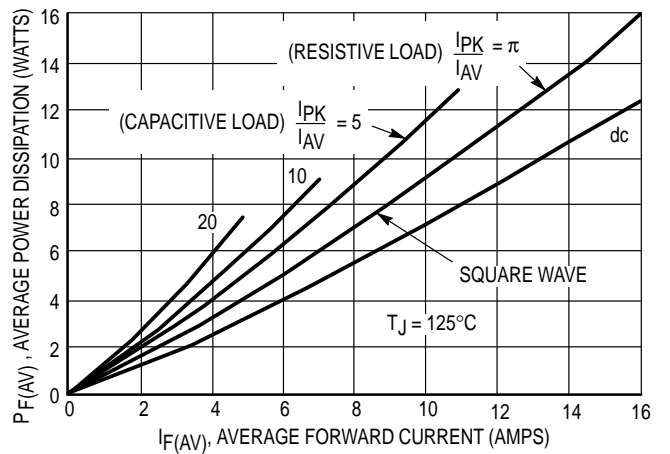
**Figure 2. Typical Reverse Current (Per Leg)\***



**Figure 3. Current Derating, Case (Per Leg)**



**Figure 4. Current Derating, Ambient (Per Leg)**



**Figure 5. Power Dissipation (Per Leg)**

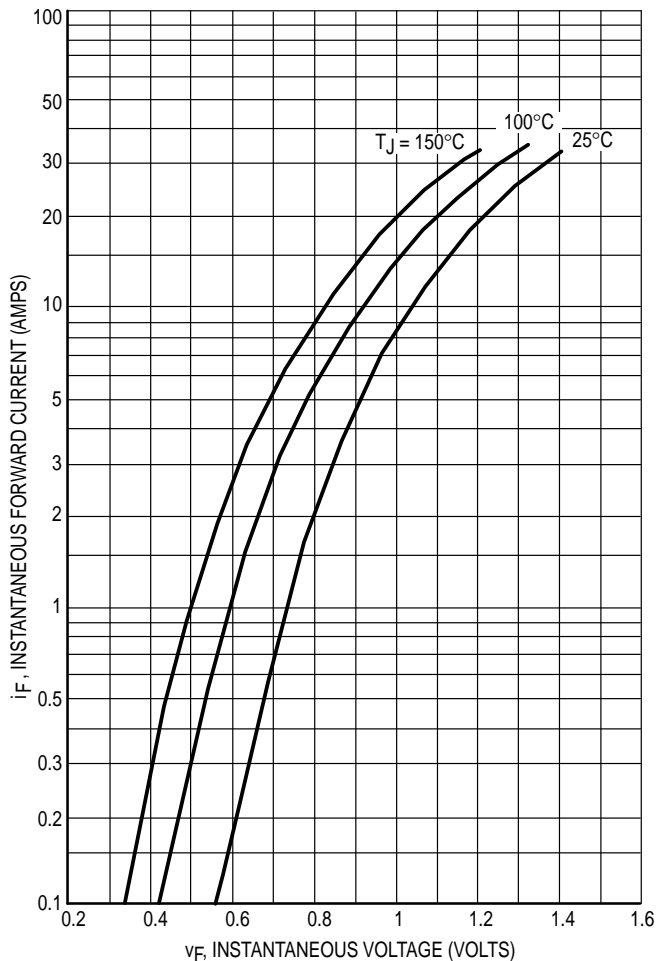
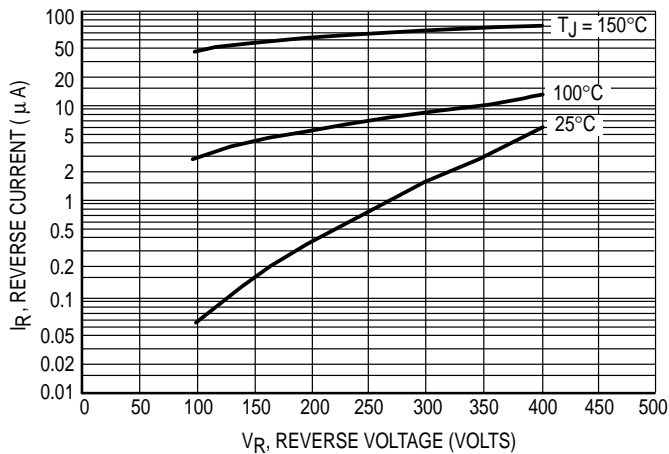


Figure 6. Typical Forward Voltage (Per Leg)



\*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)\*

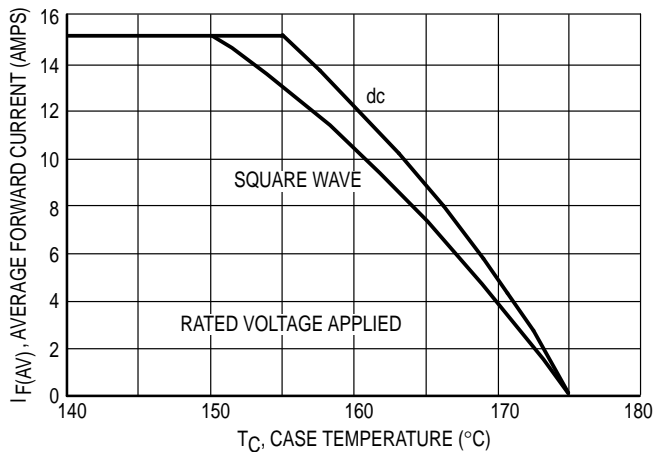


Figure 8. Current Derating, Case (Per Leg)

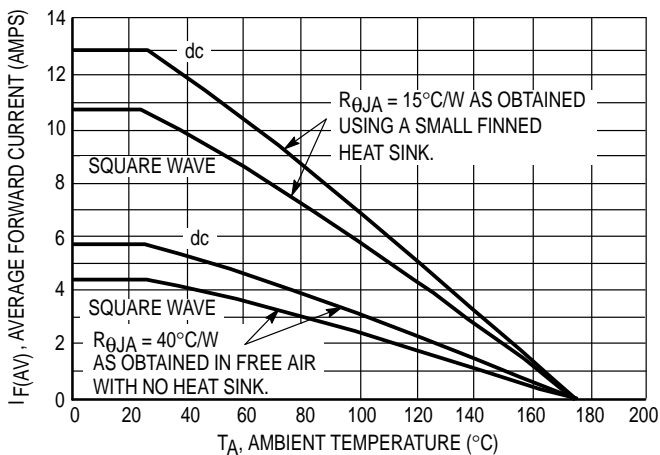


Figure 9. Current Derating, Ambient (Per Leg)

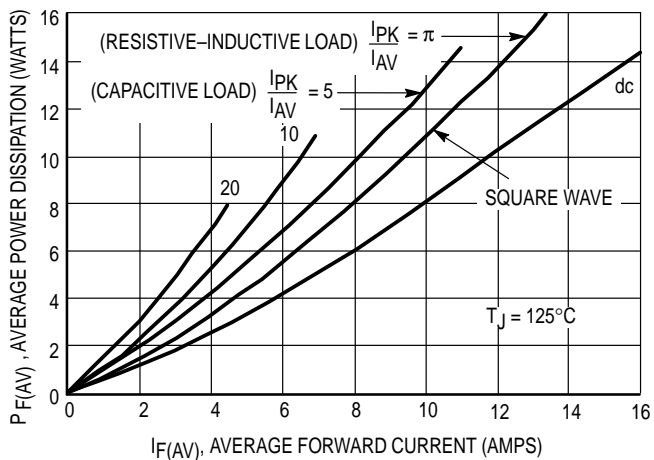
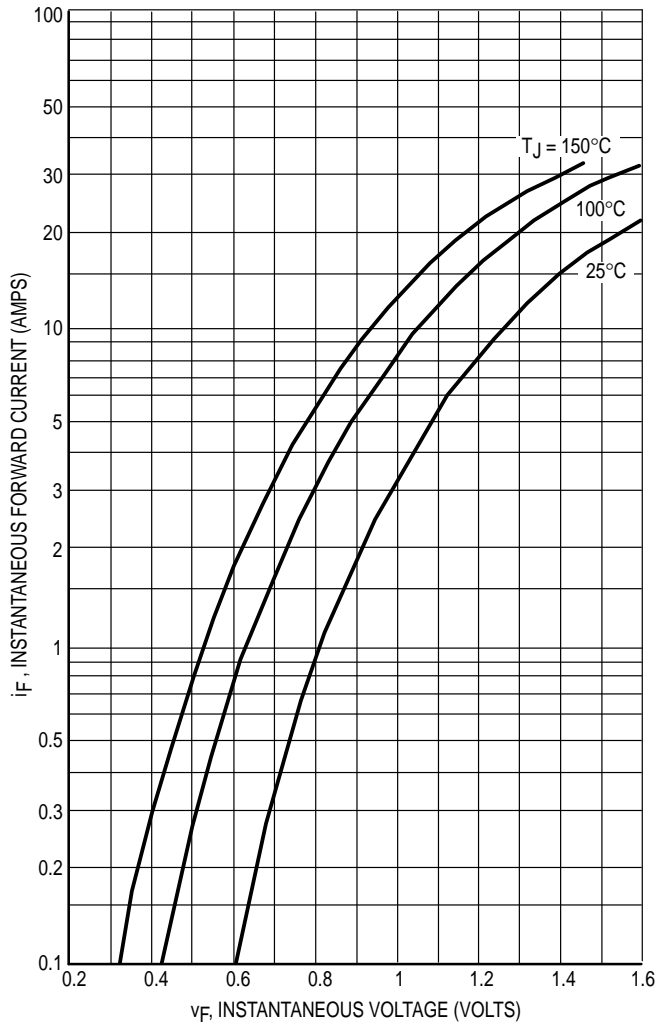
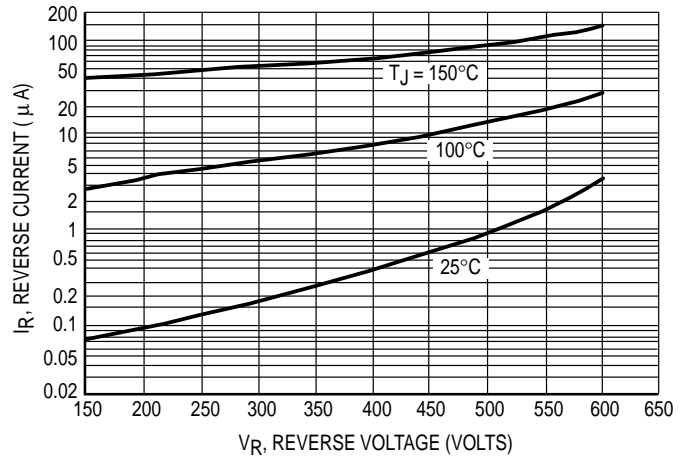


Figure 10. Power Dissipation (Per Leg)

**MUR3020WT MUR3040WT MUR3060WT**

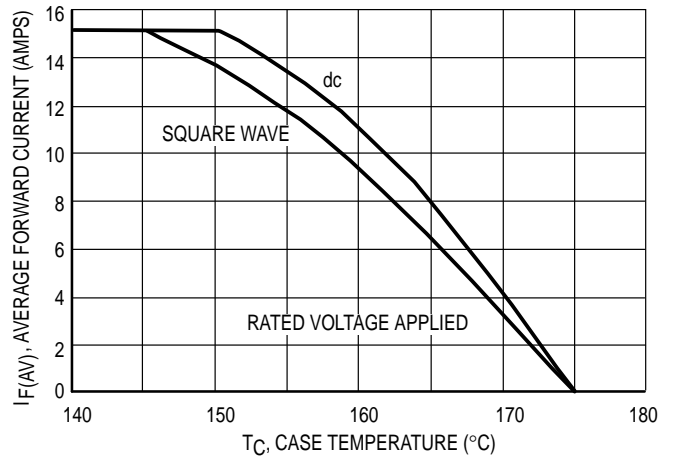


**Figure 11. Typical Forward Voltage (Per Leg)**

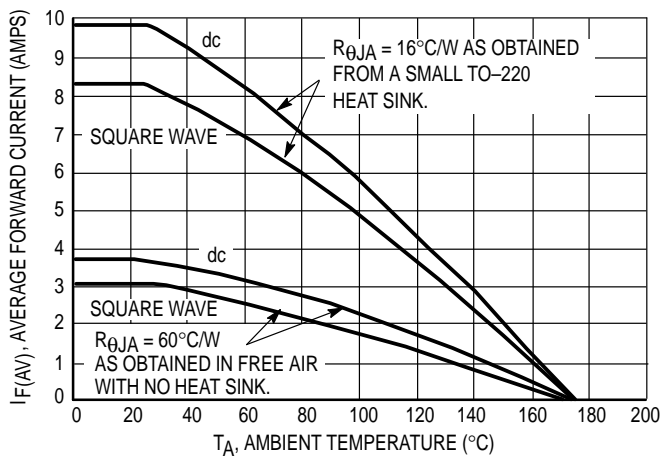


\*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if  $V_R$  is sufficiently below rated  $V_R$ .

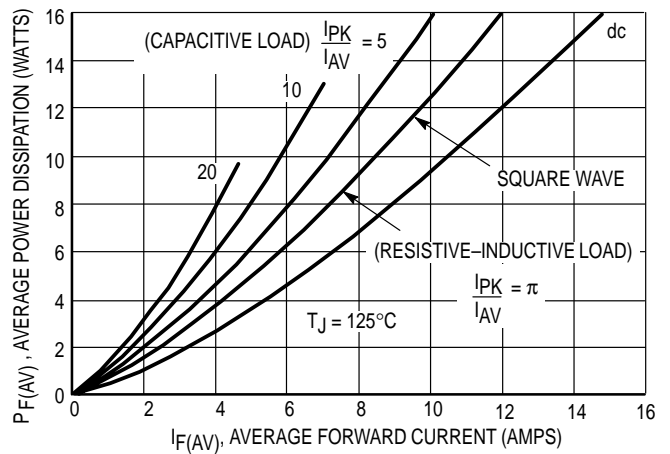
**Figure 12. Typical Reverse Current (Per Leg)\***



**Figure 13. Current Derating, Case (Per Leg)**



**Figure 14. Current Derating, Ambient (Per Leg)**



**Figure 15. Power Dissipation (Per Leg)**

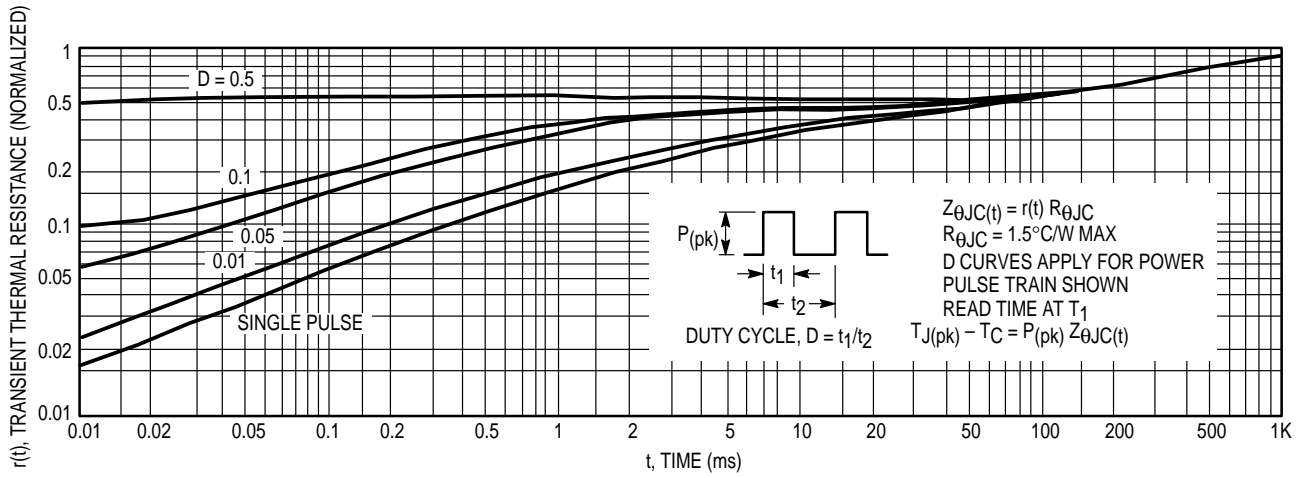


Figure 16. Thermal Response

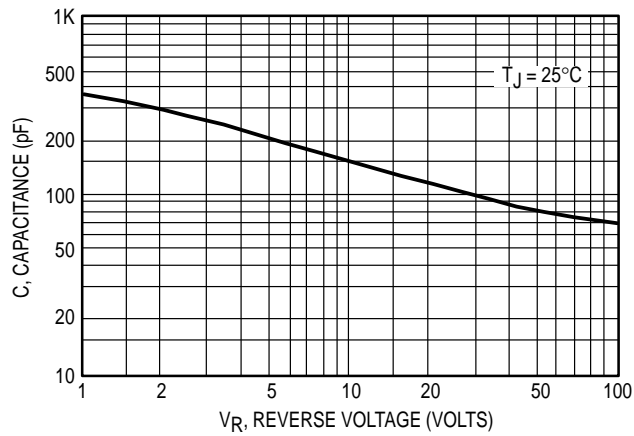
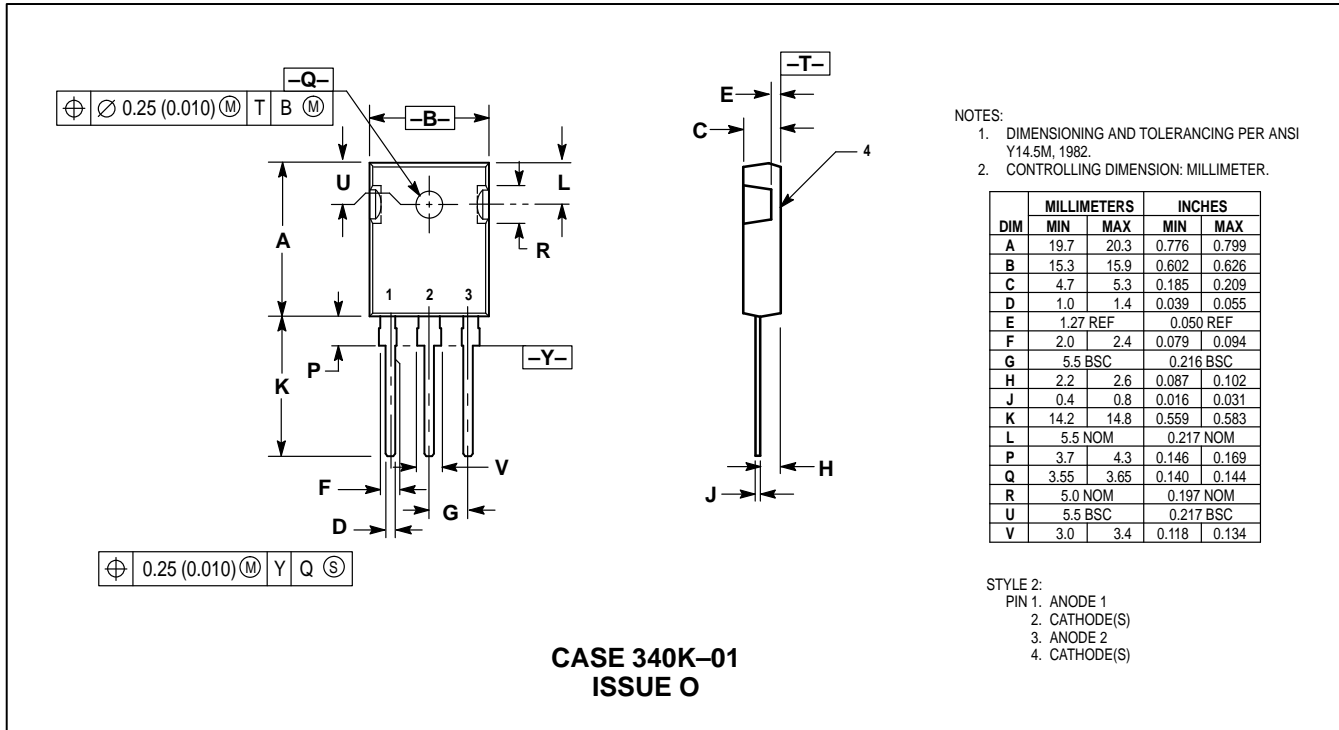


Figure 17. Typical Capacitance (Per Leg)

**MUR3020WT MUR3040WT MUR3060WT**

**PACKAGE DIMENSIONS**



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