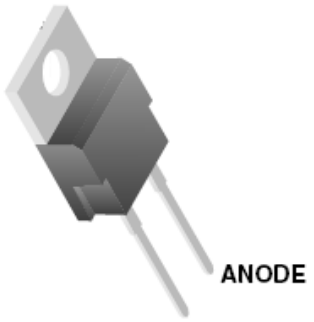
Semitel
Enabling your idea

MUR8120

Ultrafast Plastic Power Rectifiers

Description

This device is an ultrafast diode with soft recovery characteristics (t_{rr}<65ns).
It is intended for use as a freewheeling /clamping diode and rectifier in a variety of high frequency switching power supplies and other power switching applications. It has low stored charge and ultrafast soft recovery minimize ringing and electrical noise in many power switching circuits, thus reducing power loss in the switching transistors.



TO220-AC

Features

- Ultrafast with Soft Recovery <65ns
- Reverse Voltage 1200V
- Avalanche Energy Rated
- Planar Construction

Applications

- Switching Power Supplies
- Power Switching Circuits
- General Purpose

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	1200	V
Average Rectified Forward Current(T_A = 78°C) Repetitive Peak Surge Current(Square Wave, 20KHz) Nonrepetitive Peak Surge Current(Halfwave, 1 Phase, 50Hz)	$I_{F(AV)}$ I_{FRM} I_{FSM}	8 16 100	A
Maximum Power Dissipation	P_D	75	W
Avalanche Energy (Figures 7 and 8)	E_{AVL}	20	mJ
Storage Temperature Range	T_{STG}	-55-150	°C
Junction Temperature	T_J	-55-150	°C
Junction to Ambient thermal resistance	$R_{\theta JA}$	62.5	°C /W
Junction to Case thermal resistance	$R_{\theta JC}$	2.0	°C /W

Electrical Characteristics (T_A =25°C)

Parameter	Symbol
Instantaneous forward voltage (pw = 300us, D = 2%)	V_F
Instantaneous reverse current	I_R
Reverse recovery time (Figure 6), summation of t_a + t_b	t_{rr}
Time to reach peak reverse current (Figure 6)	t_a
Time from peak I_{RM} to projected zero crossing of I_{RM} based on a straight line from peak I_{RM} through 25% of I_{RM} (Figure 6)	t_b
Junction to free air thermal resistance	$R_{\theta JA}$
Pulse width	pw
Duty cycle	D

Electrical Specifications (T_A =25°C)

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
V_F	I_F=8A, T_A=25°C			3.2	V
	I_F=8A, T_A=150°C			2.6	V
I_R	V_R=1200V, T_A=25°C			100	μA
	V_R=1200V, T_A=150°C			500	μA
t_{rr}	I_F=1A, di/dt=200A/μs			55	ns
	I_F=8A, di/dt=200A/μs			65	ns
t_a	I_F=8A, di/dt=200A/μs		30		ns
t_b	I_F=8A, di/dt=200A/μs		20		ns
Q_{RR}	I_F=8A, di/dt=200A/μs		165		nC
C_J	V_R=10A, I_F=0A		25		pF

Typical Performance Curves

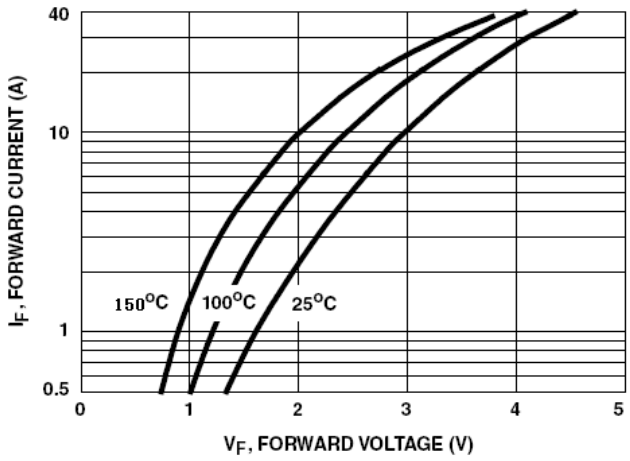


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

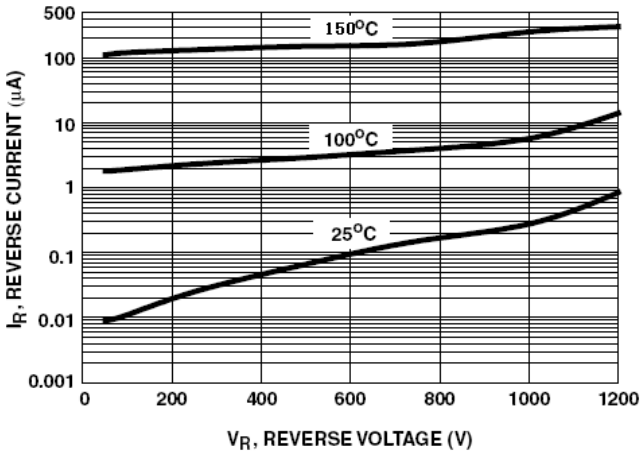


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

Typical Performance Curves (Continued)

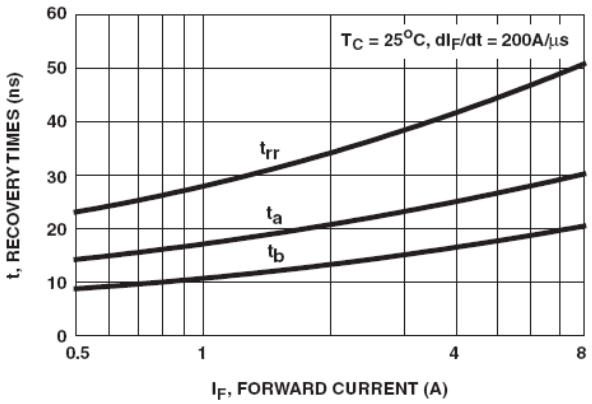


FIGURE 3. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

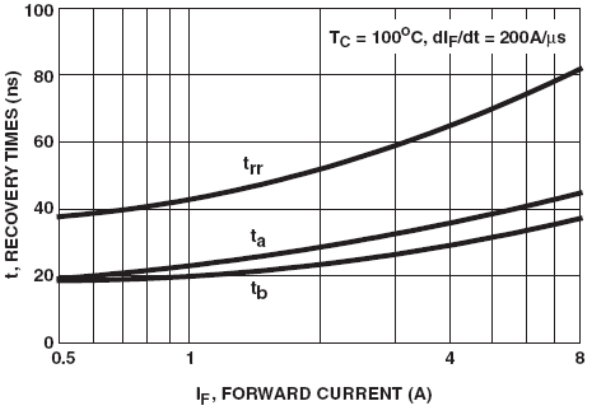


FIGURE 4. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

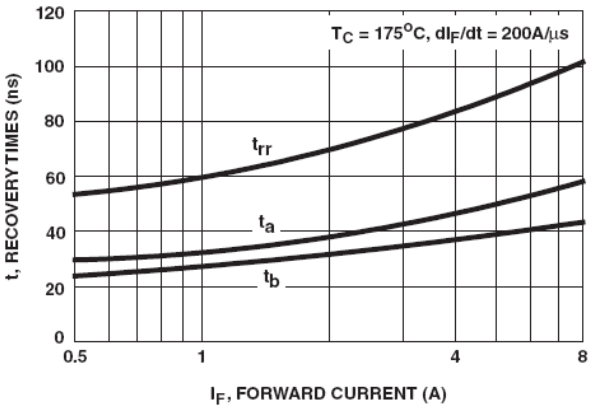


FIGURE 5. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

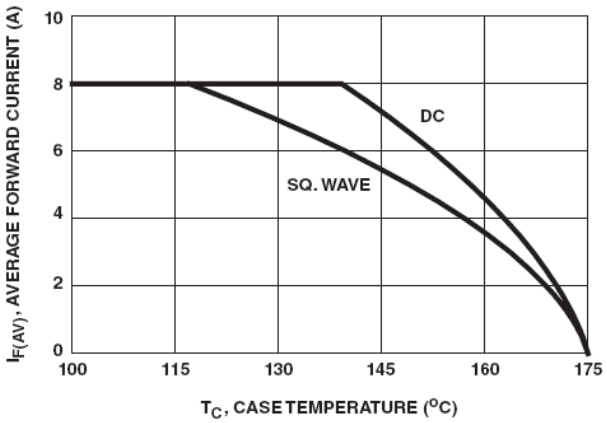


FIGURE 6. CURRENT DERATING CURVE

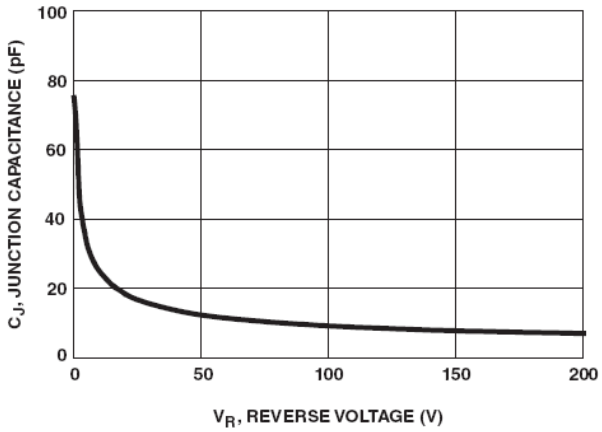


FIGURE 7. JUNCTION CAPACITANCE vs REVERSE VOLTAGE

Test Circuits and Waveforms

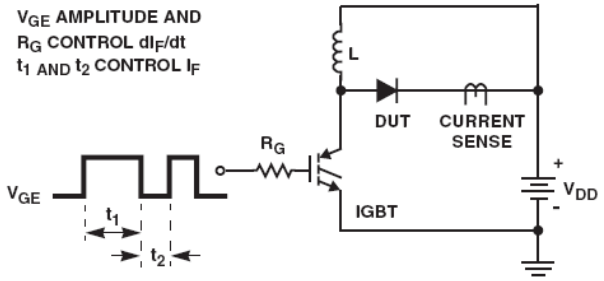


FIGURE 8. t_{rr} TEST CIRCUIT

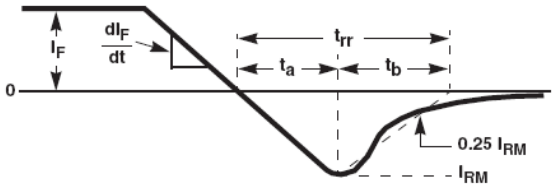


FIGURE 9. t_{rr} WAVEFORMS AND DEFINITIONS

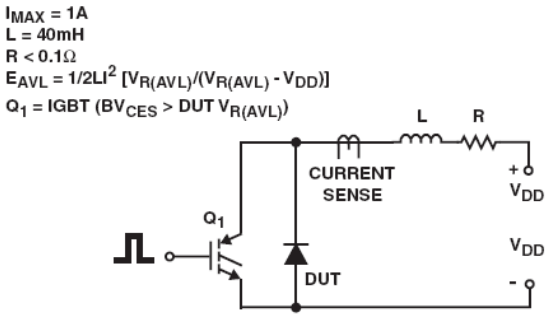


FIGURE 10. AVALANCHE ENERGY TEST CIRCUIT

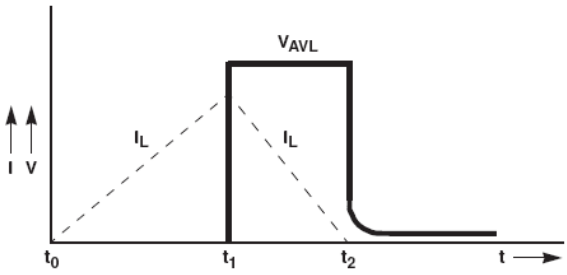
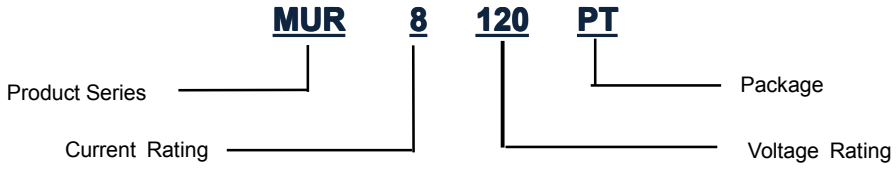


FIGURE 11. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

Marking and Order Information

Part Number System



Order Information

Device	Package	Net Weight	Carrier	Quantity	HSF Status
MUR8120	TO220-AC		Tube & Box		Lead Free