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Features

- Ultrafast Recovery Time ($t_{rr} < 35\text{ns}$)
- Low Forward Voltage
- Low Thermal Resistance
- Hard Glass Passivation
- Wire-Bonded Construction

Applications

- General Purpose
- Power Switching Circuits to 100kHz
- Full-Wave Rectification

Description

The MUR1610CT, MUR1615CT, MUR1620CT, RUR1610CT, RUR1615CT, RUR1620CT are low forward voltage drop ultrafast rectifiers ($t_{rr} < 35\text{ns}$). They use a glass passivated ion-implanted, epitaxial construction.

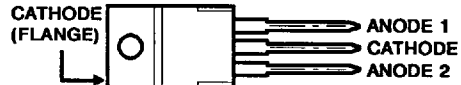
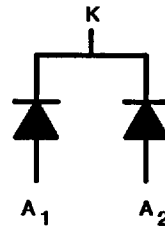
These devices are intended for use as output rectifiers and flywheel diodes in a variety of high frequency pulse width modulated and switching regulators. Their low stored charge and attendant fast reverse recovery behavior minimize electrical noise generation and in many circuits markedly reduce the turn-on dissipation of the associated power switching transistors.

All are supplied in TO-220AB plastic packages.

Package

 TO-220AB
TOP VIEW

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Symbol

Absolute Maximum Ratings ($T_C = +25^\circ\text{C}$)

	MUR1610CT RUR1610CT	MUR1615CT RUR1615CT	MUR1620CT RUR1620CT
Peak Repetitive Reverse Voltage..... V_{RRM}	100V	150V	200V
Working Peak Reverse Voltage..... V_{RWM}	100V	150V	200V
DC Blocking Voltage..... V_R	100V	150V	200V
Average Rectified Forward Current (Per Leg)..... $I_F(AV)$	8A	8A	8A
(Total device, (Rated V_R), $T_C = 150^\circ\text{C}$)	16A	16A	16A
Peak Forward Repetitive Current (Per Diode Leg)..... I_{FRM}	16A	16A	16A
(Rated V_R , Square Wave, 20kHz), $T_C = 150^\circ\text{C}$			
Nonrepetitive Peak Surge Current..... I_{FSM}	100A	100A	100A
(Surge applied at rated load condition halfwave, single phase, 60Hz)			
Operating and Storage Temperature..... T_{STG}, T_J	-65°C to $+175^\circ\text{C}$	-65°C to $+175^\circ\text{C}$	-65°C to $+175^\circ\text{C}$
Maximum Lead Temperature During Soldering..... T_L	260°C	260°C	260°C
(At distance $> \frac{1}{8}$ " (3.17mm) from case for 10s max)			

Electrical Characteristics (T_C = +25°C) Unless Otherwise Specified.

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SYMBOL	TEST CONDITION	LIMITS									UNITS
		MUR1610CT, RUR1610CT			MUR1615CT, RUR1615CT			MUR1620CT, RUR1620CT			
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
V _F	I _F = 8A T _C = +150°C	-	-	0.83	-	-	0.83	-	-	0.85	V
	I _F = 8A T _C = +25°C	-	-	0.975	-	-	0.975	-	-	1	V
I _R @ T _C = +150°C	V _R = 100V	-	-	250	-	-	-	-	-	-	μA
	V _R = 150V	-	-	-	-	-	250	-	-	-	μA
	V _R = 200V	-	-	-	-	-	-	-	-	250	μA
I _R @ T _C = +25°C	V _R = 100V	-	-	5	-	-	-	-	-	-	μA
	V _R = 150V	-	-	-	-	-	5	-	-	-	μA
	V _R = 200V	-	-	-	-	-	-	-	-	5	μA
t _{rr}	I _F = 1A*	-	-	35	-	-	35	-	-	35	ns
	I _F = 0.5**	-	-	25	-	-	25	-	-	25	ns
R _{θjc}		-	-	3	-	-	3	-	-	3	°C/W

* dI_F/dt = 50A/μs ** I_R = 1.0A, I_{REC} = 0.25A.

MUR1610CT, MUR1615CT, RUR1610CT, RUR1615CT

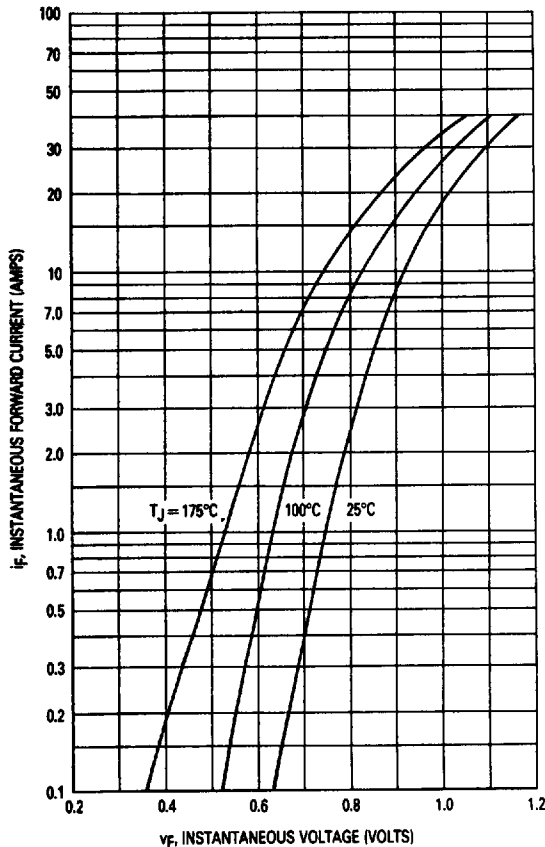


FIGURE 1. TYPICAL FORWARD VOLTAGE (PER LEG)

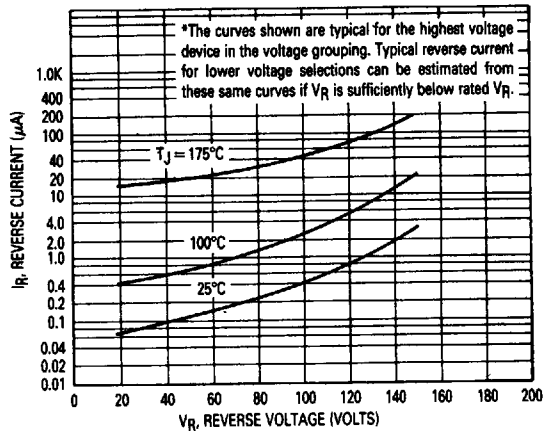


FIGURE 2. TYPICAL REVERSE CURRENT (PER LEG*)

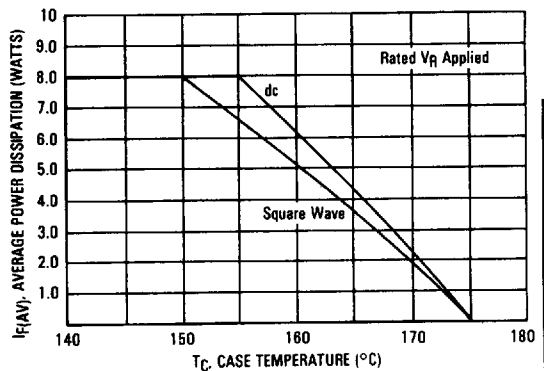


FIGURE 3. CURRENT DERATING CASE (PER LEG)

HARRIS SEMICONDUCTOR 56E D 4302271 1042400 54E ■

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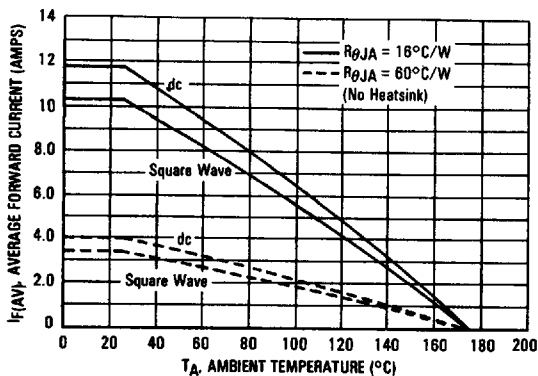


FIGURE 4. CURRENT DERATING, AMBIENT (PER LEG)

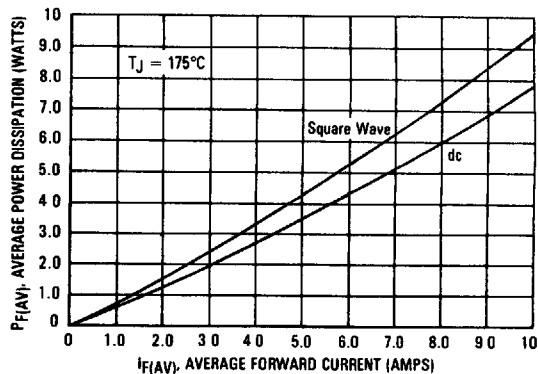


FIGURE 5. POWER DISSIPATION (PER LEG)

MUR1620CT, RUR1620CT

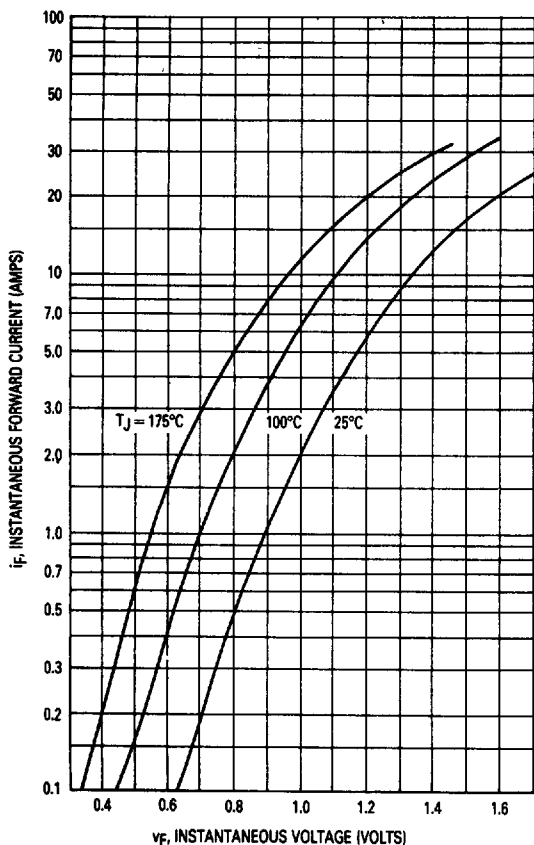


FIGURE 6. TYPICAL FORWARD VOLTAGE (PER LEG)

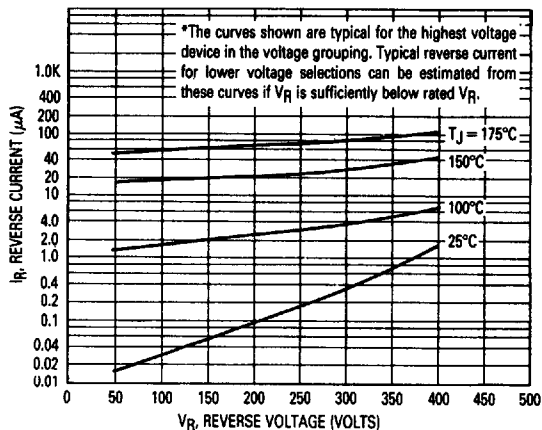


FIGURE 7. TYPICAL REVERSE CURRENT (PER LEG)*

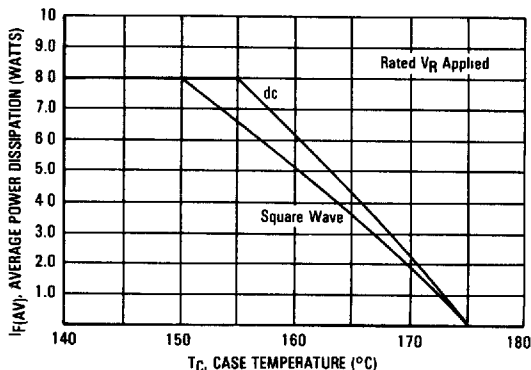


FIGURE 8. CURRENT DERATING, CASE (PER LEG)

12
 ULTRA-FAST
 RECTIFIERS

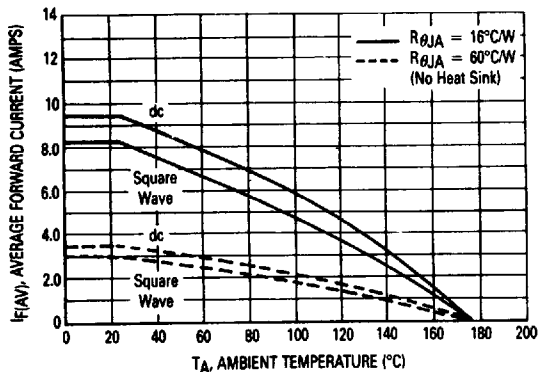


FIGURE 9. CURRENT DERATING AMBIENT (PER LEG)

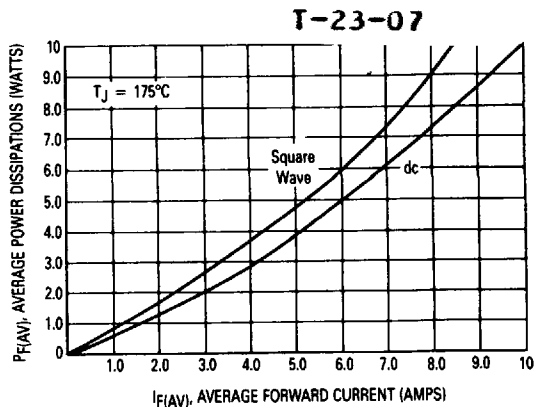


FIGURE 10. POWER DISSIPATION (PER LEG)

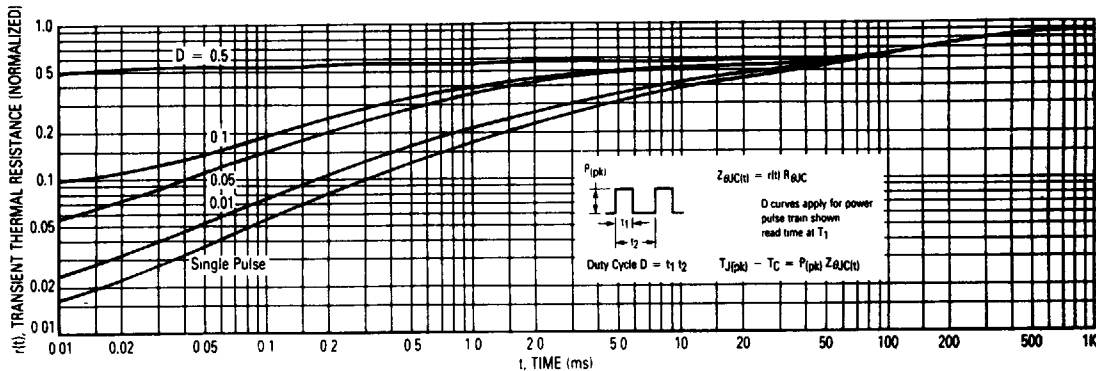


FIGURE 11. THERMAL RESPONSE

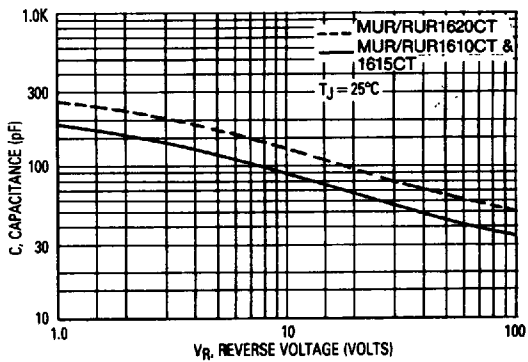


FIGURE 12. TYPICAL CAPACITANCE (PER LEG)