

单 P 沟道 MOSFET

ELM52125SA-S

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

■概要

ELM52125SA-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。另外、此芯片还内藏 ESD 保护电路。

■特点

- $V_{ds} = -200V$
- $I_d = -0.5A$
- $R_{ds(on)} = 2400m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} = 2600m\Omega$ ($V_{gs} = -4.5V$)
- ESD 保护 : $>2000V$ HBM

■绝对最大额定值

如没有特别注明时, $T_a = 25^\circ C$

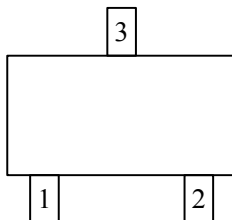
项目	记号	规格范围	单位
漏极 - 源极电压	V_{ds}	-200	V
栅极 - 源极电压	V_{gs}	± 20	V
漏极电流 (定常) $T_j = 150^\circ C$	I_d	-0.5	A
		-0.3	
漏极电流 (脉冲)	I_{dm}	-1.0	A
容许功耗	P_d	3.2	W
		2.1	
动作结合部温度	T_j	150	$^\circ C$
结合部温度及保存温度范围	T_{stg}	$-55 \sim 150$	$^\circ C$

■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	$^\circ C/W$

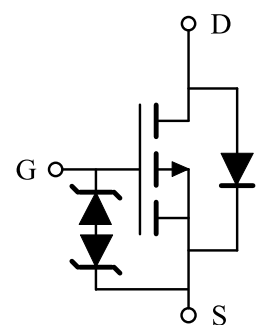
■引脚配置图

SOT-23(俯视图)



引脚编号	引脚名称
1	GATE
2	SOURCE
3	DRAIN

■电路图



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■电特性

如没有特别注明时, Ta=25℃

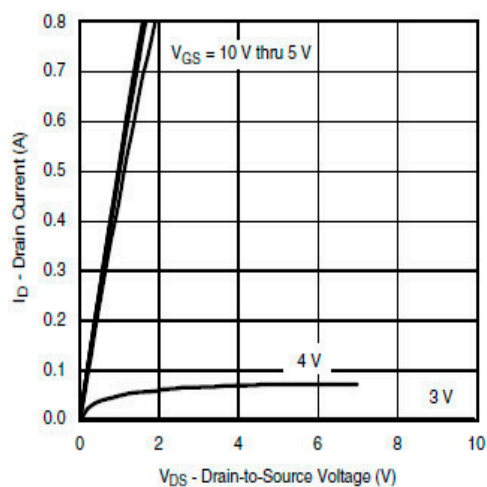
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 – 源极击穿电压	BV _{dss}	V _{gs} =0V, I _d =-250μA	-200			V
栅极接地时漏极电流	I _{dss}	V _{ds} =-160V, V _{gs} =0V			-1	μA
		V _{ds} =-160V, V _{gs} =0V, T _a =85℃			-30	
栅极漏电电流	I _{gss}	V _{ds} =0V, V _{gs} = ± 20V			± 10	μA
栅极阈值电压	V _{gs(th)}	V _{ds} =V _{gs} , I _d =-250 μA	-1.0		-2.5	V
导通时漏极电流	I _{d(on)}	V _{gs} =-10V, V _{ds} ≥-10V	-0.6			A
漏极 – 源极导通电阻	R _{ds(on)}	V _{gs} =-10V, I _d =-0.5A		2000	2400	mΩ
		V _{gs} =-4.5V, I _d =-0.3A		2100	2600	
正向跨导	G _{fs}	V _{ds} =-10V, I _d =-0.5A		1.5		S
二极管正向压降	V _{sd}	I _s =-0.3A, V _{gs} =0V		-0.75	-1.20	V
寄生二极管最大连续电流	I _s				-1.0	A
动态特性						
输入电容	C _{iss}	V _{gs} =0V, V _{ds} =-75V, f=1MHz		155		pF
输出电容	C _{oss}			8		pF
反馈电容	C _{rss}			6		pF
开关特性						
总栅极电荷	Q _g	V _{gs} =-10V, V _{ds} =-75V I _d ≡-0.5A		4.20	8.00	nC
栅极 – 源极电荷	Q _{gs}			0.98		nC
栅极 – 漏极电荷	Q _{gd}			1.32		nC
导通延迟时间	t _{d(on)}	V _{gs} =-10V, V _{ds} =-75V R _L =75Ω, I _d ≡-1.0A R _{gen} =1.0Ω		5	10	ns
导通上升时间	t _r			10	20	ns
关闭延迟时间	t _{d(off)}			20	40	ns
关闭下降时间	t _f			10	20	ns

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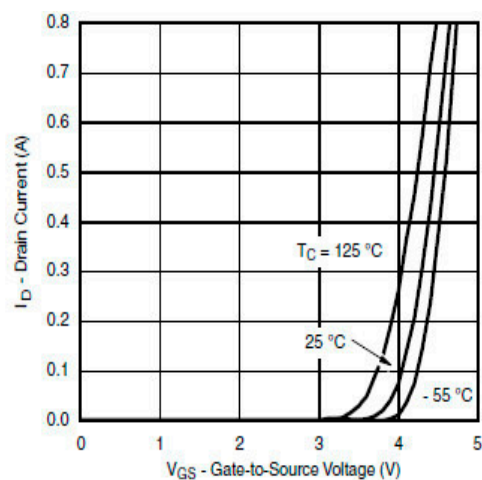
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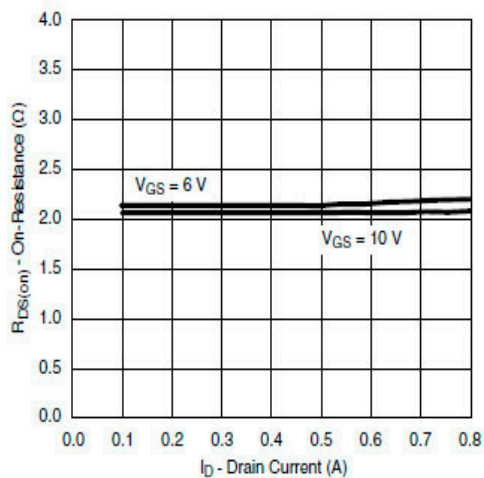
■ 标准特性和热特性曲线



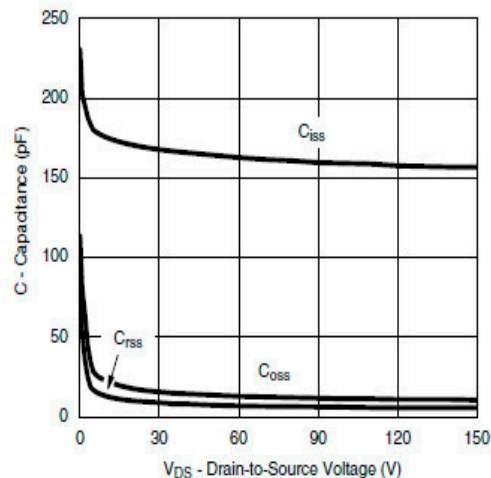
Output Characteristics



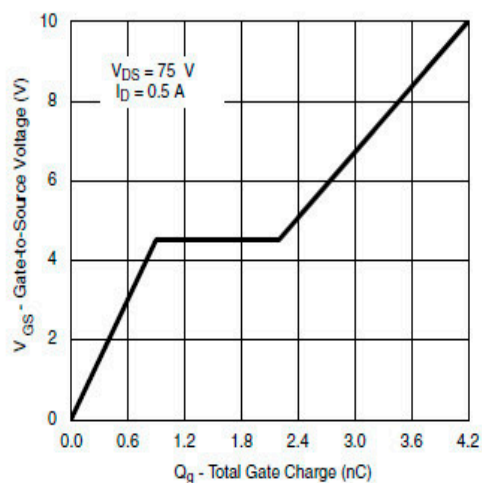
Transfer Characteristics



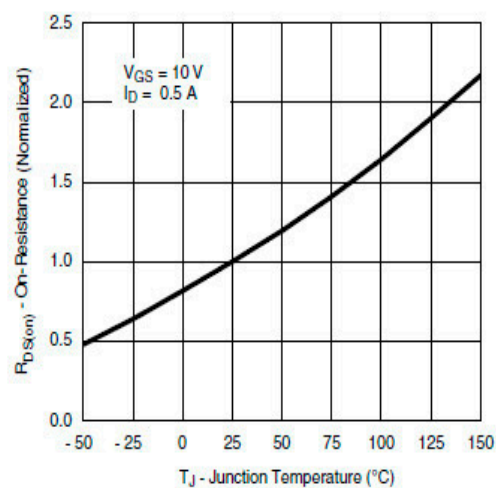
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge

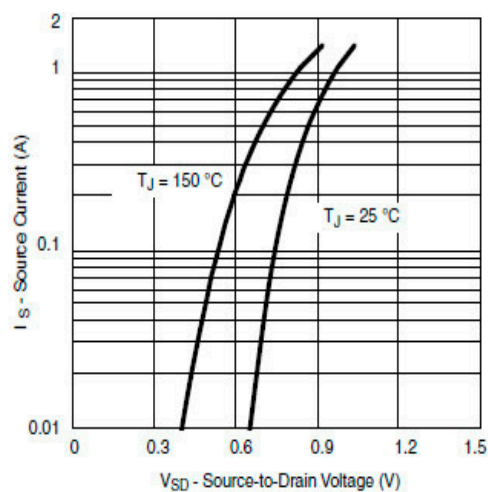


On-Resistance vs. Junction Temperature

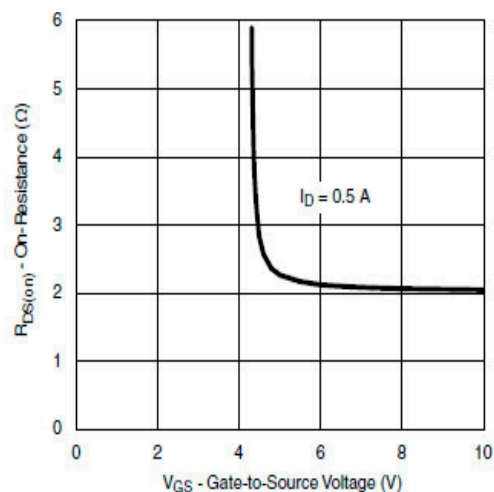
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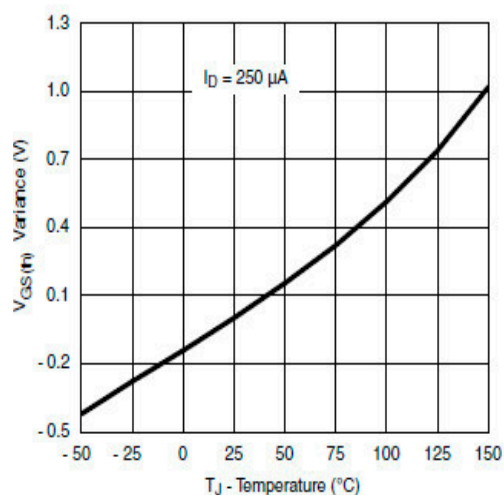
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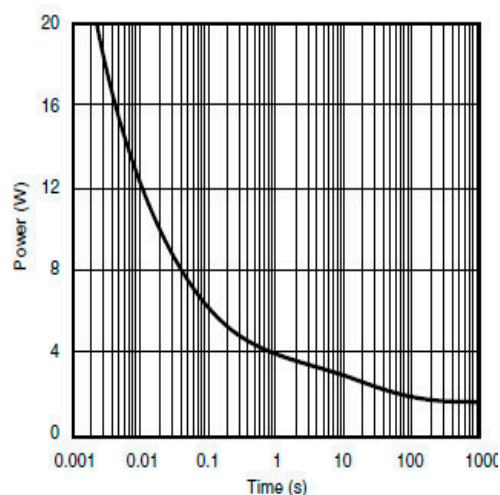
Source-Drain Diode Forward Voltage



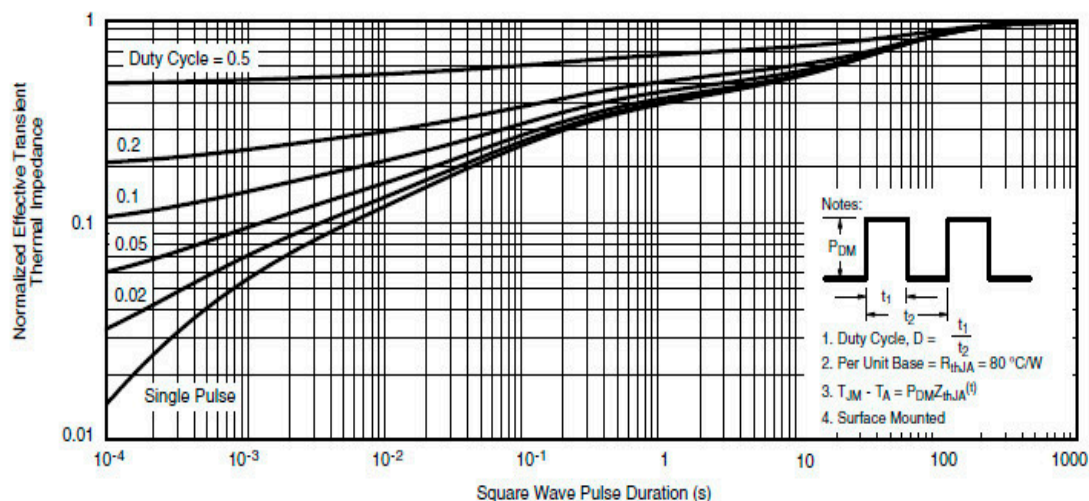
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

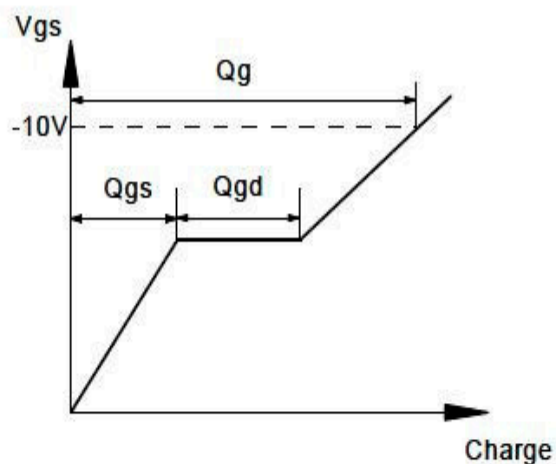
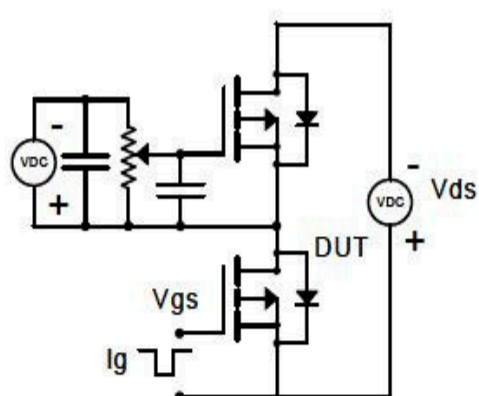
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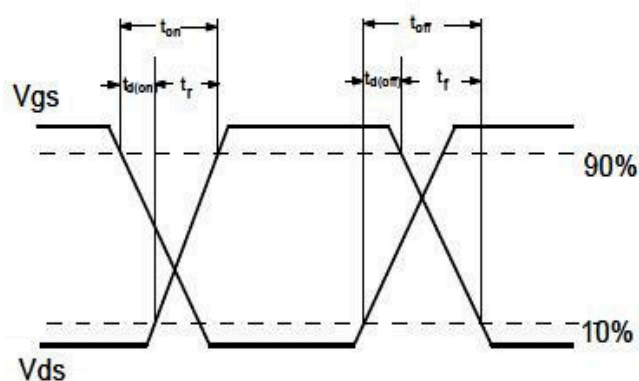
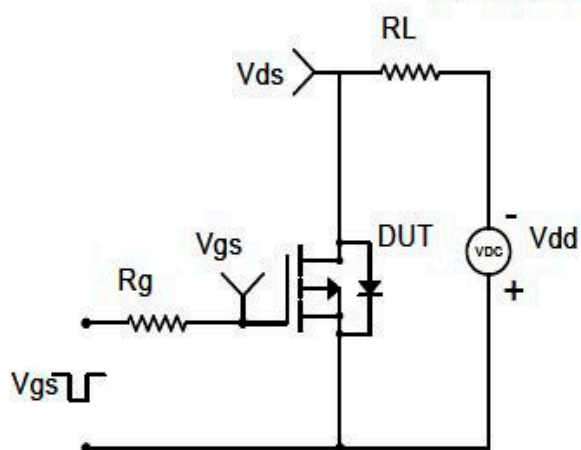
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■测试电路和波形

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

