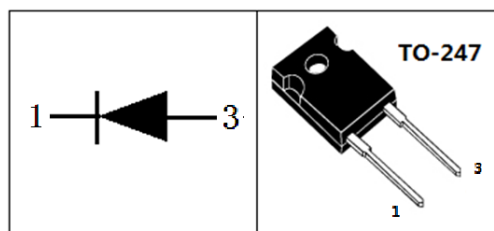# FAST RECOVER EPITAXIAL DIODE （FRED）

Features

- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low I_{RM} values
- Soft recovery behaviour
- 100% avalanche tested

V_{RRM} = 1200 V	I_{FAVM} = 75 A
V_F（typ）=2.0V （I_F=75A,T_{VJ}=25℃）	
t_{rr} < 90 ns （I_F = 1 A; di/dt = 200 A/s）	
Package	TO247-2L

Applications

- Antiparallel 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)
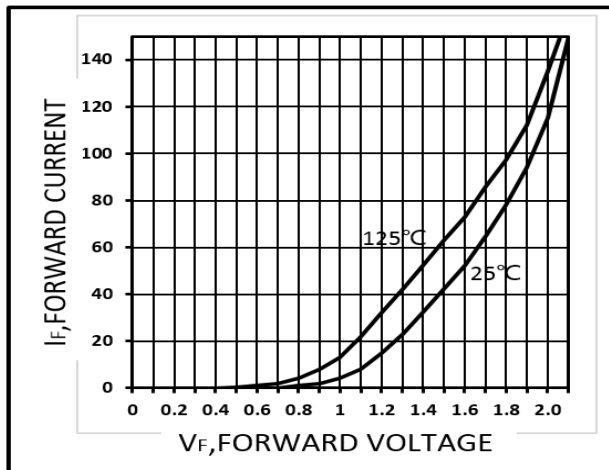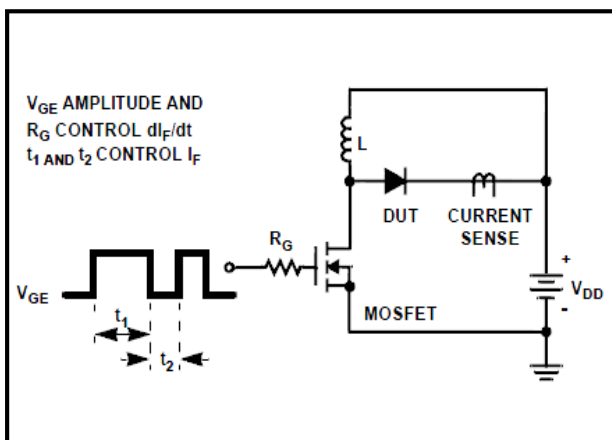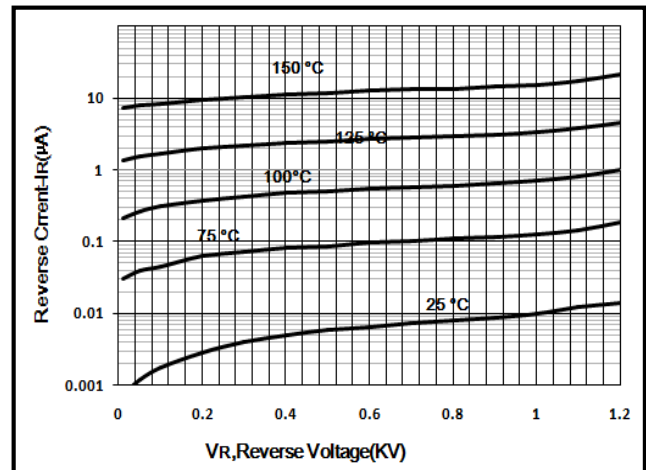- Ultrasonic cleaners and welders

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{RRM}	Peak Repetitive Reverse Voltage	1200	V
$I_{F(AV)}$	Diode Continuous Forward Current (T_C=100℃)	75	A
I_{FRM}	Repetitive Peak Surge Current (20kHz Square Wave)	150	A
I_{FSM}	Nonrepetitive Peak Surge Current (Halfwave 1 Phase 60Hz)	750	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)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_R	Cathode to Anode Breakdown Voltage	I_R = 100μA	1200			
V_F	Diode Forward Voltage	I_F=75A T_C=25℃		2.0	2.7	V
	Diode Forward Voltage	I_F=75A T_C=125℃		1.8	2.5	V
I_{RM}	Maximum Reverse Leakage Current	V_R=1200V T_C=25℃			10	μA
		V_R=1200V T_C=125℃			100	μA

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_{RRM}	Diode Peak Reverse Recovery Current	$V_{DD}=100V;I_F=1A$; dif/dt=200A/μs; See **Fig.4**		5.1		A
Qrr	Reverse recovery charge (Area Under the Curve Defined by I_{RRM} and trr).			250		nc
trr	Diode Reverse Recovery Time			75	90	ns
S	S= tb/ta			0.6		
I_{RRM}	Diode Peak Reverse Recovery Current	$V_{DD}=800V;I_F=30A$; dif/dt=850A/μs; See **Fig.4**		27		A
Qrr	Reverse recovery charge (Area Under the Curve Defined by I_{RRM} and trr).			910		nc
trr	Diode Reverse Recovery Time			112		ns
S	S= tb/ta			1.26		

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