

单 P 沟道 MOSFET

ELM54425WSA-N

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

■概要

ELM54425WSA-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

- $V_{ds} = -30V$
- $I_d = -13A$
- $R_{ds(on)} = 12.0m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} = 16.5m\Omega$ ($V_{gs} = -4.5V$)

■绝对最大额定值

如没有特别注明时, $T_a = 25^\circ C$

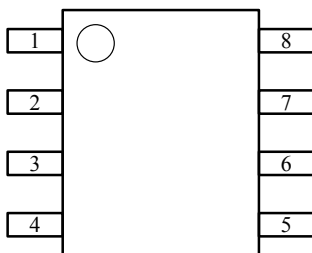
项目	记号	规格范围	单位
漏极 - 源极电压	V_{ds}	-30	V
栅极 - 源极电压	V_{gs}	± 20	V
漏极电流 (定常) $T_j = 150^\circ C$	I_d	$T_a = 25^\circ C$	-13
		$T_a = 70^\circ C$	-10
漏极电流 (脉冲)	I_{dm}	-50	A
容许功耗	P_d	$T_c = 25^\circ C$	2.8
		$T_c = 70^\circ C$	1.8
动作结合部温度	T_j	150	$^\circ C$
保存温度范围	T_{stg}	-55 ~ 150	$^\circ C$

■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	$^\circ C/W$
最大接合部 - 外封装	$R_{\theta jc}$		19.0	$^\circ C/W$

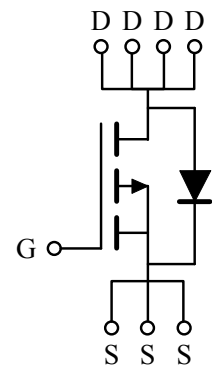
■引脚配置图

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

如没有特别注明时, $T_a=25^\circ\text{C}$

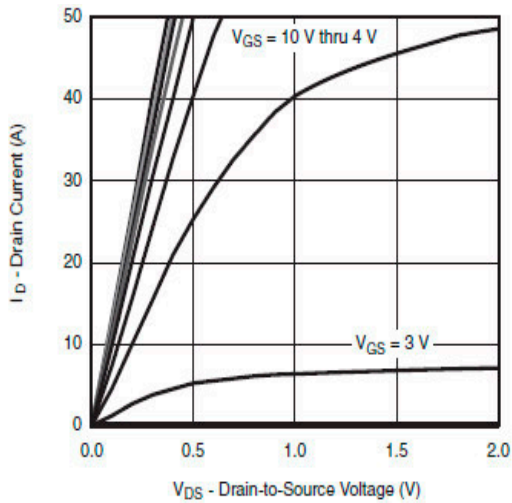
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 - 源极击穿电压	BV _{dss}	$I_d=-250\mu\text{A}, V_{gs}=0\text{V}$	-30			V
栅极接地时漏极电流	I _{dss}	$V_{ds}=-24\text{V}$ $V_{gs}=0\text{V}$			-1	μA
		$T_a=85^\circ\text{C}$			-30	
栅极漏电流	I _{gss}	$V_{ds}=0\text{V}, V_{gs}=\pm 25\text{V}$			± 100	nA
栅极阈值电压	V _{gs(th)}	$V_{ds}=V_{gs}, I_d=-250\mu\text{A}$	-1.0	-1.6	-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)}	$V_{gs}=-10\text{V}, I_d=-13\text{A}$		10.0	12.0	m Ω
		$V_{gs}=-4.5\text{V}, I_d=-10\text{A}$		14.0	16.5	
正向跨导	G _{fs}	$V_{ds}=-15\text{V}, I_d=-13\text{A}$		40		S
二极管正向压降	V _{sd}	$I_s=-1.0\text{A}, V_{gs}=0\text{V}$		-0.7	-1.3	V
寄生二极管最大连续电流	I _s				-2	A
动态特性						
输入电容	C _{iss}	$V_{gs}=0\text{V}, V_{ds}=-15\text{V}, f=1\text{MHz}$		2600		pF
输出电容	C _{oss}			450		pF
反馈电容	C _{rss}			400		pF
开关特性						
总栅极电荷	Q _g	$V_{gs}=-4.5\text{V}, V_{ds}=-15\text{V}$ $I_d\equiv -10\text{A}$		26	55	nC
栅极 - 源极电荷	Q _{gs}			8		nC
栅极 - 漏极电荷	Q _{gd}			12		nC
导通延迟时间	t _{d(on)}	$V_{gs}=-10\text{V}, V_{ds}=-15\text{V}$ $R_L=1.5\Omega, I_d\equiv -10\text{A}$ $R_{gen}=1.0\Omega$		12	20	ns
导通上升时间	t _r			10	25	ns
关闭延迟时间	t _{d(off)}			40	80	ns
关闭下降时间	t _f			10	20	ns

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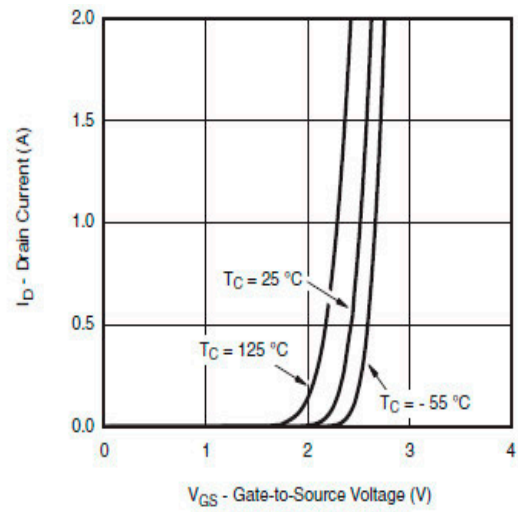
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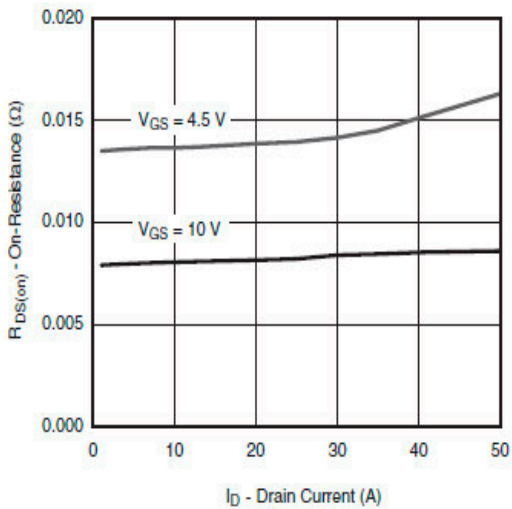
■ 标准特性和热特性曲线



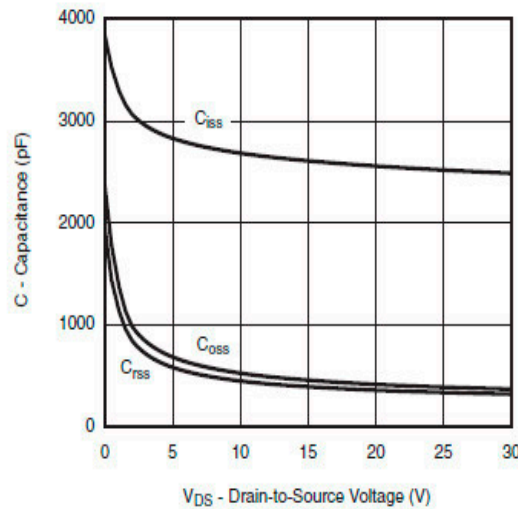
Output Characteristics



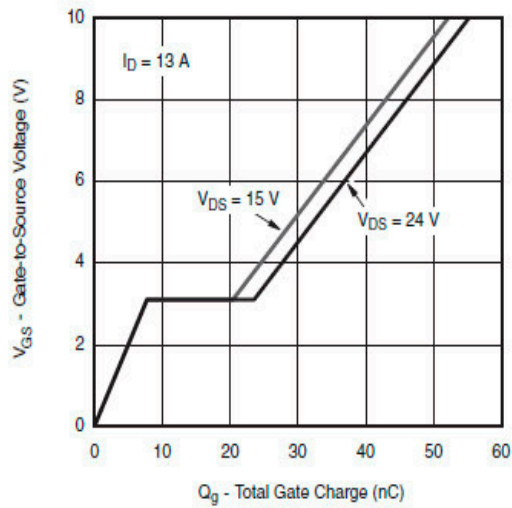
Transfer Characteristics



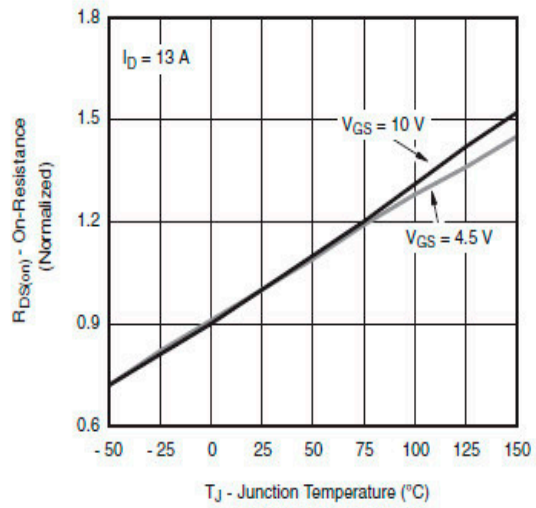
On-Resistance vs. Drain Current



Capacitance



Gate Charge

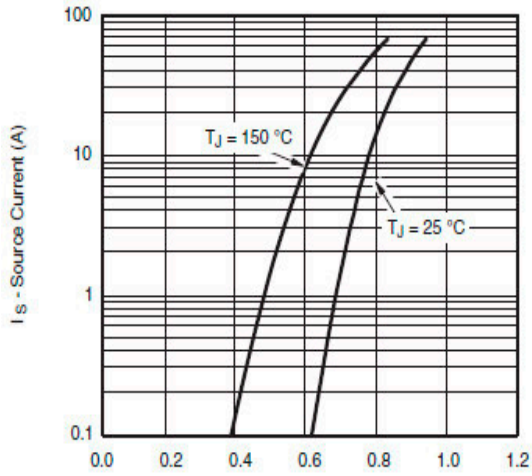


On-Resistance vs. Junction Temperature

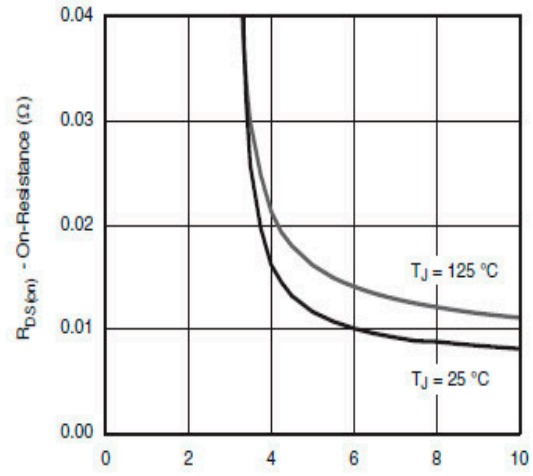
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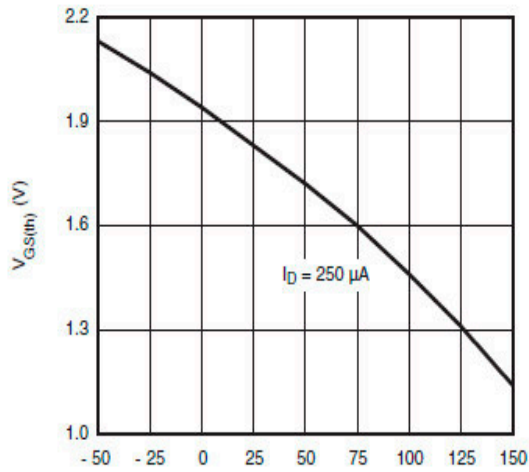
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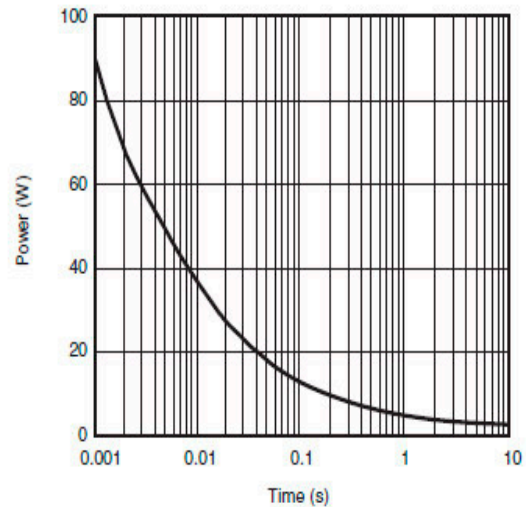
Source-Drain Diode Forward Voltage



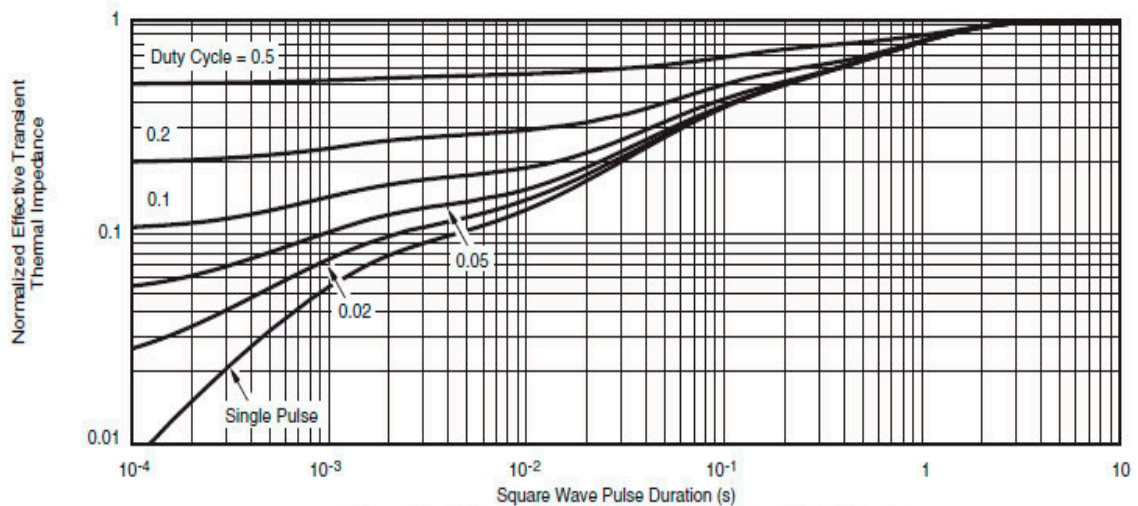
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power (Junction-to-Ambient)



Normalized Thermal Transient Impedance, Junction-to-Foot

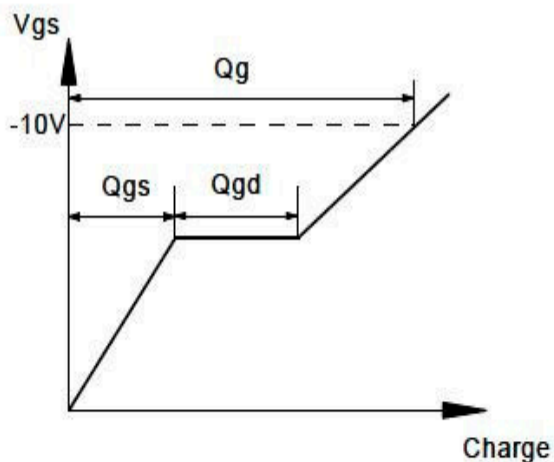
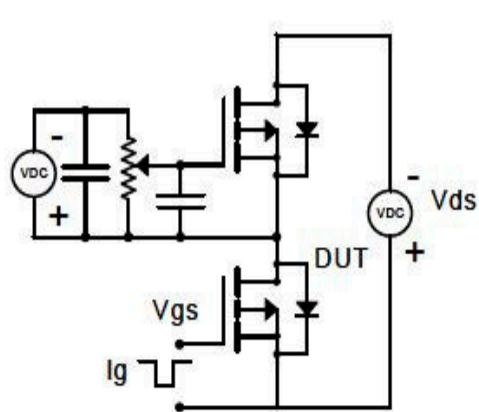
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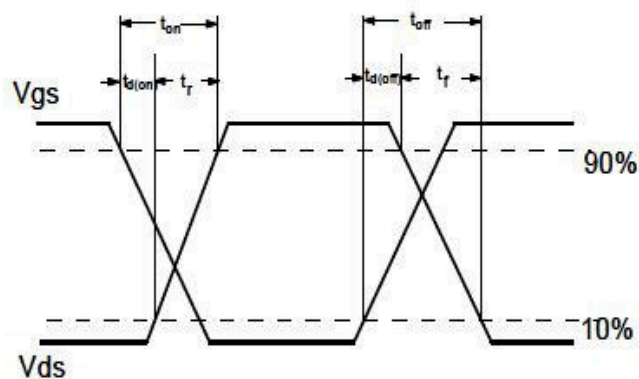
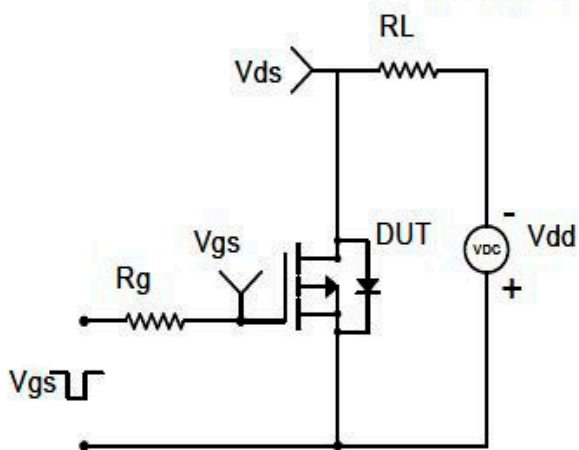
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测试电路和波形

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

