

# 单 P 沟道 MOSFET

ELM54403WA-N

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

## ■概要

ELM54403WA-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。

## ■特点

- $V_{ds} = -20V$
- $I_d = -9.0A$
- $R_{ds(on)} = 26m\Omega$  ( $V_{gs} = -4.5V$ )
- $R_{ds(on)} = 34m\Omega$  ( $V_{gs} = -2.5V$ )
- $R_{ds(on)} = 82m\Omega$  ( $V_{gs} = -1.8V$ )

## ■绝对最大额定值

如没有特别注明时,  $T_a = 25^\circ C$

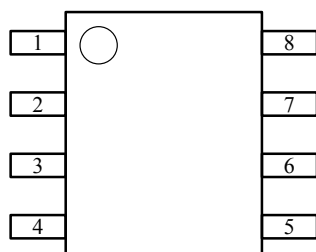
项目	记号	规格范围	单位
漏极 - 源极电压	$V_{ds}$	-20	V
栅极 - 源极电压	$V_{gs}$	$\pm 12$	V
漏极电流 (定常) $T_j = 150^\circ C$	Id	$T_a = 25^\circ C$	-9.0
		$T_a = 70^\circ C$	-6.0
漏极电流 (脉冲)	$I_{dm}$	-40	A
容许功耗	Pd	$T_c = 25^\circ C$	2.8
		$T_c = 70^\circ C$	1.8
动作结合部温度	$T_j$	150	$^\circ C$
保存温度范围	$T_{stg}$	-55 ~ 150	$^\circ C$

## ■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	$^\circ C/W$

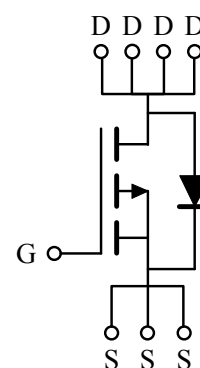
## ■引脚配置图

SOP-8(俯视图)



引脚编号	引脚名称
1	SOURCE
2	SOURCE
3	SOURCE
4	GATE
5	DRAIN
6	DRAIN
7	DRAIN
8	DRAIN

## ■电路图



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## ■电特性

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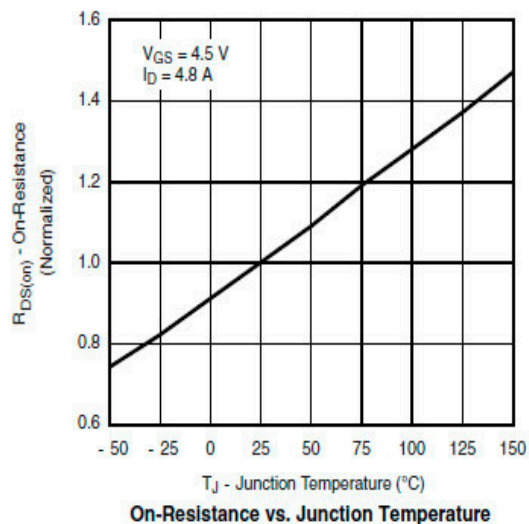
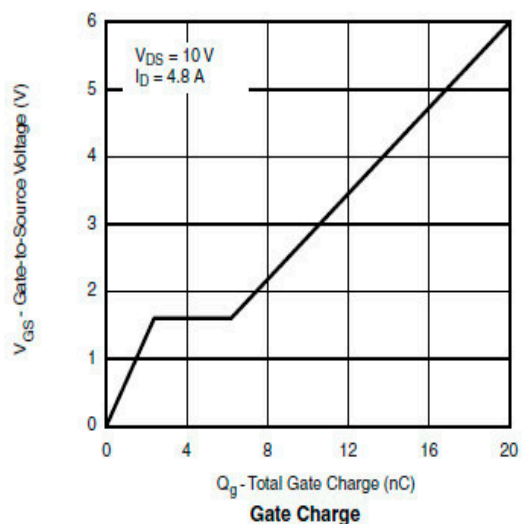
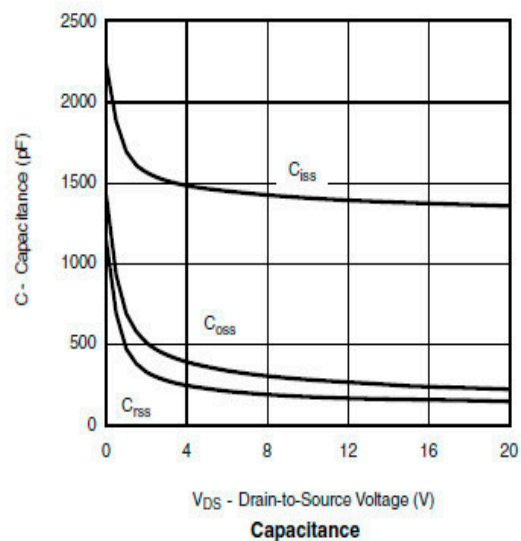
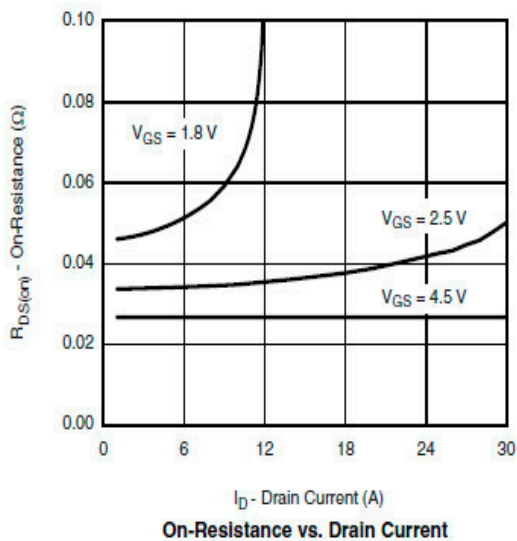
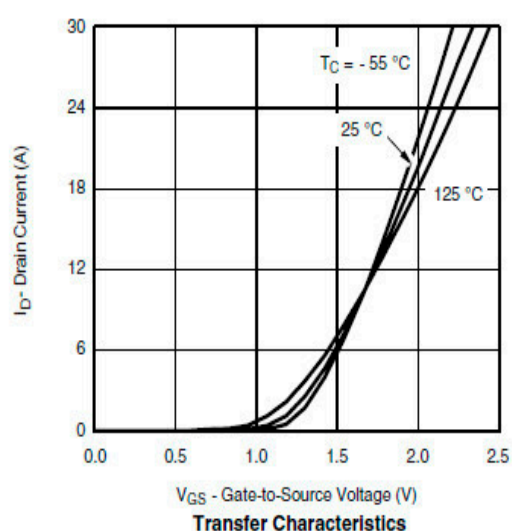
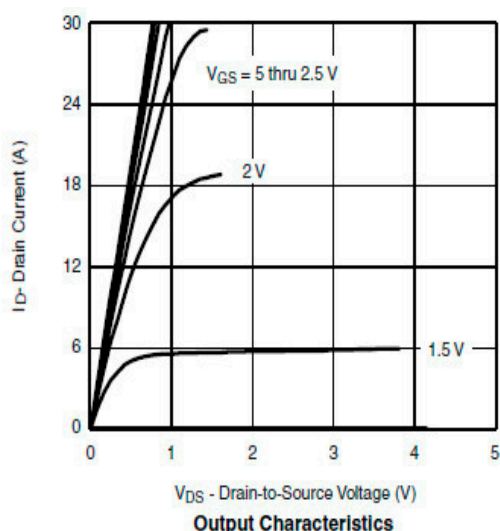
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 - 源极击穿电压	BV <sub>dss</sub>	$I_d=-250\mu\text{A}, V_{gs}=0\text{V}$	-20			V
栅极接地时漏极电流	I <sub>dss</sub>	$V_{ds}=-16\text{V}$ $V_{gs}=0\text{V}$			-1	$\mu\text{A}$
		$T_a=85^\circ\text{C}$			-10	
栅极漏电流	I <sub>gss</sub>	$V_{ds}=0\text{V}, V_{gs}=\pm 12\text{V}$			$\pm 100$	nA
栅极阈值电压	V <sub>gs(th)</sub>	$V_{ds}=V_{gs}, I_d=-250\mu\text{A}$	-0.4		-0.8	V
导通时漏极电流	I <sub>d(on)</sub>	$V_{gs}=-10\text{V}, V_{ds}\geq -10\text{V}$	-30			A
		$V_{gs}=-4.5\text{V}, V_{ds}\geq -5\text{V}$	-5			
漏极 - 源极导通电阻	R <sub>ds(on)</sub>	$V_{gs}=-4.5\text{V}, I_d=-9\text{A}$		18	26	m $\Omega$
		$V_{gs}=-2.5\text{V}, I_d=-8\text{A}$		24	34	
		$V_{gs}=-1.8\text{V}, I_d=-6\text{A}$		58	82	
正向跨导	G <sub>fs</sub>	$V_{ds}=-5\text{V}, I_d=-3.6\text{A}$		10		S
二极管正向压降	V <sub>sd</sub>	$I_s=-1.6\text{A}, V_{gs}=0\text{V}$		-0.85	-1.20	V
寄生二极管最大连续电流	I <sub>s</sub>				-2	A
动态特性						
输入电容	C <sub>iss</sub>			1450		pF
输出电容	C <sub>oss</sub>	$V_{gs}=0\text{V}, V_{ds}=-10\text{V}, f=1\text{MHz}$		350		pF
反馈电容	C <sub>rss</sub>			215		pF
开关特性						
总栅极电荷	Q <sub>g</sub>	$V_{gs}=-5.0\text{V}, V_{ds}=-10\text{V}$		17.0	35.0	nC
栅极 - 源极电荷	Q <sub>gs</sub>	$I_d\equiv -4.8\text{A}$		2.5		nC
栅极 - 漏极电荷	Q <sub>gd</sub>			4.0		nC
导通延迟时间	t <sub>d(on)</sub>	$V_{gs}=-10\text{V}, V_{ds}=-10\text{V}$		18	30	ns
导通上升时间	t <sub>r</sub>	$R_L=15\Omega, I_d\equiv -5.0\text{A}$		30	50	ns
关闭延迟时间	t <sub>d(off)</sub>			100	150	ns
关闭下降时间	t <sub>f</sub>	$R_{gen}=6.0\Omega$		55	80	ns

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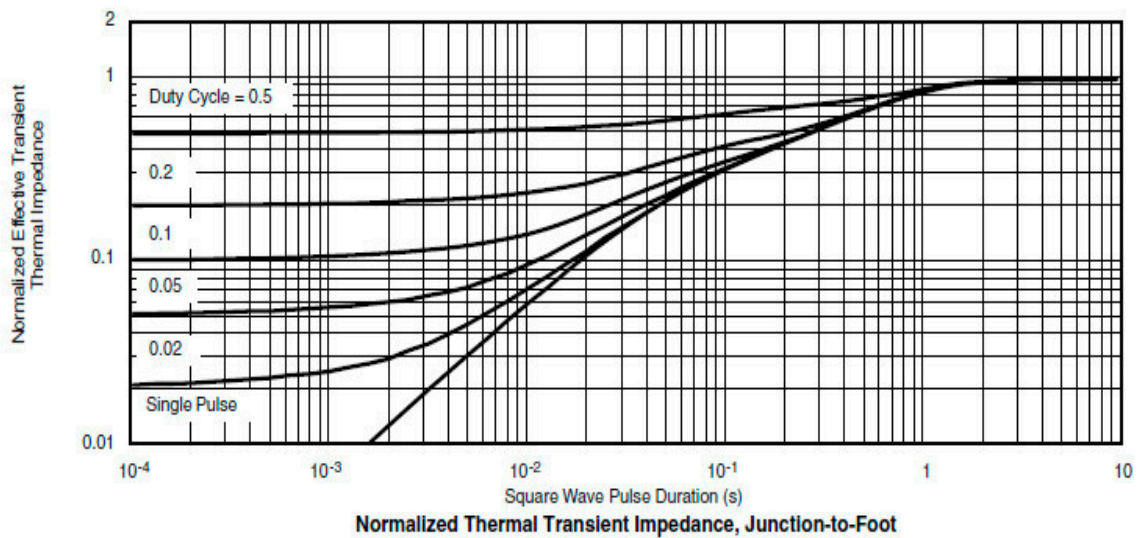
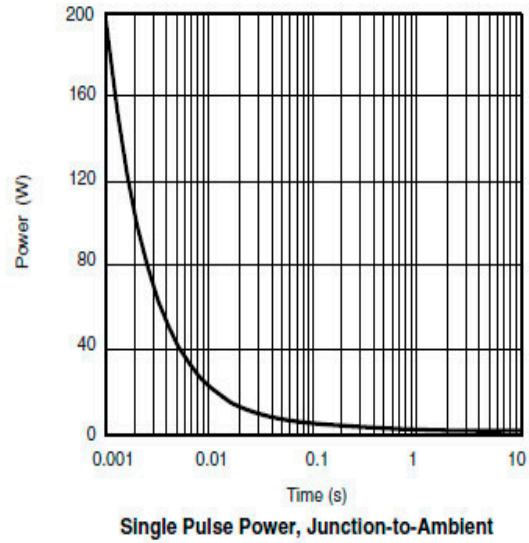
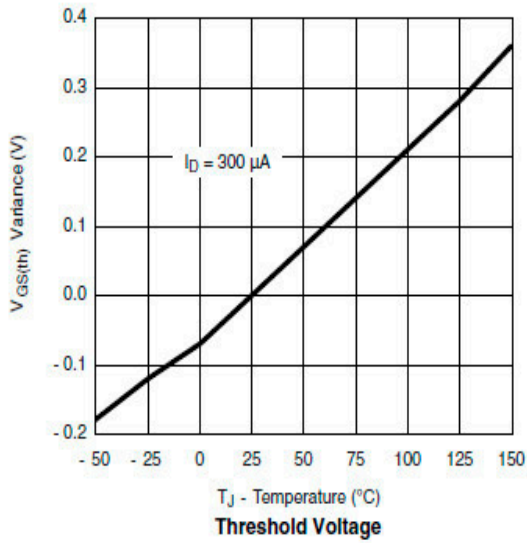
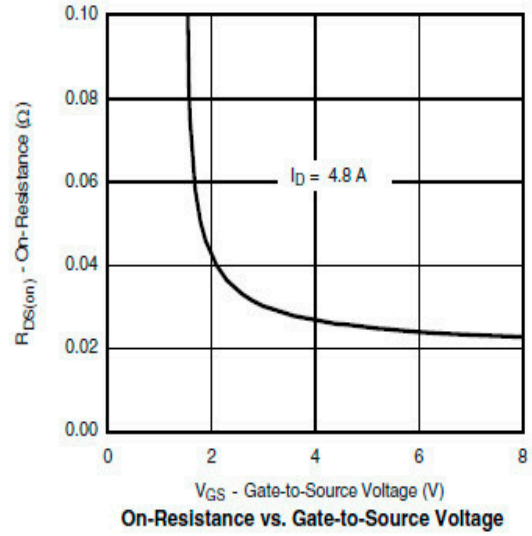
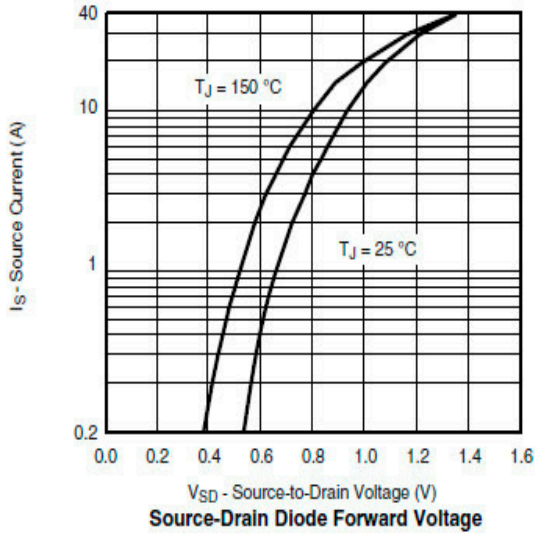
## ■ 标准特性和热特性曲线



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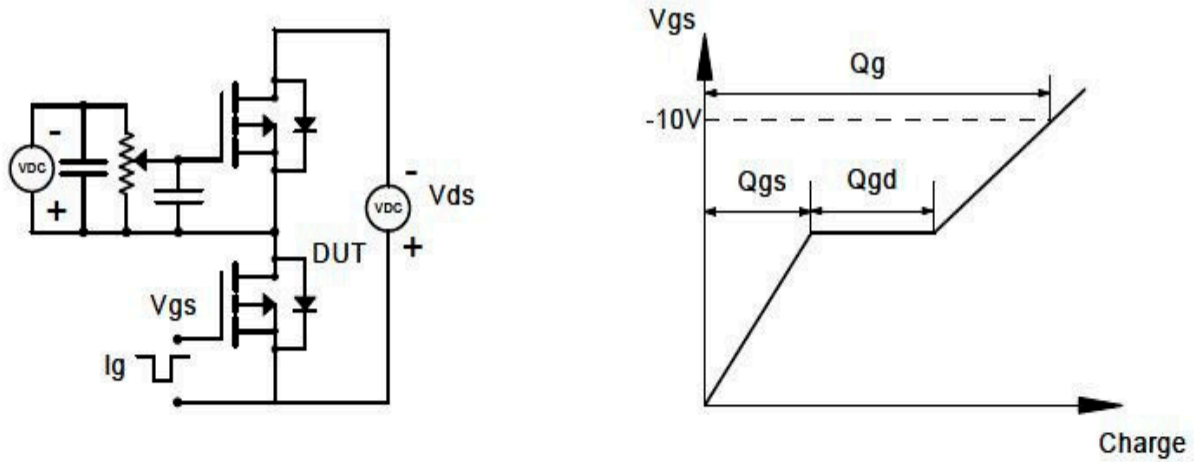
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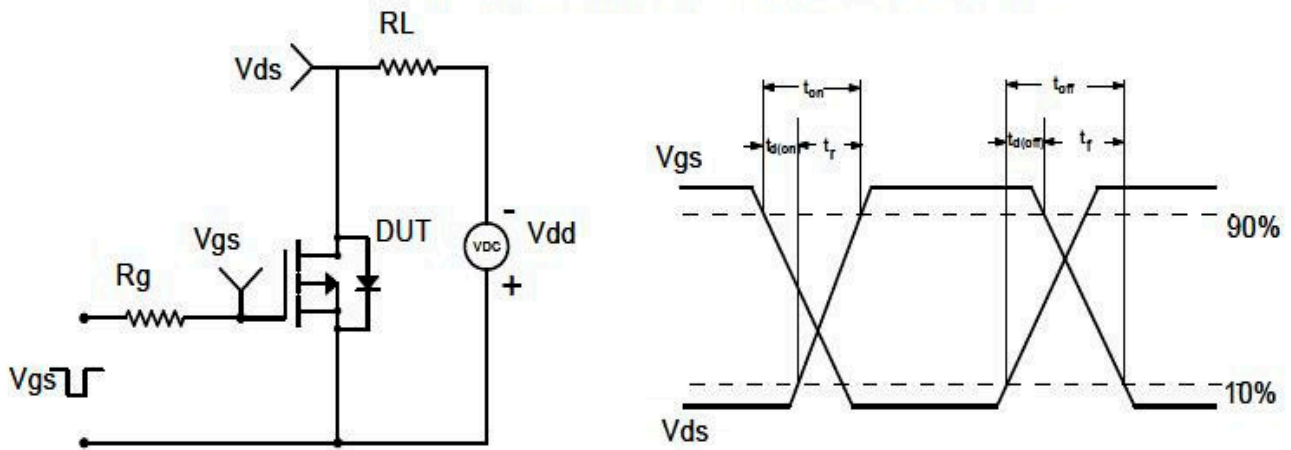
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## 测试电路和波形

### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms



### Diode Recovery Test Circuit & Waveforms

