

FRED
Ultrafast Soft Recovery Diode, 600V, 40A

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.

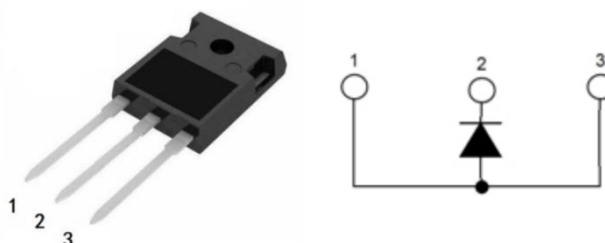
Features:

- Ultrafast Recovery
- 175°C operating junction temperature
- High frequency operation
- Low IR value
- Very Low forward voltage
- Epitaxial chip construction

Product Summary	
V_R	600 V
$I_{F(AV)}$	40 A
t_{rr}	45 ns

Applications:

- Switched mode power supply
- PFC
- UPS



Absolute Maximum Ratings						
Parameter	Symbol	Test Conditions	Values	Units		
Repetitive peak reverse voltage	V_{RRM}		650	V		
Continuous forward current	$I_{F(AV)}$	$T_A=110^{\circ}C$	40	A		
Single pulse forward current	I_{FSM}	$T_A=25^{\circ}C$	400	A		
Maximum repetitive forward current	I_{FRM}	Square wave, 20kHz	80	A		
Operating junction	T_j		175	$^{\circ}C$		
Storage temperatures	T_{stg}		-55 to +175	$^{\circ}C$		
Electrical characteristics ($T_a=25^{\circ}C$ unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Breakdown voltage	V_{BR}	$I_R=100\mu A$	650			V
Blocking voltage	V_R					
Forward voltage	V_F	$I_F=40 A$		1.35	1.65	V
		$I_F=40 A, T_j=125^{\circ}C$		1.25	1.50	V
Reverse leakage current	I_R	$V_R=V_{RRM}$			30	μA
		$T_j=150^{\circ}C, V_R=650V$			300	μA
Reverse recovery time	t_{rr}	$I_F=0.5A, I_R=1A, I_{RR}=0.25A$			70	ns
		$I_F=1A, V_R=30V, di/dt=200A/us$		32	45	ns
Thermal characteristics						
Parameter	Symbol	Typ	MAX		Units	
Junction-to-Case	R_{thJC}	-	0.80		$^{\circ}C/W$	

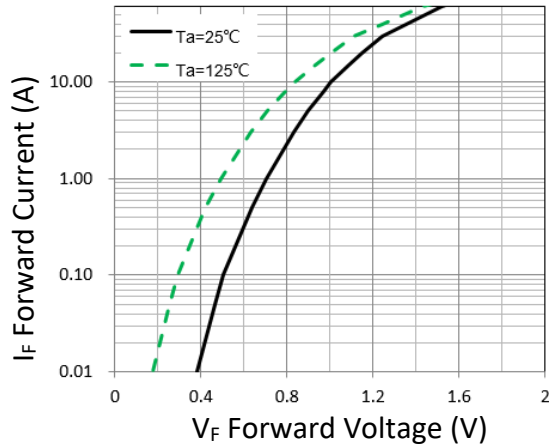


Figure 1. Forward Characteristic(typ.)

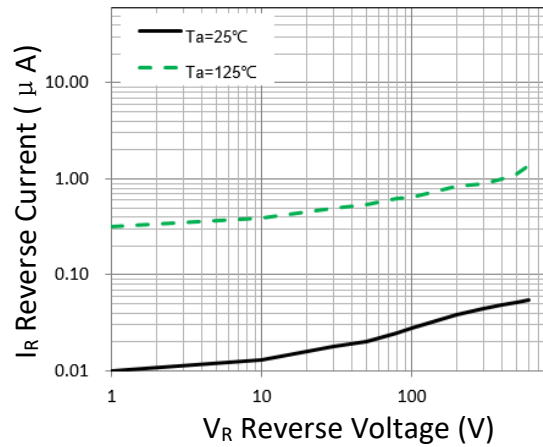


Figure 2. Reverse Characteristic (typ.)

Package Information		
TO-247 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
b1	2.55	2.85
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
ΦP1	7.00	7.30
S	5.95	6.35

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