单 N 沟道 MOSFET

ELM51012EA-S

■概要

ELM51012EA-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。另外、此芯片还内藏 ESD 保护电路。

■特点

- Vds=20V
- Id=0.7A
- Rds(on) = 360mΩ (Vgs=4.5V)
- Rds(on) = 420mΩ (Vgs=2.5V)
- Rds(on) = 560mΩ (Vgs=1.8V)

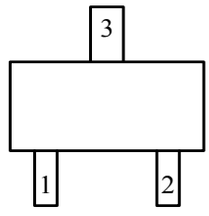
■绝对最大额定值

如没有特别注明时, Ta=25℃

项目		记号	规格范围	单位
漏极 – 源极电压		Vds	20	V
栅极 – 源极电压		Vgs	± 12	V
漏极电流（定常）	Ta=25℃	Id	0.7	A
	Ta=70℃		0.4	
漏极电流（脉冲）		Idm	1.0	A
容许功耗	Tc=25℃	Pd	0.27	W
	Tc=70℃		0.16	
结合部温度及保存温度范围		Tj, Tstg	–55 ~ 150	℃

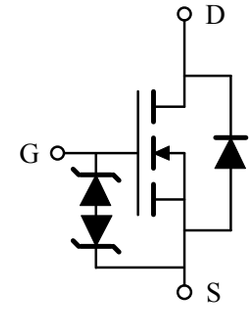
■引脚配置图

SOT–523(俯视图)



引脚编号	引脚名称
1	GATE
2	SOURCE
3	DRAIN

■电路图



如需确认语言的准确性，请参考 ELM 的英文版或日文版。

■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=16V Vgs=0V				1	μA
			Ta=85℃			5	
栅极漏电电流	Igss	Vds=0V, Vgs= ± 12V				± 1	mA
栅极阈值电压	Vgs(th)	Vds=Vgs, Id=250μA		0.3		0.8	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			300	360	mΩ
		Vgs=2.5V, Id=0.5A			240	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=1Ω			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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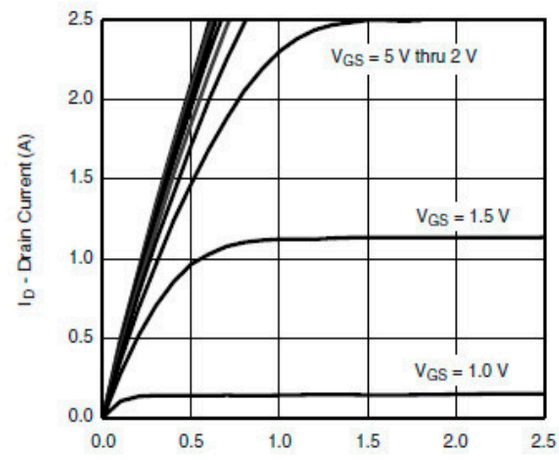
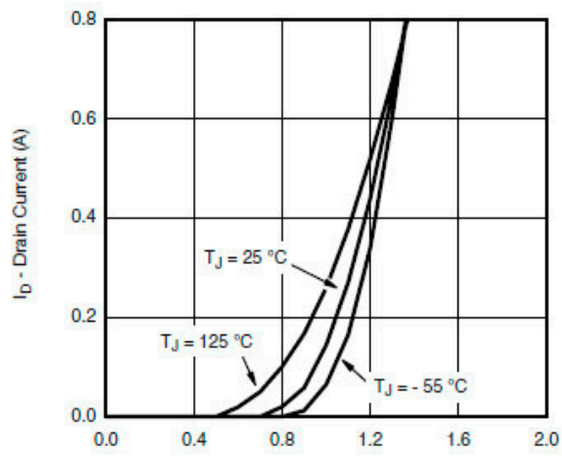
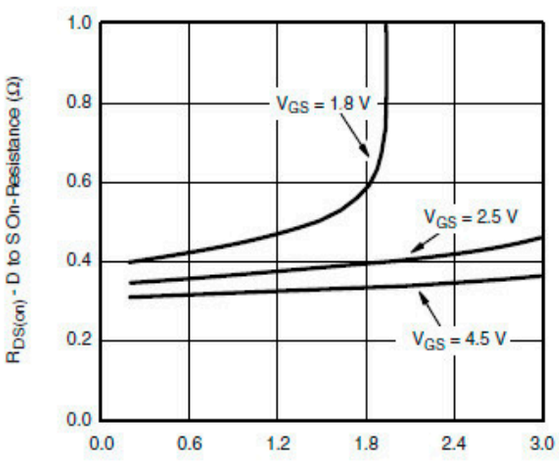
■标准特性和热特性曲线



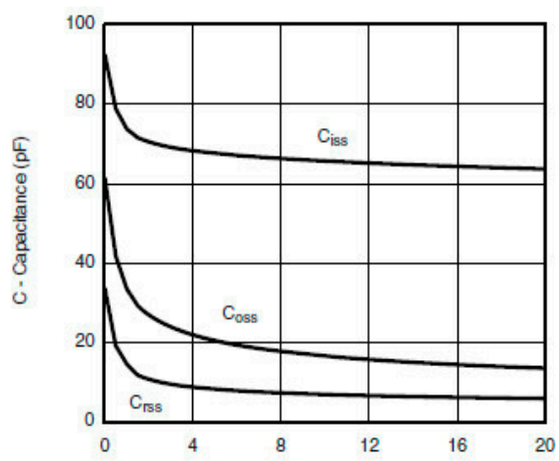
Output Characteristics



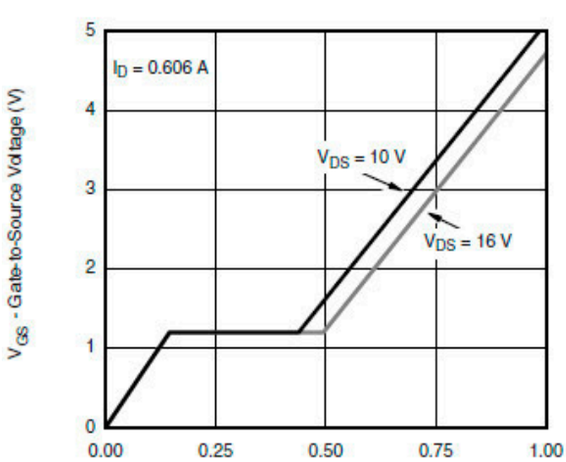
Transfer Characteristics



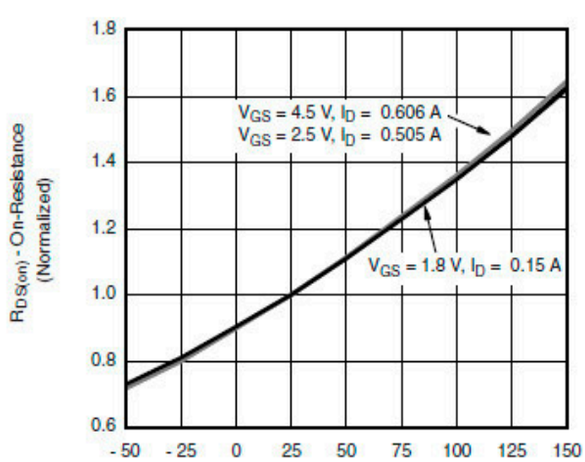
On-Resistance vs. Drain Current



Capacitance



Gate Charge



On-Resistance vs. Junction Temperature

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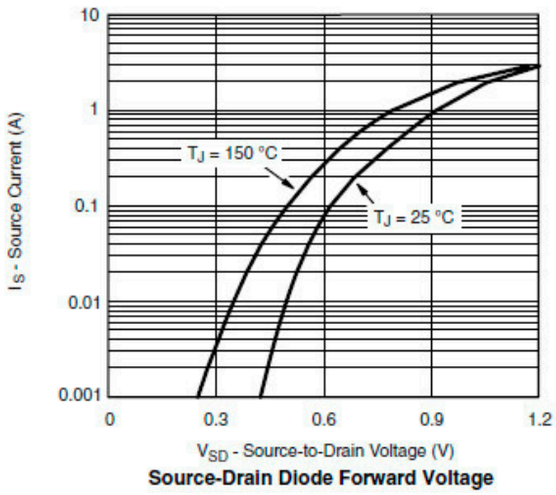
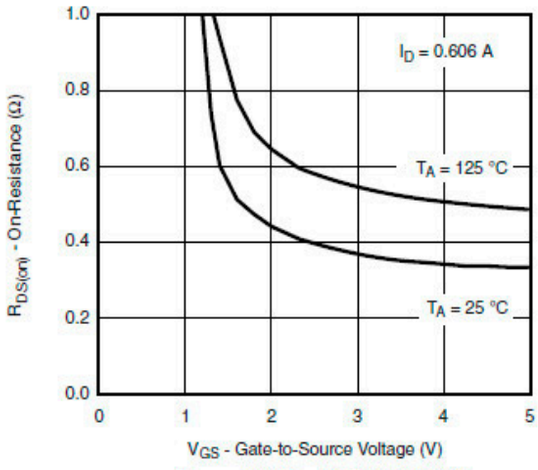
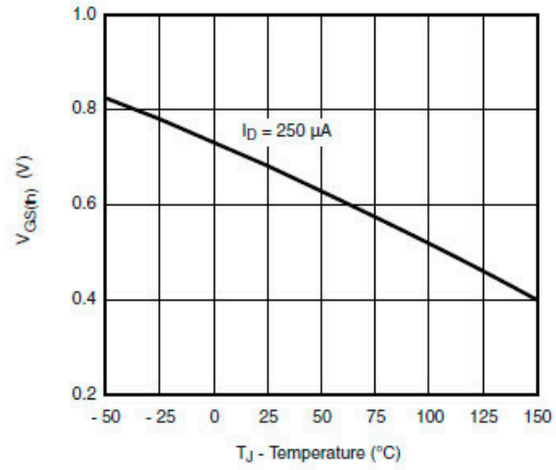


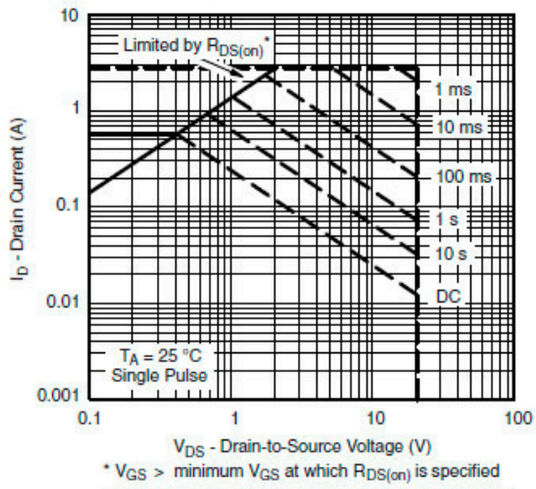
Source-Drain Diode Forward Voltage



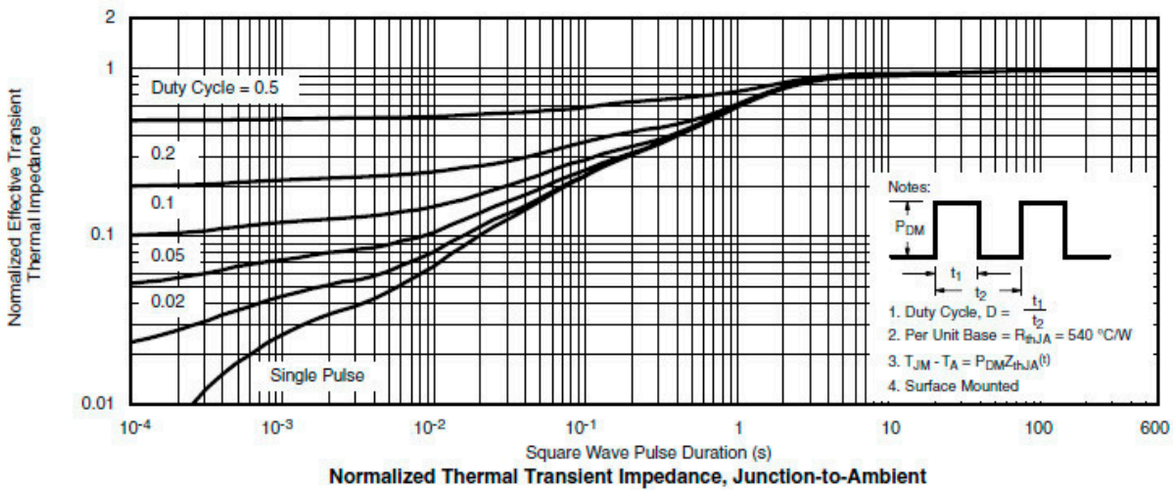
$R_{DS(on)}$ vs. V_{GS} vs Temperature



Threshold Voltage



Safe Operating Area, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

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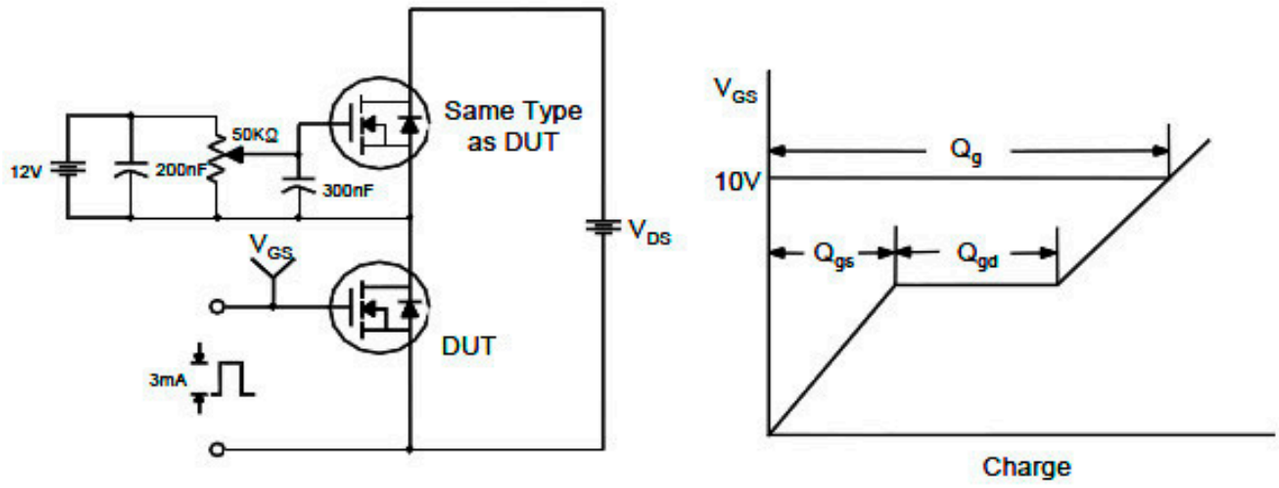
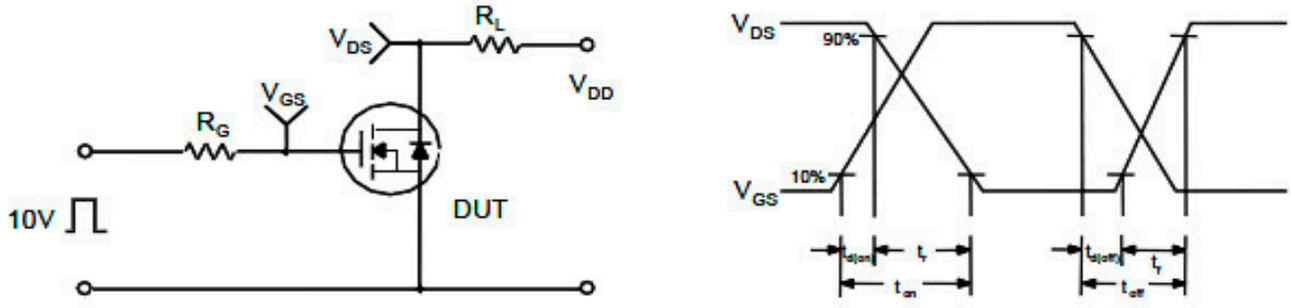
■测试电路和波形

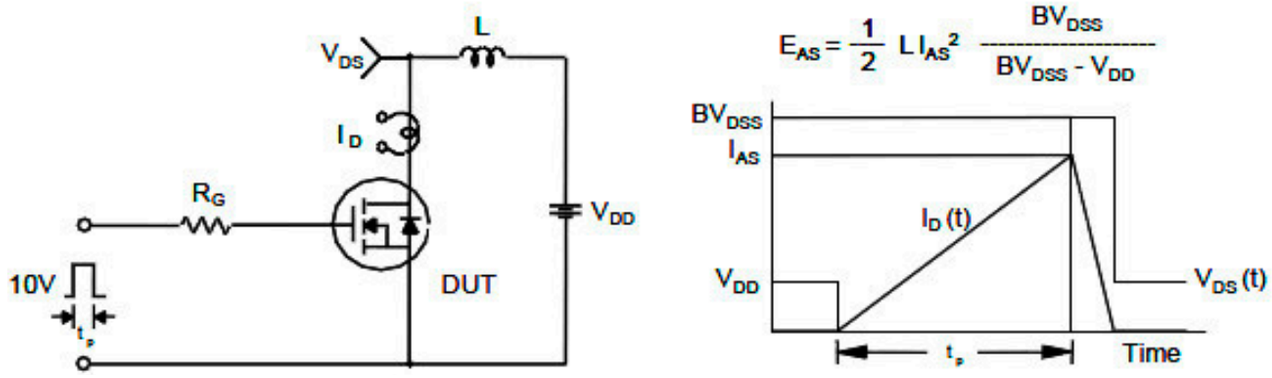
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



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