

ST5L300

LOW VF RECTIFIERS



VOLTAGE: 300 Volts **CURRENT:** 5 Amperes **Package:** TO-277 **Marking And Polarity**

FEATURES

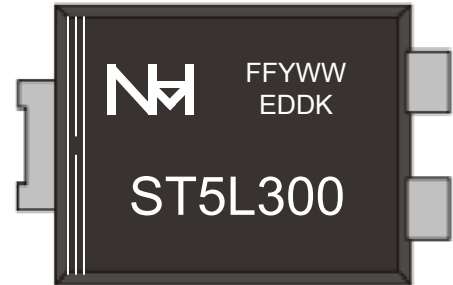
- Plane Schottky Potential Barrier Chip
- Low Forward Voltage Drop For High Efficiency
- Low Leakage Current For High Reliability
- High Forward Surge Capability For High Reliability
- High Frequency Operation

MECHANICAL DATA

- **Package:** Molding Compound Meets UL 94 V-0 Flammability Rating, RoHS-Compliant
- **Polarity:** As Marked On Case
- **Mounting Position:** Any
- **Weight:** App. 0.1 grams (0.00352 ounce)

TYPICAL APPLICATIONS

- For Use In High Frequency Inverters, Switching Mode Power Supply
AC/DC Converters, LED Driver Etc.Applications



Remark:

- ①. NH=niuhang trademark
- ②. FF=Product line code, According to actual changes
YWW=Date code, According to actual changes
EDDK=Internal code, According to actual changes
- ③. ST5L300=Model
- ④. White band denotes cathode

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	ST5L300	Unit
Maximum Repetitive Peak Reverse Voltage		V_{RRM}	300	V
Maximum RMS Voltag		V_{RMS}	210	V
Maximum DC Blocking Voltage		V_{DC}	300	V
Maximum Average Forward Rectified Current	@TC= 100 °C	$I_{F(AV)}$	5	A
Peak Forward Surge Current	8.3ms Single Half Sine-wave Superimposed On Rate Load	I_{FSM}	110	A
Current Squared Time Per Diode	t<8.3ms	I^2t	50.2	A ² sec

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

Parameter	Test Conditions		Symbol	ST5L300			Unit
				Min.	Typ.	Max.	
Instaneous forward voltage per diode (note1)	Ta=25°C	$I_F = 5.0 A$	V_F	--	0.85	1.00	V
	Ta=125°C			--	0.75	0.90	
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	--	300	--	pF

Thermal Characteristcs (Ta=25°C Unless otherwise specified)

Parameter	Symbol	ST5L300	Unit
Operating Junction Temperature Range	T_J	-55 to 150	°C
Storage Temperature Range	T_{STD}	-55 to 150	
Typical thermal resistance (Note 2)	$R_{θJA}$	35	°C/W
	$R_{θJL}$	10	

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

2.Mounted on P.C.B. with 0.3" x 0.3" (7.62 mm x 7.62 mm) copper pad areas

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Typical Characteristics Curves

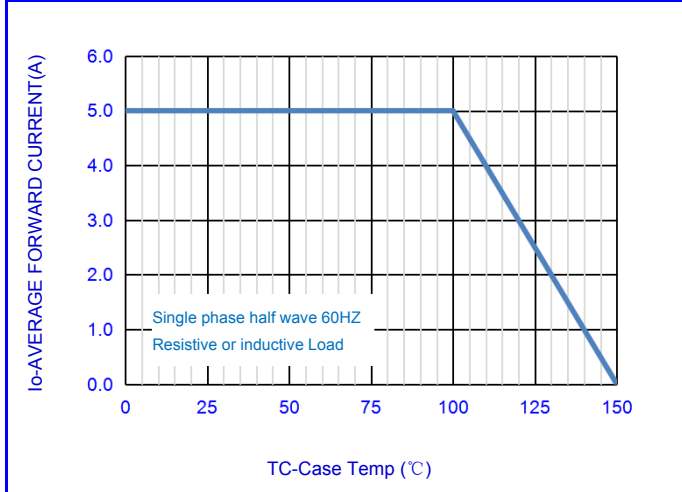


Fig.1-FORWARD CURRENT DERATING CURVE

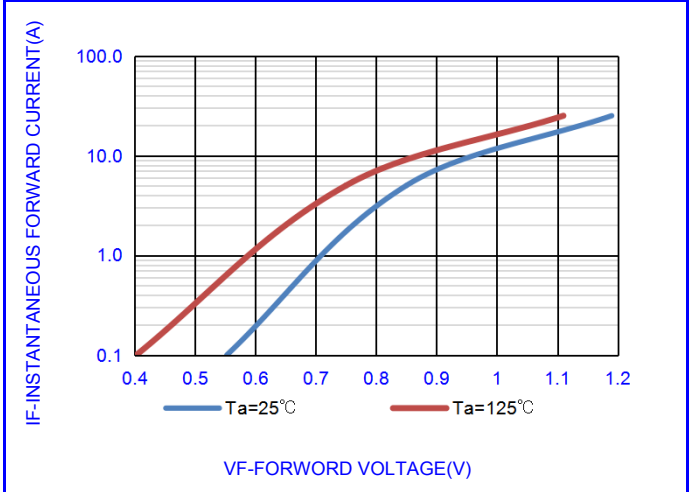


Fig.2- TYPICAL INSTANTANEOUS FORWARD

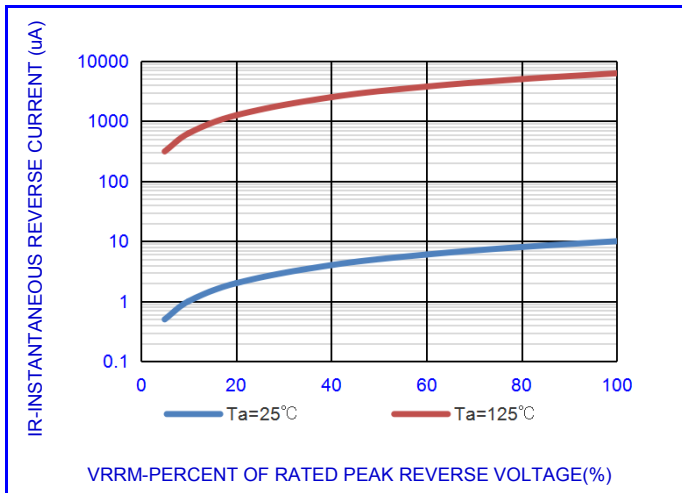


Fig.3- TYPICAL REVERSE CHARACTERISTICS

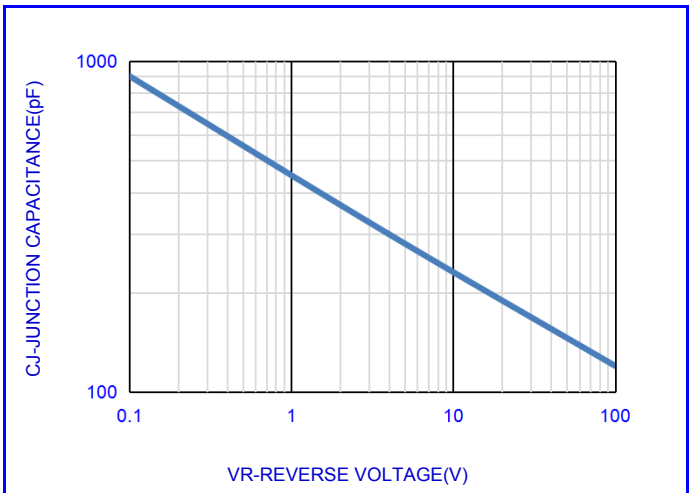


Fig.4- TYPICAL JUNCTION CAPACITANCE

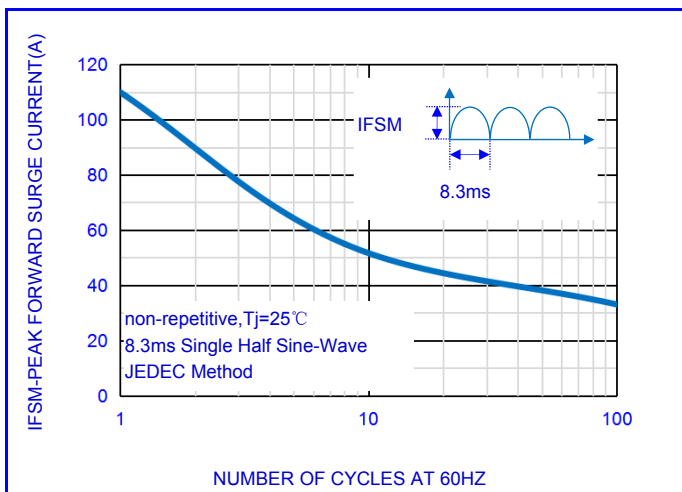


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

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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-277	T/R	350×350×50	10000	360×360×310	60000

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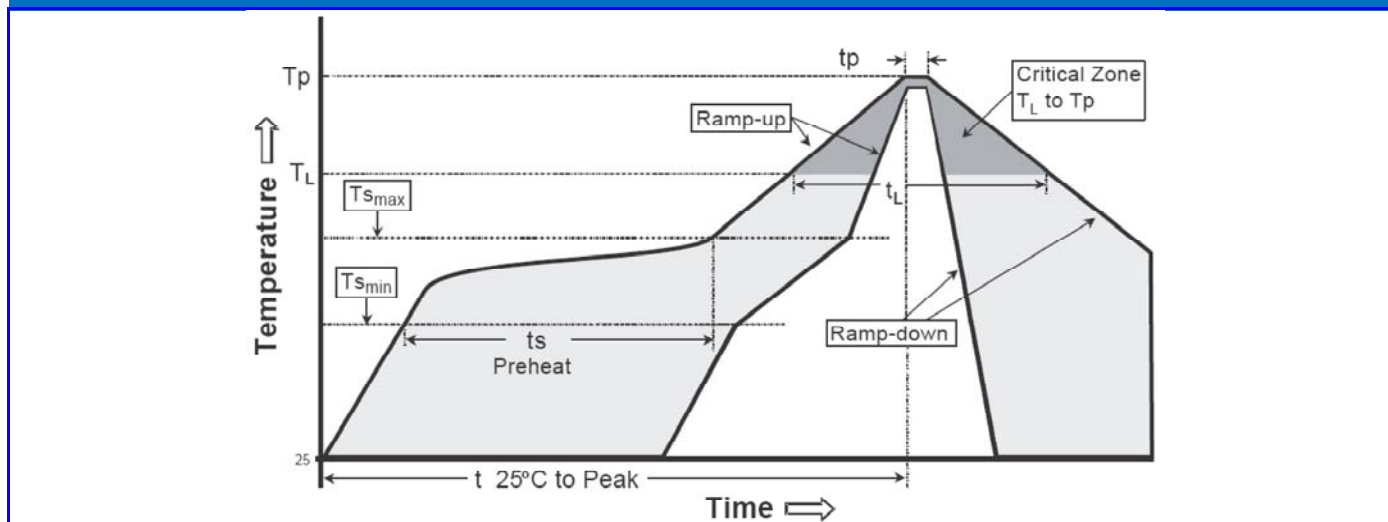
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Recommended wave soldering condition

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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