LITE-ON SEMICONDUCTOR

# FRS1ME

**SURFACE MOUNT**
**FAST RECOVERY RECTIFIERS**

**REVERSE VOLTAGE – 1000 Volts**
**FORWARD CURRENT – 1.0 Ampere**

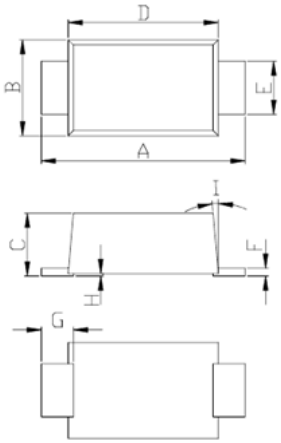
## FEATURES

- Fast switching for high efficiency
- For surface mounted applications
- Glass passivated chip
- Low reverse leakage current
- Low forward voltage drop
- High current capability
- Qualified according to AEC-Q101 Rev_C

## MECHANICAL DATA

- Case: JEDEC DO-219AA
- Case Material: “Green” molding compound, UL flammability classification 94V-0,"Halogen-free".
- Moisture Sensitivity: Level 1 per J-STD-020C
- Lead Free Finish, RoHs Compliant
- Marking code: R1M
- Weight: 16.3 mg (Approximate)

## F1A




| F1A | | | |
|---|---|---|---|
| DIM | MIN | TYP | MAX |
| A | 3.50 | 3.80 | 3.90 |
| B | 1.70 | 1.90 | 2.00 |
| C | 0.81 | 1.18 | 1.20 |
| D | 2.70 | 2.80 | 2.90 |
| E | 0.85 | 1.00 | 1.15 |
| F | 0.05 | 0.15 | 0.30 |
| G | 0.45 | 0.60 | 0.75 |
| H | 0.03 | 0.07 | 0.10 |
| I | 0° | 5° | 8° |
| All dimension in millimeter. | | | |

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

### ABSOLUTE RATING

| PARAMETER | | SYMBOL | VALUE | UNIT |
|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | | $V_{RRM}$ | 1000 | V |
| Maximum DC blocking voltage | | $V_{DC}$ | 1000 | V |
| Maximum Average rectified forward current | @Tc=125°C | $I_{(AV)}$ | 1.0 | A |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load | | $I_{FSM}$ | 30 | A |
| Operating temperature range | | $T_J$ | -55 ~ +150 | °C |
| Storage temperature rang | | $T_{STG}$ | -55 ~ +150 | °C |

### STATIC ELECTRICAL CHARACTERISTICS

| PARAMETER | TEST CONDITION | | SYMBOL | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Forward voltage (Note1) | $I_F$=1.0A | $T_J$=25°C | $V_F$ | 1.1 | 1.3 | V |
| Leakage current | $V_R$=1000V | $T_J$=25°C<br>$T_J$=100°C | $I_R$ | 0.5<br>20 | 5<br>200 | uA |
| Typical junction capacitance (Note2) | | | $C_J$ | 5 | | pF |

### THERMAL CHARACTERISTICS

| PARAMETER | SYMBOL | TYP | UNIT |
|---|---|---|---|
| Typical Thermal Resistance (Note 3) | $RthJ_A$<br>$RthJ_L$<br>$RthJ_C$ | 110<br>25<br>20 | °C/W |

### DYNAMIC ELECTRICAL CHARACTERISTICS

| PARAMETER | TEST CONDITION | SYMBOL | MAX | UNIT |
|---|---|---|---|---|
| Reverse recovery time | $I_F$= 0.5A, $I_{rr}$=0.25A, $I_R$=1.0A | $T_{RR}$ | 500 | nS |

**Note :**

(1) 300us pulse width, 2% duty cycle.

(2) Measured at 1.0MHz and applied reverse voltage of 4.0V DC.

(3) Thermal resistance test performed in accordance with JESD-51. Unit mounted on glass-epoxy substrate with 5 x 7 mm copper pad.

**REV.-5, Jun.-2020,KSEP05**

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## RATING AND CHARACTERISTIC CURVES
## FRS1ME

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FIG.1- FORWARD CURRENT DERATING CURVE

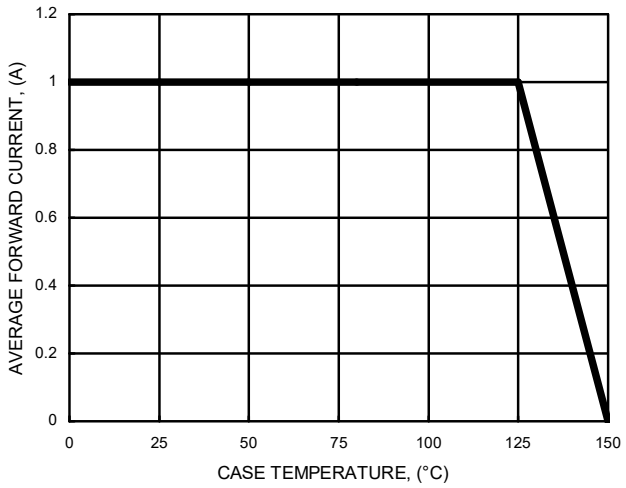



FIG.2- MAXIMUM NON-REPETITIVE SURGE CURRENT

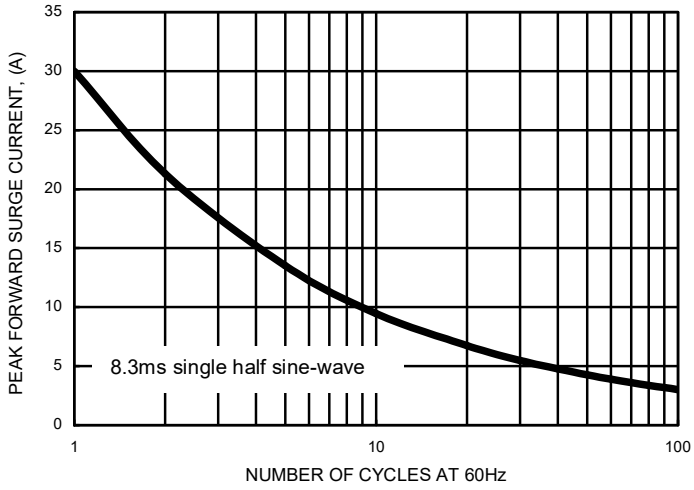



FIG.3- TYPICAL FORWARD CHARACTERISTICS

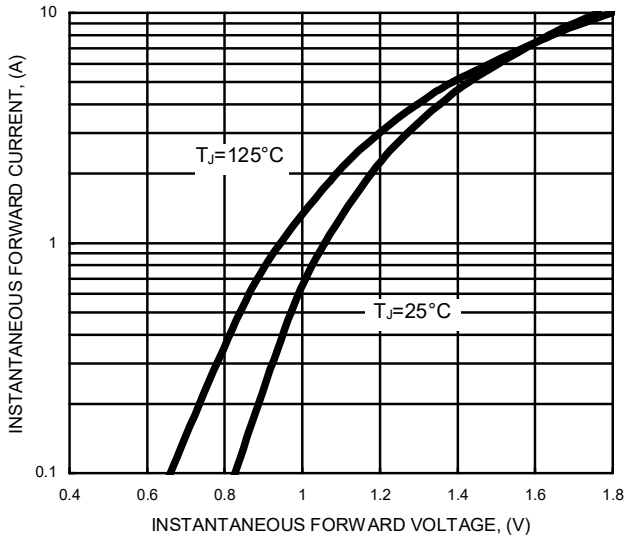



FIG.4- TYPICAL JUNCTION CAPACITANCE

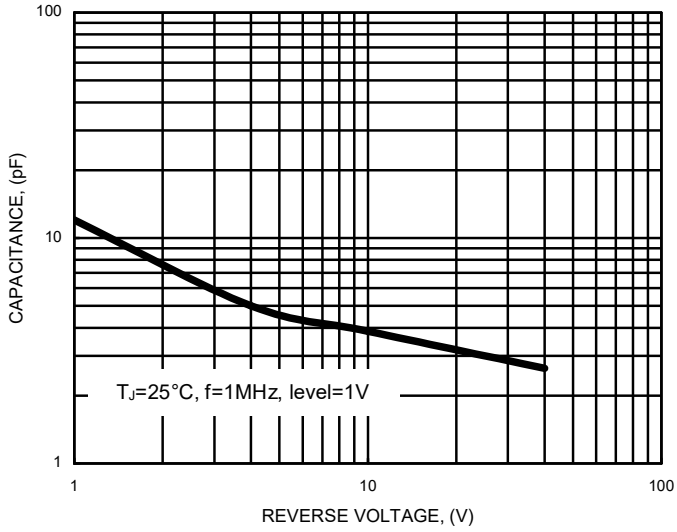
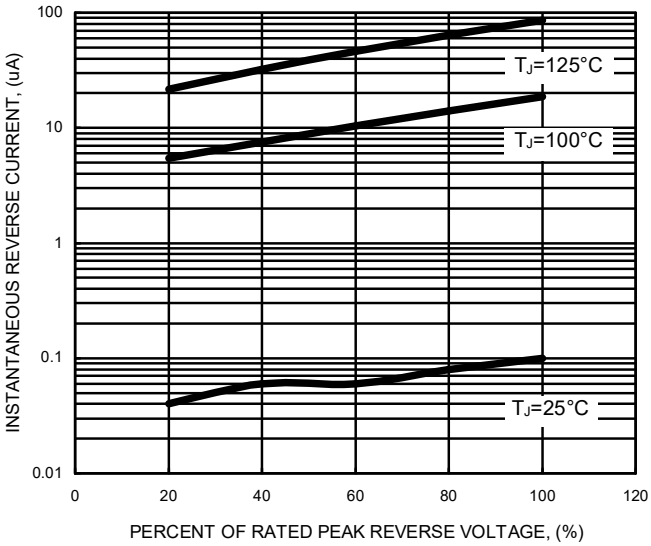



FIG.5- TYPICAL REVERSE CHARACTERISTICS




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