

# 单 P 沟道 MOSFET

ELM51303A-S

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## ■概要

ELM51303A-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。

## ■特点

- $V_{ds} = -20V$
- $I_d = -1.0A$
- $R_{ds(on)} = 600m\Omega$  ( $V_{gs} = -4.5V$ )
- $R_{ds(on)} = 800m\Omega$  ( $V_{gs} = -2.5V$ )
- $R_{ds(on)} = 1300m\Omega$  ( $V_{gs} = -1.8V$ )

## ■绝对最大额定值

如没有特别注明时,  $T_a = 25^\circ C$

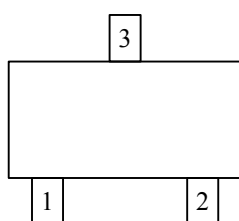
项目	记号	规格范围	单位
漏极 - 源极电压	$V_{dss}$	-20	V
栅极 - 源极电压	$V_{gs}$	$\pm 12$	V
漏极电流 (定常)	Id	$T_a = 25^\circ C$	-1.0
		$T_a = 70^\circ C$	-0.6
漏极电流 (脉冲)	$I_{dm}$	-6	A
容许功耗	Pd	$T_c = 25^\circ C$	0.35
		$T_c = 70^\circ C$	0.22
结合部温度及保存温度范围	$T_j, T_{stg}$	-55 ~ 150	$^\circ C$

## ■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	$^\circ C/W$

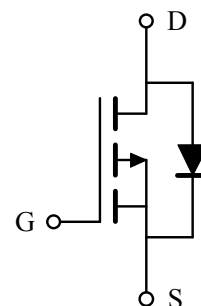
## ■引脚配置图

SC-70(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℃

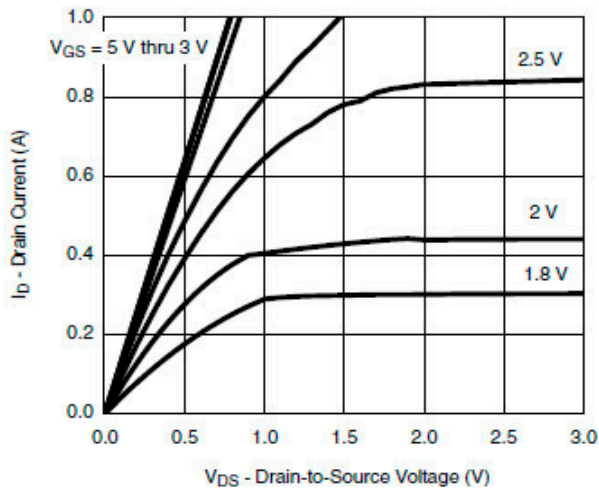
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 - 源极击穿电压	BVdss	Id=-250μA, Vgs=0V	-20			V
栅极接地时漏极电流	Idss	Vds=-20V, Vgs=0V Ta=85℃			-1	μA
					-5	
栅极漏电流	Igss	Vds=0V, Vgs=±12V			±100	nA
栅极阈值电压	Vgs(th)	Vds=Vgs, Id=-250μA	-0.4		-1.0	V
导通时漏极电流	Id(on)	Vgs=-4.5V, Vds=-5V	-0.7			A
漏极 - 源极导通电阻	Rds(on)	Vgs=-4.5V, Id=-0.45A		500	600	mΩ
		Vgs=-2.5V, Id=-0.35A		700	800	
		Vgs=-1.8V, Id=-0.25A		1000	1300	
正向跨导	Gfs	Vds=-10V, Id=-0.4A		1		S
二极管正向压降	Vsd	Is=-0.15A, Vgs=0V		-0.65	-1.20	V
寄生二极管最大连续电流	Is				-1.0	A
动态特性						
输入电容	Ciss	Vgs=0V, Vds=-10V, f=1MHz		70	100	pF
输出电容	Coss			20		pF
反馈电容	Crss			10		pF
开关特性						
总栅极电荷	Qg	Vgs=-4.5V, Vds=-10V Id=-0.25A		1.0	1.3	nC
栅极 - 源极电荷	Qgs			0.1		nC
栅极 - 漏极电荷	Qgd			0.3		nC
导通延迟时间	td(on)	Vgs=-4.5V, Vds=-10V RL=30Ω, Id=-0.2A Rgen=10Ω		10	15	ns
导通上升时间	tr			10	15	ns
关闭延迟时间	td(off)			40	60	ns
关闭下降时间	tf			30	50	ns

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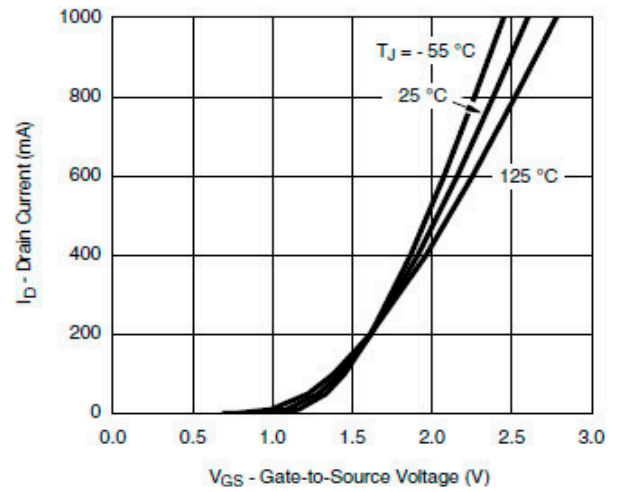
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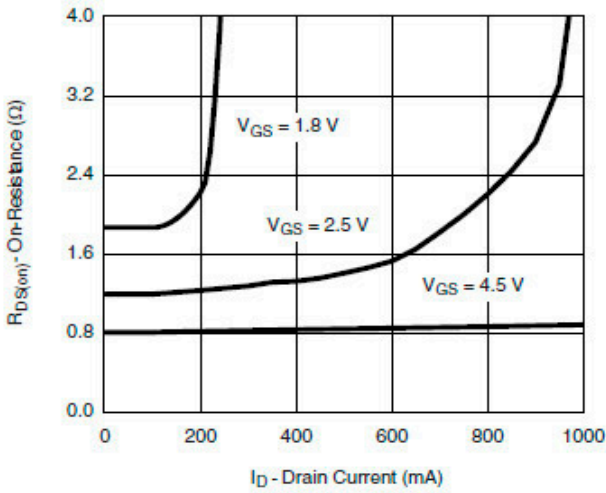
## ■ 标准特性和热特性曲线



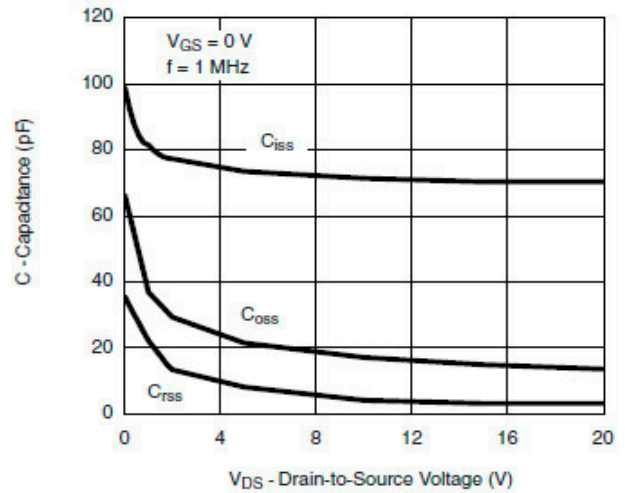
Output Characteristics



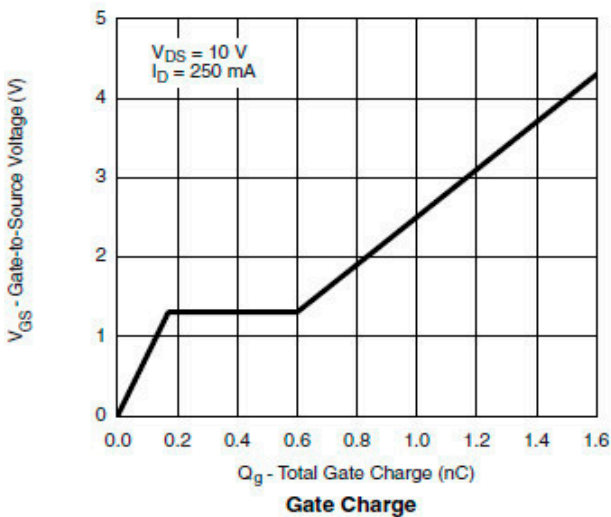
Transfer Characteristics



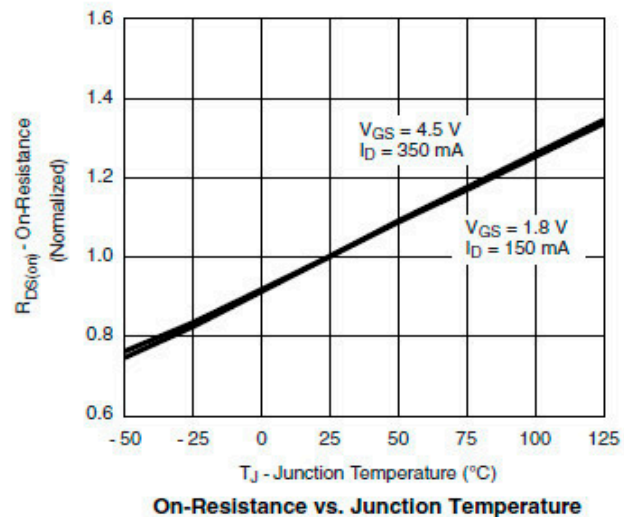
On-Resistance vs. Drain Current



Capacitance



Gate Charge

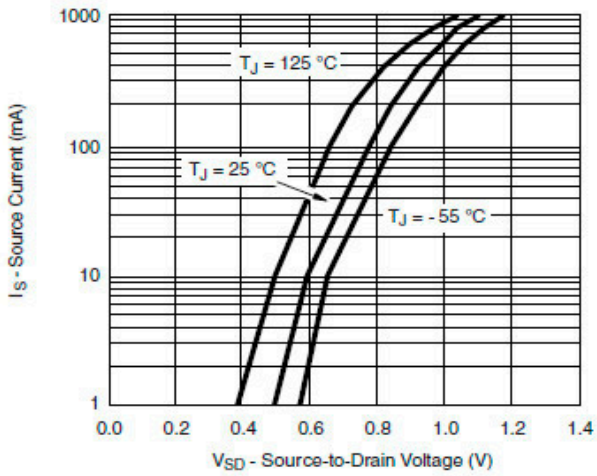


On-Resistance vs. Junction Temperature

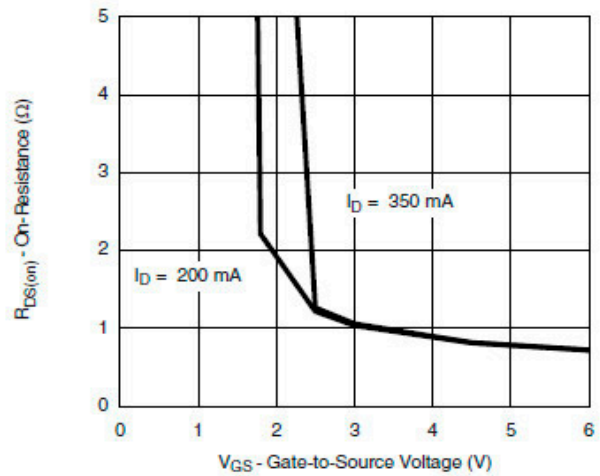
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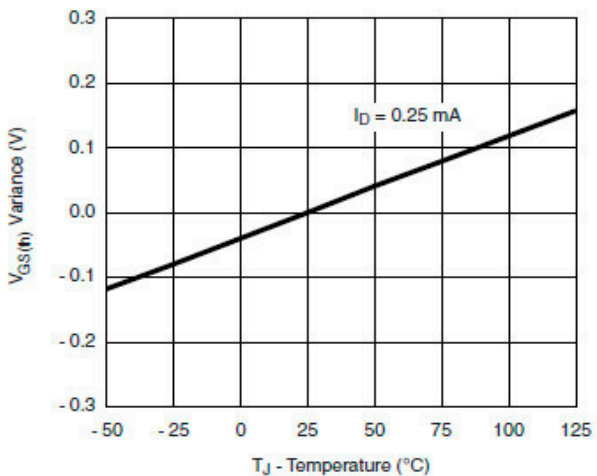
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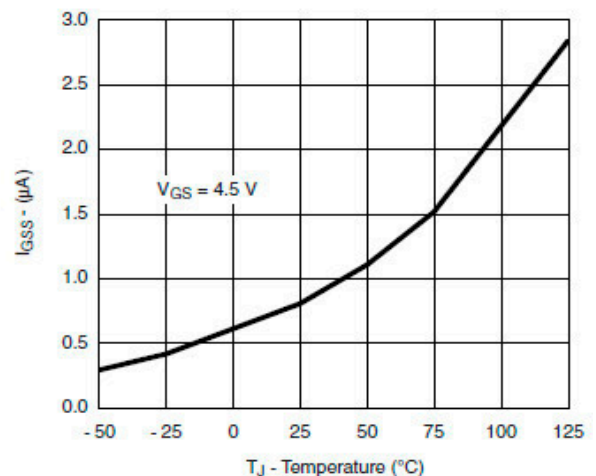
Source-Drain Diode Forward Voltage



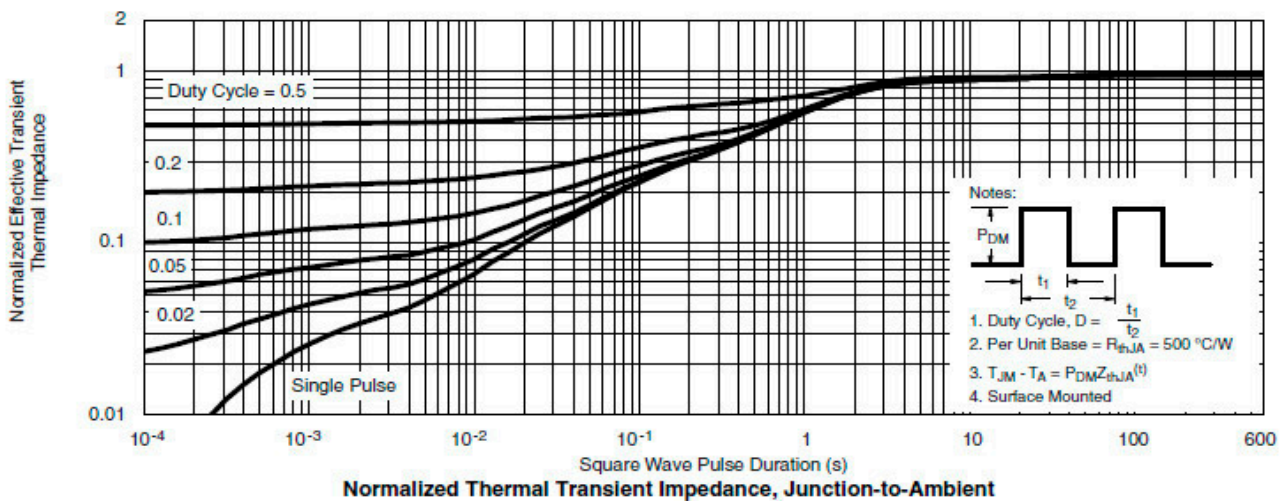
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage Variance vs. Temperature



I<sub>GSS</sub> vs. Temperature



Normalized Thermal Transient Impedance, Junction-to-Ambient

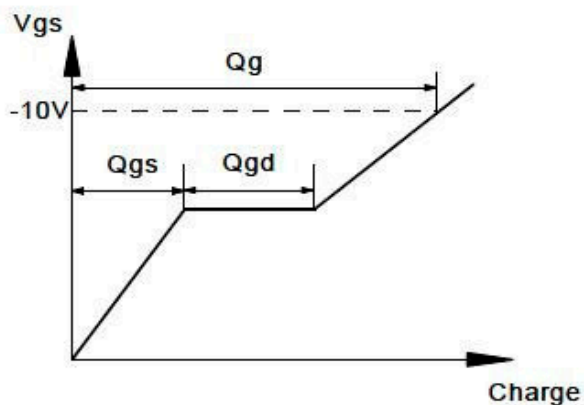
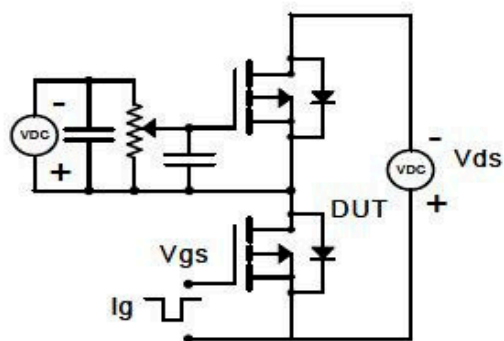
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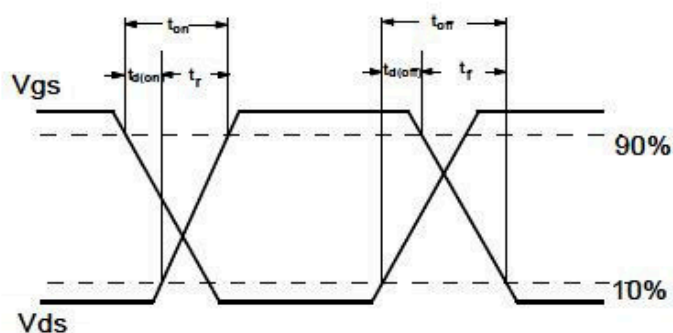
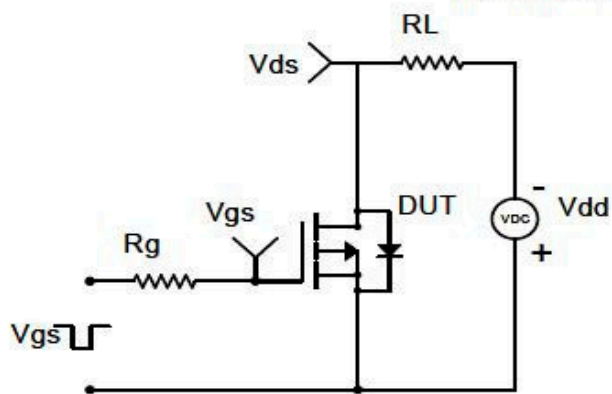
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## 测试电路和波形

### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms



### Diode Recovery Test Circuit & Waveforms

