## P-Channel Power MOSFET

### 描述 / Descriptions

SOP-8 塑封封装双 P 沟道 MOS 场效应管。Dual P-Channel MOSFET in a SOP-8 Plastic Package.

### 特征 / Features

超高密度设计，导通电阻小，可靠性好。

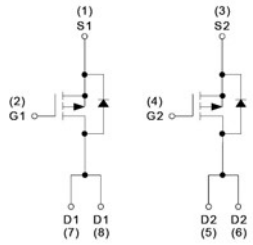
Super high dense cell design for low $R_{DS(ON)}$,Rugged and reliable.

### 用途 / Applications

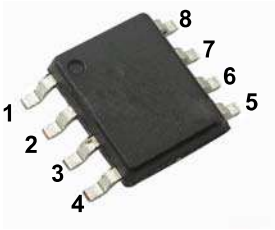
用于电源管理，便携式设备和电池供电系统。

Power Management in Notebook computer, Portable Equipment and Battery powered systems.

### 内部等效电路 / Equivalent Circuit




### 引脚排列 / Pinning




PIN1：S1　PIN 2：G1　PIN 3：S2　PIN 4：G2

PIN 5：D2　PIN 6：D2　PIN 7：D1　PIN 8：D1

## 极限参数 / Absolute Maximum Ratings(Ta=25℃)

| 参数 Parameter | 符号 Symbol | 数值 Rating | 单位 Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DSS}$ | -20 | V |
| Gate-Source Voltage | $V_{GSS}$ | ±12 | V |
| Continuous Drain Current | $I_D$ * | -3.0 | A |
| Pulsed Drain Current | $I_{DM}$* | -12 | A |
| Diode Continuous Forward Current | $I_S$* | -2.0 | A |
| Power Dissipation for Single Operation | $P_D$* (Ta=25℃) | 2 | W |
| Power Dissipation for Single Operation | $P_D$* (Ta=100℃) | 0.8 | W |
| Maximum Junction Temperature | $T_j$ | 150 | ℃ |
| Storage Temperature Range | $T_{stg}$ | -55 ~ 150 | ℃ |
| Thermal Resistance-Junction to Ambient | $R_{\theta JA}$* | 62.5 | ℃/W |

Note:

* Surface Mounted on 1in2 pad area, t ≤ 10sec.

## 电性能参数 / Electrical Characteristics(Ta=25℃)

| 参数 Parameter | 符号 Symbol | 测试条件 Test Conditions | 最小值 Min | 典型值 Typ | 最大值 Max | 单位 Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V $I_{DS}$=-250μA | -20 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=-16V $V_{GS}$=0V | | | -1 | μA |
| | | $V_{DS}$=-16V $V_{GS}$=0V $T_J$=85°C | | | -10 | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=VGS $I_{DS}$=-250μA | -0.50 | -0.7 | -1.0 | V |
| Gate Leakage Current | $I_{GSS}$ | $V_{GS}$=±12V $V_{DS}$=0V | | | ±100 | nA |
| Drain-Source On-state Resistance | $R_{DS(ON)}$[a] | $V_{GS}$=-10V $I_{DS}$=-2.7A | | 75 | 97 | mΩ |
| | | $V_{GS}$=-4.5V $I_{DS}$=-2.7A | | 82 | 100 | |
| | | $V_{GS}$=-2.5V $I_{DS}$=-2.2A | | 115 | 135 | |
| Diode Forward Voltage | $V_{SD}$[a] | $V_{GS}$=0V $I_{SD}$=-1.0A | | -0.7 | -1.3 | V |
| Total Gate Charge | $Q_g$[b] | $V_{DS}$=-6V $V_{GS}$=-4.5V $I_{DS}$=-2.7A | | 3.2 | 6 | nC |
| Gate-Source Charge | $Q_{gs}$[b] | | | 0.65 | | nC |
| Gate-Drain Charge | $Q_{gd}$[b] | | | 1.0 | | nC |

**电性能参数 / Electrical Characteristics(Ta=25℃)**

| 参数<br>Parameter | 符号<br>Symbol | 测试条件<br>Test Conditions | 最小值<br>Min | 典型值<br>Typ | 最大值<br>Max | 单位<br>Unit |
|---|---|---|---|---|---|---|
| Gate Resistance | $R_G$[b] | $V_{GS}$=0V $V_{DS}$=0V<br>F=1MHz | | 6 | | Ω |
| Input Capacitance | $C_{iss}$[b] | $V_{GS}$=0V $V_{DS}$=-6V<br>Frequency=1.0MHz | | 325 | | pF |
| Output Capacitance | $C_{oss}$[b] | | | 63 | | |
| Reverse Transfer Capacitance | $C_{rss}$[b] | | | 37 | | |
| Turn-on Delay Time | $t_{d(ON)}$[b] | $V_{DD}$=-6V $R_L$=6Ω<br>$I_{DS}$=-1A $V_{GEN}$=-10V<br>$R_G$=6Ω | | 11 | 22 | ns |
| Turn-on Rise Time | $T_r$[b] | | | 5.5 | 11 | |
| Turn-off Delay Time | $T_{d(OFF)}$[b] | | | 22 | 40 | |
| Turn-off Fall Time | $T_f$[b] | | | 10 | 20 | |

Notes:

a : Pulse test ; pulse width≤300μs, duty cycle≤2%.

b : Guaranteed by design, not subject to production testing.

## Typical Electrical and Thermal Characteristics

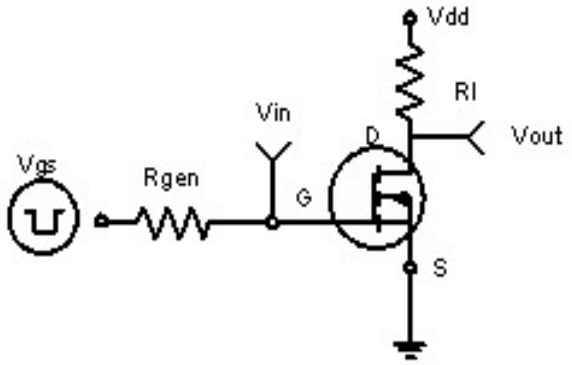



**Figure 1:Switching Test Circuit**

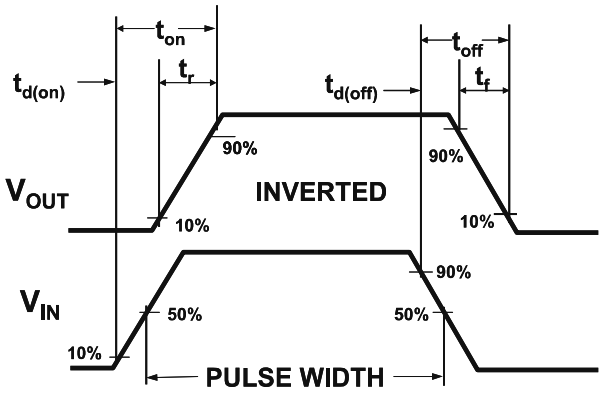



**Figure 2:Switching Waveforms**

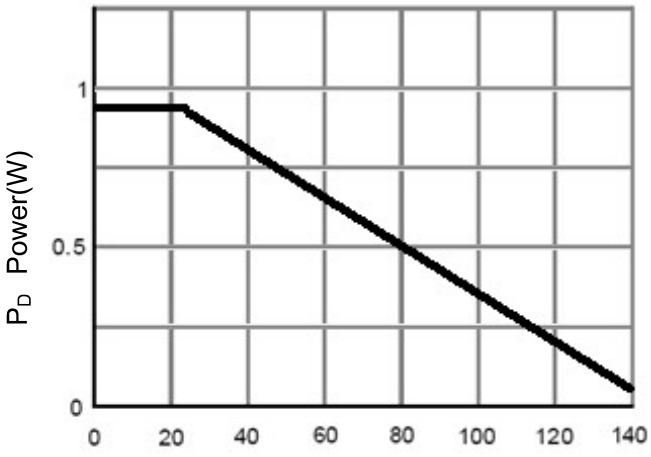



**Figure 3 Power Dissipation**

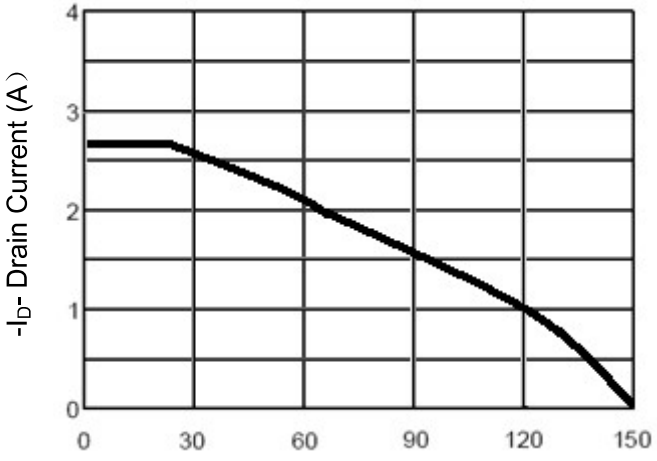



**Figure 4 Drain Current**

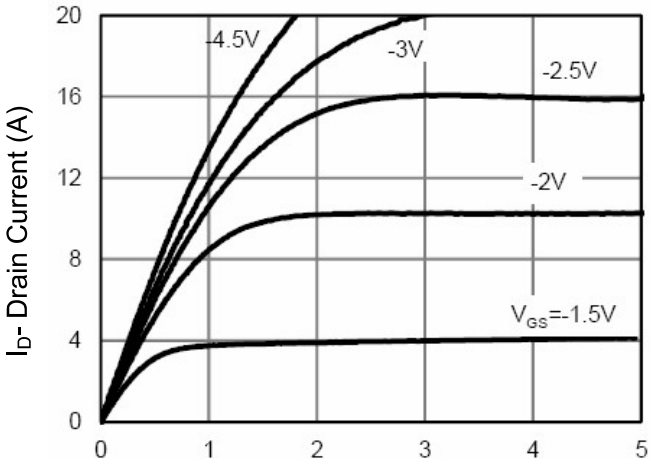



**Figure 5 Output Characteristics**

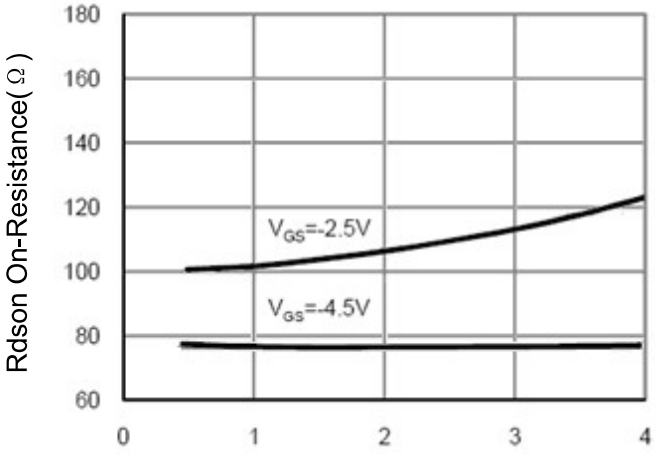



**Figure 6 Drain-Source On-Resistance**

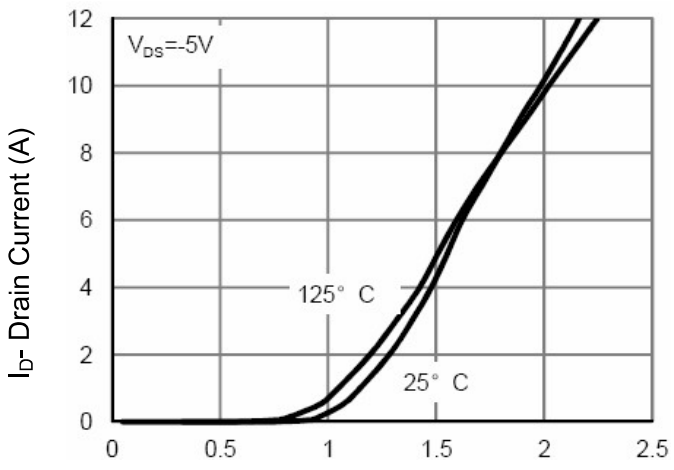



**Figure 7 Transfer Characteristics**

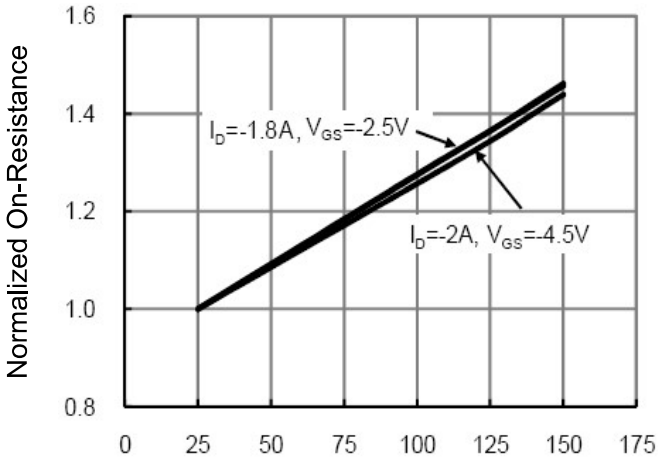



**Figure 8 Drain-Source On-Resistance**

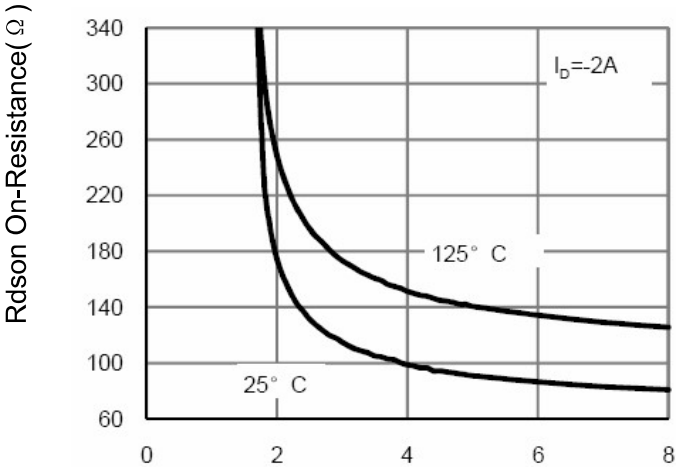



**Figure 9 Rdson vs Vgs**

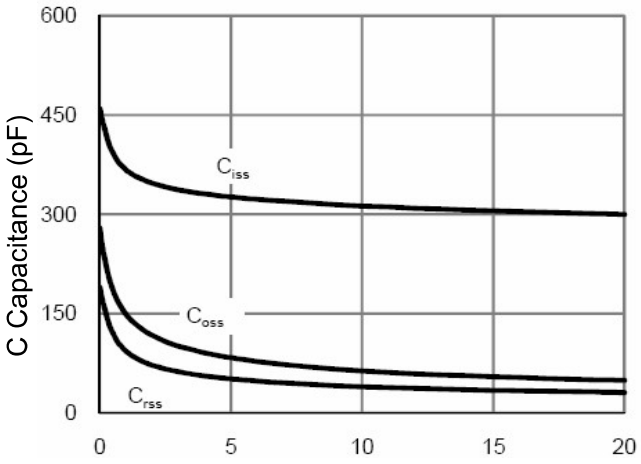



**Figure 10 Capacitance vs Vds**

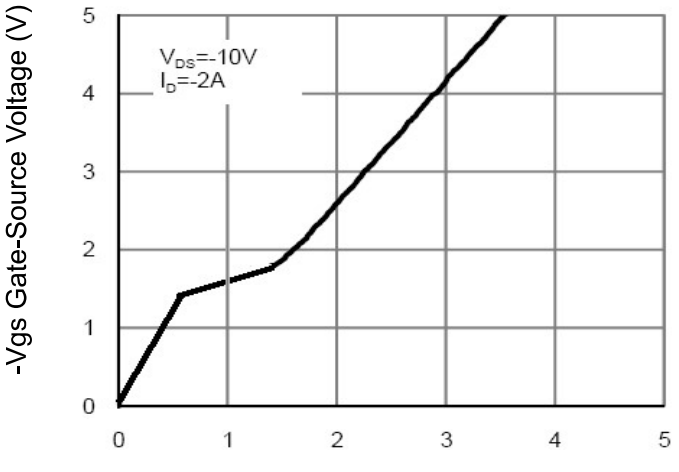



**Figure 11 Gate Charge**

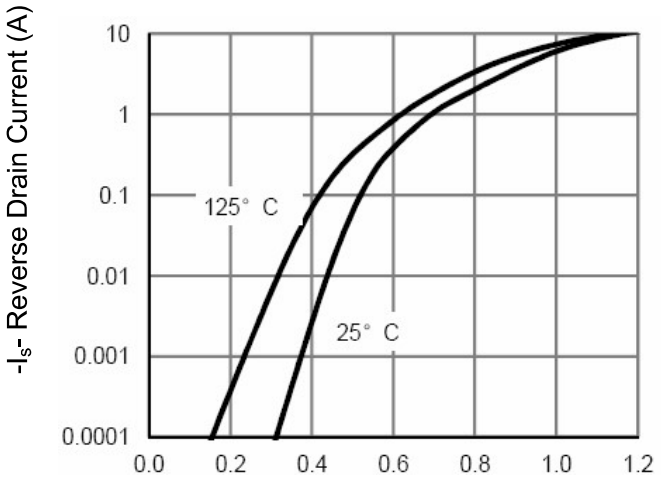
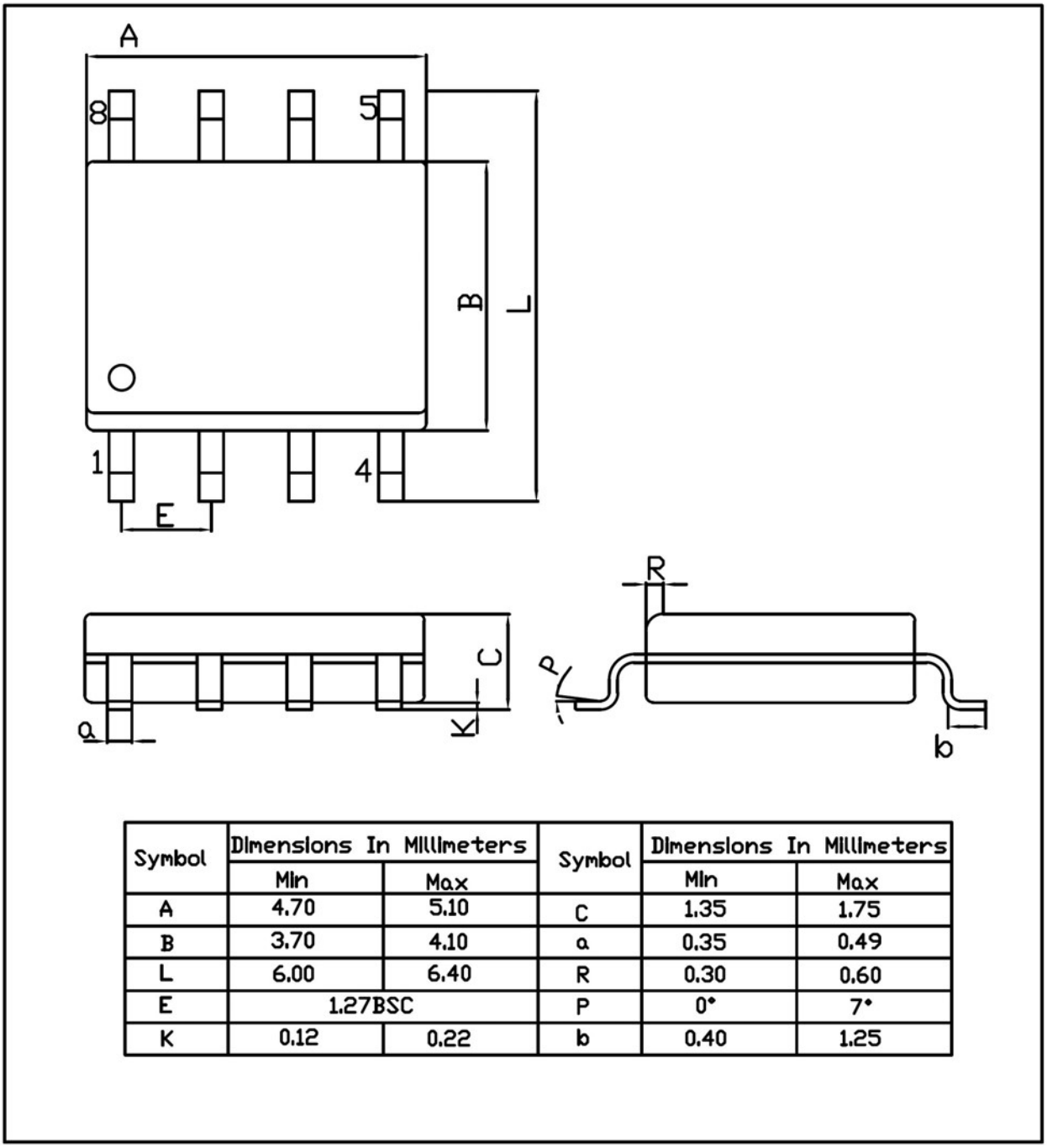



**Figure 12 Source- Drain Diode Forward**

## 外形尺寸图 / Package Dimensions

SOP-8 Unit:mm




| Symbol | Dimensions In Millimeters | | Symbol | Dimensions In Millimeters | |
|---|---|---|---|---|---|
| | Min | Max | | Min | Max |
| A | 4.70 | 5.10 | C | 1.35 | 1.75 |
| B | 3.70 | 4.10 | a | 0.35 | 0.49 |
| L | 6.00 | 6.40 | R | 0.30 | 0.60 |
| E | 1.27BSC | | P | 0° | 7° |
| K | 0.12 | 0.22 | b | 0.40 | 1.25 |