

**SFF2006DSU**

SUPER FAST RECOVERY RECTIFIERS



**VOLTAGE:** 600 Volts    **CURRENT:** 20 Amperes    **Package:** TO-252    **Marking And Polarity**

**FEATURES**

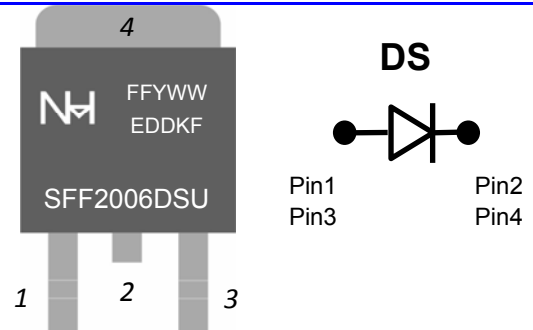
- Glass Passivated Chip Junction
- Low Forward Voltage Drop For High Efficiency
- Low Leakage Current For High Reliability
- High Forward Surge Capability For High Reliability
- Fast Reverse Recovery Time

**MECHANICAL DATA**

- **Package:** Molding Compound Meets UL 94 V-0 Flammability Rating, RoHS-Compliant
- **Polarity:** As Marked On Case
- **Mounting Position:** Any
- **Weight:** App. 0.321 Grams (0.01132 Ounce)

**TYPICAL APPLICATIONS**

- Typical Applications Are In Switching Power Supplies, High Frequency Converter, UPS, Freewheeling Diodes, PFC Boost And LED Driver Etc.



**Remark:**

- ①. NH=niuhang trademark
- ②. FF=Product line code,According to actual changes  
YWW=Date code,According to actual changes  
EDDKF=Inernal code,According to actual changes
- ③. SFF2006DSU=Model

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	SFF2006DSU	Unit
Maximum Repetitive Peak Reverse Voltage		$V_{RRM}$	600	V
Maximum RMS Voltag		$V_{RMS}$	420	V
Maximum DC Blocking Voltage		$V_{DC}$	600	V
Maximum Average Forward Rectified Current	@TC= 100 °C	$I_{F(AV)}$	20	A
Peak Forward Surge Current	8.3ms Single Half Sine-wave Superimposed On Rate Load	$I_{FSM}$	150	A
Current Squared Time Per Diode	t<8.3ms	$I^2t$	93.4	A <sup>2</sup> sec

**Electrical Characteristics (Ta=25°C Unless otherwise specified )**

Parameter	Test Conditions		Symbol	SFF2006DSU			Unit
				Min.	Typ.	Max.	
Instaneous forward voltage per diode (note1)	Ta=25°C	$I_F = 20.0 A$	$V_F$	--	1.35	1.60	V
	Ta=125°C			--	1.22	1.50	
Maximum DC Reverse Current at Rated DC Blocking Voltage (Note 1)	Ta=25°C	$V_R = V_{RRM}$	$I_{RRM}$	--	1	10	µA
	Ta=125°C	$V_R = 80% * V_{RRM}$		--	1	5	mA
Typical Junction Capacitance Per Diode	4.0 V, 1MHz		$C_J$	--	45	--	pF
Maximum Reverse Recovery Time	$I_F = 0.5A, I_R = 1.0A, I_{RR} = 0.25A$		$T_{RR}$	--	35	50	nS

**Thermal Characteristics (Ta=25°C Unless otherwise specified )**

Parameter	Symbol	SFF2006DSU		Unit
Operating Junction Temperature Range	$T_J$	-55	to 150	°C
Storage Temperature Range	$T_{STD}$	-55	to 150	
Typical thermal resistance (Note 2)	$R_{θJA}$	50		°C/W
	$R_{θJC}$	5		

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

2.Device Mounted On Device Mounted On 10cm\*10cm\*1mm copper pad areas.

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Typical Characteristics Curves

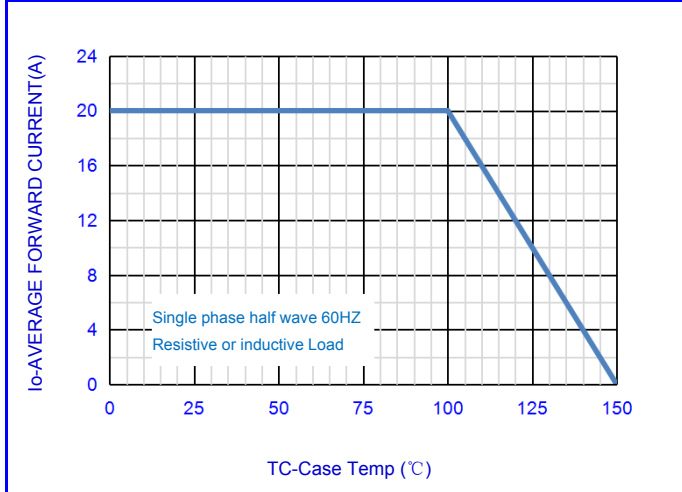


Fig.1-FORWARD CURRENT DERATING CURVE

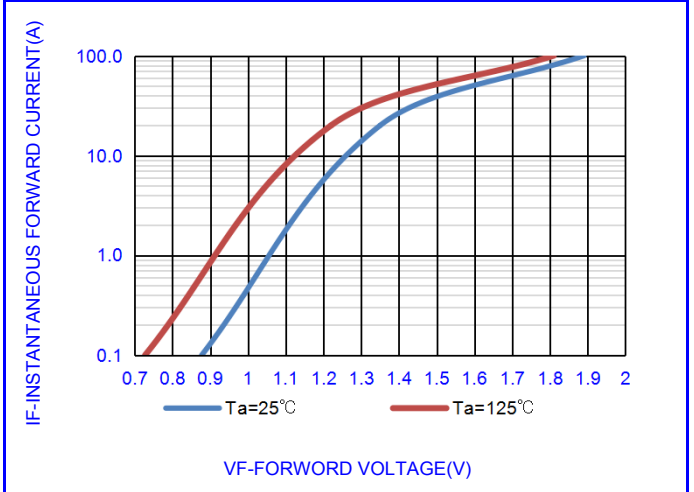


Fig.2- TYPICAL INSTANTANEOUS FORWARD

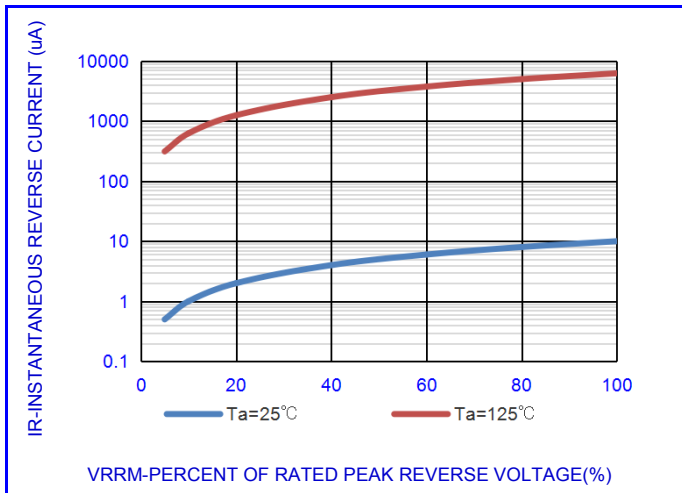


Fig.3- TYPICAL REVERSE CHARACTERISTICS

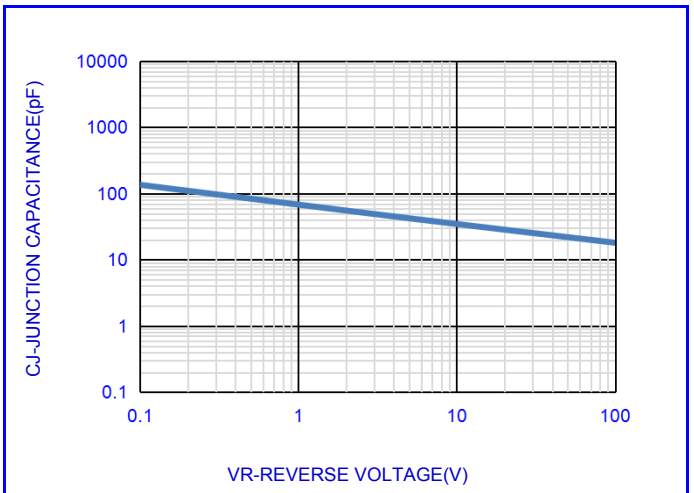


Fig.4- TYPICAL JUNCTION CAPACITANCE

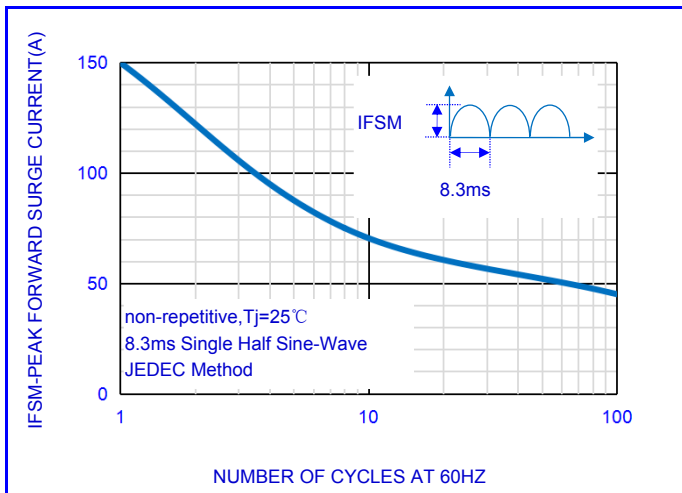


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

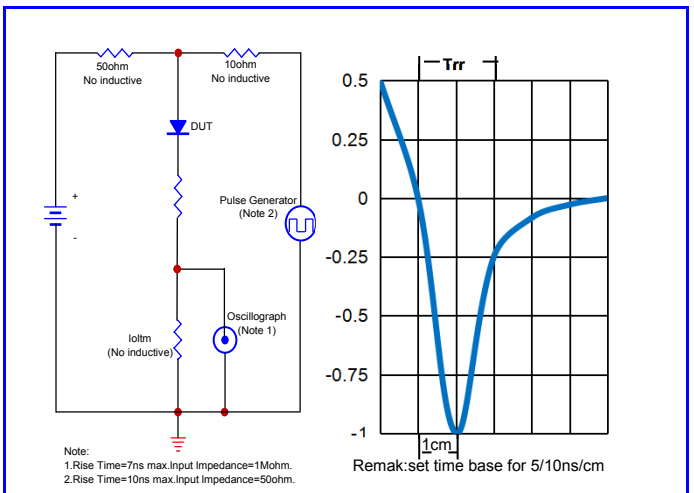


Fig.6-REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT

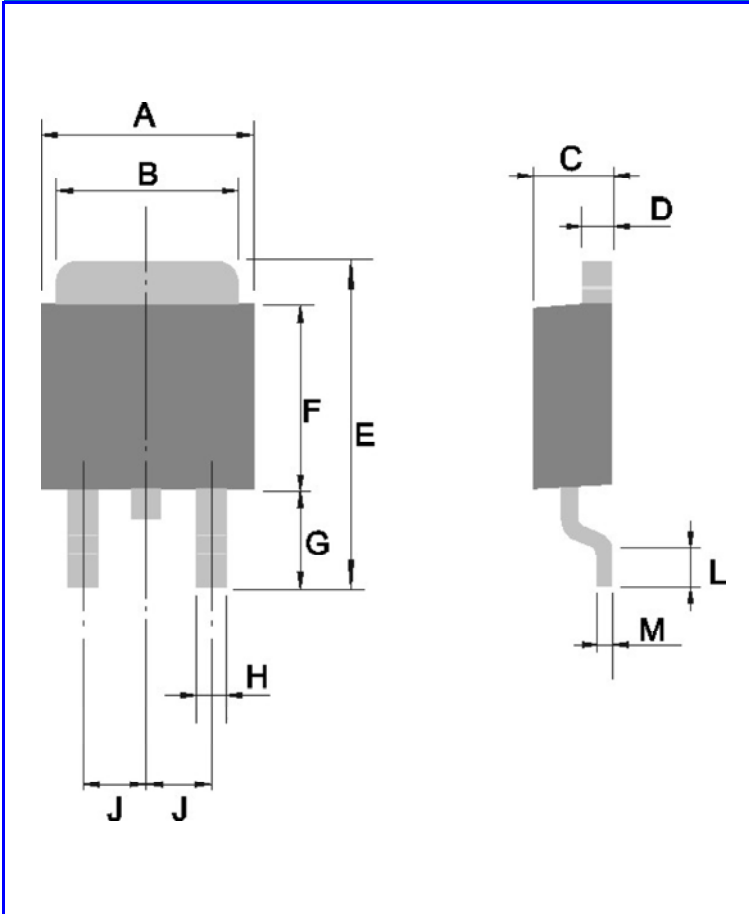
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OUTLINE DRAWINGS

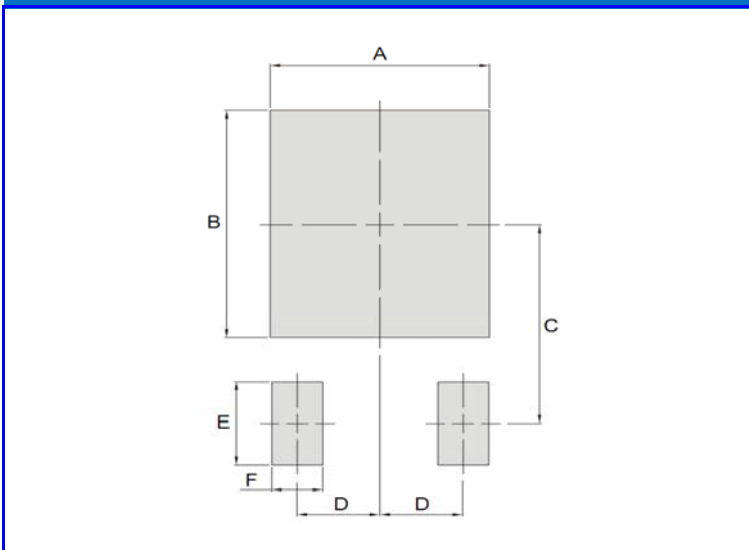
TO-252



OUTLINE DIMENSIONS						
Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.100	-	7.100	0.240	-	0.280
B	4.800	-	5.800	0.189	-	0.228
C	1.950	-	2.550	0.077	-	0.100
D	0.350	-	0.750	0.014	-	0.030
E	9.250	-	10.750	0.364	-	0.423
F	5.600	-	6.600	0.220	-	0.260
G	2.500	-	3.100	0.098	-	0.122
H	0.650	-	1.050	0.026	-	0.041
J	2.100	-	2.500	0.083	-	0.098
L	1.000	-	1.400	0.039	-	0.055
M	0.350	-	0.750	0.014	-	0.030

OUTLINE DRAWINGS

TO-252



OUTLINE DIMENSIONS						
Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	6.09	-	-	0.24	-
B	-	7.57	-	-	0.298	-
C	-	6.64	-	-	0.261	-
D	-	2.3	-	-	0.091	-
E	-	2.76	-	-	0.109	-
F	-	1.42	-	-	0.056	-

PACKING INFORMATION

Package Code	Package Method	Inner Box Size L×W×H(mm)	Quantity (Pcs/Inner Box)	Outer Carton Size L×W×H(mm)	Quantity (Pcs/Carton)
TO-252	T/R	340×340×50	5000	360×360×260	25000

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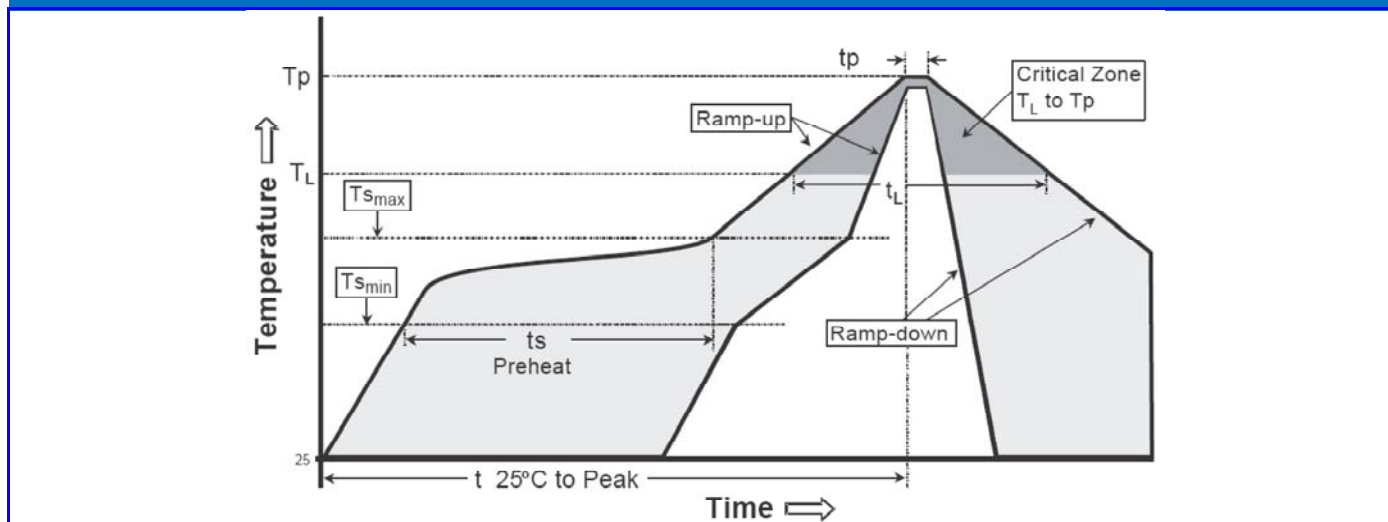
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Recommended wave soldering condition

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 (T <sub>smax</sub> to T <sub>p</sub> )	3°C/second max.	3°C/second max.
Preheat -Temperature Min(T <sub>S min</sub> ) -Temperature Max(T <sub>S max</sub> ) -Time( $t_s$ min to $t_s$ max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: -Temperature (T <sub>L</sub> ) - Time (t <sub>L</sub> )	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(T <sub>P</sub> )	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature( $t_p$ )	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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