MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

MUR405 MUR430
MUR410 MUR440
MUR415 MUR450
MUR420 MUR460

MUR420, MUR440 and MUR460
are Motorola Preferred Devices

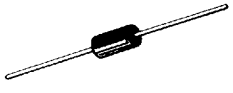
ULTRAFAST RECTIFIERS

4.0 AMPERES
50–600 VOLTS

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 25, 50 and 75 Nanosecond Recovery Times
- 175°C Operating Junction Temperature
- Low Forward Voltage
- Low Leakage Current
- High Temperature Glass Passivated Junction
- Reverse Voltage to 600 Volts



CASE 267-03
PLASTIC

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MAXIMUM RATINGS

Rating	Symbol	MUR 405	410	415	420	430	440	450	460	Unit
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 (Square Wave) (Mounting Method #3 Per Note 1)	$I_{F(AV)}$	4 0 @ T_A = 80°C				4.0 @ T_A = 40°C				Amps
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	125				70				Amps
Operating Junction Temperature and Storage Temperature	T_J, T_{stg}	−65 to +175								°C

THERMAL CHARACTERISTICS

Maximum Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	See Note 1	°C/W

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (1) (I_F = 3 0 Amp, T_J = 150°C) (I_F = 3 0 Amp, T_J = 25°C) (I_F = 4.0 Amp, T_J = 25°C)	v_F	0 710 0 875 0 890	1 05 1.25 1 28	Volts
Maximum Instantaneous Reverse Current (1) (Rated dc Voltage, T_J = 150°C) (Rated dc Voltage, T_J = 25°C)	I_R	150 5 0	250 10	µA
Maximum Reverse Recovery Time (I_F = 1.0 Amp, di/dt = 50 Amp/µs) (I_F = 0 5 Amp, I_R = 1 0 Amp, I_{REC} = 0 25 Amp)	t_{rr}	35 25	75 50	ns
Maximum Forward Recovery Time (I_F = 1.0 A, di/dt = 100 A/µs, Recovery to 1 0 V)	t_{fr}	25	50	ns

(1) Pulse Test: Pulse Width = 300 µs, Duty Cycle ≤ 2 0%

MUR405, 410 AND 415

FIGURE 1 — TYPICAL FORWARD VOLTAGE

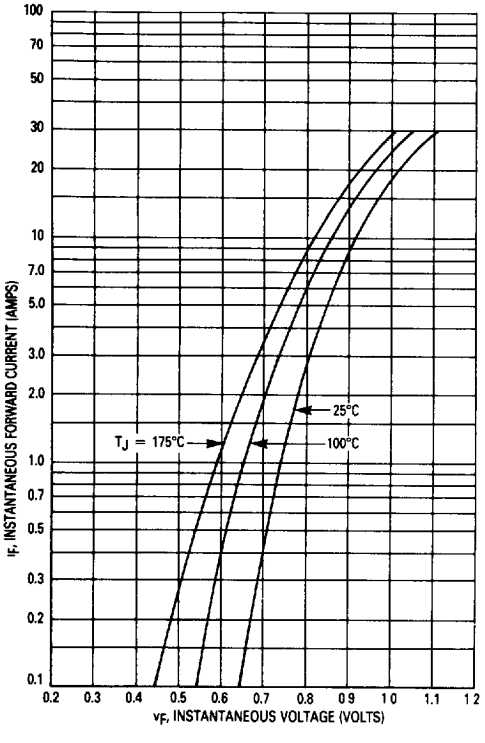


FIGURE 2 — TYPICAL REVERSE CURRENT*

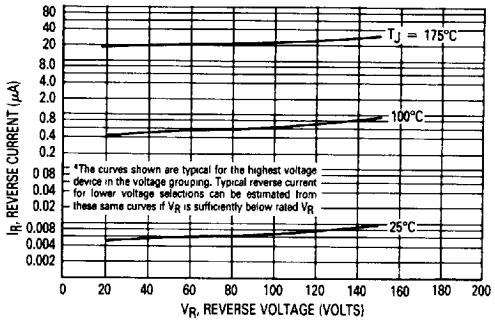


FIGURE 3 — CURRENT DERATING
(MOUNTING METHOD #3 PER NOTE 1)

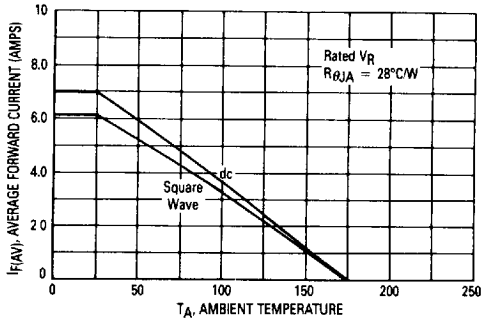


FIGURE 4 — POWER DISSIPATION

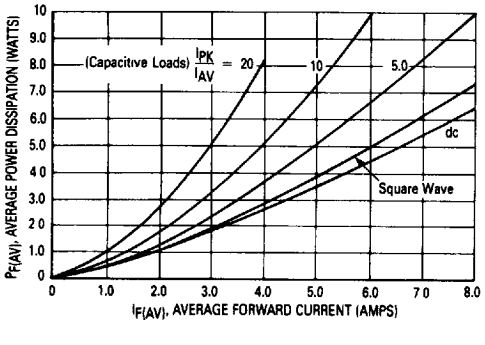
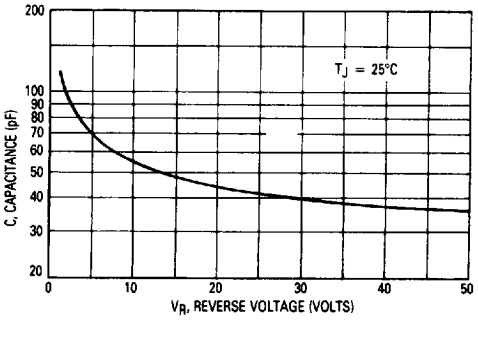


FIGURE 5 — TYPICAL CAPACITANCE



MUR405 Series

MUR420, 430, 440, 450 AND 460

FIGURE 6 — TYPICAL FORWARD VOLTAGE

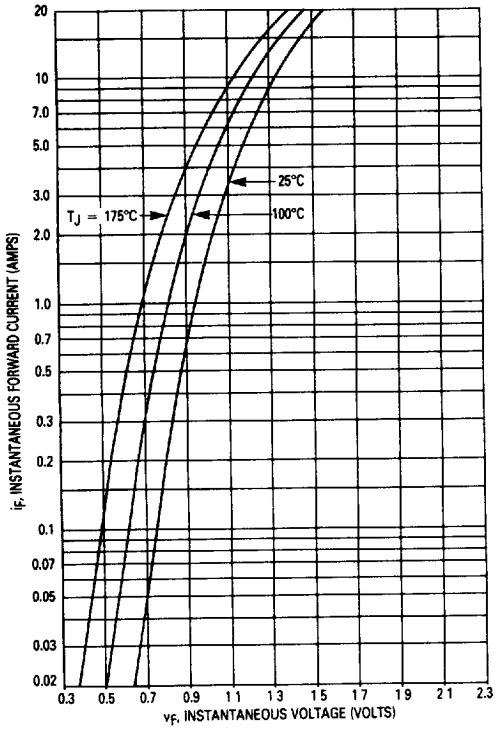


FIGURE 7 — TYPICAL REVERSE CURRENT*

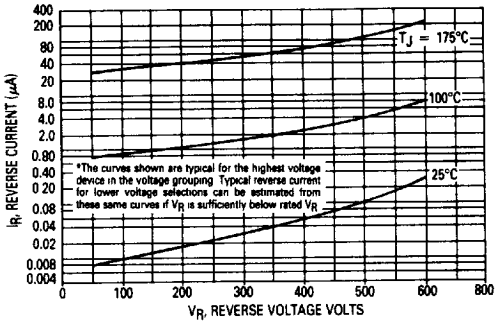


FIGURE 8 — CURRENT DERATING
(MOUNTING METHOD #3 PER NOTE 1)

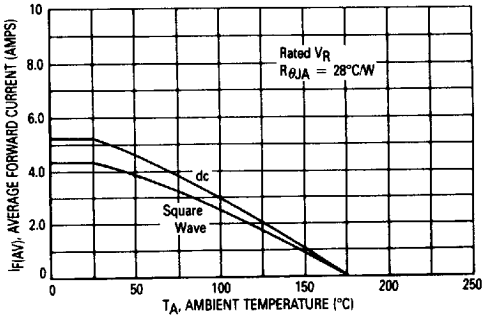


FIGURE 9 — POWER DISSIPATION

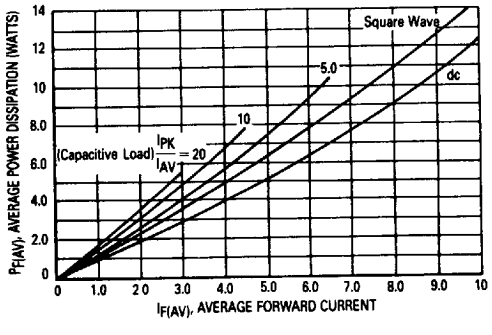
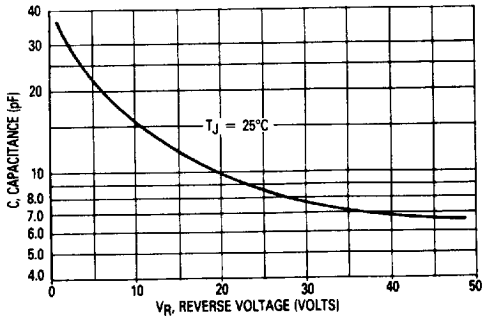


FIGURE 10 — TYPICAL CAPACITANCE



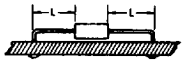
NOTE 1 — AMBIENT MOUNTING DATA

Data shown for thermal resistance junction-to-ambient ($R_{\theta JA}$) for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

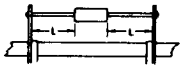
TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

MOUNTING METHOD		LEAD LENGTH, L (IN)				UNITS
		1/8	1/4	1/2	3/4	
1	$R_{\theta JA}$	50	51	53	55	°C/W
2		58	59	61	63	°C/W
3		28				°C/W

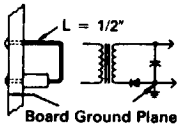
MOUNTING METHOD 1
P.C. Board Where Available Copper Surface area is small.



MOUNTING METHOD 2
Vector Push-In Terminals T-28



MOUNTING METHOD 3
P.C. Board with 1-1/2" x 1-1/2" Copper Surface



MECHANICAL CHARACTERISTICS

Case: Transfer Molded Plastic
Finish: External Leads are Plated, Leads are readily Solderable
Polarity: Indicated by Cathode Band
Weight: 1.1 Grams (Approximately)
Maximum Lead Temperature for Soldering Purposes:
300°C, 1/8" from case for 10 s

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