

AP4953A

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。

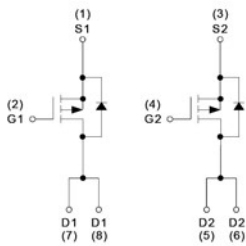
Super high dense cell design for low $R_{DS(ON)}$, Rugged and reliable.

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



PIN 1 : S1 PIN 2 : G1 PIN 3 : S2 PIN 4 : G2

PIN 5 : D2 PIN 6 : D2 PIN 7 : D1 PIN 8 : D1

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极限参数 / Absolute Maximum Ratings(Ta=25°C)

| 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 | $P_D^*(Ta=25^\circ C)$ | 2 | W |
| Power Dissipation for Single Operation | $P_D^*(Ta=100^\circ C)$ | 0.8 | W |
| Maximum Junction Temperature | T_j | 150 | °C |
| Storage Temperature Range | T_{stg} | -55 ~ 150 | °C |
| Thermal Resistance-Junction to Ambient | $R_{\theta JA}^*$ | 62.5 | °C/W |

Note:

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

电性能参数 / Electrical Characteristics(Ta=25°C)

| 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} | $V_{GS}=0V$ $I_{DS}=-250\mu A$ | -20 | | | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=-16V$ $V_{GS}=0V$ | | | -1 | μA |
| | | $V_{DS}=-16V$ $V_{GS}=0V$ $T_j=85^\circ C$ | | | -10 | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_{DS}=-250\mu A$ | -0.50 | -0.7 | -1.0 | V |
| Gate Leakage Current | I_{GSS} | $V_{GS}=\pm 12V$ $V_{DS}=0V$ | | | ±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 |

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电性能参数 / Electrical Characteristics(Ta=25°C)

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|------------------------------|----------------|--|------------|------------|------------|------------|
| Gate Resistance | R_G^b | $V_{GS}=0V$ $V_{DS}=0V$ $F=1MHz$ | | 6 | | Ω |
| Input Capacitance | C_{iss}^b | $V_{GS}=0V$ $V_{DS}=-6V$ Frequency=1.0MHz | | 325 | | pF |
| Output Capacitance | C_{oss}^b | | | 63 | | |
| Reverse Transfer Capacitance | C_{rss}^b | | | 37 | | |
| Turn-on Delay Time | $t_{d(ON)}^b$ | $V_{DD}=-6V$ $R_L=6\Omega$ $I_{DS}=-1A$ $V_{GEN}=-10V$ $R_G=6\Omega$ | | 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 $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

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Typical Electrical and Thermal Characteristics

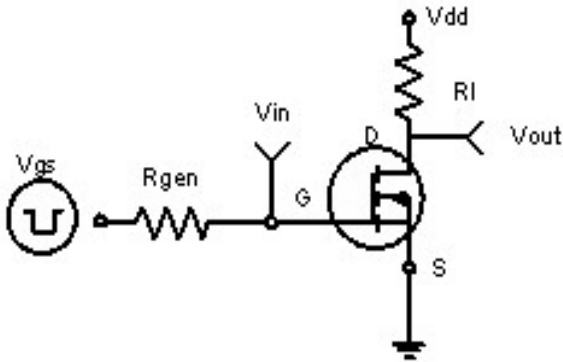


Figure 1: Switching Test Circuit

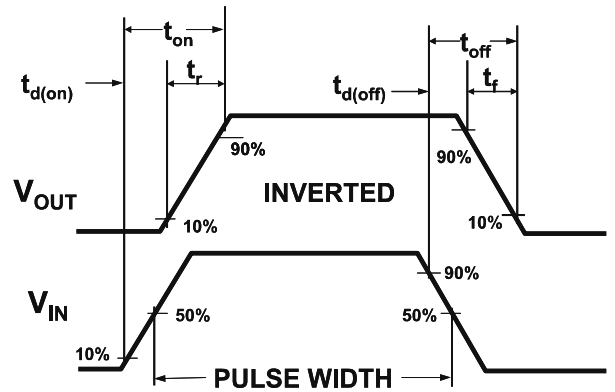


Figure 2: Switching Waveforms

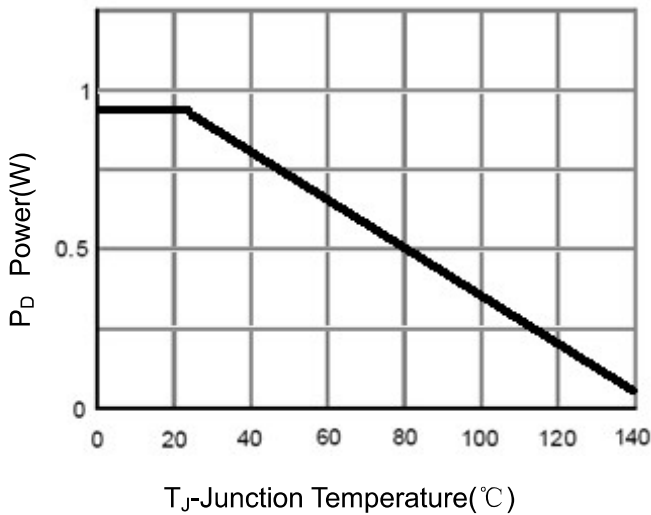


Figure 3 Power Dissipation

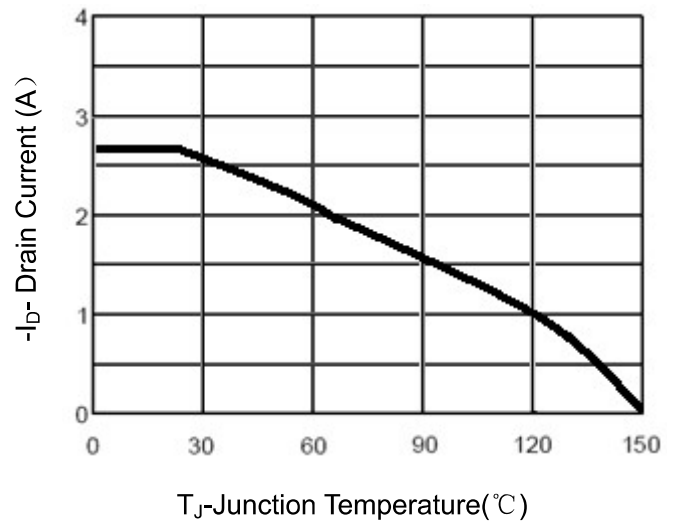


Figure 4 Drain Current

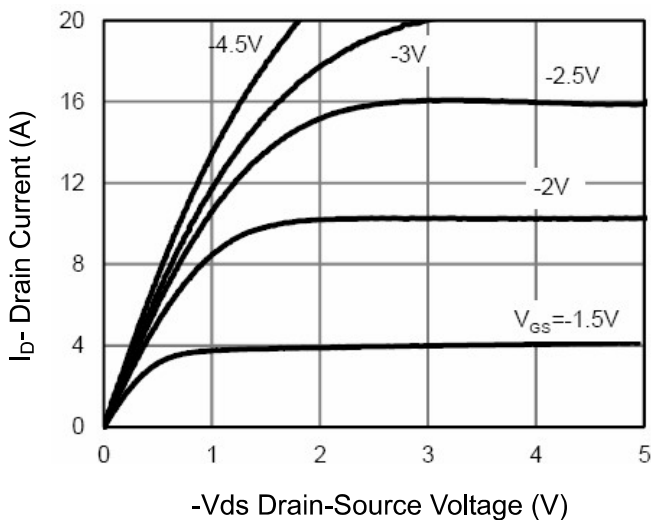


Figure 5 Output Characteristics

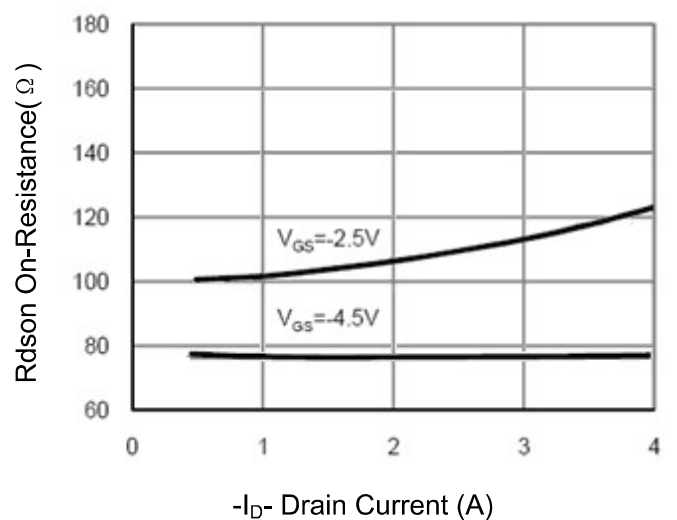


Figure 6 Drain-Source On-Resistance

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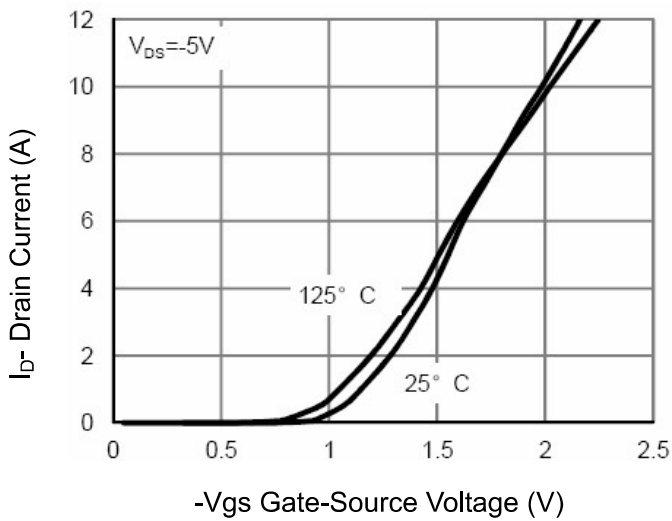


Figure 7 Transfer Characteristics

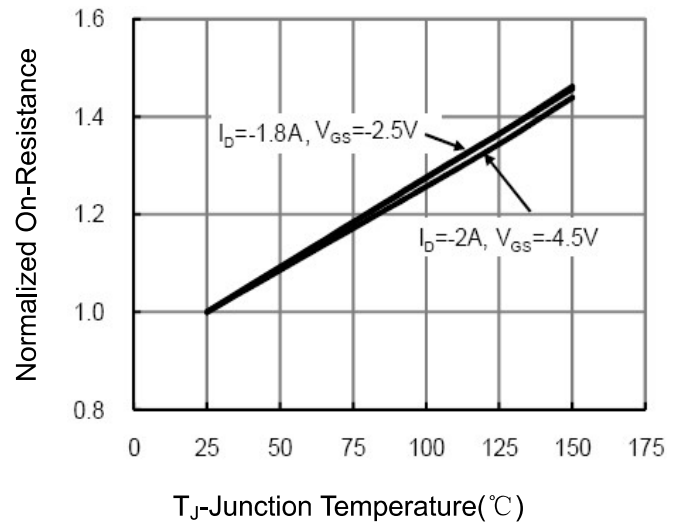


Figure 8 Drain-Source On-Resistance

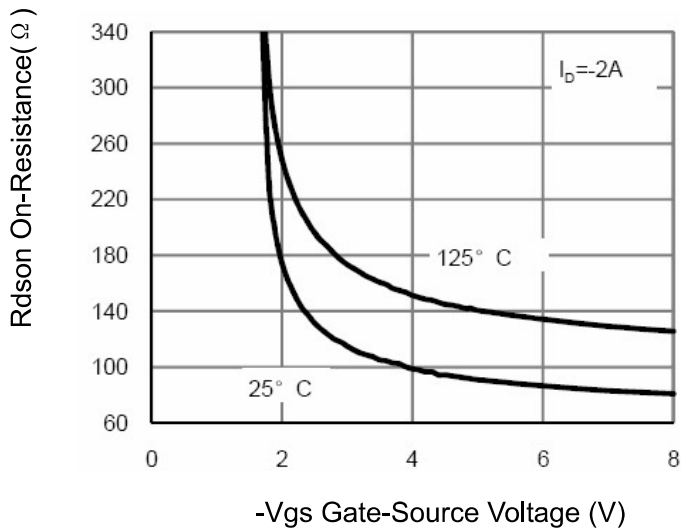


Figure 9 Rdson vs Vgs

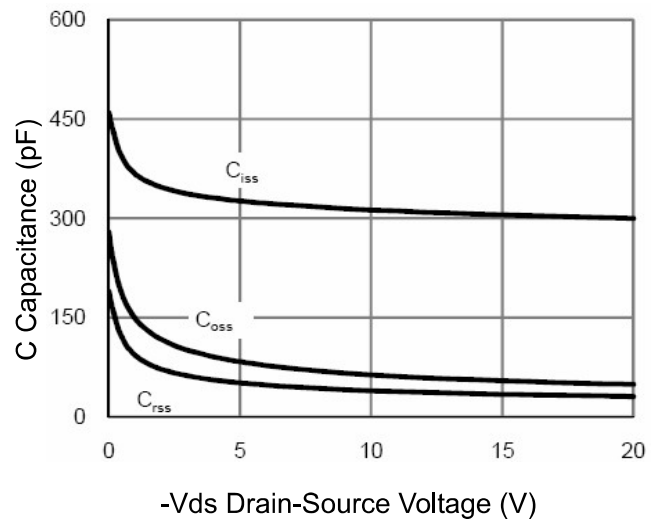


Figure 10 Capacitance vs Vds

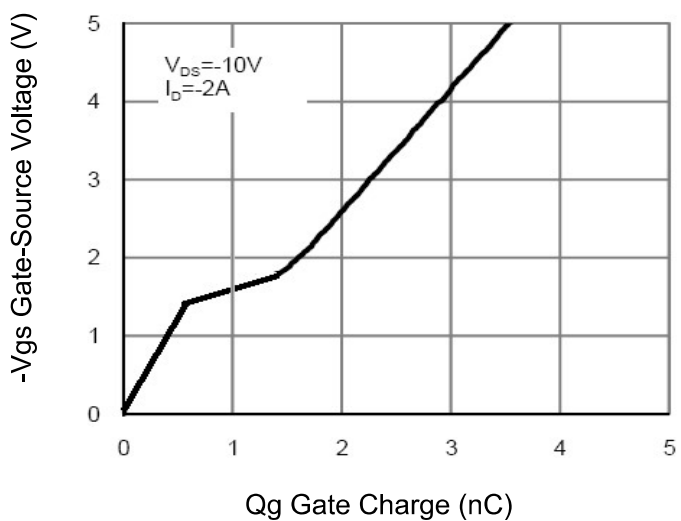


Figure 11 Gate Charge

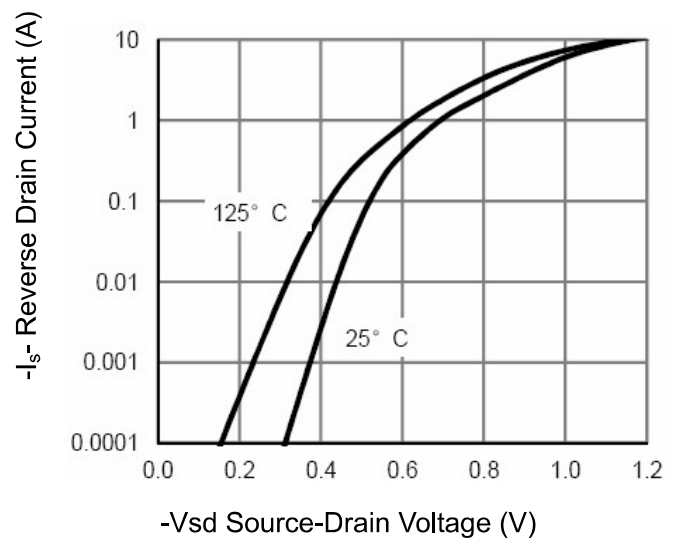


Figure 12 Source- Drain Diode Forward

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外形尺寸图 / Package Dimensions

SOP-8

Unit:mm

