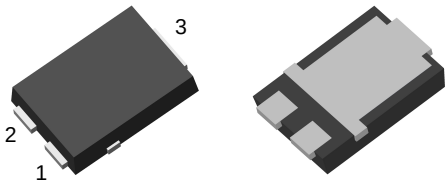
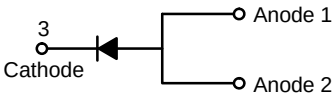
# Ultrafast Rectifiers, Surface Mount, 6 A, 200 V - 600 V

# FES6, NRVFES6 Series



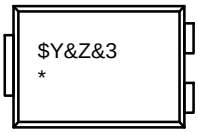

**TO−277−3LD**
**CASE 340BQ**




### 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

### MARKING DIAGRAM




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

### MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Repetitive Peak Reverse Voltage<br>FES6D<br>FES6G<br>FES6J | $V_{RRM}$ | <br>200<br>400<br>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 |

†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.



July, 2024 − Rev. 5
Publication Order Number:
FES6D/D

**THERMAL CHARACTERISTICS** (Values are at $T_A$ = 25°C unless otherwise noted) (Note 2)

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

2. Per JESD51−3 Recommended Thermal Test Board.

**ELECTRICAL CHARACTERISTICS** (Values are at $T_A$ = 25°C unless otherwise noted)

| Symbol | Parameter | Conditions | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | FES6D | FES6G | FES6J | |
| $V_F$ | Maximum Instantaneous Forward Voltage (Note 3) | $I_F$ = 6 A | 1.05 | 1.20 | 2.2 | V |
| | | $I_F$ = 6 A, $T_J$ = 125°C | 0.90 | 1.00 | 1.80 | |
| $I_R$ | Maximum Reverse Current at Rated $V_R$ | $T_J$ = 25°C | 2 | | | μA |
| | | $T_J$ = 125°C | 200 | 500 | | |
| $C_J$ | Typical Junction Capacitance | $V_R$ = 4 V, f = 1 MHz | 60 | | 45 | pF |
| $T_{rr}$ | Typical Reverse Recovery Time | $I_F$ = 0.5 A, $I_R$ = 1 A, $I_{RR}$ = 0.25 A | 25 | | | ns |
| | | $I_F$ = 1 A, di/dt = 50 A/μs, $V_R$ = 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 μs, 1% duty cycle

## TYPICAL CHARACTERISTICS

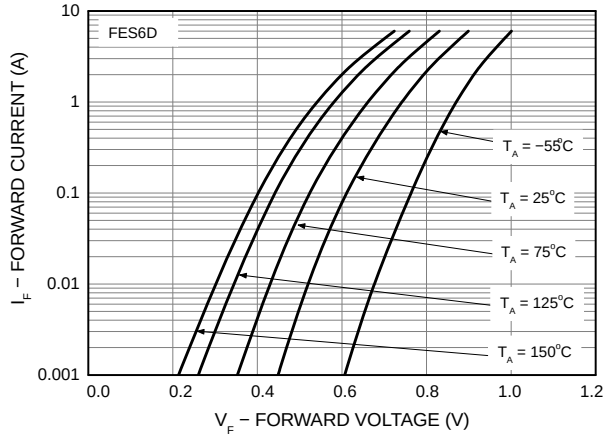



**Fig 1. Typical Forward Characteristics for FES6D**

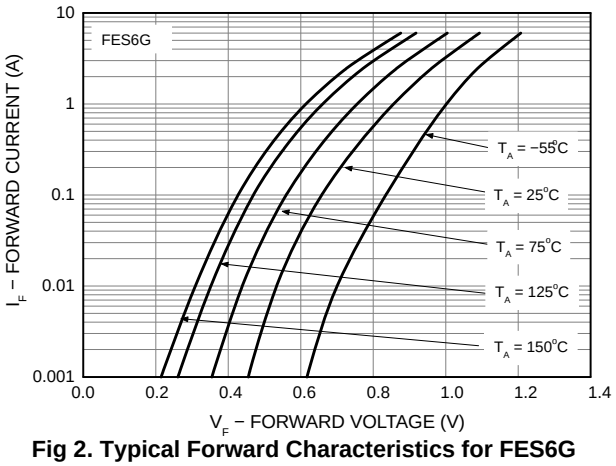



**Fig 2. Typical Forward Characteristics for FES6G**

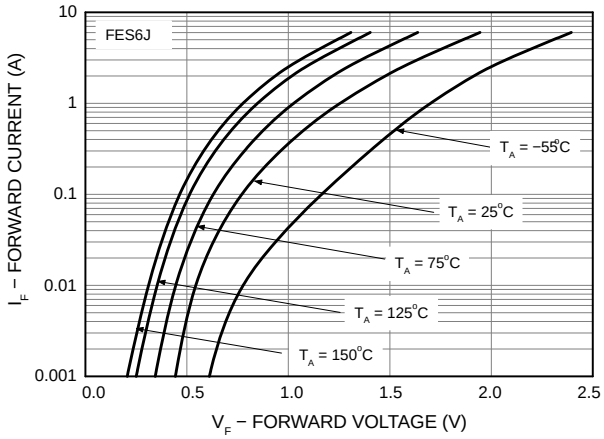



**Fig 3. Typical Forward Characteristics for FES6J**

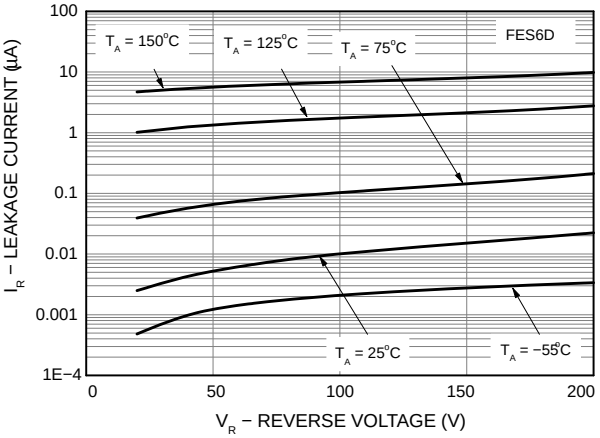



**Fig 4. Typical Reverse Characteristics for FES6D**

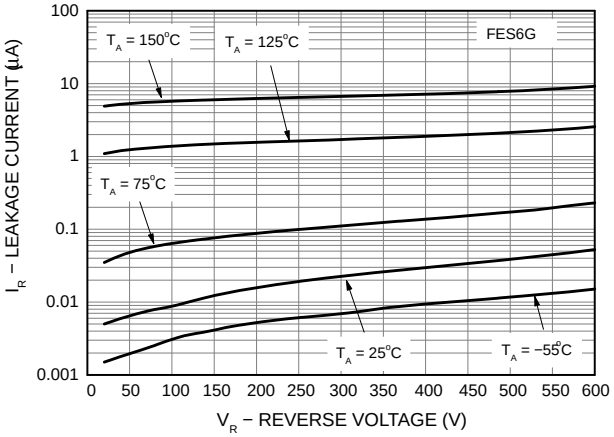



**Fig 5. Typical Reverse Characteristics for FES6G**

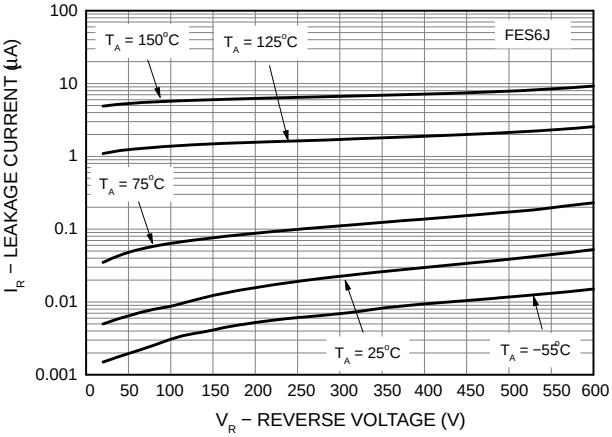



**Fig 6. Typical Reverse Characteristics for FES6J**

## TYPICAL CHARACTERISTICS

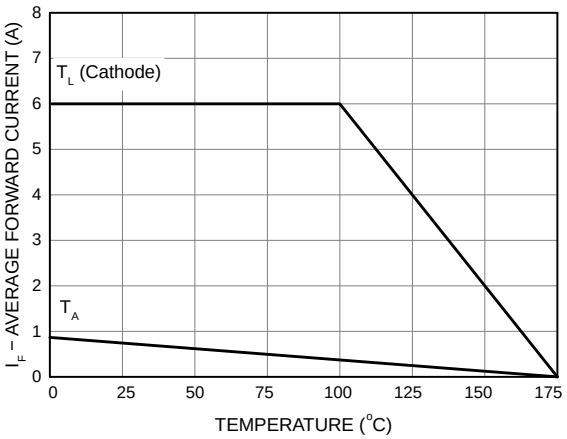



**Fig 7. Forward Current Derating Curve**

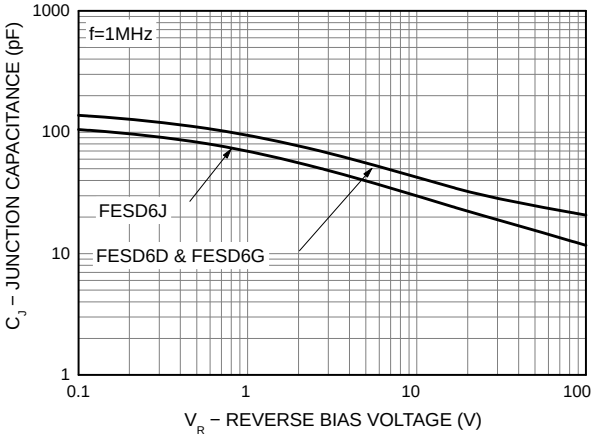



**Fig 8. Typical Junction Capacitance**

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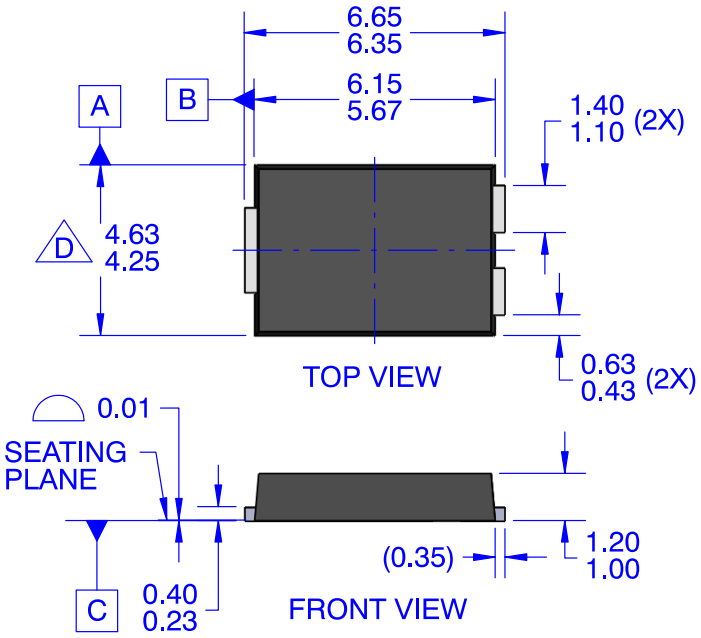
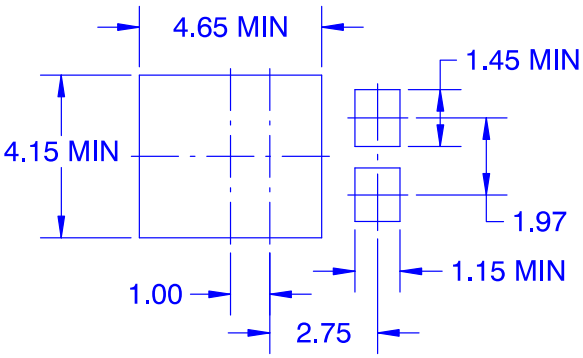
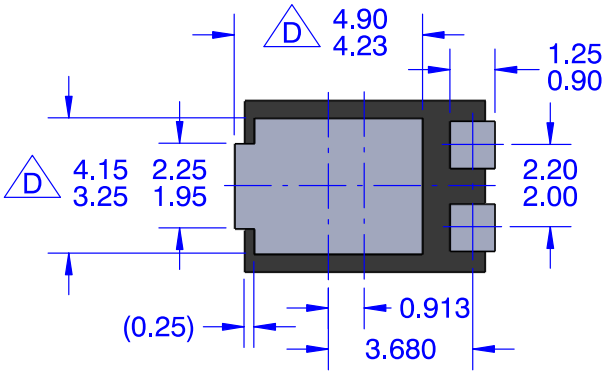


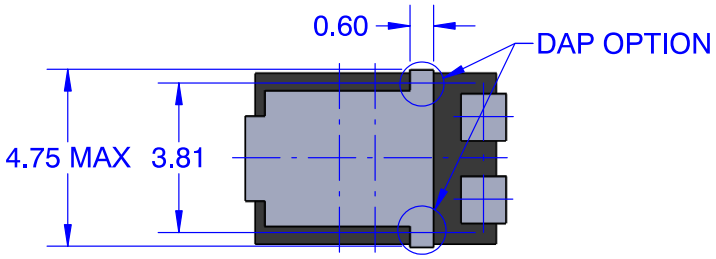

LAND PATTERN RECOMMENDATION




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.




BOTTOM VIEW − DAP OPTION

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| **DESCRIPTION:** | **TO−277−3LD** | | **PAGE 1 OF 1** |

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