

SFF2006U/SFF2006UF
SUPER FAST RECOVERY RECTIFIERS



VOLTAGE 600 Volts

CURRENT 20 Amperes

Marking and Polarity

FEATURES

- Glass passivated chip junction
 - Super fast reverse recovery time
 - Low Forward Voltage Drop for high efficiency
 - Low leakage current for high reliability
 - High frequency operation
 - Solder bath temperature 275°C maximum, 10s, per JESD22-B106
- Component in accordance to RoHS 2011/65/EU

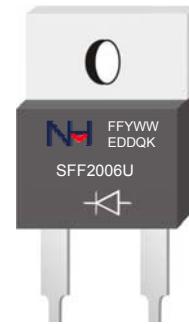
MECHANICAL DATA

- **Case:** JEDEC TO-220AC、ITO-220AC
Molding compound meets UL94V-0 flammability rating
- **Terminals:** Lead solderable per J-STD-002 and JESD22-B102
- **Polarity:** As marked
- **Mounting position:** Any

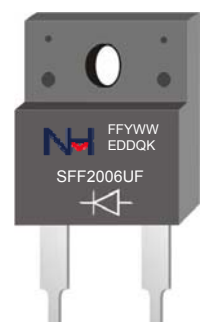
TYPICAL APPLICATIONS

For use in switching power supplies ,high frequency inverters ,PFC booster circuit, and polarity protection applications

TO-220AC
SFF2006U



ITO-220AC
SFF2006UF



Remark:

- ①. NH=niuhang trademark;
- ②. FF=Product line code,According to actual changes
YWW=Data code,According to actual changes
EDDQK=Inernal code,According to actual changes
SFF2006F/UF=Modle.
- ③.

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

Parameter	Symbol	SFF2006U/SFF2006UF	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	600	V
Maximum average forward rectified current(see fig.1)	$I_{F(AV)}$	20	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL)	I_{FSM}	150	A
Peak repetitive reverse current per diode at $t_p=2\mu s$ 1KHz	I_{RRM}	2	uA

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

Parameter	Test Conditions	Symbol	SFF2006U/SFF2006UF			Unit
			Min.	Typ.	Max.	
Instaneous forward voltage per diode (note1)	$T_A=25^\circ C$ $T_A=125^\circ C$ $I_F=10A$	V_F	--	1.40 1.32	1.80 1.74	V
Reverse current per diode (note2)	$T_A=25^\circ C$ $T_A=125^\circ C$ $V_R=V_{RRM}$ $V_R=80\%*V_{RRM}$	I_R	--	--	2 5	uA mA
Maximum Reverse Recovery Time	$I_F=0.5A$, $I_R=1.0A$, $IRR=0.25A$	T_{RR}	--	35	45	ns
Typical junction capacitance	4V,1MHz	C_J	--	6	--	pF

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

Parameter	Symbol	SFF2006U/SFF2006UF	Unit
Operating junction	T_J	175	°C
Storage temperature range	T_{STD}	-55 to +175	
Typical thermal resistance (note3)	$R_{\theta JC}$	TO-220AB	°C/W
		2.5	
		TO-220F	4.5

- 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

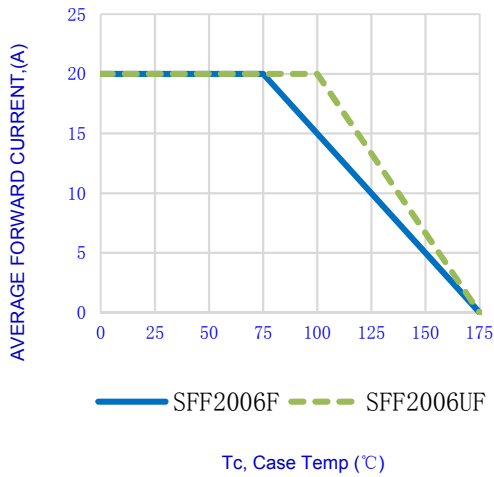


Fig.1-FORWARD CURRENT DERATING CURVE

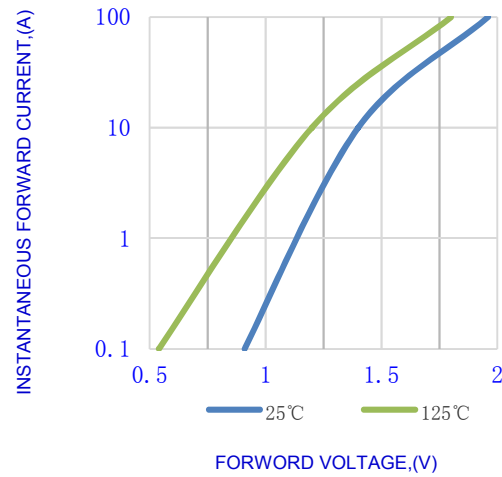


Fig.2- TYPICAL INSTANTANEOUS FORWARD

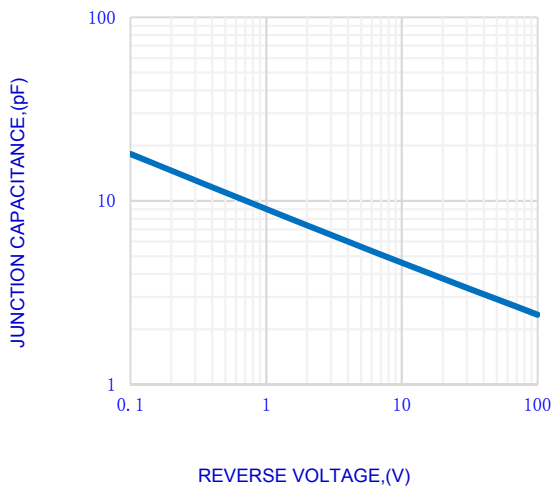


Fig.3- TYPICAL JUNCTION CAPACITANCE

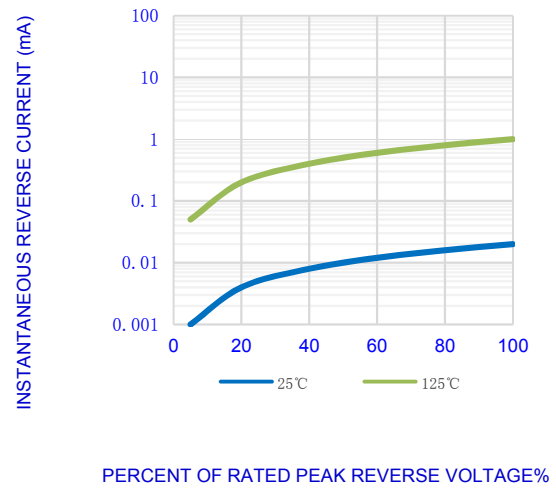


Fig.4- TYPICAL REVERSE CHARACTERISTICS

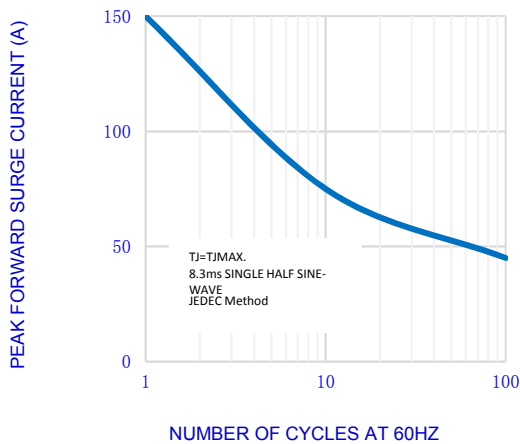
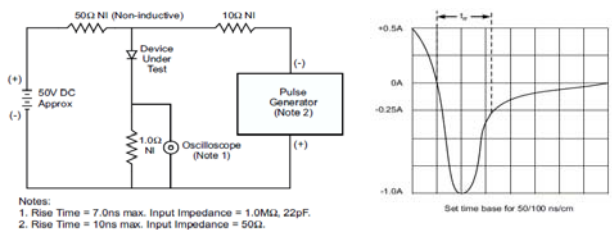


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT



Notes:
1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
2. Rise Time = 10ns max. Input Impedance = 50Ω.

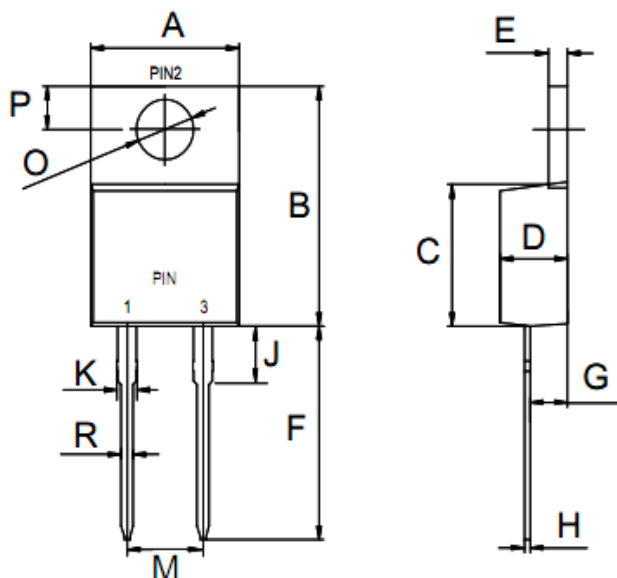
Fig.6-REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT

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OUTLINE DRAWINGS

TO-220AC

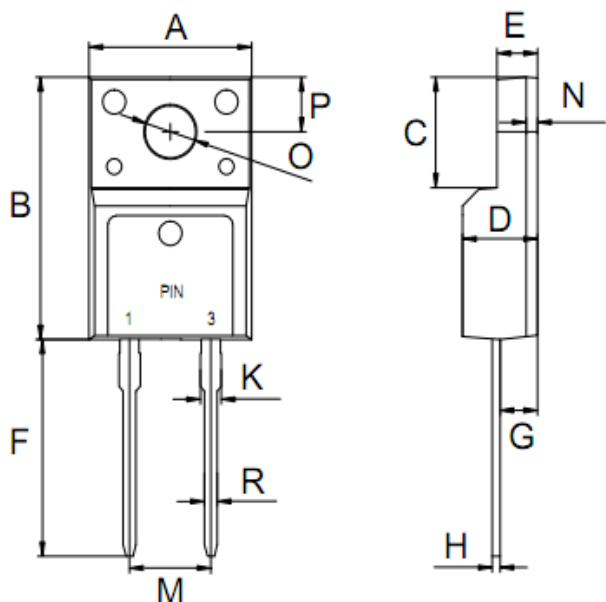


OUTLINE DIMENSIONS(Units:mm)

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.80	-	10.20	9.80	-	10.40
B	15.50	-	16.05	14.95	-	15.35
C	8.40	-	9.40	8.40	-	9.40
D	4.20	-	4.70	4.20	-	4.70
E	1.15	-	1.45	1.15	-	1.45
F	12.50	-	-	12.50	-	-
G	2.30	-	2.70	2.30	-	2.70
H	0.45	-	0.55	0.30	-	0.45
J	2.50	-	4.00	3.00	-	4.50
M	2.44	-	2.64	2.44	-	2.64
R	0.70	-	1.00	0.70	-	1.00
O	3.45	-	3.85	3.75	-	4.15
P	3.00	-	3.40	2.80	-	3.20

OUTLINE DRAWINGS

ITO-220AC



OUTLINE DIMENSIONS(MILI METERS)

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.90	-	10.40	10.00	-	10.40
B	14.90	-	15.40	15.40	-	16.20
C	6.48	-	6.88	6.48	-	6.88
D	4.30	-	4.70	4.50	-	4.90
E	2.70	-	3.30	2.35	-	2.75
F	12.50	-	-	12.50	-	-
G	2.40	-	2.80	2.00	-	2.40
H	0.50	-	0.70	0.40	-	0.60
M	4.90	-	5.30	4.90	-	5.30
N	1.25	-	1.45	0.70	-	1.00
K	1.20	-	1.40	1.20	-	1.40
R	0.45	-	0.75	0.60	-	1.00
O	3.10	-	3.70	3.10	-	3.70
P	2.40	-	3.50	3.00	-	4.00

PACKING INFORMATION

Package Code	Package Method	Tube Size L×W×H(mm)	Quantity (pcs/Tube)	Inner Box Size L×W×H(mm)	Quantity (pcs/Inner Box)	Outer Carton Size L×W×H(mm)	Quantity (pcs/carton)
TO-220AC	Tube	530x35x8	50	560x155x55	1000	570×284×185	5000
ITO-220AC	Tube	530x35x8	50	560x155x55	1000	570×284×185	5000

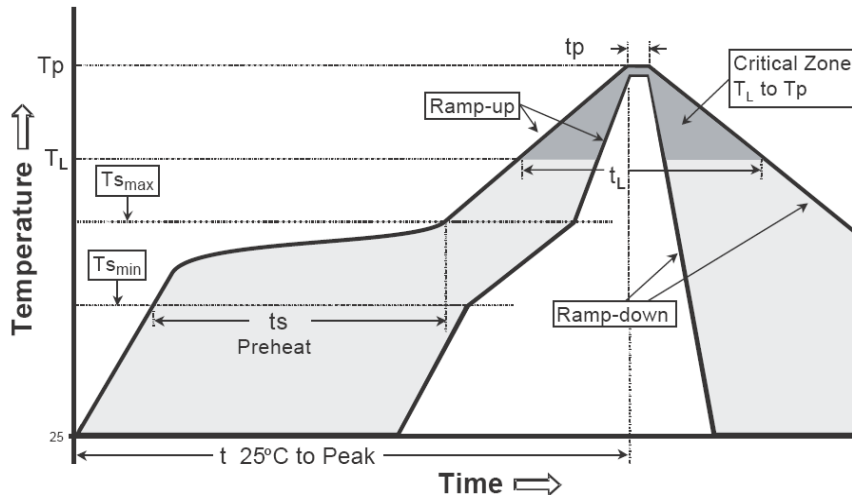
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Recommended wave soldering condition

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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