

单 N 沟道 MOSFET

ELM51012A-S

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

■概要

ELM51012A-S 是 N 沟道低输入电容,低工作电压,低导通电阻的大电流 MOSFET。

■特点

- $V_{ds}=20V$
- $I_d=0.7A$
- $R_{ds(on)} = 360m\Omega$ ($V_{gs}=4.5V$)
- $R_{ds(on)} = 420m\Omega$ ($V_{gs}=2.5V$)
- $R_{ds(on)} = 560m\Omega$ ($V_{gs}=1.8V$)

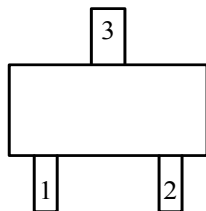
■绝对最大额定值

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}	± 12	V
漏极电流 (定常)	$T_a=25^\circ C$	I_d	0.7	A
	$T_a=70^\circ C$		0.4	
漏极电流 (脉冲)		I_{dm}	1.0	A
容许功耗	$T_c=25^\circ C$	P_d	0.27	W
	$T_c=70^\circ C$		0.16	
结合部温度及保存温度范围		T_j, T_{stg}	-55 to 150	$^\circ C$

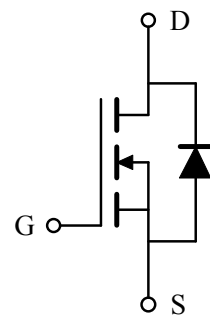
■引脚配置图

SOT-523(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℃

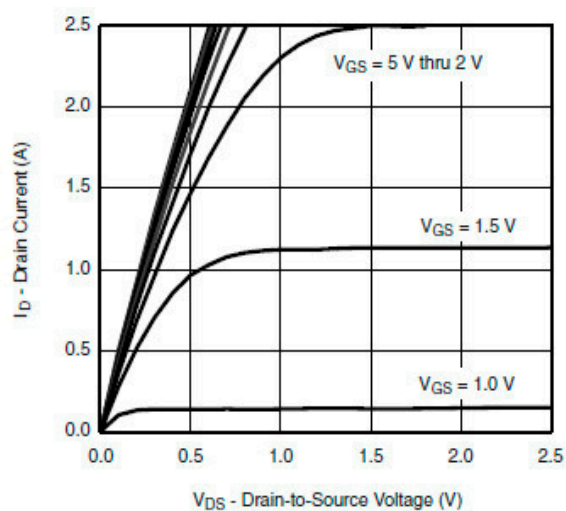
项目	记号	条件	最小值	典型值	最大值	单位	
静态特性							
漏极 – 源极击穿电压	BV _{dss}	Id=250μA, Vgs=0V		20		V	
栅极接地时漏极电流	Idss	Vds=20V Vgs=0V			1	μA	
		Ta=85℃			5		
栅极漏电流	Igss	Vds=0V, Vgs= ± 12V			± 100	nA	
栅极阈值电压	Vgs(th)	Vds=Vgs, Id=250 μA		0.4	1.0	V	
导通时漏极电流	Id(on)	Vgs=4.5V, Vds=5V		0.7		A	
漏极 – 源极导通电阻	Rds(on)	Vgs=4.5V, Id=0.6A			240	360	mΩ
		Vgs=2.5V, Id=0.5A			300	420	
		Vgs=1.8V, Id=0.4A			420	560	
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				0.3	A	
动态特性							
输入电容	Ciss	Vgs=0V, Vds=10V, f=1MHz			70		pF
输出电容	Coss				20		pF
反馈电容	Crss				8		pF
开关特性							
总栅极电荷	Qg	Vgs=4.5V, Vds=10V, Id=0.6A			1.06	1.38	nC
栅极 – 源极电荷	Qgs				0.18		nC
栅极 – 漏极电荷	Qgd				0.32		nC
导通延迟时间	td(on)	Vgs=4.5V, Vds=10V RL=20Ω, Id=0.5A, Rgen=1 Ω			18	26	ns
导通上升时间	tr				20	28	ns
关闭延迟时间	td(off)				70	110	ns
关闭下降时间	tf				25	40	ns

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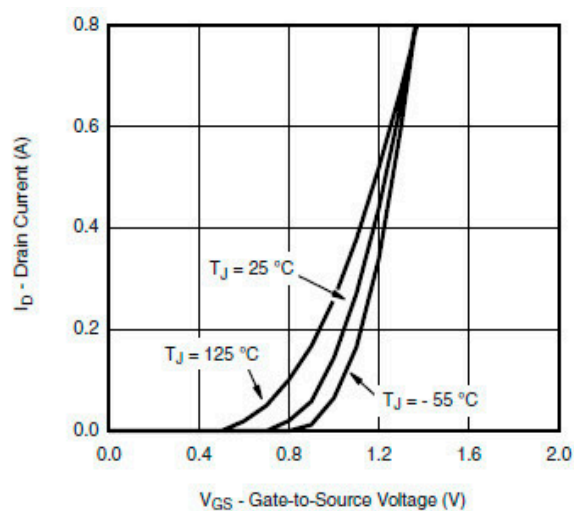
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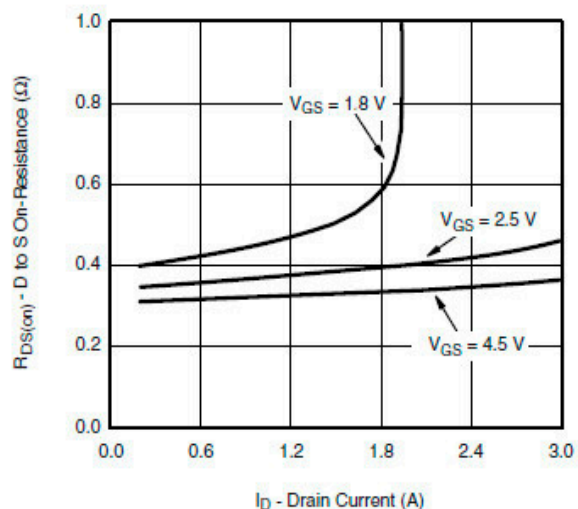
■ 标准特性和热特性曲线



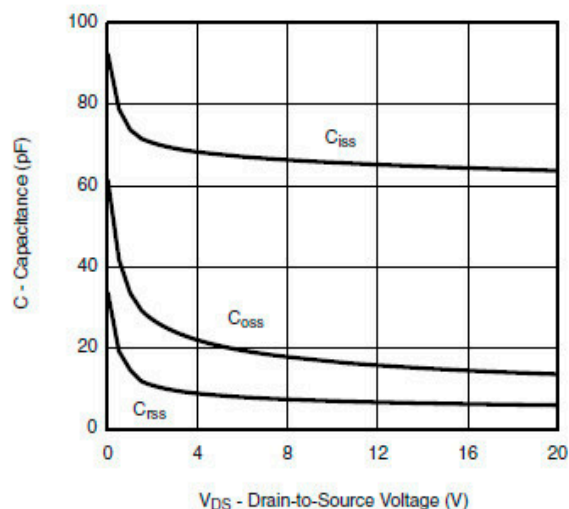
Output Characteristics



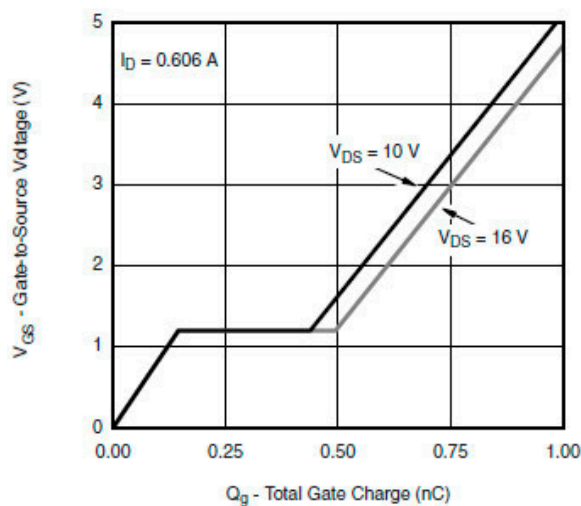
Transfer Characteristics



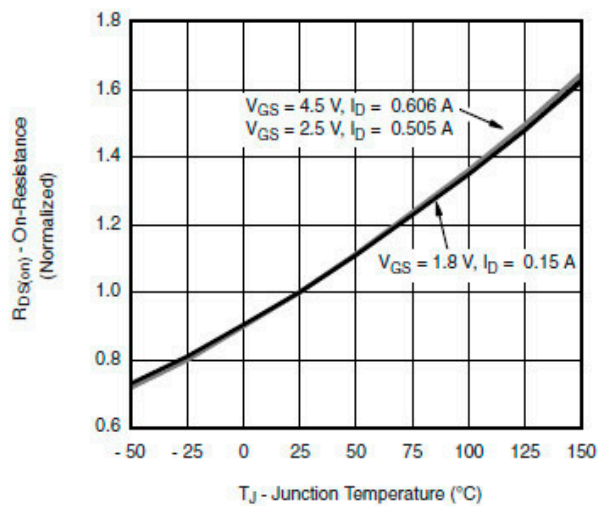
On-Resistance vs. Drain Current



Capacitance



Gate Charge

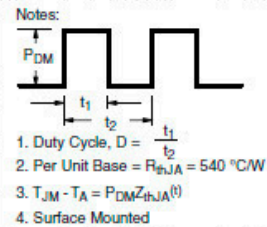
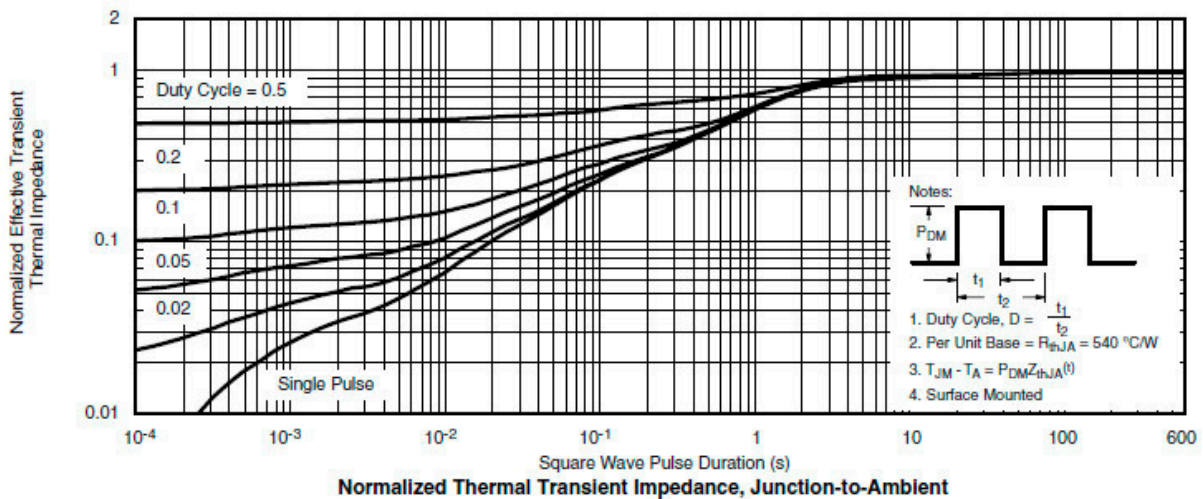
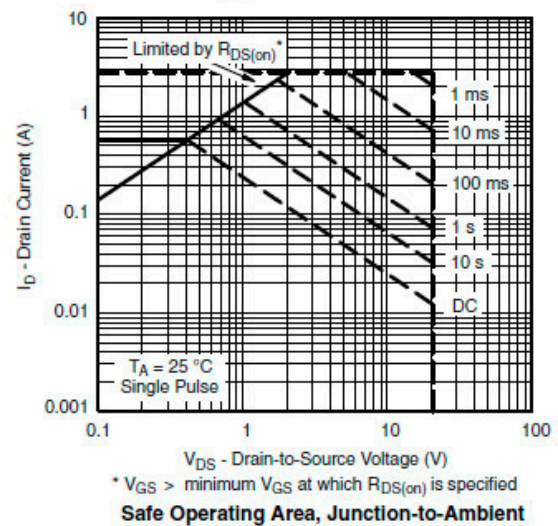
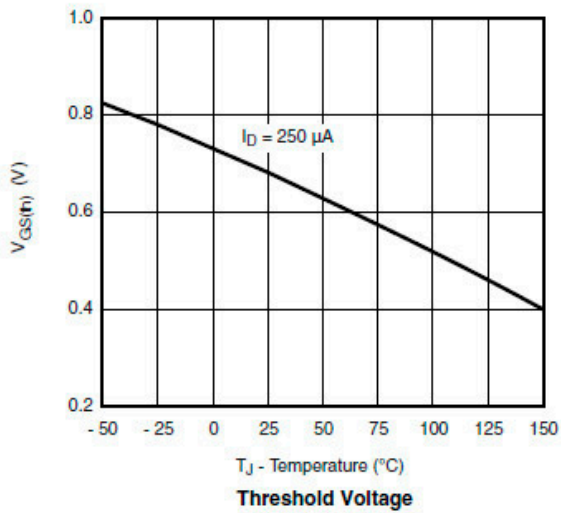
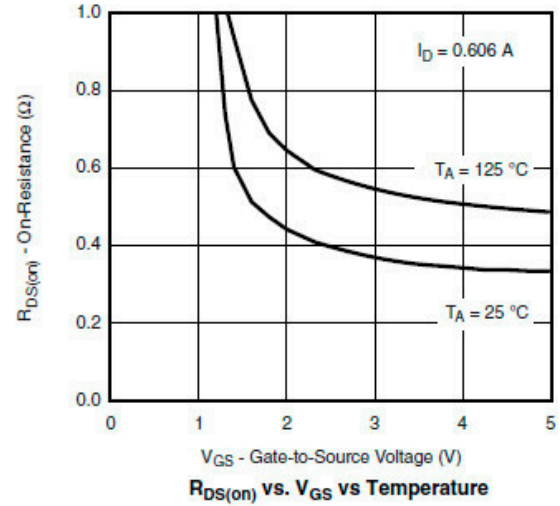
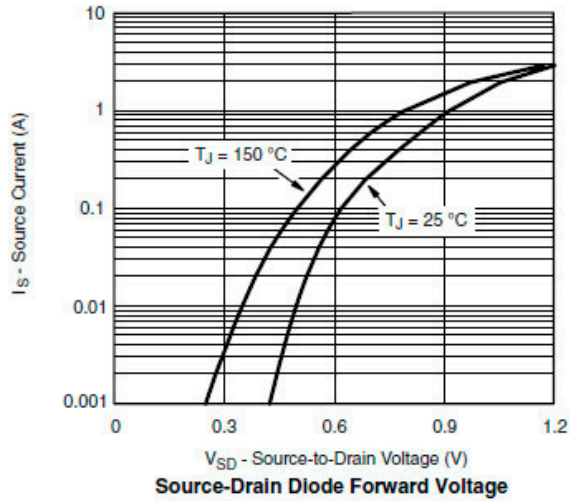


On-Resistance vs. Junction Temperature

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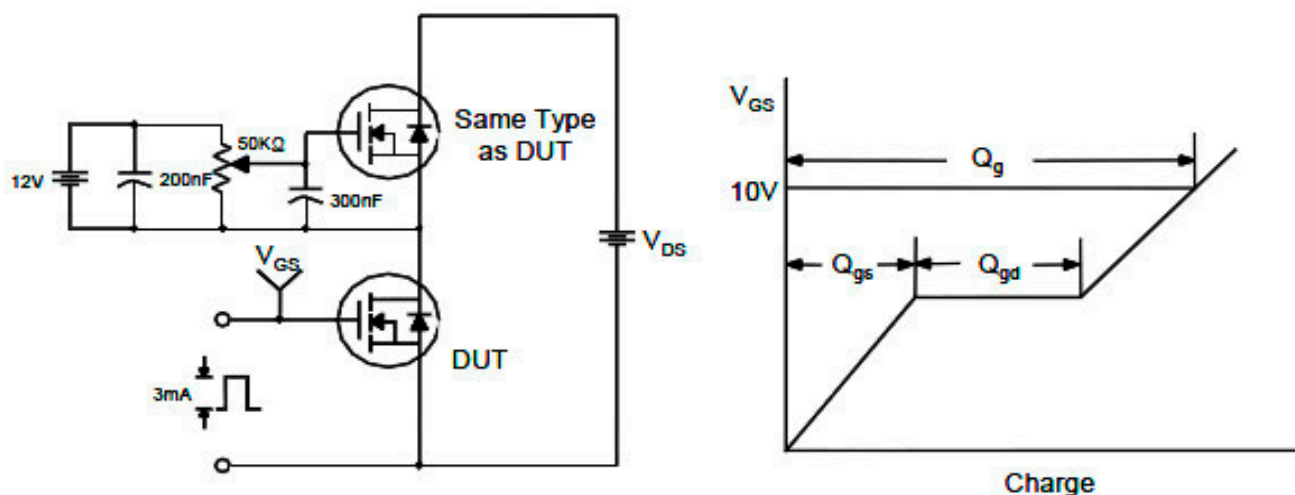
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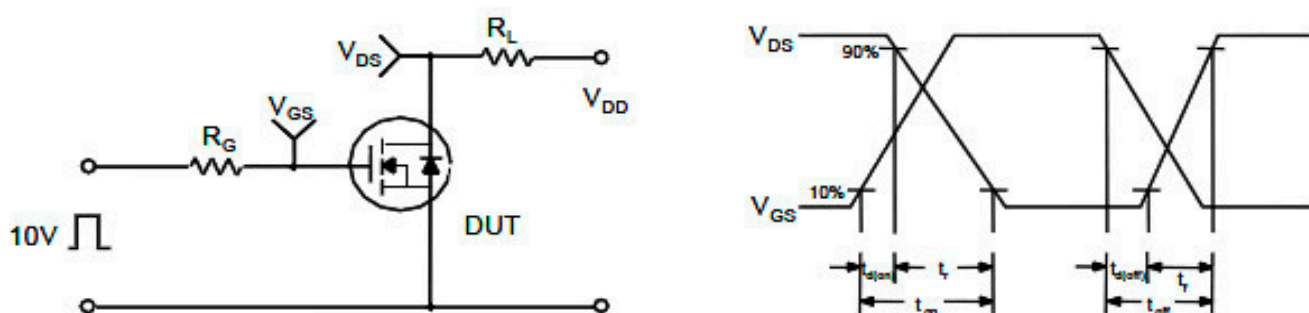
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■测试电路和波形

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

