

# Ultrafast Rectifiers, Surface Mount, 6 A, 200 V - 600 V



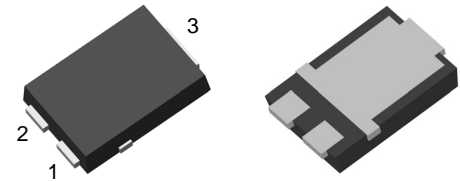
ON Semiconductor®

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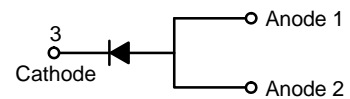
## FES6, NRVFES6 Series

### 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
- NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable



TO-277-3LD  
CASE 340BQ

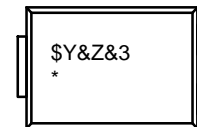


### MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage FES6D FES6G FES6J	$V_{RRM}$	200 400 600	V
Average Forward Rectified Current	$I_{F(AV)}$	6	A
Peak Forward Surge Current: 8.3 ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	80	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.

### MARKING DIAGRAM



\$Y = ON Semiconductor Logo  
 &Z = Assembly Plant Code  
 &3 = Date Code (Year & Week)  
 \* = Specific Device Code  
 FES6D, FES6G, FES6J

### ORDERING INFORMATION

Part Number	Top Mark	Package	Shipping†
FES6D	FES6D	TO-277 3L (with DAP Option only)	5000 / Tape & Reel
NRVFES6D*			
FES6G	FES6G		
NRVFES6G*			
FES6J	FES6J		
NRVFES6J*			

†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.

\*NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

## FES6, NRVFES6 Series

### 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
			FES6D	FES6G	FES6J	
$V_F$	Maximum Instantaneous Forward Voltage (Note 2)	$I_F = 6\text{ A}$	1.05	1.20	2.2	V
		$I_F = 6\text{ A}, T_J = 125^\circ\text{C}$	0.90	1.00	1.80	
$I_R$	Maximum Reverse Current at Rated $V_R$	$T_J = 25^\circ\text{C}$	2			$\mu\text{A}$
		$T_J = 125^\circ\text{C}$	200	500		
$C_J$	Typical Junction Capacitance	$V_R = 4\text{ V}, f = 1\text{ MHz}$	60		45	pF
$T_{rr}$	Typical Reverse Recovery Time	$I_F = 0.5\text{ A}, I_R = 1\text{ A}, I_{RR} = 0.25\text{ A}$	25			ns
		$I_F = 1\text{ A}, di/dt = 50\text{ A}/\mu\text{s}, V_R = 30\text{ V}$	45			

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

# FES6, NRVFES6 Series

## TYPICAL CHARACTERISTICS

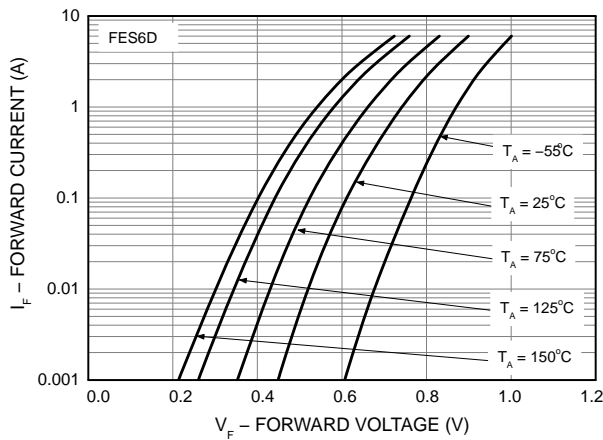


Fig 1. Typical Forward Characteristics for FES6D

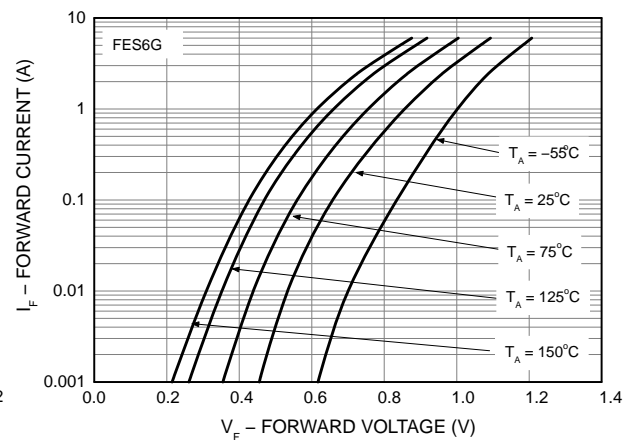


Fig 2. Typical Forward Characteristics for FES6G

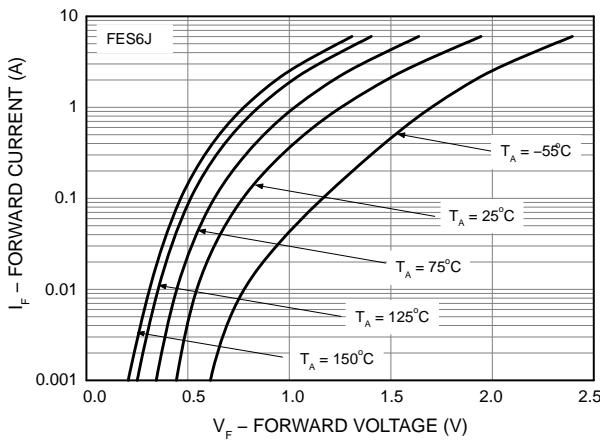


Fig 3. Typical Forward Characteristics for FES6J

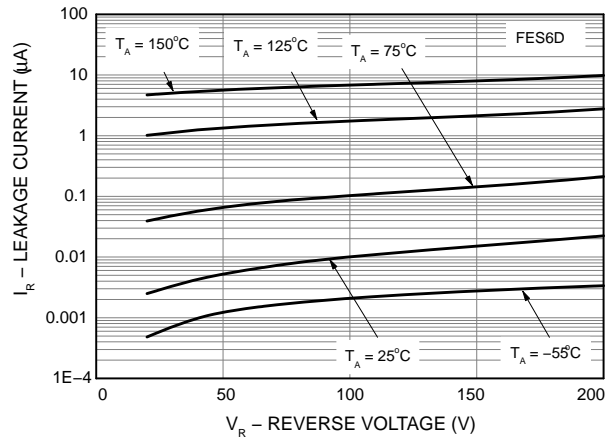


Fig 4. Typical Reverse Characteristics for FES6D

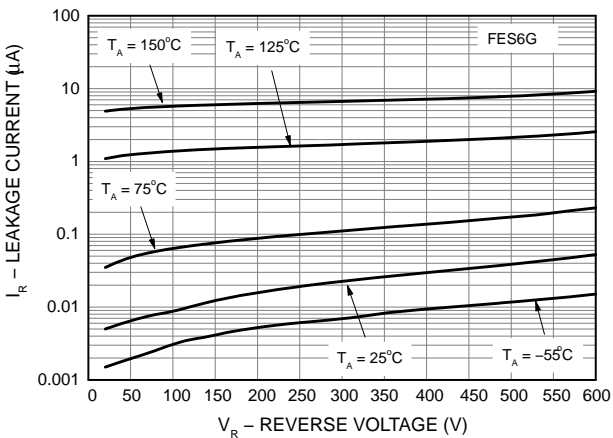


Fig 5. Typical Reverse Characteristics for FES6G

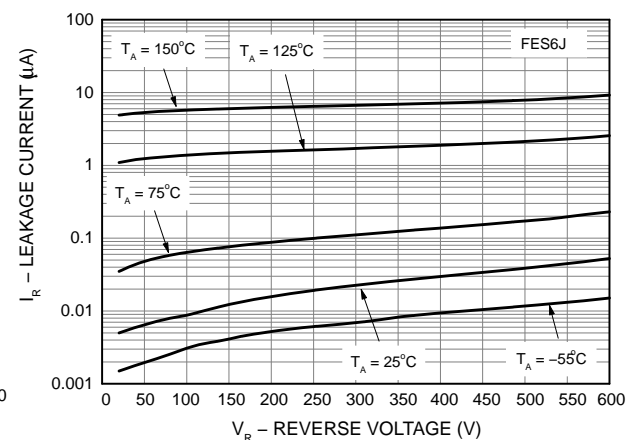


Fig 6. Typical Reverse Characteristics for FES6J

# FES6, NRVFES6 Series

## TYPICAL CHARACTERISTICS

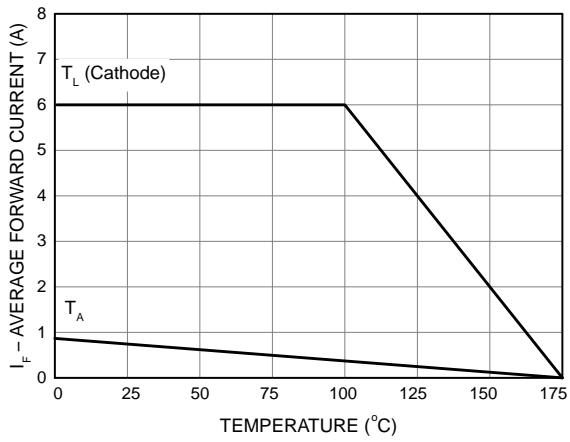


Fig 7. Forward Current Derating Curve

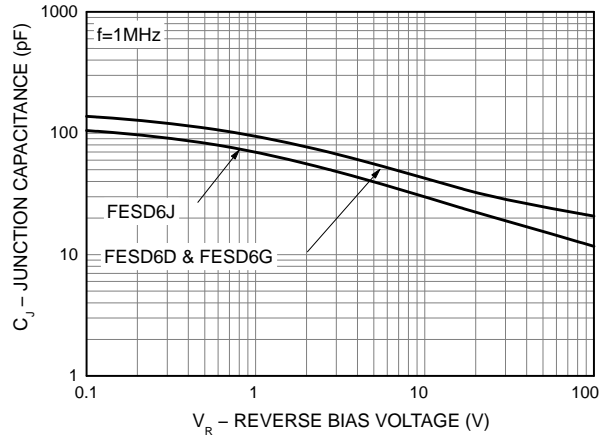
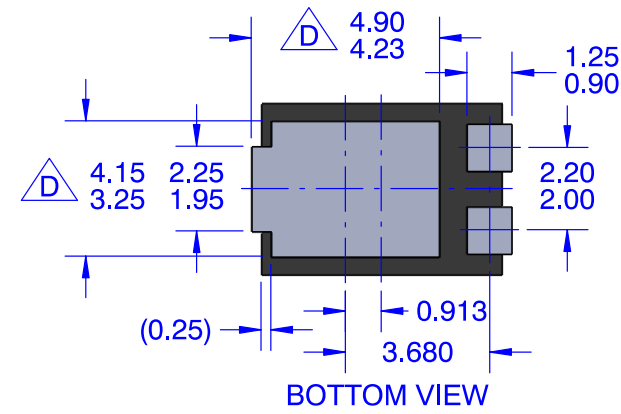
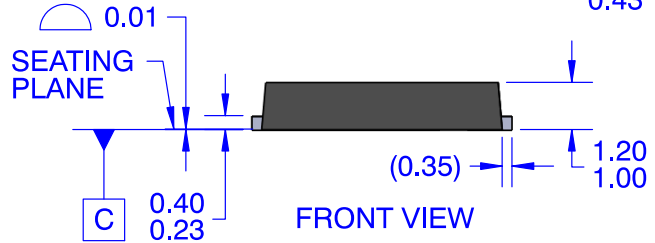
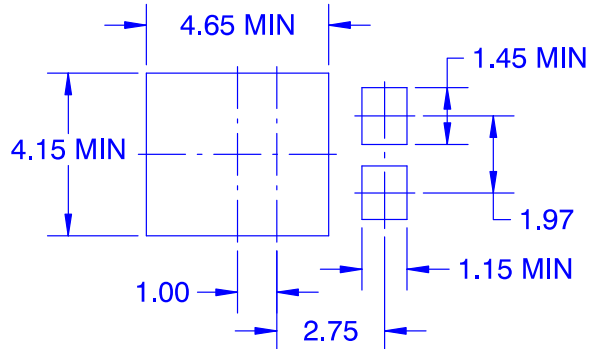
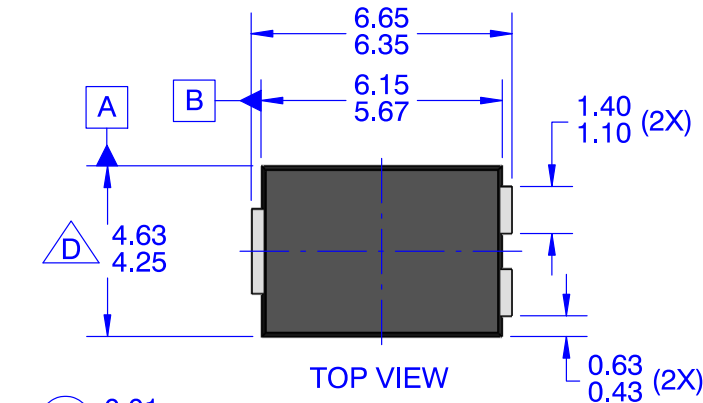


Fig 8. Typical Junction Capacitance

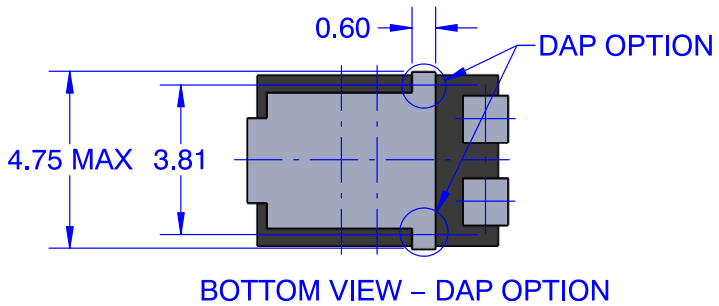
**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

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.



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