

PL54B

SUPER LOW VF SCHOTTKY RECTIFIERS



VOLTAGE:	40	Volts	CURRENT:	5.0	Amperes	SMB(DO-214AA)	Marking and Polarity
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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. PL54B=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	PL54B	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	40	V
Maximum RMS voltage	V_{RMS}	28	V
Maximum DC blocking voltage	V_{DC}	40	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
Current Squared Time Per Diode($t < 8.3ms$)	I^2t	59.76	A ² sec

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

Parameter	Test Conditions		Symbol	PL54B			Unit
				Min.	Typ.	Max.	
Maximum instantaneous forward voltage (see fig.2) (Note 1)	$T_A = 25^\circ C$ $T_A = 125^\circ C$	$I_F = 5.0 A$	V_F	--	0.42 0.38	0.51 0.46	V
Maximum instantaneous reverse current at rated DC blocking voltage (see fig.3)(Note 1)	$T_A = 25^\circ C$ $T_A = 125^\circ C$	$V_R = V_{RRM}$ $V_R = 80\% V_{RRM}$	I_R	--	18 1.0	100 10	μA mA
Typical junction capacitance(see fig.4)	4V, 1MHz		C_J	--	300	--	pF

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

Parameter	Symbol	PL54B	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 μs , 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

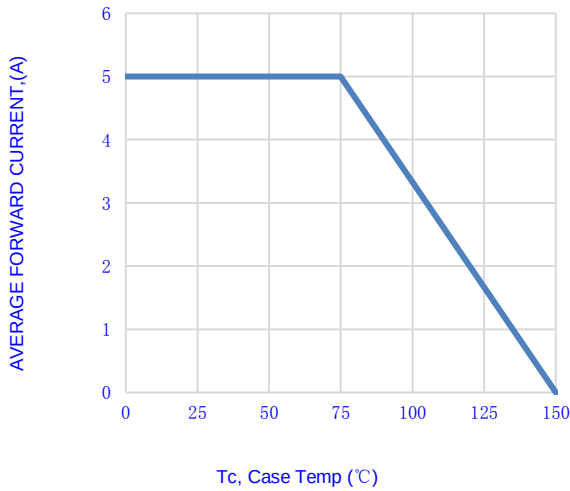


Fig.1- FORWARD CURRENT DERATING CURVE

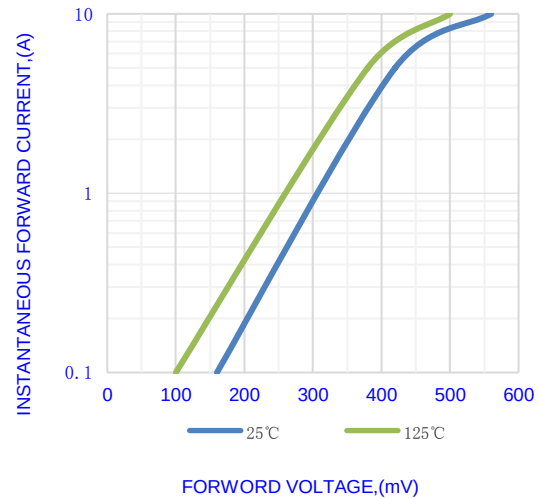


Fig.2-TYPICAL INSTANTANEOUS FORWARD

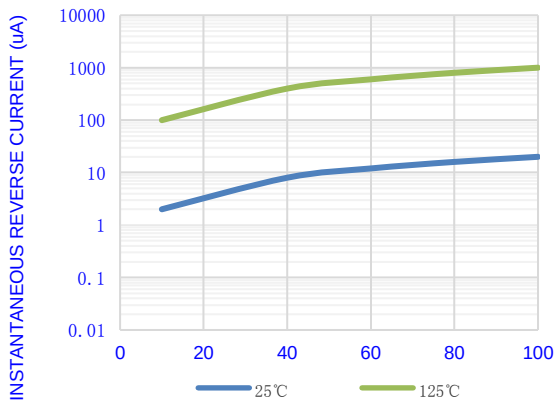


Fig.3-TYPICAL REVERSE CHARACTERISTICS

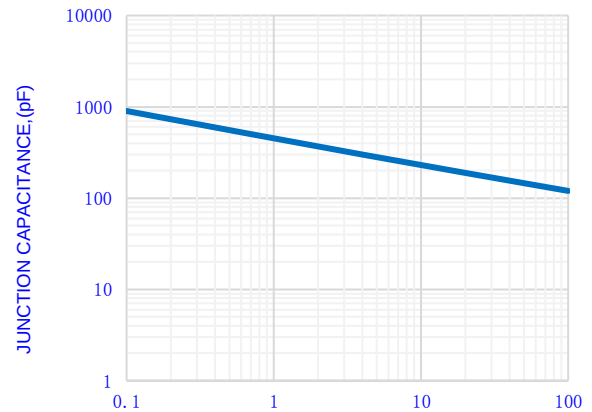


Fig.4- TYPICAL JUNCTION CAPACITANCE

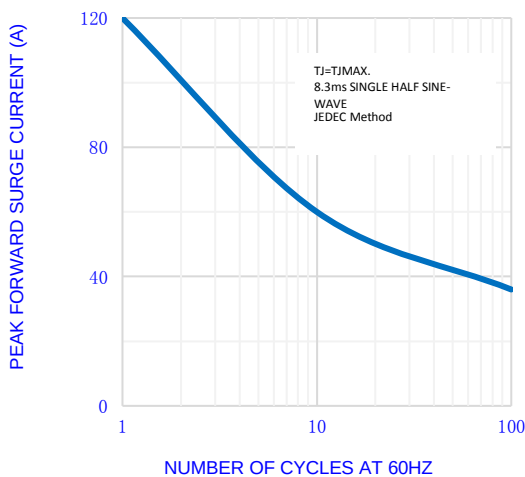


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

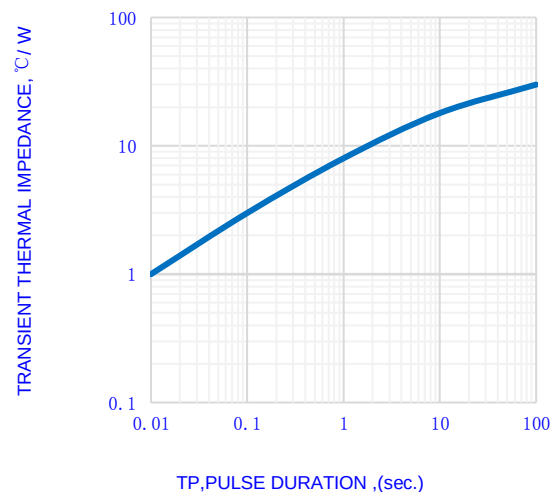


FIG.6-TYPICAL TRANSIENT THERMAL IMPEDANCE

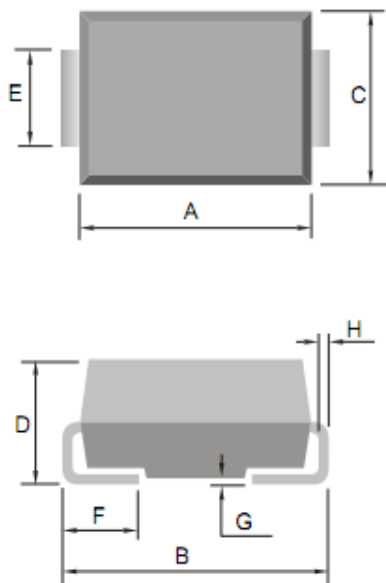
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OUTLINE DRAWINGS

SMB(DO-214AA)

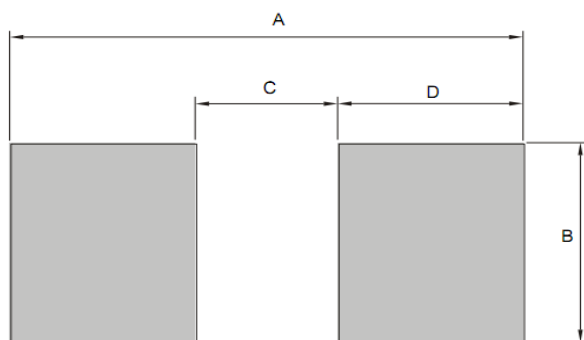


OUTLINE DIMENSIONS

Dim.	Millimeters			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.	Millimeters			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 L×W×H(mm)	Quantity (pcs/Inner Box)	Carton Size L×W×H(mm)	Quantity (pcs/carton)
Tape Reel	Φ330	3000	340×340×45	6000	360×360×470	60000

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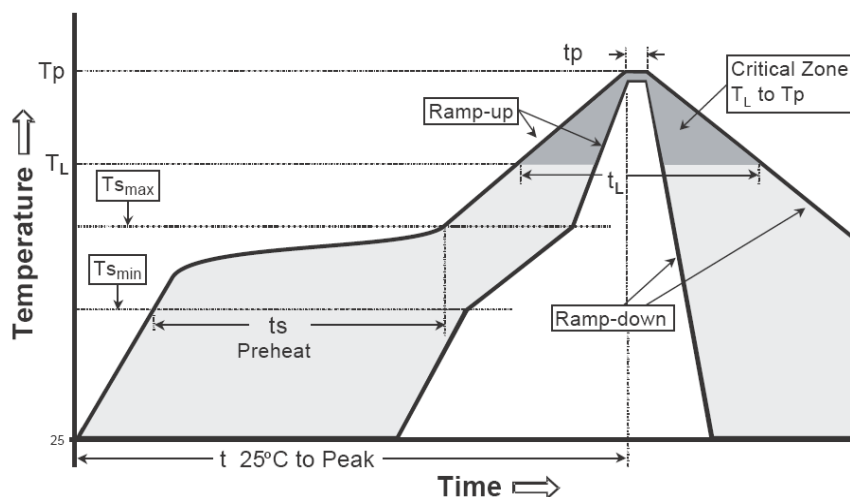
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Recommended wave soldering condition

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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