

单 P 沟道 MOSFET

ELM595761A-S

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

■概要

ELM595761A-S 是 P 沟道低输入电容,低工作电压,低导通电阻的大电流 MOSFET。

■特点

- $V_{ds} = -60V$
- $I_d = -14A$
- $R_{ds(on)} = 115m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} = 125m\Omega$ ($V_{gs} = -4.5V$)

■绝对最大额定值

如没有特别注明时, $T_a = 25^\circ C$

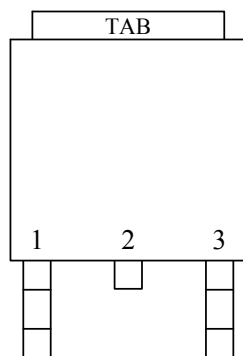
| 项目 | 记号 | 规格范围 | 单位 | |
|--------------|----------------|--------------------|------------|---|
| 漏极 - 源极电压 | V_{ds} | -60 | V | |
| 栅极 - 源极电压 | V_{gs} | ± 20 | V | |
| 漏极电流 (定常) | I_d | $T_a = 25^\circ C$ | -14 | A |
| | | $T_a = 70^\circ C$ | -10 | |
| 漏极电流 (脉冲) | I_{dm} | -30 | A | |
| 崩溃电流 | I_{as} | -12 | A | |
| 崩溃能量 | E_{as} | 23 | mJ | |
| 容许功耗 | P_d | $T_c = 25^\circ C$ | 40 | W |
| | | $T_c = 70^\circ C$ | 15 | |
| 结合部温度及保存温度范围 | T_j, 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 | $^\circ C/W$ |

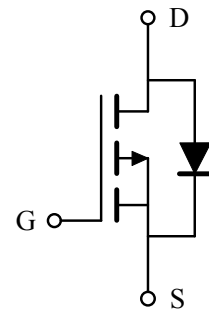
■引脚配置图

TO-252-3(俯视图)



| 引脚编号 | 引脚名称 |
|------|--------|
| 1 | GATE |
| 2 | DRAIN |
| 3 | SOURCE |

■电路图



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■电特性

如没有特别注明时, Ta=25℃

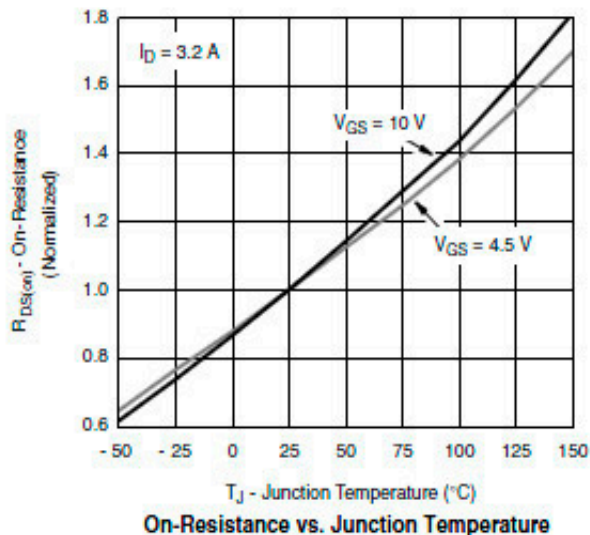
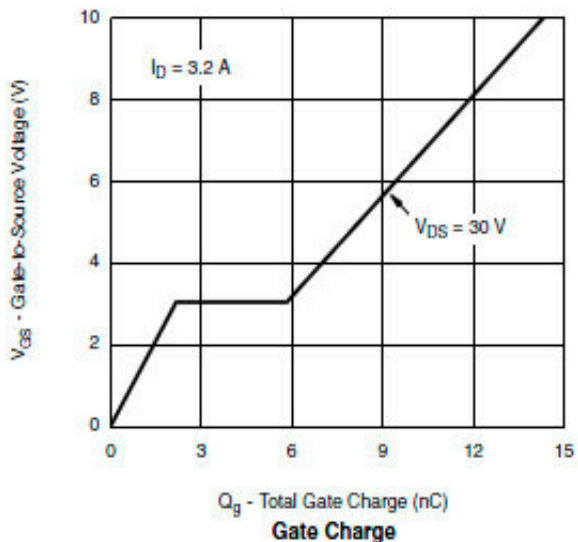
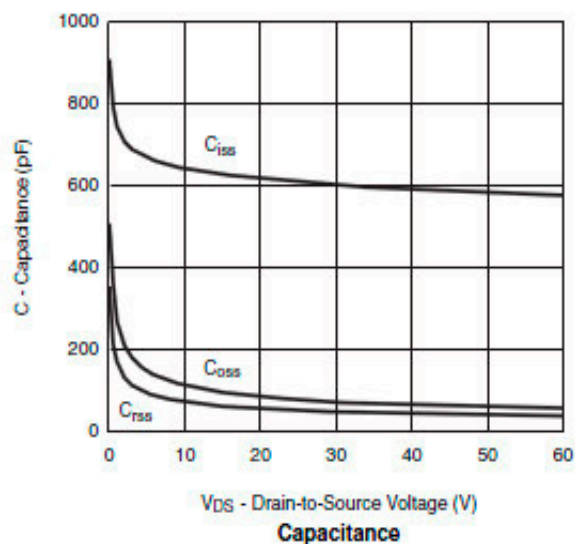
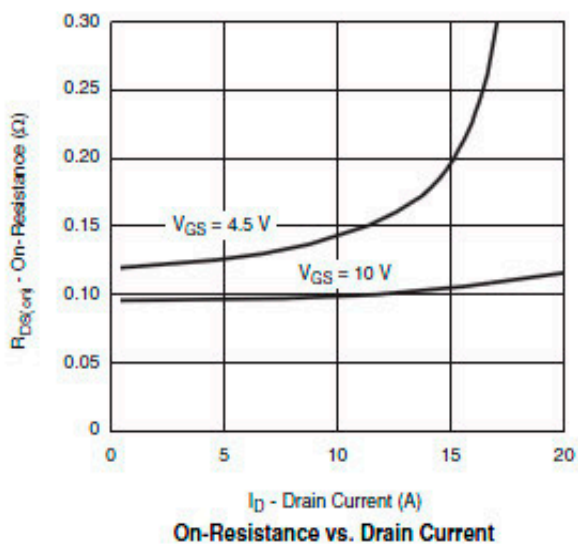
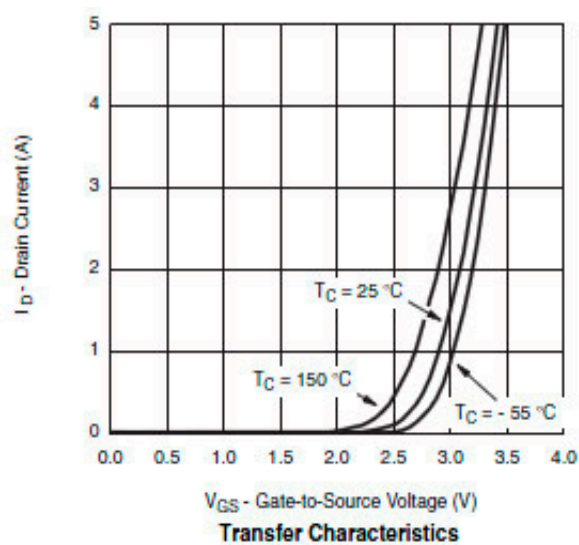
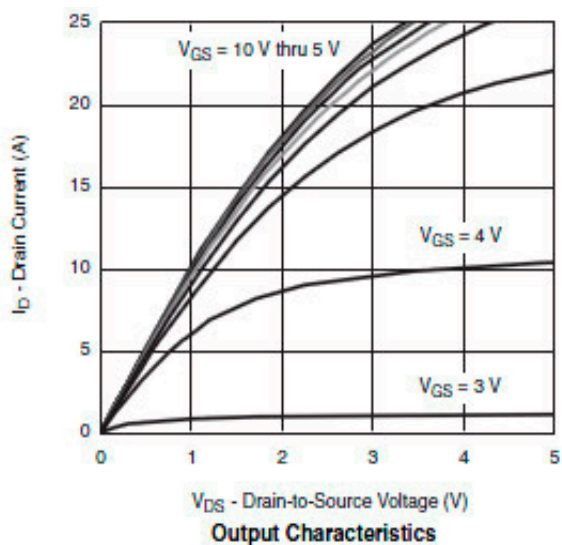
| 项目 | 记号 | 条件 | 最小值 | 典型值 | 最大值 | 单位 |
|-------------|---------|--|------|------|------|----|
| 静态特性 | | | | | | |
| 漏极 - 源极击穿电压 | BVdss | Vgs=0V, Id=-250μA | -60 | | | V |
| 栅极接地时漏极电流 | Idss | Vds=-48V, Vgs=0V | | | -1 | μA |
| | | Vds=-48V, Vgs=0V, Ta=85℃ | | | -20 | |
| 栅极漏电流 | Igss | Vds=0V, Vgs=±20V | | | ±100 | nA |
| 栅极阈值电压 | Vgs(th) | Vds=Vgs, Id=-250μA | -0.8 | | -2.5 | V |
| 导通时漏极电流 | Id(on) | Vgs=-10V, Vds≥-5V | -20 | | | A |
| 漏极 - 源极导通电阻 | Rds(on) | Vgs=-10V, Id=-14A | | 105 | 115 | mΩ |
| | | Vgs=-4.5V, Id=-10A | | 110 | 125 | |
| 正向跨导 | Gfs | Vds=-15V, Id=-3.2A | | 12 | | S |
| 二极管正向压降 | Vsd | Is=-2A, Vgs=0V | | -0.8 | -1.2 | V |
| 寄生二极管最大连续电流 | Is | | | | -8 | A |
| 动态特性 | | | | | | |
| 输入电容 | Ciss | Vgs=0V, Vds=-30V, f=1MHz | | 980 | | pF |
| 输出电容 | Coss | | | 110 | | pF |
| 反馈电容 | Crss | | | 45 | | pF |
| 开关特性 | | | | | | |
| 总栅极电荷 | Qg | Vgs=-10V, Vds=-30V Id=-4.0A | | 12.0 | 20.0 | nC |
| 栅极 - 源极电荷 | Qgs | | | 2.5 | | nC |
| 栅极 - 漏极电荷 | Qgd | | | 3.5 | | nC |
| 导通延迟时间 | td(on) | Vgs=-10V, Vds=-30V Id=-3.8A, RL=7.5Ω, Rgen=3.0Ω | | 10 | 20 | ns |
| 导通上升时间 | tr | | | 6 | 10 | ns |
| 关闭延迟时间 | td(off) | | | 30 | 45 | ns |
| 关闭下降时间 | tf | | | 12 | 25 | ns |

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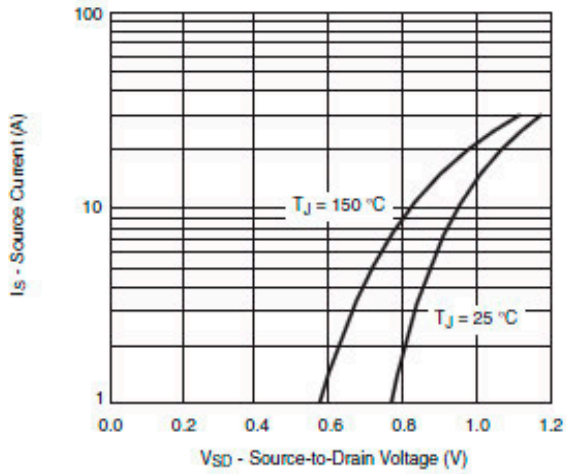
标准特性和热特性曲线



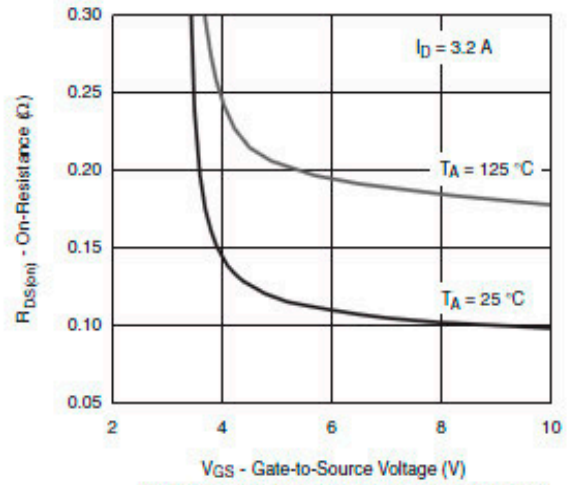
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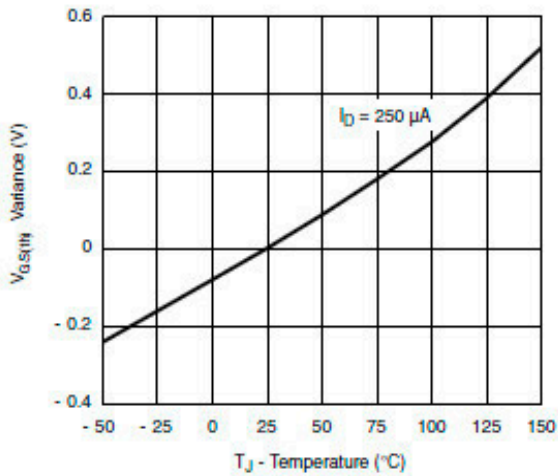
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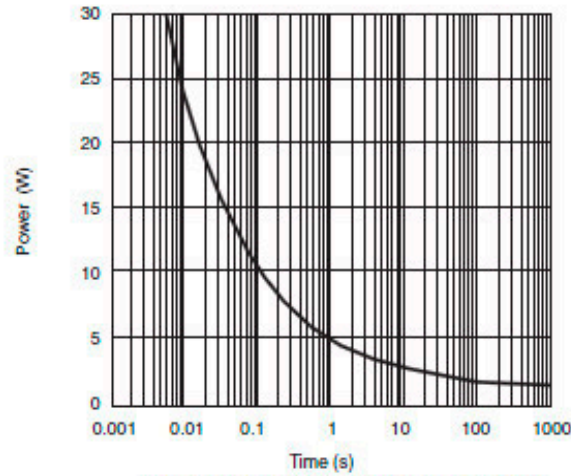
Source-Drain Diode Forward Voltage



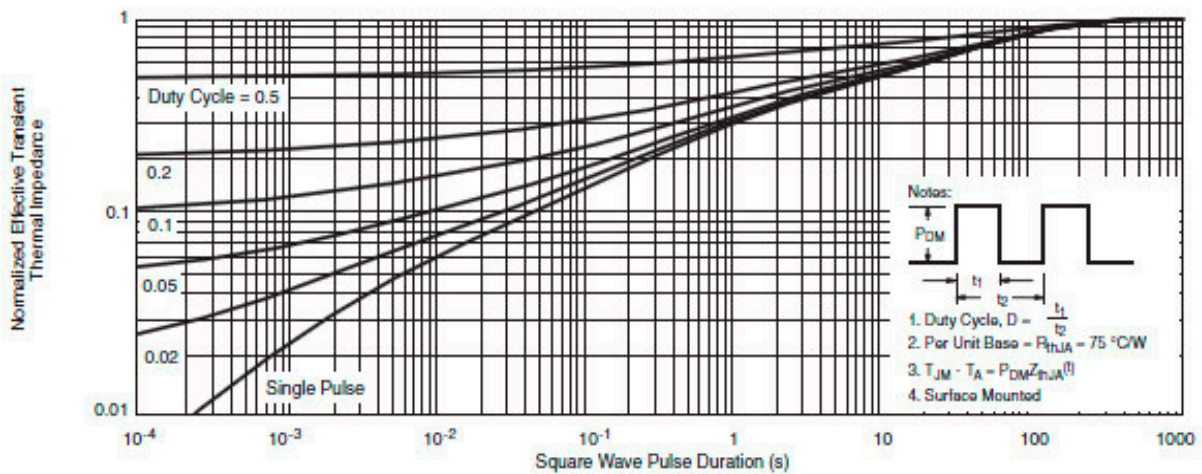
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

- Notes:
- Duty Cycle, $D = \frac{t_1}{t_2}$
 - Per Unit Base - $R_{thJA} = 75 \text{ } ^\circ\text{C/W}$
 - $T_{JM} - T_A = P_{DM} Z_{thJA}(t)$
 - Surface Mounted

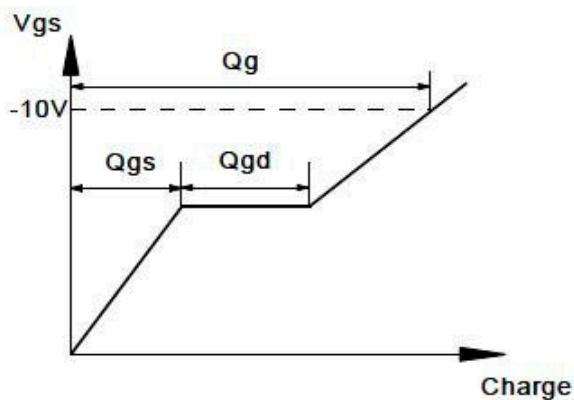
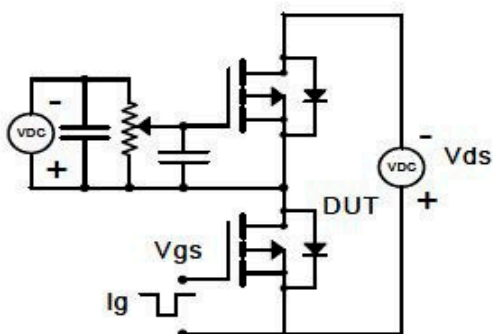
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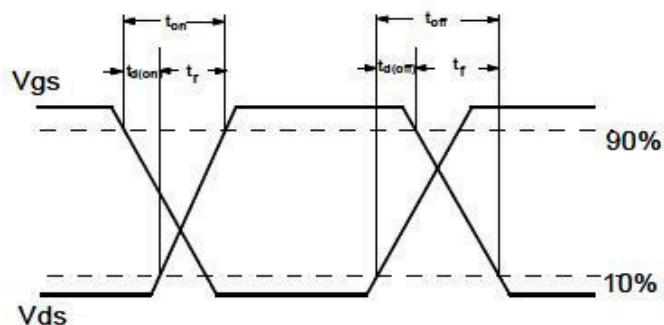
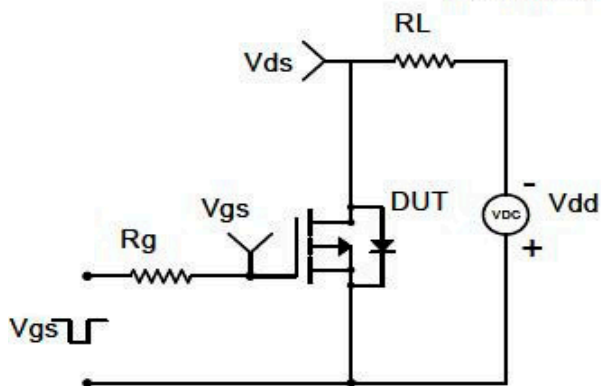
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测试电路和波形

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

