

单 N 沟道 MOSFET

ELM51032EA-S

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

■概要

ELM51032EA-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

- $V_{ds}=30V$
- $I_d=0.7A$
- $R_{ds(on)} = 500m\Omega$ ($V_{gs}=4.5V$)
- $R_{ds(on)} = 600m\Omega$ ($V_{gs}=2.5V$)
- $R_{ds(on)} = 880m\Omega$ ($V_{gs}=1.8V$)
- ESD 保护

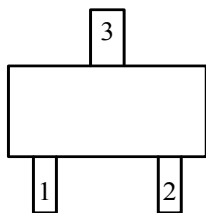
■绝对最大额定值

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}	± 12	V	
漏极电流 (定常) $T_j=150^\circ C$	Id	$T_a=25^\circ C$	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	Pd	$T_c=25^\circ C$	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	$^\circ C$	

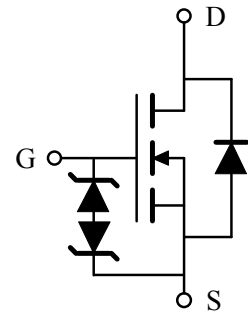
■引脚配置图

SOT-523(俯视图)



引脚编号	引脚名称
1	GATE
2	SOURCE
3	DRAIN

■电路图



单 N 沟道 MOSFET

ELM51032EA-S

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

■电特性

如没有特别注明时, Ta=25℃

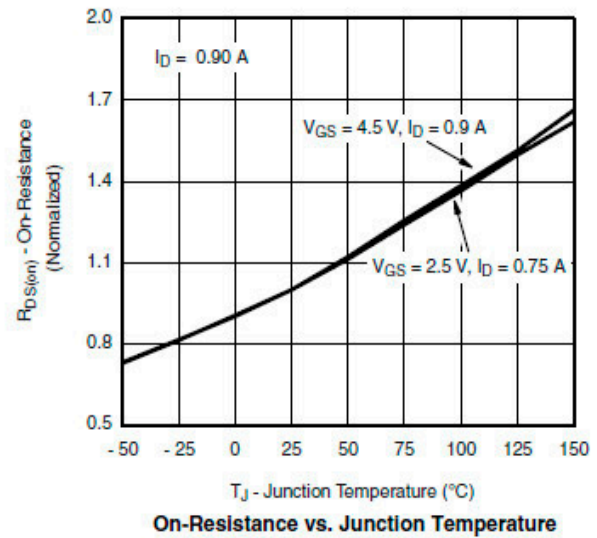
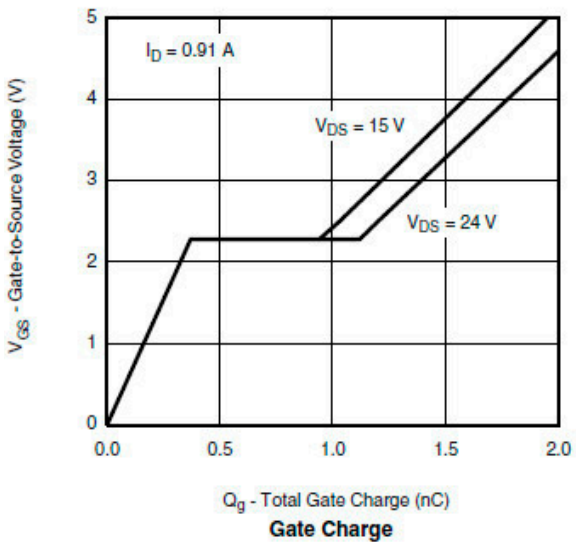
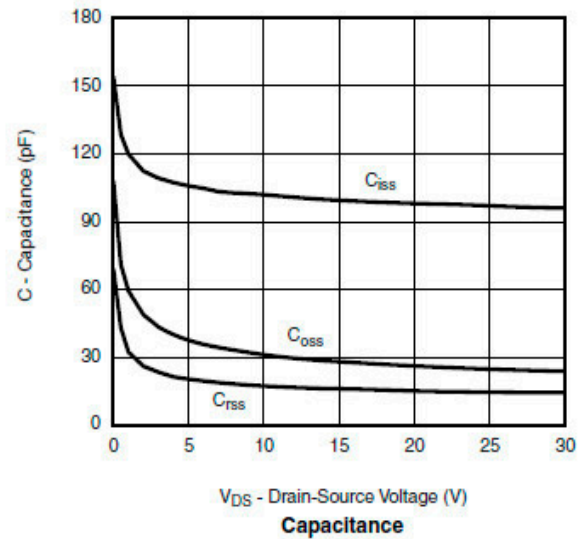
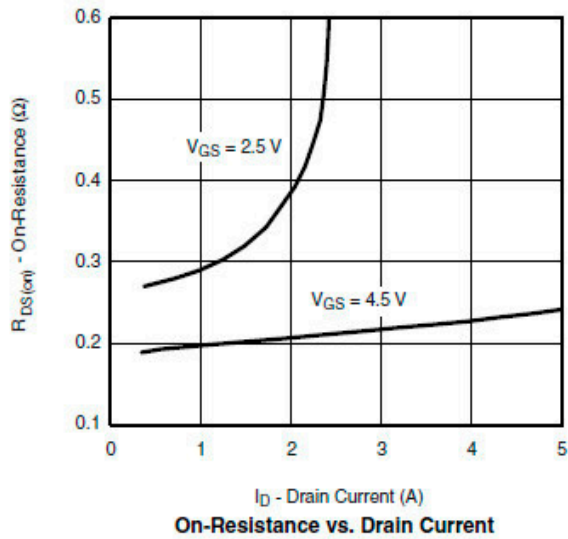
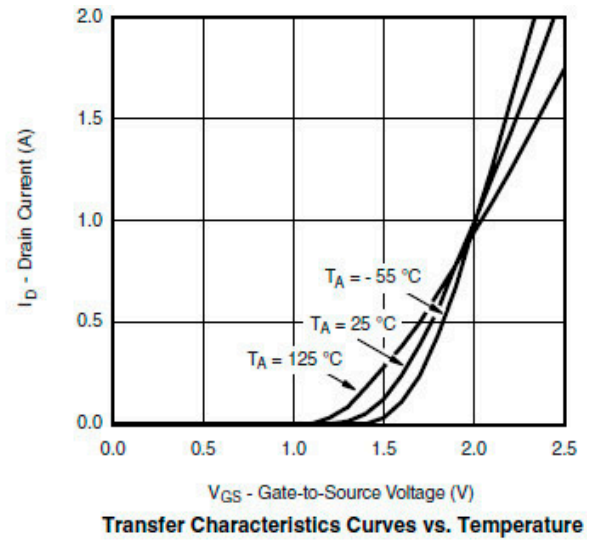
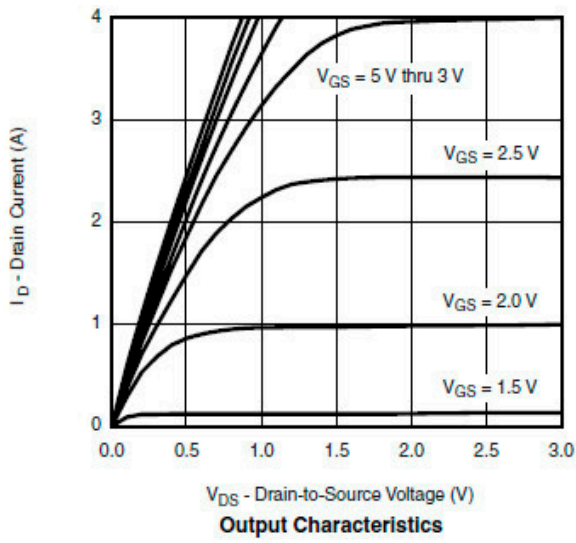
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 - 源极击穿电压	BV _{dss}	I _d =250μA, V _{gs} =0V	30			V
栅极接地时漏极电流	I _{dss}	V _{ds} =24V V _{gs} =0V			1	μA
		Ta=85℃			5	
栅极漏电流	I _{gss}	V _{ds} =0V, V _{gs} =±12V			±5	mA
栅极阈值电压	V _{gs(th)}	V _{ds} =V _{gs} , I _d =250μA	0.5		1.5	V
导通时漏极电流	I _{d(on)}	V _{gs} =4.5V, V _{ds} ≥5V	0.7			A
漏极 - 源极导通电阻	R _{ds(on)}	V _{gs} =4.5V, I _d =0.6A		400	500	mΩ
		V _{gs} =2.5V, I _d =0.5A		500	600	
		V _{gs} =1.8V, I _d =0.4A		750	880	
正向跨导	G _{fs}	V _{ds} =10V, I _d =0.4A		1		S
二极管正向压降	V _{sD}	I _s =0.15A, V _{gs} =0V		0.6	1.5	V
寄生二极管最大连续电流	I _s				0.3	A
动态特性						
输入电容	C _{iss}	V _{gs} =0V, V _{ds} =15V, f=1MHz		85		pF
输出电容	C _{oss}			25		pF
反馈电容	C _{rss}			15		pF
开关特性						
总栅极电荷	Q _g	V _{gs} =4.5V, V _{ds} =15V, I _d ≐0.6A		1.4	1.8	nC
栅极 - 源极电荷	Q _{gs}			0.3		nC
栅极 - 漏极电荷	Q _{gd}			0.6		nC
导通延迟时间	t _{d(on)}	V _{gs} =4.5V, V _{ds} =15V R _L =20Ω, I _d ≐0.5A, R _{gen} =1Ω		15	25	ns
导通上升时间	t _r			25	45	ns
关闭延迟时间	t _{d(off)}			15	25	ns
关闭下降时间	t _f			10	20	ns

单 N 沟道 MOSFET

ELM51032EA-S

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

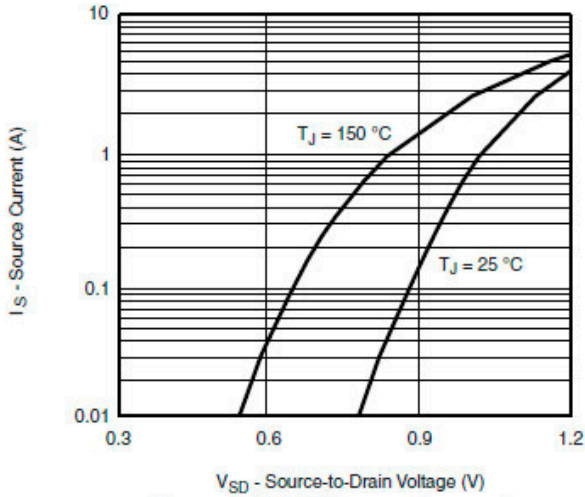
■ 标准特性和热特性曲线



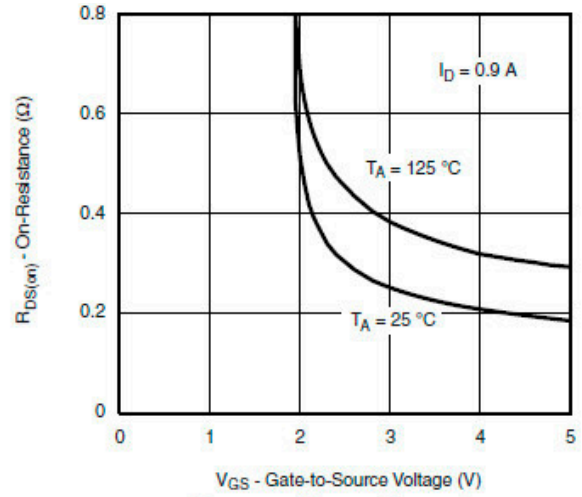
单 N 沟道 MOSFET

ELM51032EA-S

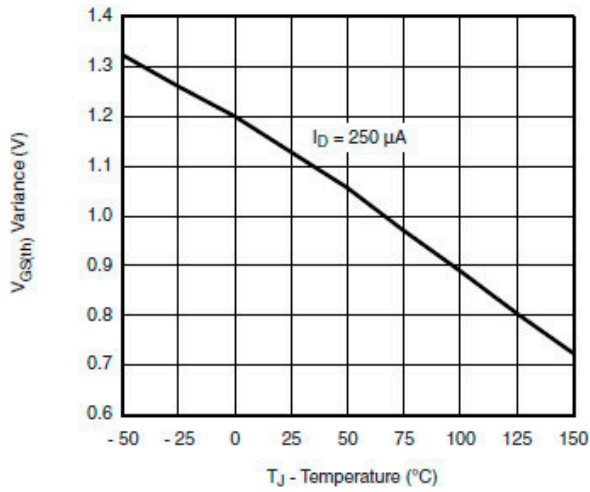
<http://www.elm-tech.com>



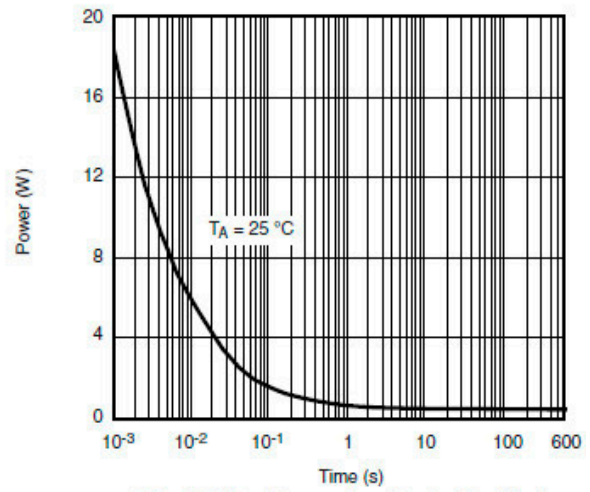
Forward Diode Voltage vs. Temperature



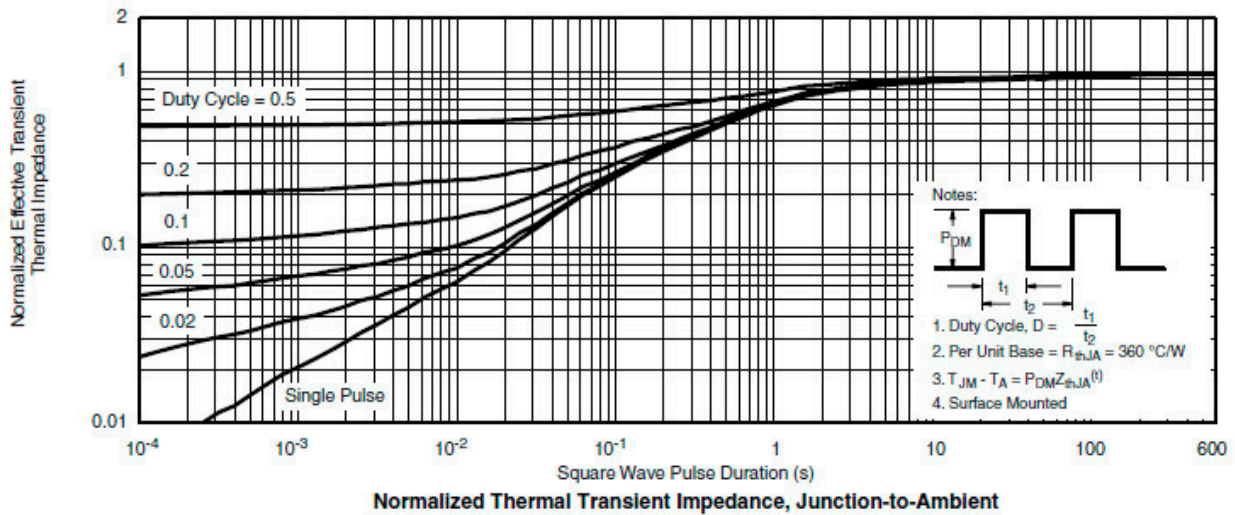
$R_{DS(on)}$ vs. V_{GS} vs. Temperature



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

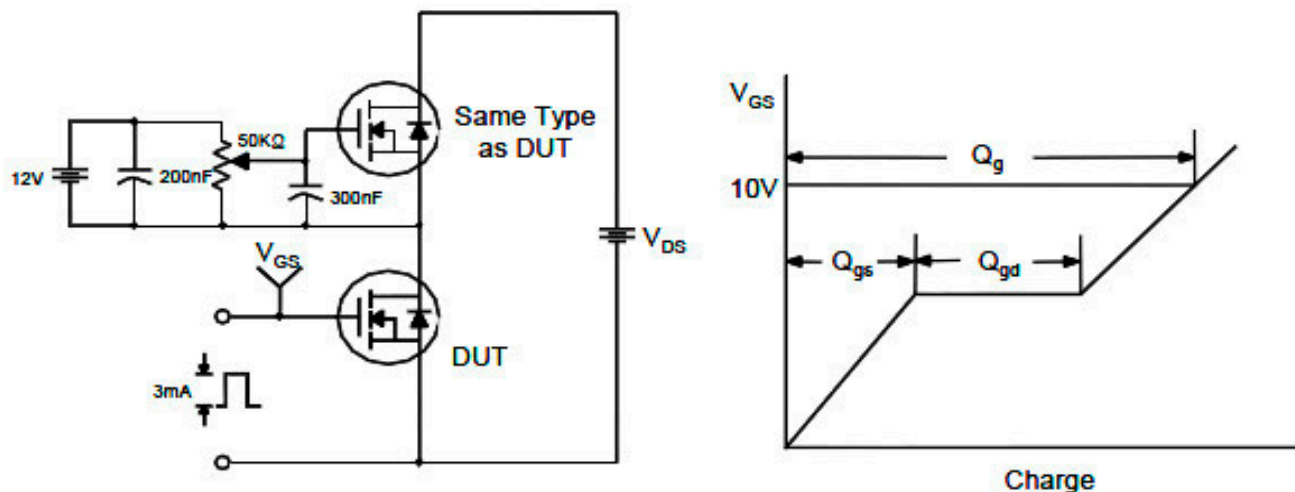
单 N 沟道 MOSFET

ELM51032EA-S

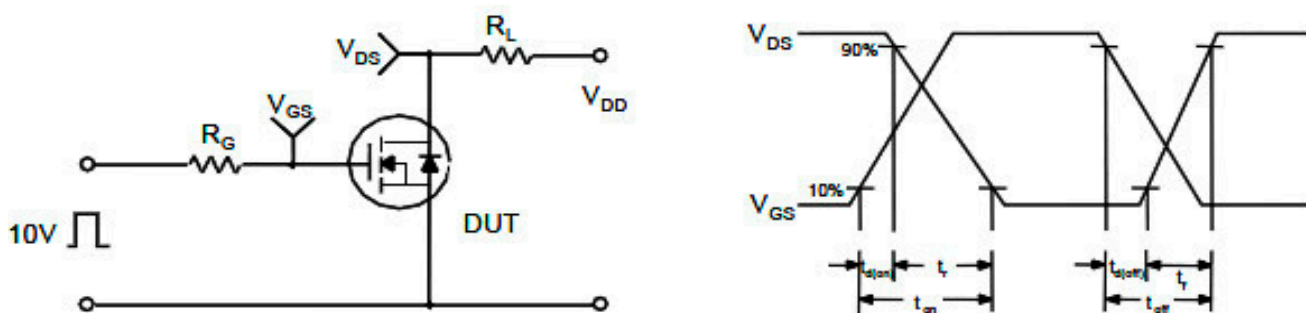
<http://www.elm-tech.com>

■测试电路和波形

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

