

PL54BF

SUPER LOW VF SCHOTTKY RECTIFIERS



VOLTAGE: 45 Volts

CURRENT: 5.0 Amperes

SMBF

Marking and Polarity

FEATURES

- 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. 0.066 grams (0.0023 ounce)

TYPICAL APPLICATIONS

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



Remark:

- ①. PL54BF=Module
- ②. NH=niu hang trademark
- ③. FF=Product line, According to actual changes;
YWW=Periodic code, According to actual changes;
- ④. White band denotes cathode

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Date:2014/10/20

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

Parameter	Symbol	PL54BF	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	45	V
Maximum RMS voltage	V_{RMS}	31.5	V
Maximum DC blocking voltage	V_{DC}	45	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}	110	A
Current Squared Time Per Diode($t < 8.3ms$)	I^2t	50.22	A ² sec

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

Parameter	Test Conditions		Symbol	PL54BF			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	--	0.42	0.51	V
Maximum instantaneous reverse current at rated DC blocking voltage (see fig.3)(Note 1)	$T_A = 25^\circ C$	$V_R = V_{RRM}$	I_R	--	50	100	μA
	$T_A = 125^\circ C$	$V_R = 80\% V_{RRM}$		--	5	20	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	PL54BF	Unit
Operating junction	T_J	-55 to 150	$^\circ C$
Storage temperature range	T_{STG}	-55 to 150	
Typical thermal resistance (Note 2)	$R_{\theta JA}$	55	$^\circ C/W$
	$R_{\theta JL}$	17	

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

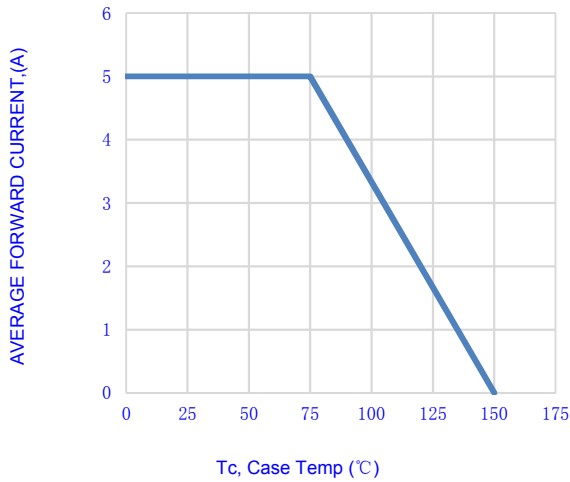


Fig.1- FORWARD CURRENT DERATING CURVE

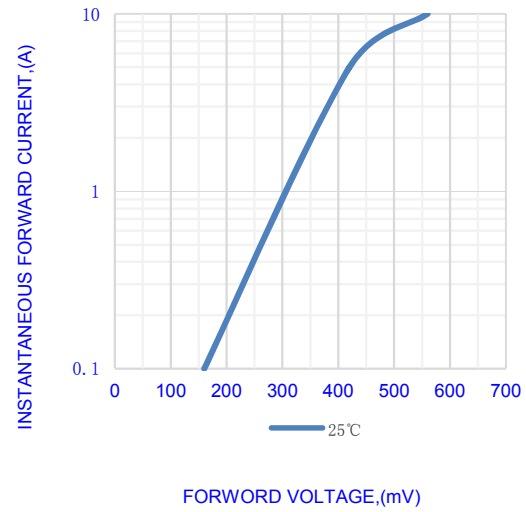


Fig.2-TYPICAL INSTANTANEOUS FORWARD

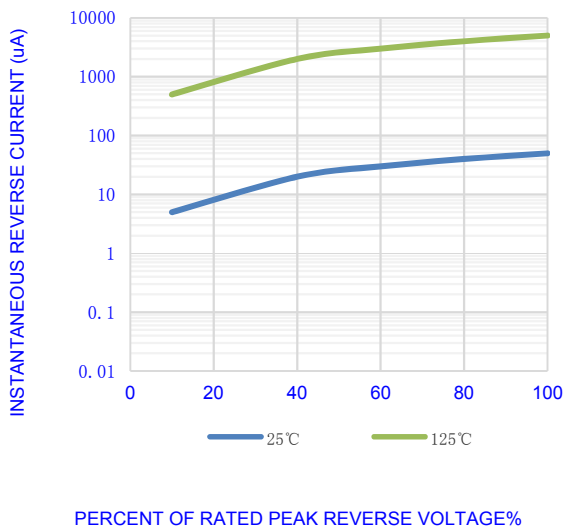


Fig.3-TYPICAL REVERSE CHARACTERISTICS

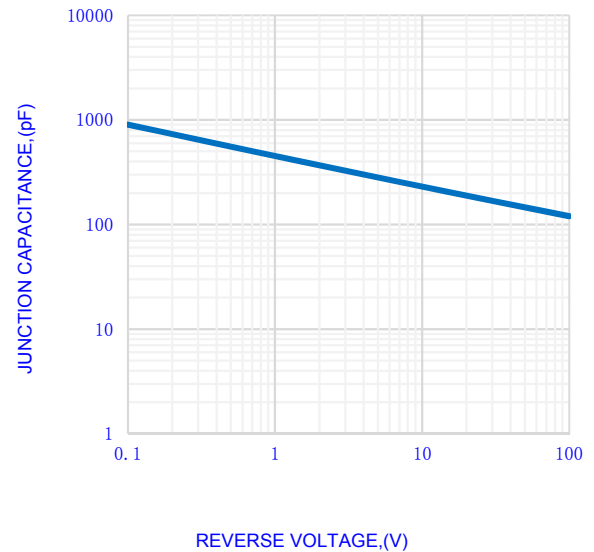


Fig.4- TYPICAL JUNCTION CAPACITANCE

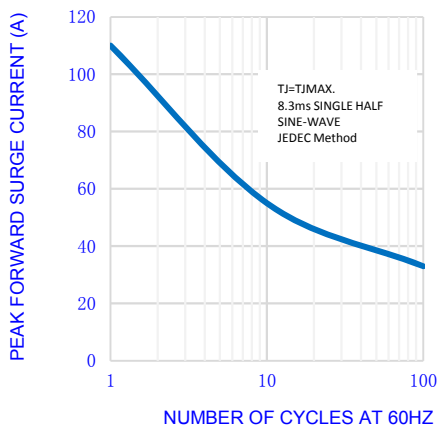


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

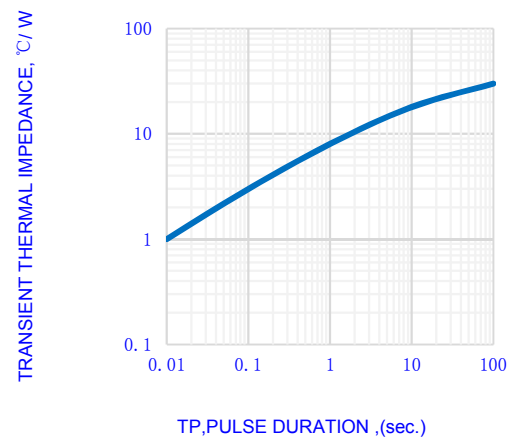


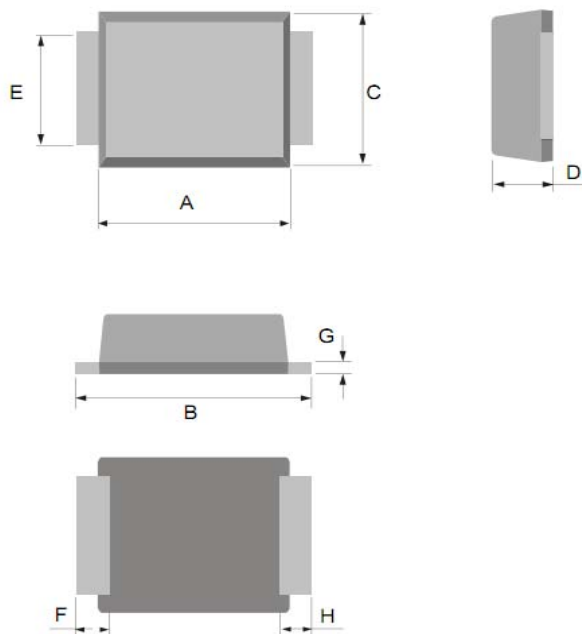
FIG.6-TYPICAL TRANSIENT THERMAL IMPEDANCE

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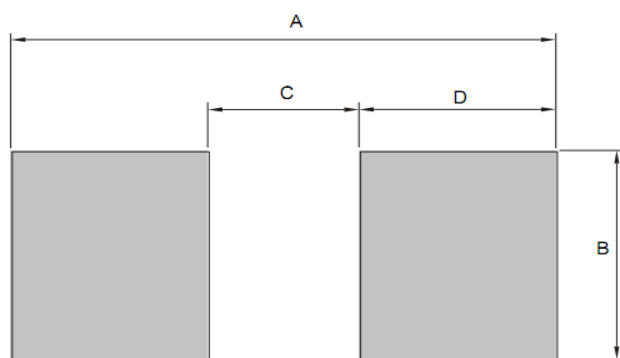
OUTLINE DRAWINGS



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OUTLINE DIMENSIONS						
Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.100	-	4.700	0.161	-	0.185
B	5.100	-	5.500	0.201	-	0.217
C	3.400	-	3.800	0.134	-	0.150
D	1.050	-	1.550	0.041	-	0.061
E	1.800	-	2.200	0.071	-	0.087
F	0.550	-	1.450	0.022	-	0.057
G	0.150	-	0.250	0.006	-	0.010
H	0.550	-	1.450	0.022	-	0.057

RECOMMENDED LAYOUT DRAWINGS



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RECOMMENDED MOUNTING PAD DIMENSIONS						
Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	6.500	-	-	0.256	-
B	-	2.200	-	-	0.087	-
C	-	2.800	-	-	0.110	-
D	-	1.850	-	-	0.073	-

PACKING INFORMATION

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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	5000	340×340×45	10000	360×360×470	100000

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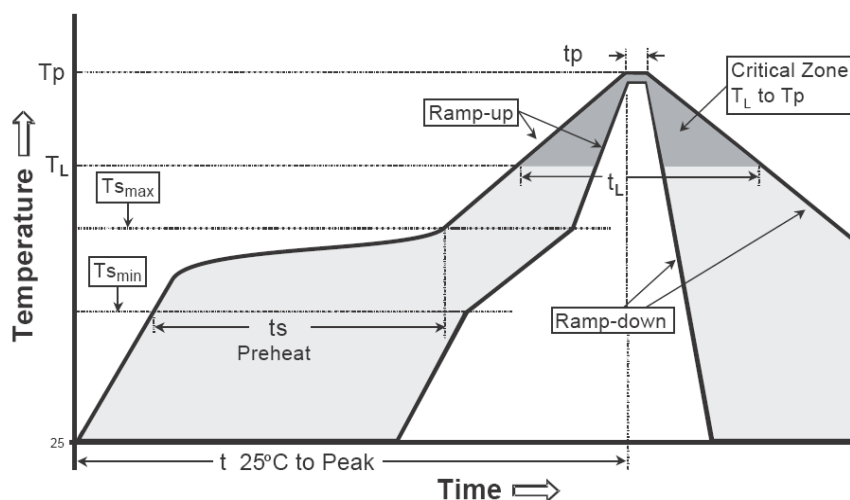
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Recommended wave soldering condition

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 (Tsmmax 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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