单 N 沟道 MOSFET

ELM51306A–S

■概要

ELM51306A–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

- Vds=30V
- Id=1.0A
- Rds(on) = 430mΩ (Vgs=4.5V)
- Rds(on) = 580mΩ (Vgs=2.5V)
- Rds(on) = 860mΩ (Vgs=1.8V)

■绝对最大额定值

如没有特别注明时，Ta=25℃

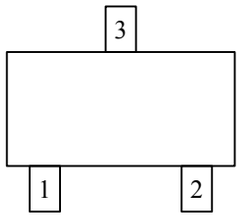
项目		记号	规格范围	单位
漏极 – 源极电压		Vds	30	V
栅极 – 源极电压		Vgs	± 12	V
漏极电流（定常）	Ta=25℃	Id	1.0	A
	Ta=70℃		0.6	
漏极电流（脉冲）		Idm	6	A
容许功耗	Tc=25℃	Pd	0.35	W
	Tc=70℃		0.22	
结合部温度及保存温度范围		Tj, Tstg	–55 ~ 150	℃

■热特性

项目	记号	典型值	最大值	单位
最大结合部 – 环境热阻	Rθja		120	℃ /W

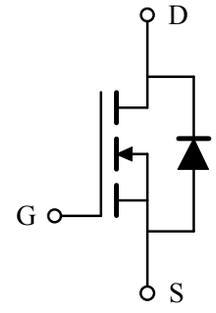
■引脚配置图

SC–70(俯视图)



引脚编号	引脚名称
1	GATE
2	SOURCE
3	DRAIN

■电路图

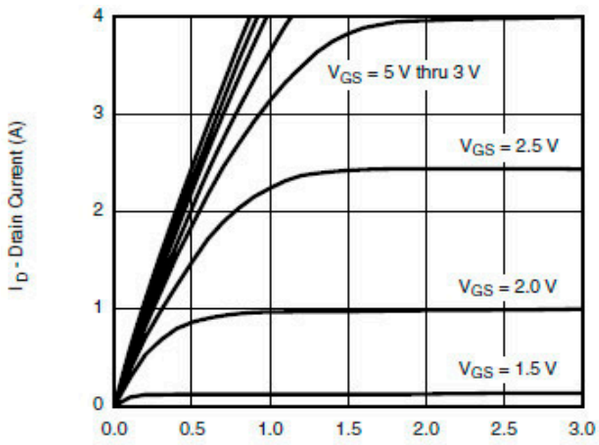


■电特性

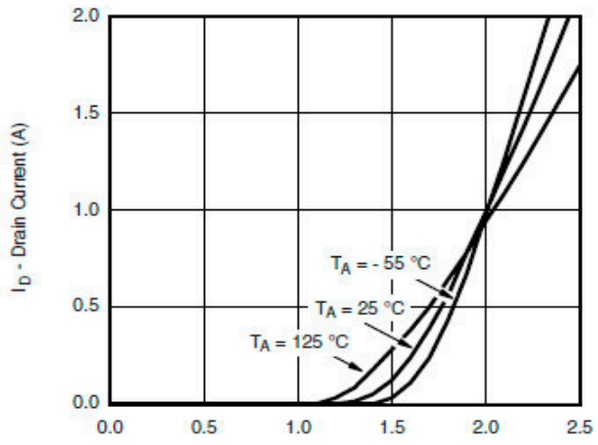
如没有特别注明时, Ta=25℃

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		30			V
栅极接地时漏极电流	Idss	Vds=24V, Vgs=0V				1	μA
			Ta=85℃			5	
栅极漏电电流	Igss	Vds=0V, Vgs= ± 12V				± 100	nA
栅极阈值电压	Vgs(th)	Vds=Vgs, Id=250μA		0.5		1.0	V
导通时漏极电流	Id(on)	Vgs=4.5V, Vds=5V		1.8			A
漏极 – 源极导通电阻	Rds(on)	Vgs=4.5V, Id=1.5A			380	430	mΩ
		Vgs=2.5V, Id=1.2A			500	580	
		Vgs=1.8V, Id=0.6A			760	860	
正向跨导	Gfs	Vds=10V, Id=1.0A			1		S
二极管正向压降	Vsd	Is=1.0A, 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=15V, f=1MHz			85		pF
输出电容	Coss				25		pF
反馈电容	Crss				15		pF
开关特性							
总栅极电荷	Qg	Vgs=4.5V, Vds=15V, Id=1.2A			1.4	1.8	nC
栅极 – 源极电荷	Qgs				0.3		nC
栅极 – 漏极电荷	Qgd				0.6		nC
导通延迟时间	td(on)	Vgs=4.5V, Vds=15V RL=20Ω, Id=1.2A, Rgen=1Ω			15	25	ns
导通上升时间	tr				25	45	ns
关闭延迟时间	td(off)				15	25	ns
关闭下降时间	tf				10	20	ns

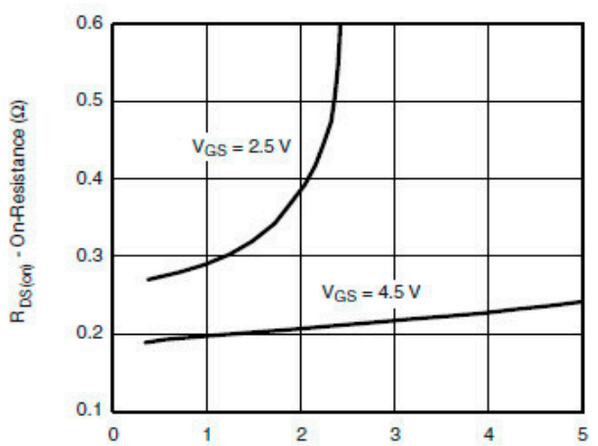
■标准特性和热特性曲线



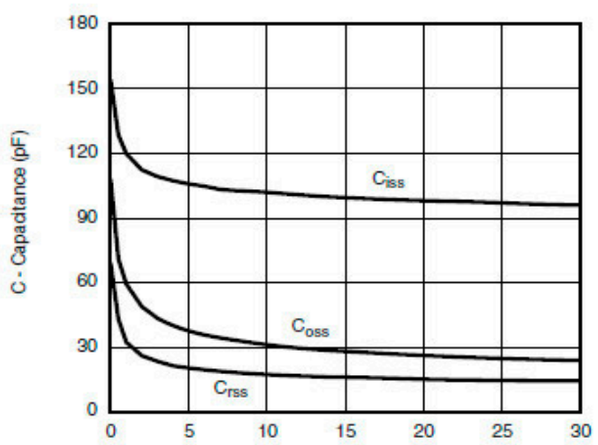
Output Characteristics



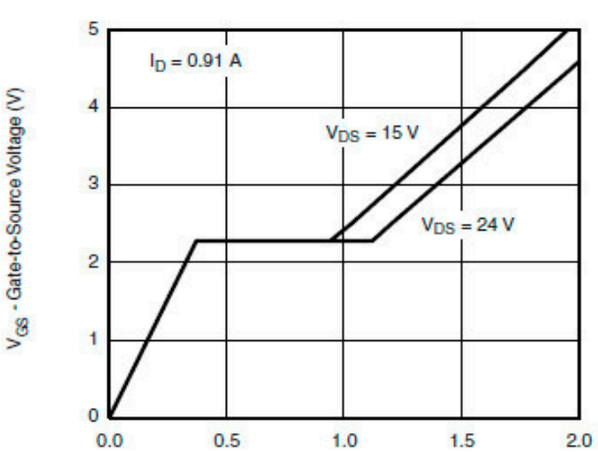
Transfer Characteristics Curves vs. Temperature



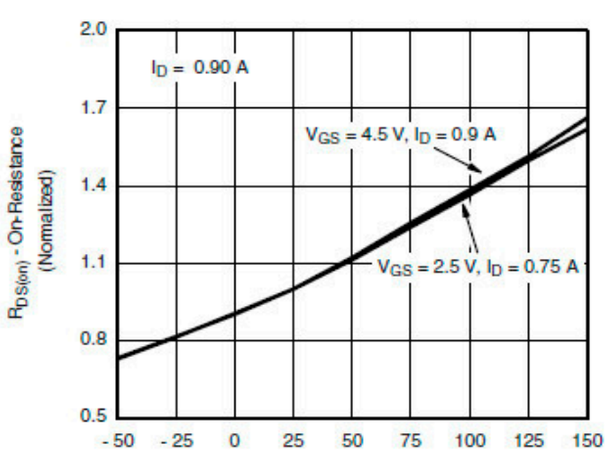
On-Resistance vs. Drain Current



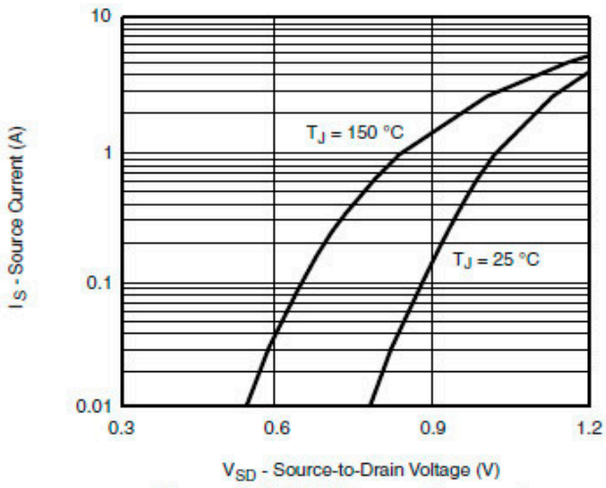
Capacitance



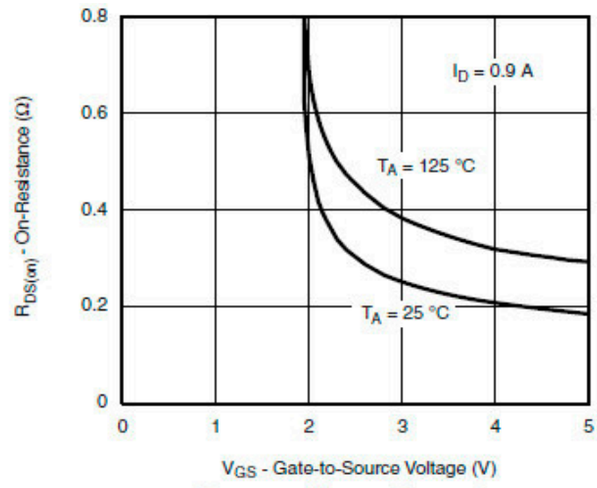
Gate Charge



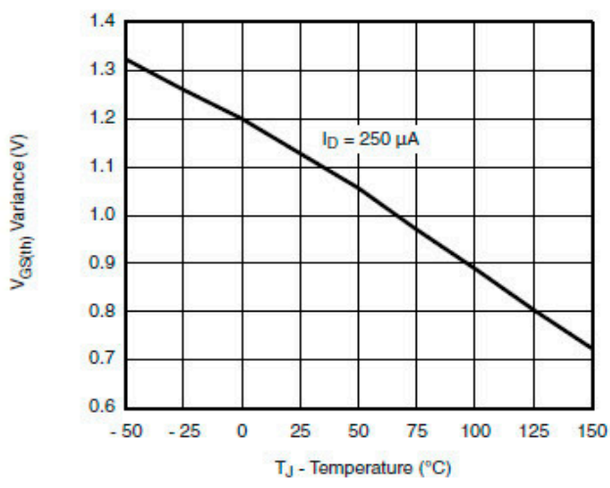
On-Resistance vs. Junction Temperature



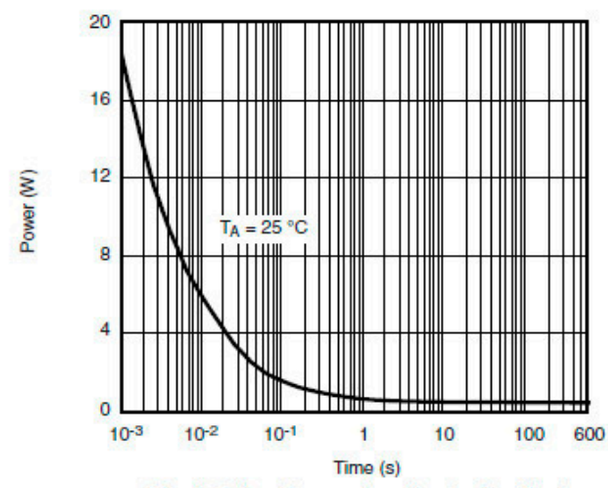
Forward Diode Voltage vs. Temperature



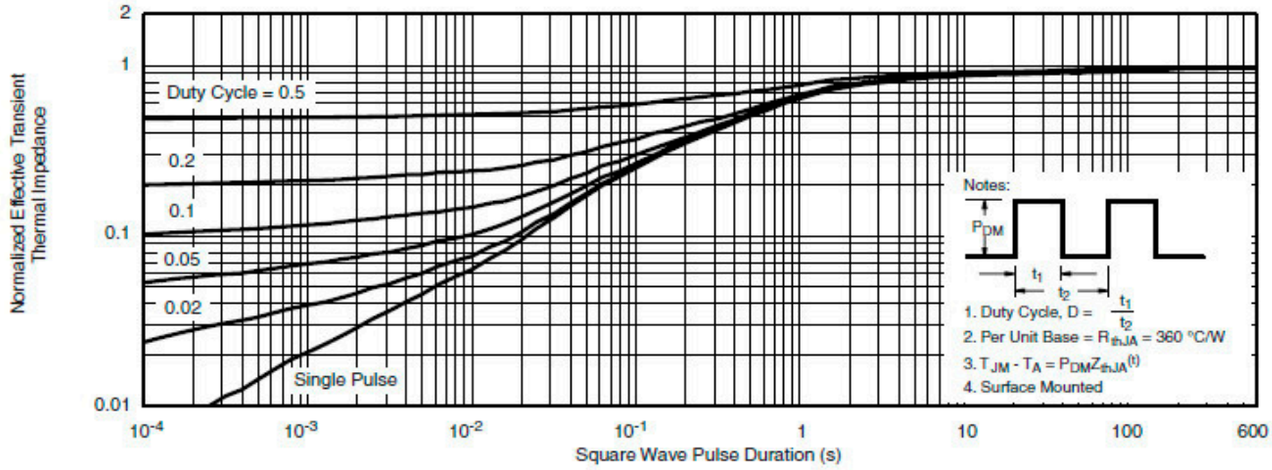
$R_{DS(on)}$ vs. V_{GS} vs. Temperature



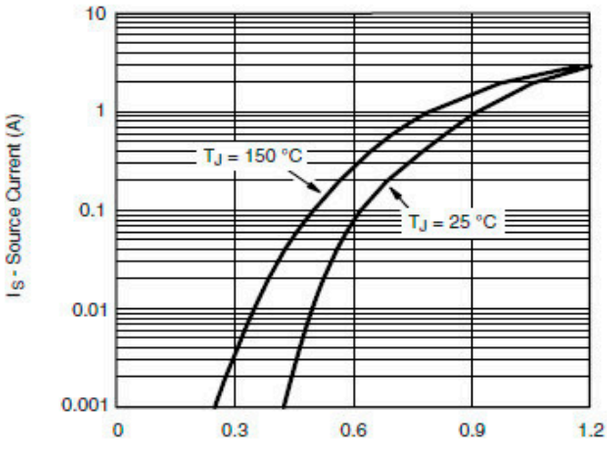
Threshold Voltage



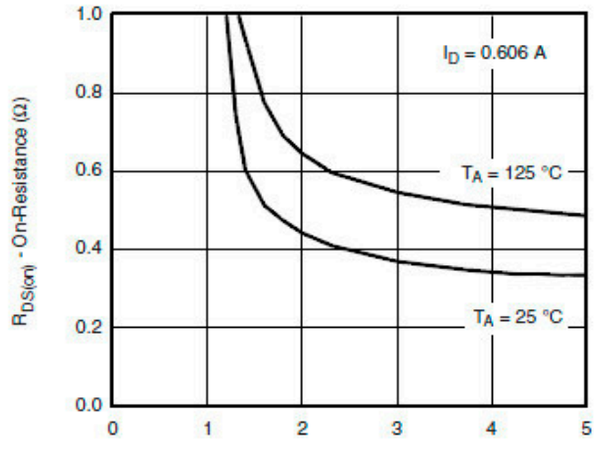
Single Pulse Power, Junction-to-Ambient



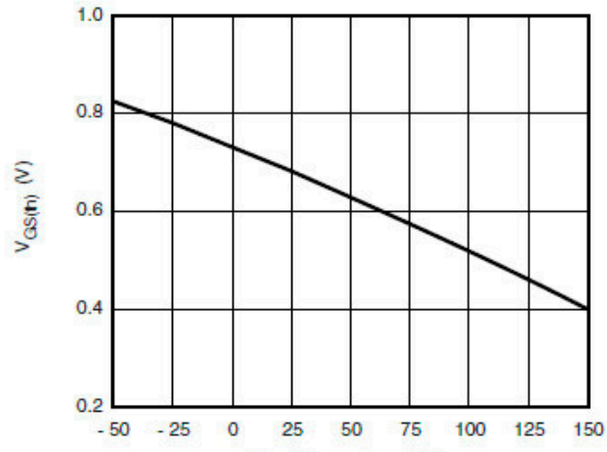
Normalized Thermal Transient Impedance, Junction-to-Ambient



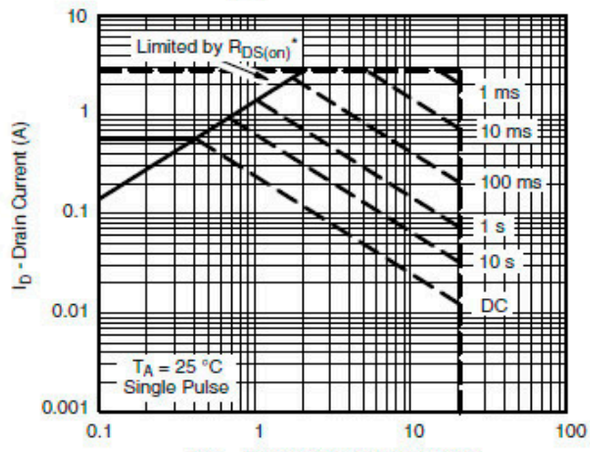
Source-Drain Diode Forward Voltage



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

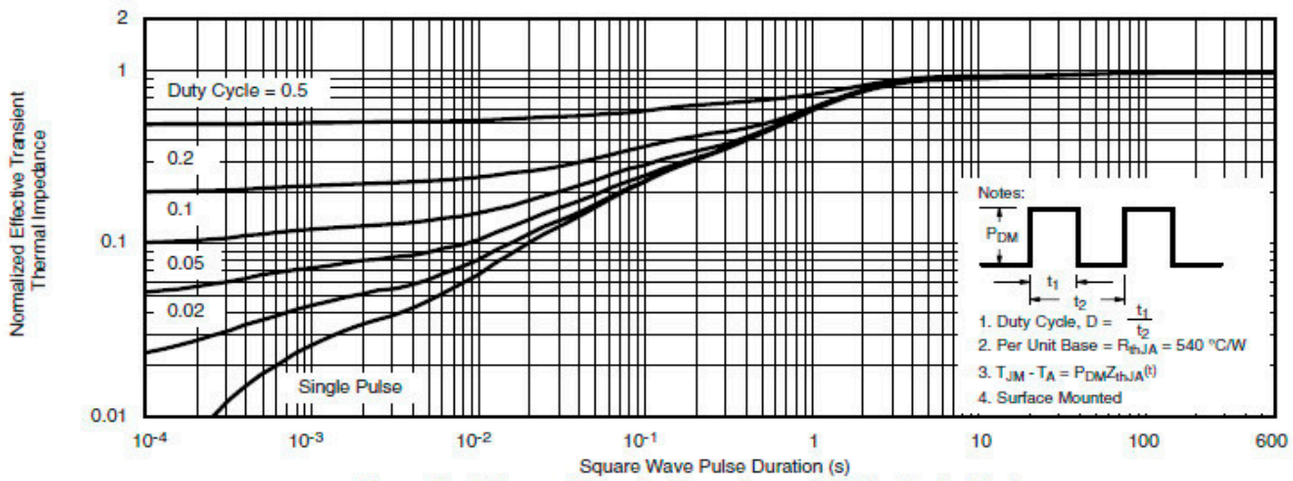


Threshold Voltage



* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

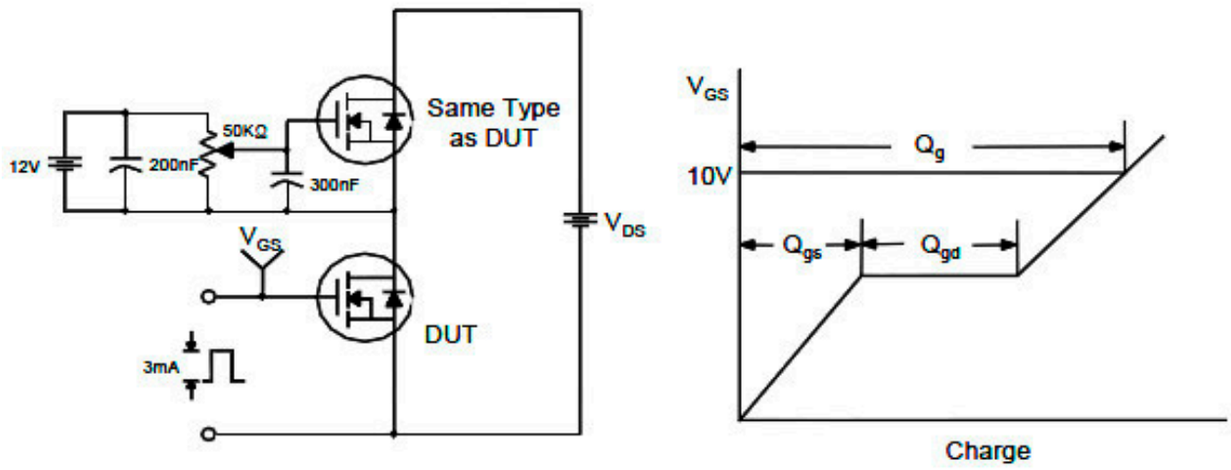
Safe Operating Area, Junction-to-Ambient



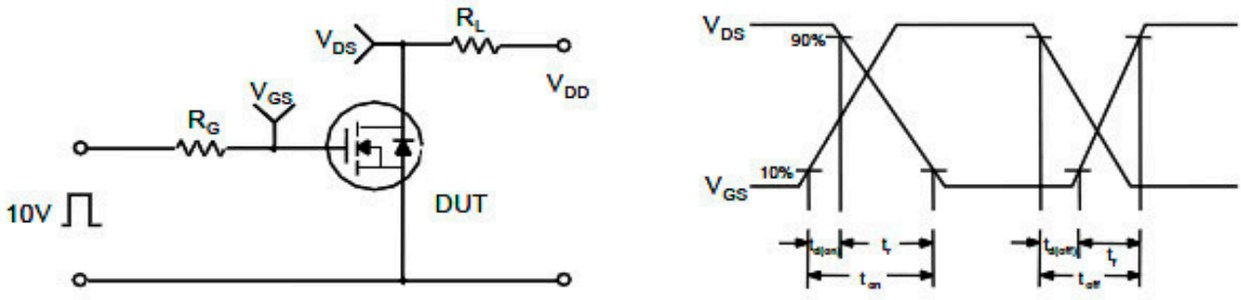
Normalized Thermal Transient Impedance, Junction-to-Ambient

■测试电路和波形

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms