



FRED Modules

V_{RRM} 600V

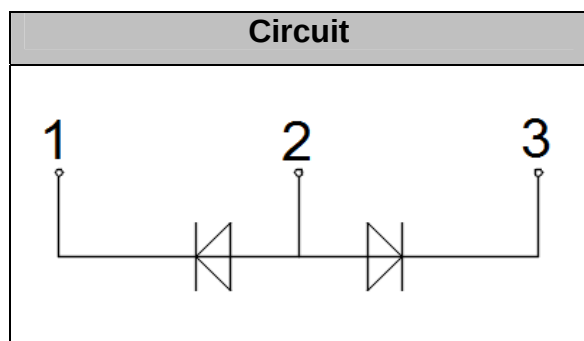
I_{FAV} 100 A

Applications

- Inversion Welder
- Uninterruptible Power Supply (UPS)
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Power Factor Correction (PFC) Circuit
- Converter & Chopper

Features

- Soft Reverse Recovery Characteristics
- Ultrafast Reverse Recovery Time
- Low Reverse Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Inductance Package
- Insulation Encapsulation



Maximum Ratings

Symbol	Conditions	Values	Units
V_R		600	V
V_{RRM}		600	V
$I_{F(AV)}$	$T_C=100^{\circ}\text{C}$, Per Diode	100	A
	$T_C=100^{\circ}\text{C}$, Per Module	200	A
$I_{F(RMS)}$	$T_C=100^{\circ}\text{C}$, Per Diode	150	A
I_{FSM}	1/2 Cycle , 50Hz, Sine	1300	A
	1/2 Cycle , 60Hz, Sine	1426	A
I^2t	$T_J=45^{\circ}\text{C}$, $t=10\text{ms}$, 50Hz, Sine	8450	A^2s
	$T_J=45^{\circ}\text{C}$, $t=8.3\text{ms}$, 60Hz, Sine		A^2s
P_D		280	W
Visol	AC, $T_{on}=1\text{min}$	3000	V
T_J		-40 to +150	$^{\circ}\text{C}$
T_{STG}		-40 to +125	$^{\circ}\text{C}$
Torque	Recommended (M5)	$3\pm 15\%$	N·m
Torque	Recommended (M6)	$4.5\pm 15\%$	N·m
Weight		100	g

Thermal Characteristics

Symbol	Conditions	Values	Units
$R_{th(j-c)}$	Junction-to-Case, Per Diode	0.32	$^{\circ}\text{C/W}$
$R_{th(j-c)}$	Junction-to-Case, Per Module	0.16	$^{\circ}\text{C/W}$

Electrical Characteristics

Symbol	Conditions	Values			Units
		Min.	Typ.	Max.	
I_{RM}	$V_R=600V$	--	--	0.5	mA
	$V_R=600V, T_J=125^{\circ}C$	--	--	5	mA
V_F	$I_F=100A$	--	1.20	1.40	V
	$I_F=100A, T_J=125^{\circ}C$	--	1.05	1.25	V
t_{rr}	$I_F=1A, V_R=30V, di_F/dt=-200A/\mu s$	--	45	50	ns
t_{rr}	$V_R=300V, I_F=100A, di_F/dt=-200A/\mu s, T_J=25^{\circ}C$	--	105	--	ns
I_{RRM}		--	10	--	A
t_{rr}	$V_R=300V, I_F=100A, di_F/dt=-200A/\mu s, T_J=125^{\circ}C$	--	220	--	ns
I_{RRM}		--	18	--	A

Performance Curves

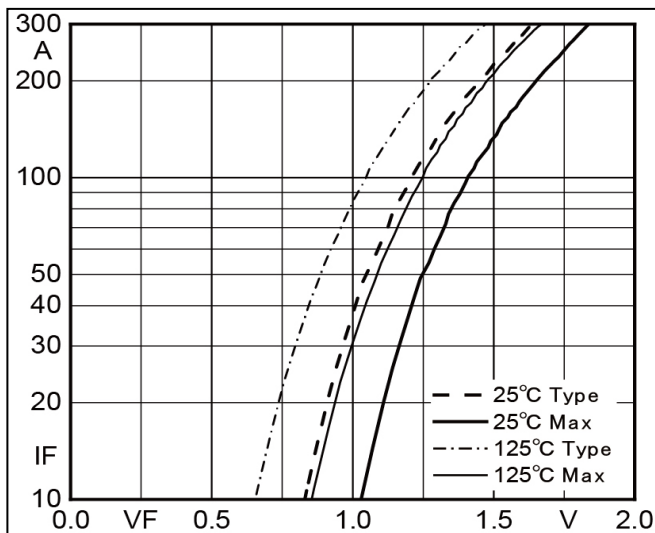


Fig1. Forward Voltage Drop vs Forward Current

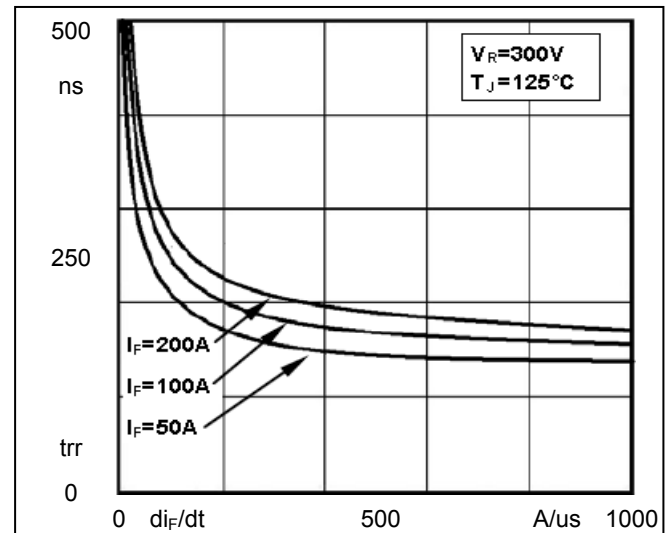


Fig2. Reverse Recovery Time vs di_F/dt

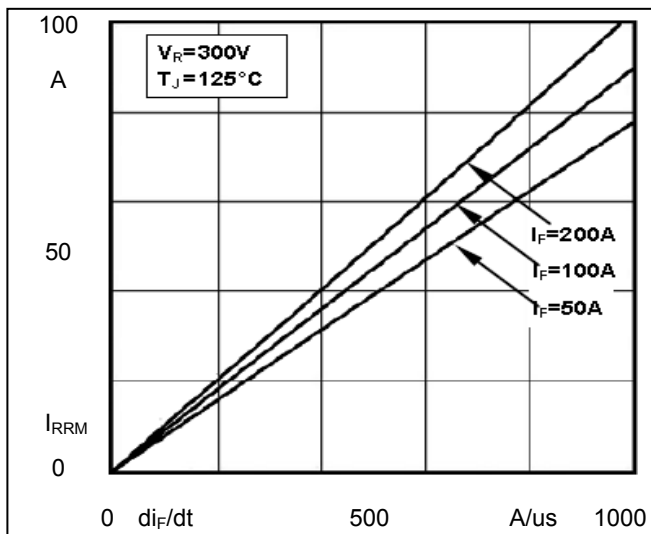


Fig3. Reverse Recovery Current vs di_F/dt

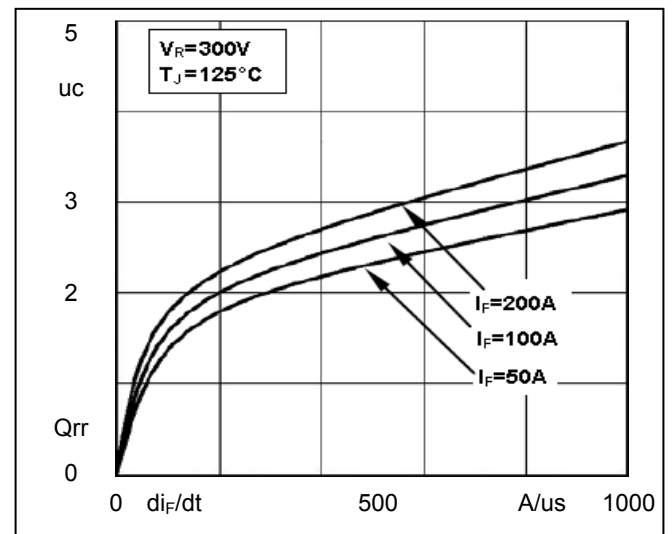
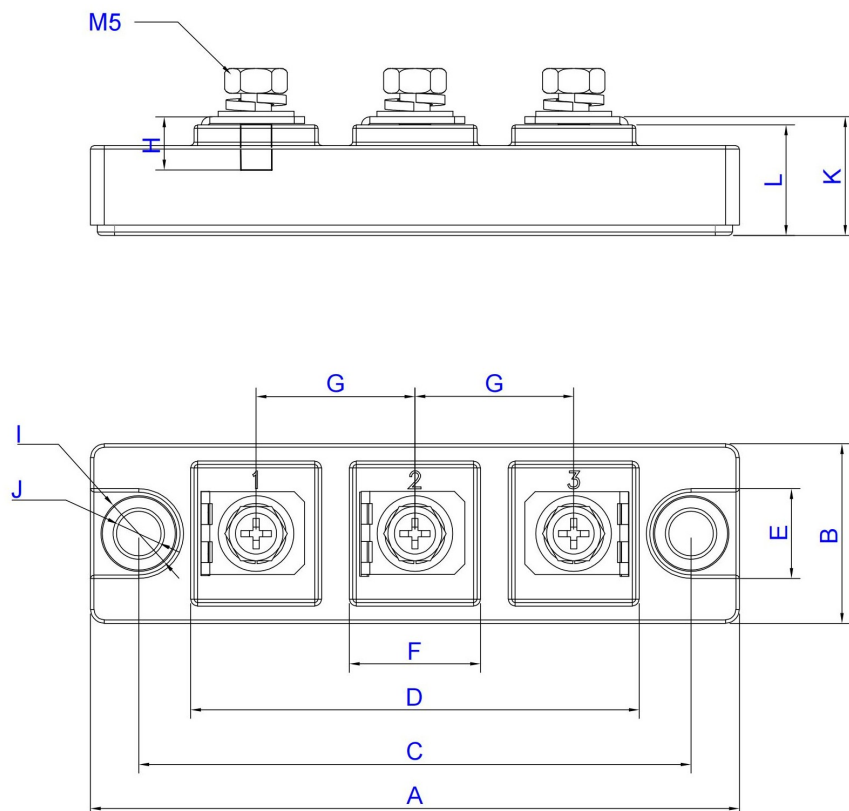


Fig4. Reverse Recovery Charge vs di_F/dt

Package Outline Information

CASE: F5



DIM	Min (mm)	Max (mm)	Note
A	93.5	94.5	
B	25.5	26.5	
C	79.5	80.5	
D	64.5	65.5	
E	12.5	13.5	
F	18.5	19.5	
G	22.5	23.5	
H	6	7	
I	10.5	11.5	Ø
J	6	7	Ø
K	16.5	17.5	
L	15.5	16.5	

Packing Standard

Item	Length: A (mm)	Width: B (mm)	Height: C (mm)	Quantity (PCS)
Inner Box	276	258	40	10
Outer Carton	545	295	240	120



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