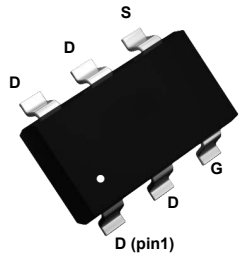
GOOD-ARK
SEMICONDUCTOR

# SSF2429

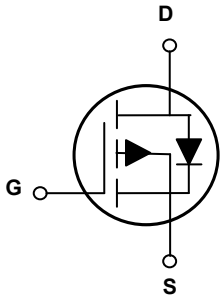
**20V P-Channel MOSFET**

## Main Product Characteristics

| | |
|---|---|
| $BV_{DSS}$ | -20V |
| $R_{DS(ON)}$ | 35mΩ (Max.) |
| $I_D$ | -5A |



SOT-23-6L



Schematic Diagram

## Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery

## Description

The SSF2429 utilizes the latest techniques to achieve ultra high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in battery protection, load switch, power management and a wide variety of other applications.

## Absolute Maximum Ratings ($T_A$=25°C unless otherwise specified)

| Parameter | Symbol | Max. | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | -20 | V |
| Gate-Source Voltage | $V_{GS}$ | ±12 | V |
| Drain Current-Continuous[1] | $I_D$ | -5 | A |
| Drain Current-Pulsed[1] | $I_{DM}$ | -20 | A |
| Maximum Power Dissipation | $P_D$ | 1.4 | W |
| Thermal Resistance Junction-to-Ambient[2] | $R_{\theta JA}$ | 90 | °C/W |
| Operating Junction Temperature Range | $T_J$ | -55 To +150 | °C |
| Storage Temperature Range | $T_{STG}$ | -55 To +150 | °C |

# SSF2429

**20V P-Channel MOSFET**

## Electrical Characteristics ($T_A$=25°C unless otherwise specified)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V, $I_D$=250uA | -20 | - | - | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=-20V, $V_{GS}$=0V | - | - | -1 | μA |
| Gate-Body Leakage Current | $I_{GSS}$ | $V_{GS}$=±12V, $V_{DS}$=0V | - | - | ±100 | nA |
| **On Characteristics** | | | | | | |
| Gate Threshold Voltage[3] | $V_{GS(th)}$ | $V_{GS}$=$V_{DS}$, $I_D$=250uA | -0.5 | -0.7 | -1 | V |
| Drain Static-Source On-Resistance[3] | $R_{DS(ON)}$ | $V_{GS}$=-4.5V, $I_D$=-5A | - | 29 | 35 | mΩ |
| | | $V_{GS}$=-2.5V, $I_D$=-3A | - | 37 | 48 | mΩ |
| Gate Resistance[3] | $R_g$ | $V_{DS}$=0V, f=1mHz | - | 14 | - | Ω |
| Forward Transconductance[3] | $g_{FS}$ | $V_{DS}$=-10V, $I_D$=-3A | 4 | - | - | S |
| **Dynamic and Switching Characteristics** | | | | | | |
| Input Capacitance[4] | $C_{lss}$ | $V_{DS}$=-10V, $V_{GS}$=0V, F=1MHz | - | 688 | - | pF |
| Output Capacitance[4] | $C_{oss}$ | | - | 124 | - | |
| Reverse Transfer Capacitance[4] | $C_{rss}$ | | - | 115 | - | |
| Turn-On Delay Time[4] | $t_{d(on)}$ | $V_{DD}$=-10V, $R_{GEN}$=6Ω $V_{GS}$=-4.5V, $I_D$=-1A | - | 5.8 | - | nS |
| Rise Time[4] | $t_r$ | | - | 2.2 | - | |
| Turn-Off Delay Time[4] | $t_{d(off)}$ | | - | 95 | - | |
| Fall Time[4] | $t_f$ | | - | 45 | - | |
| Total Gate Charge[4] | $Q_g$ | $V_{DS}$=-10V, $I_D$=-4.5A $V_{GS}$=-5V | - | 17.4 | - | nC |
| Gate-Source Charge[4] | $Q_{gs}$ | | - | 1.9 | - | |
| Gate-Drain Charge[4] | $Q_{gd}$ | | - | 2.5 | - | |
| **Drain-Source Diode Characteristics and Maximum Ratings** | | | | | | |
| Diode Forward Voltage[3] | $V_{SD}$ | $V_{GS}$=0V, $I_S$=-1.3A | - | -0.65 | -1.3 | V |
| Reverse Recovery Time | $T_{rr}$ | $V_R$=-10V, $I_D$=-4.5A di/dt=100A/us | - | 9.35 | - | nS |
| Reverse Recovery Charge | $Q_{rr}$ | | - | 1.87 | - | nC |

Notes:

1. Repetitive rating: pulse width limited by maximum junction temperature.
2. Surface mounted on 1in$^2$ FR4 Board, t ≤ 10 sec.
3. Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

## Typical Electrical and Thermal Characteristic Curves

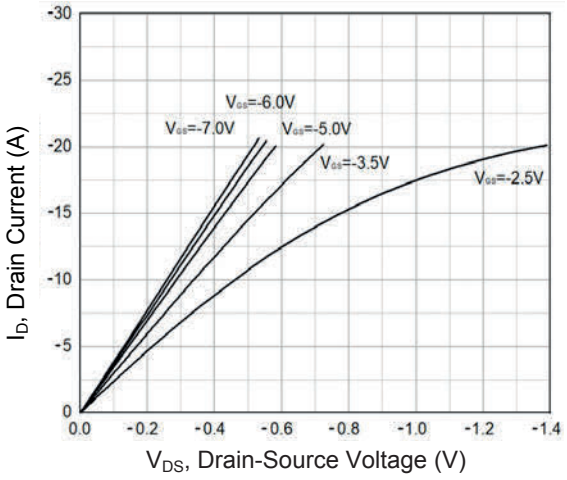



**Figure 1. Output Characteristics**

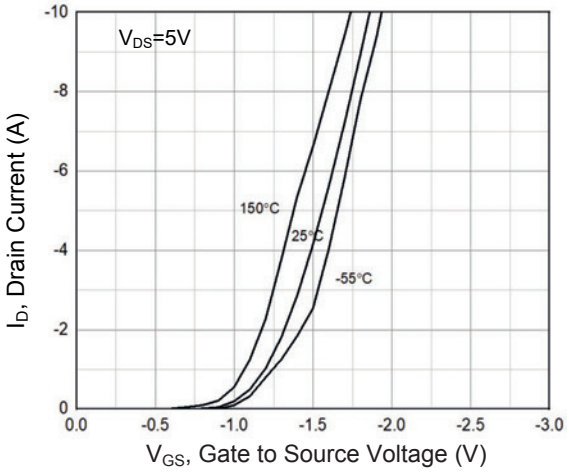



**Figure 2. Transfer Characteristics**

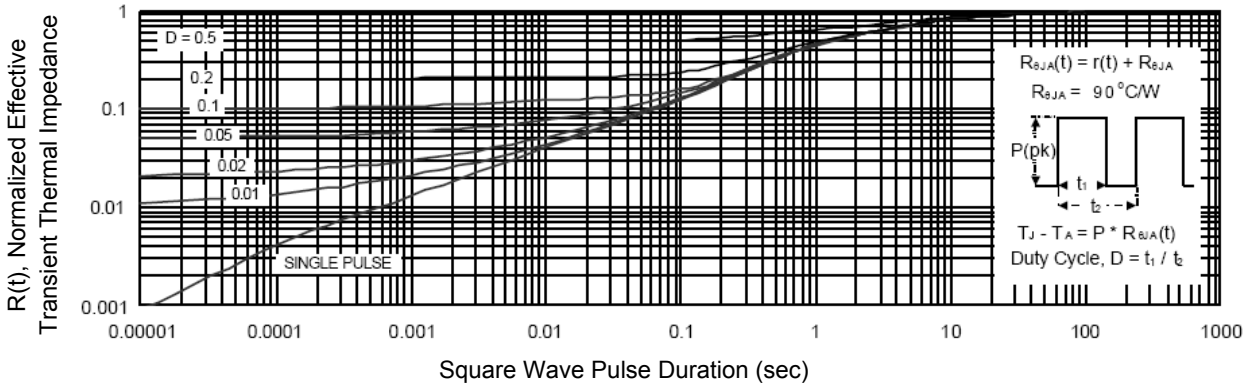
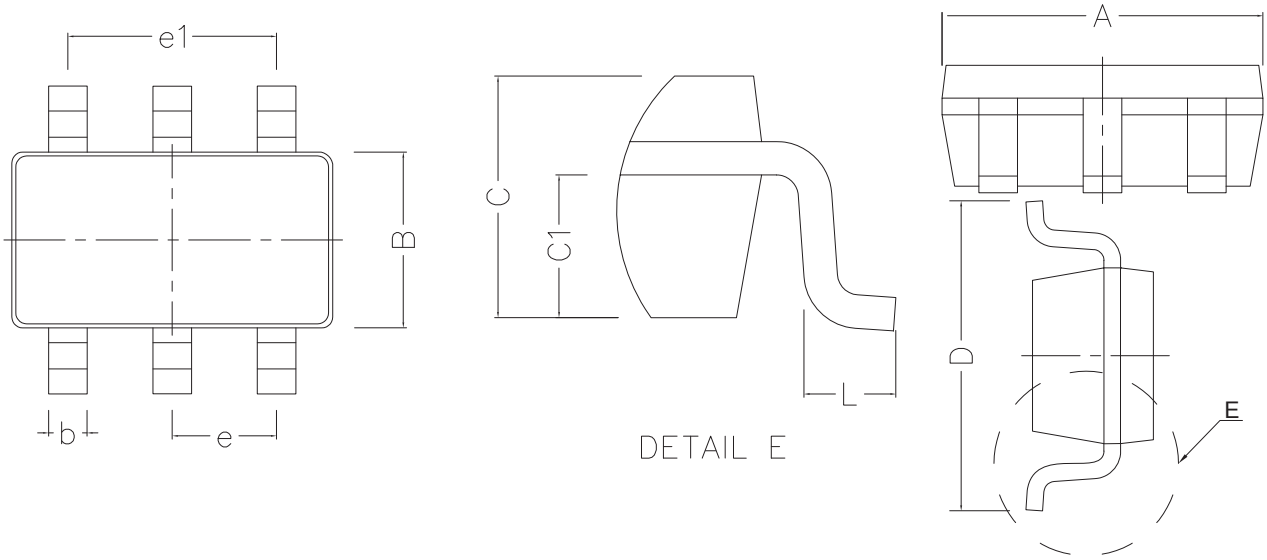



**Figure 3. Normalized Maximum Transient Thermal Impedance**

## Package Outline Dimensions (SOT-23-6L)




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 2.82 | 3.02 | 0.111 | 0.119 |
| B | 1.50 | 1.70 | 0.059 | 0.067 |
| C | 1.05 | 1.15 | 0.041 | 0.045 |
| C1 | 0.60 | 0.70 | 0.024 | 0.028 |
| D | 2.65 | 2.95 | 0.104 | 0.116 |
| L | 0.30 | 0.60 | 0.012 | 0.024 |
| b | 0.28 | 0.42 | 0.011 | 0.017 |
| e | 0.95 TYP | | 0.037 TYP | |
| e1 | 1.90 TYP | | 0.075 TYP | |

## Order Information

| Device | Package | Marking | Carrier | Quantity |
|---|---|---|---|---|
| SSF2429 | SOT-23-6L | 2429 | Tape & Reel | 3,000 pcs / 7" Reel |