

MOTOROLA
SEMICONDUCTOR
 TECHNICAL DATA

Switchmode Power Rectifiers

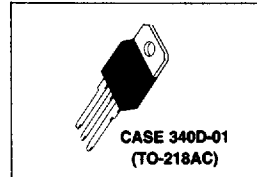
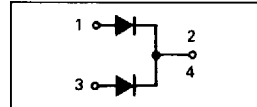
... designed for use in switching power supplies, inverters and as free wheeling diodes, these state-of-the-art devices have the following features:

- 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, V₀ @ 1/8"
- High Temperature Glass Passivated Junction

MUR3005PT
 thru
MUR3060PT

MUR3020PT and MUR3060PT
 are Motorola Preferred Devices

ULTRAFAST RECTIFIERS
30 AMPERES
50-600 VOLTS



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MAXIMUM RATINGS

Rating	Symbol	MUR								Unit
		3005PT	3010PT	3015PT	3020PT	3030PT	3040PT	3050PT	3060PT	
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V _{RRM} V _{RWM} V _R	50	100	150	200	300	400	500	600	Volts
Average Rectified Forward Current (Rated V _R) Per Leg Per Device	I _{F(AV)}	15 30 T _C = 150°C						15 T _C = 30 145°C		Amps
Peak Repetitive Forward Current, Per Leg (Rated V _R , Square Wave, 20 kHz), T _C = 150°C	I _{FRM}	30 @ T _C = 150°C						30 @ T _C = 145°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 Temperature and Storage Temperature	T _J , T _{stg}	- 65 to + 175								°C

THERMAL CHARACTERISTICS PER DIODE LEG

Maximum Thermal Resistance, Junction to Case	R _{θJC}	1.5	°C/W
Junction to Ambient	R _{θJA}	40	°C/W

ELECTRICAL CHARACTERISTICS PER DIODE LEG

Maximum Instantaneous Forward Voltage (1) (I _F = 15 Amps, T _C = 150°C) (I _F = 15 Amps, T _C = 25°C)	V _F	0.85 1.05	1.12 1.25	1.2 1.5	Volts
Maximum Instantaneous Reverse Current (1) (Rated dc Voltage, T _C = 150°C) (Rated dc Voltage, T _C = 25°C)	i _R	500 10		1000 10	μA
Maximum Reverse Recovery Time (I _F = 1 Amp, di/dt = 50 Amps/μs)	t _{rr}	35		60	ns

(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

MUR3005PT, 3010PT, and 3015PT

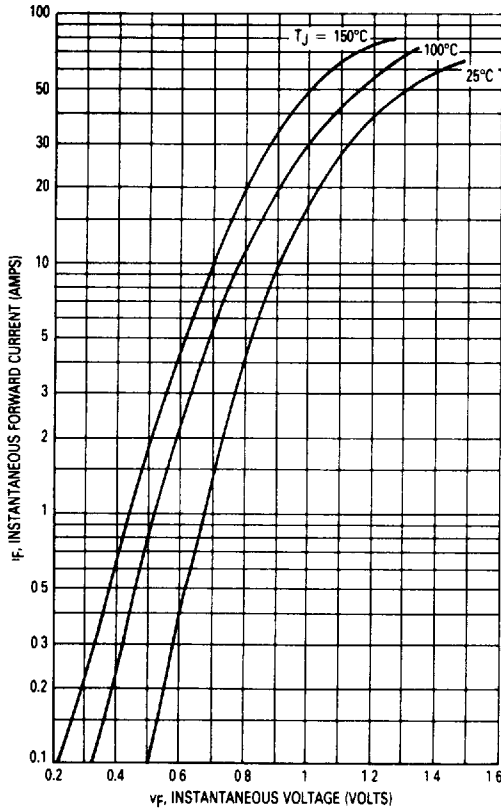
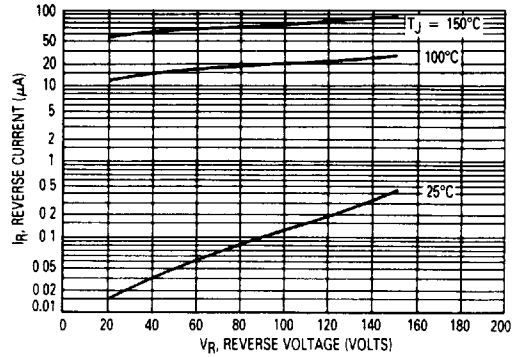


Figure 1. Typical Forward Voltage (Per Leg)



*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)*

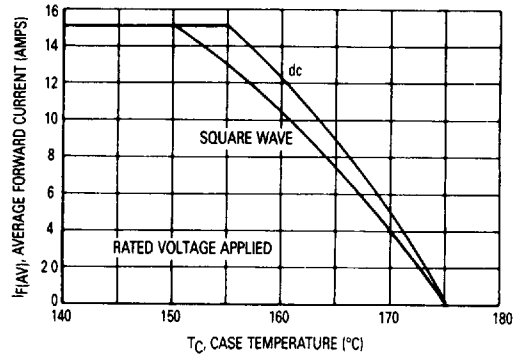


Figure 3. Current Derating, Case (Per Leg)

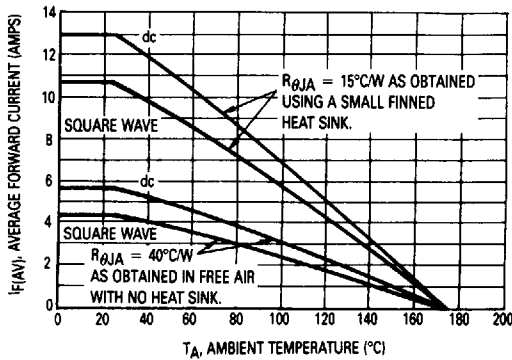


Figure 4. Current Derating, Ambient (Per Leg)

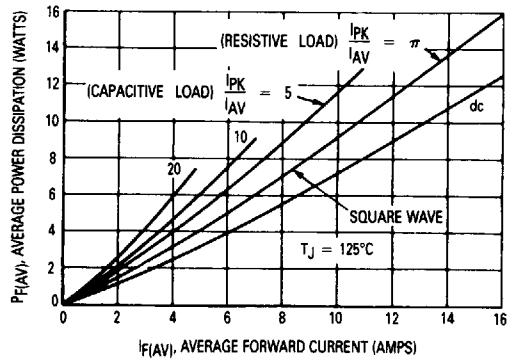


Figure 5. Power Dissipation (Per Leg)

MUR3020PT, 3030PT, and 3040PT

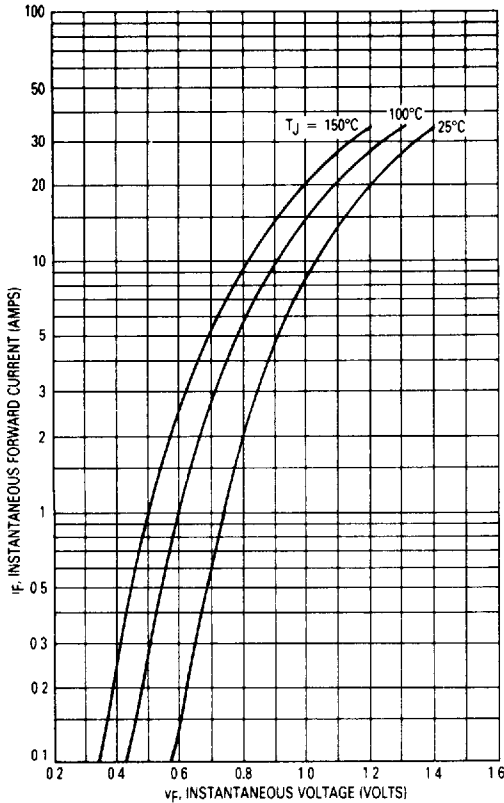
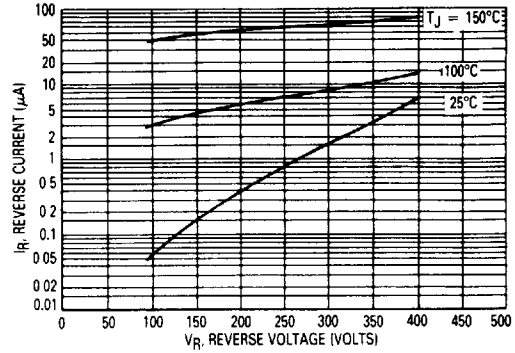


Figure 6. Typical Forward Voltage (Per Leg)



*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)*

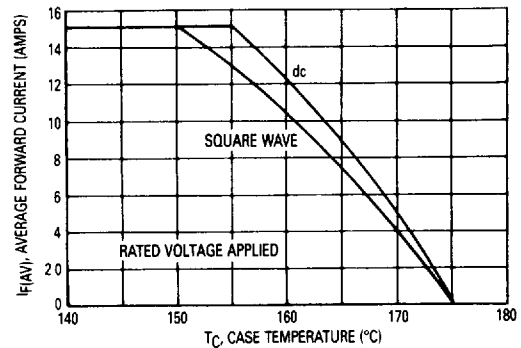


Figure 8. Current Derating, Case (Per Leg)

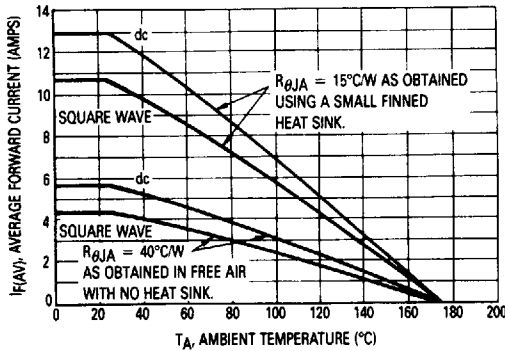


Figure 9. Current Derating, Ambient (Per Leg)

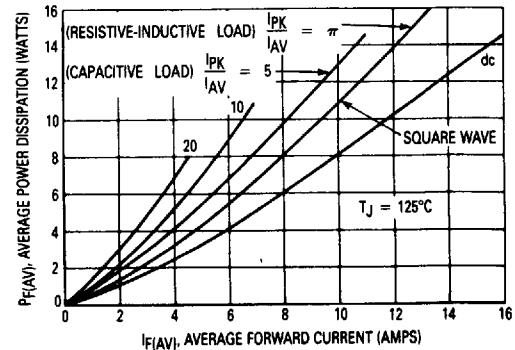


Figure 10. Power Dissipation (Per Leg)

MUR3050PT and MUR3060PT

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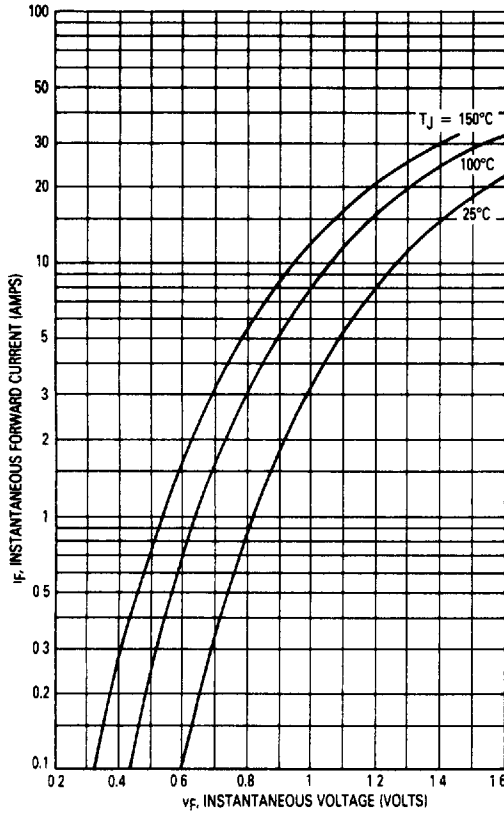
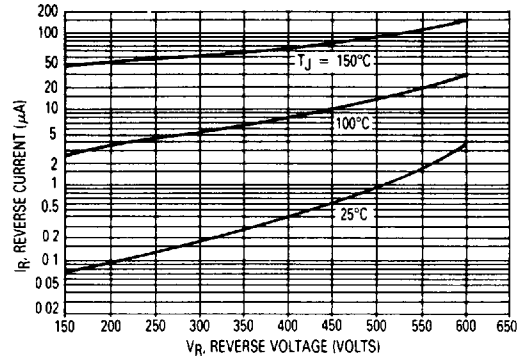


Figure 11. Typical Forward Voltage



*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*

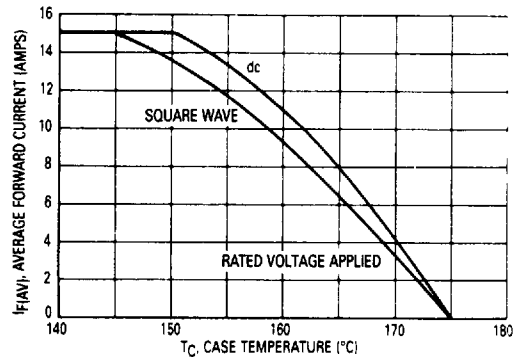


Figure 13. Current Derating, Case

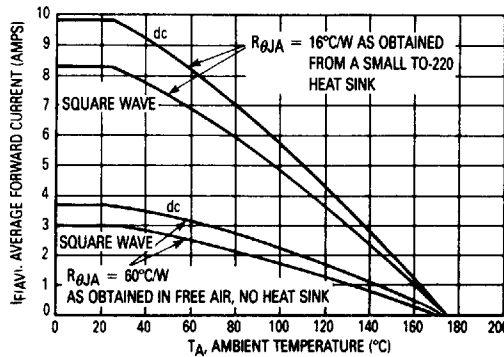


Figure 14. Current Derating, Ambient

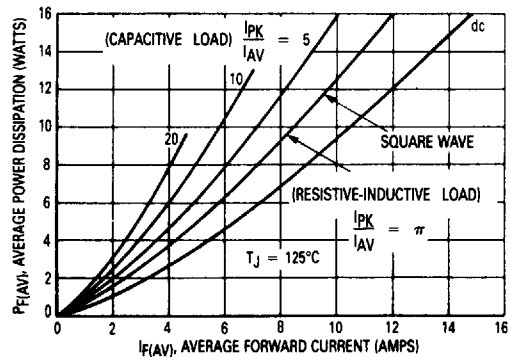


Figure 15. Power Dissipation

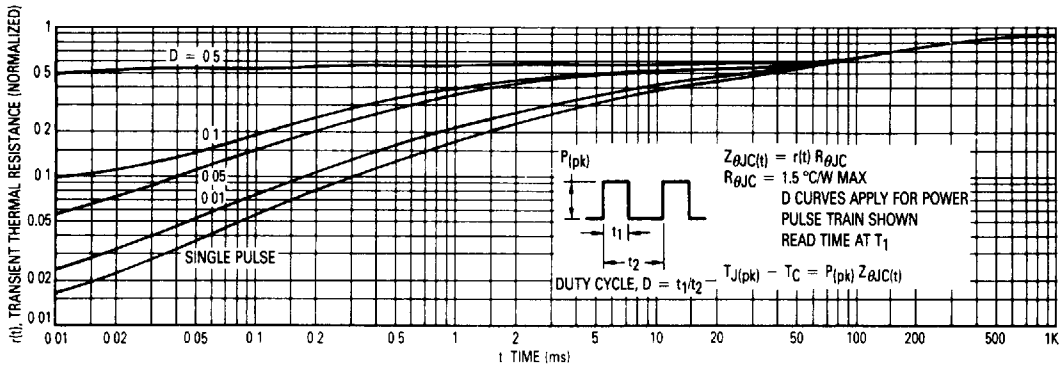


Figure 16. Thermal Response

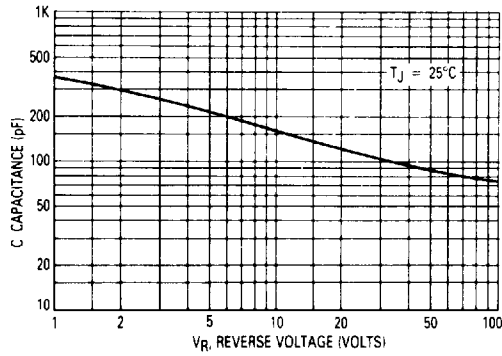


Figure 17. Typical Capacitance (Per Leg)