

FR101 THRU FR107
FAST RECOVERY RECTIFIERS



VOLTAGE: 50~1000 Volts

CURRENT: 1.0 Amperes

DO-41

Marking and Polarity

FEATURES

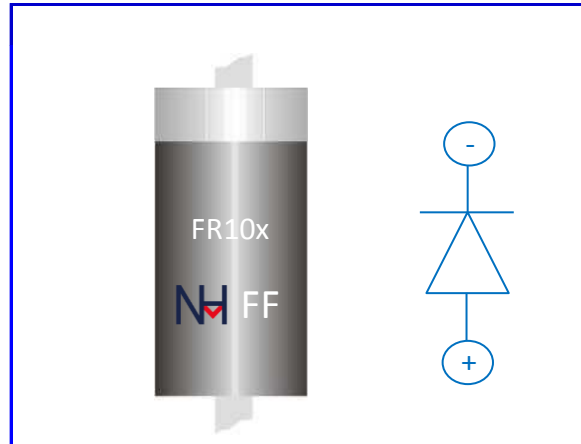
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Metal silicon junction ,majority carrier conduction
- Guard ring for overvoltage protection
- Low power loss ,high efficiency
- High current capability ,ultra low forward voltage drop
- High surge capability
- High temperature soldering guaranteed:260°C/10 seconds at terminals
- Component in accordance to RoHS 2011/65/EU

MECHANICAL DATA

- Case: JEDEC DO-41 molded plastic body
- Terminals: Plated axial leads, solderable per MIL-STD-750,method 2026
- Polarity: color band denotes cathode end
- Mounting Position: Any
- Weight: App. 0.208 grams

TYPICAL APPLICATIONS

- For use in low voltage ,high frequency inverters ,DC/DC converters, free wheeling ,and polarity protection applications



Remark:

- ①. NH=niuhang trademark
- ②. FR10x=Modle,x=1,2,3,4,5,6,7
- ③. FF=Production line,According to actual changes

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

| Parameter | Symbol | FR 101 | FR 102 | FR 103 | FR 104 | FR 105 | FR 106 | FR 107 | Unit |
|--|-------------|--------|--------|--------|--------|--------|--------|--------|------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Maximum RMS voltage | V_{RMS} | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V |
| Maximum DC blocking voltage | V_{DC} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Maximum average forward rectified current(see fig.1) | $I_{F(AV)}$ | 1.0 | | | | | | | A |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL) | I_{FSM} | 30 | | | | | | | A |

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

| Parameter | Symbol | FR 101 | FR 102 | FR 103 | FR 104 | FR 105 | FR 106 | FR 107 | Unit |
|---|-----------|--------|--------|--------|--------|--------|--------|--------|------|
| Maximum instantaneous forward voltage (Note 1) | V_F | 1.3 | | | | | | | V |
| Maximum instantaneous reversecurrent at rated DC blockingvoltage (Note 1) | I_{RRM} | 10 | | | | | | | uA |
| | | 500 | | | | | | | |
| Maximum Reverse Recovery Time (Note 2) | T_{RR} | 150 | | | 250 | | 500 | | ns |
| Typical junction capacitance (Note 3) | C_J | 40 | | | | | | | pF |

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

| Parameter | Symbol | FR 101 | FR 102 | FR 103 | FR 104 | FR 105 | FR 106 | FR 107 | Unit |
|-------------------------------------|------------------------------------|------------|--------|--------|--------|--------|--------|--------|------|
| Operating junction | T_J | -65 to 150 | | | | | | | °C |
| Storage temperature range | T_{STG} | -65 to 150 | | | | | | | |
| Typical thermal resistance (Note 4) | $R_{\theta JA}$ $R_{\theta JC}$ | 50 | | | | 18 | | | °C/W |

- Note:
1. Pulse width < 300 uS, Duty cycle < 2%
 2. Reverse Recovery Time test condition: IF=0.5A, IR=1.0A, IRR=0.25A
 3. Measured at 1MHz and applied reverse voltage of 4.0V D.C.
 4. Thermal resistance from junction to lead vertical P.C.B. mounted , 0.375"(9.5mm)lead length,Polymide PCB, 2 oz Copper.
Cathode pad dimensions 18.8x14.4mm , Anode pad dimensions- (5.6x14.4mm)

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RATING AND CHARACTERISTIC CURVES

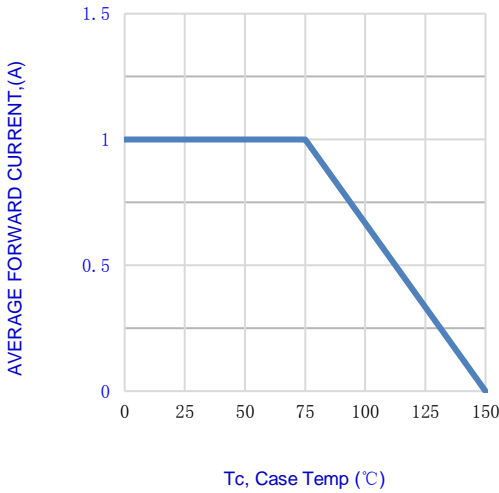


Fig.1-FORWARD CURRENT DERATING CURVE

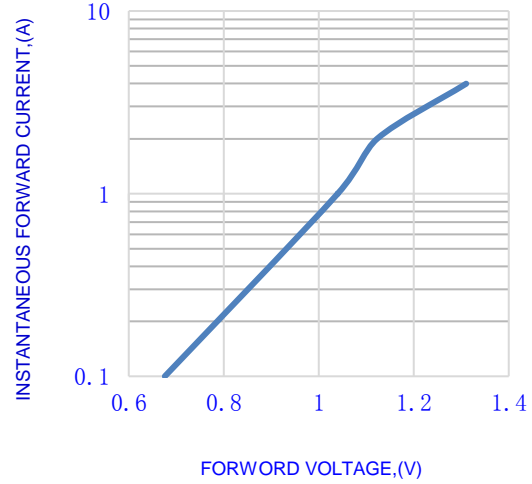


Fig.2-TYPICAL INSTANTANEOUS FORWARD

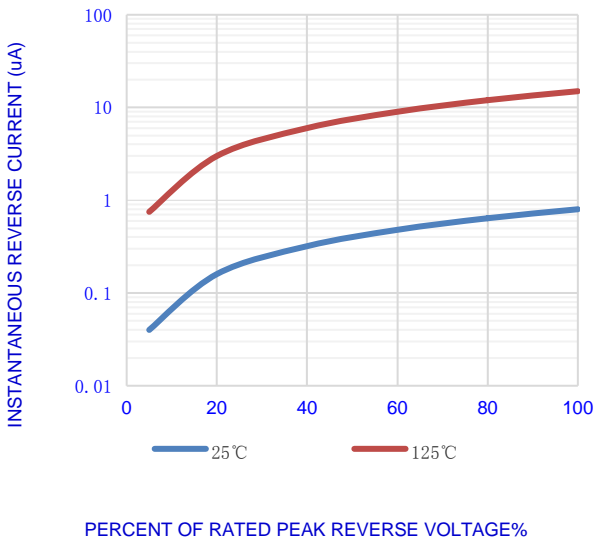


Fig.3-TYPICAL REVERSE CHARACTERISTICS

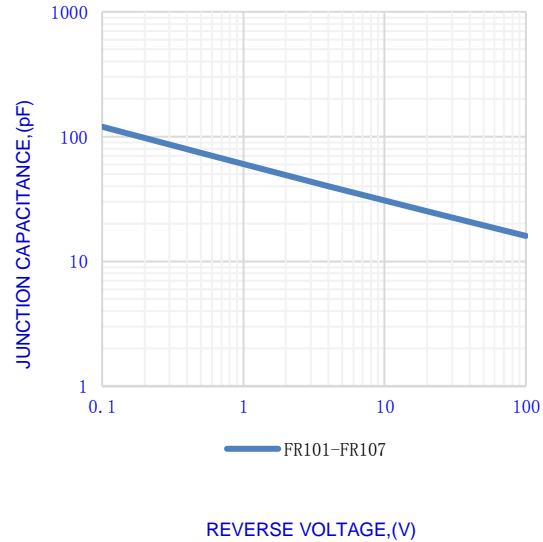


Fig.4-TYPICAL JUNCTION CAPACITANCE

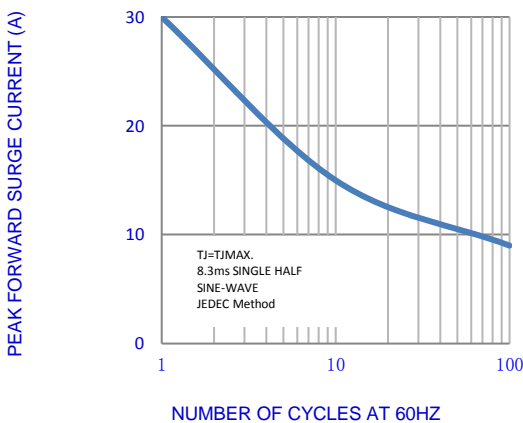


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

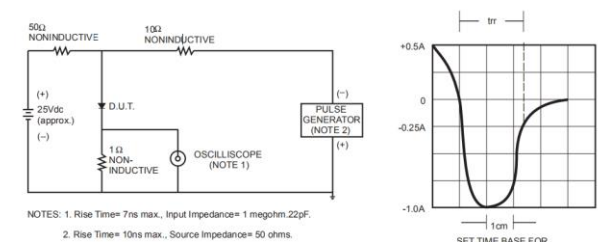


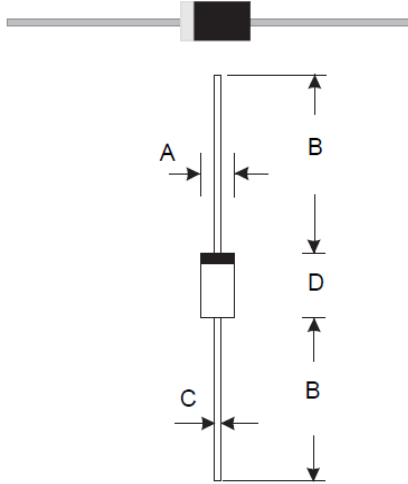
Fig.6-REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT

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OUTLINE DRAWINGS

DO-41



OUTLINE DIMENSIONS

| Dim. | Millimeters | | | Inches | | |
|------|-------------|------|------|--------|------|-------|
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 2.0 | - | 2.8 | 0.079 | - | 0.110 |
| B | 25.1 | - | - | 0.988 | - | - |
| C | 0.6 | - | 0.9 | 0.024 | - | 0.035 |
| D | 4.2 | - | 5.2 | 0.165 | - | 0.205 |

Packing Information

| Package | Pack | Box Size LxWxH(mm) | Quantity (pcs/box) | Carton Size LxWxH(mm) | Quantity (pcs/carton) |
|---------|------|-----------------------|-----------------------|--------------------------|--------------------------|
| DO-41 | B/G | 264*74*135 | 5000 | 420*280*310 | 50000 |

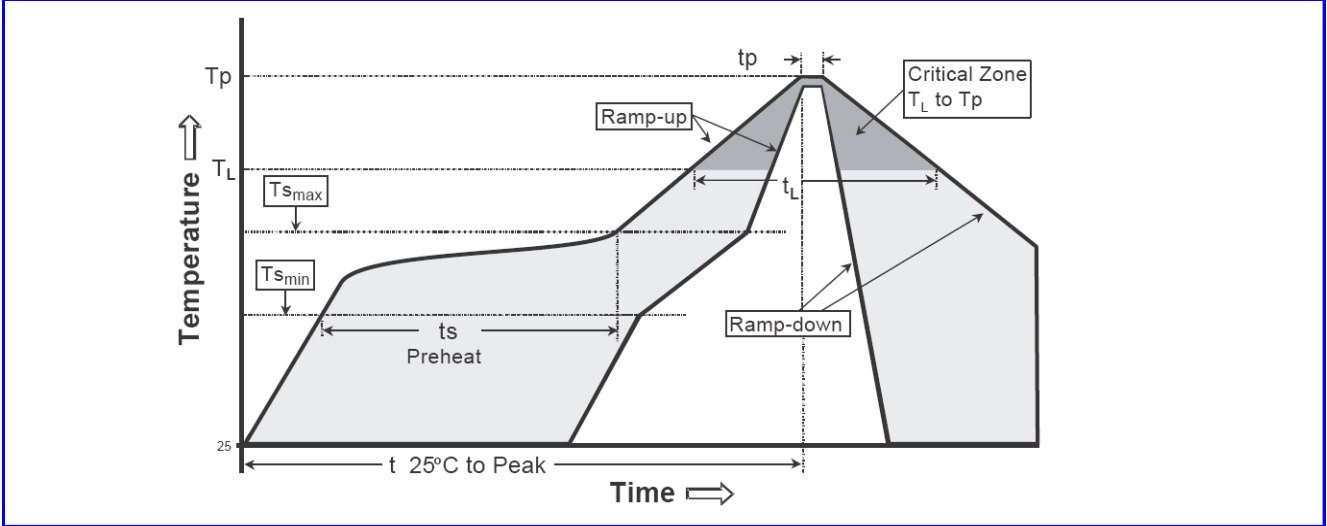
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Recommended wave soldering condition

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