

PL54BF

Low Vf Schottky Barrier Rectifiers



Voltage: 40 Volts

Current: 5 Amperes

Package: SMBF

Features

- NH'S Low Vf Schottky Barrier Chip Technology
- Super Low Forward Voltage Drop For High Efficiency
- Low Power Loss For High Reliability
- High Frequency Switching Speed

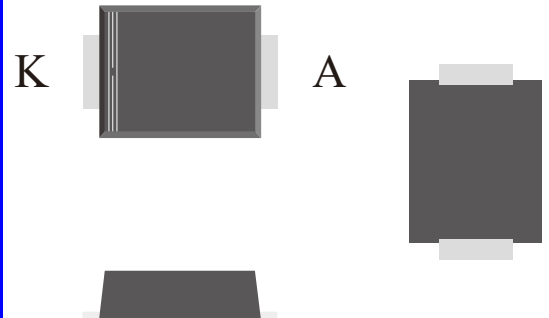
Mechanical Data

- **Case:** Molded With UL-94 ClassV-0 Recognized, RoHS-Compliant
- **Polarity:** Look At The Diagram And Polarity On The Right
- **Terminals:** Tin Plated Leads,Solderable Per J-STD-002 And JESD22-B102

Typical Applications

- Switch Mode Power Supplies (SMPS)
- Fast Chargers
- LED Driver And Monitor Lighting
- Automotive Electronics And Charging Posts

Diagram:



Polarity:



Single Phase,Half Wave,60Hz,Resistive Or Inductive Load.For Capacitive Load,Derate Current By 20%

Maximum Ratings (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Ratings	Unit
Maximum Repetitive Peak Reverse Voltage		V_{RRM}	40	V
Maximum RMS Voltag		V_{RMS}	28	V
Maximum DC Blocking Voltage		V_{DC}	40	V
Maximum Average Forward Rectified Current		$I_{F(AV)}$	5	A
Peak Forward Surge Current	8.3ms Single Half Sine-wave Superimposed On Rate Load	I_{FSM}	120	A
Current Squared Time	$t < 8.3ms$	I^2t	59.8	A ² sec

Electrical Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Ratings			Unit
			Min.	Typ.	Max.	
Maximum Instaneous Forward Voltage	Ta=25°C Ta=100°C $I_F = 5.0 \text{ A}$	V_F	--	0.42 0.38	0.51 0.46	V
Maximum DC Reverse Current at Rated DC Blocking Voltage	Ta=25°C , $V_R = V_{RRM}$ Ta=100°C , $V_R = V_{RRM} * 80\%$	I_{RRM}	--	18 1	100 10	uA mA
Typical Junction Capacitance	4 V,1MHz	C_J	--	420	--	pF

Thermal Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Ratings			Unit
Operating Junction Temperature Range		T _J	-55	to	150	°C
Storage Temperature Range		T _{STD}	-55	to	150	
Thermal Resistance Junction To Ambient With Steady-State	Still Air Environment With Ta=25 °C	R _{θJA}	60.0			°C/W
Thermal Resistance Junction-Case With Steady-State	Device Mounted On 1 in2 FR-4 Board With 2oz. Copper	R _{θJC}	18.0			

Notes: 1.Pulse Test: 300 Us Pulse Width,1% Duty Cycle

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Typical Characteristics Curves

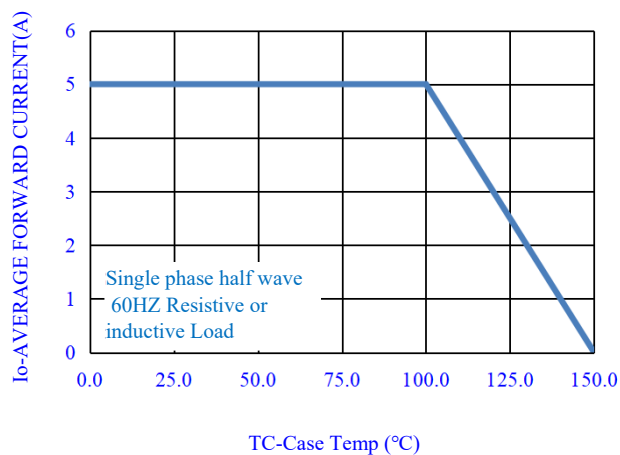


Fig.1-FORWARD CURRENT DERATING CURVE

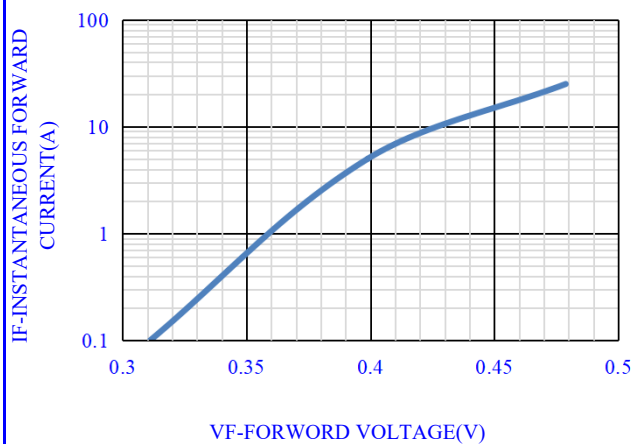


Fig.2- TYPICAL INSTANTANEOUS FORWARD

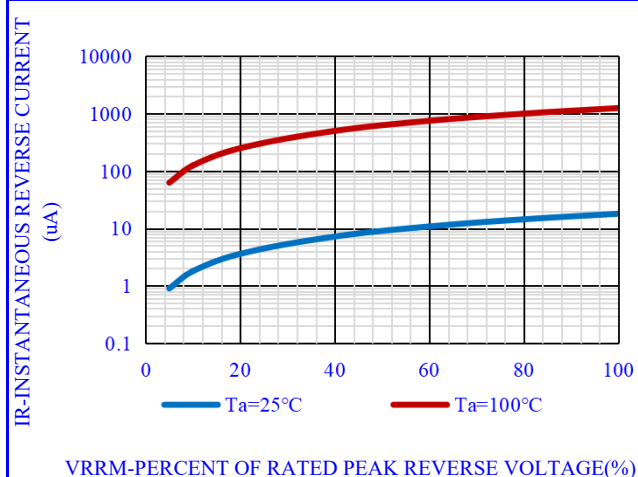


Fig.3- TYPICAL REVERSE CHARACTERISTICS

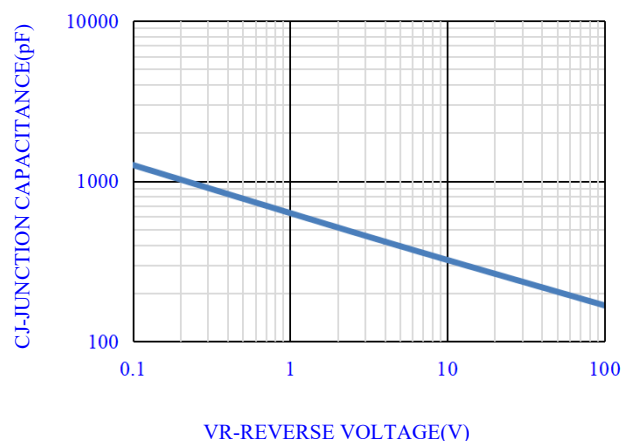


Fig.4- TYPICAL JUNCTION CAPACITANCE

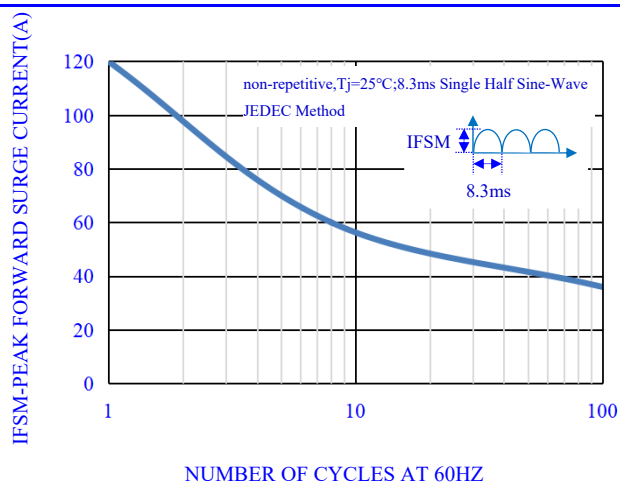


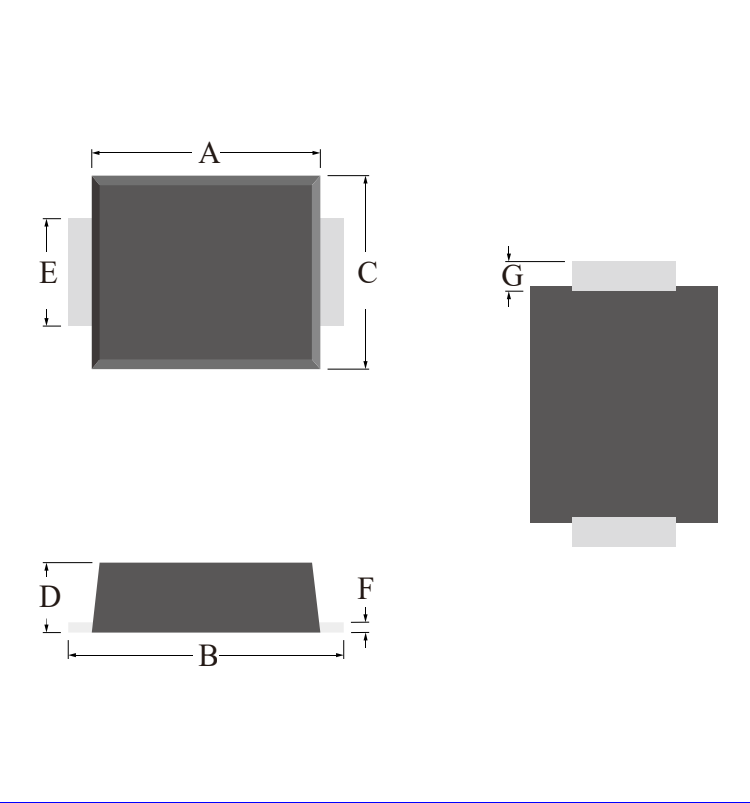
Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

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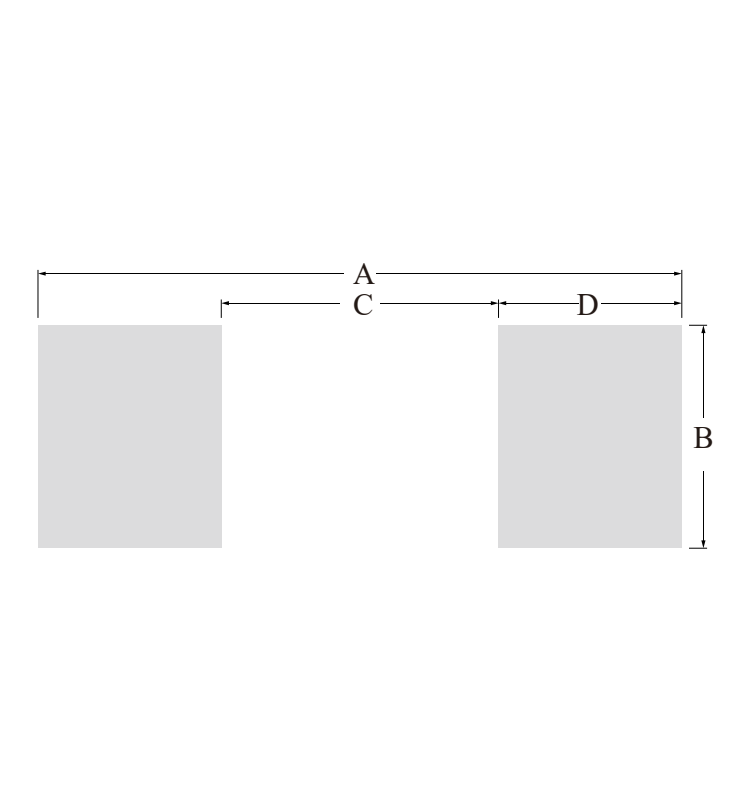
OUTLINE DRAWINGS



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OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.10	-	4.70	0.1614	-	0.1850
B	5.10	-	5.50	0.2008	-	0.2165
C	3.40	-	3.80	0.1339	-	0.1496
D	1.05	-	1.55	0.0413	-	0.0610
E	1.80	-	2.20	0.0709	-	0.0866
F	0.13	-	0.25	0.0051	-	0.0098
G	0.55	-	1.45	0.0217	-	0.0571

RECOMMEDND LAYOUT DRAWINGS



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OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	6.50	-	-	0.2559	-
B	-	2.20	-	-	0.0866	-
C	-	2.80	-	-	0.1102	-
D	-	1.85	-	-	0.0728	-

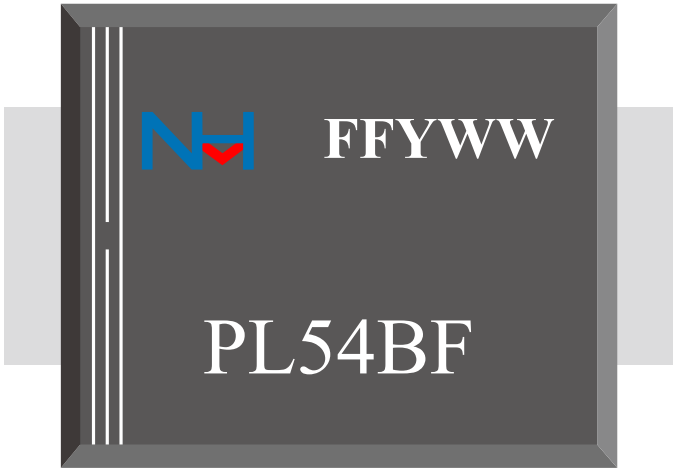
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MARKING

MARKING INSTRUCTION



NH=Niuhan Trademark
FF=Product Line Code,According To Actual Changes
YWW=Date Code,According To Actual Changes
=Internal Code,According To Actual Changes
PL54BF=Model
White band denotes cathode

PACKING INFORMATION

Package Type	Package Code	Product Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)
SMBF	P1	0.066	13" Reel	3000	6000	48000
SMBF	P2	0.066	13" Reel	3000	6000	60000

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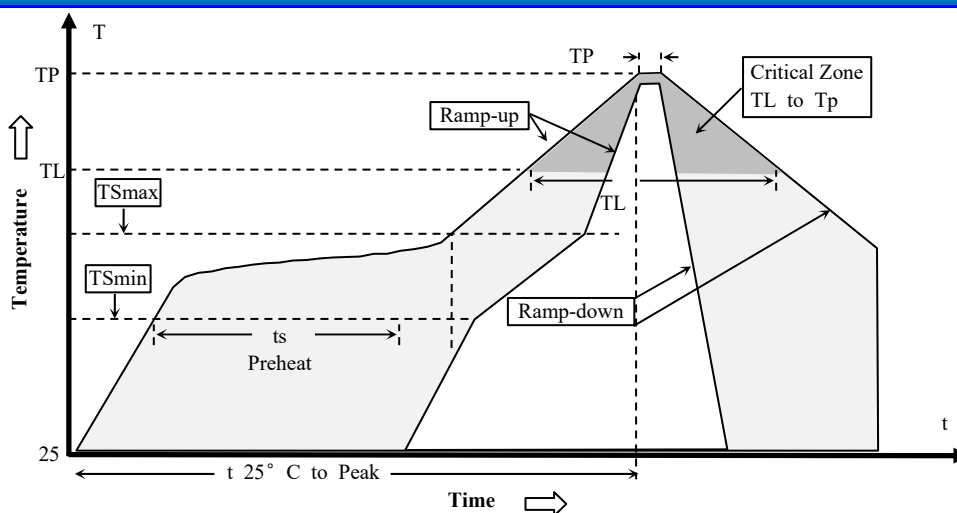
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Recommended wave soldering condition

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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