

双 P 沟道 MOSFET

ELM54925WSA-N

<http://www.elm-tech.com>

■概要

ELM54925WSA-N 是 P 沟道低输入电容、低工作电压、低导通电阻的大电流 MOSFET，内藏有两个 MOSFET。

■特点

- $V_{ds} = -30V$
- $I_d = -8.0A$
- $R_{ds(on)} = 18m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} = 26m\Omega$ ($V_{gs} = -4.5V$)

■绝对最大额定值

如没有特别注明时, $T_a = 25^\circ C$

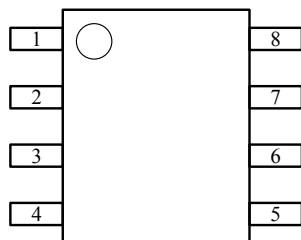
| 项目 | 记号 | 规格范围 | 单位 |
|-----------------------------------|-----------|--------------------|------------|
| 漏极 - 源极电压 | V_{ds} | -30 | V |
| 栅极 - 源极电压 | V_{gs} | ± 20 | V |
| 漏极电流 (定常) ($T_j = 150^\circ C$) | Id | $T_a = 25^\circ C$ | A |
| | | $T_a = 70^\circ C$ | |
| 漏极电流 (脉冲) | I_{dm} | -30 | A |
| 容许功耗 | Pd | $T_c = 25^\circ C$ | W |
| | | $T_c = 70^\circ C$ | |
| 动作结合部温度 | T_j | 150 | $^\circ C$ |
| 保存温度范围 | T_{stg} | -55 ~ 150 | $^\circ C$ |

■热特性

| 项目 | 记号 | 典型值 | 最大值 | 单位 |
|--------------|-----------------|-----|------|--------------|
| 最大结合部 - 环境热阻 | $R_{\theta ja}$ | - | 62.5 | $^\circ C/W$ |

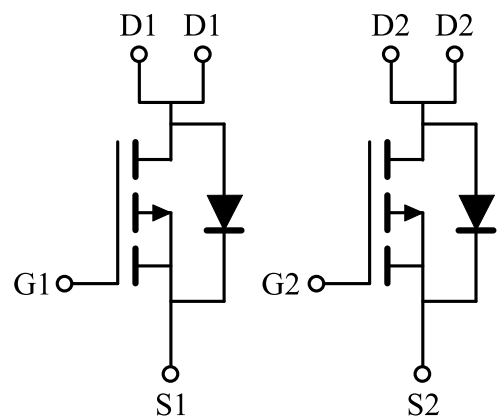
■引脚配置图

SOP-8(俯视图)



| 引脚编号 | 引脚名称 |
|------|---------|
| 1 | SOURCE1 |
| 2 | GATE1 |
| 3 | SOURCE2 |
| 4 | GATE2 |
| 5 | DRAIN2 |
| 6 | DRAIN2 |
| 7 | DRAIN1 |
| 8 | DRAIN1 |

■电路图



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■电特性

如没有特别注明时, $T_a=25^\circ\text{C}$

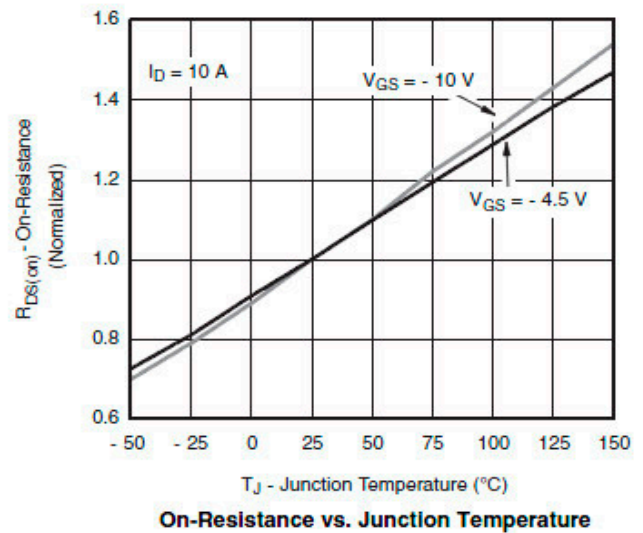
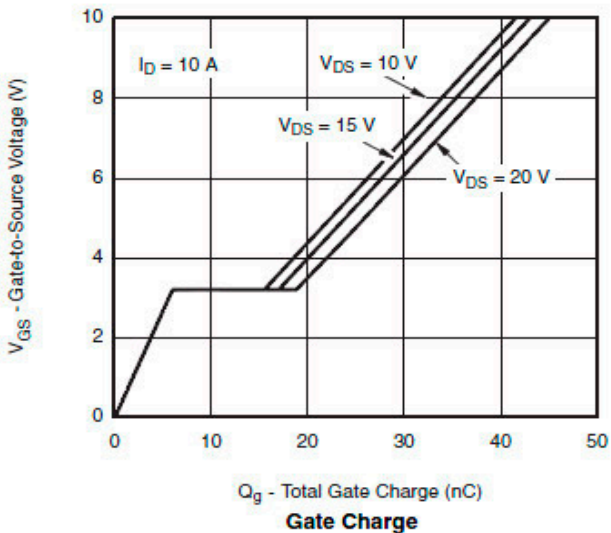
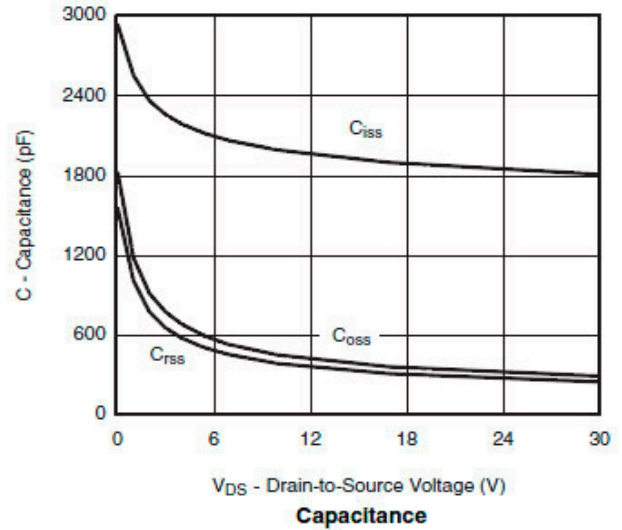
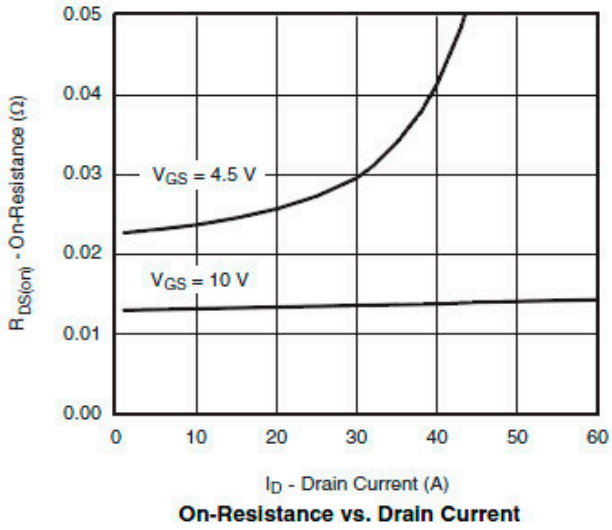
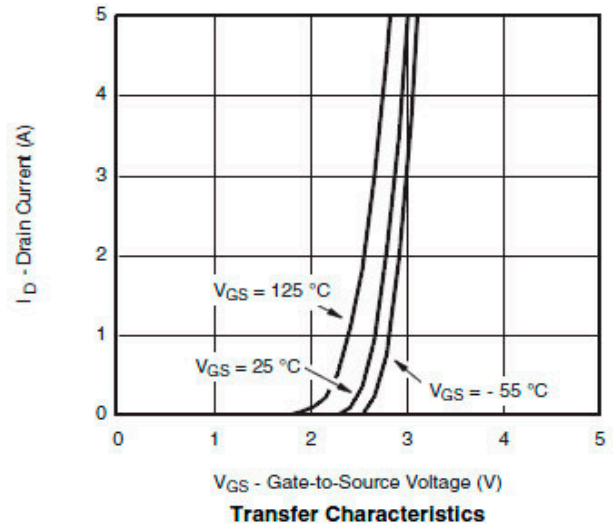
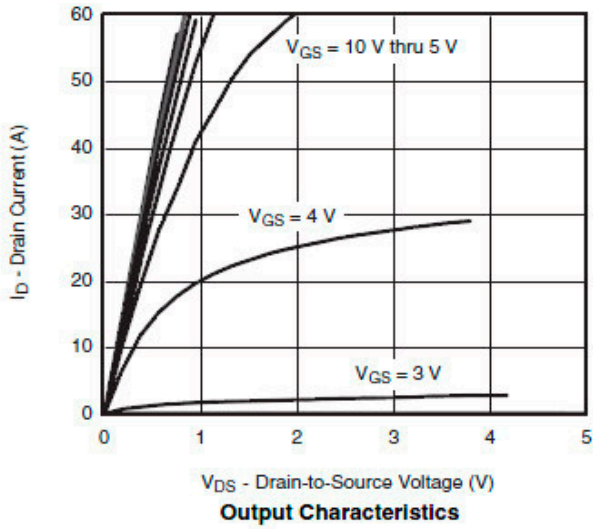
| 项目 | 记号 | 条件 | 最小值 | 典型值 | 最大值 | 单位 |
|-------------|---------------------|--|------|------|-----------|---------------|
| 静态特性 | | | | | | |
| 漏极 - 源极击穿电压 | BV _{dss} | $I_d=-250\mu\text{A}, V_{gs}=0\text{V}$ | -30 | | | V |
| 栅极接地时漏极电流 | I _{dss} | $V_{ds}=-24\text{V}, V_{gs}=0\text{V}$ $T_a=85^\circ\text{C}$ | | | -1 | μA |
| | | | | | -30 | |
| 栅极漏电流 | I _{gss} | $V_{ds}=0\text{V}, V_{gs}=\pm 20\text{V}$ | | | ± 100 | nA |
| 栅极阈值电压 | V _{gs(th)} | $V_{ds}=V_{gs}, I_d=-250\mu\text{A}$ | -1.0 | | -2.0 | V |
| 导通时漏极电流 | I _{d(on)} | $V_{gs}=-10\text{V}, V_{ds}\geq -10\text{V}$ | -30 | | | A |
| | | $V_{gs}=-4.5\text{V}, V_{ds}\geq -5\text{V}$ | -5 | | | |
| 漏极 - 源极导通电阻 | R _{ds(on)} | $V_{gs}=-10\text{V}, I_d=-8.0\text{A}$ | | 11 | 18 | m Ω |
| | | $V_{gs}=-4.5\text{V}, I_d=-6.0\text{A}$ | | 17 | 26 | |
| 正向跨导 | G _{fs} | $V_{ds}=-10\text{V}, I_d=-9.0\text{A}$ | | 22 | | S |
| 二极管正向压降 | V _{sd} | $I_s=-2.3\text{A}, V_{gs}=0\text{V}$ | | -0.7 | -1.3 | V |
| 寄生二极管最大连续电流 | I _s | | | | -1.7 | A |
| 动态特性 | | | | | | |
| 输入电容 | C _{iss} | $V_{gs}=0\text{V}, V_{ds}=-15\text{V}, f=1\text{MHz}$ | | 1600 | | pF |
| 输出电容 | C _{oss} | | | 350 | | pF |
| 反馈电容 | C _{rss} | | | 300 | | pF |
| 开关特性 | | | | | | |
| 总栅极电荷 | Q _g | $V_{gs}=-4.5\text{V}, V_{ds}=-15\text{V}$ $I_d\equiv -6.0\text{A}$ | | 20 | 30 | nC |
| 栅极 - 源极电荷 | Q _{gs} | | | 6 | | nC |
| 栅极 - 漏极电荷 | Q _{gd} | | | 10 | | nC |
| 导通延迟时间 | t _{d(on)} | $V_{gs}=-10\text{V}, V_{ds}=-15\text{V}$ $I_d\equiv -5\text{A}, R_L=3\Omega$ $R_{gen}=1\Omega$ | | 10 | 20 | ns |
| 导通上升时间 | t _r | | | 12 | 24 | ns |
| 关闭延迟时间 | t _{d(off)} | | | 30 | 45 | ns |
| 关闭下降时间 | t _f | | | 10 | 20 | ns |

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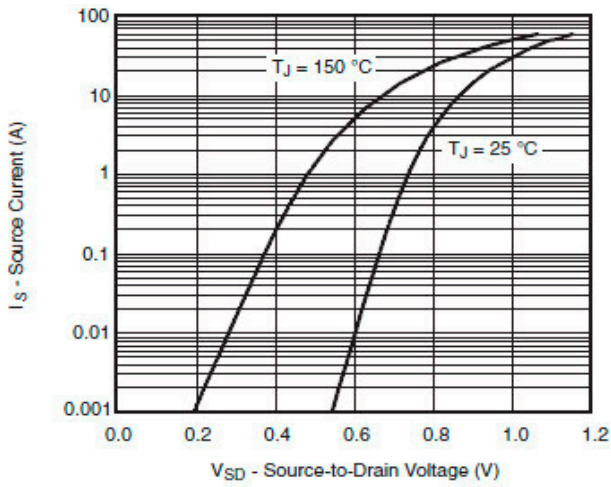
■ 标准特性和热特性曲线



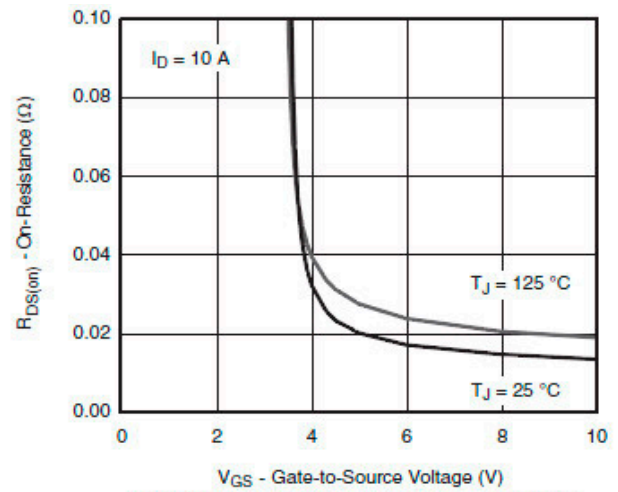
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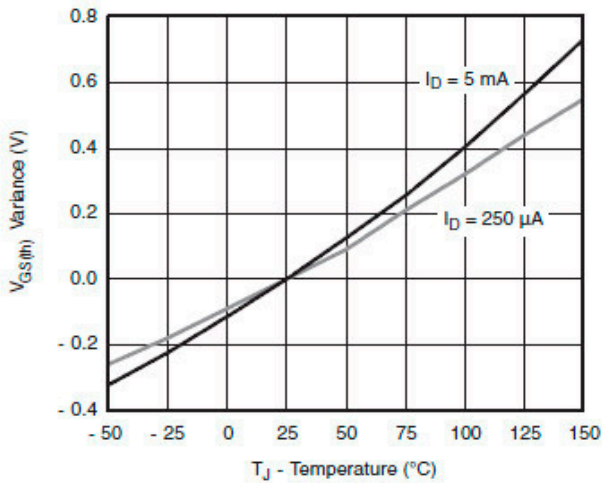
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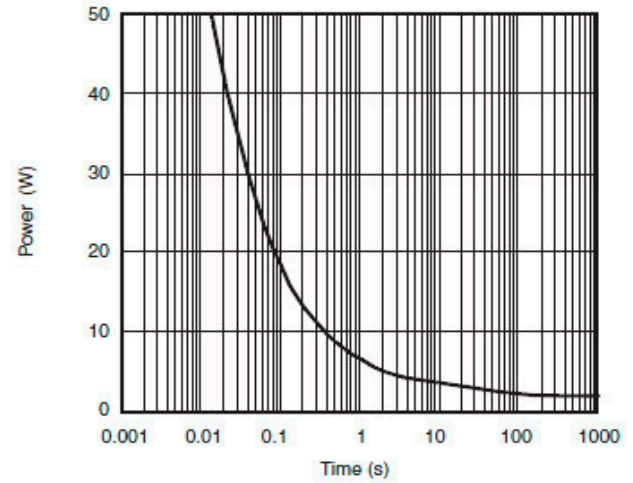
Source-Drain Diode Forward Voltage



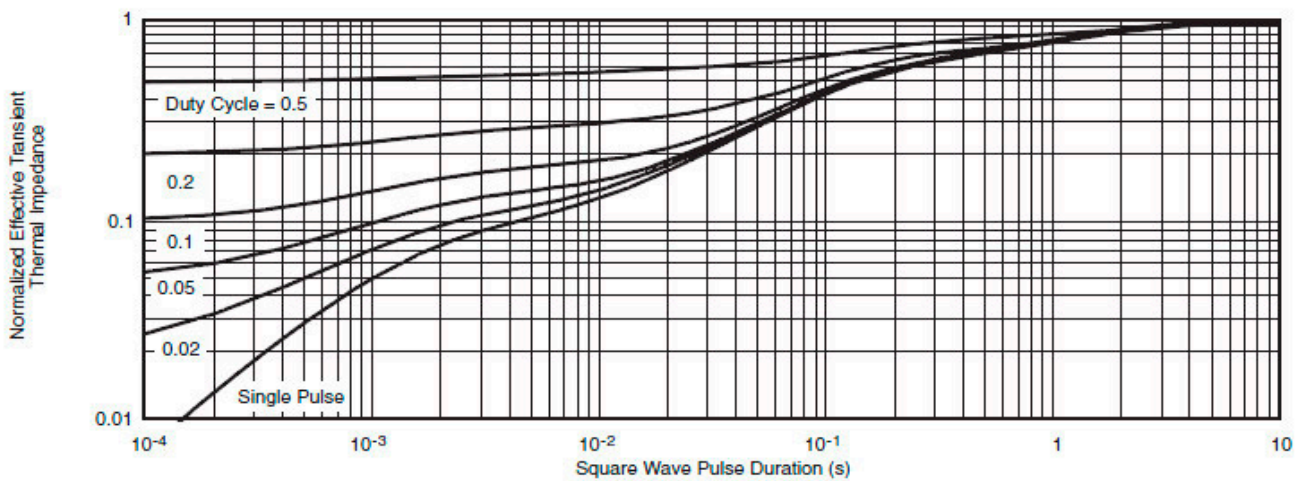
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

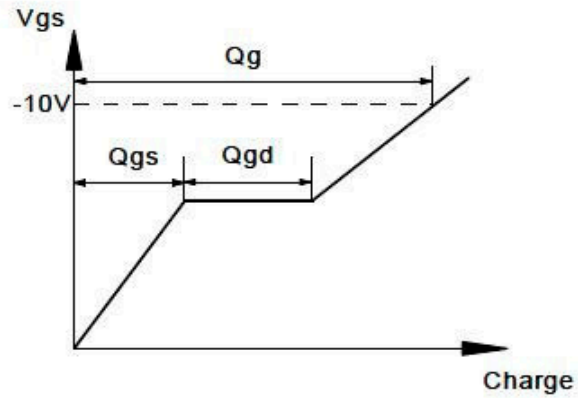
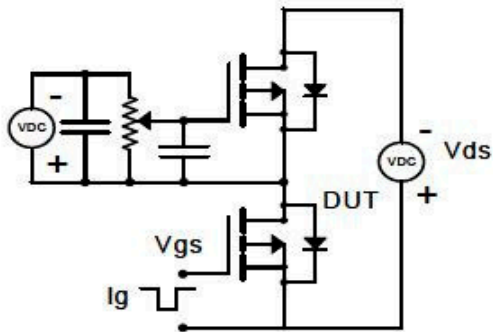
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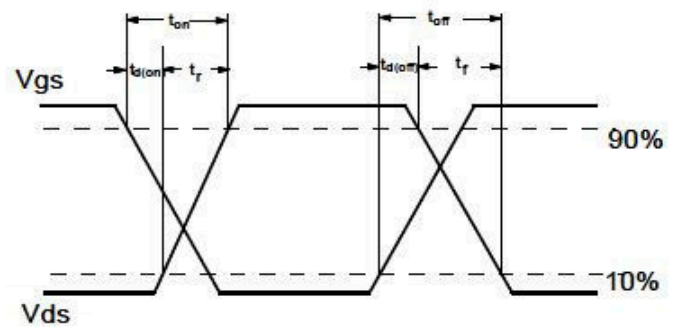
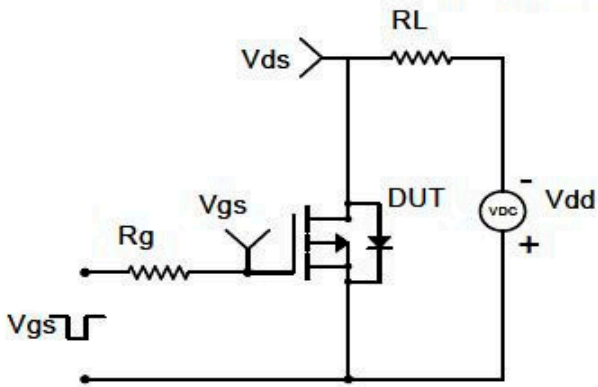
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■ 试验电路图和测试波形图

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

