

15A 600V Fast Recovery Epitaxial Diode(FRED)

Features

VOLTAGE	600 V
CURRENT	15A

- Ultrafast Recovery Time
- Soft Recovery Characteristics
- Low Forward Voltage
- Low stored Charge
- Low Leakage Current
- Low Recovery Loss

Mechanical Data

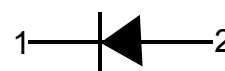
- Case: TO-220AB
- Freewheeling, Snubber, Clamp
- Snubber Diode
- Switch Power Supplies
- Motor control
- Inverters Converters
- PFC

Package	ROHS Status	Packing	Part No.
TO-220AB	Pb-Free	Box (Tube)	SI15L600

PIN DESCRIPTION



TO-220



MAXIMUM RATINGS($T_A=25\text{ }^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNITS
Maximum Recurrent Peak Reverse Voltage	V_{RRM}	600	V
Maximum RMS voltage	V_{RMS}	420	V
Maximum DC blocking voltage	V_{DC}	600	V
Average Rectified Forward Current	$I_{F(AV)}$	15	A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	I_{FSM}	150	A
Operating Junction Temperature	T_J	-55 to 175	$^\circ\text{C}$
Operating Junction and Storage Temperature Range	T_{STG}	-55 to 175	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS (T_A=25 °C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	TYP	Max	Unit
Static Characteristics						
V _{BR}	Reverse Breakdown Voltage	I _R =50uA	600	-	-	V
V _F	Instantaneous forward voltage per diode	I _F =15A ,T _a =25 °C	-	1.3	2.5	V
		I _F =15A ,T _a =125 °C	-	1.35	1.75	V
I _R	Reverse current per diode	V _R =600V,T _a =25 °C	-	-	2	uA
T _{rr}	Reverse Recovery Time	I _F =0.5A, I _R =1A, I _{rr} =0.25A	-	23	35	ns
		I _F =1A,V _R =30V, di/dt=-100A/us	-	23	35	ns
		I _F =1A,V _R =30V, di/dt=-200A/us	-	22	35	ns

Remark:

- 1.Customer should obtain the latest version of datasheet before placing order, and verify the relevant information.
- 2.Cutting damage and chipping area can't beyond scribe line in given size range.
- 3.Testing system of T_{rr} could be different, customer might take secondary test to evaluate if necessary.
- 4.Customer might choose the bonding wire material and diameter according to acutal situation ,while no less than our recommendation.

Typical Operating Characteristics

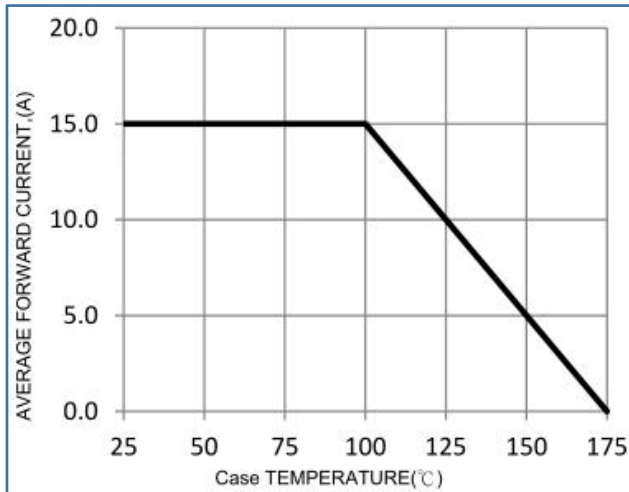


FIG.1 Typical Forward Current Derating Curve

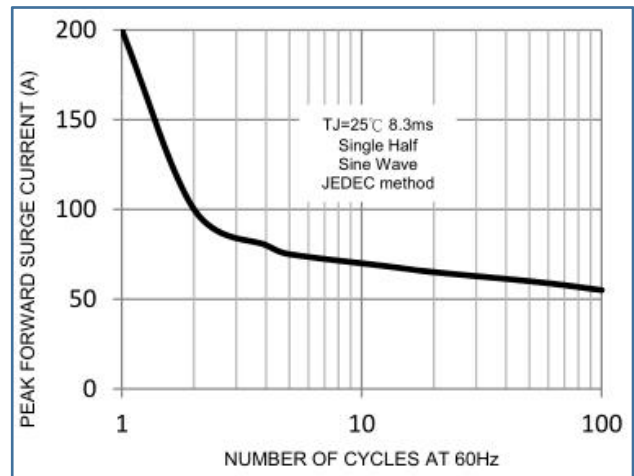


FIG.2 -Maximum Non-Repetitive Forward Surge Current

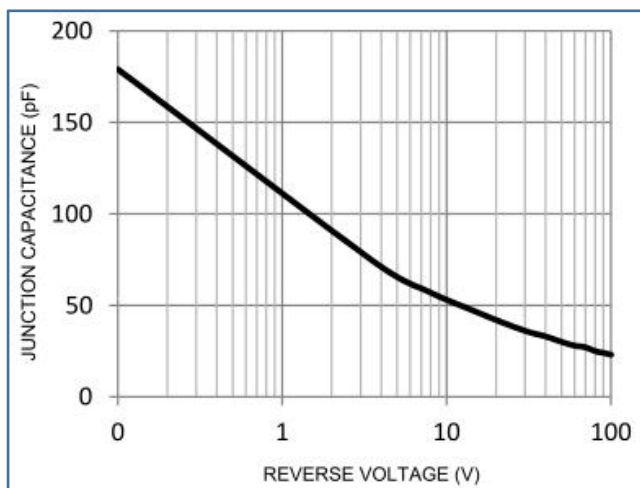


FIG.3 Typical Junction Capacitance

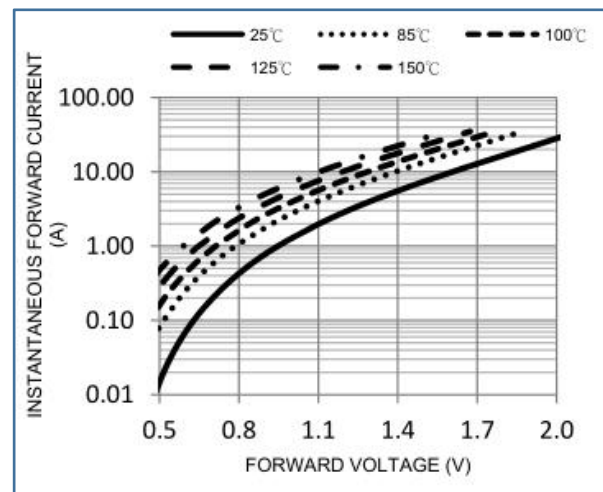


FIG.4 Typical Forward Characteristics

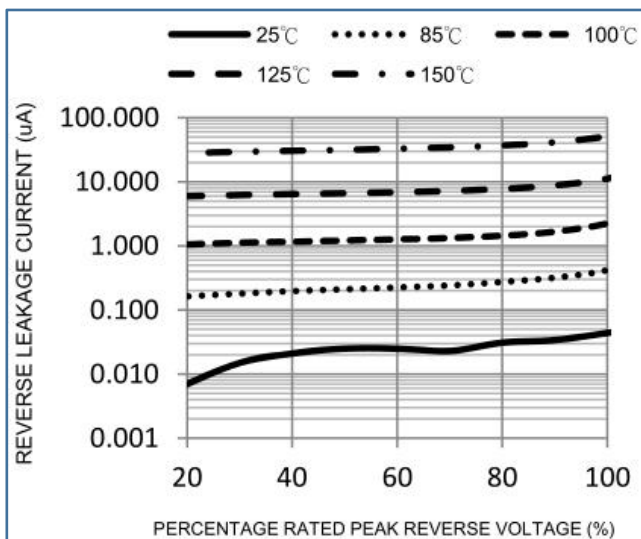
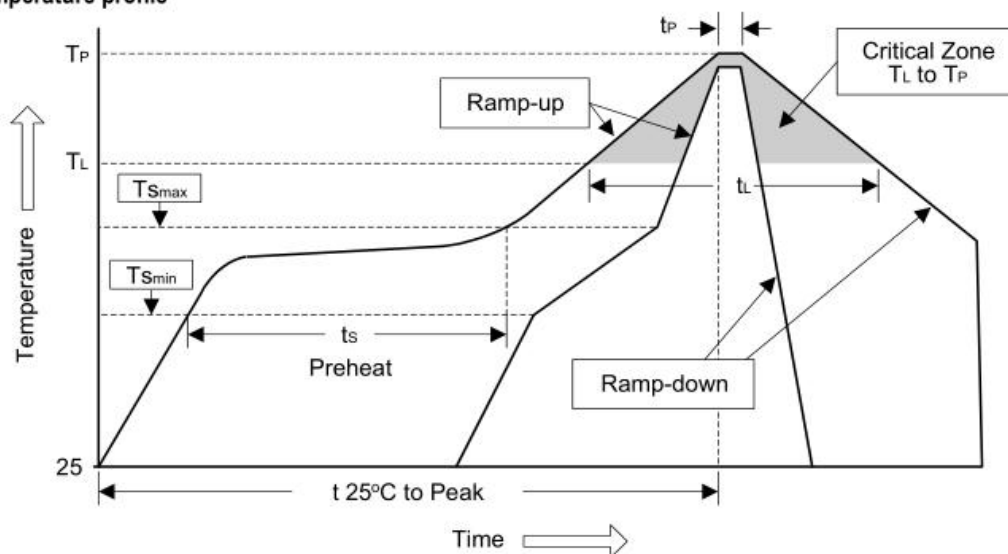


FIG.5-Typical Reverse Characteristics

Soldering Methods for Products

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate(TL to TP)	<3°C/sec	<3°C/sec
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(min to max)(ts)	60 to 120 sec	60 to 180 sec
Ts max to TL		
- ramp-up rate	<3°C/sec	<3°C/sec
Time maintained above:		
-Temperature(TL)	183°C	217°C
-Time(t L)	60 to 150 sec	60 to 150 sec
Peak Temperature(T p)	240°C+0/-5°C	250°C+0/-5°C
Time within 5°C of actual Peak Temperature	10 to 30 sec	20 to 40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25 °C to Peak Temperature	<6 minutes	<8 minutes

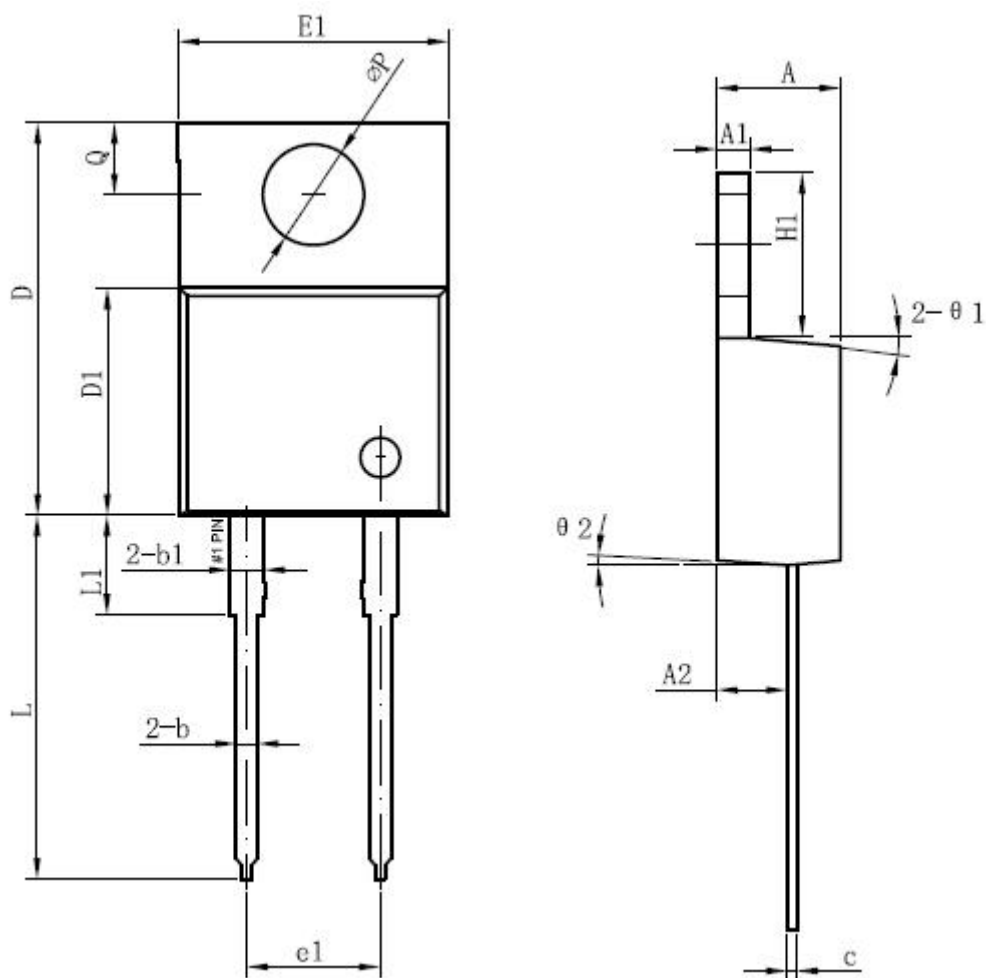
Figure 1: Temperature profile



- Note :**
- 1.Storage environment: Temperature=10°C to 35@Humidity=45%±15%
 - 2.Reflow soldering of surface-mount devices
 - 3.Flow(wave) soldering(solder dipping)

Products	Peak Temperature	Dipping Time
Pb devices	245°C±5°C	5sec±1sec
Pb-free devices	250°C+0/-5°C	5sec±1sec

Package Outline



Millimeters/mm					
Symbol	Min	Max	Symbol	Min	Max
A	4.55	4.85	E1	9.98	10.38
A1	1.17	1.37	e1	5.08 Typ.	
A2	2.59	2.89	H1	6.04	6.44
b	0.71	0.96	L	13.00	14.08
b1	1.27 Typ		L1	3.80 Typ.	
c	0.36	0.61	φP	374	4.04
D	14.64	15.24	Q	2.54	2.94
D1	8.55	8.85	θ 1	5°	
E	10.01	10.31	θ 2	4°	

■ Important Notice

Si-Trend reserves the right to change all product specifications and data without prior notice ; Our customer Please confirm to place an order confirmation before make the integrity of information complete and up-to-date ◦

Any semiconductor under specific conditions are possible to certain failure or malfunction rate ; Customers are responsible in the use of Si-Trend products to system design and manufacturing in compliance with safety standards and adopting safety measures , To avoid the potential risk of failure may cause the personal safety and property loss ◦

Si-Trend Always refine on to provide more excellent products

■ Modify record

Date	Version	Description	Pagination
20150626	A.0	original	6