

## DESCRIPTION

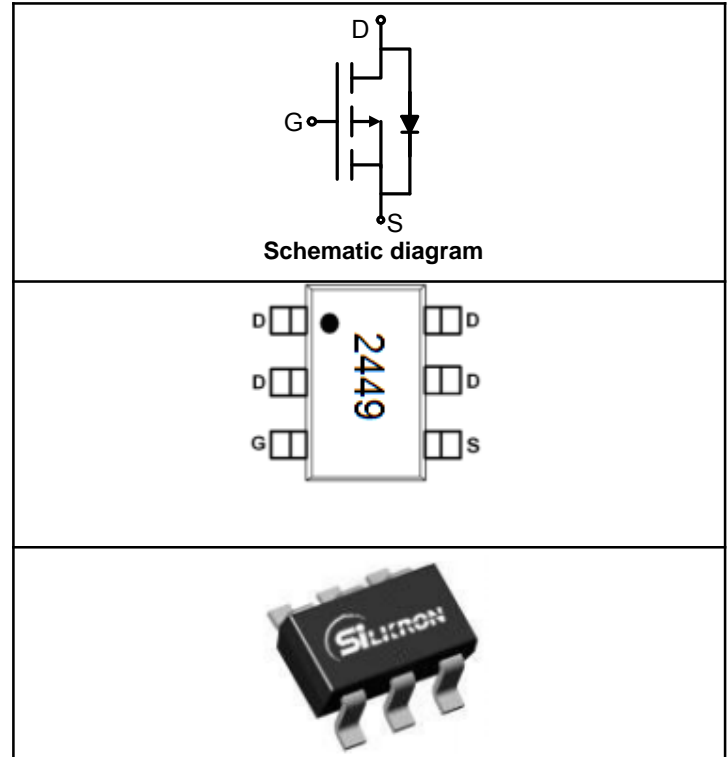
The SSF2449 uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch or in PWM applications.

## GENERAL FEATURES

- $V_{DS} = -20V, I_D = -5A$   
 $R_{DS(ON)} < 100m\Omega @ V_{GS} = -2.5V$   
 $R_{DS(ON)} < 60m\Omega @ V_{GS} = -4.5V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

## Application

- PWM applications
- Load switch
- Power management



## PACKAGE MARKING AND ORDERING INFORMATION

### Pin Assignment

| Device Marking | Device  | Device Package | Reel Size | Tape width | Quantity |
|----------------|---------|----------------|-----------|------------|----------|
| 2449           | SSF2449 | SOT23-6        | —         | —          | —        |

## ABSOLUTE MAXIMUM RATINGS(TA=25 °C unless otherwise noted)

| Parameter   | Symbol         | Limit      | Unit |
|---|----------------|------------|------|
| Drain-Source Voltage                              | $V_{DS}$       | -20        | V    |
| Gate-Source Voltage                               | $V_{GS}$       | ±12        | V    |
| Drain Current-Continuous@ Current-Pulsed (Note 1) | $I_D$          | -5         | A    |
|   | $I_{DM}$       | -20        | A    |
| Maximum Power Dissipation                         | $P_D$          | 1.2        | W    |
| Operating Junction and Storage Temperature Range  | $T_J, T_{STG}$ | -55 To 150 | °C   |

## THERMAL CHARACTERISTICS

|  |                 |     |      |
|--|-----------------|-----|------|
| Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 110 | °C/W |
|--|-----------------|-----|------|

## ELECTRICAL CHARACTERISTICS (TA=25 °C unless otherwise noted)

| Parameter                       | Symbol     | Condition                   | Min | Typ | Max  | Unit |
|---------------------------------|------------|-----------------------------|-----|-----|------|------|
| <b>OFF CHARACTERISTICS</b>      |            |                             |     |     |      |      |
| Drain-Source Breakdown Voltage  | $BV_{DSS}$ | $V_{GS}=0V, I_D=-250\mu A$  | -20 |     |      | V    |
| Zero Gate Voltage Drain Current | $I_{DSS}$  | $V_{DS}=-20V, V_{GS}=0V$    |     |     | -1   | μA   |
| Gate-Body Leakage Current       | $I_{GSS}$  | $V_{GS}=\pm 12V, V_{DS}=0V$ |     |     | ±100 | nA   |

| ON CHARACTERISTICS (Note 3)        |              |   |      |     |      |            |
|------------------------------------|--------------|---|------|-----|------|------------|
| Gate Threshold Voltage             | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=-250\mu A$                            | -0.6 |     | -1   | V          |
| Drain-Source On-State Resistance   | $R_{DS(ON)}$ | $V_{GS}=-4.5V, I_D=-5A$                                   |      | 49  | 60   | m $\Omega$ |
|                                    |              | $V_{GS}=-2.5V, I_D=-3A$                                   |      | 83  | 100  |            |
| Forward Transconductance           | $g_{FS}$     | $V_{DS}=-10V, I_D=-5A$                                    |      | 9   |      | S          |
| DYNAMIC CHARACTERISTICS (Note4)    |              |   |      |     |      |            |
| Input Capacitance                  | $C_{iss}$    | $V_{DS}=-10V, V_{GS}=0V,$<br>$F=1.0MHz$                   |      | 610 |      | PF         |
| Output Capacitance                 | $C_{oss}$    |   |      | 130 |      | PF         |
| Reverse Transfer Capacitance       | $C_{rss}$    |   |      | 100 |      | PF         |
| SWITCHING CHARACTERISTICS (Note 4) |              |   |      |     |      |            |
| Turn-on Delay Time                 | $t_{d(on)}$  | $V_{DD}=-10V, I_D=-5A$<br>$V_{GS}=-4.5V, R_{GEN}=1\Omega$ |      | 27  |      | nS         |
| Turn-on Rise Time                  | $t_r$        |   |      | 60  |      | nS         |
| Turn-Off Delay Time                | $t_{d(off)}$ |   |      | 30  |      | nS         |
| Turn-Off Fall Time                 | $t_f$        |   |      | 10  |      | nS         |
| Total Gate Charge                  | $Q_g$        | $V_{DS}=-10V, I_D=-5A, V_{GS}=-4.5V$                      |      | 9.6 |      | nC         |
| Gate-Source Charge                 | $Q_{gs}$     |   |      | 1.5 |      | nC         |
| Gate-Drain Charge                  | $Q_{gd}$     |   |      | 2.4 |      | nC         |
| DRAIN-SOURCE DIODE CHARACTERISTICS |              |   |      |     |      |            |
| Diode Forward Voltage (Note 3)     | $V_{SD}$     | $V_{GS}=0V, I_s=-1.7A$                                    |      |     | -1.2 | V          |

## NOTES:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production testing.

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

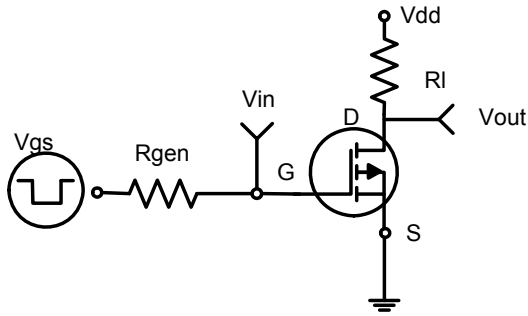


Figure 1: Switching Test Circuit

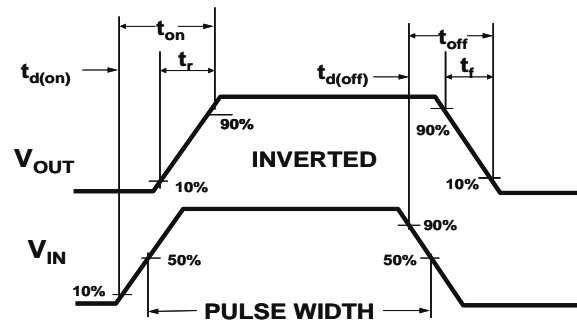


Figure 2: Switching Waveforms

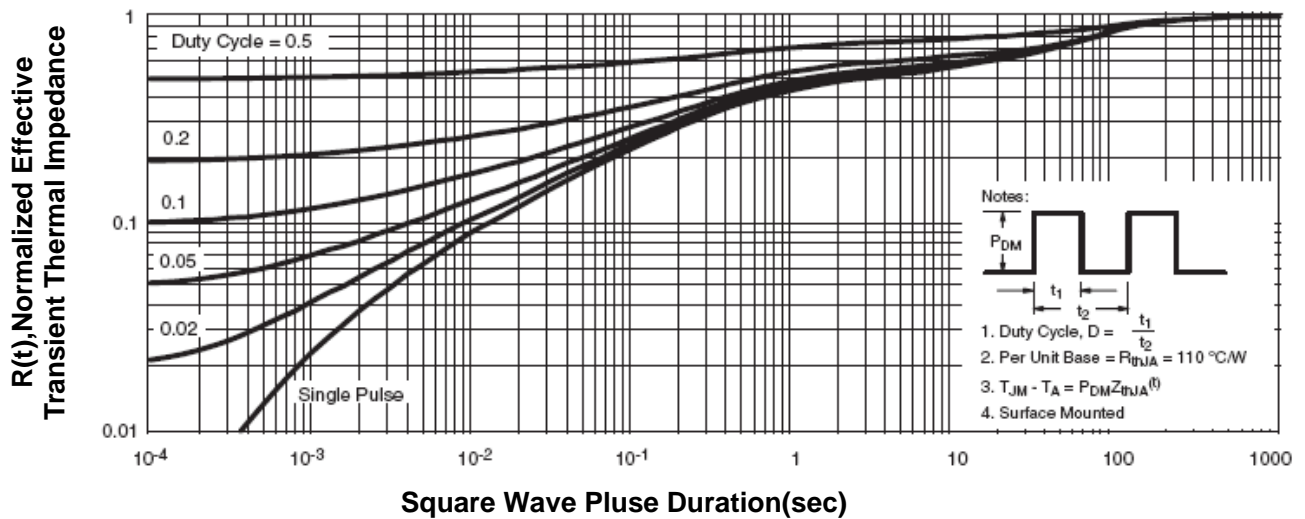
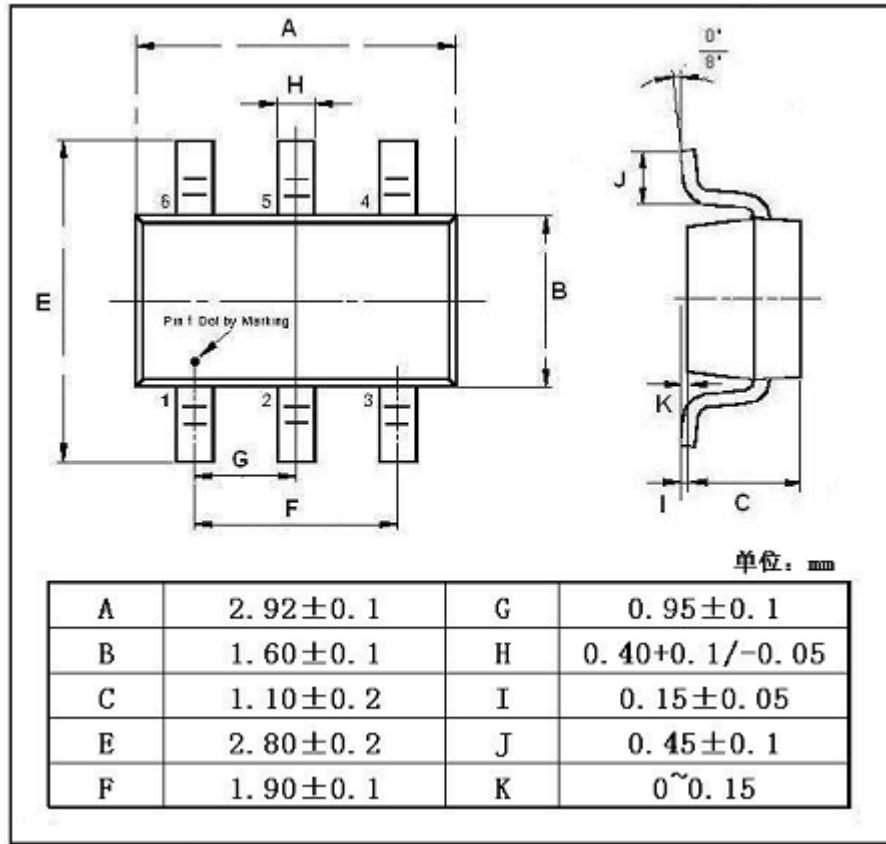


Figure 3: Normalized Maximum Transient Thermal Impedance

## SOT23-6 PACKAGE INFORMATION



### NOTES:

1. Dimensions are inclusive of plating
2. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils.
3. Dimension L is measured in gauge plane.
4. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

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