

SF21 THRU SF28

SUPER FAST RECOVERY RECTIFIERS



**VOLTAGE** 50~600 Volts

**CURRENT** 2.0 Amperes

**DO-15** Marking and Polarity

**FEATURES**

- Low leakage current
- Ultrafast reverse recovery time
- High forward surge capability
- Low power loss ,high efficiency
- High temperature soldering guaranteed:260°C/10 seconds at terminals

**MECHANICAL DATA**

- Package:** DO-15  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- Mounting Position:** Any
- Weight:** App. 0.32 grams

**TYPICAL APPLICATIONS**

- For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer and telecommunication.

Remark:

- NH=niuhang trademark
- SF2x=Modle,x=1,2,3,4,5,6,7,8
- FF=Production line,According to actual changes

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

Parameter	Symbol	SF 21	SF 22	SF 23	SF 24	SF 25	SF 26	SF 27	SF 28	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	50	100	150	200	300	400	500	600	V
Maximum RMS voltage	$V_{RMS}$	35	70	105	140	210	280	350	420	V
Maximum DC blocking voltage	$V_{DC}$	50	100	150	200	300	400	500	600	V
Maximum average forward rectified current(see fig.1)	$I_{F(AV)}$	2.0								A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL)	$I_{FSM}$	50								A

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

Parameter	Symbol	SF 21	SF 22	SF 23	SF 24	SF 25	SF 26	SF 27	SF 28	Unit
Maximum instantaneous forward voltage (Note 1) @ 2.0 A	$V_F$	0.95			1.30		1.70			V
Maximum instantaneous reversecurrent at rated DC blockingvoltage (Note 1) Ta=25°C Ta=125°C	$I_{RRM}$	5 200								uA
Typical junction capacitance (Note 2)	$C_J$	32			18		13			pF
Operating junction and Storage temperature range	$T_J$	-55 to 150								°C
Storage temperature range	$T_{STG}$	-55 to 150								

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

Parameter	Symbol	SF 21	SF 22	SF 23	SF 24	SF 25	SF 26	SF 27	SF 28	Unit
Typical thermal resistance (Note 3)	$R_{\theta JA}$ $R_{\theta JL}$	50 16								°C/W

- Note:
- Pulse width < 300 uS, Duty cycle < 2%
  - Measured at 1MHz and applied reverse voltage of 4.0V D.C.
  - Thermal resistance from junction to lead vertical P.C.B. mounted , 0.375"(9.5mm)lead length,Polymide PCB, 2 oz Copper.  
Cathode pad dimensions 18.8x14.4mm , Anode pad dimensions- (5.6x14.4mm)

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RATING AND CHARACTERISTIC CURVES

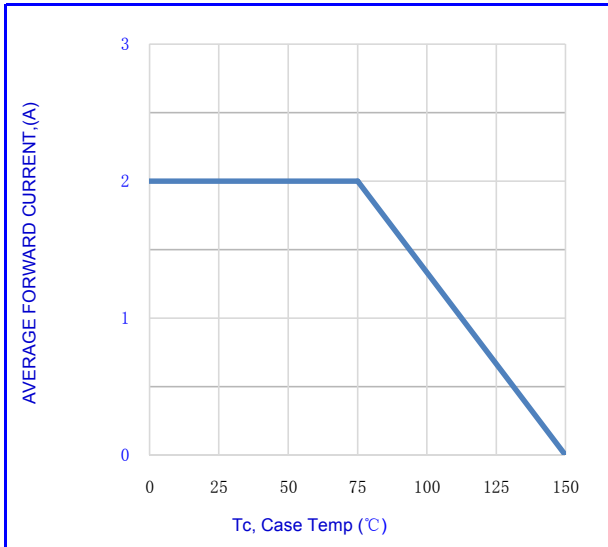


Fig.1-FORWARD CURRENT DERATING CURVE

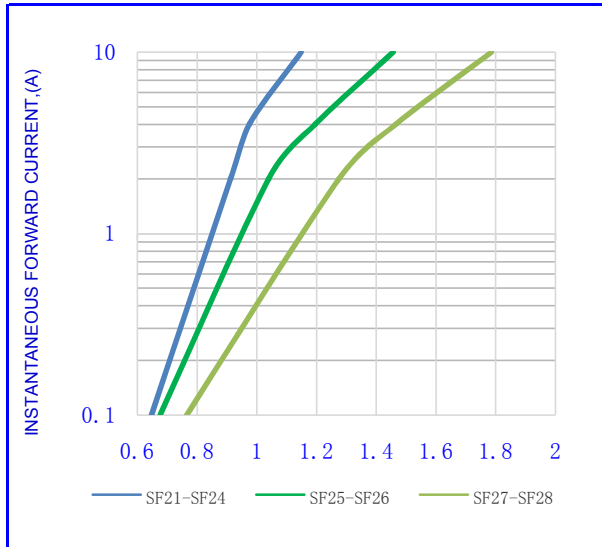


Fig.2-TYPICAL INSTANTANEOUS FORWARD

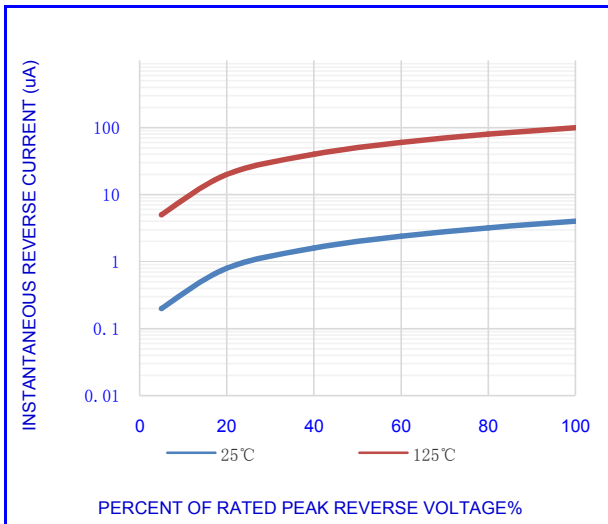


Fig.3-TYPICAL REVERSE CHARACTERISTICS

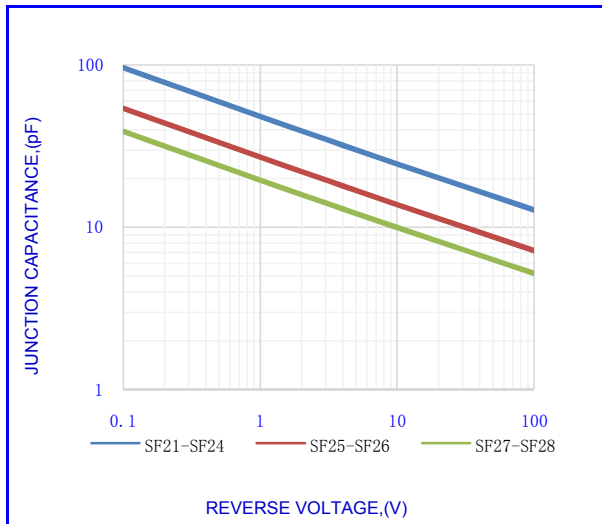


Fig.4-TYPICAL JUNCTION CAPACITANCE

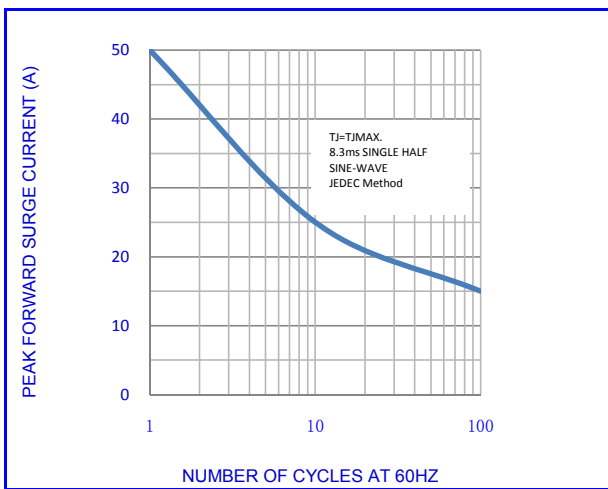


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

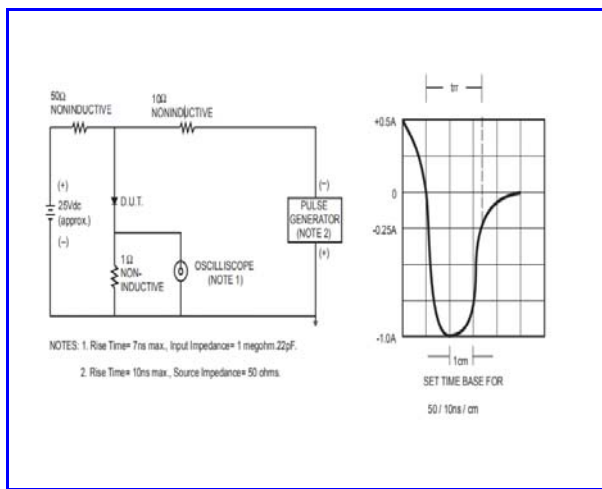
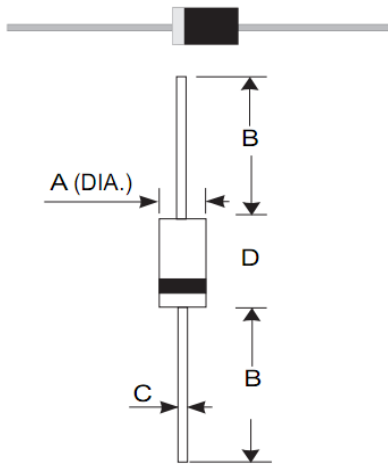


Fig.6-REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT

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**OUTLINE DRAWINGS**



**DO-15**

OUTLINE DIMENSIONS						
DIM	MILLIMETERS			INCHES		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.60	-	3.60	0.10	-	0.14
B	24.50	-	-	0.96	-	-
C	0.65	-	0.90	0.03	-	0.04
D	5.80	-	7.60	0.23	-	0.30

**Packing Information**

Package	Pack	Box Size L×W×H(mm)	Quantity (pcs/box)	Carton Size L×W×H(mm)	Quantity (box/pcs)
DO-15	B/P	250*75*140	3000	420*280*310	30000

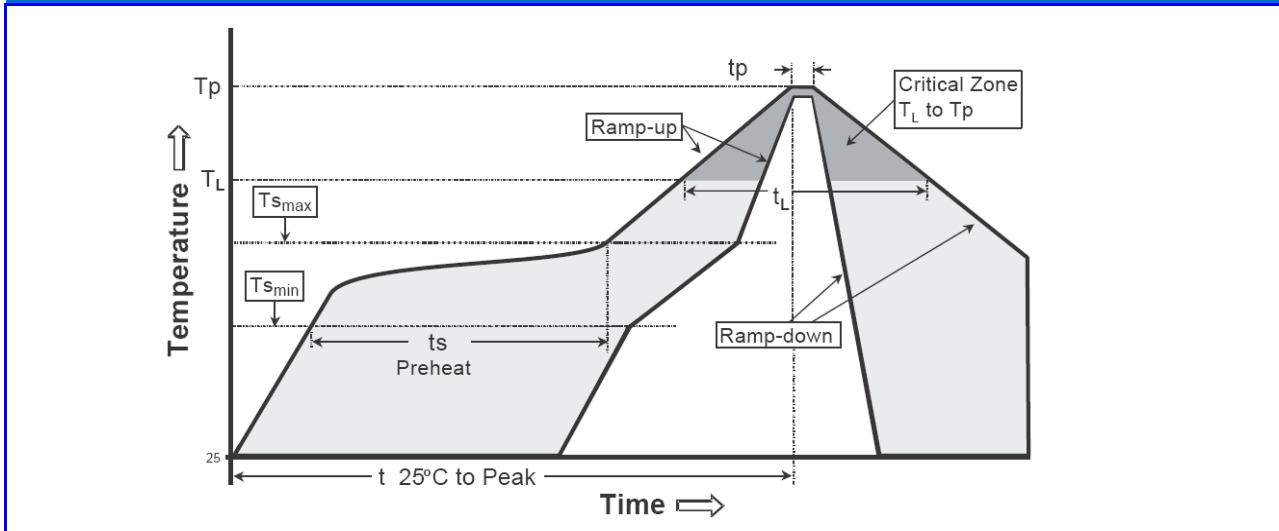
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Recommended wave soldering condition

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 SF

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