

# Ultrafast Rectifiers, Surface Mount, 10 A, 200 V - 600 V

## FES10D, FES10G, FES10J

### Features

- Very Low Profile: Typical Height of 1.1 mm
- Ultrafast Recovery Time
- Low Forward Voltage Drop
- Low Thermal Resistance
- Very Stable Operation at Industrial Temperature, 150°C
- RoHS Compliant
- Green Molding Compound as per IEC61249 Standard
- Lead Free in Compliance with EU RoHS 2011/65/EU Directive
- With DAP Option Only
- Industrial Device Qualified per AEC-Q101 Standards

\* See authorized use policy

### MAXIMUM RATINGS

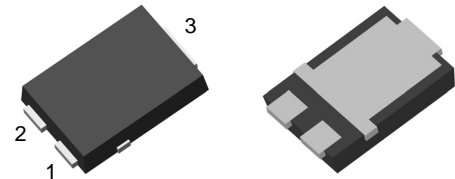
Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage FES10D FES10G FES10J	$V_{RRM}$	200 400 600	V
Average Forward Rectified Current	$I_{F(AV)}$	10	A
Peak Forward Surge Current: 8.3 ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	150	A
Operating Junction Temperature Range	$T_J$	-55 to +175	°C
Storage Temperature Range	$T_{STG}$	-55 to +175	°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.



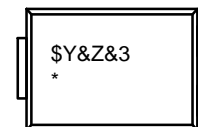
ON Semiconductor®

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

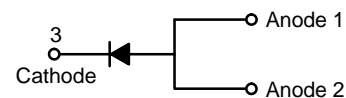


TO-277-3LD  
CASE 340BQ

### MARKING DIAGRAM



\$Y = ON Semiconductor Logo  
 &Z = Assembly Plant Code  
 &3 = Date Code (Year & Week)  
 \* = Specific Device Code  
 FES10D, FES10G, FES10J



### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

# FES10D, FES10G, FES10J

## ORDERING INFORMATION

Part Number	Top Mark	Package	Shipping†
FES10D	FES10D	TO-277 3L (with DAP Option only)	5000 / Tape & Reel
FES10G	FES10G	TO-277 3L (with DAP Option only)	5000 / Tape & Reel
FES10J	FES10J	TO-277 3L (with DAP Option only)	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.

## THERMAL CHARACTERISTICS (Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted) (Note 1)

Parameter	Symbol	Value	Unit
Thermal Characteristics, Junction-to-Lead, Thermocouple Soldered to Cathode	$\Psi_{JL}$	6	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	100	$^\circ\text{C/W}$

1. Per JESD51-3 Recommended Thermal Test Board.

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

Symbol	Parameter	Conditions	Value			Unit
			FES10D	FES10G	FES10J	
$V_F$	Maximum Instantaneous Forward Voltage (Note 2)	$I_F = 10\text{ A}$	0.95	1.20	1.80	V
		$I_F = 10\text{ A}, T_J = 125^\circ\text{C}$	0.86	1.00	–	
$I_R$	Maximum Reverse Current at Rated $V_R$	$T_J = 25^\circ\text{C}$	5			$\mu\text{A}$
		$T_J = 125^\circ\text{C}$	250	500		
$C_J$	Typical Junction Capacitance	$V_R = 4\text{ V}, f = 1\text{ MHz}$	140			pF
$T_{rr}$	Typical Reverse Recovery Time	$I_F = 0.5\text{ A}, I_R = 1\text{ A}, I_{RR} = 0.25\text{ A}$	30			ns
		$I_F = 1\text{ A}, di/dt = 50\text{ A}/\mu\text{s}, V_R = 30\text{ A}$	40			

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.

2. Pulse test with  $PW = 300\ \mu\text{s}$ , 1% duty cycle

# FES10D, FES10G, FES10J

## TYPICAL CHARACTERISTICS

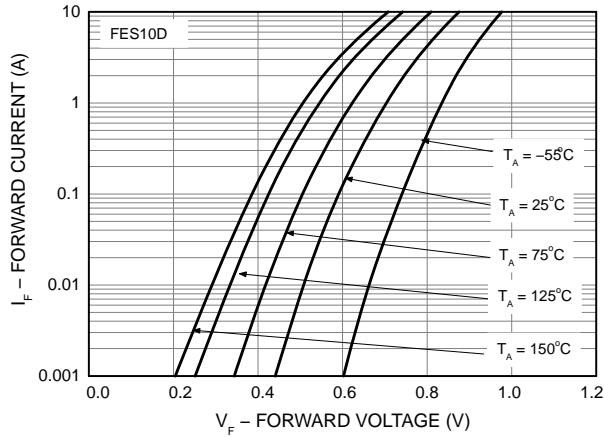


Fig 1. Typical Forward Characteristics for FES10D

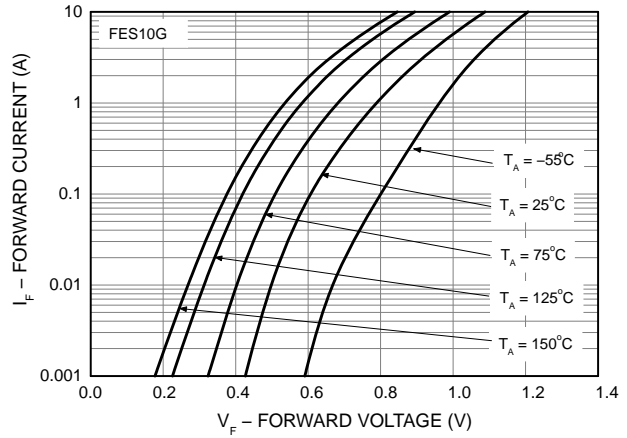


Fig 2. Typical Forward Characteristics for FES10G

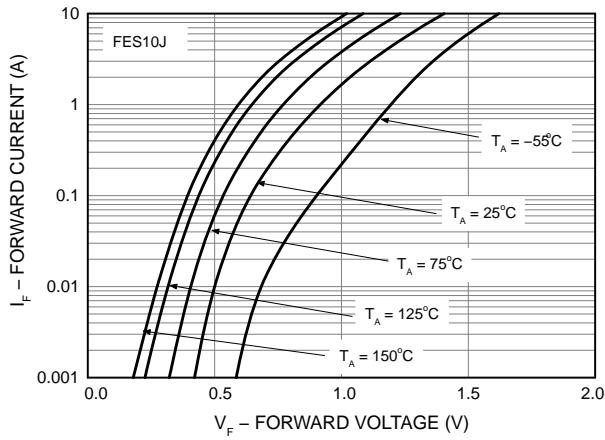


Fig 3. Typical Forward Characteristics for FES10J

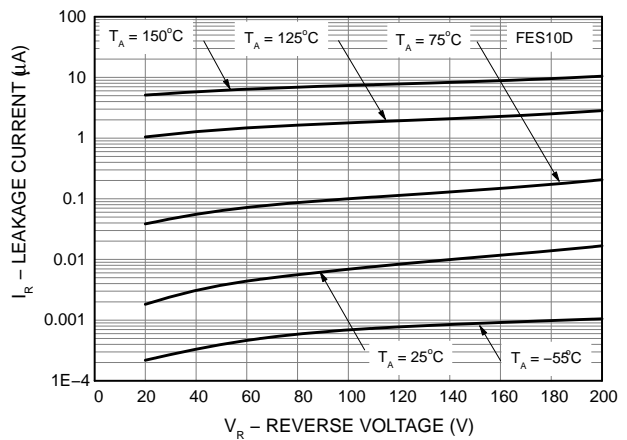


Fig 4. Typical Reverse Characteristics for FES10D

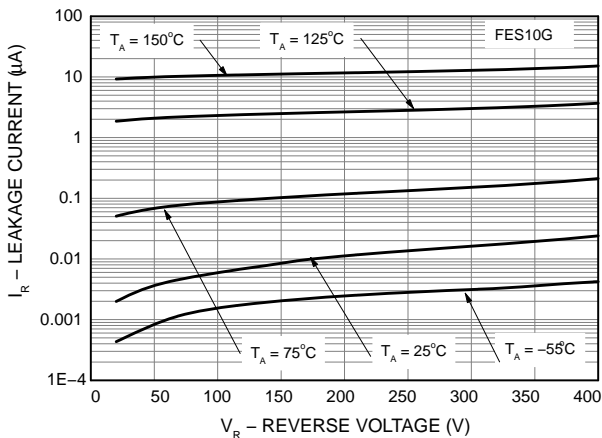


Fig 5. Typical Reverse Characteristics for FES10G

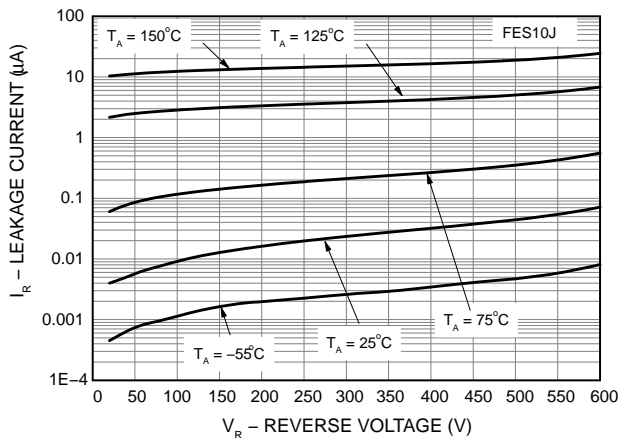


Fig 6. Typical Reverse Characteristics for FES10J

# FES10D, FES10G, FES10J

## TYPICAL CHARACTERISTICS

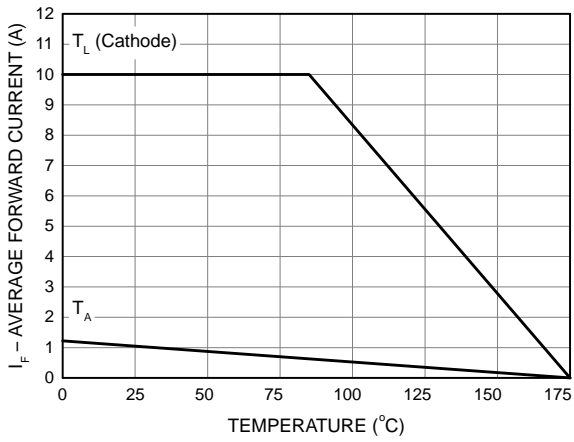


Fig 7. Forward Current Derating Curve

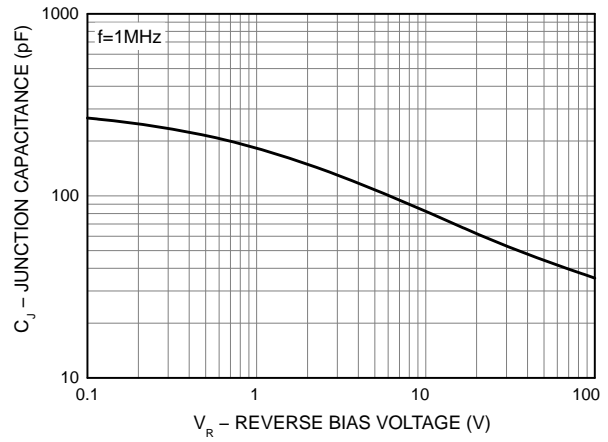


Fig 8. Typical Junction Capacitance

# MECHANICAL CASE OUTLINE

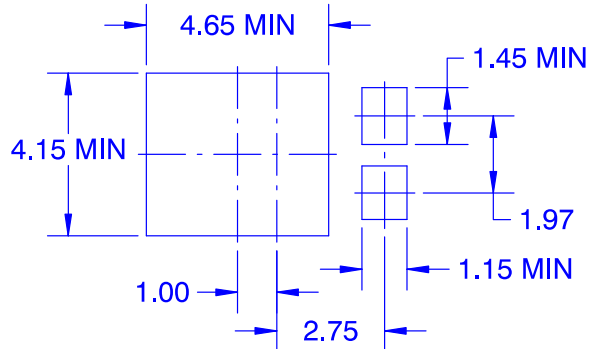
## PACKAGE DIMENSIONS

ON Semiconductor®

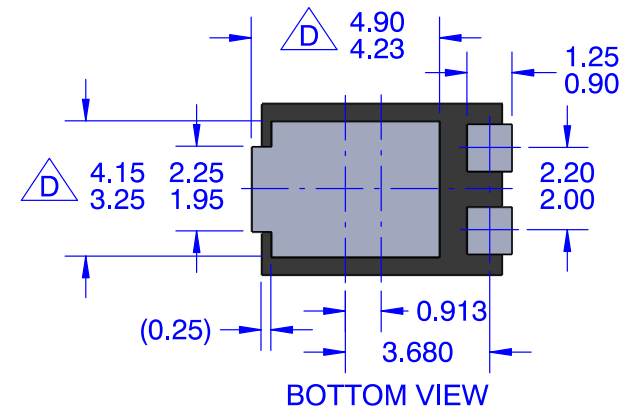


TO-277-3LD  
CASE 340BQ  
ISSUE O

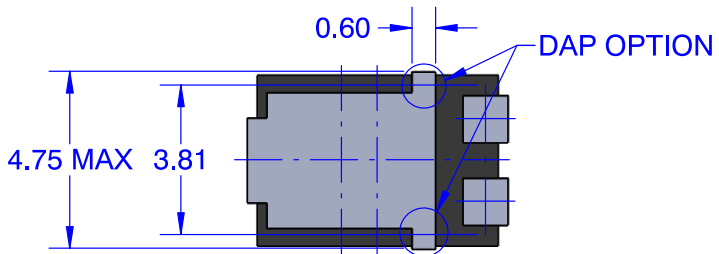
DATE 30 SEP 2016



LAND PATTERN RECOMMENDATION



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.



DOCUMENT NUMBER:	98AON13861G	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	TO-277-3LD	PAGE 1 OF 1

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 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. ON Semiconductor 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](http://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.

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Email Requests to: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

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

### TECHNICAL SUPPORT

**North American Technical Support:**

Voice Mail: 1 800-282-9855 Toll Free USA/Canada

Phone: 011 421 33 790 2910

**Europe, Middle East and Africa Technical Support:**

Phone: 00421 33 790 2910

For additional information, please contact your local Sales Representative