

双 P 沟道 MOSFET

ELM53993A-S

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

■概要

ELM53993A-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，内藏有两个 MOSFET。

■特点

- $V_{ds} = -30V$
- $I_d = -3.6A$
- $R_{ds(on)} = 150m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} = 235m\Omega$ ($V_{gs} = -4.5V$)

■绝对最大额定值

如没有特别注明时, $T_a = 25^\circ C$

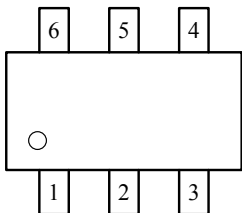
项目	记号	规格范围	单位	
漏极 - 源极电压	V_{ds}	-30	V	
栅极 - 源极电压	V_{gs}	± 20	V	
漏极电流 (定常) ($T_j = 150^\circ C$)	Id	$T_a = 25^\circ C$	-3.6	A
		$T_a = 70^\circ C$	-3.0	
漏极电流 (脉冲)	I_{dm}	-15	A	
容许功耗	Pd	$T_c = 25^\circ C$	2.0	W
		$T_c = 70^\circ C$	1.3	
动作结合部温度	T_j	150	$^\circ C$	
保存温度范围	T_{stg}	-55 ~ 150	$^\circ C$	

■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	$^\circ C/W$

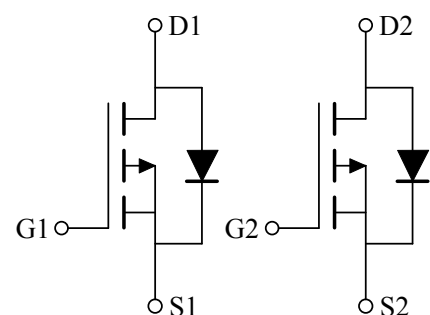
■引脚配置图

SOT-26(俯视图)



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

■电路图



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■电特性

如没有特别注明时, Ta=25°C

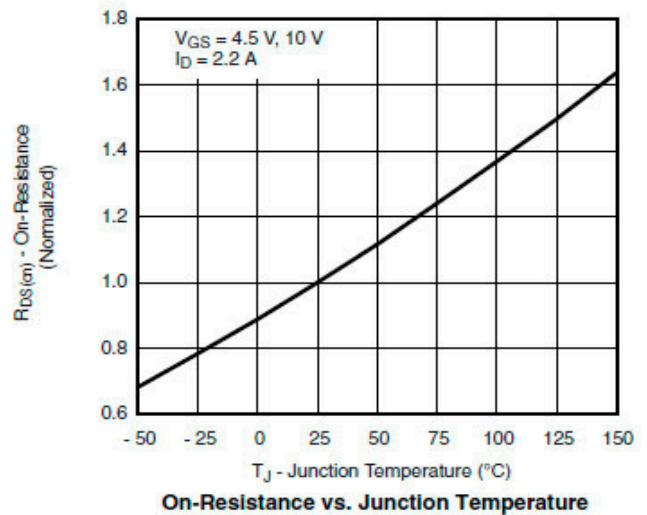
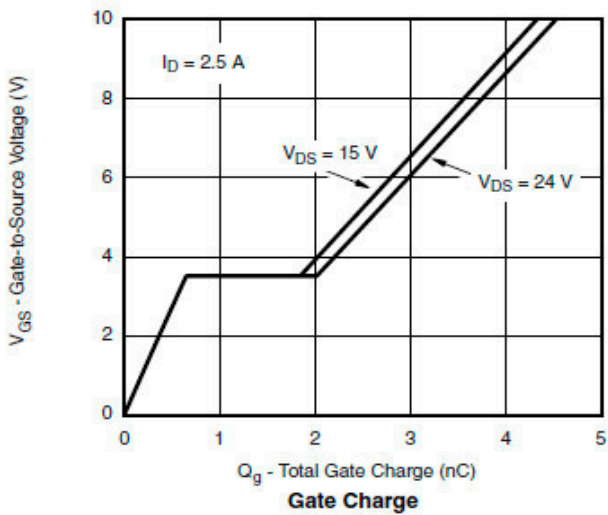
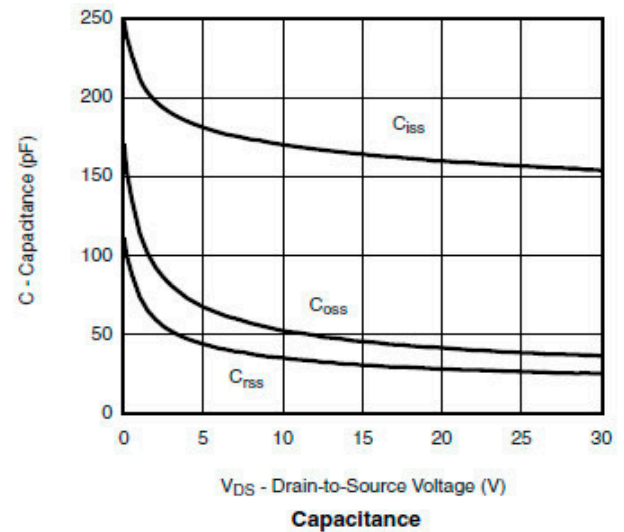
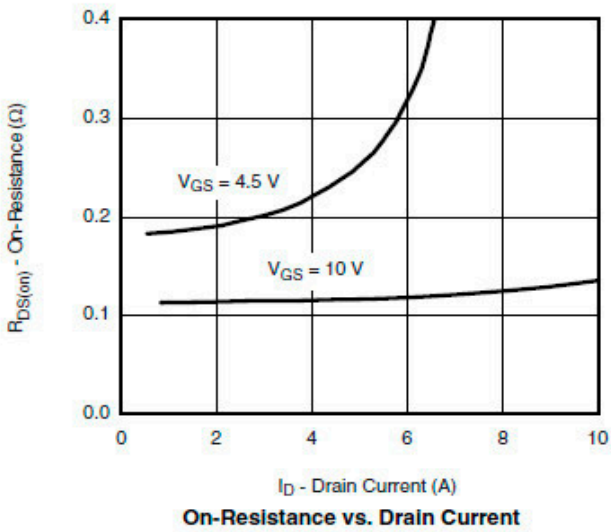
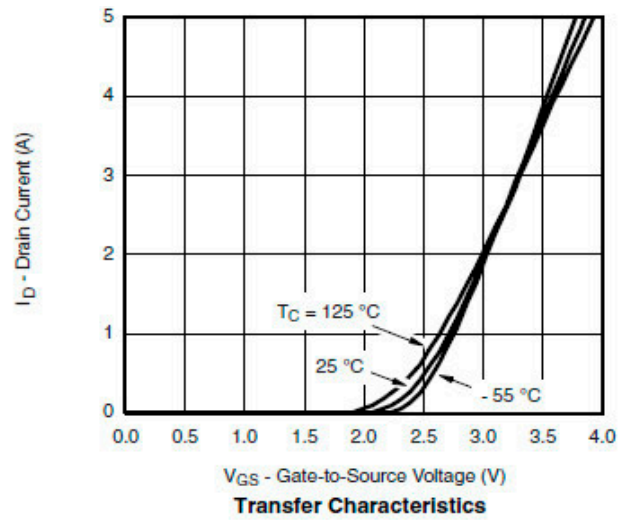
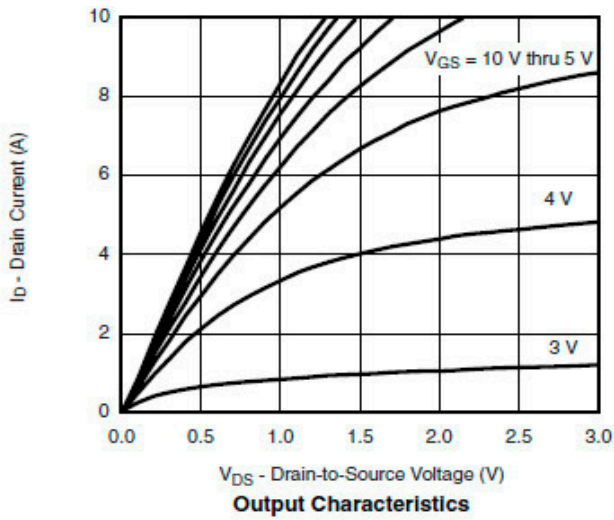
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 - 源极击穿电压	BVdss	Id=-250μA, Vgs=0V	-30			V
栅极接地时漏极电流	Idss	Vds=-24V, Vgs=0V Ta=85°C			-1	μA
					-30	
栅极漏电流	Igss	Vds=0V, Vgs=±20V			±100	nA
栅极阈值电压	Vgs(th)	Vds=Vgs, Id=-250μA	-1.0		-2.6	V
导通时漏极电流	Id(on)	Vgs=-10V, Vds≥-5V	-10			A
漏极 - 源极导通电阻	Rds(on)	Vgs=-10V, Id=-3.6A		135	150	mΩ
		Vgs=-4.5V, Id=-3.2A		220	235	
正向跨导	Gfs	Vds=-5V, Id=-4.0A		10		S
二极管正向压降	Vsd	Is=-1.7A, Vgs=0V		-0.7	-1.3	V
寄生二极管最大连续电流	Is				-1.5	A
动态特性						
输入电容	Ciss	Vgs=0V, Vds=-15V, f=1MHz		170		pF
输出电容	Coss			50		pF
反馈电容	Crss			30		pF
开关特性						
总栅极电荷	Qg	Vgs=-4.5V, Vds=-15V Id≡-2.5A		2.5		nC
栅极 - 源极电荷	Qgs			0.8		nC
栅极 - 漏极电荷	Qgd			1.0		nC
导通延迟时间	td(on)	Vgs=-10V, Vds=-15V Id≡-2.0A, RL=7.5Ω		5	10	ns
导通上升时间	tr			10	16	ns
关闭延迟时间	td(off)	Rgen=1Ω		10	16	ns
关闭下降时间	tf			5	10	ns

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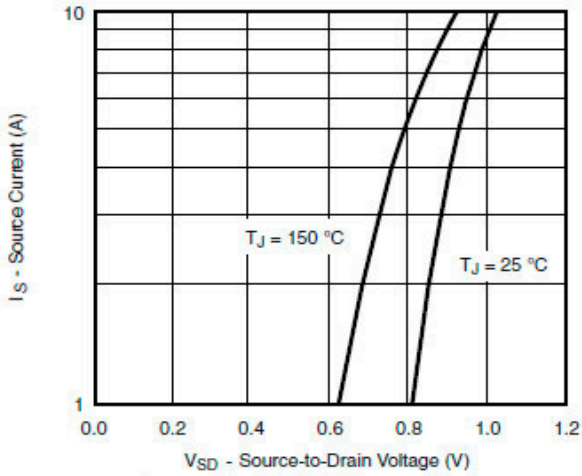
■ 标准特性和热特性曲线



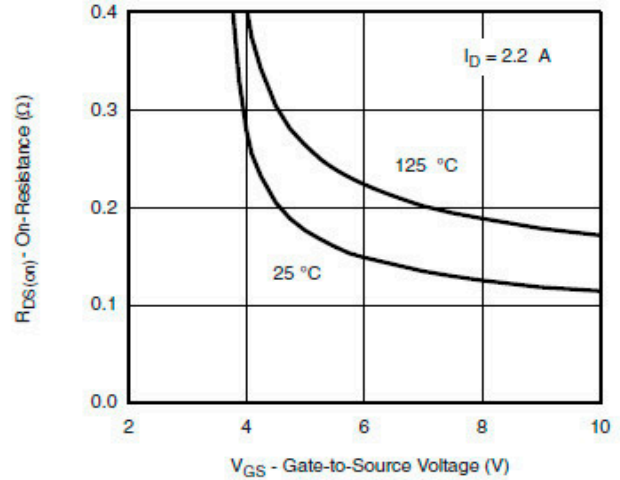
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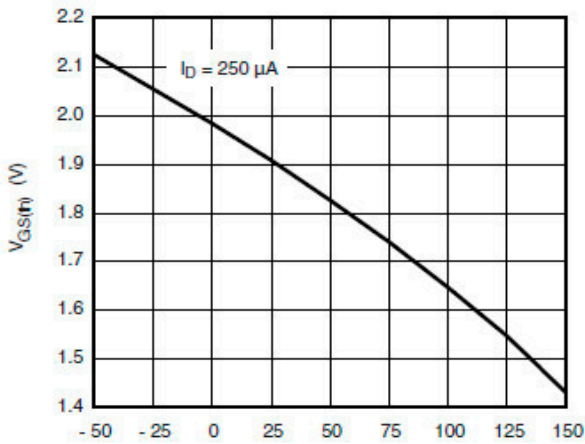
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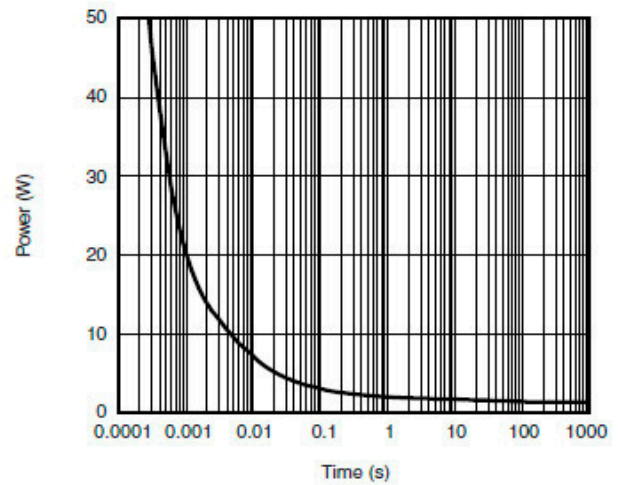
Source-Drain Diode Forward Voltage



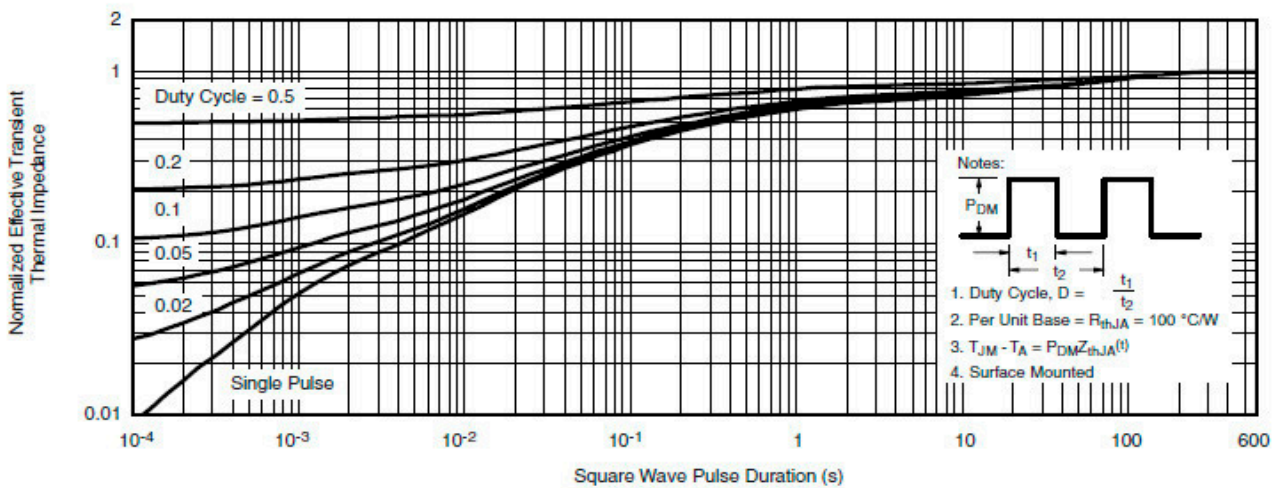
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

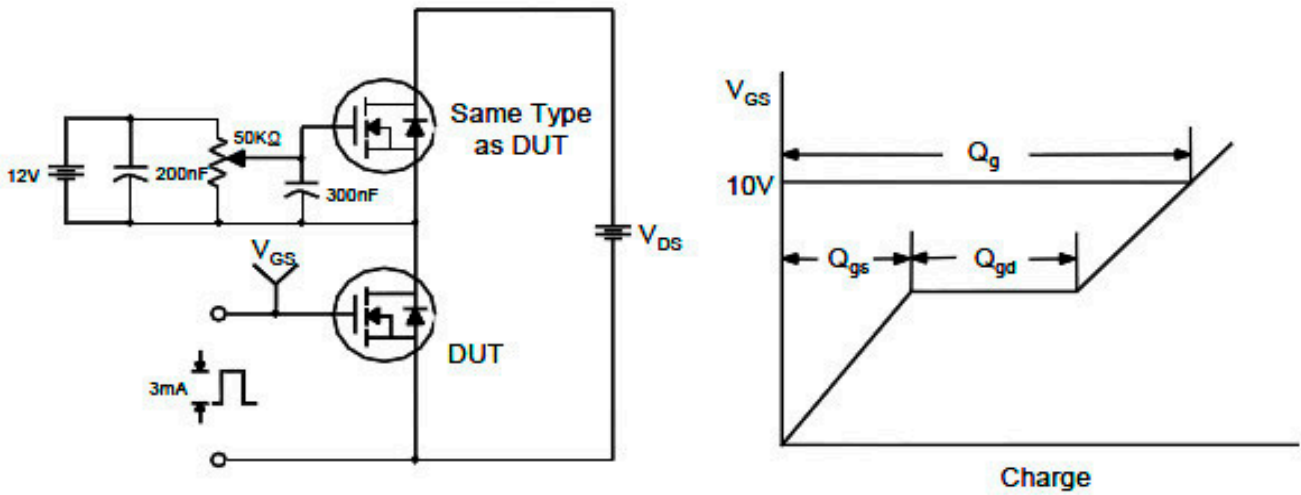
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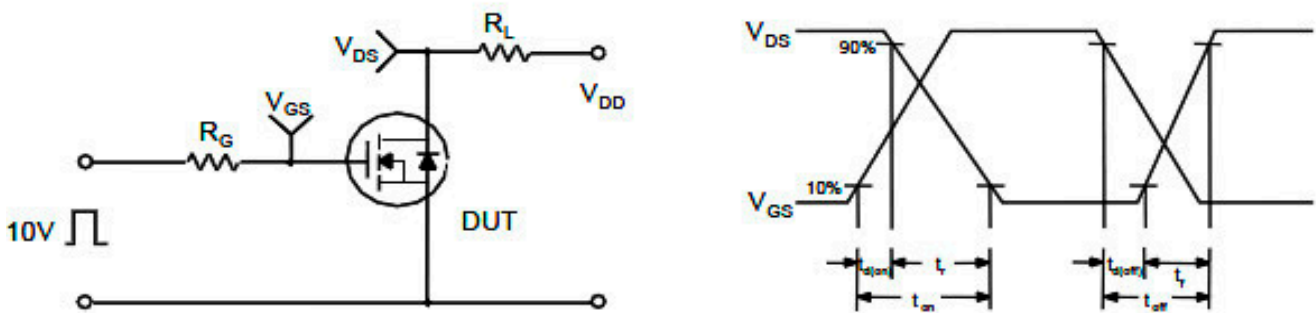
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■ 试验电路图和测试波形图

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

