DIODE

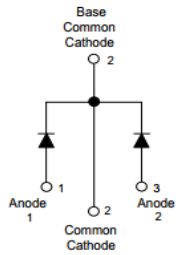
Features

- Ultrafast recovery time
- Low forward voltage drop
- 150 ˚C operating junction temperature
- Low leakage current
- Designed and qualified according to JEDEC-JESD47

TO-3P

1. Anode 2. Gathode 3. Anode

V_R : 620V
$I_{F(AV)}$: 50A
V_F at I_F : 1.5V



General Description

This FRED is designed with optimized performance of forward voltage drop and ultrafast recovery time. the platinum doped life time control, guarantee the best overall performance ruggedness and reliability characteristics. This devices are intended for use in the output rectification stage of SMPS, UPS, DC/DC converters as freewheeling diode in low voltage inverters. Their extremely optimized stored charge and low recovery current minimize the switching losses and reduce over dissipation in the switching element.

Order Codes

Item	Sales Type	Marking	Package	Packaging
1	SW W 50CPF06	SW50CPF06	TO-3P	TUBE

Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_R	Repetitive peak reverse voltage	620	V
$I_{F(AV)}$	Average rectified forward current (@T_C=150ºC)	50	A
TJ, TStg	Operating junction and storage temperatures	-55 ~ + 150	ºC

Electrical characteristic (T_C = 25ºC unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_R	Breakdown voltage,blocking voltage	I_R=100uA	620			V
V_F	Forward voltage	I_F=3A		0.9	1.13	V
		I_F=50A			1.5	V
		I_F=50A, T_J= 150 ˚C			1.3	V
I_R	Reverse leakage current	V_R=600V			500	nA
		V_R=600V, T_J= 150 ˚C			500	uA
CT	Junction capacitance	V_R=600V		30		pF

DYNAMIC RECOVERY CHARACTERISTICS (TJ= 25 °C unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{rrm}	Peak recovery current	I_F=50A, di/dt=200A/us, V_R =100V		5.9		A
T_{rr}	Reverse recovery time			59		ns
Q_{rr}	Reverse recovery Charge			190		nC

THERMAL - MECHANICAL SPECIFICATIONS

Symbol	Parameter	Value	Unit
R_{thjc}	Thermal resistance, Junction to case (Per Leg)	0.57	°C/W
R_{thjc}	Thermal resistance, Junction to case (Per Package)	0.62	°C/W
R_{thja}	Thermal resistance, Junction to ambient(Per Leg)	35.5	°C/W
R_{thja}	Thermal resistance, Junction to ambient(Per Package)	34.3	°C/W

Fig. 1. Typical Forward Voltage Drop Characteristics

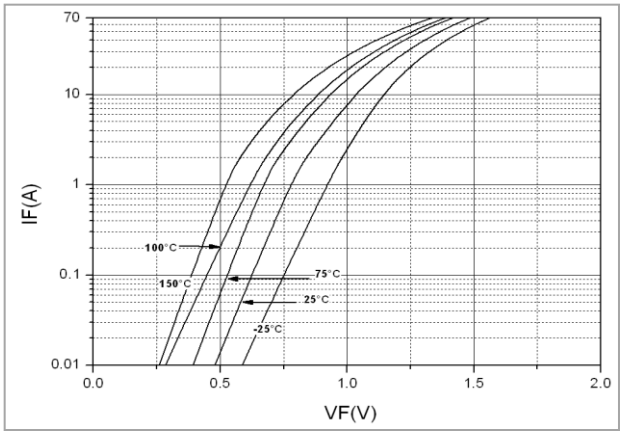


Fig. 2. Typical Values of Reverse Current vs. Reverse Voltage

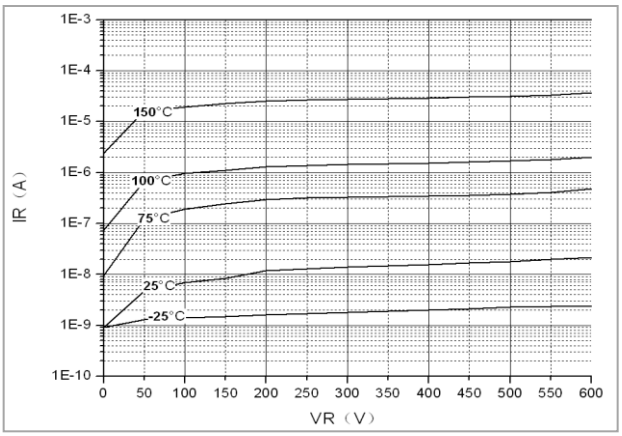


Fig. 3. Typical Junction Capacitance vs. Reverse Voltage

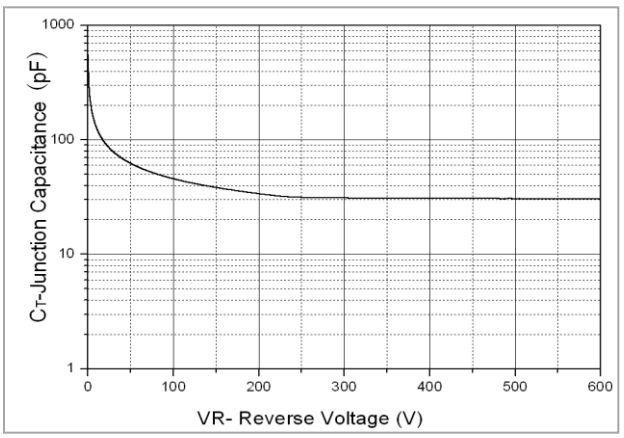


Fig. 4. Max. Thermal Impedance Z thJC Characteristics (Per Leg)

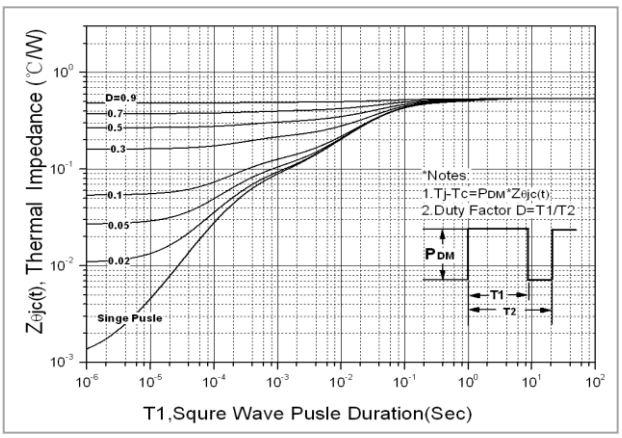


Fig 5. Max. Thermal Impedance Z thJC Characteristics (Per Package)

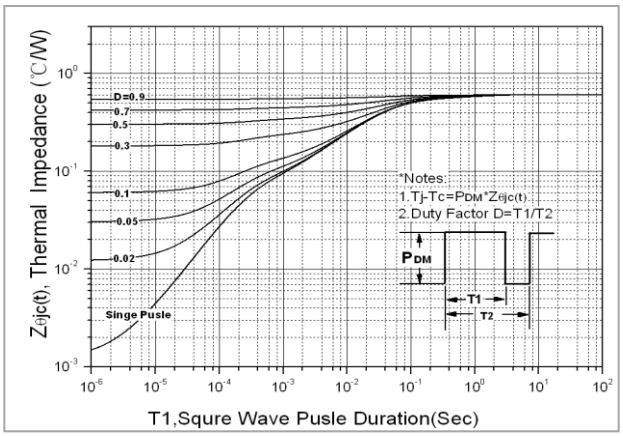


Fig. 6. Typical Reverse Recovery Current vs. di/dt

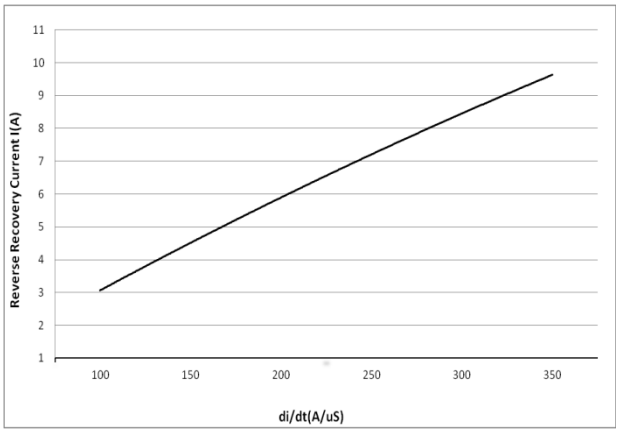


Fig. 7. Typical Reverse Recovery Time vs. di/dt

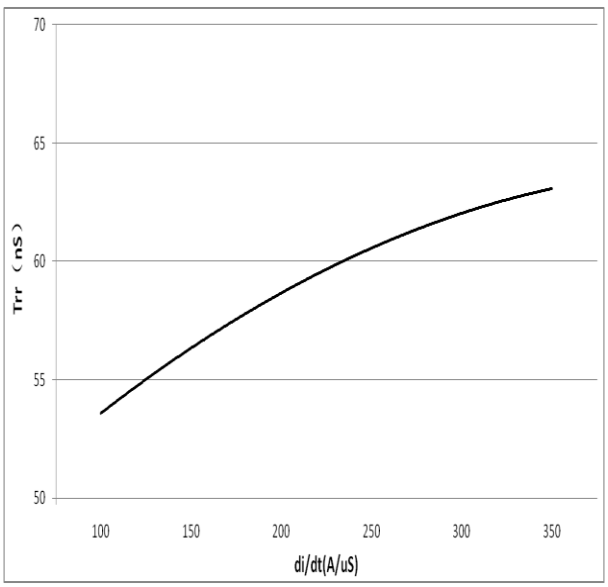


Fig. 8. Typical Stored Charge vs. di/dt

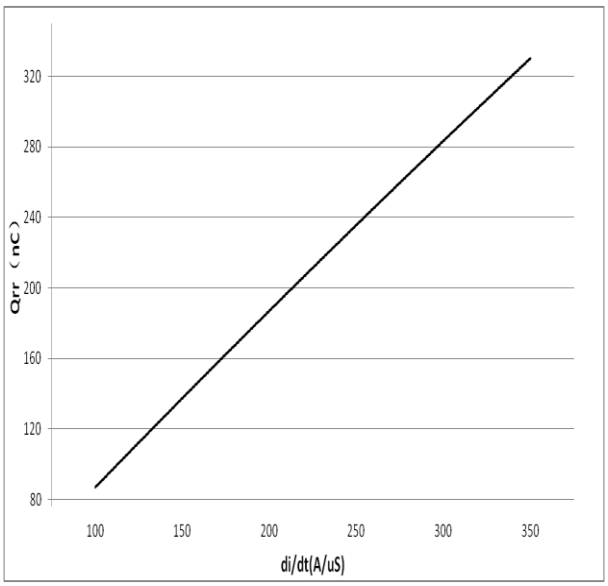


Fig. 9. Reverse Recovery Parameter Test Circuit & waveform

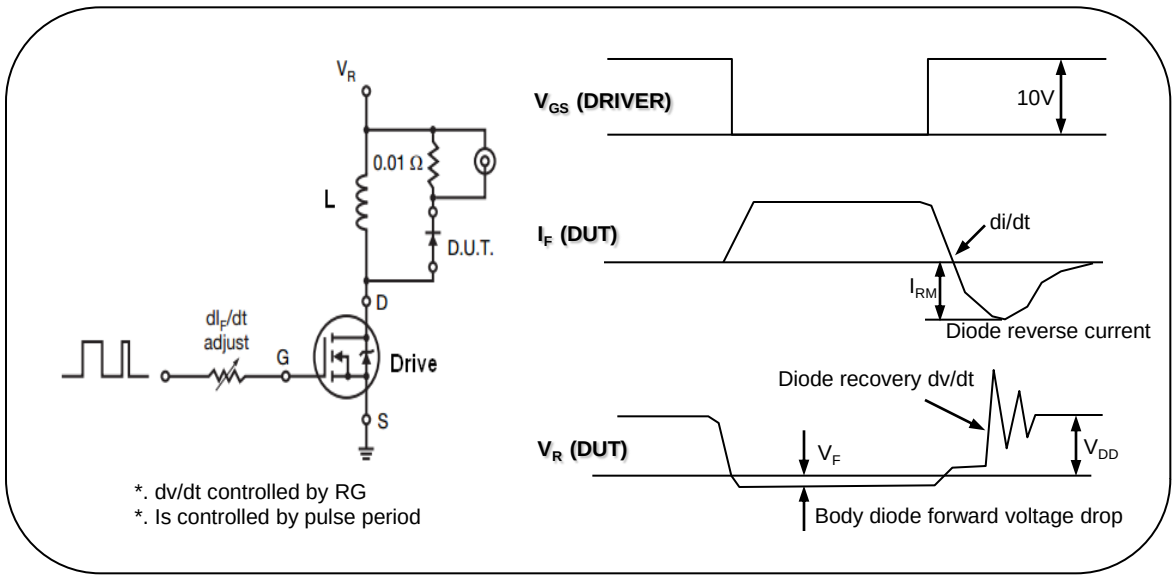


Fig. 10. Unclamped Inductive Test Circuit