



May 2015

## FS8G - FS8M

### 8 A Standard Recovery Surface Mount Rectifiers

#### Features

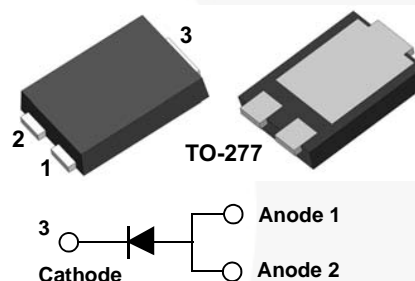
- Very High forward Surge Capability:  $I_{FSM} = 230\text{ A}$
- Low Leakage Current:  $0.37\text{ }\mu\text{A}$  at  $T_A = 25^\circ\text{C}$
- Very Low Profile: Typical Height of 1.1 mm
- Glass Passivated Junction
- Lead Free in Compliance with EU RoHS 2011/65/EU Directive
- Green Molding Compound as per IEC61249 Standard
- Qualified per AEC-Q101 REV. C standard
- HBM (JEDEC A114) > 8 KV; CDM (JEDEC C101C) > 2KV

#### Applications

- General-Purpose Applications
- Reverse Polarity Protection
- Rectifications

#### Description

The FS8G to FS8M series offers breakthrough size and performance. It sinks 8 A DC forward current and provides up to 230 A surge current capability with only  $0.37\text{ }\mu\text{A}$  reverse leakage current. All this capability is packed into a small, flat-lead, TO-277 package, optimized for space-constrained applications.



#### Ordering Information

| Part Number | Top Mark | Package   | Packing Method |
|-------------|----------|-----------|----------------|
| FS8G        | FS8G     | TO-277 3L | Tape and Reel  |
| FS8J        | FS8J     | TO-277 3L | Tape and Reel  |
| FS8K        | FS8K     | TO-277 3L | Tape and Reel  |
| FS8M        | FS8M     | TO-277 3L | Tape and Reel  |

## Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol      | Parameter   | Value       |      |      |      | Unit             |
|-------------|---|-------------|------|------|------|------------------|
|             |   | FS8G        | FS8J | FS8K | FS8M |                  |
| $V_{RRM}$   | Maximum Repetitive Peak Reverse Voltage   | 400         | 600  | 800  | 1000 | V                |
| $V_{RMS}$   | Maximum RMS Reverse Voltage   | 280         | 420  | 560  | 700  | V                |
| $V_{DC}$    | DC Blocking Voltage   | 400         | 600  | 800  | 1000 | V                |
| $I_{F(AV)}$ | Maximum Average Rectified Forward Current   | 8           |      |      |      | A                |
| $I_{FSM}$   | Peak Forward Surge Current: 8.3 ms Single Half Sine-Wave Superimposed on Rated Load | 230         |      |      |      | A                |
| $T_J$       | Operating Junction Temperature Range  | -55 to +150 |      |      |      | $^\circ\text{C}$ |
| $T_{STG}$   | Storage Temperature Range   | -55 to +150 |      |      |      | $^\circ\text{C}$ |

## Thermal Characteristics<sup>(1)</sup>

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol          | Parameter  | Minimum Land Pattern | Maximum Land Pattern | Unit                      |
|-----------------|--|----------------------|----------------------|---------------------------|
| $R_{\theta JA}$ | Junction-to-Ambient Thermal Resistance                                     | 100                  | 40                   | $^\circ\text{C}/\text{W}$ |
| $\psi_{JL}$     | Junction-to-Lead Thermal Characteristics, Thermocouple Soldered to Anode   | 20                   | 12                   | $^\circ\text{C}/\text{W}$ |
|                 | Junction-to-Lead Thermal Characteristics, Thermocouple Soldered to Cathode | 6                    | 5                    |                           |

### Note:

- The thermal resistances ( $R_{\theta JA}$  &  $\psi_{JL}$ ) are characterized with device mounted on the following FR4 printed circuit boards, as shown in Figure 1 and Figure 2. PCB size: 76.2 x 114.3 mm. Minimum land pattern size: 4.9 x 4.8 mm (big pattern, x1), 1.4 x 1.52 mm (small pattern, x2). Maximum land pattern size: 30 x 30 mm (pattern, x2). Force line trace size = 55 mils, sense line trace size = 4 mils.



Figure 1. Minimum Land Pattern of 2 oz Copper

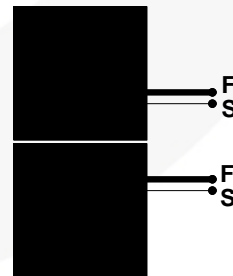


Figure 2. Maximum Land Pattern of 2 oz Copper

## Electrical Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol   | Parameter             | Conditions   | Min. | Typ.  | Max. | Unit          |
|----------|-----------------------|--|------|-------|------|---------------|
| $V_F$    | Forward Voltage       | $I_F = 8\text{ A}$   |      | 0.951 | 1.1  | V             |
|          |                       | $I_F = 8\text{ A}, T_A = 125^\circ\text{C}$                    |      | 0.845 |      |               |
| $I_R$    | DC Reverse Current    | $V_R = V_{DC}$   |      | 0.37  | 5    | $\mu\text{A}$ |
|          |                       | $V_R = V_{DC}, T_A = 125^\circ\text{C}$                        |      | 84    |      |               |
| $T_{rr}$ | Reverse Recovery Time | $I_F = 0.5\text{ A}, I_R = 1\text{ A}, I_{rr} = 0.25\text{ A}$ |      | 3.37  |      | $\mu\text{s}$ |
| $C_J$    | Junction Capacitance  | $V_R = 0\text{ V}, f = 1\text{ MHz}$                           |      | 118   |      | pF            |

## Typical Performance Characteristics

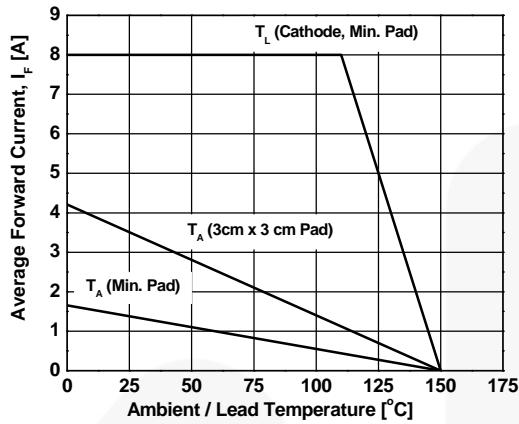


Figure 3. Forward Current Derating Curve

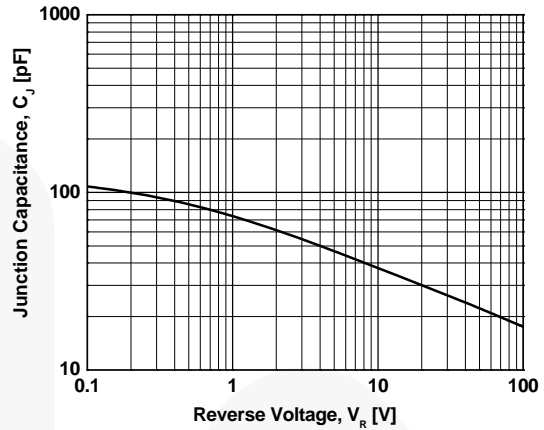


Figure 4. Typical Junction Capacitance

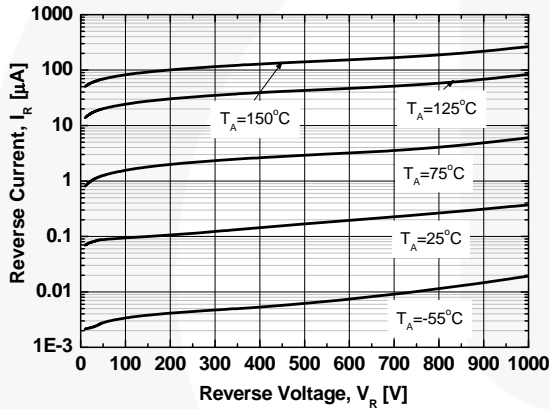


Figure 5. Typical Reverse Characteristics

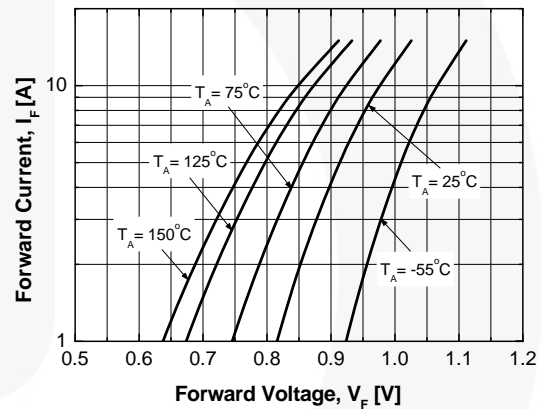


Figure 6. Typical Forward Characteristics

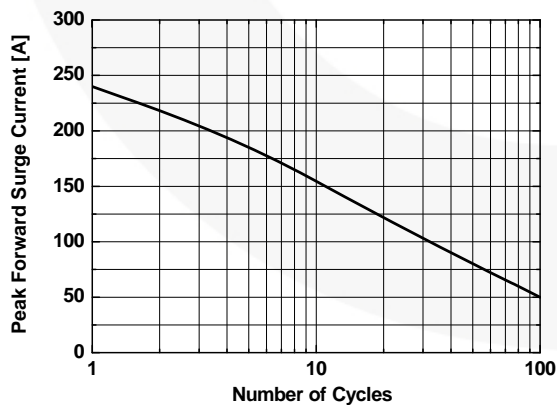
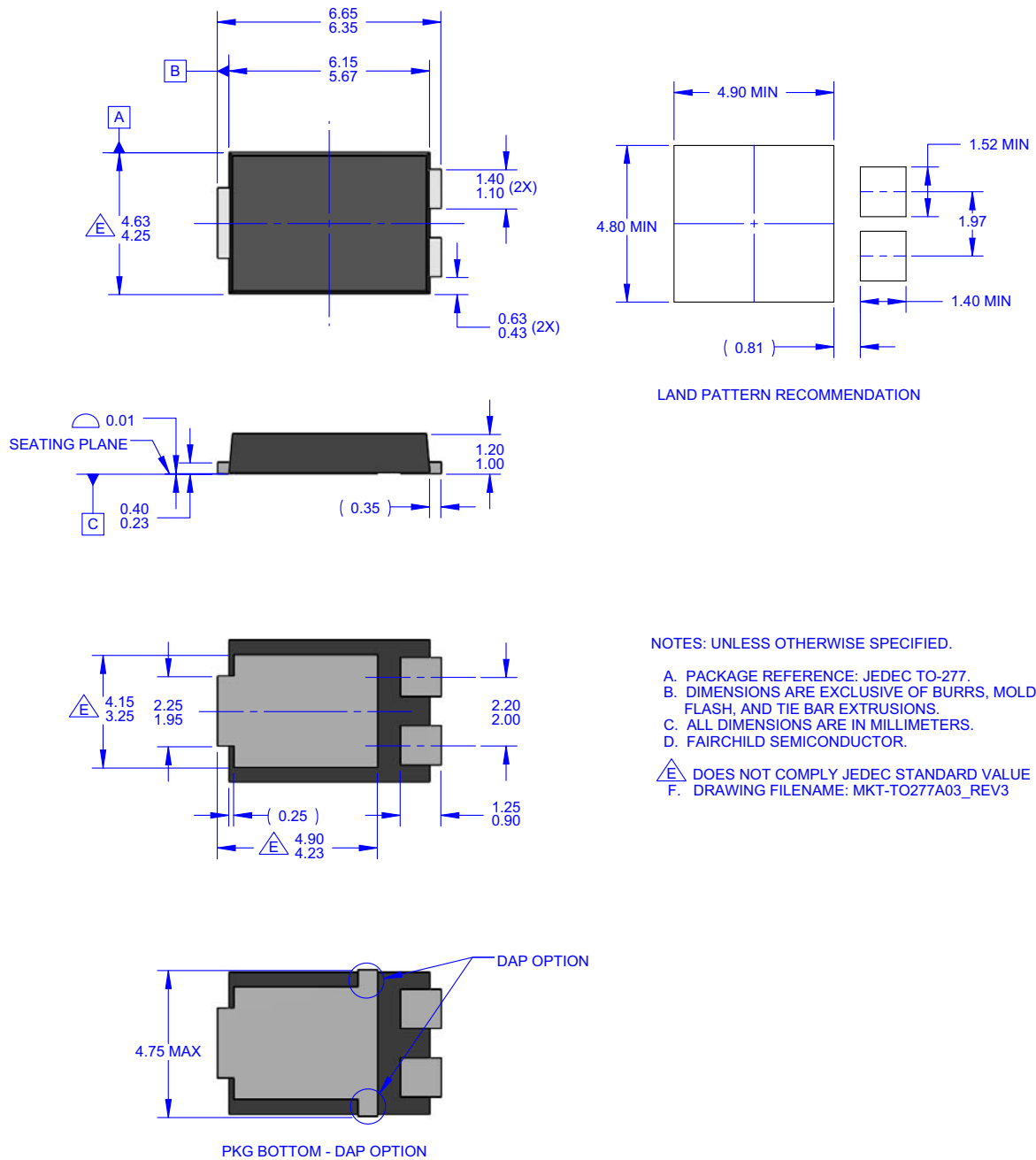


Figure 7. Maximum Non-repetitive Peak Forward Surge current

## Physical Dimensions



**Figure 8. 3-LEAD, TO277, JEDEC, SURFACE MOUNT**



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