

# 双 P 沟道 MOSFET

ELM53911WA-N

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

## ■概要

ELM53911WA-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

- $V_{ds}=-30V$
- $I_d=-4.3A$
- $R_{ds(on)}=68m\Omega$  ( $V_{gs}=-10V$ )
- $R_{ds(on)}=88m\Omega$  ( $V_{gs}=-4.5V$ )

## ■绝对最大额定值

如没有特别注明时,  $T_a=25^{\circ}C$

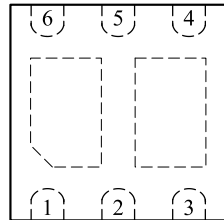
| 项目                               | 记号        | 规格范围      | 单位          |
|----------------------------------|-----------|-----------|-------------|
| 漏极 - 源极电压                        | $V_{ds}$  | -30       | V           |
| 栅极 - 源极电压                        | $V_{gs}$  | $\pm 20$  | V           |
| 漏极电流 (定常) ( $T_j=150^{\circ}C$ ) | $I_d$     | -4.3      | A           |
|                                  |           | -3.4      |             |
| 漏极电流 (脉冲)                        | $I_{dm}$  | -28       | A           |
| 容许功耗                             | $P_d$     | 7.8       | W           |
|                                  |           | 5.0       |             |
| 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 | $R_{\theta ja}$ |     | 120 | $^{\circ}C/W$ |

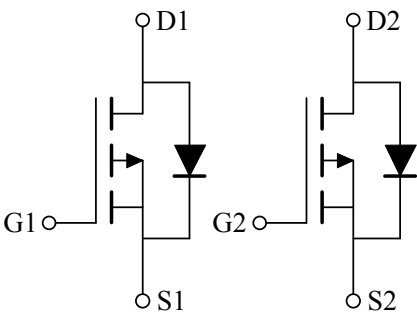
## ■引脚配置图

DFN6-2 × 2(俯视图)



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

## ■电路图



# 双 P 沟道 MOSFET

ELM53911WA-N

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

## ■电特性

如没有特别注明时, Ta=25℃

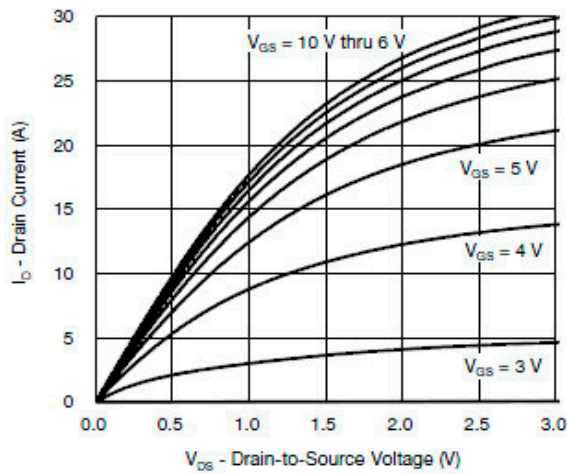
| 项目          | 记号                   | 条件                                                                                                               | 最小值                 | 典型值  | 最大值   | 单位    |     |
|-------------|----------------------|------------------------------------------------------------------------------------------------------------------|---------------------|------|-------|-------|-----|
| 静态特性        |                      |                                                                                                                  |                     |      |       |       |     |
| 漏极 - 源极击穿电压 | BV <sub>dss</sub>    | I <sub>d</sub> =-250μA, V <sub>gs</sub> =0V                                                                      |                     | -30  |       | V     |     |
| 栅极接地时漏极电流   | I <sub>dss</sub>     | V <sub>ds</sub> =-24V, V <sub>gs</sub> =0V                                                                       |                     |      | -1    | μA    |     |
|             |                      |                                                                                                                  | T <sub>a</sub> =85℃ |      |       |       | -30 |
| 栅极漏电流       | I <sub>gss</sub>     | V <sub>ds</sub> =0V, V <sub>gs</sub> = ± 20V                                                                     |                     |      | ± 100 | nA    |     |
| 栅极阈值电压      | V <sub>gs</sub> (th) | V <sub>ds</sub> =V <sub>gs</sub> , I <sub>d</sub> =-250 μA                                                       |                     | -1.0 | -2.0  | V     |     |
| 导通时漏极电流     | I <sub>d</sub> (on)  | V <sub>gs</sub> =-10V, V <sub>ds</sub> ≥ -5V                                                                     |                     | -10  |       | A     |     |
| 漏极 - 源极导通电阻 | R <sub>ds</sub> (on) | V <sub>gs</sub> =-10V, I <sub>d</sub> =-3A                                                                       |                     |      | 55    | 68    | mΩ  |
|             |                      | V <sub>gs</sub> =-4.5V, I <sub>d</sub> =-2A                                                                      |                     |      | 75    | 88    |     |
| 正向跨导        | G <sub>fs</sub>      | V <sub>ds</sub> =-15V, I <sub>d</sub> =-3A                                                                       |                     |      | 8     | S     |     |
| 二极管正向压降     | V <sub>sd</sub>      | I <sub>s</sub> =-3A, V <sub>gs</sub> =0V                                                                         |                     |      | -0.75 | -1.30 | V   |
| 寄生二极管最大连续电流 | I <sub>s</sub>       |                                                                                                                  |                     |      |       | -1.6  | A   |
| 动态特性        |                      |                                                                                                                  |                     |      |       |       |     |
| 输入电容        | C <sub>iss</sub>     | V <sub>gs</sub> =0V, V <sub>ds</sub> =-15V, f=1MHz                                                               |                     |      | 450   |       | pF  |
| 输出电容        | C <sub>oss</sub>     |                                                                                                                  |                     |      | 56    |       | pF  |
| 反馈电容        | C <sub>rss</sub>     |                                                                                                                  |                     |      | 46    |       | pF  |
| 开关特性        |                      |                                                                                                                  |                     |      |       |       |     |
| 总栅极电荷       | Q <sub>g</sub>       | V <sub>gs</sub> =-4.5V, V <sub>ds</sub> =-10V<br>I <sub>d</sub> ≡ -4A                                            |                     |      | 4.2   | 7.2   | nC  |
| 栅极 - 源极电荷   | Q <sub>gs</sub>      |                                                                                                                  |                     |      | 1.3   |       | nC  |
| 栅极 - 漏极电荷   | Q <sub>gd</sub>      |                                                                                                                  |                     |      | 1.6   |       | nC  |
| 导通延迟时间      | t <sub>d</sub> (on)  | V <sub>gs</sub> =-10V, V <sub>ds</sub> =-15V<br>I <sub>d</sub> ≡ -3A, R <sub>L</sub> =5Ω<br>R <sub>gen</sub> =1Ω |                     |      | 10    | 20    | ns  |
| 导通上升时间      | t <sub>r</sub>       |                                                                                                                  |                     |      | 5     | 10    | ns  |
| 关闭延迟时间      | t <sub>d</sub> (off) |                                                                                                                  |                     |      | 20    | 40    | ns  |
| 关闭下降时间      | t <sub>f</sub>       |                                                                                                                  |                     |      | 5     | 10    | ns  |

# 双 P 沟道 MOSFET

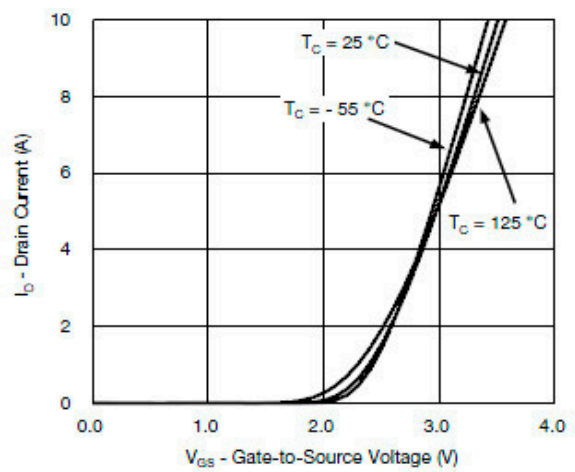
ELM53911WA-N

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

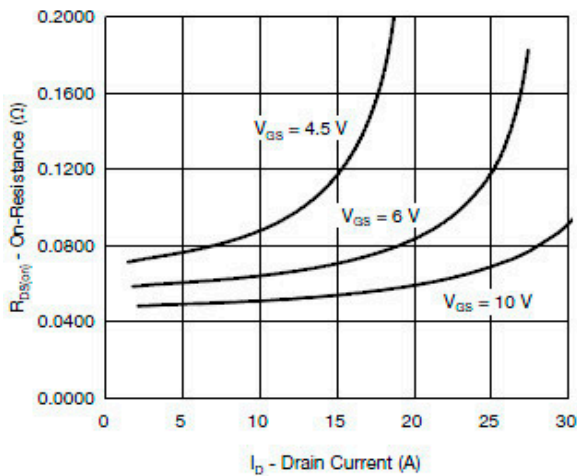
## ■ 标准特性和热特性曲线



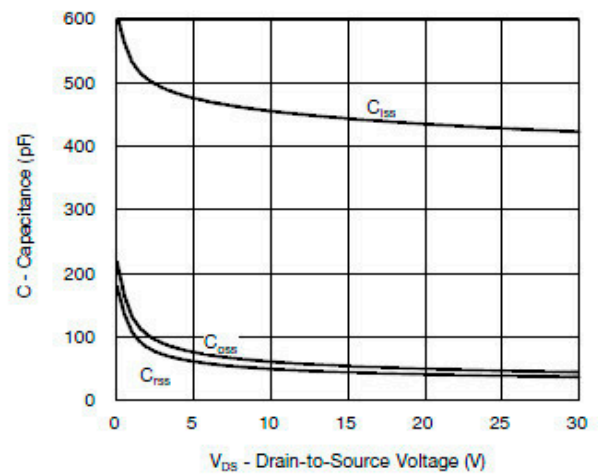
Output Characteristics



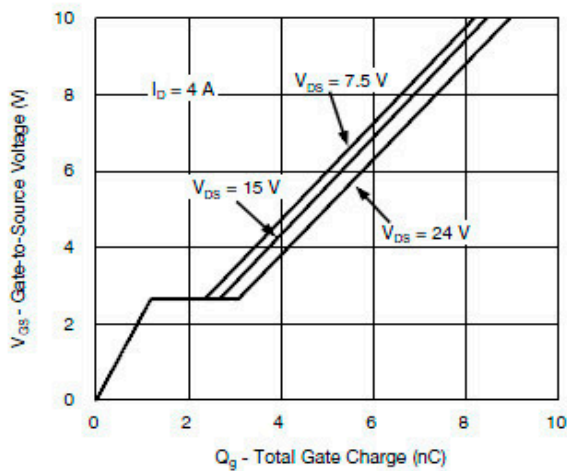
Transfer Characteristics



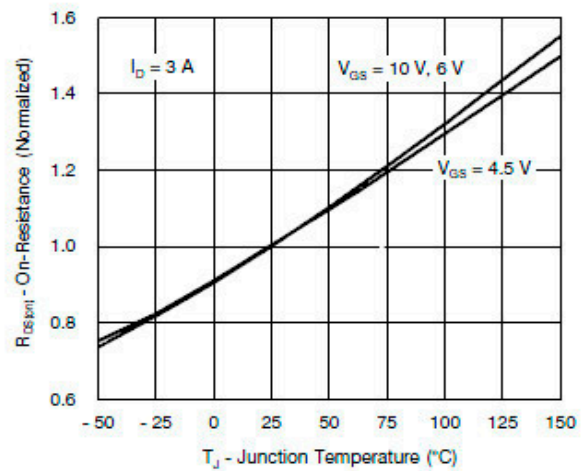
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge

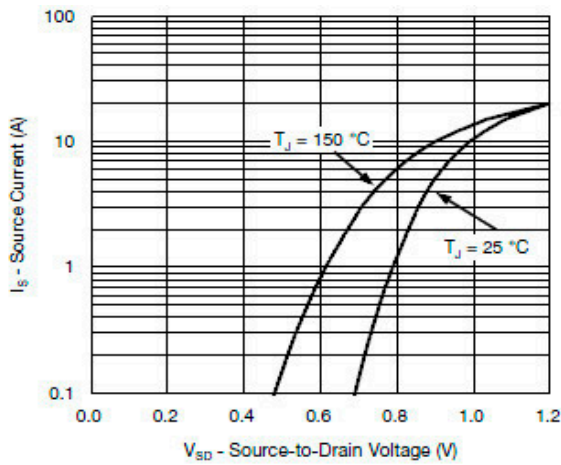


On-Resistance vs. Junction Temperature

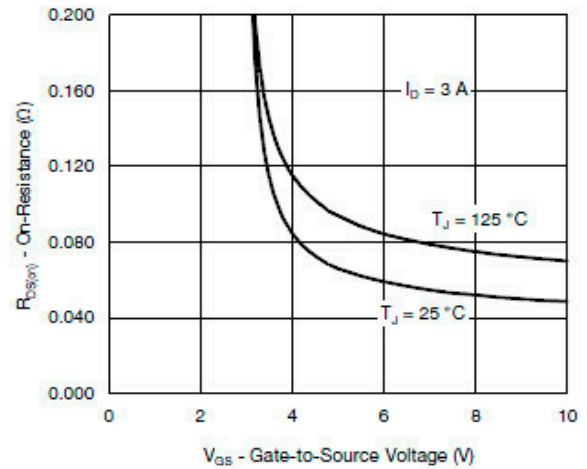
# 双 P 沟道 MOSFET

ELM53911WA-N

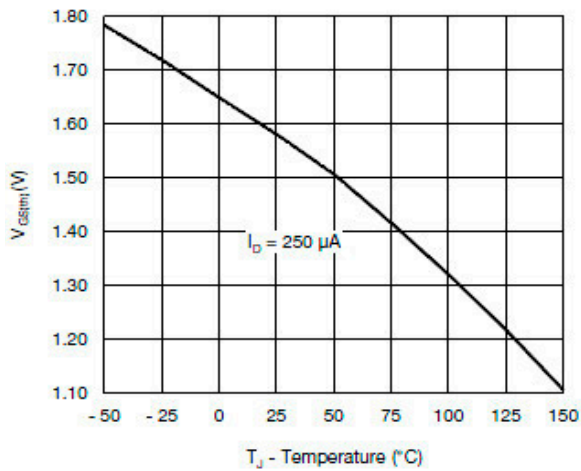
<http://www.elm-tech.com>



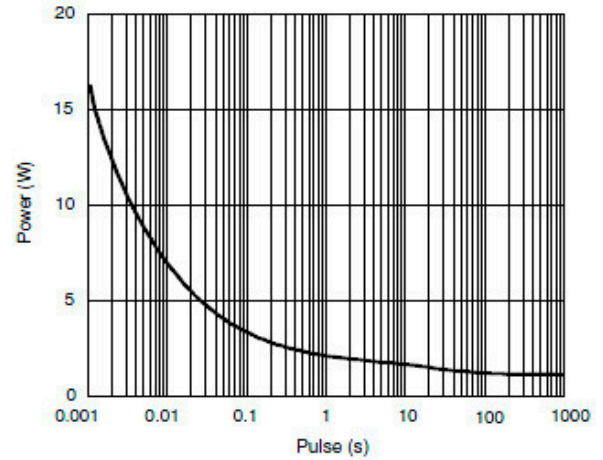
Source-Drain Diode Forward Voltage



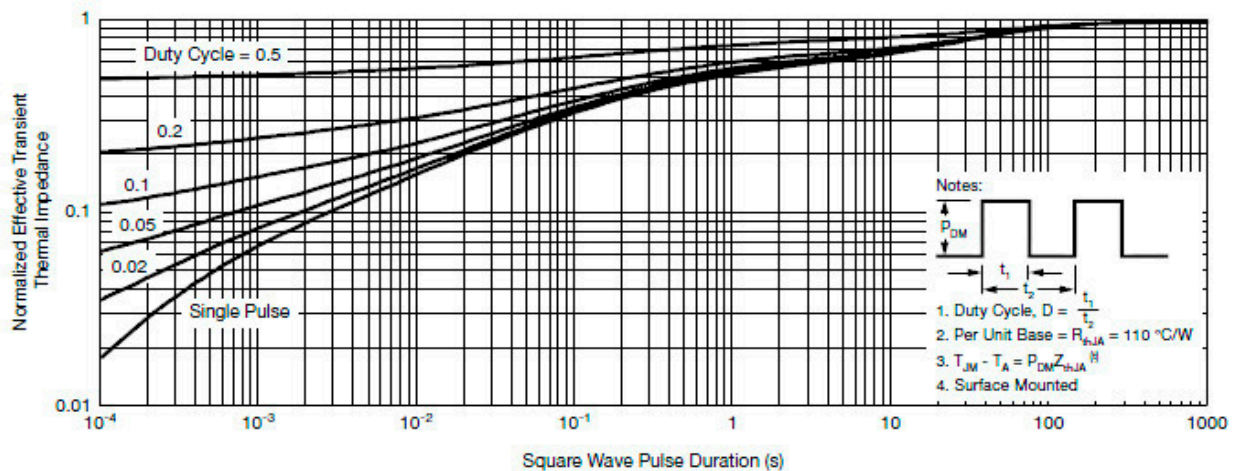
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

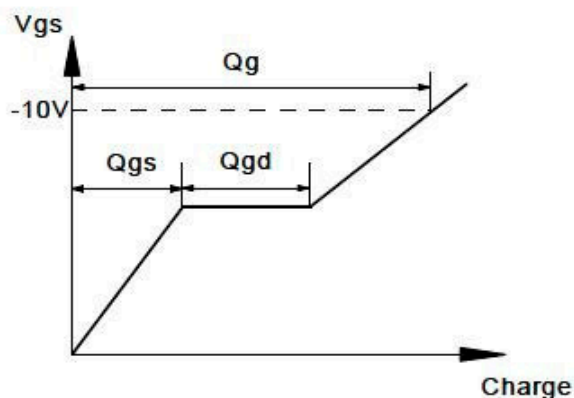
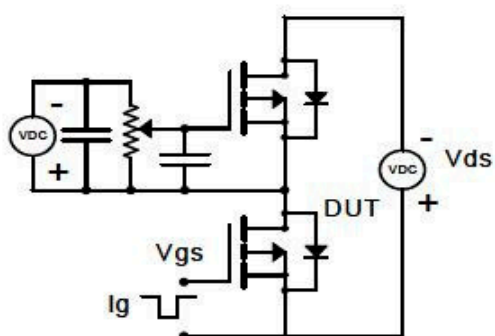
# 双 P 沟道 MOSFET

ELM53911WA-N

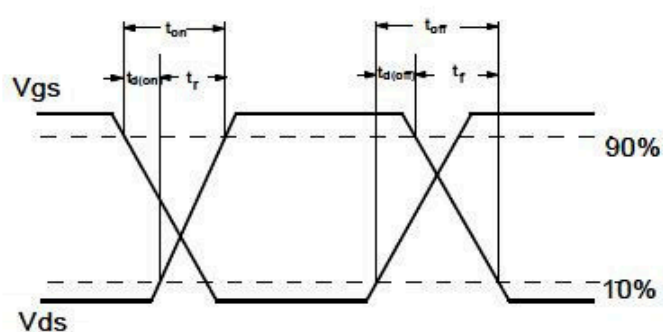
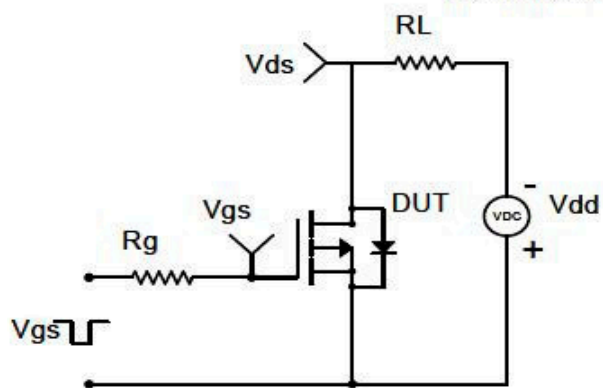
<http://www.elm-tech.com>

## ■ 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

