

SS54A THRU SS520A
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. 0.063 grams (0.0022 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. SS5xxA=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 | SS54A | SS545A | SS56A | SS58A | SS510A | SS515A | SS520A | 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} | 125 | | | | | | | A |
| Current Squared Time Per Diode (t<8.3ms) | i^2t | 64.84 | | | | | | | A ² sec |

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

| Parameter | Test Conditions | | Symbol | SS54A | SS545A | SS56A | SS58A | SS510A | SS515A | SS520A | Unit |
|---|-----------------|--------------------|-----------|-------|--------|-------|-------|--------|--------|--------|------|
| | Ta=25°C | IF= 5.0 A | | | | | | | | | |
| 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 reverse current at rated DC blocking voltage (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 | SS54A | SS545A | SS56A | SS58A | SS510A | SS515A | SS520A | 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) | $R_{\theta JA}$ | 55 | | | | | °C/W | | |
| | $R_{\theta JC}$ | 25 | | | | | | | |

- 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

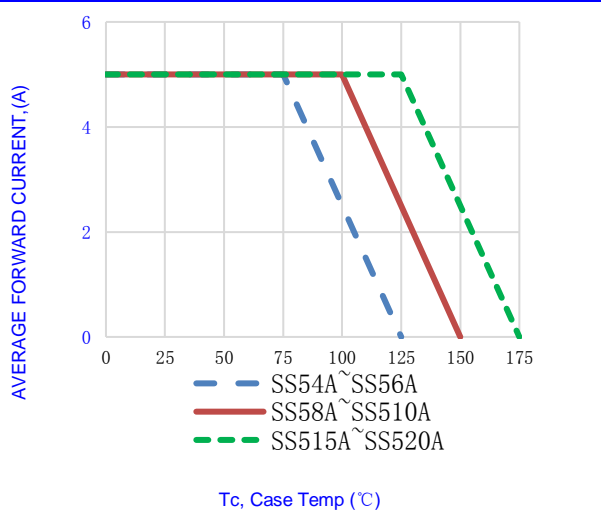


Fig.1-FORWARD CURRENT DERATING CURVE

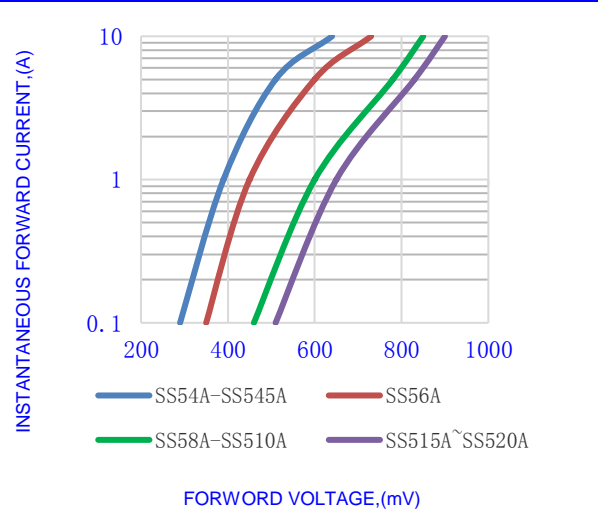


Fig.2- TYPICAL INSTANTANEOUS FORWARD

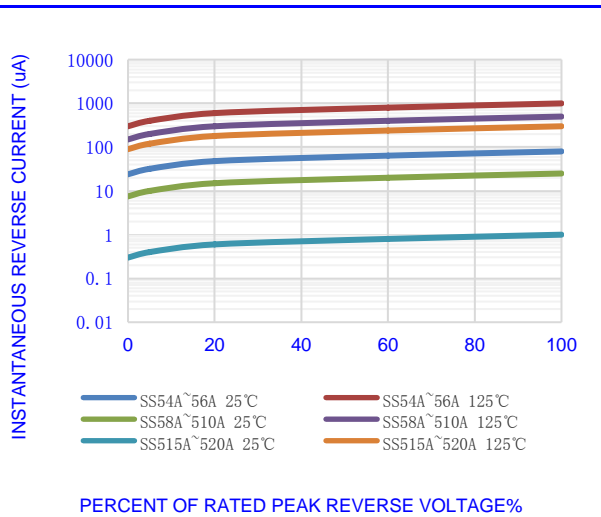


Fig.3- TYPICAL REVERSE CHARACTERISTICS

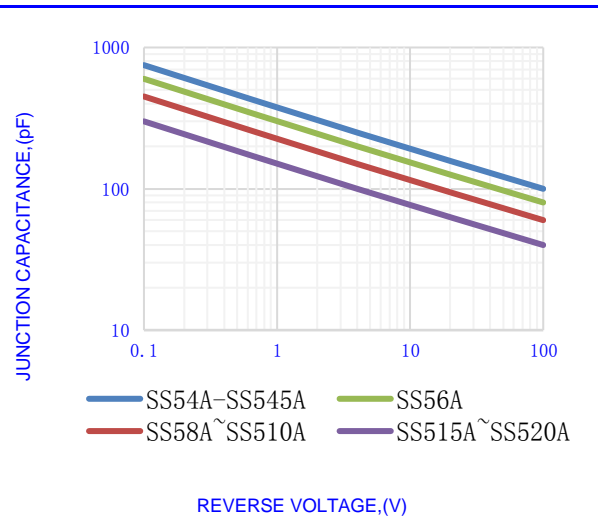


Fig.4-TYPICAL JUNCTION CAPACITANCE

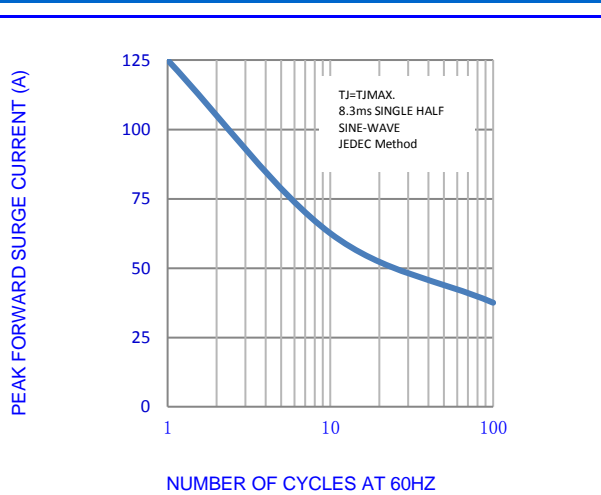


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

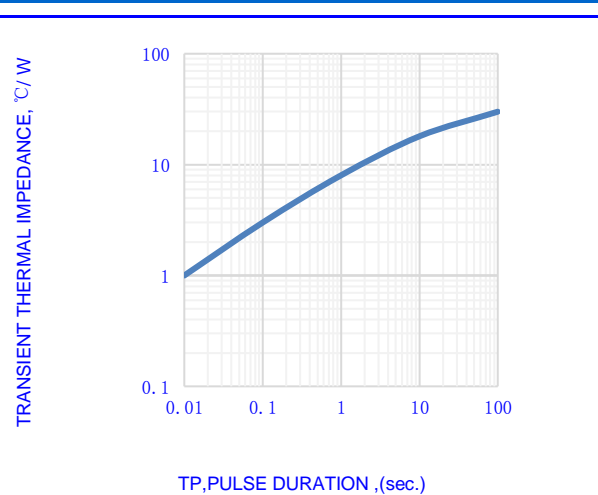


FIG.6-TYPICAL TRANSIENT THERMAL IMPEDANCE

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| OUTLINE DRAWINGS | | | | DO-214AA(SMB) | | |
|------------------|-------------|-------------|-------------|---------------------------|-------------|---------------|
| | | | | OUTLINE DIMENSIONS | | |
| | | | | MILLIMETERS | | INCHES |
| DIM | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.000 | - | 4.600 | 0.181 | - | 0.157 |
| B | 4.700 | - | 5.280 | 0.185 | - | 0.208 |
| C | 2.400 | - | 2.800 | 0.094 | - | 0.110 |
| D | 1.900 | - | 2.400 | 0.075 | - | 0.094 |
| E | 1.300 | - | 1.500 | 0.051 | - | 0.059 |
| F | 0.760 | - | 1.520 | 0.030 | - | 0.060 |
| G | 0.100 | - | 0.250 | 0.004 | - | 0.010 |
| H | 0.150 | - | 0.305 | 0.006 | - | 0.012 |

| RECOMMENDED LAYOUT DRAWINGS | | | | DO-214AA(SMB) | | |
|-----------------------------|-------------|-------------|-------------|--|-------------|---------------|
| | | | | RECOMMENDED MOUNTING PAD DIMENSIONS | | |
| | | | | Millimeters | | Inches |
| Dim. | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | - | 5.800 | - | - | 0.228 | - |
| B | - | 2.060 | - | - | 0.081 | - |
| C | - | 1.660 | - | - | 0.065 | - |
| D | - | 2.070 | - | - | 0.082 | - |

| PACKING INFORMATION | | | | DO-214AA(SMB) | | |
|---------------------|----------------|---------------------|--------------------------|--------------------------|-----------------------|-----------------------|
| Package Method | Reel Size (mm) | Quantity (pcs/reel) | Inner Box Size LxWxH(mm) | Quantity (pcs/Inner Box) | Carton Size LxWxH(mm) | Quantity (pcs/carton) |
| Tape Reel | Φ330 | 5000 | 340x340x45 | 10000 | 360x360x470 | 100000 |

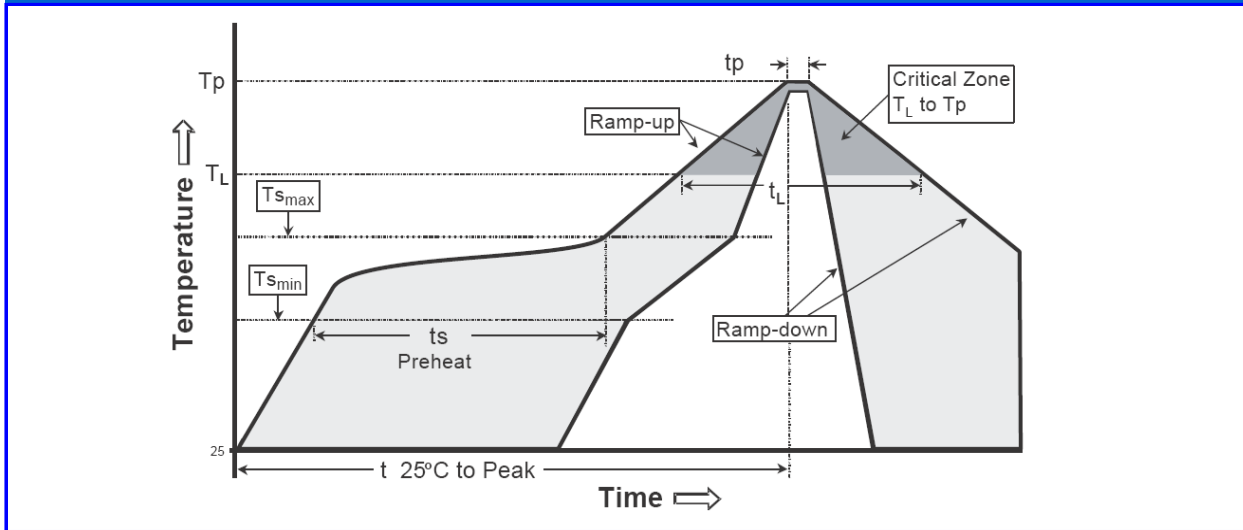
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Recommended wave soldering condition

| | | |
|-----------------|------------------|-----------------|
| 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(T _{s min}) -Temperature Max(T _{s max}) -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 _L) - Time (t _L) | 183°C 60-150 seconds | 217°C 60-150 seconds |
| Peak Temperature(T _P) | 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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