FAST RECOVER EPITAXIAL DIODE （FRED）

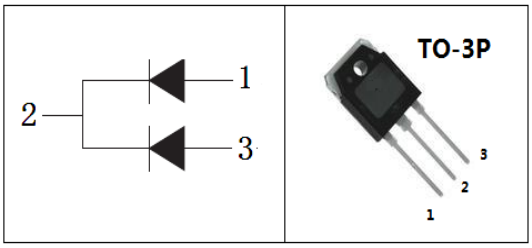
Features

- Planar epitaxial chips
- Using high temperature Pt diffusion process
- Very short recovery time
- Extremely low switching losses
- Low I_{RM} values
- Soft recovery behaviour
- 100% tested

V_{RRM} = 400 V	**I_{FAVM} = 80 A**
V_F（typ）=1.1V（I_F=40A,T_{VJ}=25℃）	
t_{rr} <50 ns（I_F = 1 A; di/dt = 200 A/s）	
Package	TO3P

Applications

- Diode for high frequency switching devices
- Anti saturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{RRM}	Peak Repetitive Reverse Voltage	400	V
$I_{F(AV)}$	Diode Continuous Forward Current (T_C=100℃)	80	A
I_{FRM}	Repetitive Peak Surge Current (20kHz Square Wave)	160	A
I_{FSM}	Nonrepetitive Peak Surge Current for Per Diode (Halfwave 1 Phase 60Hz)	400	A
T_J	Operating Junction Temperature Range	-55 to +150	℃
T_{STG}	Storage Temperature Range	-55 to +150	℃

ELECTRICAL SPECIFICATIONS (T_J = 25 ℃ unless otherwise specified for Per Diode)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_R	Cathode to Anode Breakdown Voltage	I_R = 100μA	400			
V_F	Diode Forward Voltage	I_F=40A T_C=25℃		1.1	1.3	V
	Diode Forward Voltage	I_F=40A T_C=125℃		0.95	1.2	V
I_{RM}	Maximum Reverse Leakage Current	V_R=400V T_C=25℃			100	μA
		V_R=400V T_C=125℃			10	mA

DYNAMIC RECOVERY CHARACTERISTICS(TJ = 25 ℃ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
IRRM	Diode Peak Reverse Recovery Current	VDD=100V;IF=1A; dif/dt=200A/μs; See **Fig.4**		3.7		A
Qrr	Reverse recovery charge (Area Under the Curve Defined by IRRM and trr).			75		nc
trr	Diode Reverse Recovery Time			40	50	ns
S	S= tb/ta			0.8		
IRRM	Diode Peak Reverse Recovery Current	VDD=350V;IF=40A; dif/dt=500A/μs; See **Fig.4**		20		A
Qrr	Reverse recovery charge (Area Under the Curve Defined by IRRM and trr).			900		nc
trr	Diode Reverse Recovery Time			75	100	ns
S	S= tb/ta			0.8		

Fig.1 Forward Current vs Forward Voltage

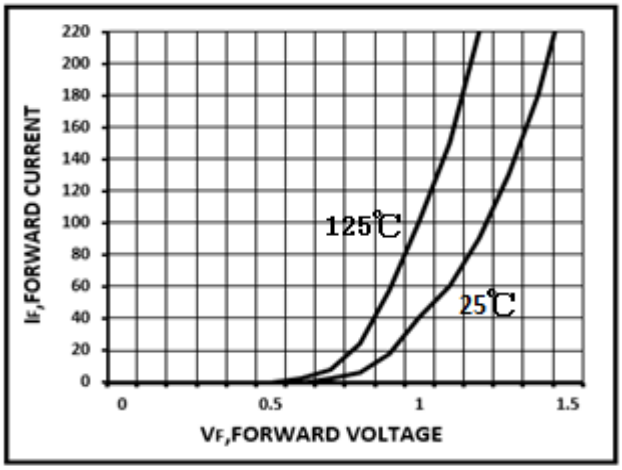


Fig.2 Reverse Current vs Reverse Voltage

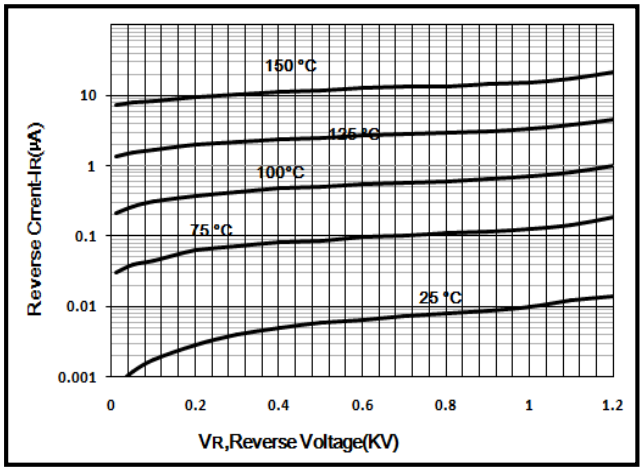


Fig.3 trr Test Circuit

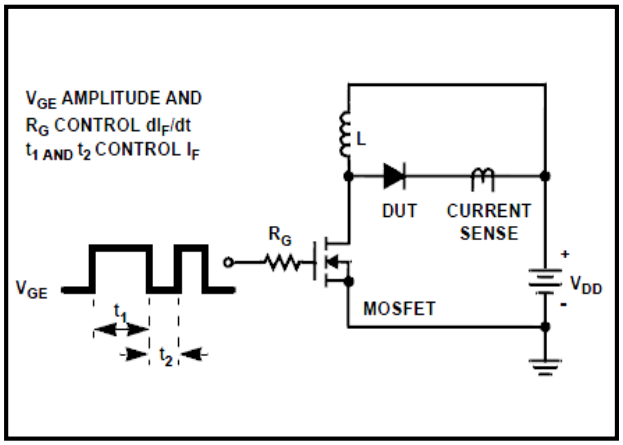


Fig.4 trr Waveforms and Definitions