

Features

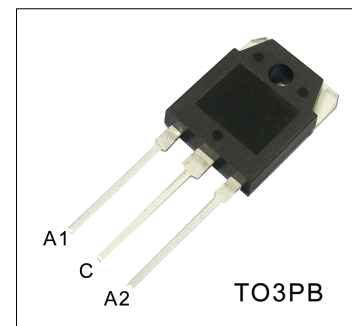
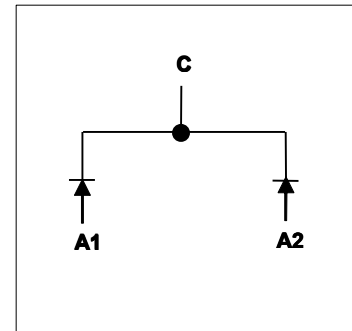
- Ultrafast recovery time
- Soft Recovery characteristics
- Low Recovery Loss
- Low forward voltage
- High reliability by planer design
- Low leakage current

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		300	V
V_{RRM}	Maximum Repetitive Revers Voltage		300	V
$I_{F(AV)}$	Average Forward Current	$T_c=110^\circ\text{C}$, Per Diode	30	A
		$T_c=110^\circ\text{C}$, Per Package	60	A
$I_{F(RMS)}$	RMS Forward Current	$T_c=110^\circ\text{C}$, Per Diode	60	A
I_{FSM}	No-Repetitive Peak Surge current	$T_j=45^\circ\text{C}$, $t=10\text{ms}$, 50Hz, Sine	300	A
P_D	Power Dissipation		165	W
T_J	Junction Temperature		150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range		-40~150	$^\circ\text{C}$
Torque	Module-to-Sink	Recommended	1.2	N.m
$R_{\theta JC}$	Thermal Resistance	Junction-to-Case	0.75	$^\circ\text{C}/\text{W}$
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	$V_R=300V$	-	-	20	μA
		$V_R=300V, T_J=125^\circ\text{C}$	-	-	250	μA
V_F	Forward Voltage Drop	$I_F=30A$	-	1.1	1.3	V
		$I_F=30A, T_J=125^\circ\text{C}$	-	1.0	-	V
T_{rr}	Reverse Recovery Time	$I_F=1A, V_R=30, di/dt=-200A/\mu s$	-	38	-	ns
T_{rr}	Reverse Recovery Time	$I_F=30A,$	-	$T_J=25^\circ\text{C}$	-	ns
T_{rr}	Reverse Recovery Time	$V_R=400V$		$T_J=125^\circ\text{C}$	-	ns
Q_{rr}	Reverse Recovery Charge	$di_F/dt=-200A/\mu s$		$T_J=125^\circ\text{C}$	-	ns
I_{RRM}	Max. Reverse Recovery Current			$T_J=125^\circ\text{C}$	-	A

Typical Performance Curres

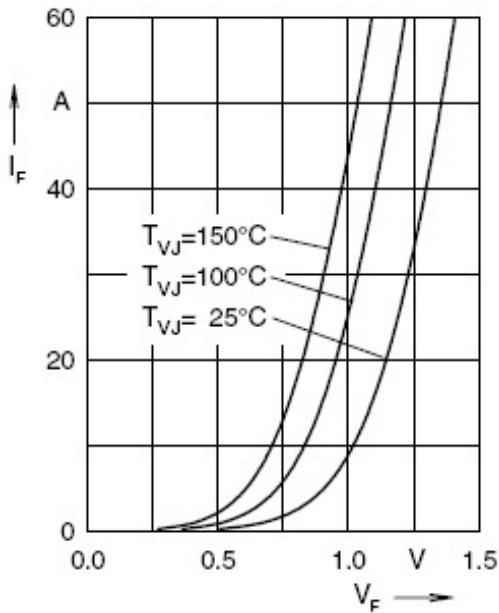


Fig.1 Forward Current I_F Versus V_F

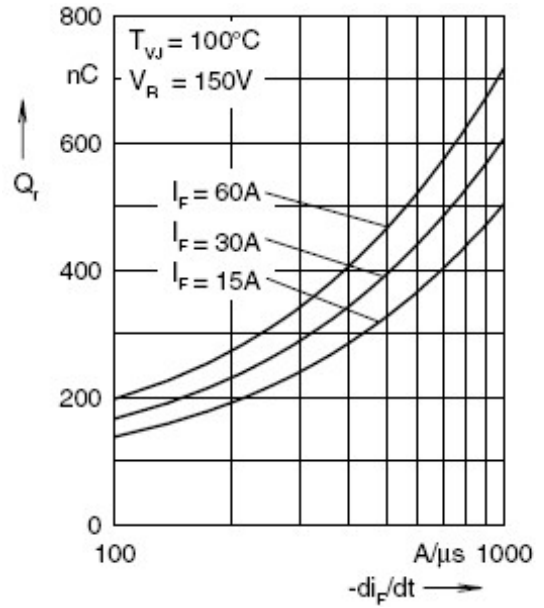


Fig.2 Reverse Recovery Charge Q_r versus $-di_F/dt$

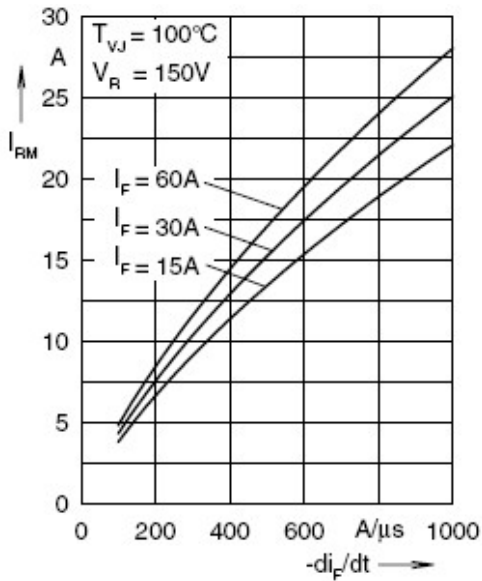


Fig.3 Peak reverse current I_{RM} versus $-di_F/dt$

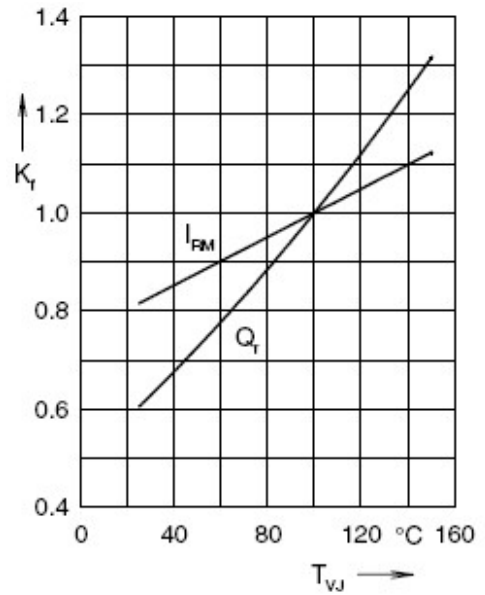


Fig.4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

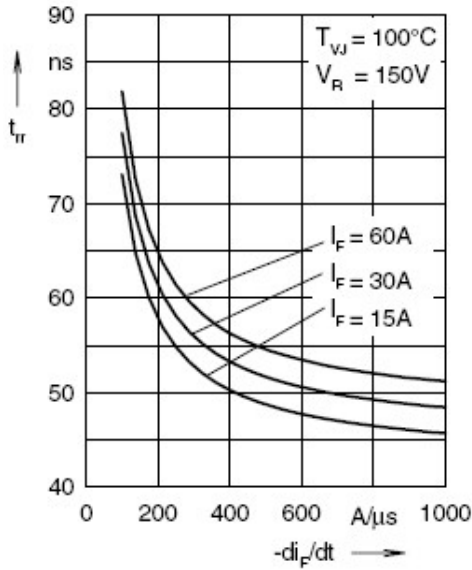


Fig.5 Recovery time t_{rr} versus $-di_F/dt$

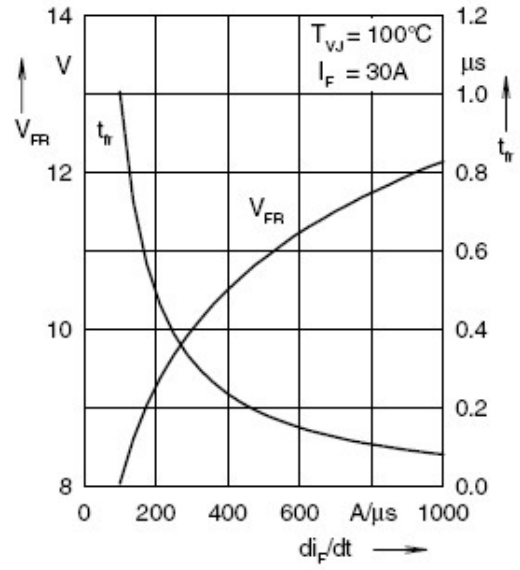


Fig.6 Peak forward voltage V_{FR} and t_{rr} versus di_F/dt

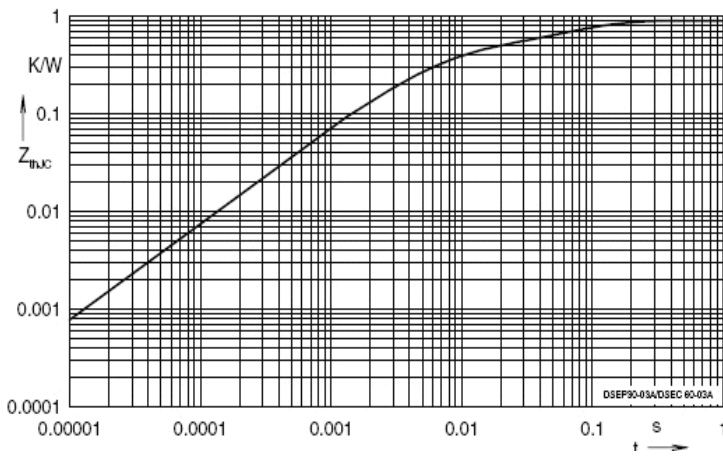


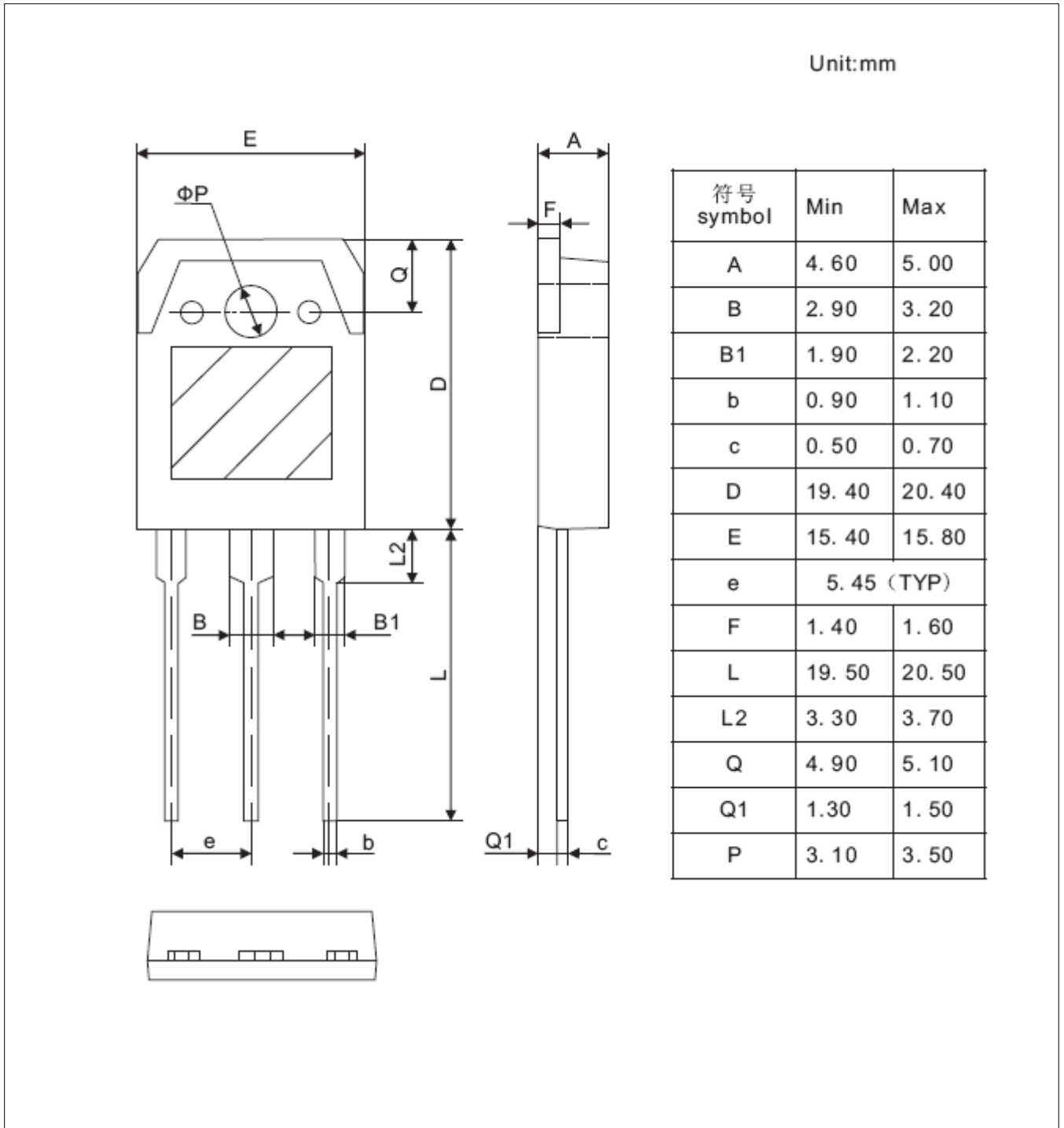
Fig.7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.465	0.005
2	0.179	0.0003
3	0.256	0.04

NOTE: Fig. 2 to Fig. 6 shows typical values

To-3PB Package Dimension



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.

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