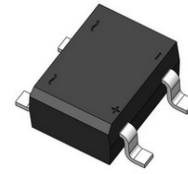


Bridge Rectifier

DF005S1-DF10S1



PDIP4 GW
CASE 709AE

Description

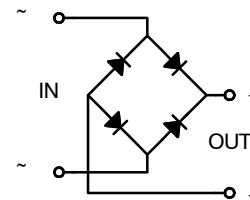
With the ever–pressing need to improve power supply efficiency, improve surge rating, improve reliability, and reduce size, the DFxS1 family sets a new standard in performance and cost saving.

The DFxS1 family balances performance against cost. The design offers a moderate surge rating of 35 A required to handle inrush surge and maintain good reliability, with fair price.

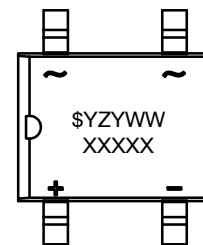
The DFxS1 achieves good performance in a SDIP surface mount form factor, reducing board space and volumetric requirements vs. competitive devices.

Features

- Maximum Surge Rating:
 - ◆ $I_{FSM} = 35\text{ A}$
 - ◆ $I^2t = 5.1\text{ A}^2\text{Sec}$
- Optimized V_F : Typical 0.95 V at 1 A, 25°C
- DF10S Socket Compatible
- Glass Passivated Junctions
- Lead Free Compliant to EU RoHS 2002/95/EU Directives
- Green Molding Compound: IEC61249
- Qualified with IR Reflow and Wave Soldering



MARKING DIAGRAM



- \$Y = onsemi Logo
- Z = Assembly Plant Code
- YWW = Date Code (Year and Week)
- XXXXX = Specific Device Code

ORDERING INFORMATION

See detailed ordering and shipping information on page 4 of this data sheet.

DF005S1–DF10S1

ABSOLUTE MAXIMUM RATINGS (Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.)

| Symbol | Parameter | Value | | | | | | | Unit |
|-------------|--|-------------|--------|--------|--------|--------|--------|--------|------------------|
| | | DF005S1 | DF01S1 | DF02S1 | DF04S1 | DF06S1 | DF08S1 | DF10S1 | |
| V_{RRM} | Maximum Recurrent Peak Reverse Voltage | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| V_{RMS} | Maximum RMS Bridge Input Voltage | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V |
| V_{DC} | Maximum DC Blocking Voltage | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| $I_{F(AV)}$ | Maximum Average Forward Current $T_A = 40^\circ\text{C}$ | 1.0 | | | | | | | A |
| I_{FSM} | Peak Forward Surge Current 8.3 ms Single Half-Sine Wave Superimposed on Rated Load (JEDEC Method) | 35 | | | | | | | A |
| T_{STG} | Storage Temperature Range | -55 to +150 | | | | | | | $^\circ\text{C}$ |
| T_J | Operating Junction Temperature Range | -55 to +150 | | | | | | | $^\circ\text{C}$ |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS (Note 1)

| Symbol | Parameter | Conditions | Max. | Unit |
|-----------------|---|---|------|---------------------------|
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | Single-Die Measurement (Maximum Land Pattern: 13 × 13 mm) | 65 | $^\circ\text{C}/\text{W}$ |
| | | Multi-Die Measurement (Maximum Land Pattern: 13 × 13 mm) | 50 | |
| | | Multi-Die Measurement (Minimum Land Pattern: 1.3 × 1.5 mm) | 105 | |
| Ψ_{JL} | Thermal Characterization Parameter, Junction to Lead | Single-Die Measurement (Maximum and Minimum Land Pattern) | 27 | $^\circ\text{C}/\text{W}$ |

1. The thermal resistances ($R_{\theta JA}$ & Ψ_{JL}) are characterized with the device mounted on the following FR4 printed circuit boards, as shown in Figure 1 and Figure 2. PCB size: 76.2 × 114.3 mm.
Heating effect from adjacent dice is considered and only two dice are powered at the same time.

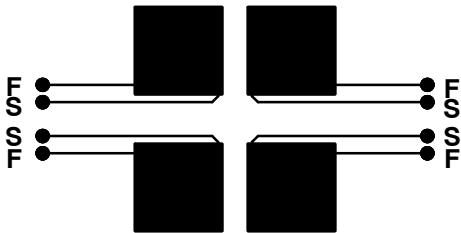


Figure 1. Maximum Pads of 2 oz Copper



Figure 2. Minimum Pads of 2 oz Copper

ELECTRICAL CHARACTERISTICS (Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------|--|---|-----|-----|-----|----------------------|
| V_F | Forward Voltage Drop per Bridge Element | $I_F = 1.0 \text{ A}$ | | | 1.1 | V |
| I_R | DC Reverse Current at Rated DC Blocking Voltage | $T_J = 25^\circ\text{C}$ | | | 3 | μA |
| | | $T_J = 125^\circ\text{C}$ | | | 500 | |
| I^2t | Rating for Fusing ($t < 8.3 \text{ ms}$) | | | | 5.1 | A^2S |
| C_J | Junction Capacitance | $V_R = 4.0 \text{ V}$, $f = 1.0 \text{ MHz}$ | | 10 | | pF |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

TYPICAL PERFORMANCE CHARACTERISTICS

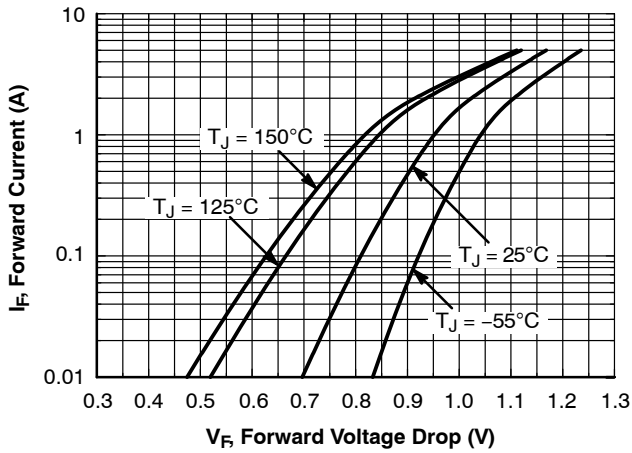


Figure 3. Typical Instantaneous Forward Characteristics

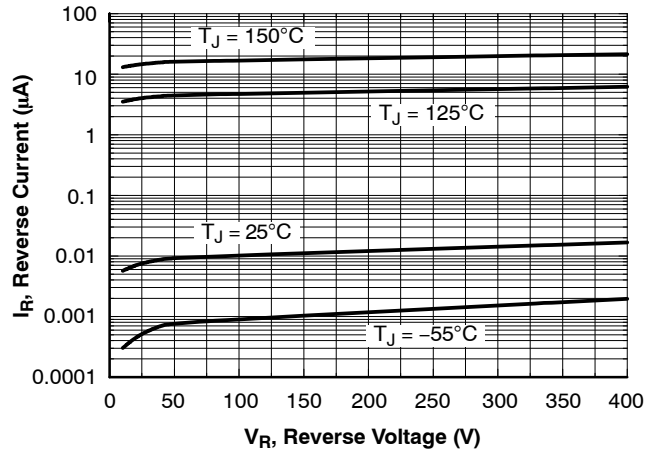


Figure 4. Typical Reverse Characteristics

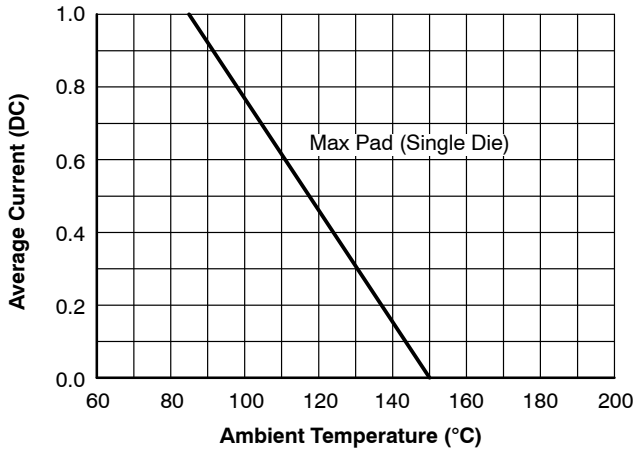


Figure 5. Maximum Average Current vs. Ambient Temperature

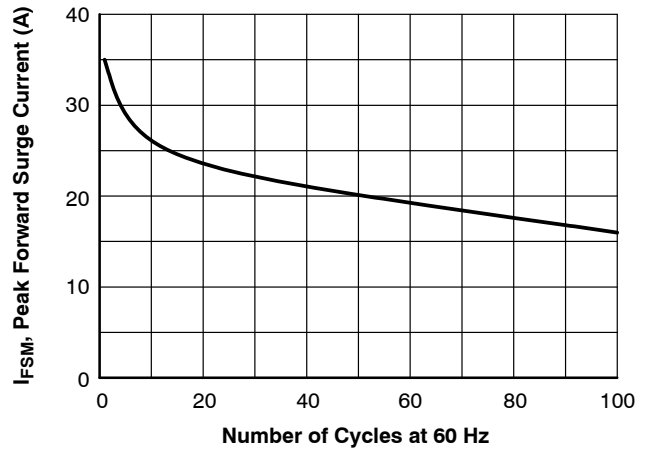


Figure 6. Peak Forward Surge Current vs. Number of Cycles at 60 Hz

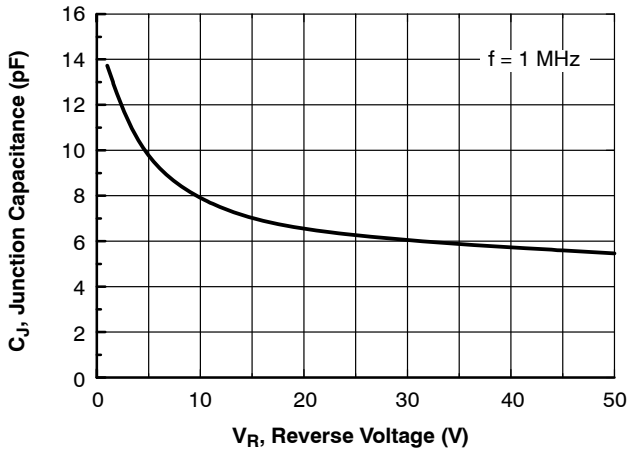


Figure 7. Typical Junction Capacitance

DF005S1-DF10S1

ORDERING INFORMATION

| Part Number | Top Mark | Package | Shipping [†] |
|-------------|----------|------------------------------------|-----------------------|
| DF005S1 | DF005S1 | PDIP4 GW (Pb-Free, Halide Free) | 1500 / Tape & Reel |
| DF01S1 | DF01S1 | | |
| DF02S1 | DF02S1 | | |
| DF04S1 | DF04S1 | | |
| DF06S1 | DF06S1 | | |
| DF08S1 | DF08S1 | | |
| DF10S1 | DF10S1 | | |

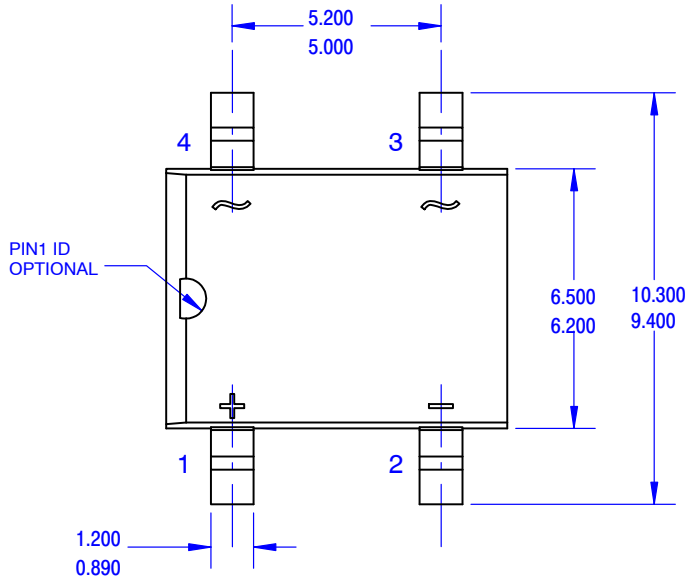
[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

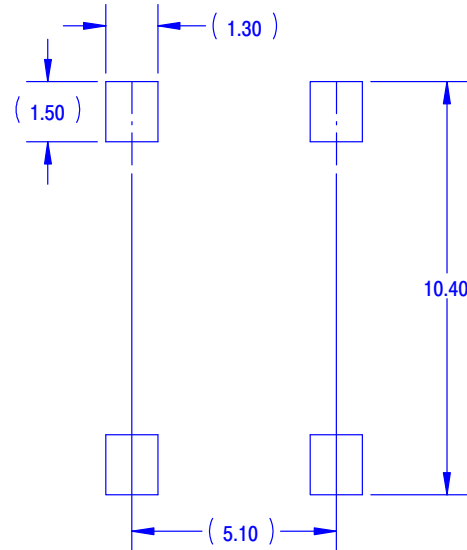


PDIP4 GW
CASE 709AE
ISSUE O

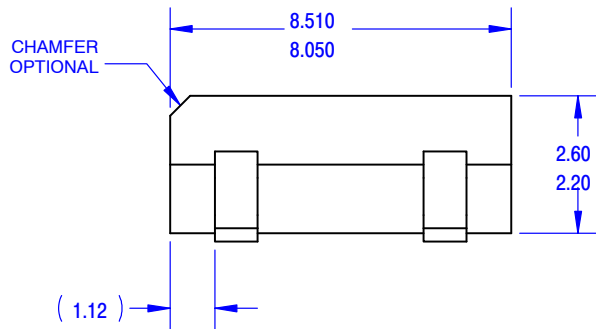
DATE 31 JUL 2016



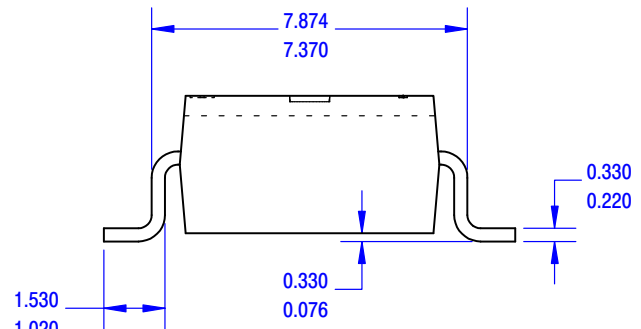
TOP VIEW



LAND PATTERN RECOMMENDATION



SIDE VIEW



END VIEW

NOTES:

- A. THIS PACKAGE DOES NOT CONFORM TO ANY REFERENCE STANDARD.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.

| | | |
|-------------------------|--------------------|--|
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| DESCRIPTION: | PDIP4 GW | PAGE 1 OF 1 |

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