

FRED Ultrafast Soft Recovery Diode, 30A/400V

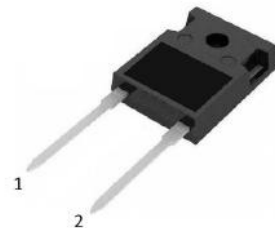
Description

These diodes are optimized to less losses and EMI/RFI in high frequency power conditioning system. The soft recovery character of the diodes offers buffer in most applications. These devices are suited for power converters and other applications where the switching losses are not significant portion of the total losses.

Features

- Ultrafast Recovery
- 175°C operating junction temperature
- High frequency operation
- Low IR value
- High surge capacity
- Epitaxial chip construction

Product Summary	
V_R	400 V
$I_{F(AV)}$	30A
t_{rr}	25ns



Application

- Inverter welding
- Switched mode power supply
- UPS

Absolute Maximum Ratings				
Parameter	Symbol	Test Conditions	Values	Units
Repetitive peak reverse voltage	V_{RRM}		400	V
Continuous forward current	$I_{F(AV)}$	$T_C = 110^\circ\text{C}$	30	A
Single pulse forward current	I_{FSM}	$T_C = 25^\circ\text{C}$	300	
Maximum repetitive forward current	I_{FRM}	Square wave, 20kHz	60	
Operating junction	T_J		175	$^\circ\text{C}$
Storage temperatures	T_{stg}		-55 to +175	$^\circ\text{C}$

Electrical characteristics (Ta=25°C unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min	Typ.	Max.	Units
Breakdown voltage Blocking voltage	V_{BR}, V_R	$I_R=100\mu A$	400			V
Forward voltage (Per Diode)	V_F	$I_F=30 A$		1.25	1.45	
		$I_F=30 A, T_J=125^\circ C$		1.15	1.35	
Reverse leakage current(Per Diode)	I_R	$V_R=400V$			30	μA
		$T_J=150^\circ C, V_R=400V$			300	
Reverse recovery time(Per Diode)	t_{rr}	$I_F=0.5A, I_R=1A, I_{RR}=0.25A$			40	ns
		$I_F=1A, V_R=30V, di/dt=200A/\mu s$		25	35	

Thermal characteristics

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	—	0.70	$^\circ C/W$

Typical Characteristics

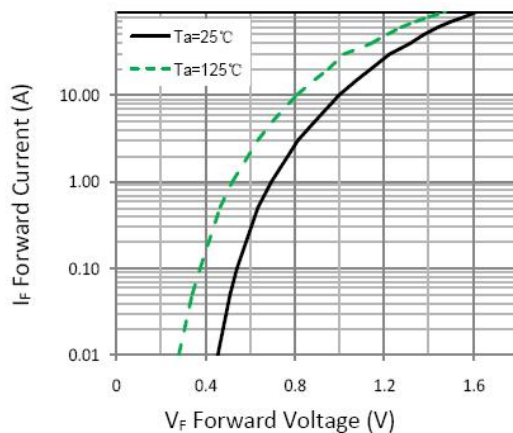


Figure 1. Forward Characteristic(typ.)

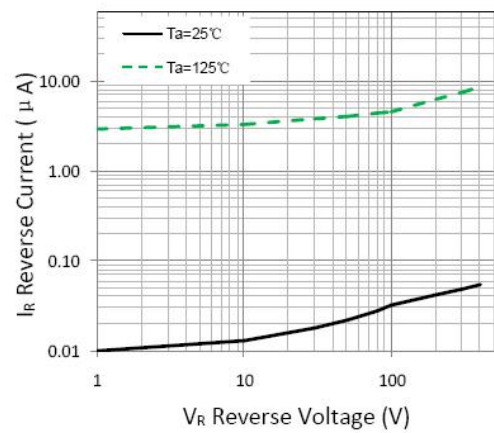
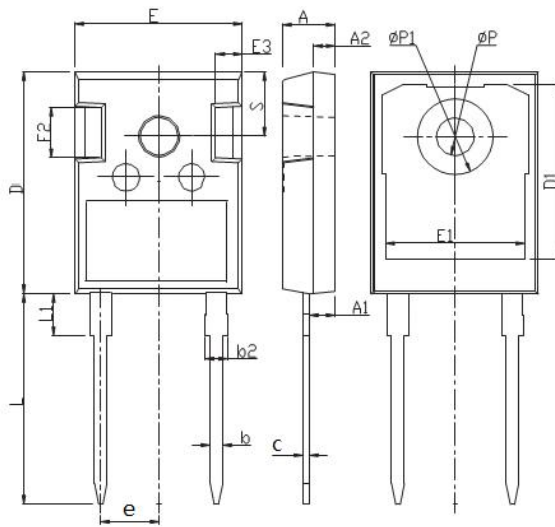


Figure 2. Reverse Characteristic (typ.)

Package Information (TO-247-2 PACKAGE)



Symbol	Dimensions(millimeters)	
	Min.	Max.
A	4.80	5.20
A1	2.21	2.61
A2	1.85	2.15
b	1.10	1.30
b2	1.90	2.15
c	0.50	0.75
D	20.70	21.30
D1	16.25	16.85
e	5.25	5.65
E	15.60	16.00
E1	13.06	13.46
E2	4.80	5.20
E3	1.80	2.50
L	19.62	20.22
L1	4.00	4.30
ϕP	3.40	3.80
$\phi P1$	7.00	7.30
S	5.95	6.35