

单 P 沟道 MOSFET

ELM51013EA-S

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

■概要

ELM51013EA-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。另外、此芯片还内藏 ESD 保护电路。

■特点

- $V_{ds} = -20V$
- $I_d = -0.7A$
- $R_{ds(on)} = 800m\Omega$ ($V_{gs} = -4.5V$)
- $R_{ds(on)} = 950m\Omega$ ($V_{gs} = -2.5V$)
- $R_{ds(on)} = 1250m\Omega$ ($V_{gs} = -1.8V$)
- ESD 规格：2000V HBM

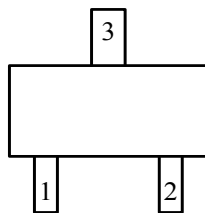
■绝对最大额定值

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	$^\circ C$

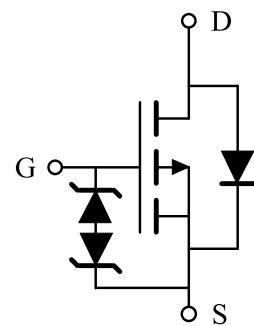
■引脚配置图

SOT-523(俯视图)



引脚编号	引脚名称
1	GATE
2	SOURCE
3	DRAIN

■电路图



单 P 沟道 MOSFET

ELM51013EA-S

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

■电特性

如没有特别注明时, Ta=25℃

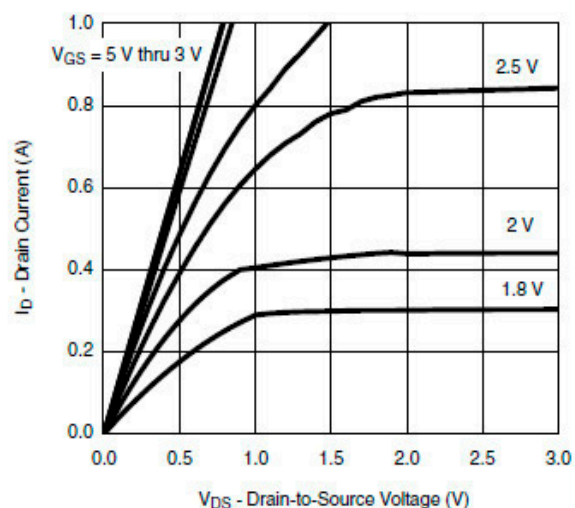
项目	记号	条件	最小值	典型值	最大值	单位	
静态特性							
漏极 – 源极击穿电压	BV _{dss}	I _d =-250μA, V _{gs} =0V		-20		V	
栅极接地时漏极电流	I _{dss}	V _{ds} =-20V V _{gs} =0V			-1	μA	
		T _a =85℃			-5		
栅极漏电电流	I _{gss}	V _{ds} =0V, V _{gs} = ± 12V			± 5	μA	
栅极阈值电压	V _{gs} (th)	V _{ds} =V _{gs} , I _d =-250 μA		-0.4	-1.0	V	
导通时漏极电流	I _d (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			600	800	mΩ
		V _{gs} =-2.5V, I _d =-0.5A			800	950	
		V _{gs} =-1.8V, I _d =-0.4A			1000	1250	
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			-0.65	-1.20	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} =-10V, f=1MHz			70	100	pF
输出电容	C _{oss}				20		pF
反馈电容	C _{rss}				10		pF
开关特性							
总栅极电荷	Q _g	V _{gs} =-4.5V, V _{ds} =-10V I _d =-0.25A			1.0	1.3	nC
栅极 – 源极电荷	Q _{gs}				0.1		nC
栅极 – 漏极电荷	Q _{gd}				0.3		nC
导通延迟时间	t _d (on)	V _{gs} =-4.5V, V _{ds} =-10V R _L =30Ω, I _d =-0.2A R _{gen} =10Ω			10	15	ns
导通上升时间	t _r				10	15	ns
关闭延迟时间	t _d (off)				40	60	ns
关闭下降时间	t _f				30	50	ns

单 P 沟道 MOSFET

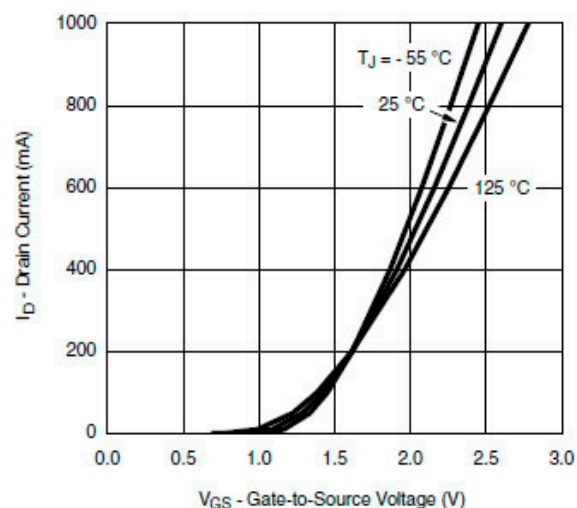
ELM51013EA-S

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

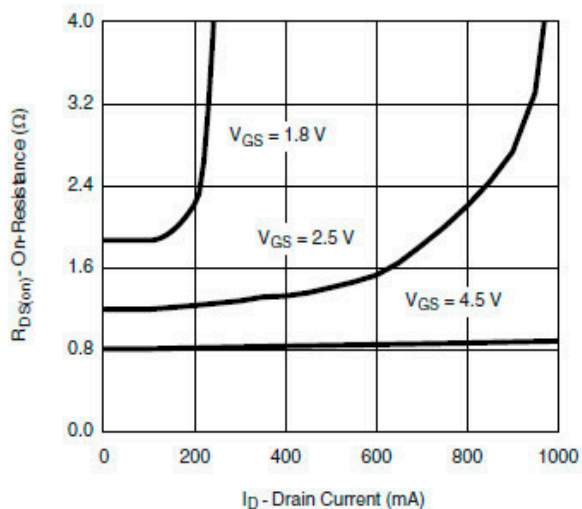
■ 标准特性和热特性曲线



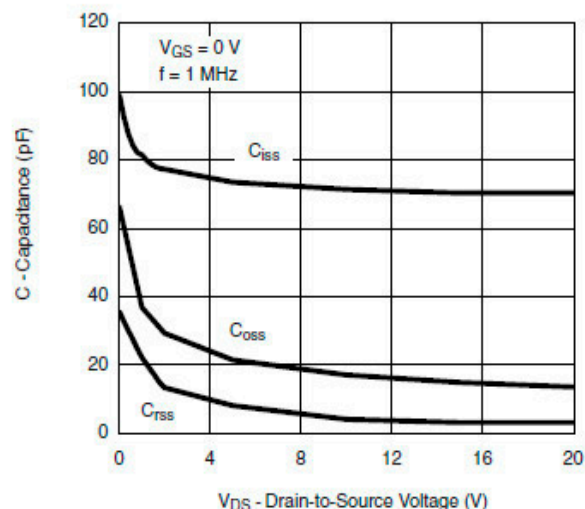
Output Characteristics



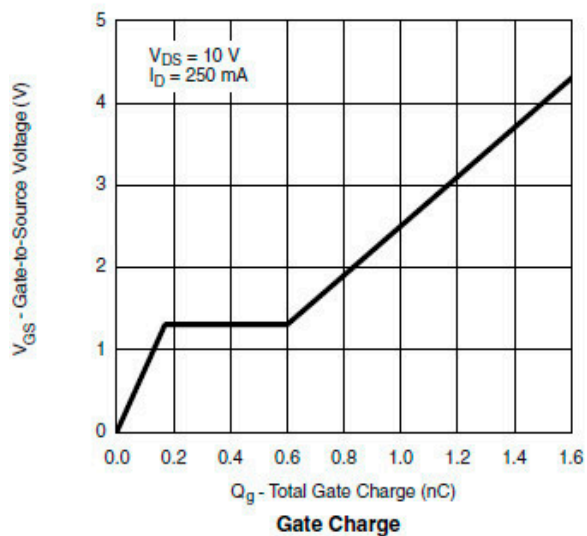
Transfer Characteristics



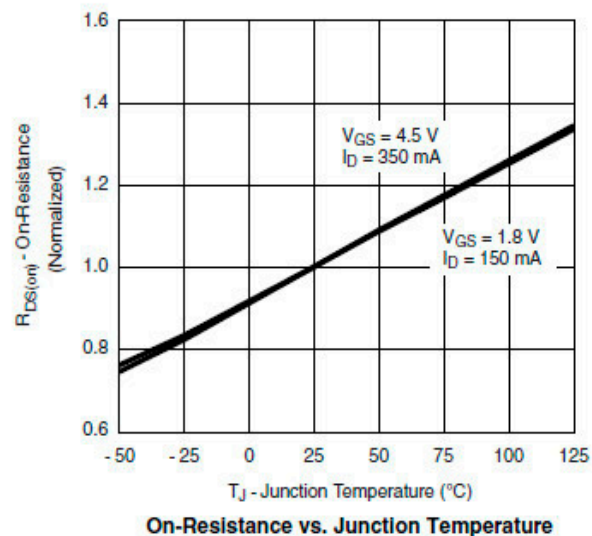
On-Resistance vs. Drain Current



Capacitance



Gate Charge

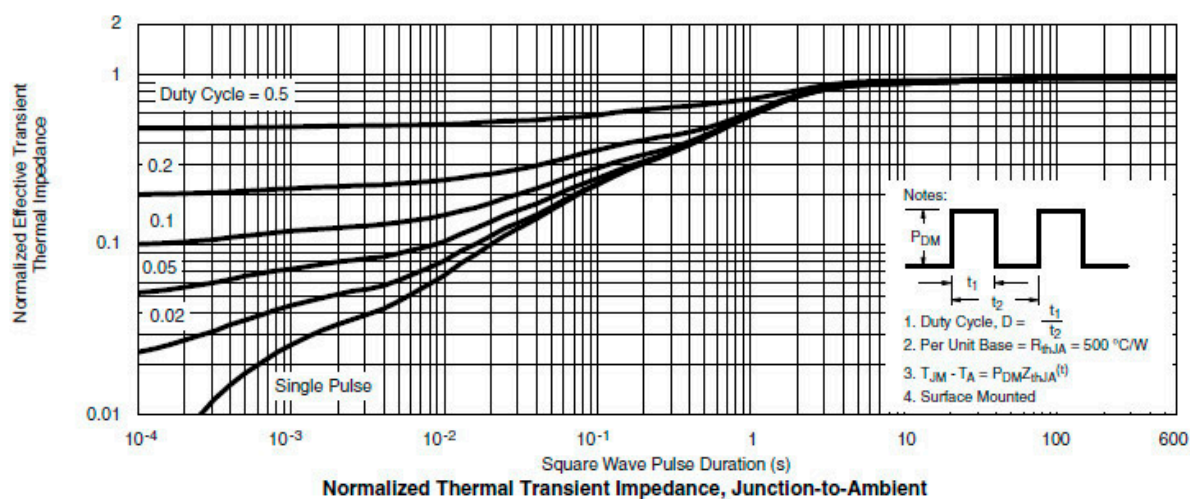
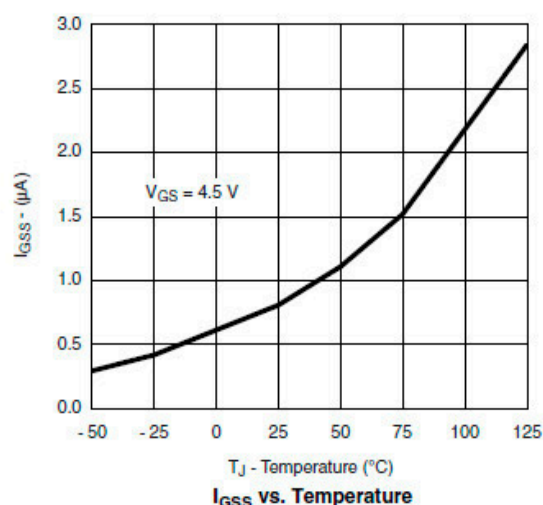
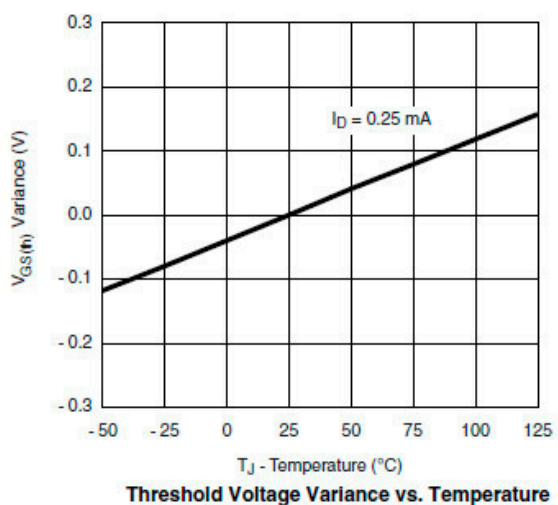
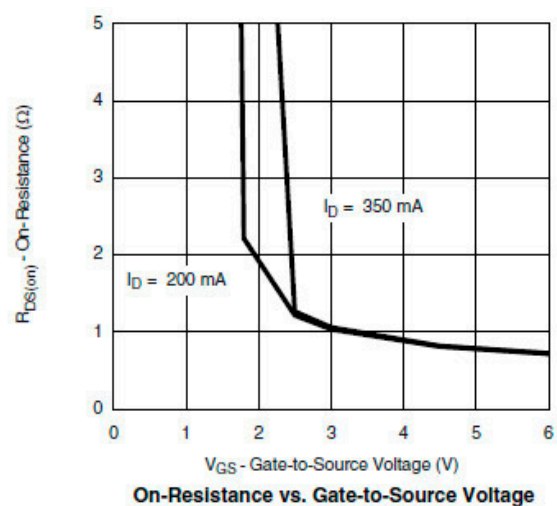
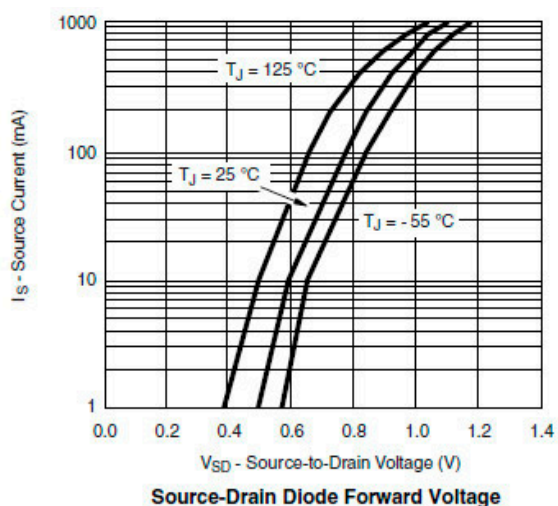


On-Resistance vs. Junction Temperature

单 P 沟道 MOSFET

ELM51013EA-S

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



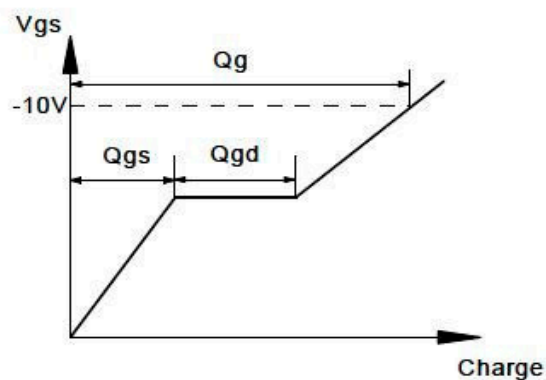
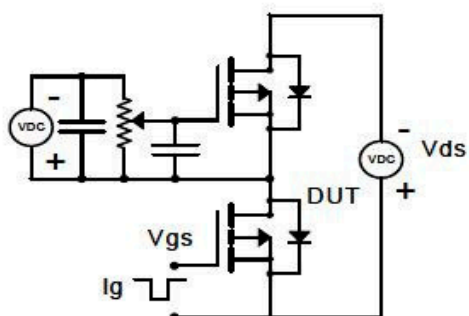
单 P 沟道 MOSFET

ELM51013EA-S

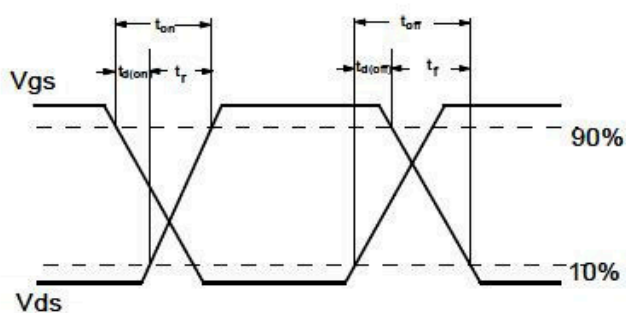
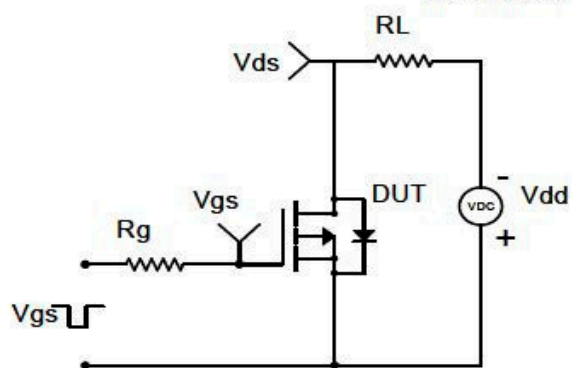
<http://www.elm-tech.com>

■测试电路和波形

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

