

**TL510B**

SUPER LOW VF SCHOTTKY RECTIFIERS



**VOLTAGE:** 100 Volts

**CURRENT:** 5.0 Amperes

**SMB(DO-214AA)**

**Marking and Polarity**

**FEATURES**

- Super Low Forward Voltage Drop for high efficiency
- Low leakage current for high reliability
- High forward surge capability for high reliability

**MECHANICAL DATA**

- **Terminals:** Plated Leads Solderable per MIL-STD-202, Method 208
- **Mounting Position:** Any
- **Lead Free:** Lead Free Finish, RoHS Compliant
- **Weight:** App. 0.095 grams (0.0034 ounce)

**TYPICAL APPLICATIONS**

- For use in high frequency inverters ,  
DC/DC converters, LED driver etc. applications



**Remark:**

- ①. TL510B=Module
- ②. NH=niuhang trademark
- ③. FF=Product line, According to actual changes;  
YWW=Periodic code, According to actual changes;
- ④. White band denotes cathode

**Maximum Ratings (Ratings at 25°C ambient temperature unless otherwise specified.)**

Parameter	Symbol	TL510B	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	100	V
Maximum RMS voltage	$V_{RMS}$	70	V
Maximum DC blocking voltage	$V_{DC}$	100	V
Maximum average forward rectified current(see fig.1)	$I_{F(AV)}$	5.0	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL)(see fig.5)	$I_{FSM}$	120	A

**Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified.)**

Parameter	Test Conditions		Symbol	TL510B			Unit
				Min.	Typ.	Max.	
Maximum instantaneous forward voltage (see fig.2) (Note 1)	$T_A=25^\circ C$	$I_F= 5.0 A$	$V_F$	--	0.58	0.65	V
	$T_A=125^\circ C$			--	0.50	0.55	
Maximum instantaneous reverse current at rated DC blocking voltage (see fig.3)(Note 1)	$T_A=25^\circ C$	$V_R= V_{RRM}$ $V_R= 80\%*V_{RRM}$	$I_R$	--	20	80	$\mu A$
	$T_A=125^\circ C$			--	1.0	20	mA
Typical junction capacitance(see fig.4)	4V, 1MHz		$C_J$	--	370	--	pF

**Thermal Characteristics (Ratings at 25°C ambient temperature unless otherwise specified )**

Parameter	Symbol	TL510B	Unit
Operating junction	$T_J$	-55 to 150	°C
Storage temperature range	$T_{STG}$	-55 to 150	
Typical thermal resistance (Note 2)	$R_{\theta JA}$	25	°C/W
	$R_{\theta JL}$	8	

**Note:** 1. Pulse width < 300  $\mu s$ , Duty cycle < 2%  
2. Mounted on P.C.B. with 0.3" x 0.3" (7.62 mm x 7.62 mm) copper pad areas

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RATING AND CHARACTERISTIC CURVES

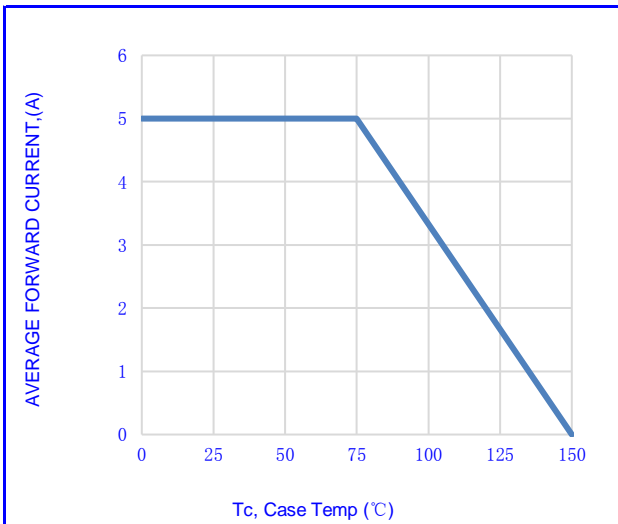


Fig.1- FORWARD CURRENT DERATING CURVE

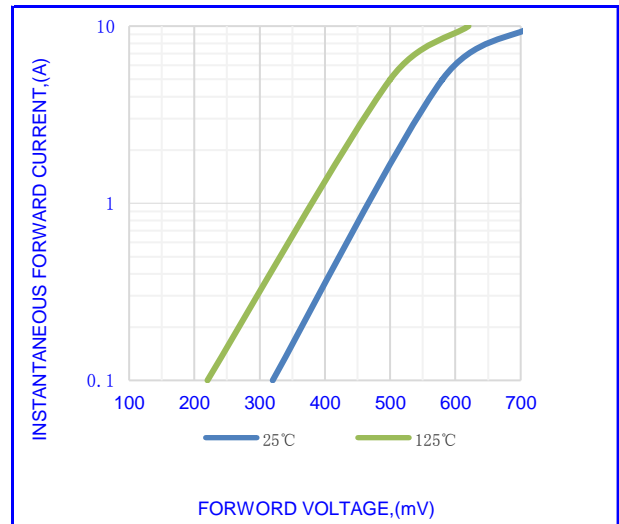


Fig.2-TYPICAL INSTANTANEOUS FORWARD

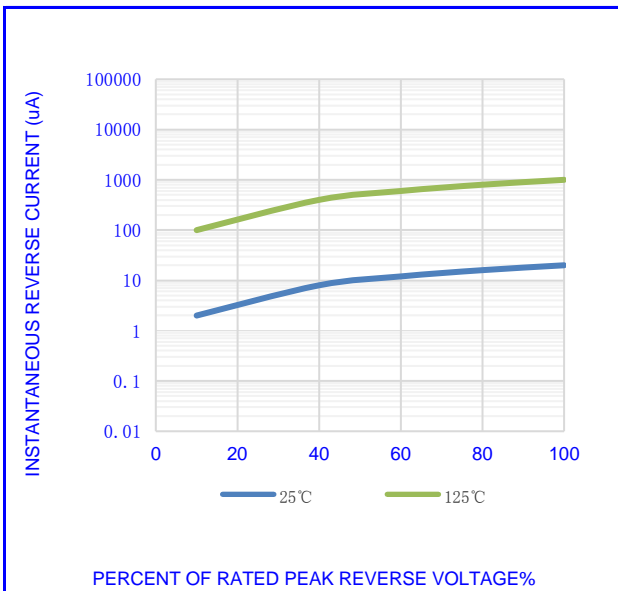


Fig.3-TYPICAL REVERSE CHARACTERISTICS

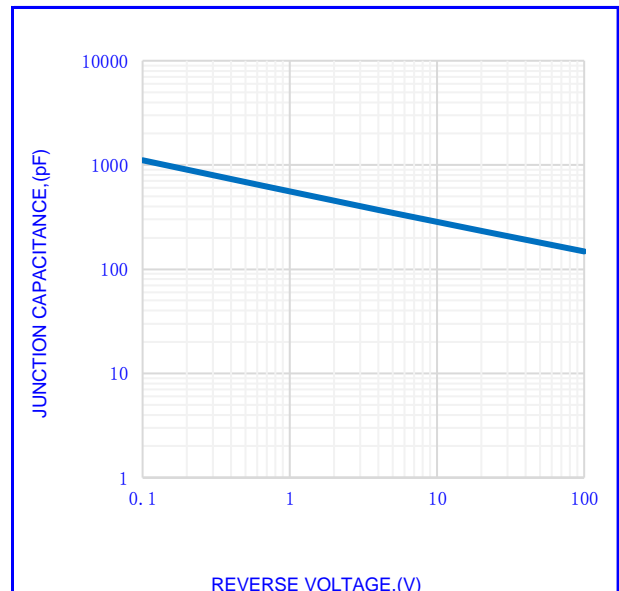


Fig.4- TYPICAL JUNCTION CAPACITANCE

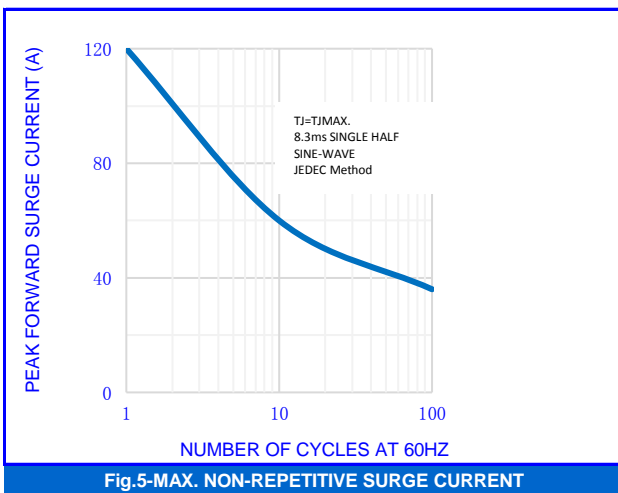


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

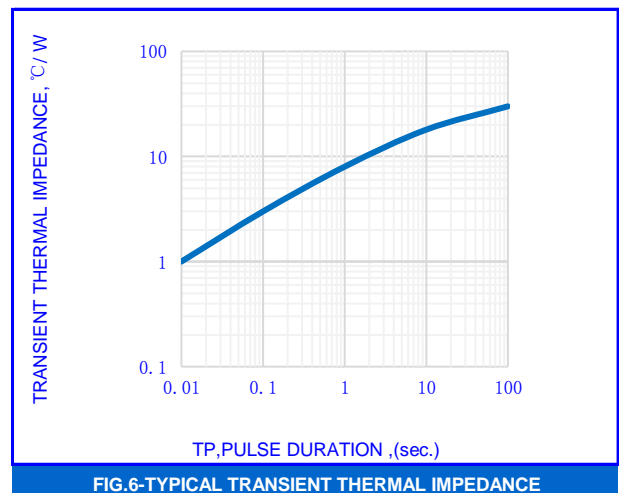


FIG.6-TYPICAL TRANSIENT THERMAL IMPEDANCE

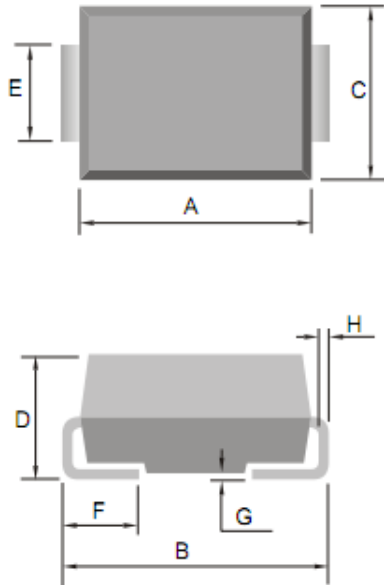
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**OUTLINE DRAWINGS**

**SMB(DO-214AA)**

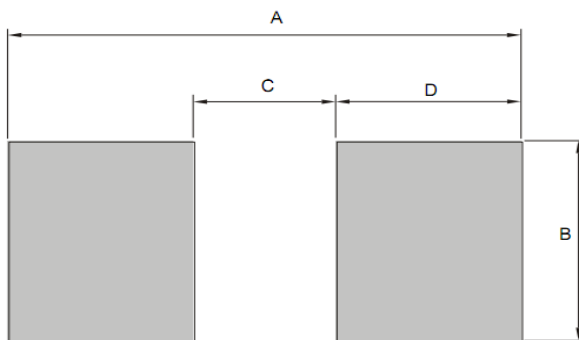


**OUTLINE DIMENSIONS**

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.060	-	4.700	0.15984	-	0.18504
B	5.080	-	5.590	0.2	-	0.22008
C	3.300	-	3.940	0.12992	-	0.15512
D	2.130	-	2.440	0.08386	-	0.09606
E	1.910	-	2.110	0.0752	-	0.08307
F	0.910	-	1.500	0.03583	-	0.05906
G	0.051	-	0.203	0.00201	-	0.00799
H	0.152	-	0.305	0.00598	-	0.01201

**RECOMMENDED LAYOUT DRAWINGS**

**SMB(DO-214AA)**



**RECOMMENDED MOUNTING PAD DIMENSIONS**

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	6.340	-	-	0.24961	-
B	-	2.720	-	-	0.10709	-
C	-	1.760	-	-	0.06929	-
D	-	2.290	-	-	0.09016	-

**PACKING INFORMATION**

**SMB(DO-214AA)**

Package Method	Reel Size (mm)	Quantity (pcs/reel)	Inner Box Size LxWxH(mm)	Quantity (pcs/Inner Box)	Carton Size LxWxH(mm)	Quantity (pcs/carton)
Tape Reel	Φ330	3000	340x340x45	6000	360x360x470	60000

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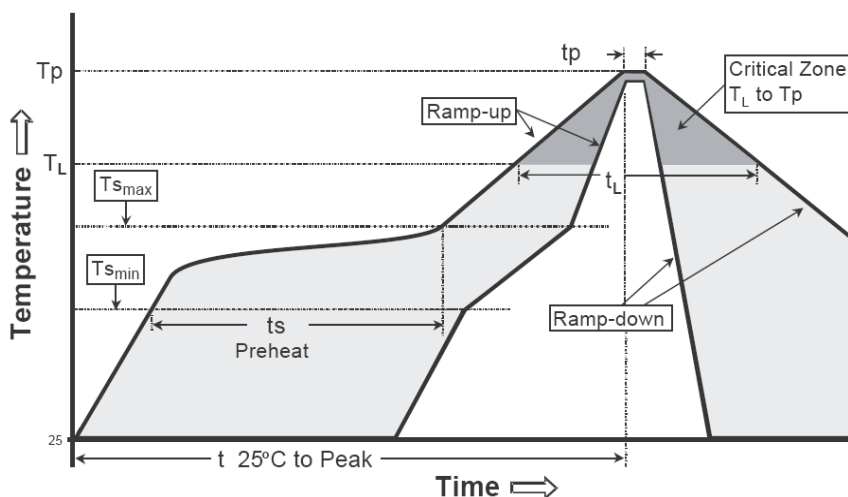
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**Recommended wave soldering condition**

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

**Recommended temperature profile for IR reflow**



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat -Temperature Min(TS min) -Temperature Max(TS max) -Time(ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: -Temperature (TL) - Time (tL)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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