

FAST RECOVER EPITAXIAL DIODE (FRED)

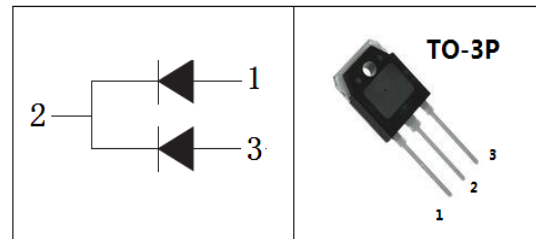
Features

- 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

$V_{RRM} = 300\text{ V}$	$I_{FAVM} = 60\text{ A}$
V_F (typ) = 1.1V ($I_F=30\text{A}, T_{VJ}=25^\circ\text{C}$)	
$t_{rr} < 40\text{ ns}$ ($I_F = 1\text{ A}; di/dt = 200\text{ A/s}$)	
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

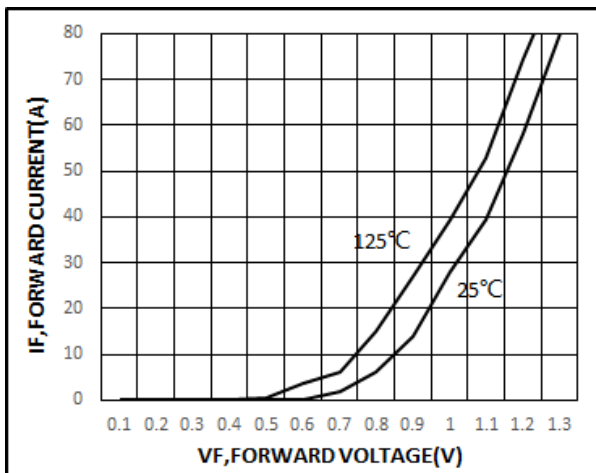
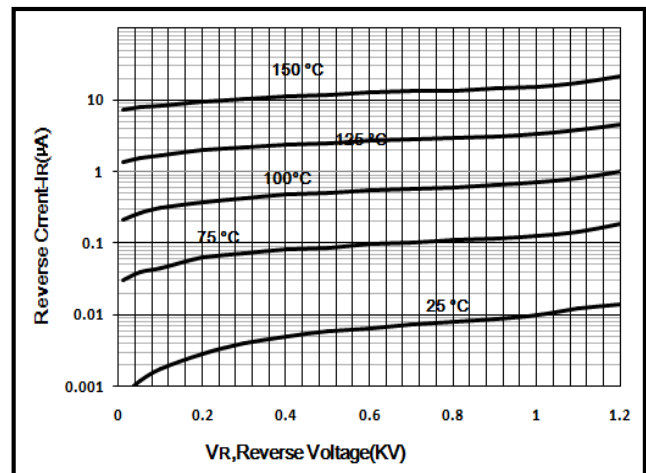
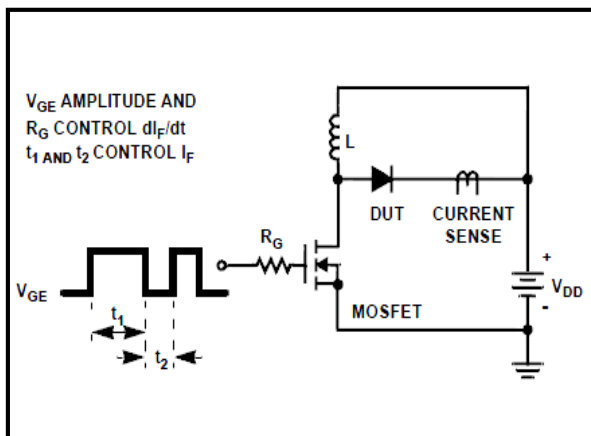


Absolute Maximum Ratings			
Symbol	Parameter	Value	Units
V_{RRM}	Peak Repetitive Reverse Voltage	300	V
$I_{F(AV)}$	Diode Continuous Forward Current ($T_C=100^\circ\text{C}$)	60	A
I_{FRM}	Repetitive Peak Surge Current (20kHz Square Wave)	120	A
I_{FSM}	Nonrepetitive Peak Surge Current for Per Diode (Halfwave 1 Phase 60Hz)	300	A
T_J	Operating Junction Temperature Range	-55 to +150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to +150	$^\circ\text{C}$

ELECTRICAL SPECIFICATIONS ($T_J = 25^\circ\text{C}$ unless otherwise specified for Per Diode)						
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_R	Cathode to Anode Breakdown Voltage	$I_R = 100\mu\text{A}$	300			
V_F	Diode Forward Voltage	$I_F=30\text{A } T_C=25^\circ\text{C}$		1.10	1.20	V
	Diode Forward Voltage	$I_F=30\text{A } T_C=125^\circ\text{C}$		0.95	1.15	V
I_{RM}	Maximum Reverse Leakage Current	$V_R=300\text{V } T_C=25^\circ\text{C}$			10	μA
		$V_R=300\text{V } T_C=125^\circ\text{C}$			100	μA

DYNAMIC RECOVERY CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_{RRM}	Diode Peak Reverse Recovery Current	$V_{DD}=100\text{V}; I_F=1\text{A};$ $di_f/dt=200\text{A}/\mu\text{s};$ See Fig.4		3.6		A
Q_{rr}	Reverse recovery charge (Area Under the Curve Defined by I_{RRM} and t_{rr}).			66		nc
t_{rr}	Diode Reverse Recovery Time			37	40	ns
S	$S= t_b/t_a$			0.81		
I_{RRM}	Diode Peak Reverse Recovery Current	$V_{DD}=150\text{V}; I_F=30\text{A};$ $di_f/dt=500\text{A}/\mu\text{s};$ See Fig.4		16		A
Q_{rr}	Reverse recovery charge (Area Under the Curve Defined by I_{RRM} and t_{rr}).			710		nc
t_{rr}	Diode Reverse Recovery Time			63	85	ns
S	$S= t_b/t_a$			0.82		

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
