双 P 沟道 MOSFET

ELM57923WSA-N

■概要

ELM57923WSA-N 是 P 沟道低输入电容、低工作电压、低导通电阻的大电流 MOSFET，内藏有两个 MOSFET。

■特点

- Vds=-30V
- Id=-8.0A
- Rds(on)=55mΩ (Vgs=-10V)
- Rds(on)=75mΩ (Vgs=-4.5V)
- Rds(on)=95mΩ (Vgs=-2.5V)

■绝对最大额定值

如没有特别注明时, Ta=25℃

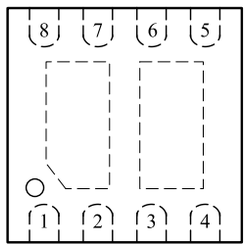
项目		记号	规格范围	单位
漏极 – 源极电压		Vds	-30	V
栅极 – 源极电压		Vgs	± 12	V
漏极电流（定常）(Tj=150℃)	Ta=25℃	Id	-8.0	A
	Ta=70℃		-6.0	
漏极电流（脉冲）		Idm	-30	A
容许功耗	Tc=25℃	Pd	1.8	W
	Tc=70℃		1.2	
动作结合部温度		Tj	150	℃
保存温度范围		Tstg	-55 ~ 150	℃

■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	–	62.5	℃/W

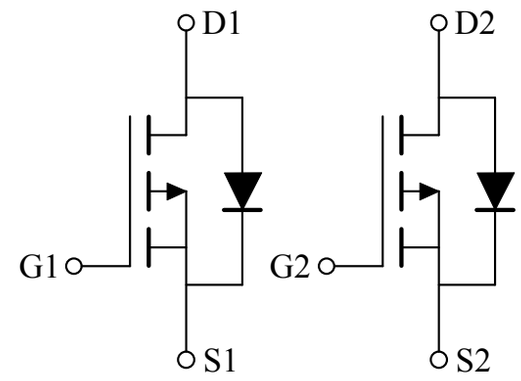
■引脚配置图

DFN8-3 × 3(俯视图)



引脚编号	引脚名称
1	SOURCE1
2	GATE1
3	SOURCE2
4	GATE2
5	DRAIN2
6	DRAIN2
7	DRAIN1
8	DRAIN1

■电路图



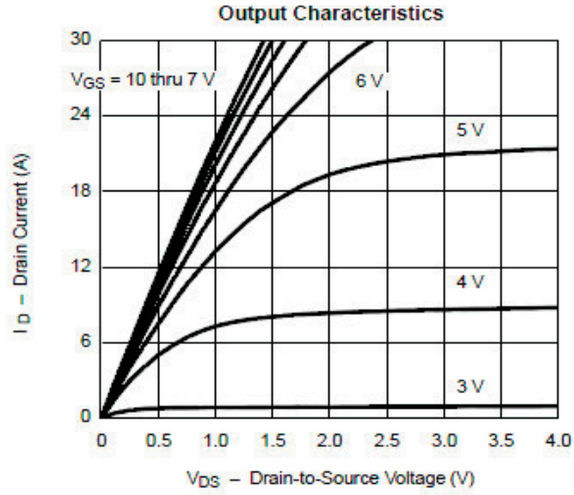
■电特性

如没有特别注明时, Ta=25℃

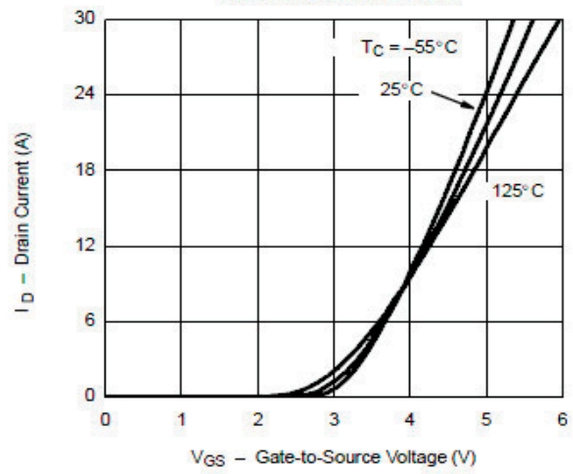
项目	记号	条件		最小值	典型值	最大值	单位
静态特性							
漏极 – 源极击穿电压	BVdss	Id=–250μA, Vgs=0V		–30			V
栅极接地时漏极电流	Idss	Vds=–24V, Vgs=0V				–1	μA
			Ta=85℃			–30	
栅极漏电电流	Igss	Vds=0V, Vgs= ± 12V				± 100	nA
栅极阈值电压	Vgs(th)	Vds=Vgs, Id=–250μA		–0.6		–1.1	V
导通时漏极电流	Id(on)	Vgs=–10V, Vds≧–5V		–25			A
漏极 – 源极导通电阻	Rds(on)	Vgs=–10V, Id=–8.0A			40	55	mΩ
		Vgs=–4.5V, Id=–6.0A			58	75	
		Vgs=–2.5V, Id=–4.0A			78	95	
正向跨导	Gfs	Vds=–10V, Id=–4.9A			10		S
二极管正向压降	Vsd	Is=–1.7A, Vgs=0V			–0.8	–1.3	V
寄生二极管最大连续电流	Is					–10	A
动态特性							
输入电容	Ciss	Vgs=0V, Vds=–15V, f=1MHz			500		pF
输出电容	Coss				100		pF
反馈电容	Crss				55		pF
开关特性							
总栅极电荷	Qg	Vgs=–10V, Vds=–15V Id≡–5.0A			10.0	18.0	nC
栅极 – 源极电荷	Qgs				1.6		nC
栅极 – 漏极电荷	Qgd				3.0		nC
导通延迟时间	td(on)	Vgs=–10V, Vds=–15V Id≡–1.0A, RL=15Ω Rgen=6Ω			8	18	ns
导通上升时间	tr				8	18	ns
关闭延迟时间	td(off)				25	50	ns
关闭下降时间	tf				25	35	ns

■标准特性和热特性曲线

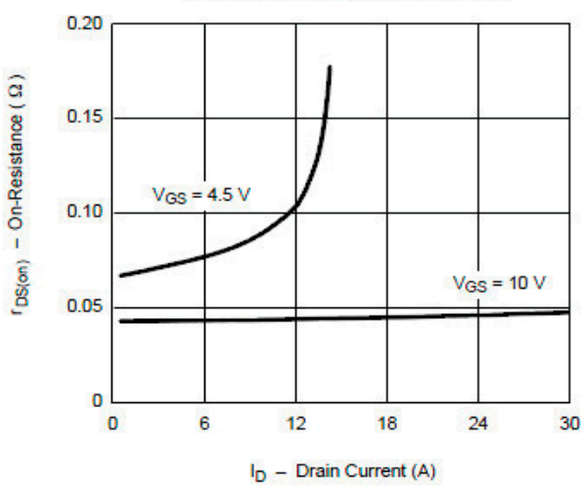
Output Characteristics



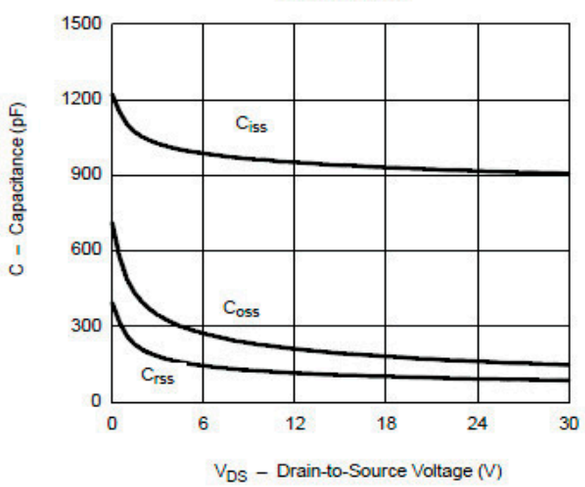
Transfer Characteristics



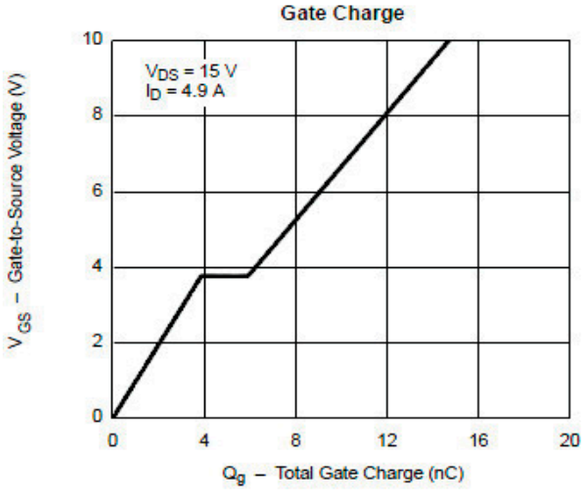
On-Resistance vs. Drain Current



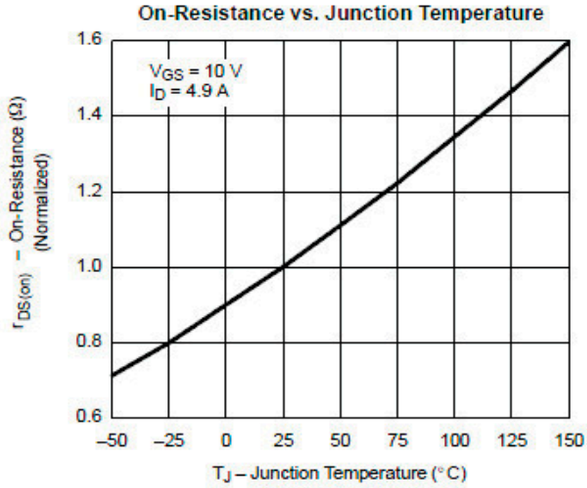
Capacitance



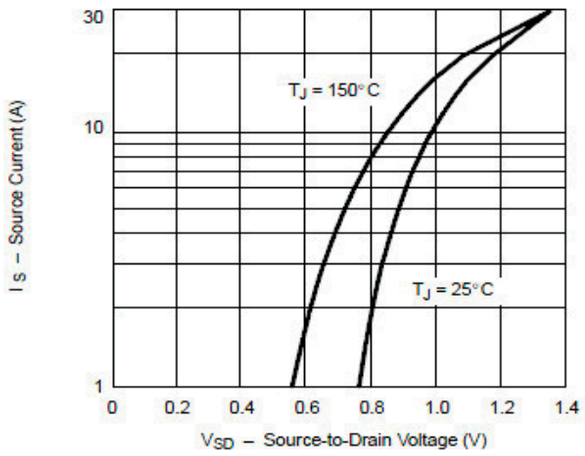
Gate Charge



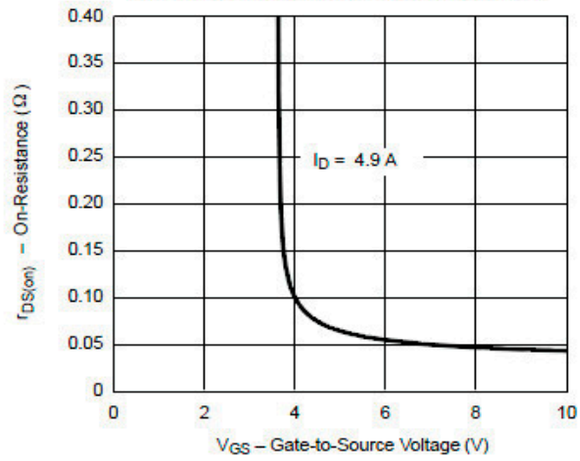
On-Resistance vs. Junction Temperature



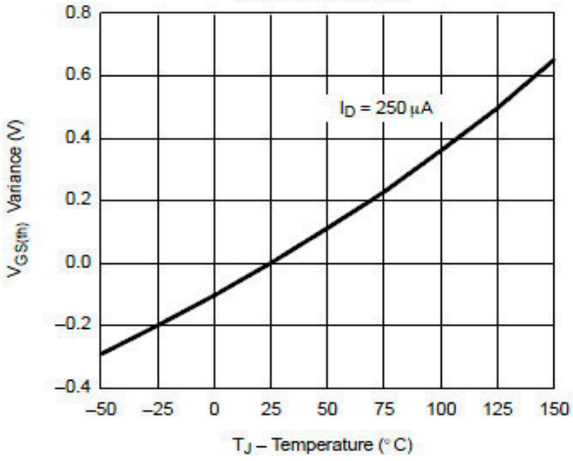
Source-Drain Diode Forward Voltage



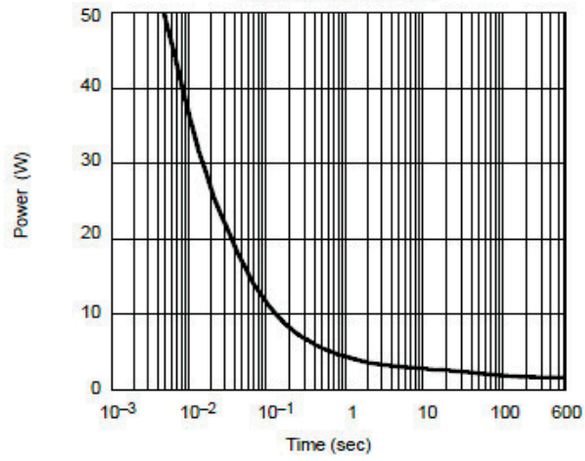
On-Resistance vs. Gate-to-Source Voltage



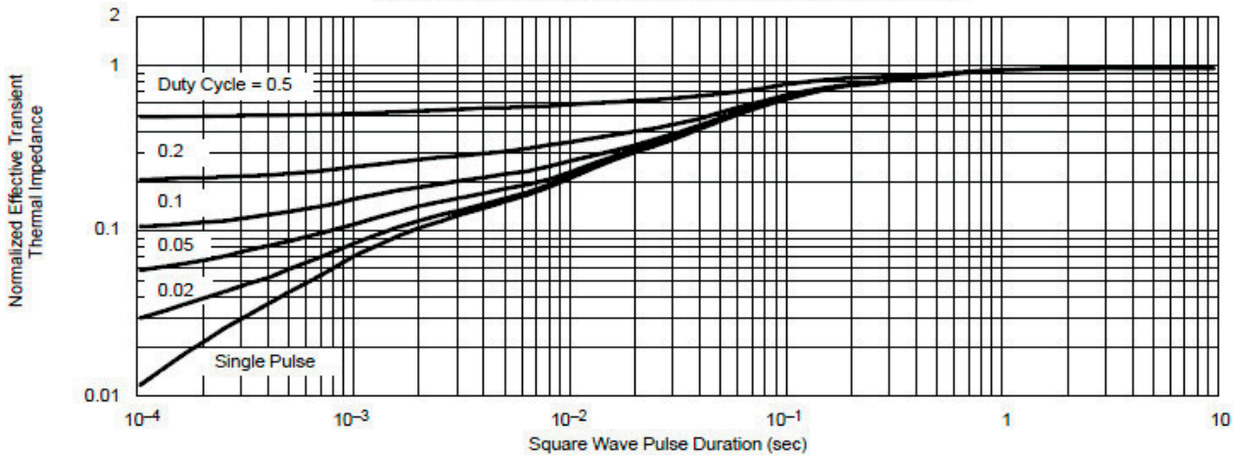
Threshold Voltage



Single Pulse Power

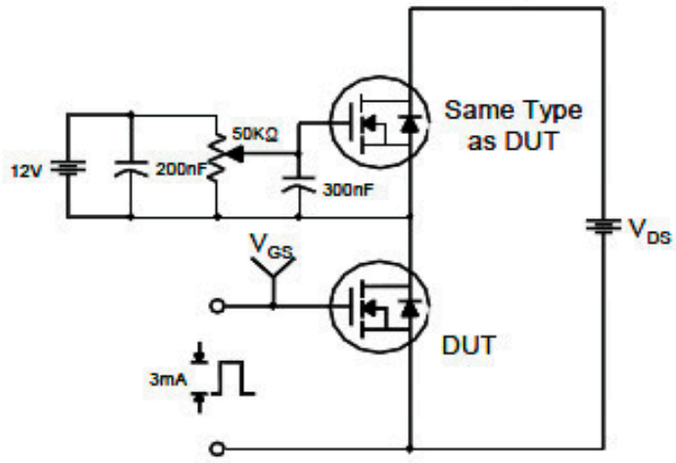


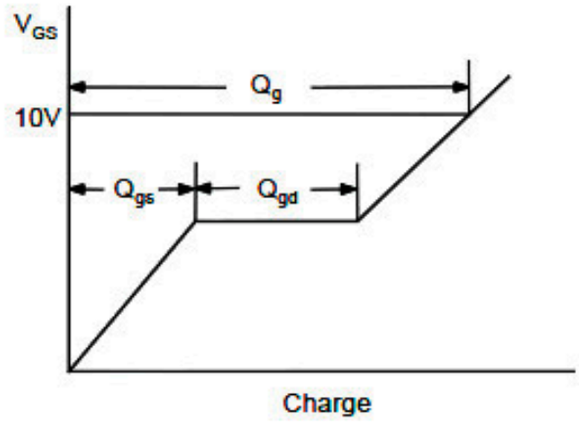
Normalized Thermal Transient Impedance, Junction-to-Foot



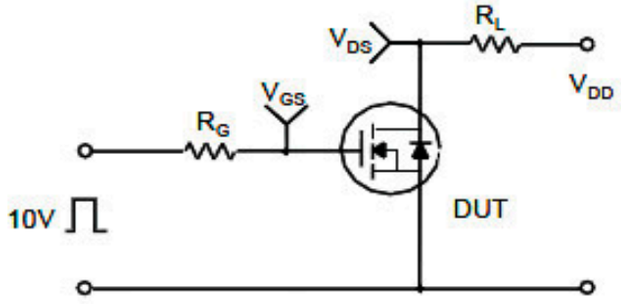
■试验电路图和测试波形图

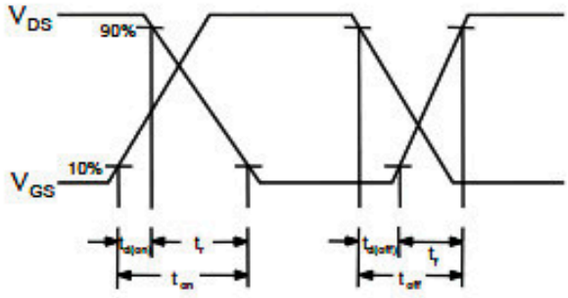
Gate Charge Test Circuit & Waveform



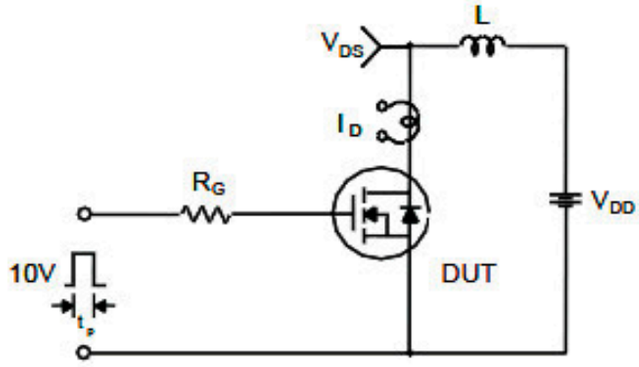


Resistive Switching Test Circuit & Waveforms





Unclamped Inductive Switching Test Circuit & Waveforms



$$E_{AS} = \frac{1}{2} L I_{AS}^2 \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$