

FAST RECOVER EPITAXIAL DIODE (FRED)

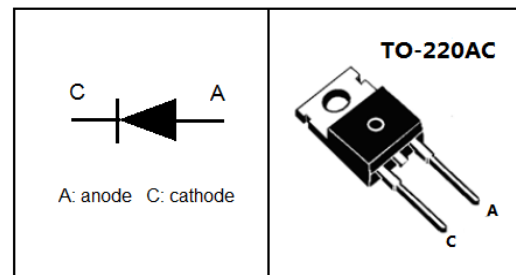
Features

- Internal Insulation Packaging
- Very short recovery time
- Extremely low switching losses
- Low I_{RM} values
- 100% avalanche tested

$V_{RRM} = 650\text{ V}$	$I_{FAVM} = 8\text{ A}$
$V_F(\text{typ}) = 1.13\text{ V}$ ($I_F=8\text{ A}, T_{VJ}=150^\circ\text{C}$)	
$t_{rr} < 95\text{ ns}$ ($I_F = 8\text{ A}; di/dt = 200\text{ A}/\mu\text{s}$)	

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	Test Conditions	Values	Units
VRRM	Repetitive peak reverse voltage		650	V
IF(AV)	Average rectified forward current	$T_C = 150^\circ\text{C}$	8	A
IFSM	Non-repetitive peak surge current	$T_J = 25^\circ\text{C}$		
IFM	Repetitive peak reverse current			
TJ,TStg	Operating junction and storage temperatures		-55 to +150	$^\circ\text{C}$

ELECTRICAL SPECIFICATIONS ($T_C=25^\circ\text{C}$ unless otherwise specified)						
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
VBR, VR	Breakdown voltage, blocking voltage	$I_R = 100\mu\text{A}$	650			V
VF	Forward voltage	$I_F = 8\text{ A}$		1.3		
		$I_F = 8\text{ A}, T_J = 150^\circ\text{C}$		1.13		
IR	Reverse leakage current	$V_R = V_R \text{ rated}$		0.002		$\mu\text{ A}$
		$V_R = V_R \text{ rated}, T_J = 150^\circ\text{C}$		6.95		
CT	Junction capacitance	$V_R=650\text{ V}$		7.4		pF

DYNAMIC RECOVERY CHARACTERISTICS ($T_c=25^\circ\text{C}$ unless otherwise specified)								
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Units	
T_{RR}	Reverse recovery time	$T_J = 25^\circ\text{C}$	$I_F = 8\text{ A}$ $dI_F/dt = 200\text{ A}/\mu\text{s}$ $V_R = 400\text{ V}$		95		ns	
		$T_J = 125^\circ\text{C}$			120			
I_{RRM}	Peak recovery current	$T_J = 25^\circ\text{C}$				3.46		A
		$T_J = 125^\circ\text{C}$				6.65		
Q_{RR}	Reverse recovery charge	$T_J = 25^\circ\text{C}$				191		nC
		$T_J = 125^\circ\text{C}$				499		

Fig.1 Typical Forward Voltage Drop Characteristics

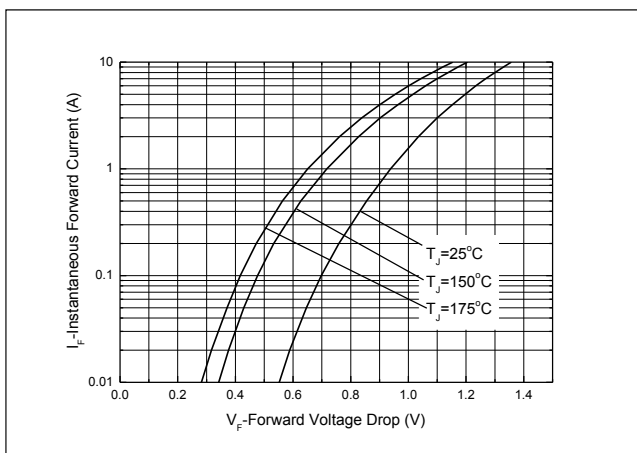


Fig.2 Typical Values of Reverse Current vs. Reverse Voltage

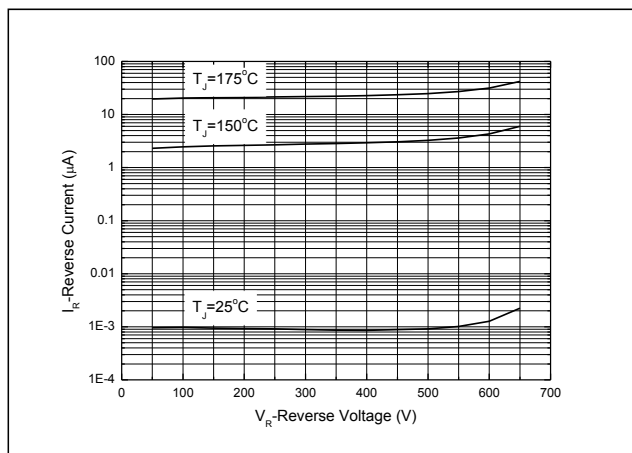


Fig.3 Typical Junction Capacitance vs. Reverse Voltage

