

SS54 THRU SS520

SCHOTTKY BARRIER RECTIFIERS



| | | | |
|------------------------------|-----------------------------|---------------|----------------------|
| VOLTAGE: 40~200 Volts | CURRENT: 5.0 Amperes | DO-214AA(SMB) | Marking and Polarity |
|------------------------------|-----------------------------|---------------|----------------------|

FEATURES


- Low Forward Voltage Drop for high efficiency
- Low leakage current for high reliability
- High forward surge capability for high reliability

MECHANICAL DATA

- **Terminals:** Plated Leads Solderable per MIL-STD-202, Method 208
- **Mounting Position:** Any
- **Lead Free:** Lead Free Finish, RoHS Compliant
- **Weight:** App. 0.095 grams (0.0034 ounce)

TYPICAL APPLICATIONS

- For use in high frequency inverters ,
DC/DC converters,LED driver etc. applications



Remark:

- ①. NH=niuhang trademark
- ②. FF=Product line,According to actual changes;
YWW=Periodic code,According to actual changes;
- ③. SS5xx=Modle,xxx=4,45,6,8,10,15,20
- ④. White band denotes cathode

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

| Parameter | Symbol | SS54 | SS545 | SS56 | SS58 | SS510 | SS515 | SS520 | Unit |
|--|-------------|-------|-------|------|------|-------|-------|-------|--------------------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 40 | 45 | 60 | 80 | 100 | 150 | 200 | V |
| Maximum RMS voltage | V_{RMS} | 28 | 32 | 42 | 56 | 70 | 105 | 140 | V |
| Maximum DC blocking voltage | V_{DC} | 40 | 45 | 60 | 80 | 100 | 150 | 200 | V |
| Maximum average forward rectified current(see fig.1) | $I_{F(AV)}$ | 5.0 | | | | | | | A |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL) | I_{FSM} | 120 | | | | | | | A |
| Current Squared Time Per Diode(t<8.3ms) | I^2t | 59.76 | | | | | | | A ² sec |

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

| Parameter | Test Conditions | | Symbol | SS54 | SS545 | SS56 | SS58 | SS510 | SS515 | SS520 | Unit |
|---|-----------------|--------------------|-----------|------|-------|------|------|-------|-------|-------|------|
| Maximum Forward Voltage(Note 1) | Ta=25°C | IF= 5.0 A | V_F | 0.55 | 0.70 | 0.80 | | 0.90 | | V | |
| Maximum instantaneous reversecurrent at rated DC blockingvoltage (Note 1) | Ta=25°C | VR= V_{RRM} | I_{RRM} | 100 | 80 | 50 | | 10 | | uA | |
| | Ta=125°C | VR= 80%* V_{RRM} | | 10 | 8 | 5 | | 3 | | mA | |
| Typical junction capacitance | 4V,1MHz | | C_J | 250 | 200 | 150 | | 100 | | pF | |

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

| Parameter | Symbol | SS54 | SS545 | SS56 | SS58 | SS510 | SS515 | SS520 | Unit |
|--|-----------------|------------|-------|------------|------|------------|-------|-------|------|
| Operating junction and Storage temperature range | T_J | -55 to 125 | | -55 to 150 | | -55 to 175 | | | °C |
| Storage temperature range | T_{STG} | -55 to 125 | | -55 to 150 | | -55 to 175 | | | |
| Typical thermal resistance (Note 2) | $R_{\theta JA}$ | 60 | | | | °C/W | | | |
| | $R_{\theta JC}$ | 20 | | | | | | | |

- Note:**
- 1.Pulse width < 300 uS, Duty cycle < 2%
 - 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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RATING AND CHARACTERISTIC CURVES

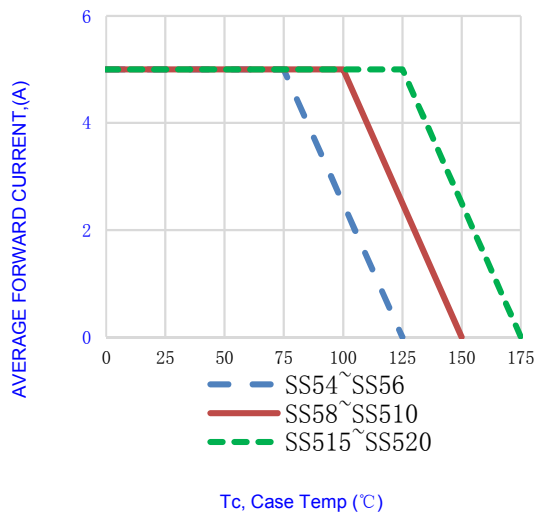


Fig.1-FORWARD CURRENT DERATING CURVE

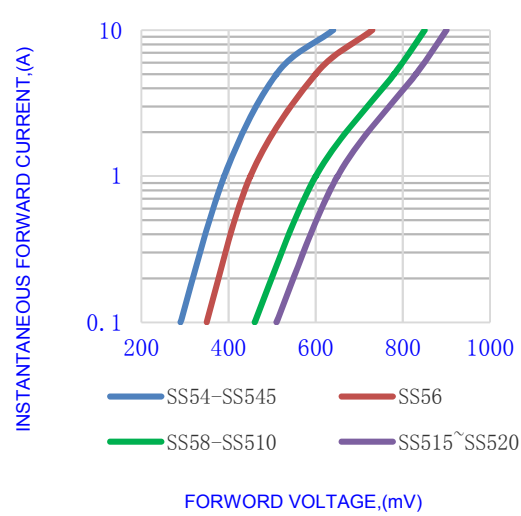


Fig.2-TYPICAL INSTANTANEOUS FORWARD

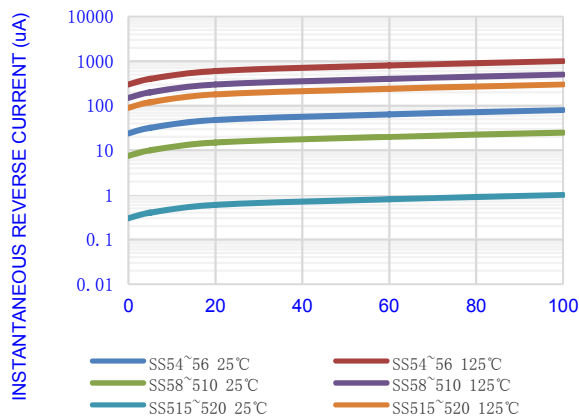


Fig.3-TYPICAL REVERSE CHARACTERISTICS

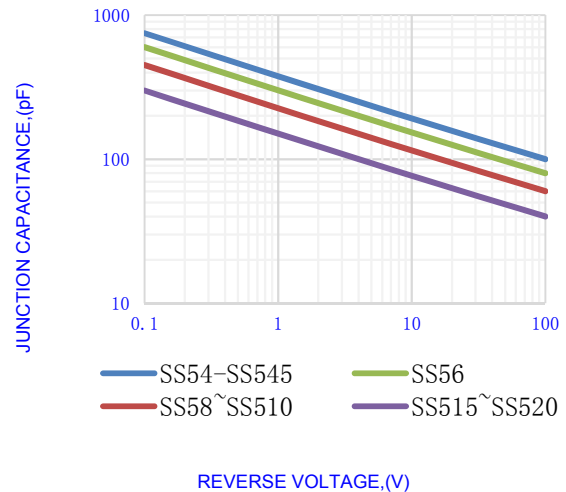


Fig.4-TYPICAL JUNCTION CAPACITANCE

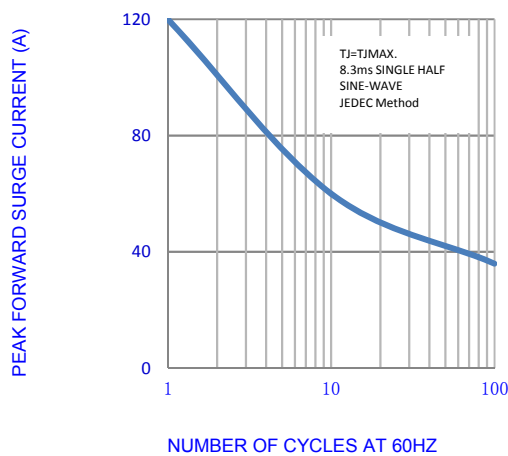


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

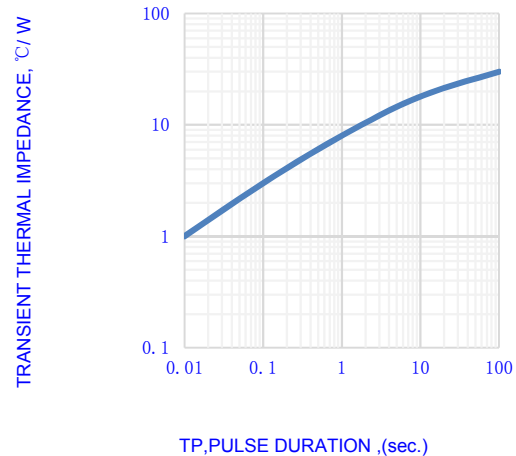


Fig.6-TYPICAL TRANSIENT THERMAL IMPEDANCE

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| OUTLINE DRAWINGS | | | | DO-214AA(SMB) | | | | | | |
|-----------------------------|----------------|---------------------|--------------------------|--|-----------------------|-----------------------|-------------|-------------|-------------|-------------|
| | | | | OUTLINE DIMENSIONS | | | | | | |
| | | | | MILLIMETERS | | INCHES | | | | |
| | | | | DIM | Min. | Typ. | Max. | Min. | Typ. | Max. |
| | | | | A | 4.060 | - | 4.700 | 0.160 | - | 0.185 |
| | | | | B | 5.080 | - | 5.590 | 0.200 | - | 0.220 |
| | | | | C | 3.300 | - | 3.940 | 0.130 | - | 0.155 |
| | | | | D | 2.130 | - | 2.440 | 0.083 | - | 0.096 |
| | | | | E | 1.910 | - | 2.110 | 0.075 | - | 0.083 |
| | | | | F | 0.760 | - | 1.270 | 0.030 | - | 0.050 |
| | | | | G | 0.051 | - | 0.203 | 0.002 | - | 0.008 |
| | | | | H | 0.152 | - | 0.305 | 0.006 | - | 0.012 |
| RECOMMENDED LAYOUT DRAWINGS | | | | DO-214AA(SMB) | | | | | | |
| | | | | RECOMMENDED MOUNTING PAD DIMENSIONS | | | | | | |
| | | | | Milimeters | | Inches | | | | |
| | | | | Dim. | Min. | Typ. | Max. | Min. | Typ. | Max. |
| | | | | A | - | 6.340 | - | - | 0.250 | - |
| | | | | B | - | 2.720 | - | - | 0.107 | - |
| | | | | C | - | 1.760 | - | - | 0.069 | - |
| | | | | D | - | 2.290 | - | - | 0.090 | - |
| PACKING INFORMATION | | | | DO-214AA(SMB) | | | | | | |
| Package Method | Reel Size (mm) | Quantity (pcs/reel) | Inner Box Size L×W×H(mm) | Quantity (pcs/Inner Box) | Carton Size L×W×H(mm) | Quantity (pcs/carton) | | | | |
| Tape Reel | Φ330 | 3000 | 340×340×45 | 6000 | 360×360×470 | 60000 | | | | |

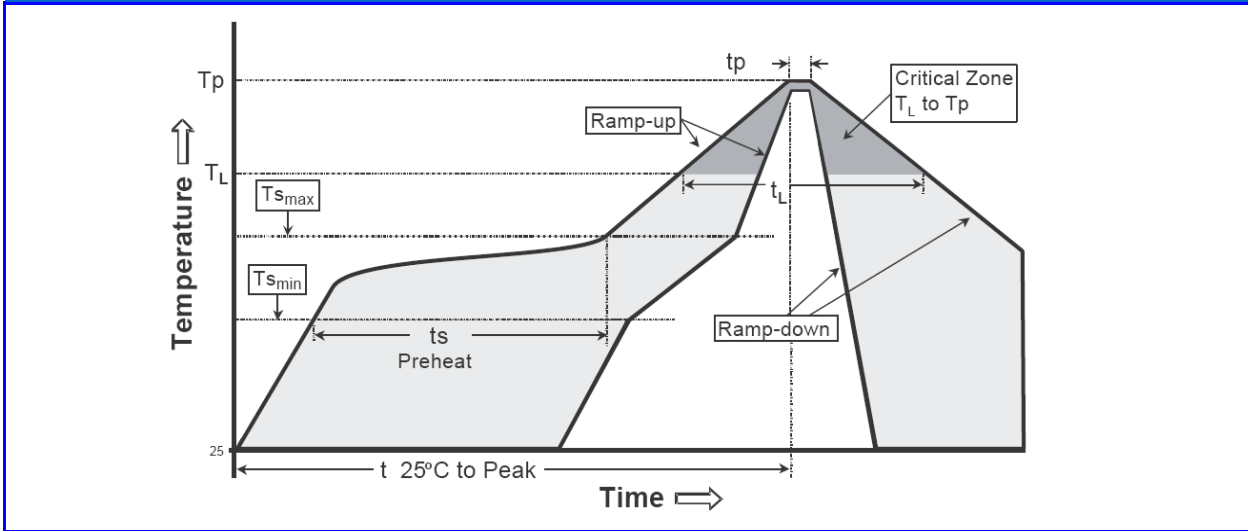
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Recommended wave soldering condition

| | | |
|-----------------|------------------|-----------------|
| 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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