

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

## 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.

## ORDERING INFORMATION

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

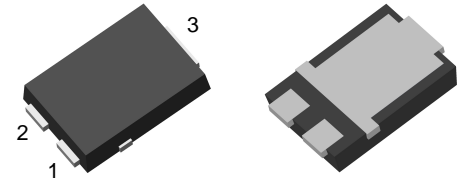
## DISCONTINUED (Note 1)

NRVFES6D*	FES6D	TO-277 3L (with DAP Option only)	5000 / Tape & Reel
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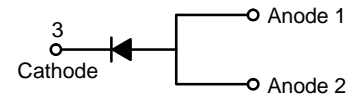
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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

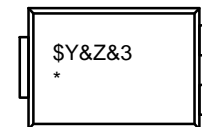
1. **DISCONTINUED:** This device is not recommended for new design. Please contact your onsemi representative for information. The most current information on this device may be available on [www.onsemi.com](http://www.onsemi.com).



TO-277-3LD  
CASE 340BQ



## MARKING DIAGRAM



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

## FES6, NRVFES6 Series

### **THERMAL CHARACTERISTICS** (Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted) (Note 2)

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	$^\circ\text{C/W}$

2. Per JESD51-3 Recommended Thermal Test Board.

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

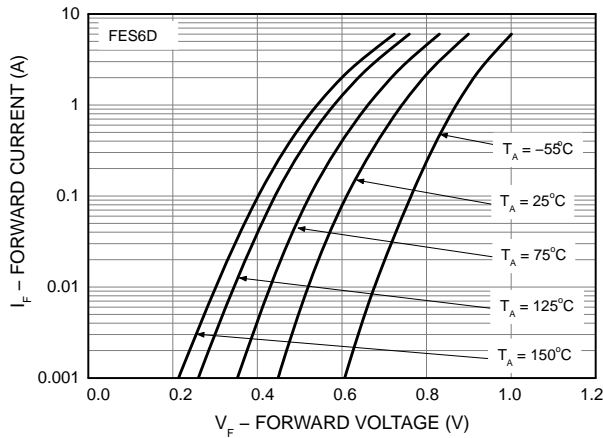
Symbol	Parameter	Conditions	Value			Unit
			FES6D	FES6G	FES6J	
V <sub>F</sub>	Maximum Instantaneous Forward Voltage (Note 3)	I <sub>F</sub> = 6 A	1.05	1.20	2.2	V
		I <sub>F</sub> = 6 A, T <sub>J</sub> = 125°C	0.90	1.00	1.80	
I <sub>R</sub>	Maximum Reverse Current at Rated V <sub>R</sub>	T <sub>J</sub> = 25°C	2			μA
		T <sub>J</sub> = 125°C	200	500		
C <sub>J</sub>	Typical Junction Capacitance	V <sub>R</sub> = 4 V, f = 1 MHz	60		45	pF
T <sub>rr</sub>	Typical Reverse Recovery Time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1 A, I <sub>RR</sub> = 0.25 A	25			ns
		I <sub>F</sub> = 1 A, di/dt = 50 A/μs, V <sub>R</sub> = 30 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.

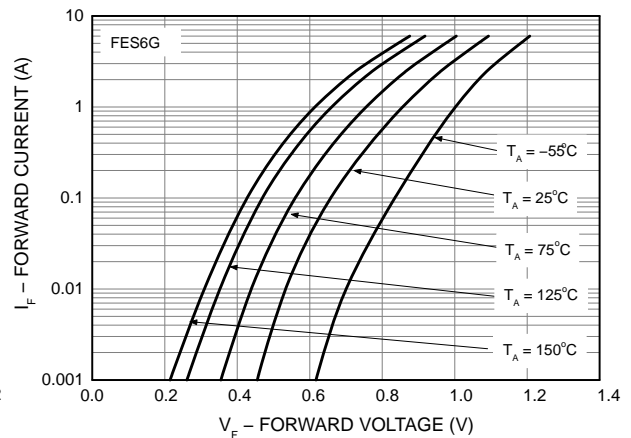
3. Pulse test with  $PW = 300\text{ }\mu\text{s}$ , 1% duty cycle

# FES6, NRVFES6 Series

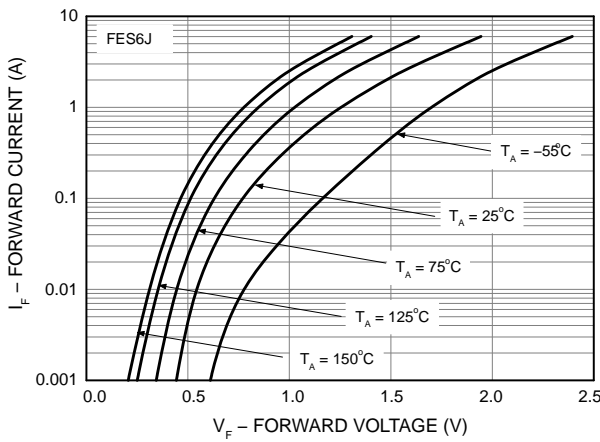
## TYPICAL CHARACTERISTICS



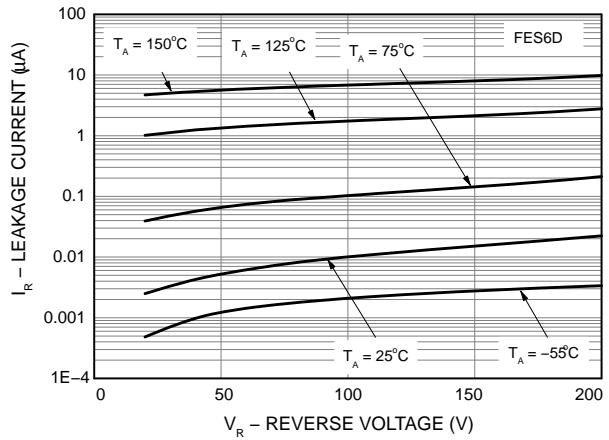
**Fig 1. Typical Forward Characteristics for FES6D**



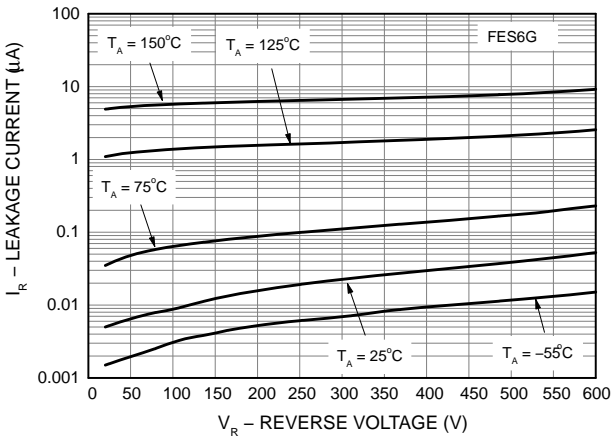
**Fig 2. Typical Forward Characteristics for FES6G**



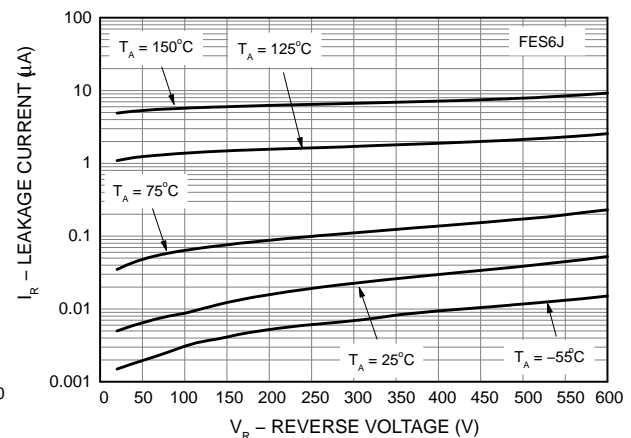
**Fig 3. Typical Forward Characteristics for FES6J**



**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

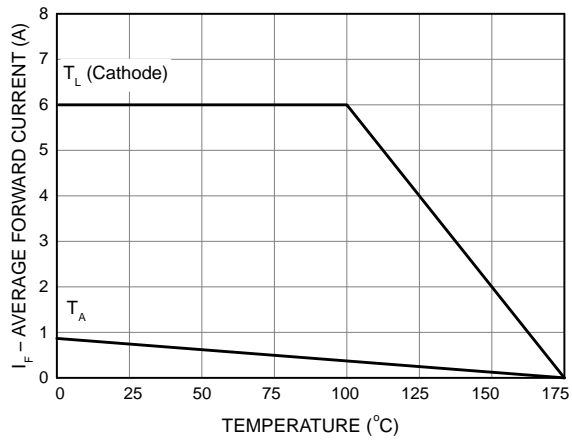


Fig 7. Forward Current Derating Curve

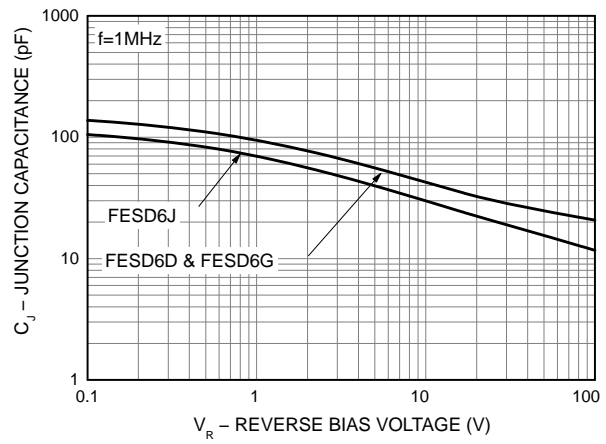
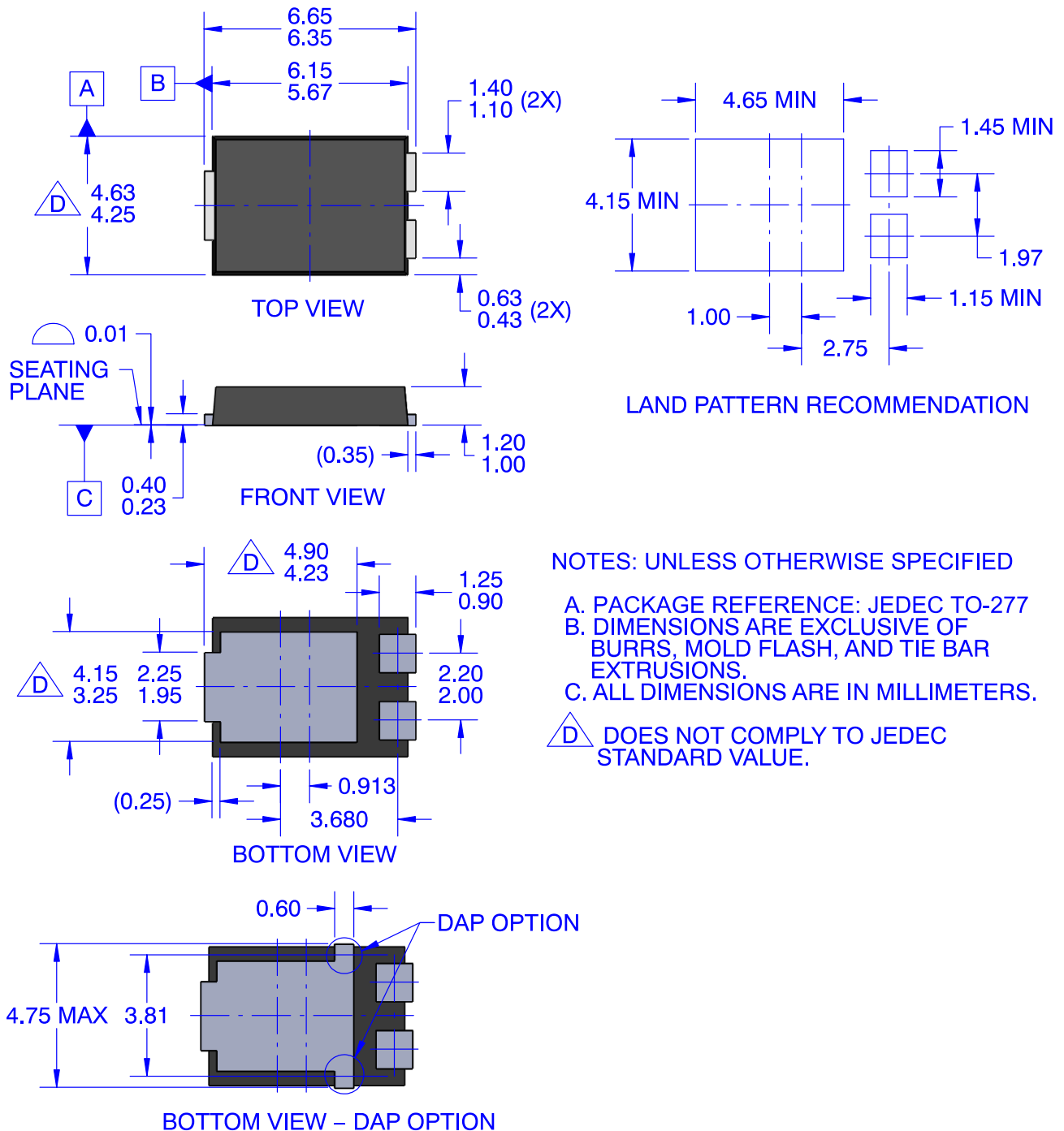


Fig 8. Typical Junction Capacitance

**TO-277-3LD**  
**CASE 340BQ**  
**ISSUE O**

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