

ST20A100Q

Low Vf Schottky Barrier Rectifiers



Voltage: 100 Volts

Current: 20 Amperes

Polarity And Marking

Package: TO-277

Features

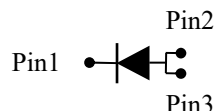
- NH'S Low Vf Schottky Barrier Chip Technology
- Super Low Forward Voltage Drop For High Efficiency
- Low Power Loss For High Reliability
- High Frequency Switching Speed

Mechanical Data

- Case:** Molded With UL-94 ClassV-0 Recognized, RoHS-Compliant
- Polarity:** Look At The Polarity And Marking On The Right
- Terminals:** Tin Plated Leads,Solderable Per J-STD-002 And JESD22-B102
- Weight:App. 0.1 Grams (0.07224 Ounce)

Typical Applications

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



Remark:

- NH=Niuhang Trademark
- FF=Product Line Code,According To Actual Changes
YWW=Date Code,According To Actual Changes
LLWWF=Internal Code,According To Actual Changes
- ST20A100Q=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	Ratings	Unit
Maximum Repetitive Peak Reverse Voltage		V_{RRM}	100	V
Maximum RMS Voltag		V_{RMS}	70	V
Maximum DC Blocking Voltage		V_{DC}	100	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}	220	A
Current Squared Time Per Diode	t< 8.3 ms	I^2t	200.9	A ² sec

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

Parameter	Test Conditions	Symbol	Ratings			Unit
			Min.	Typ.	Max.	
Instaneous forward voltage per diode	Ta=25°C	$I_F = 20 A$	--	0.76	0.81	V
	Ta=125°C		--	0.70	0.75	
Maximum DC Reverse Current at Rated DC Blocking Voltage	Ta=25°C	$V_R = V_{RRM}$	--	15	50	uA
	Ta=125°C	$V_R = V_{RRM}$	--	2	10	
Typical Junction Capacitance Per Diode	4 V,1MHz	C_J	--	240.0	--	pF

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

Parameter	Test Conditions	Symbol	Typ.	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	$R_{\theta JA}$	30.0	°C/W
Thermal Resistance Junction-Case With Steady-State	Device Mounted On 75mm x 45mm x 2.5mm Alu. Heat.	$R_{\theta JC}$	10.0	

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

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Typical Characteristics Curves

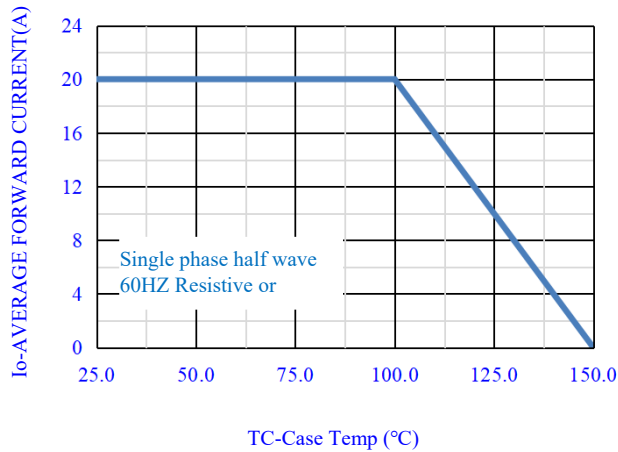


Fig.1-FORWARD CURRENT DERATING CURVE

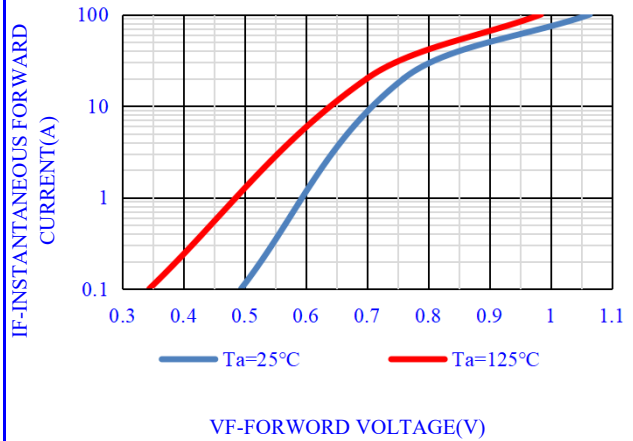


Fig.2- TYPICAL INSTANTANEOUS FORWARD

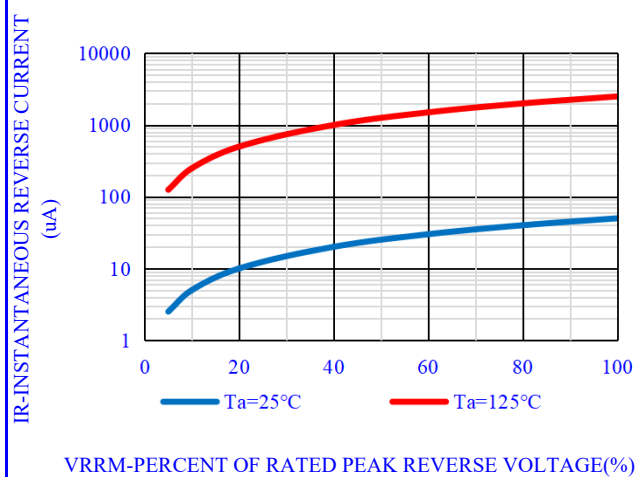


Fig.3- TYPICAL REVERSE CHARACTERISTICS

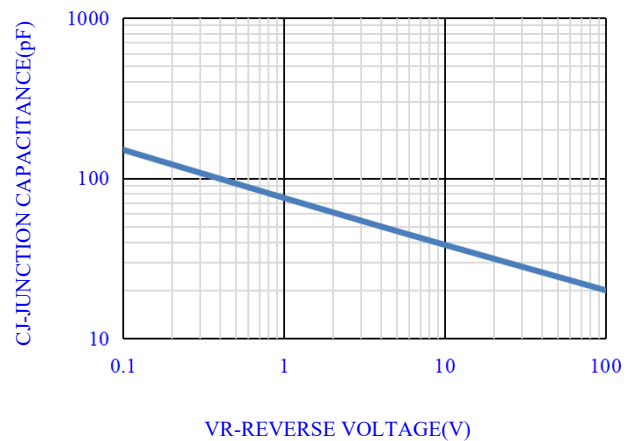


Fig.4- TYPICAL JUNCTION CAPACITANCE

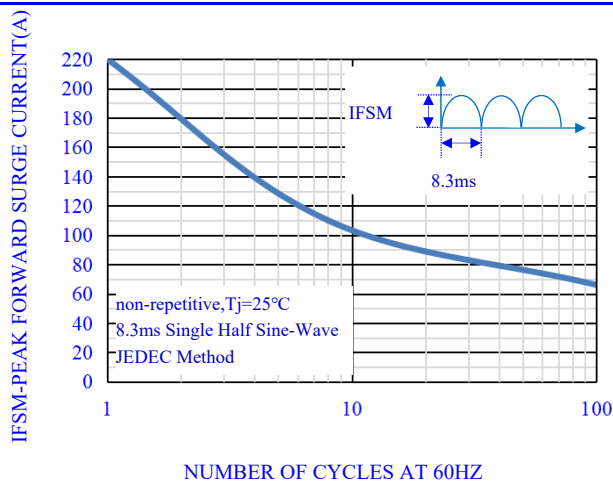


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

6-REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT

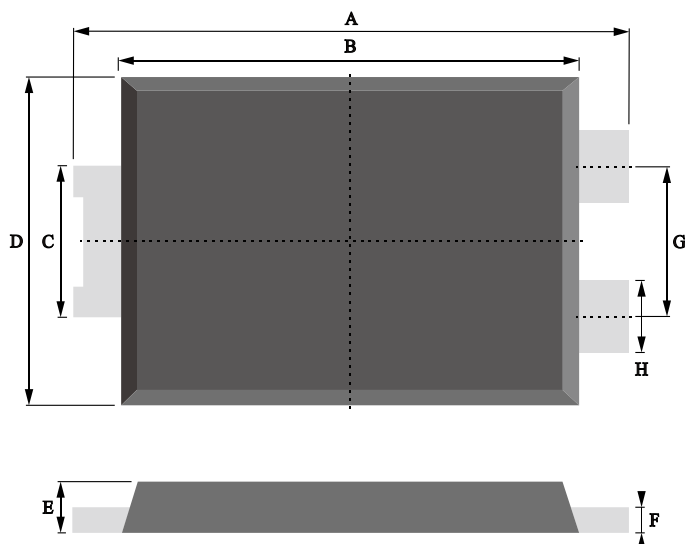
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OUTLINE DRAWINGS

TO-277

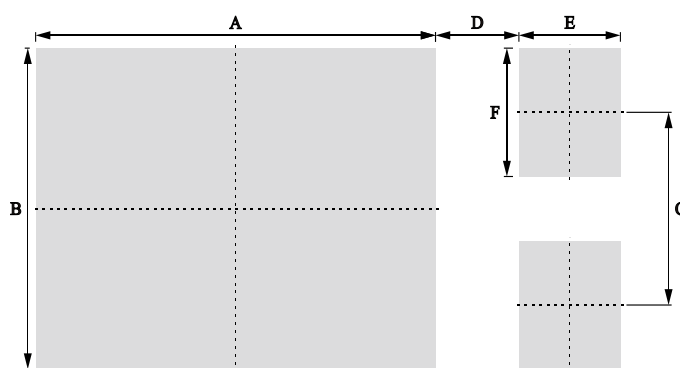


OUTLINE DIMENSIONS

Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	5.99	-	7.00	0.2358	-	0.2756
B	4.87	-	6.10	0.1917	-	0.2402
C	1.70	-	2.12	0.0669	-	0.0835
D	3.44	-	4.63	0.1354	-	0.1823
E	0.98	-	1.29	0.0386	-	0.0508
F	0.16	-	0.40	0.0063	-	0.0157
G	1.62	-	2.07	0.0638	-	0.0815
H	0.78	-	0.98	0.0307	-	0.0386

RECOMMENDED LAYOUT DRAWINGS

TO-277



OUTLINE DIMENSIONS

Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	4.65	-	-	0.1831	-
B	-	3.50	-	-	0.1378	-
C	-	2.10	-	-	0.0827	-
D	-	0.97	-	-	0.0382	-
E	-	1.18	-	-	0.0465	-
F	-	1.40	-	-	0.0551	-

PACKING INFORMATION

Package Code	Package Method	Min. Pack. Size (mm)	Quantity (Pcs/Min. Pack.)	Inner Box Size L×W×H(mm)	Quantity (Pcs/Inner Box)	Outer Carton Size L×W×H(mm)	Quantity (Pcs/Carton)
TO-277	T/R	Φ330	5000	337x337x40	10000	345x357x365	80000

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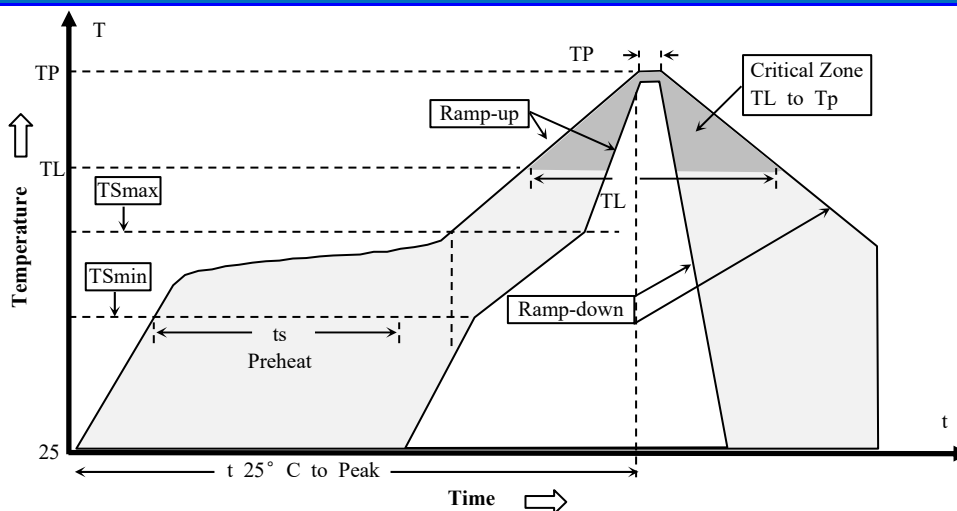
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Recommended wave soldering condition

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 _{smax} to T _p)	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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