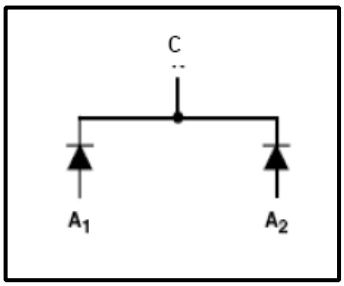
20A,200V Ultrafast Dual Diode

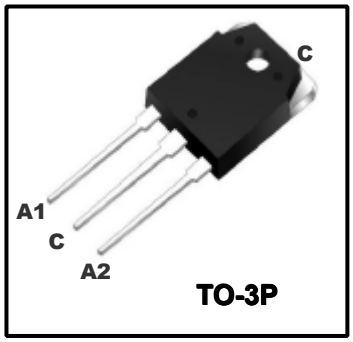


Features

- Ultrafast recovery time
- Low forward voltage drop
- Low leakage current
- High reliability by planer design
- Maximum Junction Temperature Range(175℃)

General Description

Winsemi's WSAD92-02 is the state of the are Ultra fast recovery rectifiers specifically designed with optimizedperformance of forward voltage drop and ultra fast recovery time . The planar structure and the platinum doped life time, control guarantee the best overall performance, ruggedness and reliability characteristics.



Applications

Switching Power Supplies
Uninterruptable Power Supplies
Power Switching Circuits
General Purpose

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{RRM}	Peak Repetitive Reverse Voltage	200	V
$I_{F(AV)}$	Average Out Current Square wave, duty=1/2,Tc=115℃	20	A
I_{FSM}	Repetitive Peak Surge Current	100	A
T_{STG},T_J	Operating Junction Temperature & Storage Temperature	-55~175	℃

Electrical Characteristics (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
V_F	Forward Voltage Drop	I_F=20A	-	-	1.15	V
		I_F=10A,Tc=125℃	-		0.8	V
I_{RRM}	Reverse Current	V_R=200V	-	5	15	μA
		V_R=200V,Tc=150℃	-	-	4	mA
t_{rr}	Reverse Recovery Time	I_F=20A,dI_F/dt=100A/μs	-	-	30	ns
$R_{th(J-C)}$	Thermal Resistance		-	-	1.5	℃/W

Typical Performance Curves

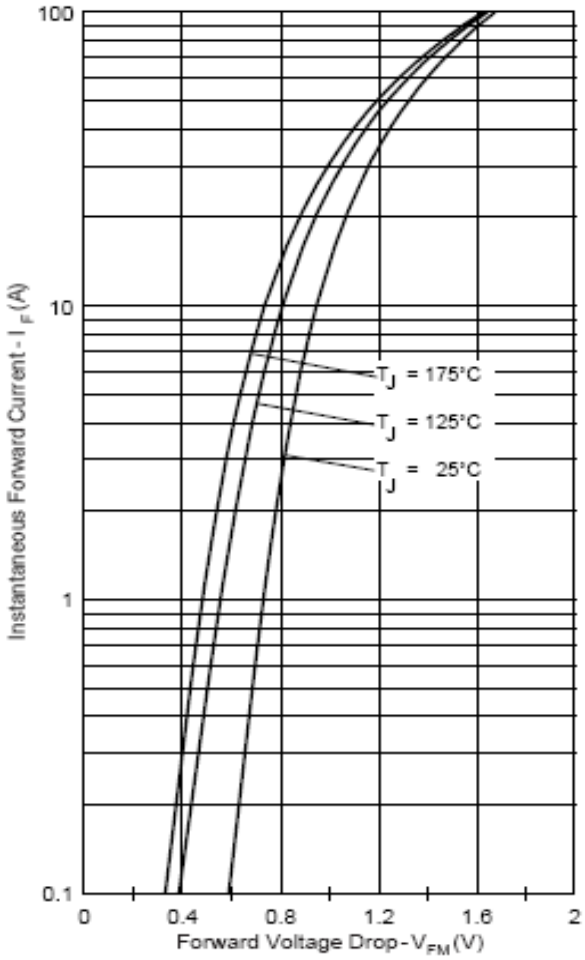


Fig.1 Forward Characteristics

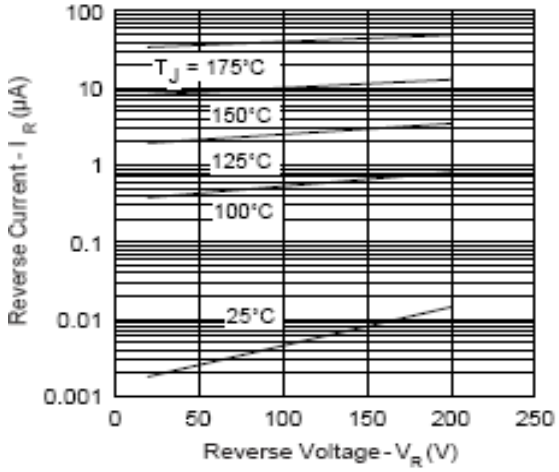


Fig.2 Reverse Characteristics

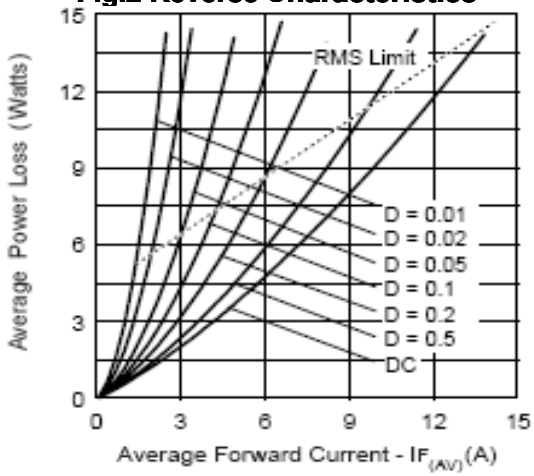


Fig.3 Forward Power Dissipation

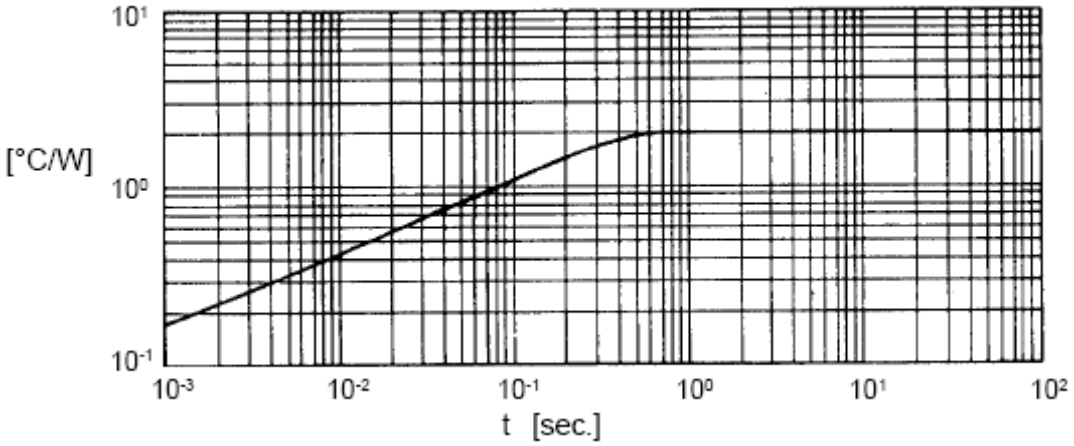


Fig.4 Transient Thermal Impedance

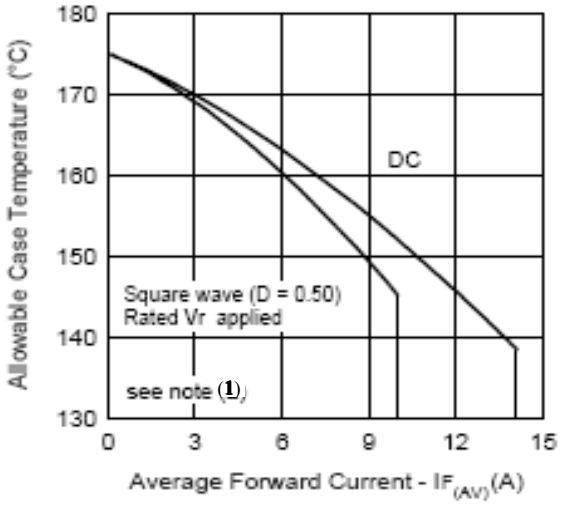


Fig.5 Case Temperature vs Out Current

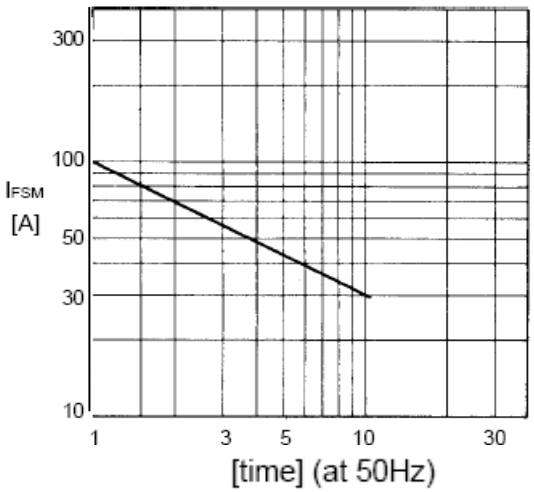


Fig.6 Surge Capability

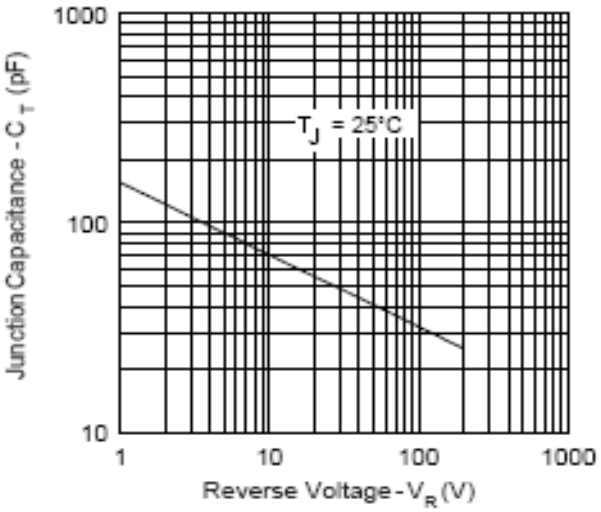


Fig.7 Junction Capacitance Characteristics

(1) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM}$ @ ($I_{F(AV)}$ / D) (see Fig.3)
Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; I_R @ V_{R1} = rated V_R

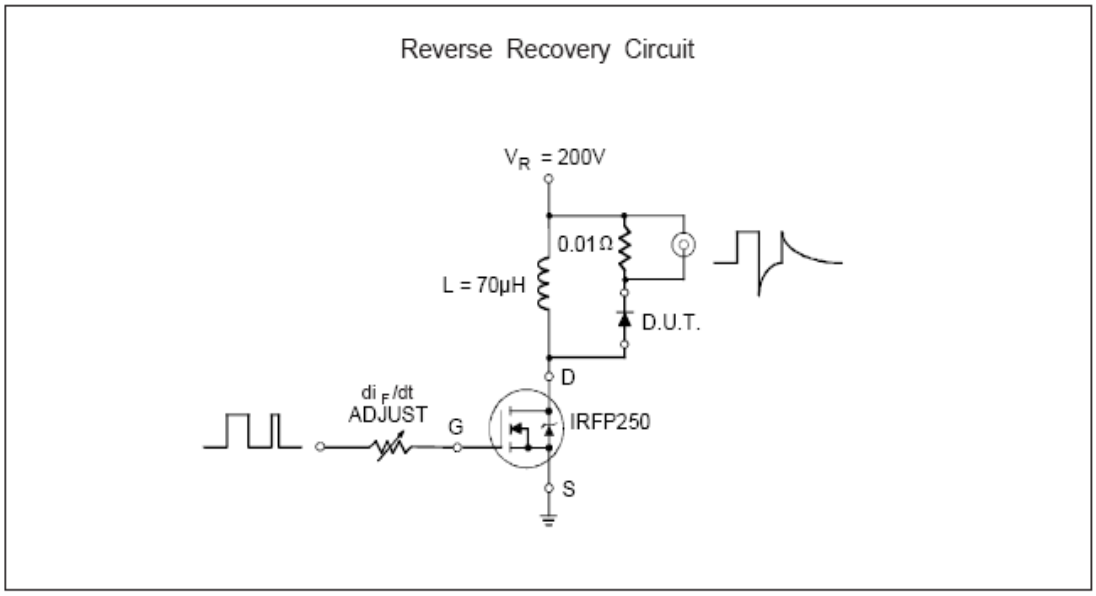
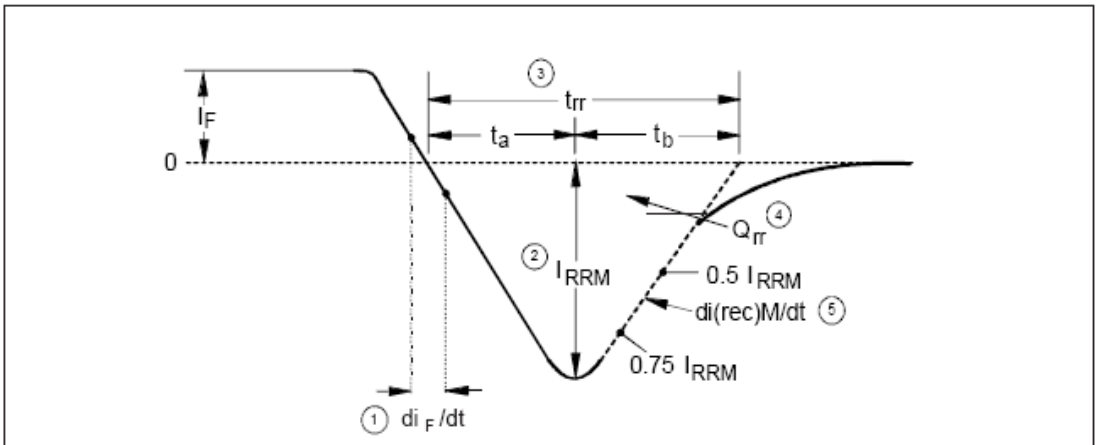


Fig.8 Reverse Recovery Parameter Test Circuit



1. di_F/dt - Rate of change of current through zero crossing
2. I_{RRM} - Peak reverse recovery current
3. t_{rr} - Reverse recovery time measured from zero crossing point of negative going I_F to point where a line passing through 0.75 I_{RRM} and 0.50 I_{RRM} extrapolated to zero current
4. Q_{rr} - Area under curve defined by t_{rr} and I_{RRM}

$$Q_{rr} = \frac{t_{rr} \times I_{RRM}}{2}$$

5. $di_{(rec)M}/dt$ - Peak rate of change of current during t_b portion of t_{rr}

Fig.9 Reverse Recovery Waveform and Definitions

TO-3P Package Dimension

Unit: mm