

# FS8G - FS8M

## 8 A Standard Recovery Surface Mount Rectifiers

### Description

The FS8G to FS8M series offers breakthrough size and performance. It sinks 8 A DC forward current and provides up to 230 A surge current capability with only 0.37  $\mu$ A reverse leakage current. All this capability is packed into a small, flat-lead, TO-277 package, optimized for space-constrained applications.

### Features

- Very High forward Surge Capability:  $I_{FSM} = 230$  A
- Low Leakage Current: 0.37  $\mu$ A at  $T_A = 25^\circ\text{C}$
- Very Low Profile: Typical Height of 1.1 mm
- Glass Passivated Junction
- HBM (JEDEC A114) > 8 KV; CDM (JEDEC C101C) > 2 KV
- Green Molding Compound as per IEC61249 Standard
- These Devices are Pb-Free, Halogen Free and are RoHS Compliant

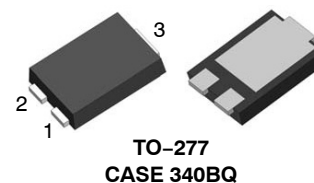
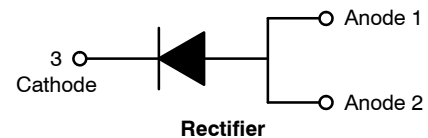
### Applications

- General-Purpose Applications
- Reverse Polarity Protection
- Rectifications

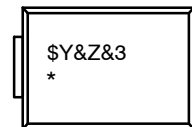


**ON Semiconductor**<sup>®</sup>

[www.onsemi.com](http://www.onsemi.com)



### MARKING DIAGRAM



\$Y	= ON Semiconductor Logo
&Z	= Assembly Plant Code
&3	= Data Code (Year & Week)
*	= Specific Device Code FS8G, FS8J, FS8K, FS8M

### ORDERING INFORMATION

See detailed ordering and shipping information on page 3 of this data sheet.

# FS8G – FS8M

## ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Rating	Value				Unit
		FS8G	FS8J	FS8K	FS8M	
$V_{RRM}$	Maximum Repetitive Peak Reverse Voltage	400	600	800	1000	V
$V_{RMS}$	Maximum RMS Reverse Voltage	280	420	560	700	V
$V_{DC}$	DC Blocking Voltage	400	600	800	1000	V
$I_{F(AV)}$	Maximum Average Rectified Forward Current	8				A
$I_{FSM}$	Peak Forward Surge Current: 8.3 ms Single Half Sine-Wave Superimposed on Rated Load	230				A
$T_J$	Operating Junction Temperature Range	-55 to +150				$^\circ\text{C}$
$T_{STG}$	Storage 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 ( $T_A = 25^\circ\text{C}$ unless otherwise noted) (Note 1)

Symbol	Characteristic	Minimum Land Pattern	Maximum Land Pattern	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance	100	40	$^\circ\text{C}/\text{W}$
$\Psi_{JL}$	Junction-to-Lead Thermal Characteristics, Thermocouple Soldered to Anode	20	12	$^\circ\text{C}/\text{W}$
	Junction-to-Lead Thermal Characteristics, Thermocouple Soldered to Cathode	6	5	

1. The thermal resistances ( $R_{\theta JA}$  &  $\Psi_{JL}$ ) are characterized with device mounted on the following FR4 printed circuit boards, as shown in Figure 1 and Figure 2. PCB size: 76.2 x 114.3 mm. Minimum land pattern size: 4.9 x 4.8 mm (big pattern, x1), 1.4 x 1.52 mm (small pattern, x2). Maximum land pattern size: 30 x 30 mm (pattern, x2). Force line trace size = 55 mils, sense line trace size = 4 mils.



Figure 1. Minimum Land Pattern of 2 oz Copper

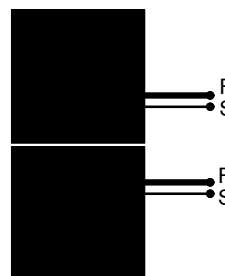


Figure 2. Maximum Land Pattern of 2 oz Copper

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	Forward Voltage	$I_F = 8\text{ A}$	-	0.951	1.1	V
		$I_F = 8\text{ A}, T_A = 125^\circ\text{C}$		0.845		
$I_R$	DC Reverse Current	$V_R = V_{DC}$	-	0.37	5	$\mu\text{A}$
		$V_R = V_{DC}, T_A = 125^\circ\text{C}$		84		
$T_{rr}$	Reverse Recovery Time	$I_F = 0.5\text{ A}, I_R = 1\text{ A}, I_{rr} = 0.25\text{ A}$		3.37		$\mu\text{s}$
$C_J$	Junction Capacitance	$V_R = 0\text{ V}, f = 1\text{ MHz}$		118		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.

## FS8G – FS8M

### ORDERING INFORMATION

Part Number	Top Mark	Package	Shipping†
FS8G	FS8G	TO-277 3L (No DAP Option) (Pb-Free/Halogen Free)	5000 / Tape & Reel
FS8J	FS8J	TO-277 3L (No DAP Option) (Pb-Free/Halogen Free)	5000 / Tape & Reel
FS8K	FS8K	TO-277 3L (No DAP Option) (Pb-Free/Halogen Free)	5000 / Tape & Reel
FS8M	FS8M	TO-277 3L (No DAP Option) (Pb-Free/Halogen Free)	5000 / Tape & Reel

†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.

TYPICAL PERFORMANCE CHARACTERISTICS

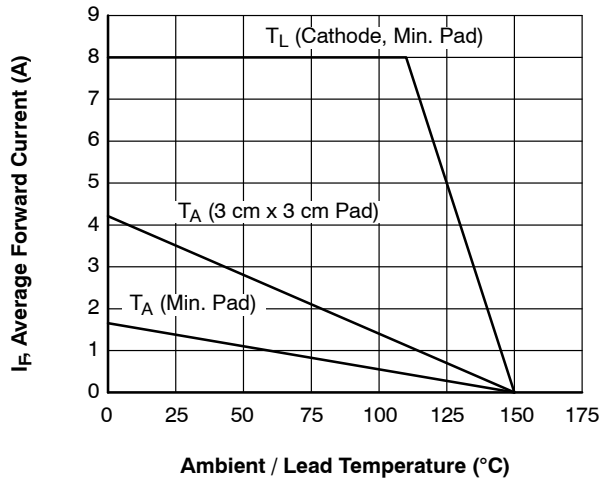


Figure 3. Forward Current Derating Curve

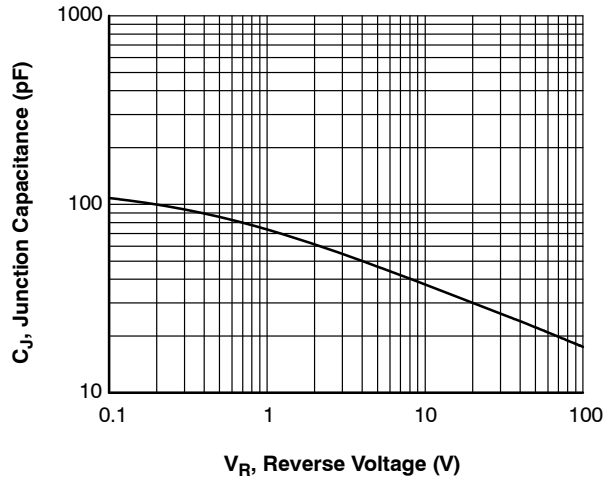


Figure 4. Typical Junction Capacitance

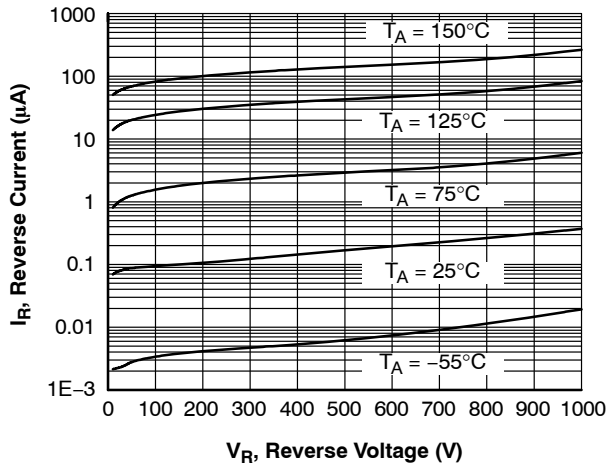


Figure 5. Typical Reverse Characteristics

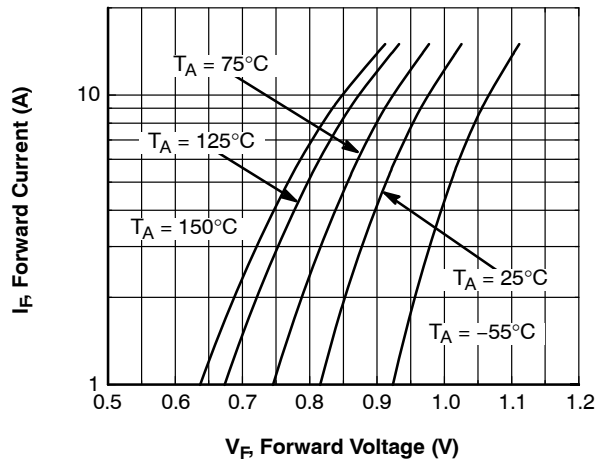


Figure 6. Typical Forward Characteristics

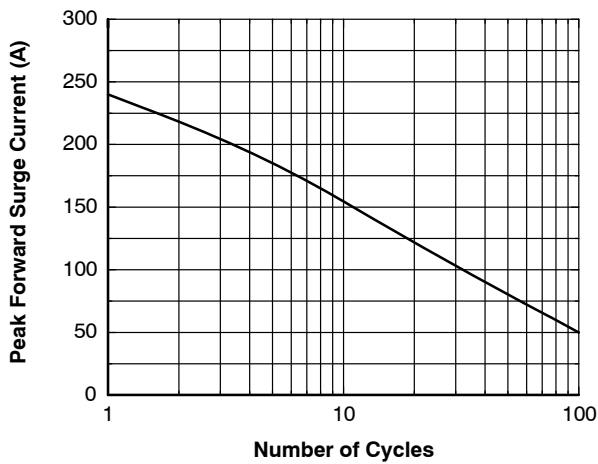
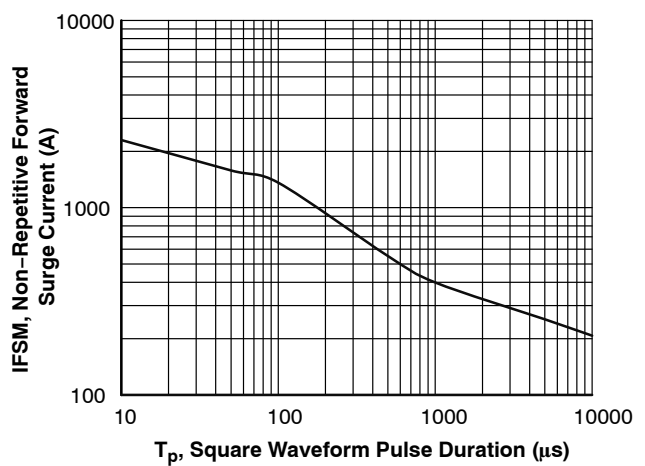


Figure 7. Maximum Non-Repetitive Peak Forward Surge Current



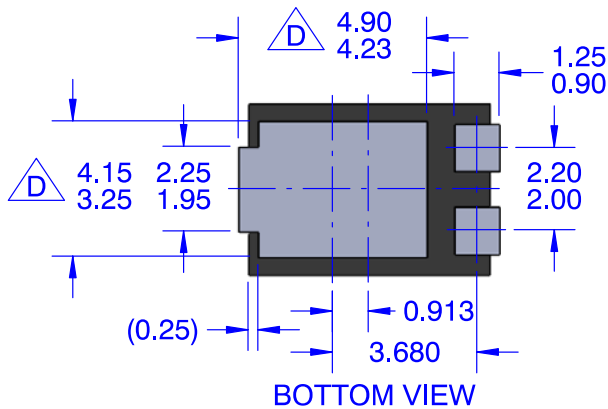
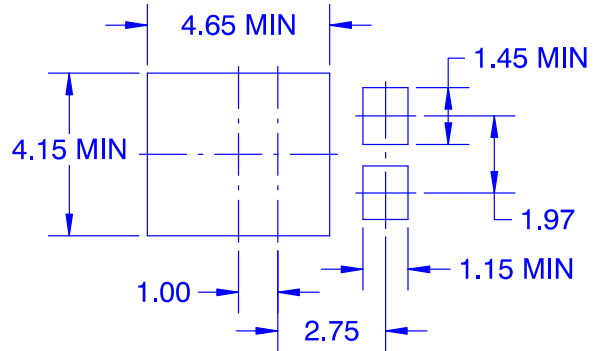
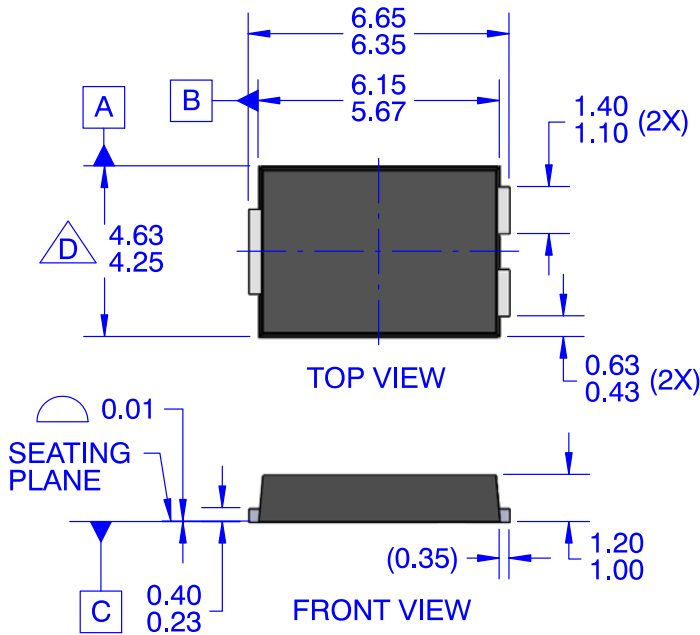
NOTE: Typical performance bases on a limited sample size, not guarantee rating.

Figure 8. Typical Non-Repetitive Forward Surge Current

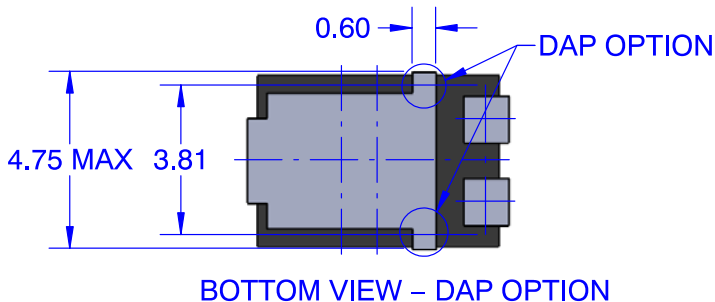
**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

TO-277-3LD  
CASE 340BQ  
ISSUE O

DATE 30 SEP 2016



- NOTES: UNLESS OTHERWISE SPECIFIED
- A. PACKAGE REFERENCE: JEDEC TO-277
  - B. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
  - C. ALL DIMENSIONS ARE IN MILLIMETERS.
  - D** DOES NOT COMPLY TO JEDEC STANDARD VALUE.



<b>DOCUMENT NUMBER:</b>	<b>98AON13861G</b>	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
<b>STATUS:</b>	<b>ON SEMICONDUCTOR STANDARD</b>	
<b>NEW STANDARD:</b>		
<b>DESCRIPTION:</b>	<b>TO-277-3LD</b>	<b>PAGE 1 OF 2</b>

ON Semiconductor®



DOCUMENT NUMBER:  
98AON13861G

PAGE 2 OF 2

ISSUE	REVISION	DATE
O	RELEASED FOR PRODUCTION FROM FAIRCHILD TO277A03 TO ON SEMICONDUCTOR. REQ. BY J. LETTERMAN.	30 SEP 2016

ON Semiconductor and ON are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC 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. "Typical" parameters which may be provided in SCILLC 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. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC 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 SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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 ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor 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 ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor 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 ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor  
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA  
**Phone:** 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
**Fax:** 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
**Email:** [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)

**Order Literature:** <http://www.onsemi.com/orderlit>

For additional information, please contact your local  
Sales Representative