

SF1604CT,SF1604FCT
SUPER FAST RECOVERY RECTIFIERS



VOLTAGE: 400 Volts

CURRENT: 16 Amperes

Marking and Polarity

FEATURES

- Glass passivated chip junction
- Ultrafast reverse recovery time
- Low leakage current for high reliability
- Low forward voltage drop for high efficiency
- High surge capability for high reliability
- High temperature soldering guaranteed:260°C max./10 seconds at terminals

MECHANICAL DATA

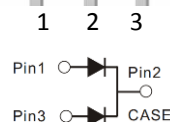
- **Case:** JEDEC TO-220AB、TO-220F
Molding compound meets UL94V-0 flammability rating
- **Terminals:** Lead solderable per J-STD-002 and JESD22-B102
- **Polarity:** As marked
- **Mounting Torque:** 10 in-lbs maximum

TYPICAL APPLICATIONS

- For use in switching power supplies ,high frequency inverters and LED Driver applications

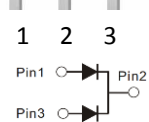
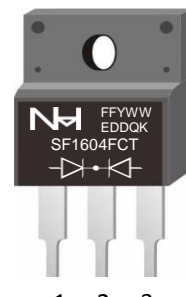
TO-220AB

SF1604CT



TO-220F

SF1604FCT



Remark:

- ①. NH=niuhang trademark;
- ②. FF=Product line code,According to actual changes
YWW=Data code,According to actual changes
EDDQK=Internal code,According to actual changes
- ③. SF1604CT/FCT=Mode.

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

Parameter	Symbol	SF1604CT,SF1604FCT	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	400	V
Maximum average forward rectified current(see fig.1)	$I_{F(AV)}$	16	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL)	I_{FSM}	200	A
Peak repetitive reverse current per diode at $t_p=2\mu s$ 1KHz	I_{RRM}	5	μA

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

Parameter	Test Conditions		Symbol	SF1604CT,SF1604FCT			Unit
				Min.	Typ.	Max.	
Instaneous forward voltage per diode (note1)	$T_A=25^\circ C$	$I_F= 8 A$	V_F	--	1.24	1.30	V
	$T_A=125^\circ C$			--	1.19	1.23	
Reverse current per diode (note2)	$T_A=25^\circ C$	$VR= V_{RRM}$ $VR= 80\%*V_{RRM}$	I_R	--	--	5	μA
	$T_A=125^\circ C$			--	--	100	μA
Maximum Reverse Recovery Time	$IF=0.5A, IR=1.0A, IRR=0.25A$		T_{RR}	--	35	50	ns
Typical junction capacitance	4V,1MHz		C_J	--	80		pF

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

Parameter	Symbol	SF1604CT,SF1604FCT	Unit
Operating junction	T_J	150	°C
Storage temperature range	T_{STD}	-55 to +150	
Typical thermal resistance (note3)	$R_{\theta JC}$	TO-220AB	°C/W
		2.5	

- Notes:
1. Pulse test: 300 μs pulse width,1% duty cycle
 2. Pulse test: pulse width $\leq 40ms$
 3. Device mounted on Device mounted on 75mm x 45mm x 2.5mm Aluminum Plate Heatsink.

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RATING AND CHARACTERISTIC CURVES

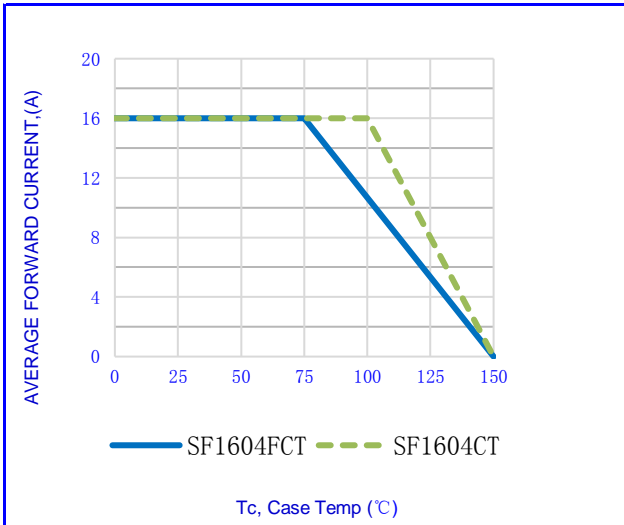


Fig.1-FORWARD CURRENT DERATING CURVE

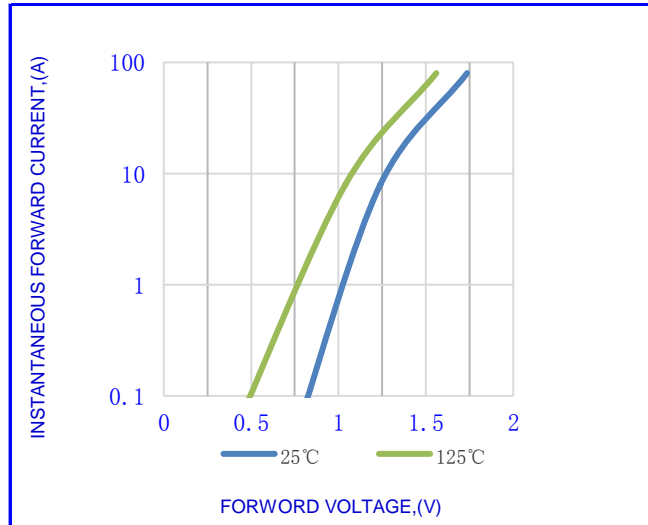


Fig.2- TYPICAL INSTANTANEOUS FORWARD

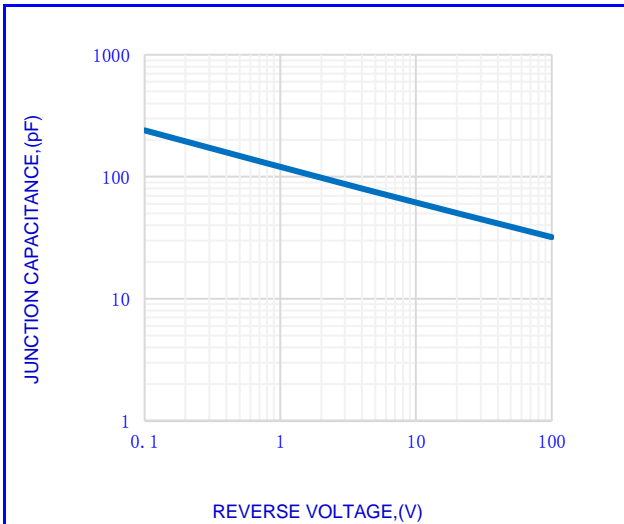


Fig.3- TYPICAL JUNCTION CAPACITANCE

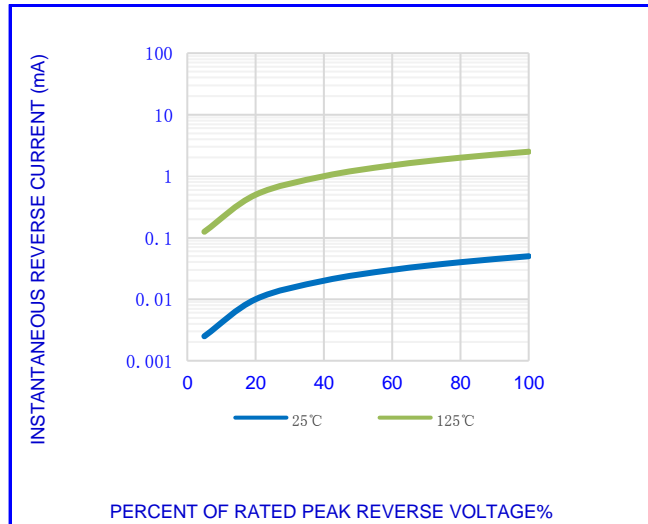


Fig.4- TYPICAL REVERSE CHARACTERISTICS

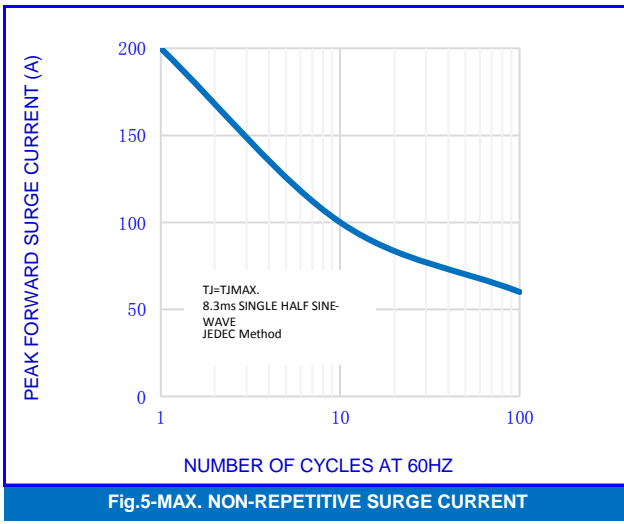


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

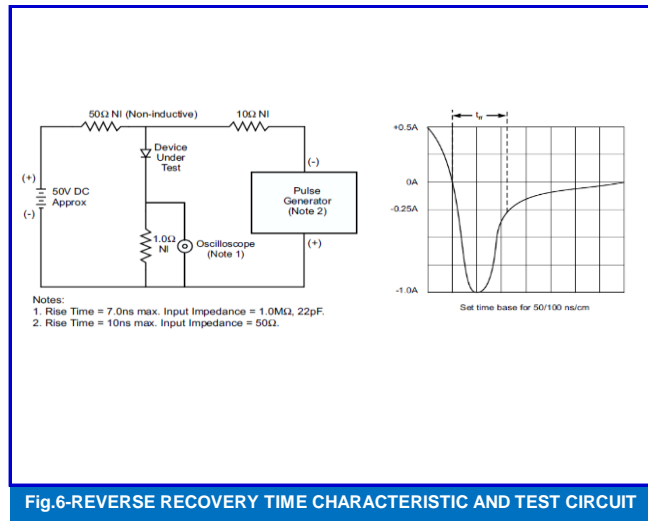


Fig.6-REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT

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Packing Information																																																																																																																									
Package Code	Package Method	Tube Size LxWxH(mm)	Quantity (pcs/Tube)	Inner Box Size LxWxH(mm)	Quantity (pcs/Inner Box)	Outer Carton Size LxWxH(mm)	Quantity (pcs/carton)																																																																																																																		
TO-220AB	Tube	530x35x8	50	560x155x55	1000	570x284x185	5000																																																																																																																		
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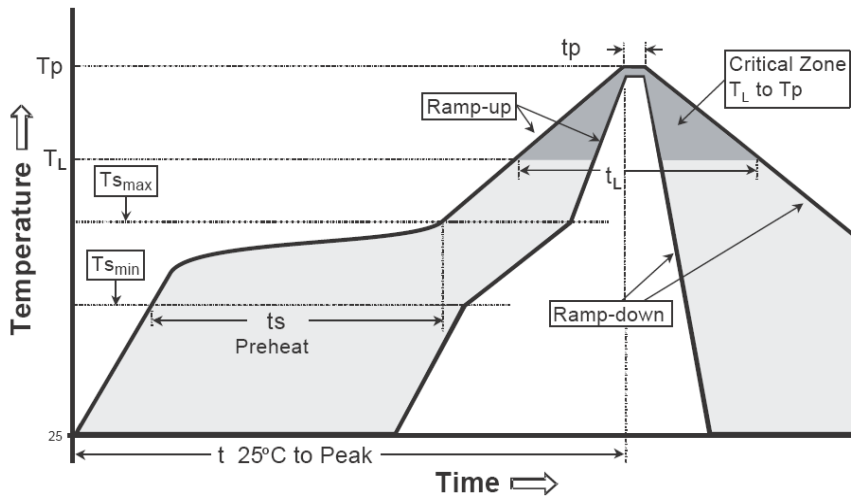
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Recommended wave soldering condition

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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