

ESTF25D60U

Ultra-Fast Soft Recovery Diode Module

DESCRIPTION

FRED 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.

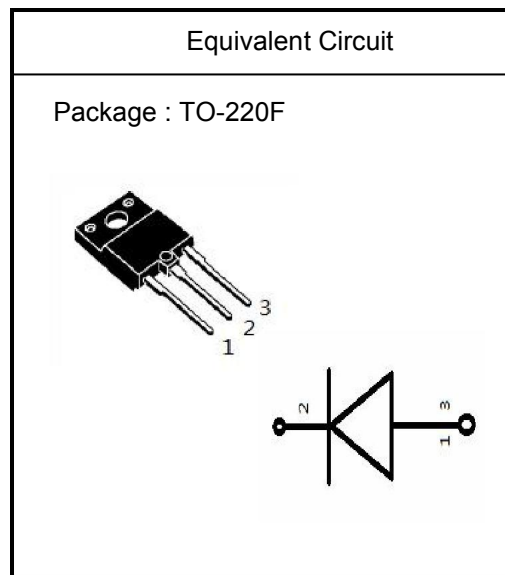
PRODUCT FEATURES

- Ultrafast Recovery Time
- Low Recovery Loss
- Soft Reverse Recovery Characteristics
- Low Leakage Current
- Low Forward Voltage
- High Surge Current Capability

APPLICATIONS

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS

Equivalent Circuit and Package



ABSOLUTE MAXIMUM RATINGS

$T_C=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
V_R	Maximum D.C. Reverse Voltage		600	V
V_{RRM}	Maximum Repetitive Reverse Voltage		600	V
$I_{F(AV)}$	Average Forward Current	$T_C=110^{\circ}\text{C}$	25	A
$I_{F(RMS)}$	RMS Forward Current	$T_C=110^{\circ}\text{C}$	30	A
I_{FSM}	Non-Repetitive Surge Forward Current	$T_J=45^{\circ}\text{C}$, $t=10\text{ms}$, 50Hz, Sine	150	A
P_D	Power Dissipation		83	W
T_J	Junction Temperature		-40 to +150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range		-40 to +150	$^{\circ}\text{C}$
Torque	Module-to-Sink	Recommended (M3)	1.1	N·m
$R_{\theta JC}$	Thermal Resistance	Junction-to-Case	1.5	$^{\circ}\text{C/W}$
Weight			2.1	g

ELECTRICAL CHARACTERISTICS

T_C=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{RM}	Reverse Leakage Current	V _R =600V	--	--	10	μA
		V _R =600V, T _J =125°C	--	--	250	μA
V _F	Forward Voltage	I _F =25A	--	1.5	1.8	V
		I _F =25A, T _J =125°C	--	1.2		V
t _{rr}	Reverse Recovery Time	I _F =1A, V _R =30V, di _F /dt=-200A/μs	--	45	--	ns
t _{rr}	Reverse Recovery Time	V _R =300V, I _F =15A di _F /dt=-200A/μs, T _J =25°C	--	75	--	ns
I _{RRM}	Max. Reverse Recovery Current		--	4	--	A
t _{rr}	Reverse Recovery Time	V _R =300V, I _F =25A di _F /dt=-200A/μs, T _J =125°C	--	200	--	ns
I _{RRM}	Max. Reverse Recovery Current		--	8	--	A

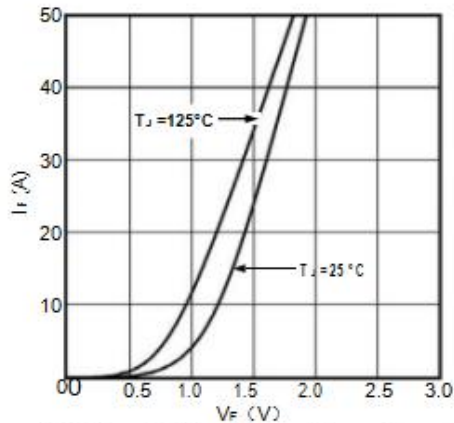


Fig1. Forward Voltage Drop vs Forward Current

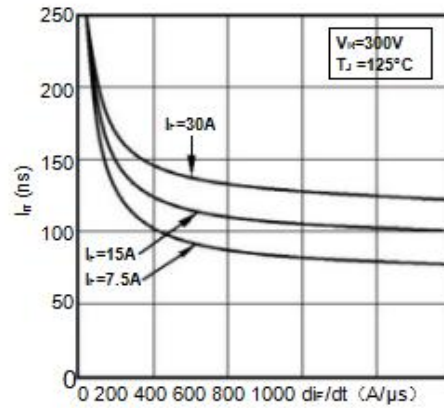


Fig2. Reverse Recovery Time vs di/dt

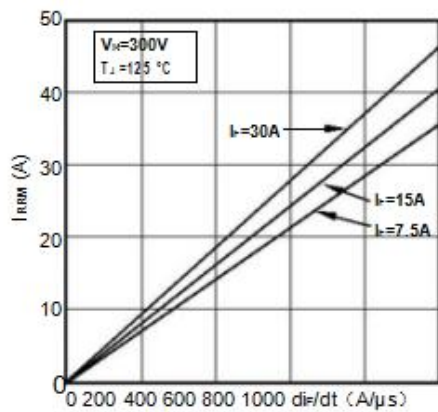


Fig3. Reverse Recovery Current vs di/dt

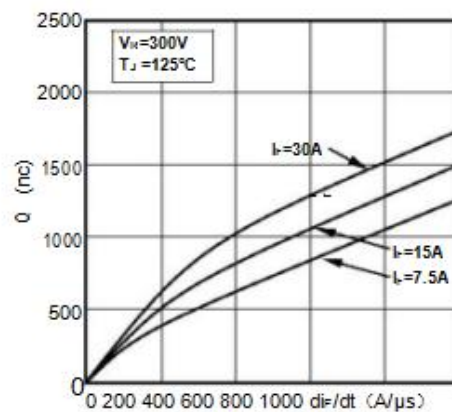


Fig4. Reverse Recovery Charge vs di/dt

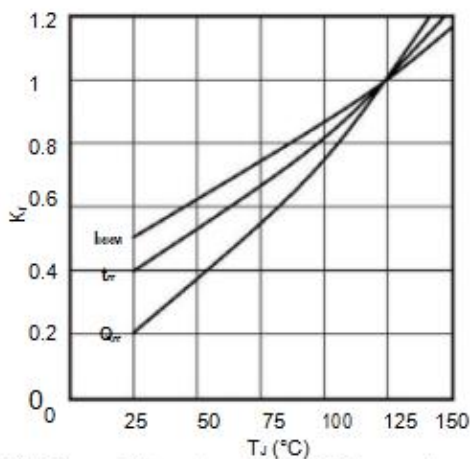


Fig5. Dynamic Parameters vs Junction Temperature

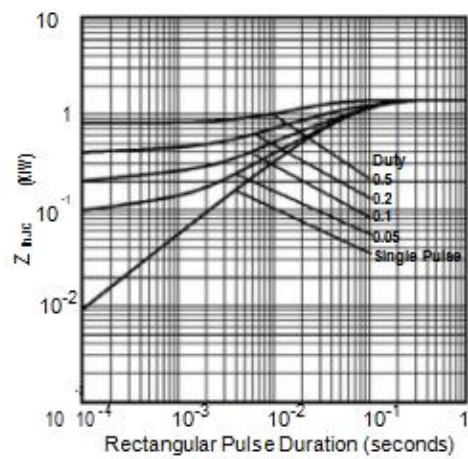


Fig6. Transient Thermal Impedance

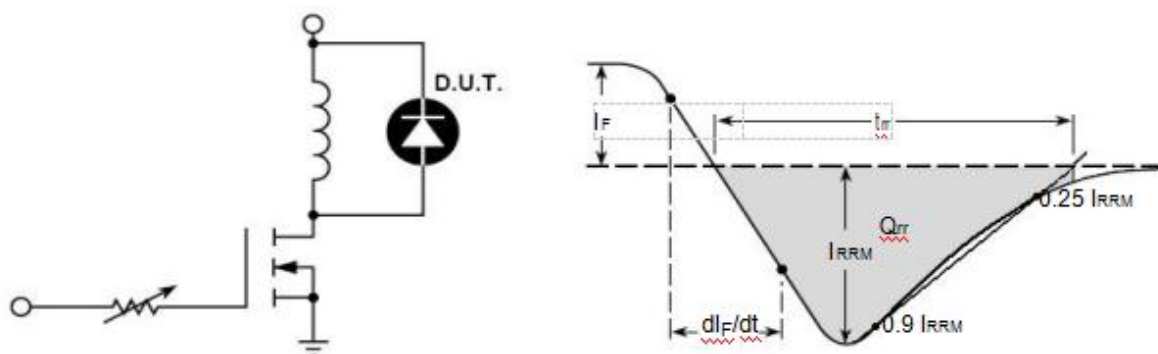


Fig7. Diode Reverse Recovery Test Circuit and Waveform