

## FRED

### Ultrafast Soft Recovery Diode, 650V, 15A

#### 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.

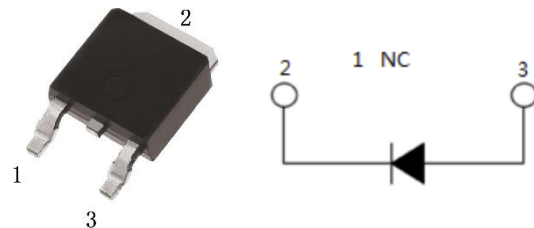
#### Features:

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

Product Summary	
$V_R$	650 V
$I_{F(AV)}$	15 A
$t_{rr}$	25 ns

#### Applications:

- Switched mode power supply
- Freewheeling diode, snubber diode
- Uninterruptible power supplies (UPS)



Absolute Maximum Ratings						
Parameter	Symbol	Test Conditions	Values			Units
Repetitive peak reverse voltage	$V_{RRM}$		650			V
Continuous forward current	$I_{F(AV)}$	$T_A=110^\circ\text{C}$	15			A
Single pulse forward current	$I_{FSM}$	$T_A=25^\circ\text{C}$	120			A
Maximum repetitive forward current	$I_{FRM}$	Square wave, 20kHz	30			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	$V_{BR}$	$I_R=100\mu\text{A}$	650			V
Blocking voltage	$V_R$					
Forward voltage	$V_F$	$I_F=15\text{ A}$		2.05	2.70	V
		$I_F=15\text{ A}, T_j=125^\circ\text{C}$		1.75	2.50	V
Reverse leakage current	$I_R$	$V_R=V_{RRM}$			20	$\mu\text{A}$
		$T_j=150^\circ\text{C}, V_R=650\text{V}$			200	$\mu\text{A}$
Reverse recovery time	$t_{rr}$	$I_F=0.5\text{A}, I_R=1\text{A}, I_{RR}=0.25\text{A}$			30	ns
		$I_F=1\text{A}, V_R=30\text{V}, di/dt=200\text{A}/\mu\text{s}$		18	25	ns
Thermal characteristics						
Parameter	Symbol	Typ	MAX			Units
Junction-to-Case	$R_{thJC}$	-	4.5			$^\circ\text{C}/\text{W}$

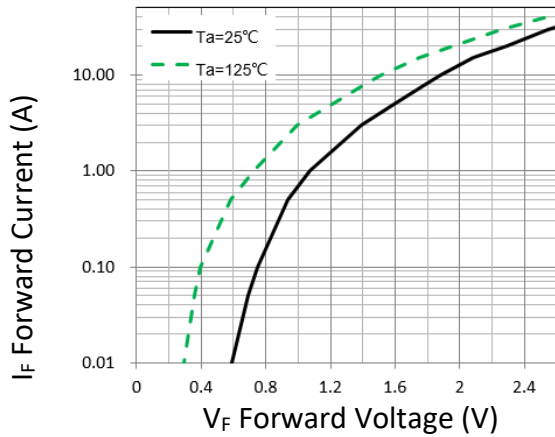


Figure 1. Forward Characteristic(typ.)

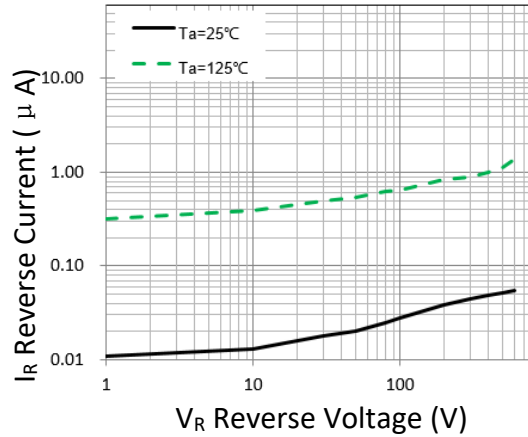


Figure 2. Reverse Characteristic (typ.)

Package Information		
TO-252 PACKAGE		
Symbol	Dimensions(millimeters)	
	Min.	Max.
A	2.20	2.40
A1	2.30	2.50
A2	1.10	1.20
A3	0	0.13
b	0.74	0.86
D	6.90	7.70
E	5.50	7.50
E1	0.50	1.10
e	2.20	2.40
L	2.95	3.25
L1	0.60	1.00
L2	0.60	1.00
P	25°	45°