

FRED Ultrafast Soft Recovery Diode, 5A/600V

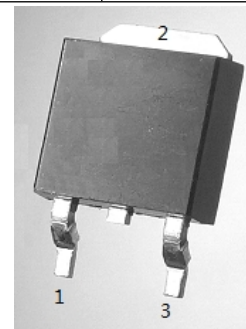
Description

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	600 V
$I_{F(AV)}$	5A
t_{rr}	27ns



Application

- Freewheeling diode, snubber diode
- Rectifiers in switch mode power supplies (SMPS)
- UPS



Absolute Maximum Ratings

Parameter	Symbol	Test Conditions	Values	Units
Repetitive peak reverse voltage	V_{RRM}		600	V
Continuous forward current	$I_{F(AV)}$	$T_C = 110^\circ\text{C}$	5	A
Single pulse forward current	I_{FSM}	$T_C = 25^\circ\text{C}$	60	
Maximum repetitive forward current	I_{FRM}	Square wave, 20kHz	15	
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	$I_R=100\mu A$	600			V
Forward voltage (Per Diode)	V_F	$I_F=5 A$		1.25	1.60	
		$I_F=5 A, T_j =125^\circ C$		1.15	1.50	
Reverse leakage current(Per Diode)	I_R	$V_R= 600V$			10	μA
		$T_j=150^\circ C, V_R=600V$			100	
Reverse recovery time(Per Diode)	t_{rr}	$I_F=0.5A, I_R=1A, I_{RR}=0.25A$			35	ns
		$I_F=1A, V_R=30V, di/dt =200A/us$		27	35	

Thermal characteristics

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	—	5.0	$^\circ C/W$

Typical Characteristics

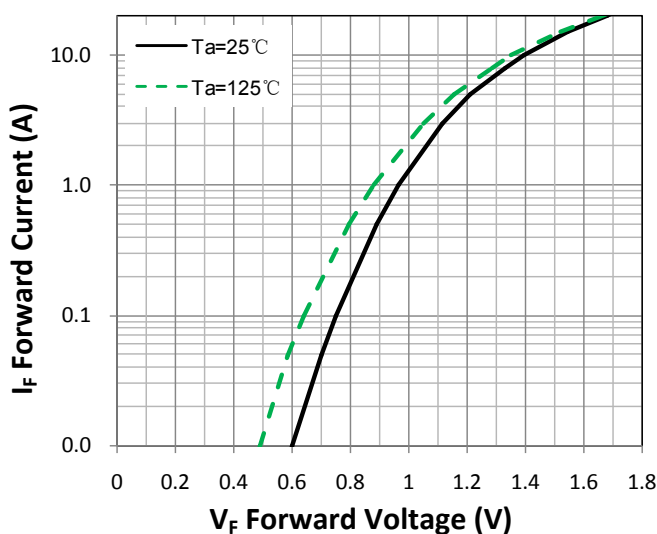


Figure 1. Forward Characteristic(typ.)

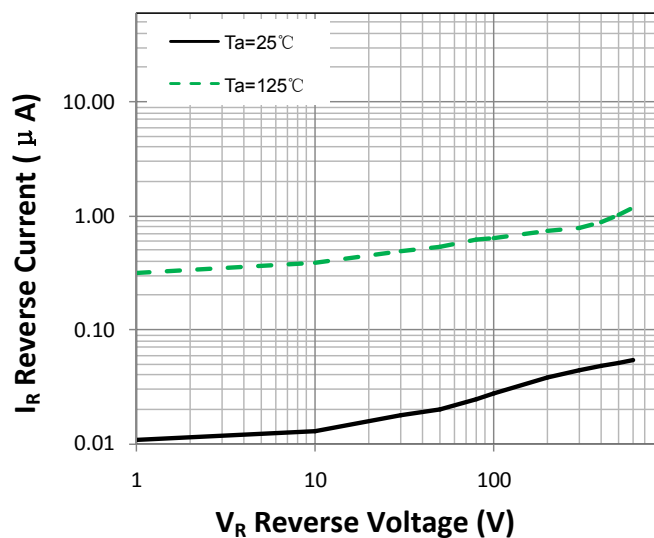
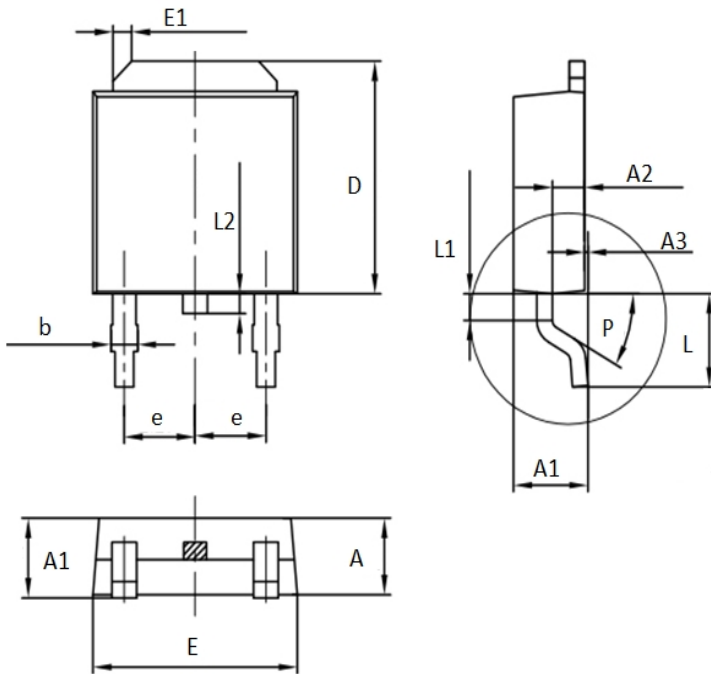


Figure 2. Reverse Characteristic (typ.)

Package Information (TO-252 PACKAGE)



Symbol	Dimensions(millimeters)	
	Min.	Max.
A	2.2	2.4
A1	2.3	2.5
A2	1.00	1.10
A3	0.05	0.15
b	0.80	0.90
D	6.90	7.00
E	6.5	6.7
E1	0.5×45°	0.7×45°
e	2.2	2.4
L	2.65	2.95
L1	0.65	0.95
L2	0.50	0.70
P	27°	33°