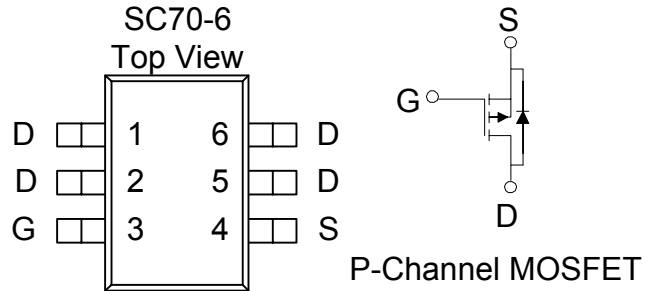


P-Channel 30-V (D-S) MOSFET

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $r_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe SC70-6 saves board space
- Fast switching speed
- High performance trench technology

| PRODUCT SUMMARY | | |
|-----------------|--------------------------|-----------|
| V_{DS} (V) | $r_{DS(on)}$ (OHM) | I_D (A) |
| -30 | 0.112 @ $V_{GS} = -10V$ | -3.1 |
| | 0.172 @ $V_{GS} = -4.5V$ | -2.5 |



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ UNLESS OTHERWISE NOTED) | | | |
|---|----------------|--------------------|------------|
| Parameter | Symbol | Maximum | Units |
| Drain-Source Voltage | V_{DS} | -30 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | |
| Continuous Drain Current ^a | I_D | $T_A = 25^\circ C$ | -3.1 |
| | | $T_A = 70^\circ C$ | -2.5 |
| Pulsed Drain Current ^b | I_{DM} | -10 | A |
| Continuous Source Current (Diode Conduction) ^a | I_S | ± 1.4 | A |
| Power Dissipation ^a | P_D | $T_A = 25^\circ C$ | 1.56 |
| | | $T_A = 70^\circ C$ | 0.81 |
| Operating Junction and Storage Temperature Range | T_j, T_{stg} | -55 to 150 | $^\circ C$ |

| THERMAL RESISTANCE RATINGS | | | |
|--|------------|----------------|-------|
| Parameter | Symbol | Maximum | Units |
| Maximum Junction-to-Ambient ^a | R_{THJA} | $t \leq 5$ sec | 80 |
| | | Steady-State | 125 |

Notes

- a. Surface Mounted on 1" x 1" FR4 Board.
- b. Pulse width limited by maximum junction temperature

| SPECIFICATIONS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) | | | | | | |
|---|--------------|--|--------|-------|-----------|------|
| Parameter | Symbol | Test Conditions | Limits | | | Unit |
| | | | Min | Typ | Max | |
| Static | | | | | | |
| Gate-Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$ | -1 | | | V |
| Gate-Body Leakage | I_{GSS} | $V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}$ | | | -1 | uA |
| | | $V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$ | | | -10 | |
| On-State Drain Current ^A | $I_{D(on)}$ | $V_{DS} = -5 \text{ V}, V_{GS} = -4.5 \text{ V}$ | -5 | | | A |
| Drain-Source On-Resistance ^A | $r_{DS(on)}$ | $V_{GS} = -10 \text{ V}, I_D = -3.1 \text{ A}$ | | | 79 | mΩ |
| | | $V_{GS} = -4.5 \text{ V}, I_D = -2.5 \text{ A}$ | | | 110 | |
| Forward Transconductance ^A | g_{fs} | $V_{DS} = -5 \text{ V}, I_D = -3.1 \text{ A}$ | | 9 | | S |
| Diode Forward Voltage | V_{SD} | $I_S = -0.46 \text{ A}, V_{GS} = 0 \text{ V}$ | | -0.65 | | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | Q_g | $V_{DS} = -10 \text{ V}, V_{GS} = -4.5 \text{ V}, I_D = -3.1 \text{ A}$ | | 7.2 | | nC |
| Gate-Source Charge | Q_{gs} | | | 1.7 | | |
| Gate-Drain Charge | Q_{gd} | | | 1.5 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = -10 \text{ V}, I_L = -1 \text{ A}, V_{GEN} = -4.5 \text{ V}, R_G = 6 \Omega$ | | 10 | | ns |
| Rise Time | t_r | | | 9 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 27 | | |
| Fall-Time | t_f | | | 11 | | |

Notes

- a. Pulse test: PW <= 300us duty cycle <= 2%.
- b. Guaranteed by design, not subject to production testing.
- c. Repetitive rating, pulse width limited by junction temperature.

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