

## FRED

### Ultrafast Soft Recovery Diode, 600V, 30A

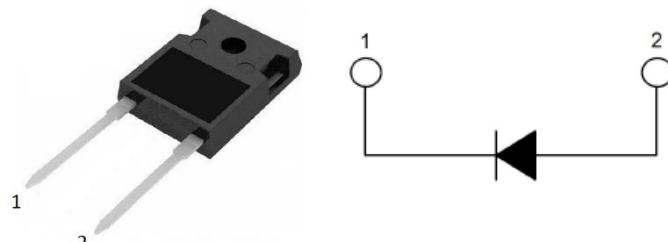
**Description:**

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
$I_{F(AV)}$	30 A
$t_{rr}$	35 ns

**Applications:**

- Switched mode power supply
- PFC
- UPS

Absolute Maximum Ratings				
Parameter	Symbol	Test Conditions	Values	Units
Repetitive peak reverse voltage	$V_{RRM}$		600	V
Continuous forward current	$I_{F(AV)}$	$T_A=110^\circ C$	30	A
Single pulse forward current	$I_{FSM}$	$T_A=25^\circ C$	270	A
Maximum repetitive forward current	$I_{FRM}$	Square wave, 20kHz	50	A
Operating junction	$T_j$		175	°C
Storage temperatures	$T_{stg}$		-55 to +175	°C

**Electrical characteristics (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Breakdown voltage	$V_{BR}$					V
Blocking voltage	$V_R$	$I_R=100\mu A$	600			
Forward voltage	$V_F$	$I_F=30 A$		1.90	2.75	V
		$I_F=30 A, T_j =125^\circ C$		1.80	2.50	V
Reverse leakage current	$I_R$	$V_R=V_{RRM}$			30	$\mu A$
		$T_j=150^\circ C, V_R=600V$			300	$\mu A$
Reverse recovery time	$t_{rr}$	$I_F=0.5A, I_R=1A, I_{RR}=0.25A$			40	ns
		$I_F=1A, V_R=30V, dI/dt =200A/us$		23	35	ns

**Thermal characteristics**

Parameter	Symbol	Typ	MAX	Units
Junction-to-Case	$R_{thJC}$	-	1.00	°C/W

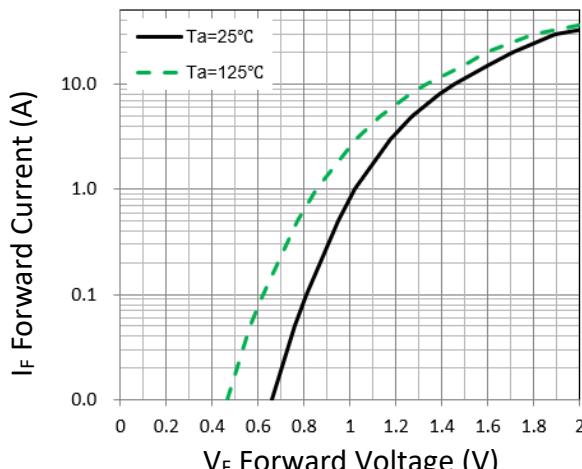


Figure 1. Forward Characteristic(typ.)

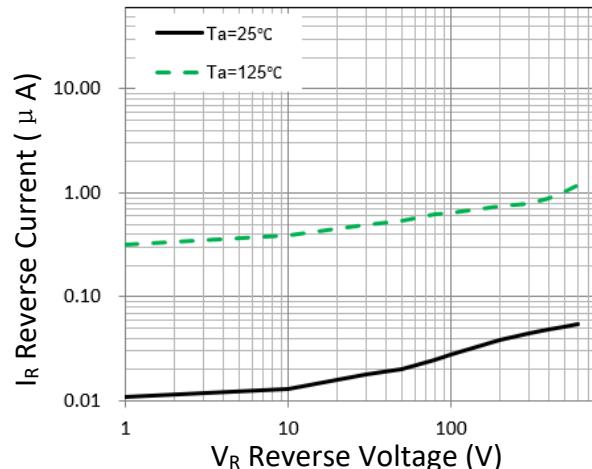


Figure 2. Reverse Characteristic (typ.)

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
ΦP1	7.00	7.30
S	5.95	6.35

The diagram shows a top-down view of the TO-247-2 package. Key dimensions labeled include: E (total width), D (total height), A (width of the lead), A1 (width of the lead tip), A2 (width of the lead base), b (lead thickness), b2 (lead thickness at the base), c (lead pitch), D1 (width of the lead base), e (lead height), E1 (lead height), E2 (lead height), E3 (lead height), L (lead length), L1 (lead length), ΦP (lead diameter), and ΦP1 (lead base diameter). The package is shown with its internal structure, including the die and bond wires, with various leads extending downwards.