

FRED**Ultrafast Soft Recovery Diode, 400V, 20A****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.

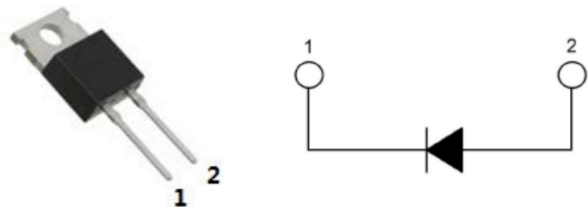
Features:

- 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
$I_{F(AV)}$	20 A
t_{rr}	35 ns

Applications:

- Switched mode power supply
- Freewheeling diode, Snubber diode
- UPS

**Absolute Maximum Ratings**

Parameter	Symbol	Test Conditions	Values	Units
Repetitive peak reverse voltage	V_{RRM}		400	V
Continuous forward current	$I_{F(AV)}$	$T_A=110^\circ\text{C}$	20	A
Single pulse forward current	I_{FSM}	$T_A=25^\circ\text{C}$	160	A
Maximum repetitive forward current	I_{FRM}	Square wave, 20kHz	60	A
Operating junction	T_j		175	$^\circ\text{C}$
Storage temperatures	T_{stg}		-55 to +175	$^\circ\text{C}$

Electrical characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Breakdown voltage	V_{BR}	$I_R=100\mu\text{A}$	400			V
Blocking voltage	V_R					
Forward voltage	V_F	$I_F=20\text{ A}$		1.20	1.35	V
		$I_F=20\text{ A}, T_j=125^\circ\text{C}$		1.10	1.25	V
Reverse leakage current	I_R	$V_R=V_{RRM}$			20	μA
		$T_j=150^\circ\text{C}, V_R=400\text{V}$			200	μA
Reverse recovery time	t_{rr}	$I_F=0.5\text{A}, I_R=1\text{A}, I_{RR}=0.25\text{A}$			35	ns
		$I_F=1\text{A}, V_R=30\text{V}, di/dt=200\text{A}/\mu\text{s}$		22	35	ns

Thermal characteristics

Parameter	Symbol	Typ	MAX	Units
Junction-to-Case	R_{thJC}	-	3.0	$^\circ\text{C}/\text{W}$

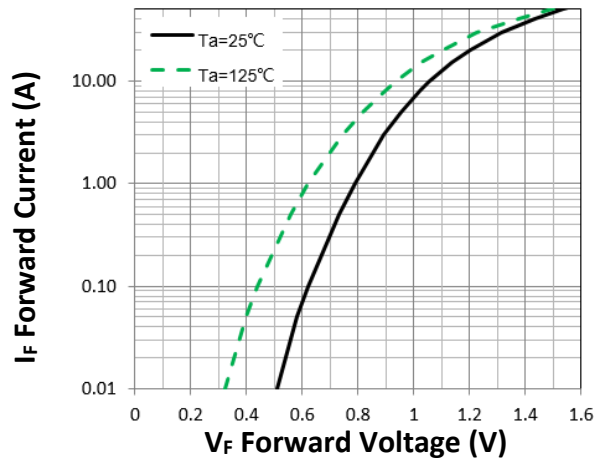


Figure 1. Forward Characteristic(typ.)

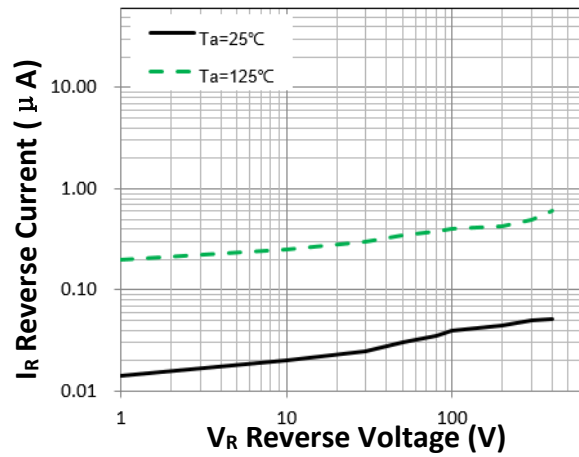


Figure 2. Reverse Characteristic (typ.)

Package Information			
TO-220C-2 PACKAGE			
The diagram illustrates the TO-220C-2 package with three views: a front view, a side view, and a top view. The front view shows the package body with dimensions E (width), H (total height), H1 (height to mounting tab), H2 (height to lead), H3 (height to mounting hole), G (height to mounting hole), and ΦP (mounting hole diameter). The side view shows dimensions A (width), A1 (width to mounting tab), and A2 (width to lead). The top view shows dimensions b (lead width), b1 (lead width to mounting hole), and c (lead width to mounting hole). The package is labeled with 1 and 2 on the top view.	Symbol	Dimensions(millimeters)	
		Min.	Max.
	A	4.30	4.70
	A1	1.17	1.37
	A2	2.20	2.60
	b	0.60	1.00
	b1	1.17	1.37
	c	0.30	0.70
	e	2.34	2.74
	E	9.70	10.10
	H	15.50	15.90
	H1	9.00	9.40
	H2	12.58	13.58
	H3	2.80	3.20
	G	2.60	3.00
	ΦP	3.40	3.80