

## FEATURES

- | Low Forward Voltage Drop Low Power Losses

---

- | Low Leakage Current

---

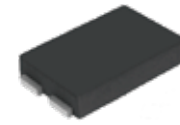
- | High Efficiency

---

- | Very Low Profile - Typical Height of 1.1 mm

---

- | Heatsink Design



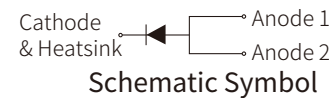
TO-277B



Marking

## APPLICATIONS

- | For Low Voltage High Frequency Inverters, DC/DC Converters And Polarity Protection And Polarity Protection Application



Schematic Symbol

## APPROVALS

<b>RoHS</b>	Compliance with 2011/65/EU
<b>HF</b>	Compliance with IEC61249-2-21:2003

## MAXIMUM RATINGS (T<sub>A</sub>=25°C)

Parameter	Symbol	Value	Unit
Maximum Repetitive Peak Reverse Voltage	V <sub>RRM</sub>	120	V
Maximum RMS Voltage	V <sub>RMS</sub>	100	V
Maximum DC Blocking Voltage	V <sub>DC</sub>	120	V
Maximum Average Forward Rectified Current	I <sub>F(AV)</sub> <sup>1)</sup>	20	A
	I <sub>F(AV)</sub> <sup>2)</sup>	10	A
Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed On Rated Load	I <sub>FSM</sub>	300	A
Operating Junction And Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C

Note 1: The thermal resistance from junction to ambient, case or mount, on PCB with 30×30mm copper pads, 2 OZ, FR4 PCB.  
 2: Mounted on recommended copper pad area free air.

## ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}\text{C}$ )

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximum Instantaneous Forward Voltage	$I_F=5\text{A}, T_A=25^{\circ}\text{C}$	$V_F$		0.58		V
	$I_F=15\text{A}, T_A=25^{\circ}\text{C}$			0.73		
	$I_F=20\text{A}, T_A=25^{\circ}\text{C}$			0.78	0.80	
Maximum DC Reverse Current At Rated DC Blocking Voltage	Rated VR	$I_R$			0.08	mA
					$T_A=100^{\circ}\text{C}$	
Typical Thermal Resistance <sup>1)</sup>	Juntion to Ambient	$R_{\theta,JA}$			100	$^{\circ}\text{C}/\text{W}$

## CHARACTERISTIC CURVES

Fig.1 Forward Current Derating Curve

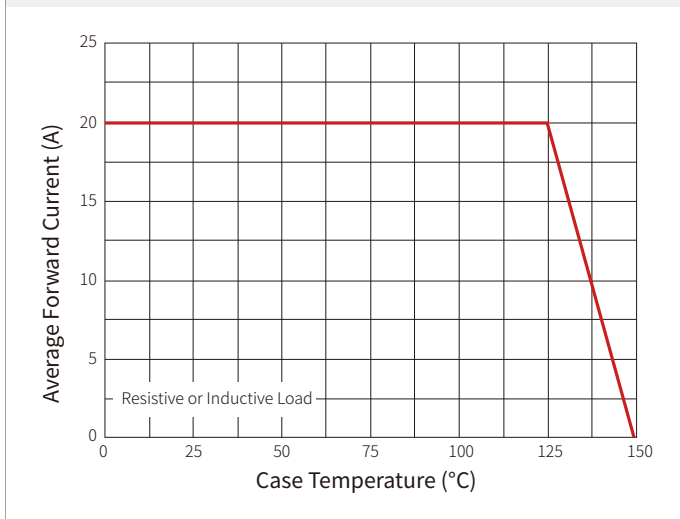
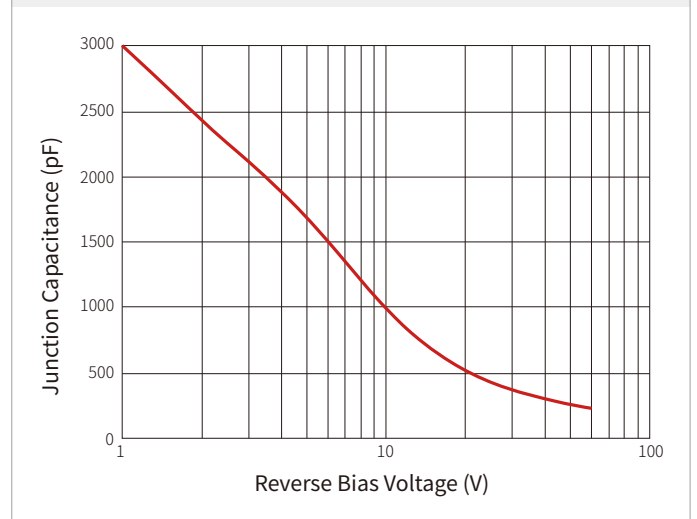
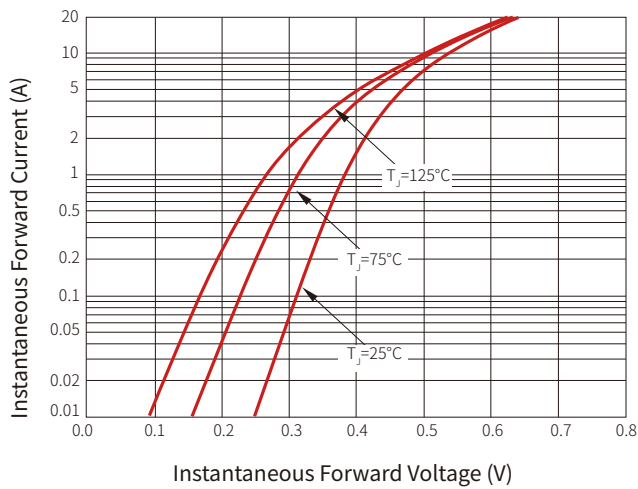
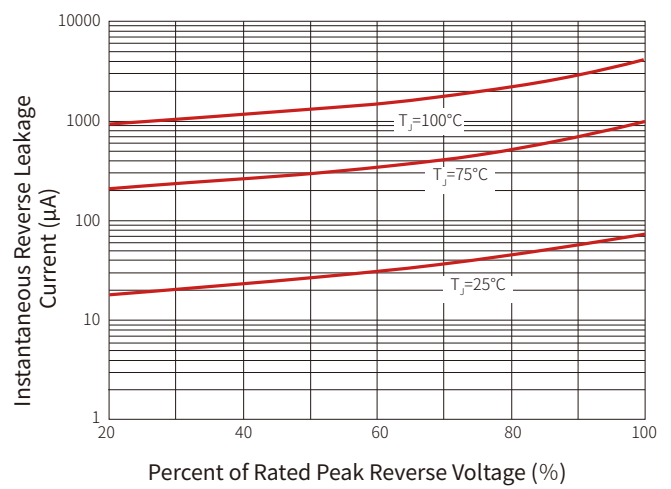


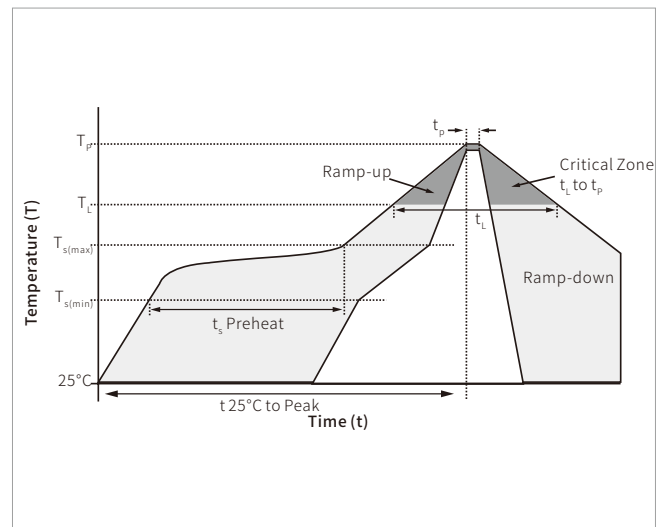
Fig.2 Typical Junction Capacitance



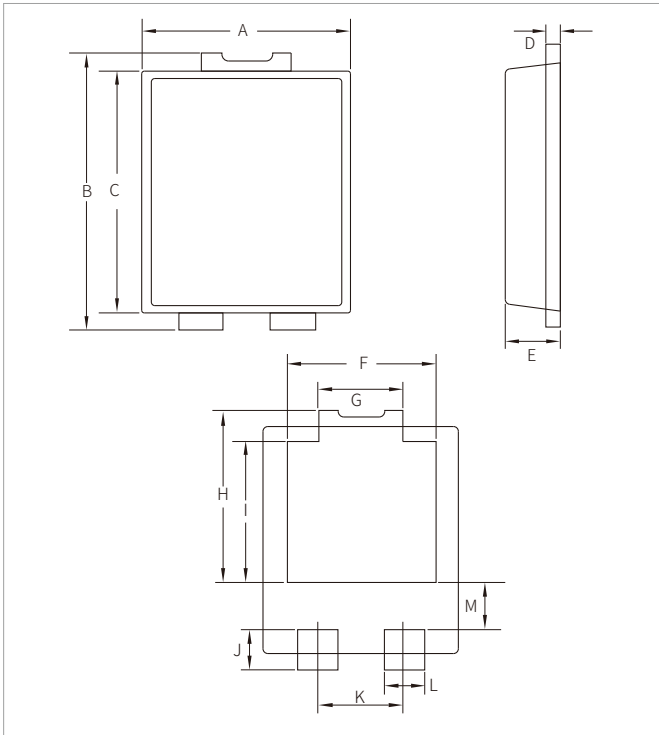
**Fig.3 Typical Instantaneous Forward Characteristics**

**Fig.4 Typical Reverse Leakage Characteristics**


## SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ( $T_{s(min)}$ )	150°C
	Temperature Max ( $T_{s(max)}$ )	200°C
	Time (min to max) ( $t_s$ )	60 – 180 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/second max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/second max
Reflow	Temperature ( $T_L$ ) (Liquidus)	217°C
	Time (min to max) ( $t_L$ )	60 – 150 seconds
Peak Temperature ( $T_p$ )		260°C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_p$ )		8 minutes max.
Do not exceed		260°C

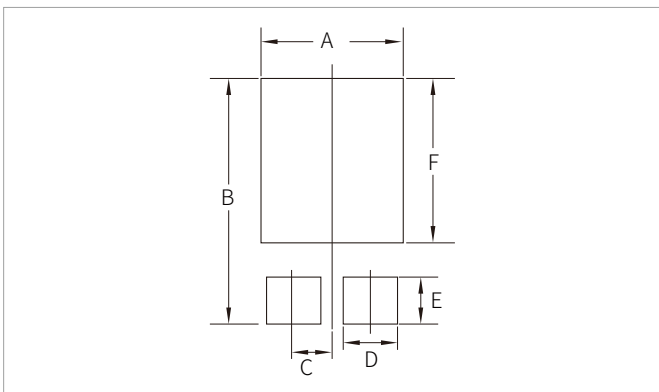


## TO-277B PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.00	4.60	0.157	0.181
B	6.20	6.80	0.244	0.268
C	5.50	6.00	0.216	0.236
D	0.25	0.40	0.010	0.016
E	1.05	1.35	0.041	0.053
F	3.00	3.50	0.118	0.138
G	1.70	2.00	0.067	0.079
H	4.20	4.50	0.165	0.177
I	3.52Nom		0.139Nom	
J	0.85	1.10	0.033	0.043
K	1.86Nom		0.073Nom	
L	0.80	1.00	0.031	0.039
M	1.10	1.40	0.043	0.055

## RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.40	-	0.134	-
B	6.90		0.272	
C	0.95		0.037	
D	1.30	-	0.051	-
E	1.30	-	0.051	-
F	4.60	-	0.181	-

## ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
ST20120L	TO-277B	5000PCS	13"

**Headquarters**

No.3387 Shendu Road  
Pujiang I&E Park  
Minhang Shanghai China  
201000

**Hotline**

400-021-5756

**Web**

<https://www.semiware.com>

**Sales Center**

Tel: 86-21-3463-7458  
Email: [sales18@semiware.com](mailto:sales18@semiware.com)

**Customer Service**

Tel: 86-21-5484-1001  
Email: [sales17@semiware.com](mailto:sales17@semiware.com)

**Technical Support**

Tel: 86-21-3463-7654  
Email: [fae01@semiware.com](mailto:fae01@semiware.com)

**Complaint & Suggestions**

Tel: 86-21-3463-7172  
Ext: 8868  
Email: [cs03@semiware.com](mailto:cs03@semiware.com)

**By QR Code**

Website



Wechat

To find your local partner within Semiware's global website: [www.semiware.com](http://www.semiware.com)

© 2022 Semiware Semiconductor Inc.

The content of this document has been carefully checked and understood. However, neither Semiware nor its subsidiaries assume any liability whatsoever for any errors or inaccuracies of this document and the consequences thereof. Published specifications are subject to change without notice. Product suitability for any area of application must ultimately be determined by the customer. In all cases, products must never be operated outside their published specifications. Semiware does not guarantee the availability of all published products. This disclaimer shall be governed by substantive Chinese law and resulting disputes shall be settled by the courts at the place of business of Semiware. Latest publications and a complete disclaimer can be downloaded from the Semiware website. All trademarks recognized.