

Bridge Rectifier

DF005S1-DF10S1

Description

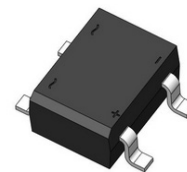
With the ever-pressing need to improve power supply efficiency, improve surge rating, improve reliability, and reduce size, the DFxS1 family sets a new standard in performance and cost saving.

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.

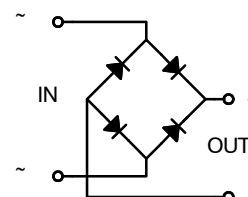
The DFxS1 achieves good performance in a SDIP surface mount form factor, reducing board space and volumetric requirements vs. competitive devices.

Features

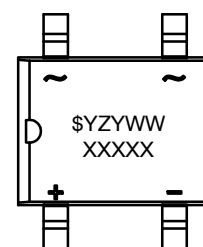
- Maximum Surge Rating:
 - $I_{FSM} = 35\text{ A}$
 - $I^2t = 5.1\text{ A}^2\text{Sec}$
- Optimized V_F : Typical 0.95 V at 1 A, 25 °C
- DF10S Socket Compatible
- Glass Passivated Junctions
- Lead Free Compliant to EU RoHS 2002/95/EU Directives
- Green Molding Compound: IEC61249
- Qualified with IR Reflow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



PDIP4 GW
CASE 709AE



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.

NOTE: Some of the device on this data sheet have been **DISCONTINUED**. Please refer to the table on page 4.

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.

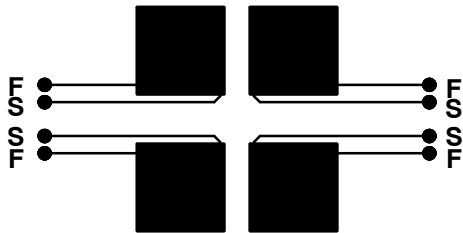


Figure 1. Maximum Pads of 2 oz Copper



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	$I_F = 1.0$ 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 ($t < 8.3$ ms)				5.1	A^2S
C_J	Junction Capacitance	$V_R = 4.0$ V, $f = 1.0$ 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

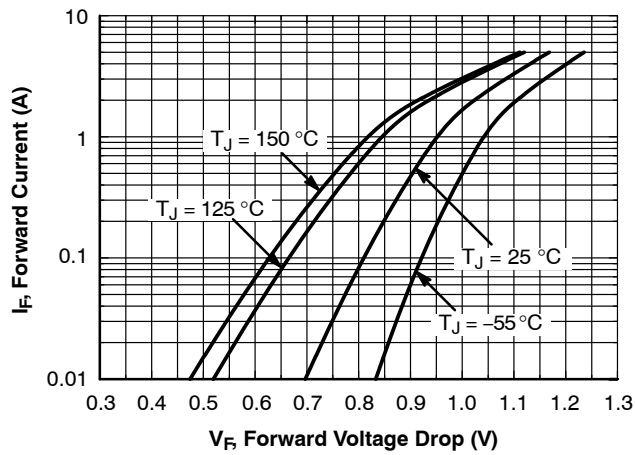


Figure 3. Typical Instantaneous Forward Characteristics

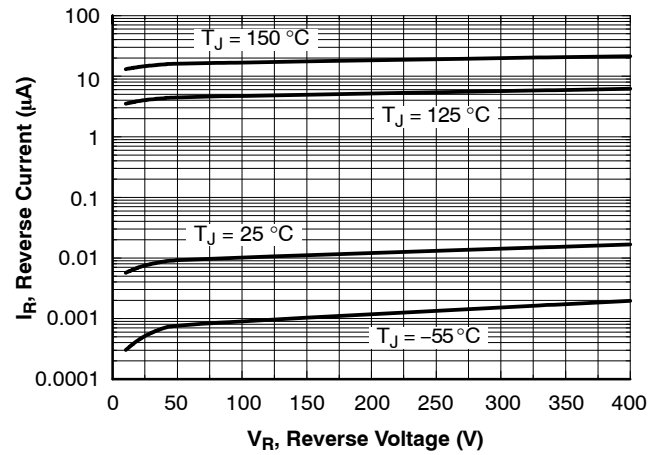


Figure 4. Typical Reverse Characteristics

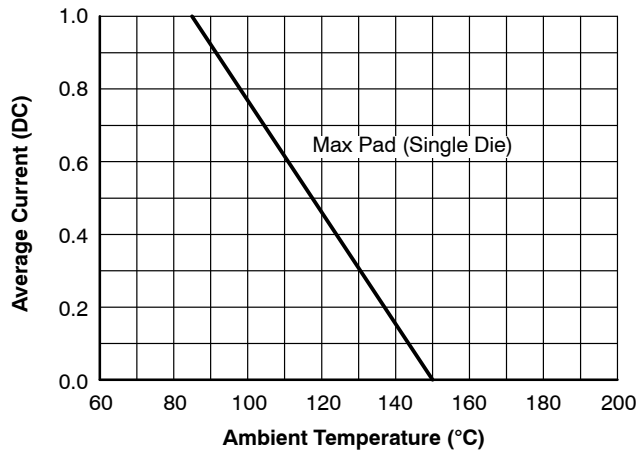


Figure 5. Maximum Average Current vs. Ambient Temperature

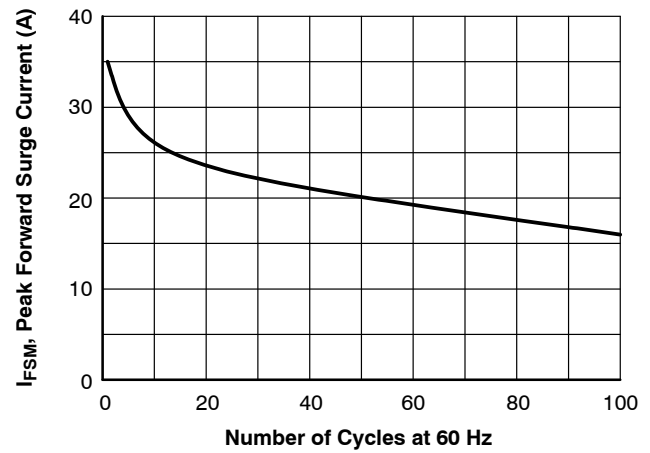


Figure 6. Peak Forward Surge Current vs. Number of Cycles at 60 Hz

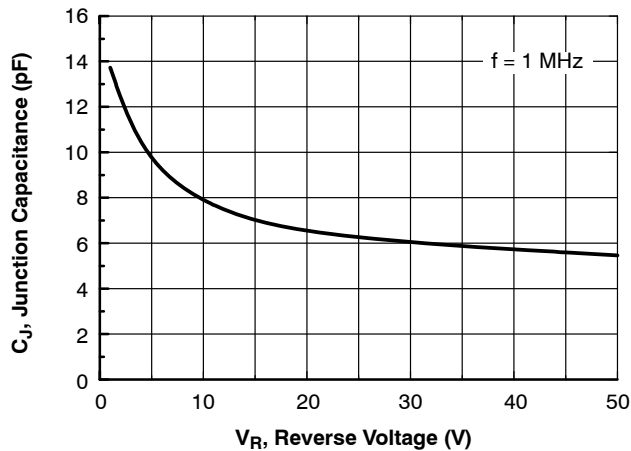


Figure 7. Typical Junction Capacitance

DF005S1-DF10S1

ORDERING INFORMATION

Part Number	Top Mark	Package	Shipping [†]
DF08S1	DF08S1	PDIP4 GW (Pb-Free, Halide Free)	1500 / Tape & Reel

DISCONTINUED (Note 2)

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		
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](#).

2. **DISCONTINUED:** These devices are not available. Please contact your **onsemi** representative for information. The most current information on these devices may be available on www.onsemi.com.



REVISION HISTORY

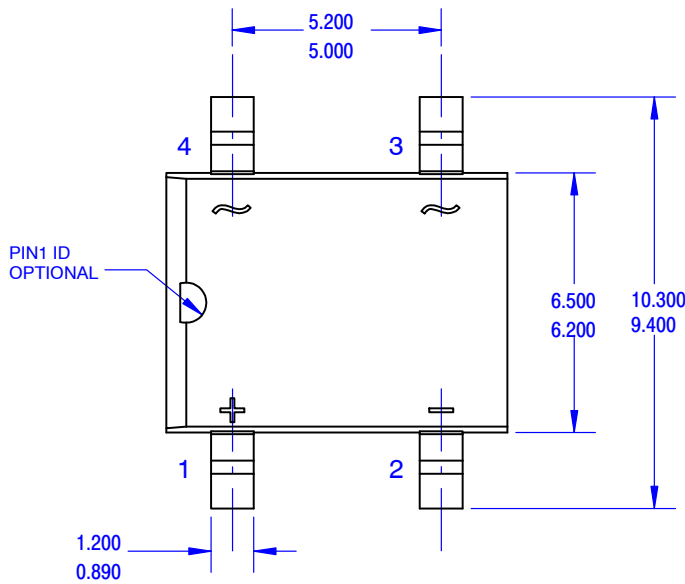
Revision	Description of Changes	Date
4	Removed "Discontinued" watermark and updated Ordering Information table according to current part number availability.	4/13/2026

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

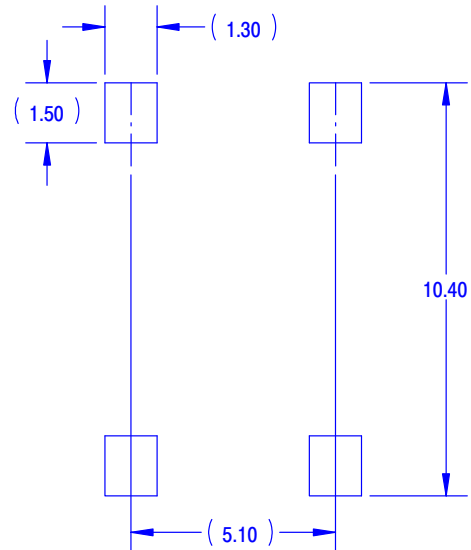


PDIP4 GW
CASE 709AE
ISSUE O

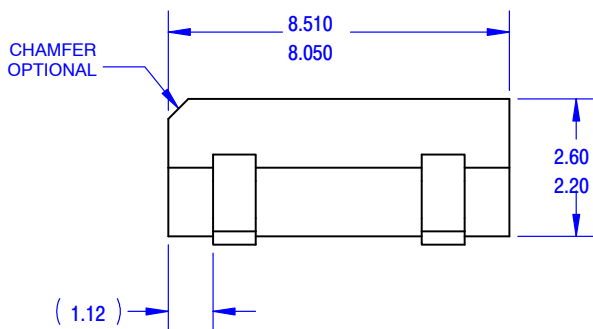
DATE 31 JUL 2016



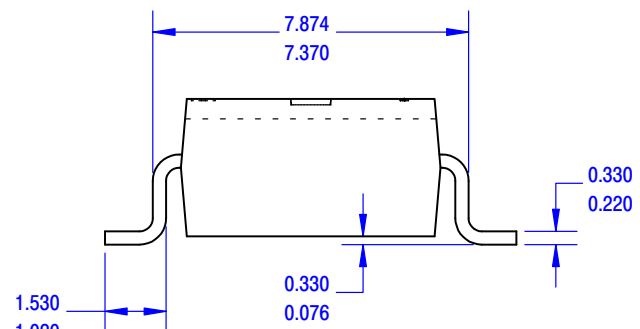
TOP VIEW



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.

DOCUMENT NUMBER:	98AON13473G	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	PDIP4 GW	PAGE 1 OF 1

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales