

# 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

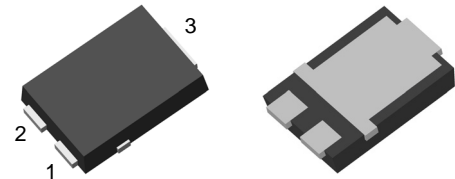
Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage FES10D FES10G FES10J	$V_{RRM}$	200 400 600	V
Average Forward Rectified Current	$I_{F(AV)}$	10	A
Peak Forward Surge Current: 8.3 ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	150	A
Operating Junction Temperature Range	$T_J$	-55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



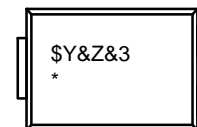
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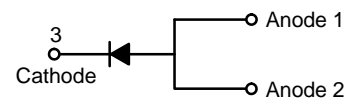


TO-277-3LD  
CASE 340BQ

### 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

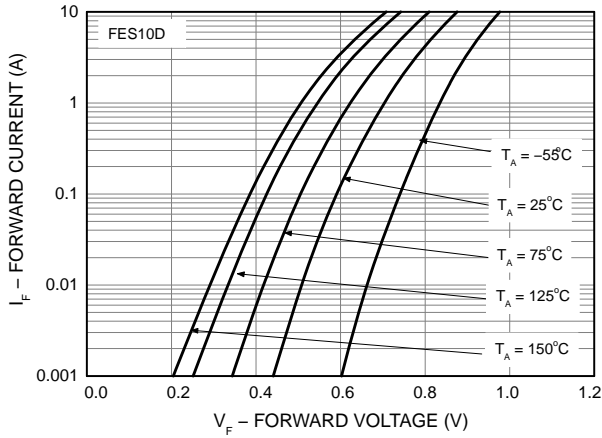


Fig 1. Typical Forward Characteristics for FES10D

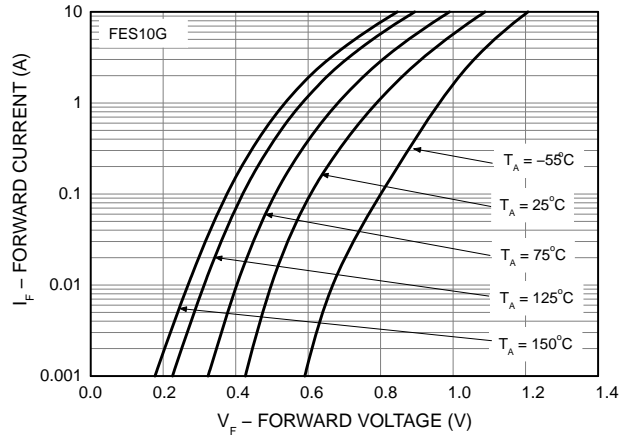


Fig 2. Typical Forward Characteristics for FES10G

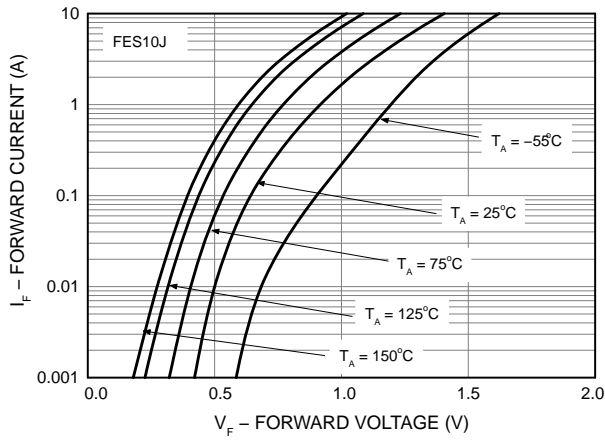


Fig 3. Typical Forward Characteristics for FES10J

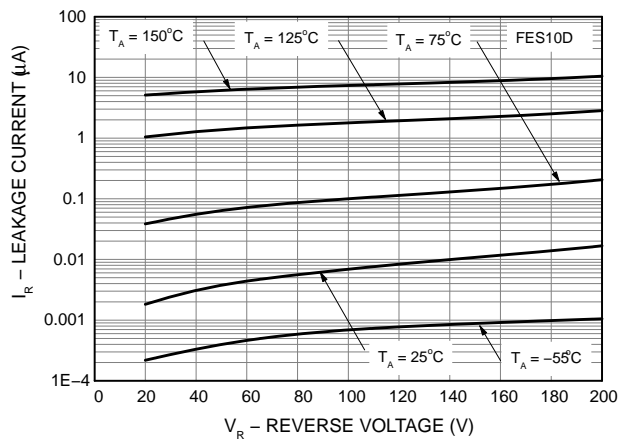


Fig 4. Typical Reverse Characteristics for FES10D

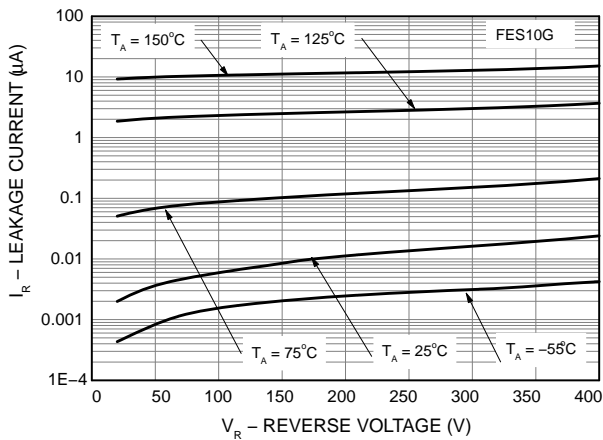


Fig 5. Typical Reverse Characteristics for FES10G

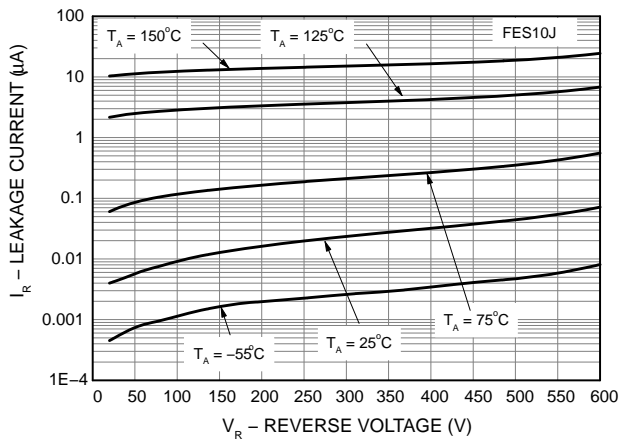
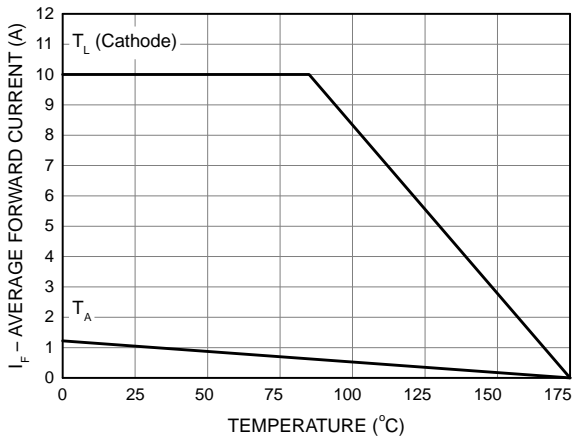


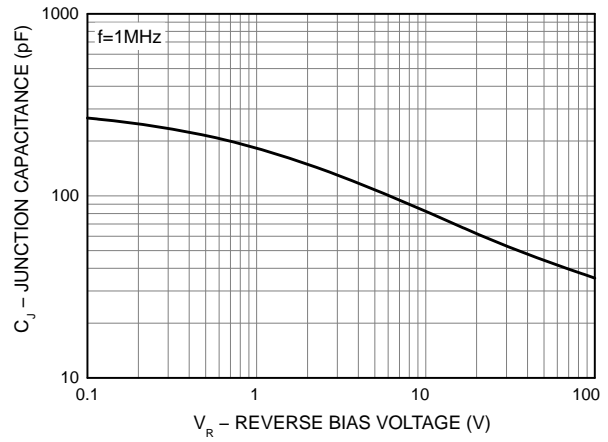
Fig 6. Typical Reverse Characteristics for FES10J

# FES10D, FES10G, FES10J

## TYPICAL CHARACTERISTICS



**Fig 7. Forward Current Derating Curve**



**Fig 8. Typical Junction Capacitance**

# MECHANICAL CASE OUTLINE

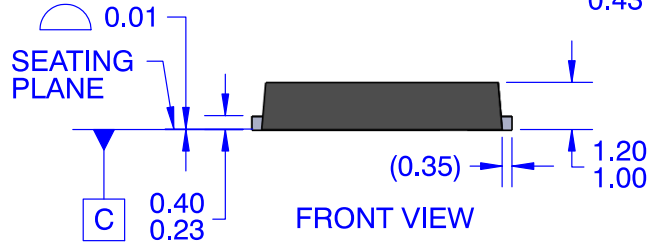
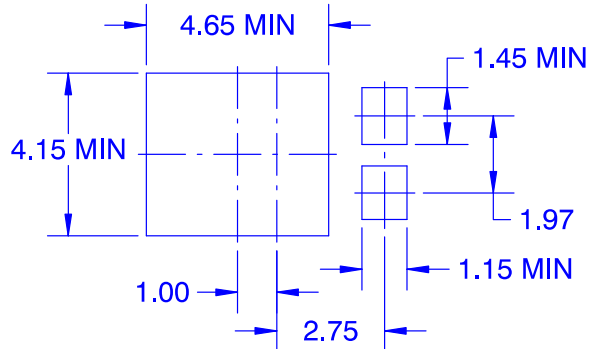
## PACKAGE DIMENSIONS

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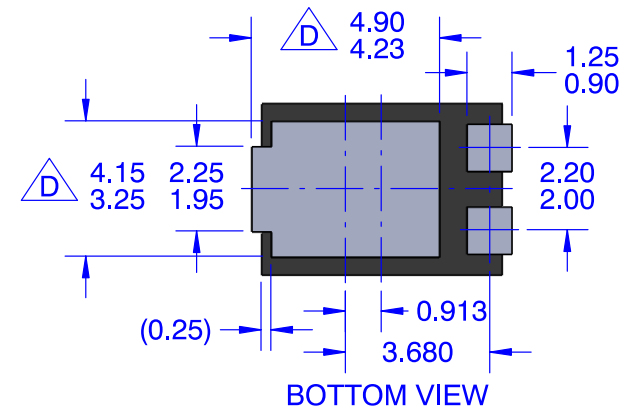


TO-277-3LD  
CASE 340BQ  
ISSUE O

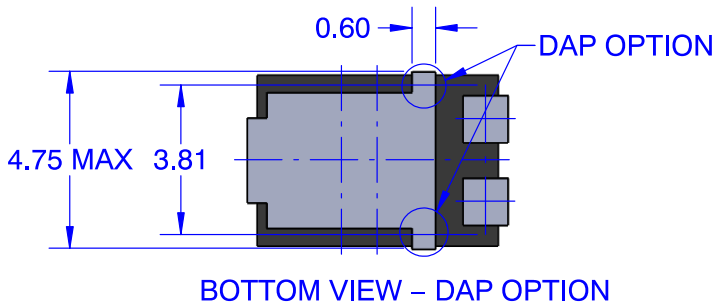
DATE 30 SEP 2016



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.  
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