

单 N 沟道 MOSFET

ELM51230WSA-S

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

■概要

ELM51230WSA-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

- $V_{ds}=100V$
- $I_d=0.17A$
- $R_{ds(on)} = 5.8\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 6.8\Omega$ ($V_{gs}=4.5V$)
- ESD 保护

■绝对最大额定值

如没有特别注明时, $T_a=25^\circ C$

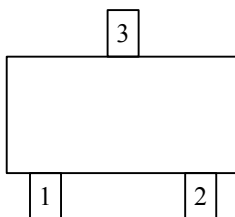
项目	记号	规格范围	单位
漏极 - 源极电压	V_{ds}	100	V
栅极 - 源极电压	V_{gs}	± 20	V
漏极电流 ($T_j=150^\circ C$)	I_d	0.17	A
		0.17	
漏极电流 (脉冲)	I_{dm}	0.68	A
容许功耗	P_d	0.35	W
		0.22	
动作结合部温度	T_j	150	$^\circ C$
保存温度范围	T_{stg}	$-55 \sim 150$	$^\circ C$

■热特性

项目	记号	典型值	最大值	单位
最大结合部 - 环境热阻	$R_{\theta ja}$		120	$^\circ C/W$

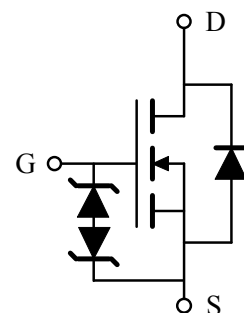
■引脚配置图

SC-70(俯视图)



引脚编号	引脚名称
1	GATE
2	SOURCE
3	DRAIN

■电路图



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■电特性

如没有特别注明时, Ta=25℃

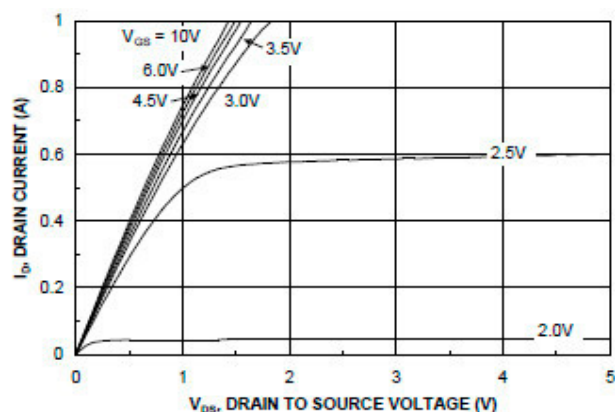
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 – 源极击穿电压	BV _{dss}	I _d =250μA, V _{gs} =0V	100			V
栅极接地时漏极电流	I _{dss}	V _{ds} =80V, V _{gs} =0V			1	μA
		V _{ds} =80V, V _{gs} =0V, T _a =85℃			10	
栅极漏电流	I _{gss}	V _{ds} =0V, V _{gs} = ± 20V			10	μA
栅极阈值电压	V _{gs} (th)	V _{ds} =V _{gs} , I _d =250μA	1.0		3.0	V
漏极 – 源极导通电阻	R _{ds} (on)	V _{gs} =10V, I _d =0.17A		4.0	5.8	Ω
		V _{gs} =4.5V, I _d =0.17A		4.6	6.8	
正向跨导	G _{fs}	V _{ds} =10V, I _d =0.17A		0.8		S
二极管正向压降	V _{sd}	I _s =0.17A, V _{gs} =0V		0.75	1.30	V
寄生二极管最大连续电流	I _s				0.4	A
动态特性						
输入电容	C _{iss}	V _{gs} =0V, V _{ds} =25V, f=1MHz		70		pF
输出电容	C _{oss}			8		pF
反馈电容	C _{rss}			5		pF
开关特性						
总栅极电荷	Q _g	V _{gs} =10V, V _{ds} =30V I _d ≡0.22A		1.8	3.5	nC
栅极 – 源极电荷	Q _{gs}			0.2		nC
栅极 – 漏极电荷	Q _{gd}			0.3		nC
导通延迟时间	t _d (on)	V _{gs} =10V, V _{ds} =30V I _d ≡0.28A, R _{gen} =50Ω		5	10	ns
导通上升时间	t _r			5	10	ns
关闭延迟时间	t _d (off)			7	15	ns
关闭下降时间	t _f			10	20	ns

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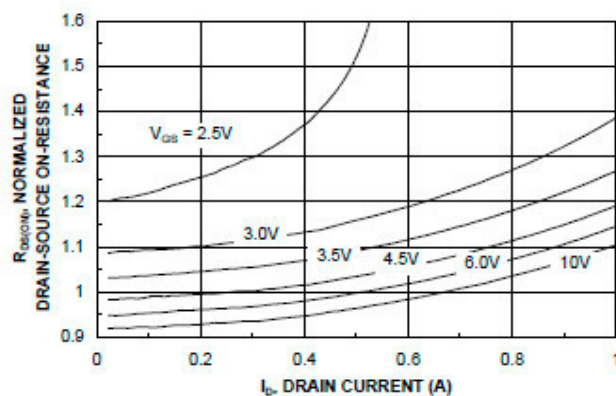
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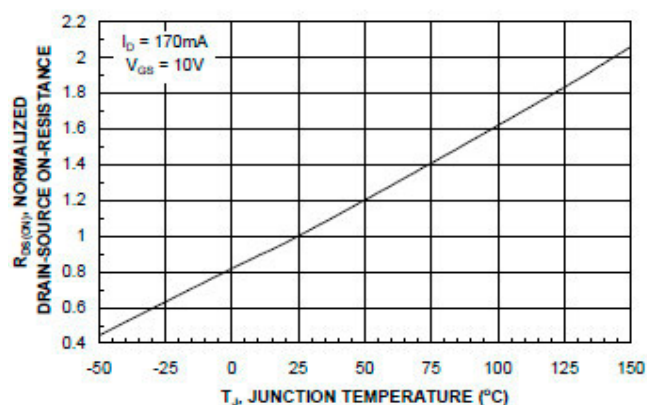
■ 标准特性和热特性曲线



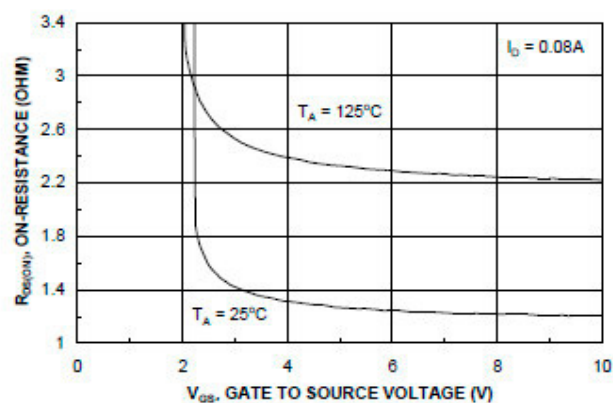
On-Region Characteristics



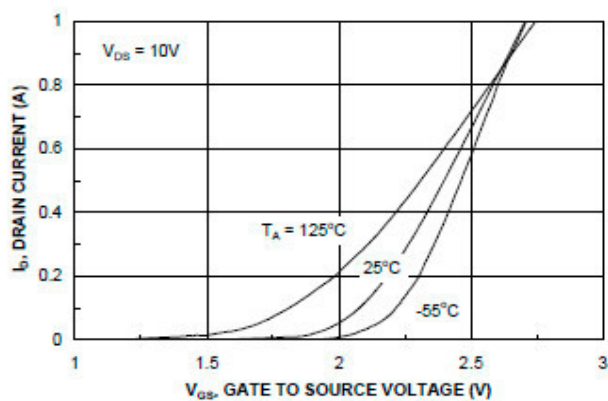
On-Resistance Variation with Drain Current and Gate Voltage



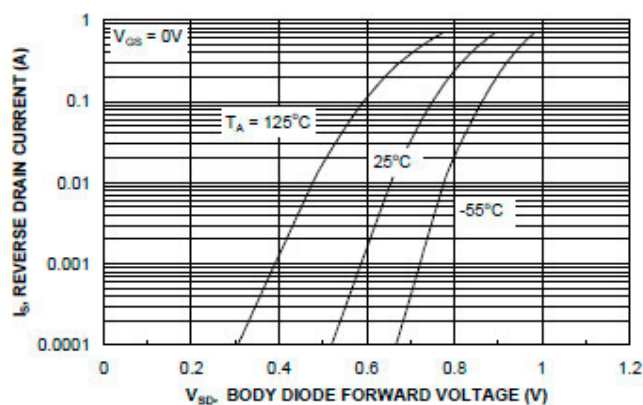
On-Resistance Variation with Temperature



On-Resistance Variation with Gate-to-Source Voltage



Transfer Characteristics

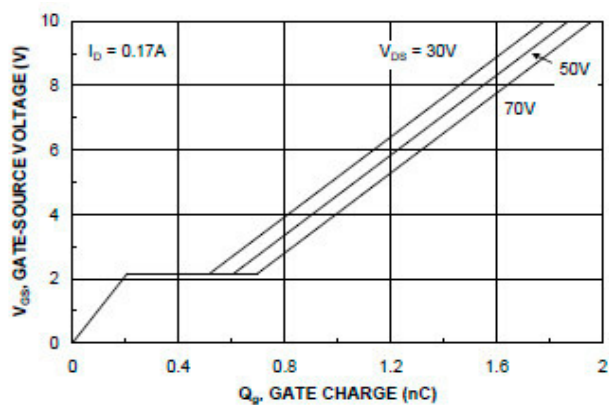


Body Diode Forward Voltage Variation with Source Current and Temperature

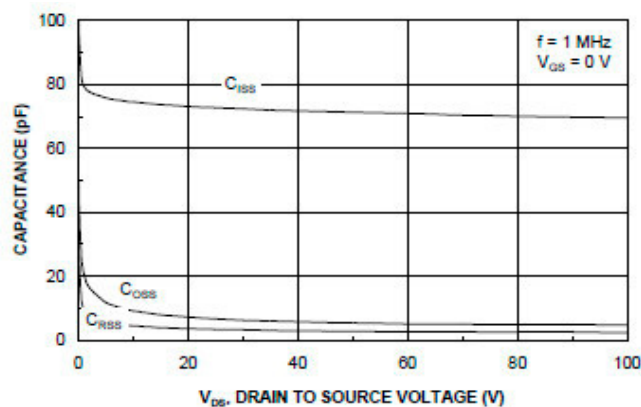
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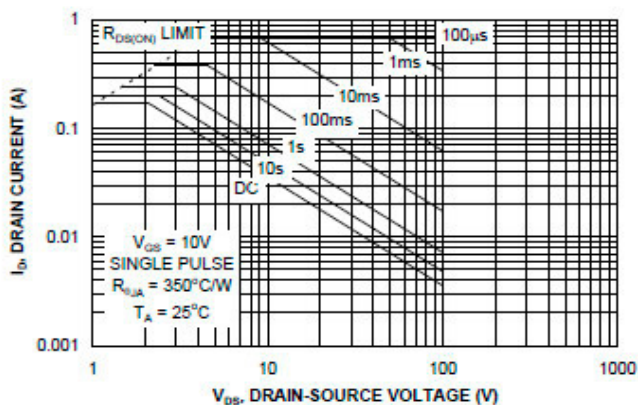
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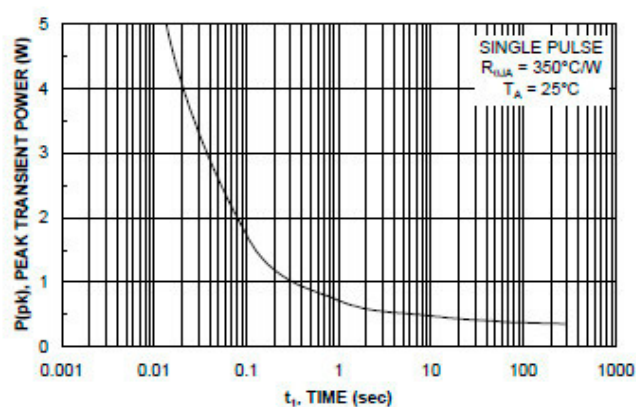
Gate Charge Characteristics



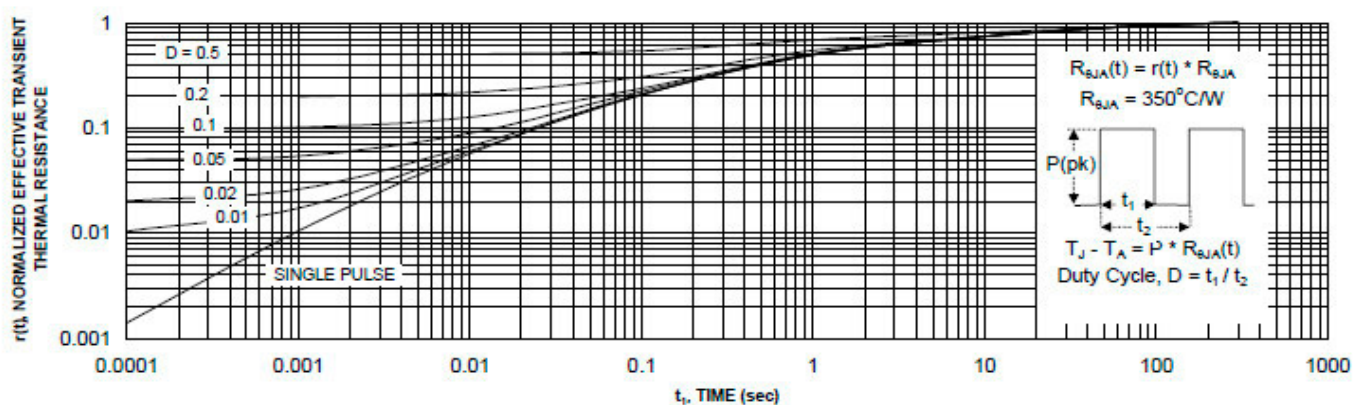
Capacitance Characteristics



Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve, Junction to Ambient

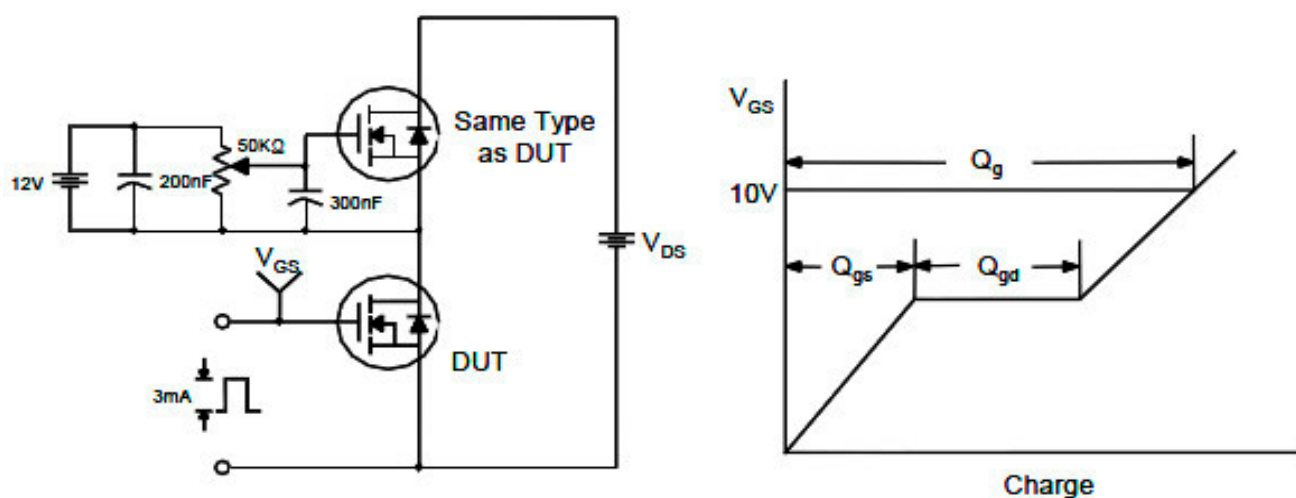
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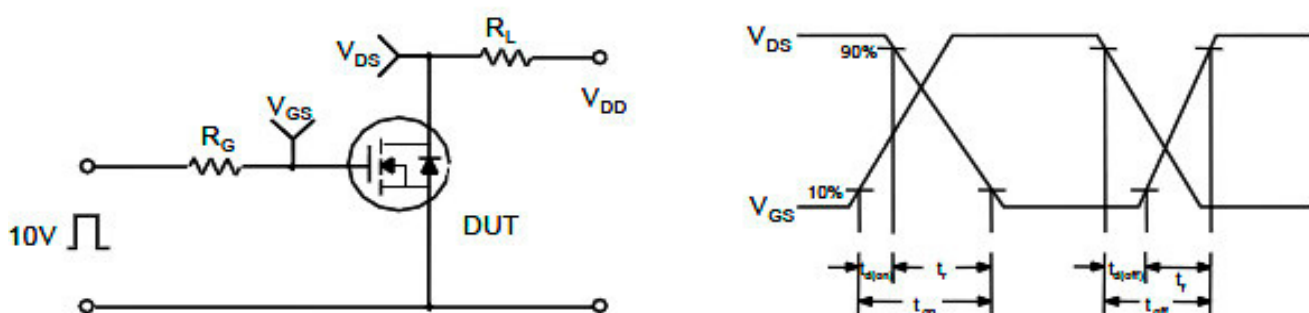
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■测试电路和波形

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

