F25D60U

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

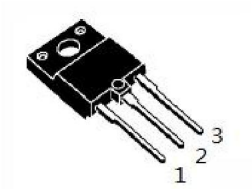
APPLICATIONS

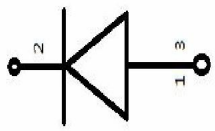
- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS

Equivalent Circuit and Package

Equivalent Circuit

Package : TO-220F





ABSOLUTE MAXIMUM RATINGS

T_C=25°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°C	25	A
$I_{F(RMS)}$	RMS Forward Current	T_C=110°C	30	A
I_{FSM}	Non-Repetitive Surge Forward Current	T_J=45°C, t=10ms, 50Hz, Sine	150	A
P_D	Power Dissipation		83	W
T_J	Junction Temperature		-40 to +150	°C
T_{STG}	Storage Temperature Range		-40 to +150	°C
Torque	Module-to-Sink	Recommended（M3）	1.1	N·m
$R_{\theta JC}$	Thermal Resistance	Junction-to-Case	1.5	°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	--	75	--	ns
I_{RRM}	Max. Reverse Recovery Current	di_F/dt=-200A/μs, T_J=25°C	--	4	--	A
t_{rr}	Reverse Recovery Time	V_R=300V, I_F=25A	--	200	--	ns
I_{RRM}	Max. Reverse Recovery Current	di_F/dt=-200A/μs, T_J=125°C	--	8	--	A

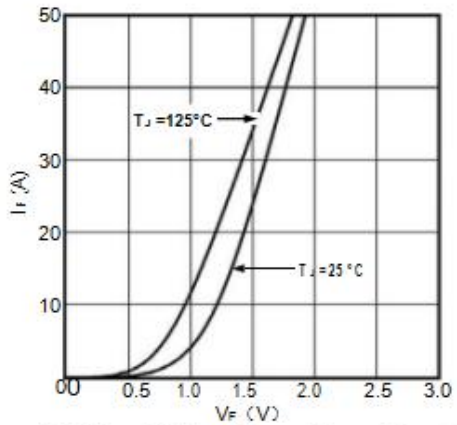


Fig1. Forward Voltage Drop vs Forward Current

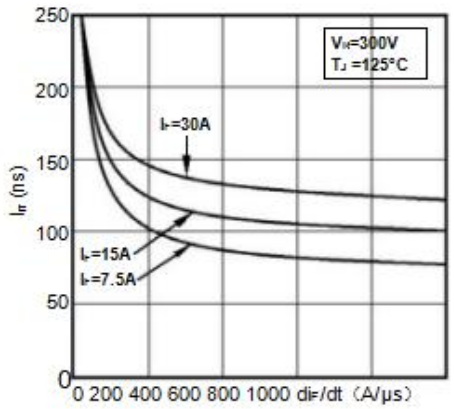


Fig2. Reverse Recovery Time vs diF/dt

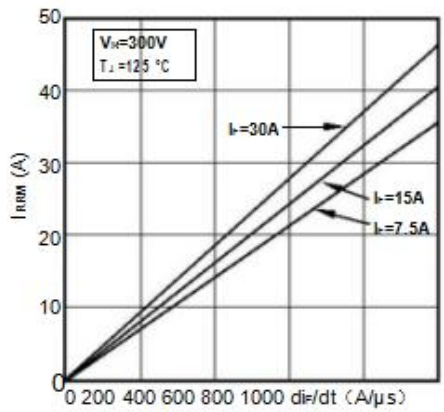


Fig3. Reverse Recovery Current vs diF/dt

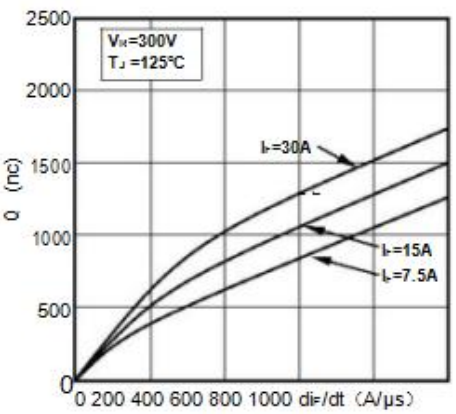


Fig4. Reverse Recovery Charge vs diF/dt

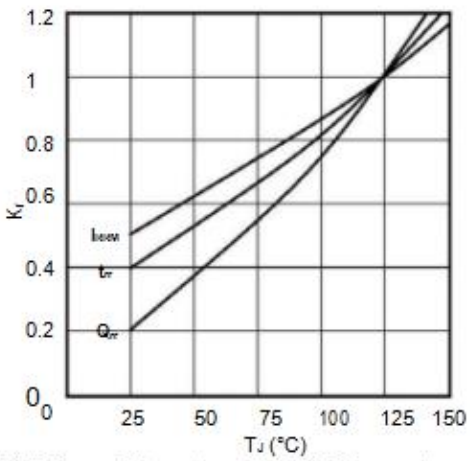


Fig5. Dynamic Parameters vs Junction Temperature

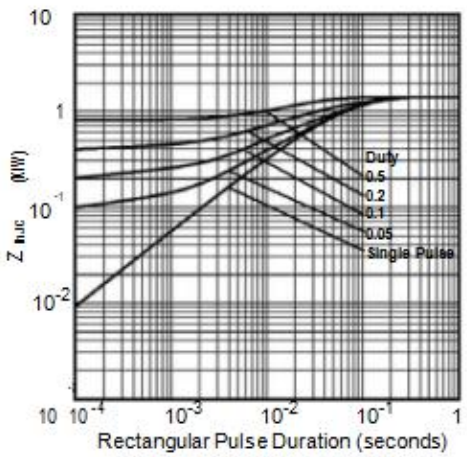


Fig6. Transient Thermal Impedance

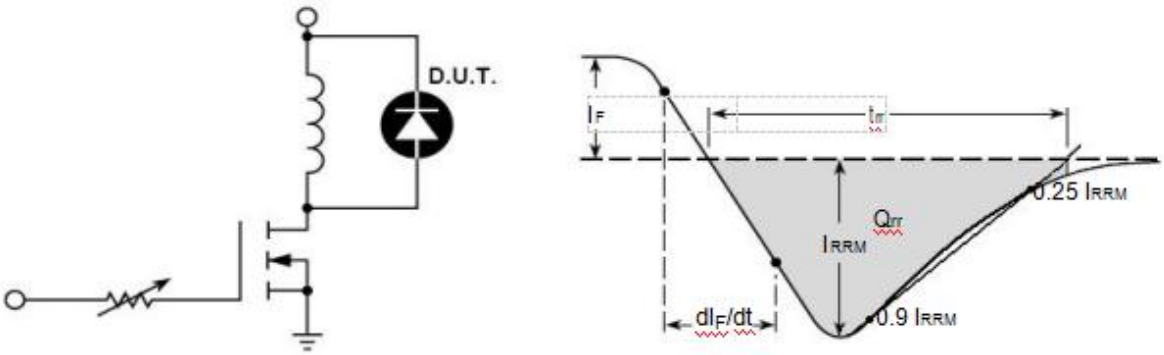


Fig7. Diode Reverse Recovery Test Circuit and Waveform