

PRESSFIT STANDARD RECOVERY DIODES

Features

- Voltage Rating up to 600 V
- High Surge Current Capability
- Simplified design and rapid assembly
- Terminals suitable for
 - Crimping
 - Clamping
 - Welding
 - Soldering

50 A

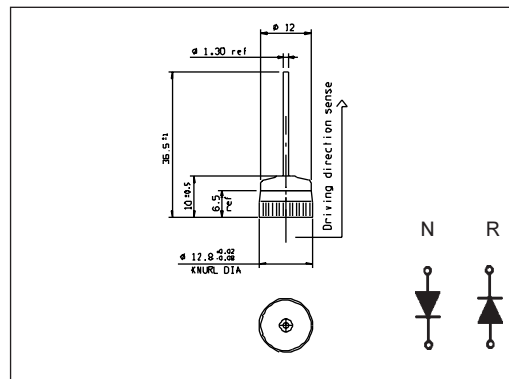
Description

These 9AF series devices are standard recovery power rectifier diodes. Mechanical design are greatly simplified giving advantages to application.

Applications, include welders, battery chargers and general industrial current rectification.

Major Ratings and Characteristics

| Parameters | Values | Units |
|------------------|------------|-------------------|
| $I_{F(AV)}$ | 50 | A |
| @ T_C | 150 | °C |
| $I_{F(RMS)}$ | 79 | A |
| I_{FSM} @ 50Hz | 850 | A |
| @ 60Hz | 900 | A |
| I^2t @ 50Hz | 3977 | A ² s |
| @ 60Hz | 3631 | A ² s |
| $I^2\sqrt{t}$ | 39775 | A ² √s |
| V_{RRM} | 400/600 | V |
| T_J | -55 to 175 | °C |



Mounting - PRESSFIT

- Use standard aluminium heatsink of minimum thickness 3 +/- 0.1 mm to obtain specified performance
- Drill a hole of diameter 12.65 + 0.03 mm (0.498 to 0.499 inch) in the heatsink
- Remove the burrs and sharp edges around the hole diameter
- Ensure that axis of the diodes are aligned with axis of the hole
- The diodes are designed for press fitted mounting from the rear side of the aluminium heatsink as indicated in the lay out figure
- The pressing force must be 1000 Kgs +/- 10% per diode.

Mounting - with SOLDER

- Base to Heatsink
- Lead Terminal to Tag, Lug or wire
- **Suggested Soldering Conditions :**
 - Equipment : Hot Plate, Solder Iron & Reflow Furnace
 - Solder : Composition Pb/Sn EUTECTIK
 - Solder Paste with Flux type - RMA or RA or RSA
 - Solder Preform
 - Solder Wire
 - Temperature: 230°C Max.
 - Duration : Time limit max 5 minute from 190°C to 230°C to 190°C
 - Atmosphere : Air

9AF.. Series

Preliminary Data Sheet I20263 rev. C 07/99

International
IOR Rectifier

ELECTRICAL SPECIFICATIONS

Voltage Ratings

| Type number | V_{RRM} , maximum repetitive peak reverse voltage V | V_{RSM} , maximum non-repetitive peak rev. voltage V | I_{RRM} max. @ $T_J = T_{Jmax}$ mA |
|-------------|--|---|--|
| 9AF40 | 400 | 500 | 10 |
| 9AF60 | 600 | 700 | 10 |

Forward Conduction

| Parameter | | 9AF | Units | Conditions | | | |
|---------------------|---|-------|-------------------|---------------------------------------|-----------------------|---|--|
| I _{F(AV)} | Max. average forward current @ Case temperature | 50 | A | 180° conduction, half sine wave | | | |
| | | 150 | °C | | | | |
| I _{F(RMS)} | Max. peak repetitive forward current @ Case temperature | 79 | A | | | | |
| | | 150 | °C | | | | |
| I _{FSM} | Max. peak, one-cycle forward, non-repetitive surge current | 850 | A | t = 10ms | No voltage | Sinusoidal half wave, Initial T _J = T _J max. | |
| | | 900 | | t = 8.3ms | reapplied | | |
| | | 750 | | t = 10ms | 100% V _{RRM} | | |
| | | 785 | | t = 8.3ms | reapplied | | |
| I ² t | Maximum I ² t for fusing | 3977 | A ² s | t = 10ms | No voltage | | |
| | | 3631 | | t = 8.3ms | reapplied | | |
| | | 2813 | | t = 10ms | 100% V _{RRM} | | |
| | | 2568 | | t = 8.3ms | reapplied | | |
| I ² √t | Maximum I ² √t for fusing | 39775 | A ² √s | t = 0.1 to 10ms, no voltage reapplied | | | |
| V _{F(TO)1} | Low level value of threshold voltage | 0.72 | V | T _J = 175° | | | |
| V _{F(TO)2} | High level value of threshold voltage | 0.84 | | | | | |
| r _{f1} | Low level value of forward slope resistance | 3.29 | mΩ | | | | |
| r _{f2} | High level value of forward slope resistance | 2.67 | | | | | |
| V _{FM} | Maximum forward voltage drop | 1.33 | V | T _J = 25°C, I = 157 A | | | |

Thermal and Mechanical Specifications

| Parameter | 9AF | Units | Conditions |
|--|-------------|-------|-------------------------|
| T_J Max. junction operating temperature range | - 55 to 175 | °C | |
| T_{stg} Storage temperature range | - 55 to 175 | °C | |
| R_{thJC} Max. thermal resistance, junction to case | 0.30 | K/W | DC operation |
| R_{thCS} Max. thermal resistance, case to heatsink | 0.14 | K/W | As per mounting details |
| wt Approximate weight | 6 | g | |

Ordering Information Table

| Device Code | | |
|-------------|----|---|
| 9AF | 60 | N |
| 1 | 2 | 3 |

1 - Essential part number
2 - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings Table)
3 - N = Normal Polarity (cathode to case)
 R = Reverse Polarity (anode to case)

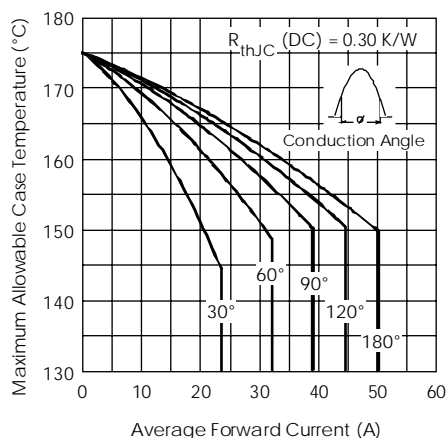


Fig. 1 - Current Ratings Characteristics

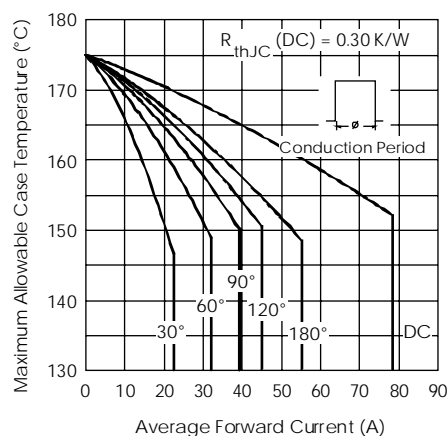


Fig. 2 - Current Ratings Characteristics

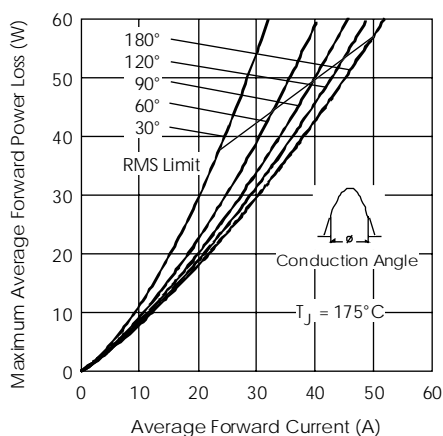


Fig. 3 - Forward Power Loss Characteristics

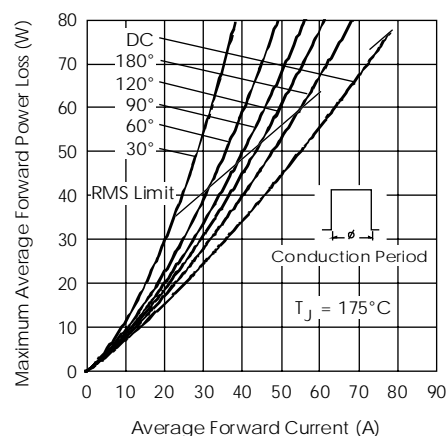


Fig. 4 - Forward Power Loss Characteristics

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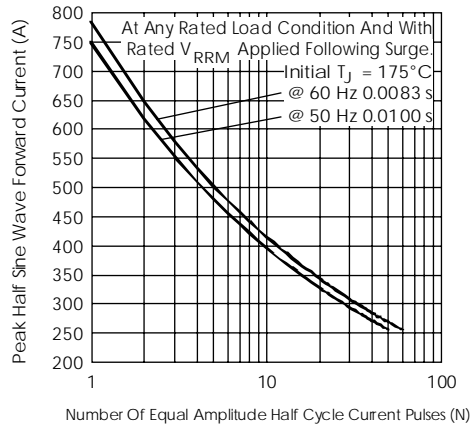


Fig. 5 - Maximum Non-Repetitive Surge Current

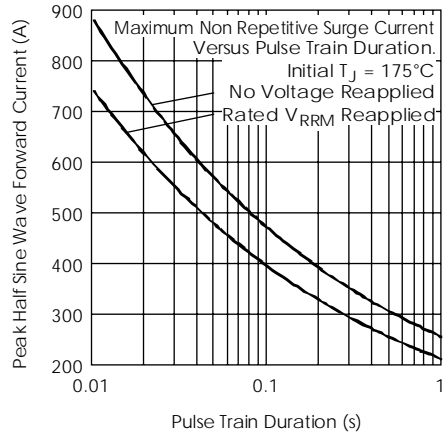


Fig. 6 - Maximum Non-Repetitive Surge Current

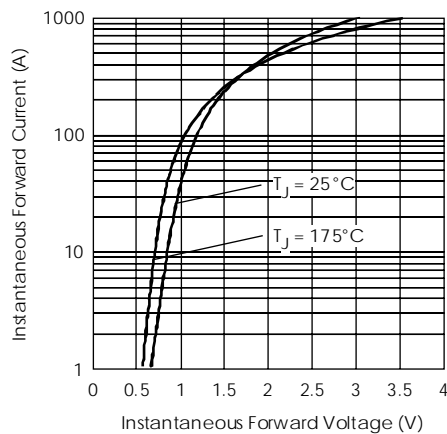


Fig. 7 - Forward Voltage Drop Characteristics

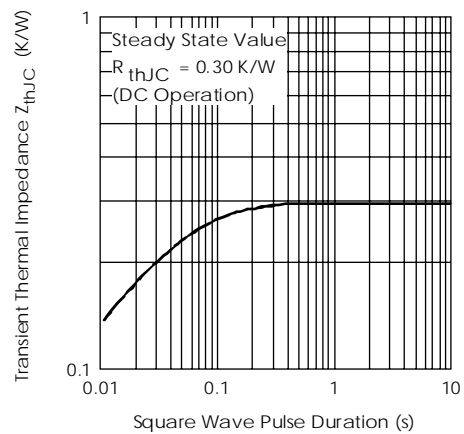


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

International
IR Rectifier

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Data and specifications subject to change without notice.