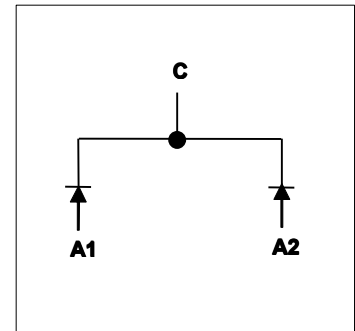


### Features

- Ultrafast recovery time
- Soft Recovery characteristics
- Low Recovery Loss
- Low forward voltage
- High reliability by planer design
- Low leakage current

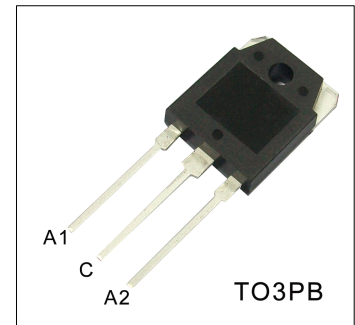


### General Description

FRD from Winsemi utilizes advanced processing techniques to achieve ultrafast recovery times and higher forward current. Its soft recovery characteristics and high reliability suit for wide industrial applications.

### Applications

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS



### Absolute Maximum Ratings

Symbol	Parameter	Test Conditions	Value	Units
$V_R$	Maximum D.C.Reverse Voltage		400	V
$V_{RRM}$	Maximum Repetitive Revers Voltage		400	V
$I_{F(AV)}$	Average Forward Current	$T_c=110^{\circ}C$ , Per Diode	40	A
		$T_c=110^{\circ}C$ , Per Package	80	A
$I_{F(RMS)}$	RMS Forward Current	$T_c=110^{\circ}C$ , Per Diode	56	A
$I_{FSM}$	No-Repetitive Peak Surge current	$T_j=45^{\circ}C$ , $t=10ms$ , 50Hz, Sine	400	A
$P_D$	Power Dissipation		156	W
$T_J$	Junction Temperature		150	$^{\circ}C$
$T_{STG}$	Storage Temperature Range		-40~150	$^{\circ}C$
Torque	Module-to-Sink	Recommended	1.1	N.m
$R_{\theta JC}$	Thermal Resistance	Junction-to-Case	0.8	$^{\circ}C/W$
Weight			6.0	g

Electrical Characteristics  $T_C=25^\circ\text{C}$ 

Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
$I_{RM}$	Reverse Leakage Current	$V_R=400V$	-	-	10	$\mu A$
		$V_R=400V, T_J=125^\circ\text{C}$	-	-	150	$\mu A$
$V_F$	Forward Voltage Drop	$I_F=40A$	-	1.3	1.7	V
		$I_F=40A, T_J=125^\circ\text{C}$	-	1.1	-	V
$T_{rr}$	Reverse Recovery Time	$I_F=1A, V_R=30, di/dt=-200A/\mu s$	-	22	-	ns
$T_{rr}$	Reverse Recovery Time	$I_F=40A, V_R=200V$	-	52	-	ns
$I_{RRM}$	Max.Reverse Recovery Current	$di_F/dt=-200A/\mu s, T_J=25^\circ\text{C}$	-	4.5	-	A
$T_{rr}$	Reverse Recovery Time	$I_F=40A, V_R=200V$	-	71	-	ns
$I_{RRM}$	Max.Reverse Recovery Current	$di_F/dt=-200A/\mu s, T_J=125^\circ\text{C}$	-	9	-	A

Typical Performance Curres

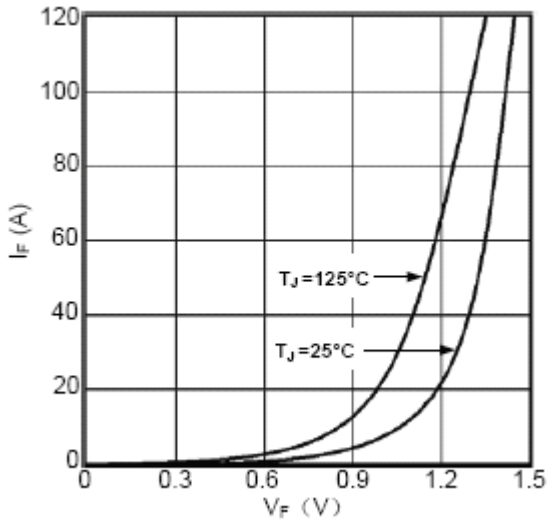


Fig.1 Forward Voltage Drop vs Forward Current

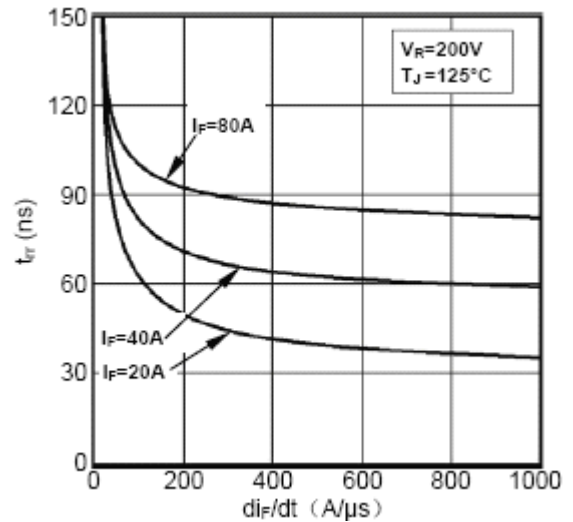


Fig.2 Reverse Recovery Time vs  $di_F/dt$

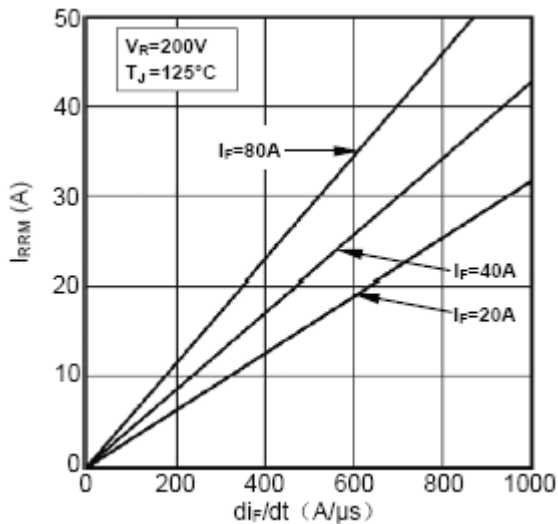


Fig.3 Reverse Recovery Current vs  $di_F/dt$

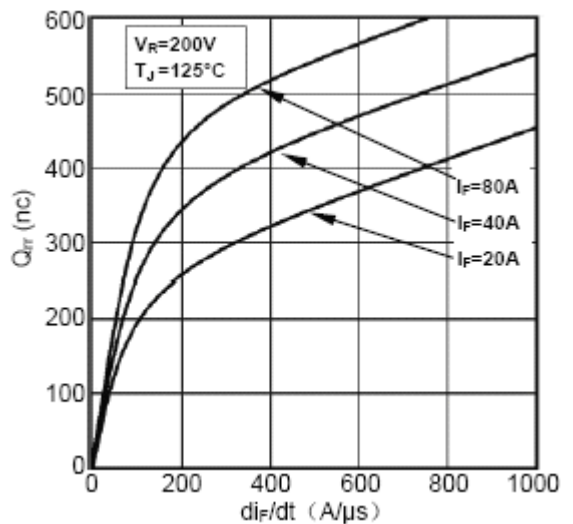


Fig.4 Reverse Recovery Charge vs  $di_F/dt$

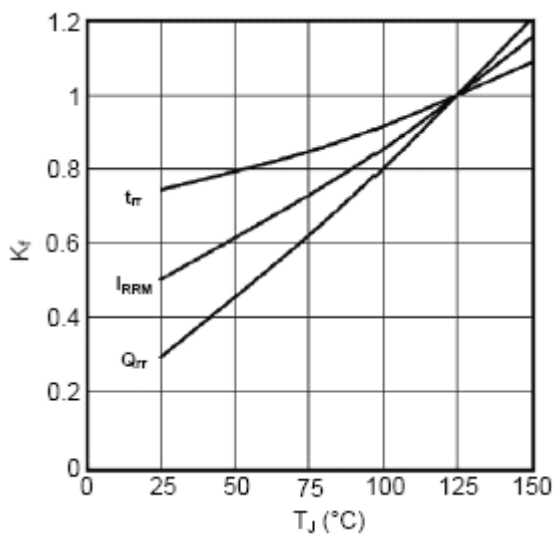


Fig.5 Dynamic Parameters vs Junction Temperature

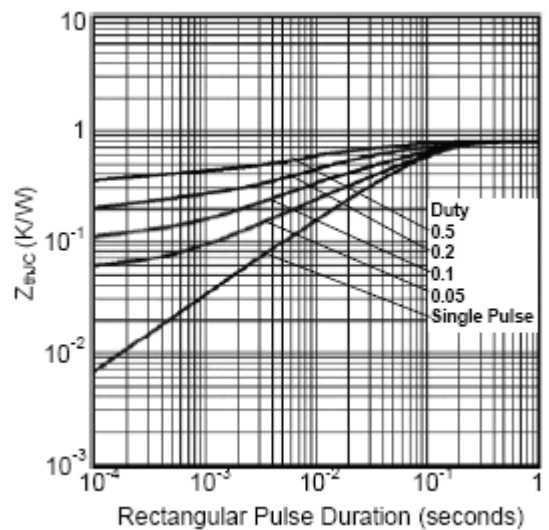


Fig.6 Transient Thermal Impedance

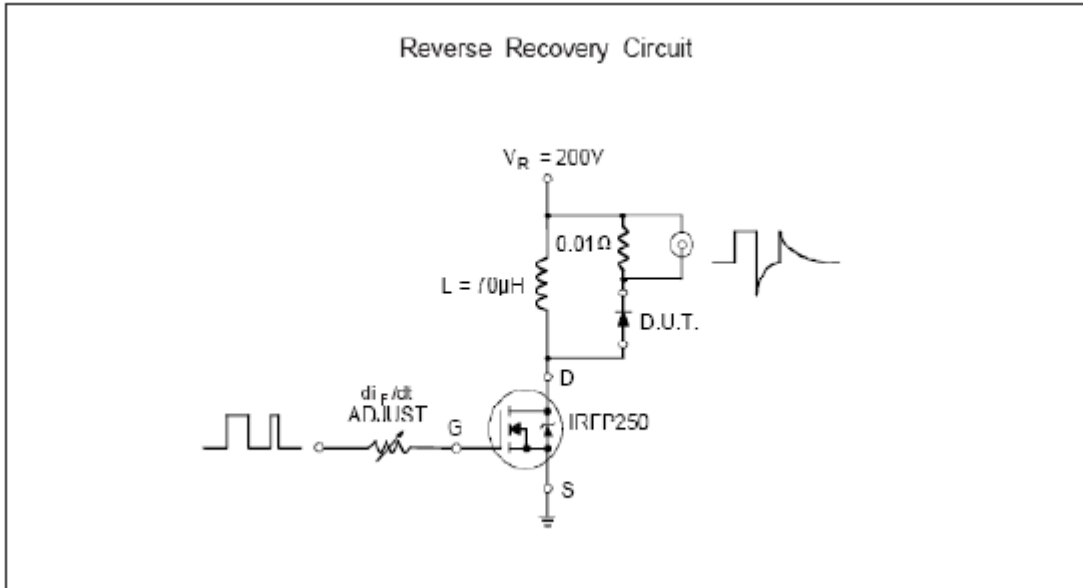


Fig.7 Reverse Recovery Parameter Test circuit

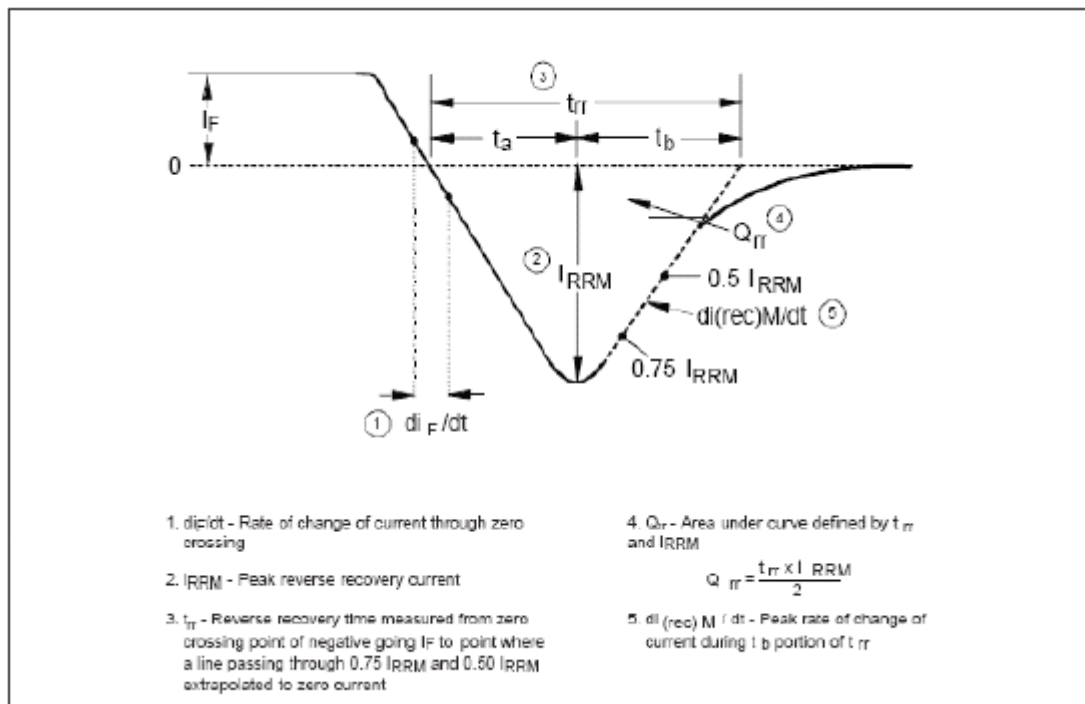
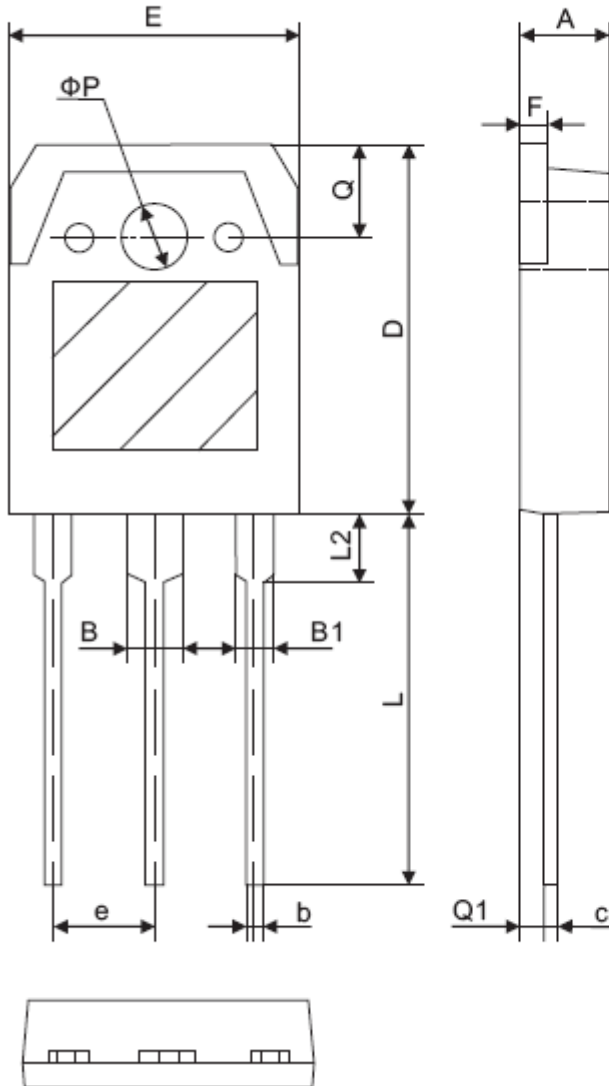


Fig.8 reverse Recovery Waveform and definitions

To-3PB Package Dimension

Unit:mm



符号 symbol	Min	Max
A	4.60	5.00
B	2.90	3.20
B1	1.90	2.20
b	0.90	1.10
c	0.50	0.70
D	19.40	20.40
E	15.40	15.80
e	5.45 (TYP)	
F	1.40	1.60
L	19.50	20.50
L2	3.30	3.70
Q	4.90	5.10
Q1	1.30	1.50
P	3.10	3.50

**NOTE:**

- 1.We strongly recommend customers check carefully on the trademark when buying our product, if there is any question, please don't be hesitate to contact us.
- 2.Please do not exceed the absolute maximum ratings of the device when circuit designing.
- 3.Winsemi Microelectronics Co., Ltd reserved the right to make changes in this specification sheet and is subject to change without prior notice.

**CONTACT:**

Winsemi Microelectronics Co., Ltd.

ADD:Futian District, ShenZhen Tian An Cyber Tech Plaza two East Wing 1002

Post Code : 518040

Tel : 86-0755-82506257

FAX : 86-0755-82506299

Web Site : [www.winsemi.com](http://www.winsemi.com)