

单 N 沟道 MOSFET

ELM52308AA-S

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

■概要

ELM52308AA-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

- $V_{ds}=60V$
- $I_d=3.5A$
- $R_{ds(on)} = 98m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 118m\Omega$ ($V_{gs}=4.5V$)

■绝对最大额定值

如没有特别注明时, $T_a=25^\circ C$

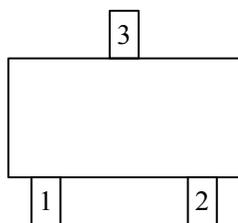
项目	记号	规格范围	单位
漏极 - 源极电压	V_{ds}	60	V
栅极 - 源极电压	V_{gs}	± 20	V
漏极电流 ($T_j=150^\circ C$)	Id	$T_a=25^\circ C$	3.5
		$T_a=70^\circ C$	2.5
漏极电流 (脉冲)	I_{dm}	10	A
容许功耗	Pd	$T_c=25^\circ C$	1.25
		$T_c=70^\circ C$	0.80
动作结合部温度	T_j	150	$^\circ C$
保存温度范围	T_{stg}	- 55 ~ 150	$^\circ C$

■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	$^\circ C/W$

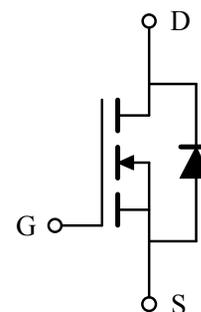
■引脚配置图

SOT-23(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

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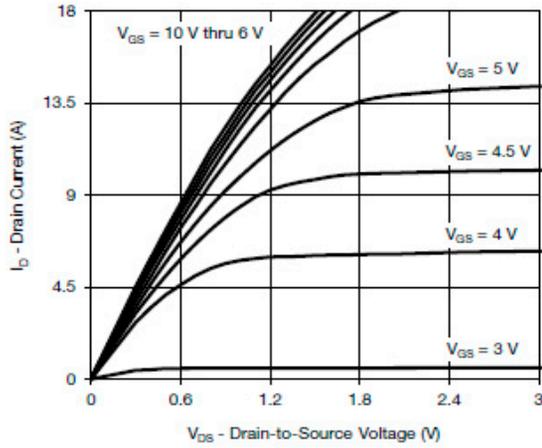
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 - 源极击穿电压	BV _{dss}	$I_d=250\mu\text{A}, V_{gs}=0\text{V}$	60			V
栅极接地时漏极电流	I _{dss}	$V_{ds}=48\text{V}, V_{gs}=0\text{V}$			1	μA
		$V_{ds}=48\text{V}, V_{gs}=0\text{V}, T_a=85^\circ\text{C}$			30	
栅极漏电电流	I _{gss}	$V_{ds}=0\text{V}, V_{gs}=\pm 20\text{V}$			± 100	nA
栅极阈值电压	V _{gs(th)}	$V_{ds}=V_{gs}, I_d=250\mu\text{A}$	1.0		2.5	V
漏极 - 源极导通电阻	R _{ds(on)}	$V_{gs}=10\text{V}, I_d=3.5\text{A}$		82	98	m Ω
		$V_{gs}=4.5\text{V}, I_d=2.5\text{A}$		100	118	
正向跨导	G _{fs}	$V_{ds}=5\text{V}, I_d=3\text{A}$		5		S
二极管正向压降	V _{sd}	$I_s=1.0\text{A}, V_{gs}=0\text{V}$		0.75	1.30	V
寄生二极管最大连续电流	I _s				1.2	A
动态特性						
输入电容	C _{iss}	$V_{gs}=0\text{V}, V_{ds}=40\text{V}, f=1\text{MHz}$		210		pF
输出电容	C _{oss}			120		pF
反馈电容	C _{rss}			18		pF
开关特性						
总栅极电荷	Q _g	$V_{gs}=4.5\text{V}, V_{ds}=40\text{V}, I_d\equiv 3.5\text{A}$		3.0	6.0	nC
栅极 - 源极电荷	Q _{gs}			1.0		nC
栅极 - 漏极电荷	Q _{gd}			1.5		nC
导通延迟时间	t _{d(on)}	$V_{gs}=10\text{V}, V_{ds}=40\text{V}$ $R_L=14.3\Omega, I_d\equiv 2.8\text{A}$ $R_{gen}=1.0\Omega$		8	15	ns
导通上升时间	t _r			5	10	ns
关闭延迟时间	t _{d(off)}			15	30	ns
关闭下降时间	t _f			4	8	ns

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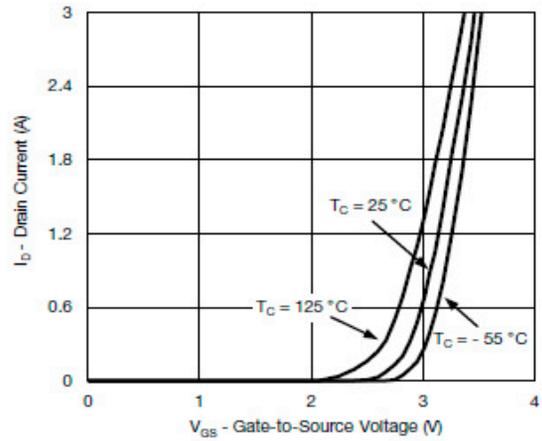
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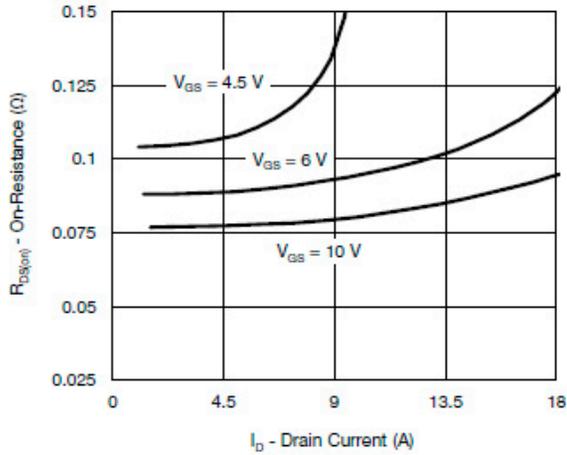
标准特性和热特性曲线



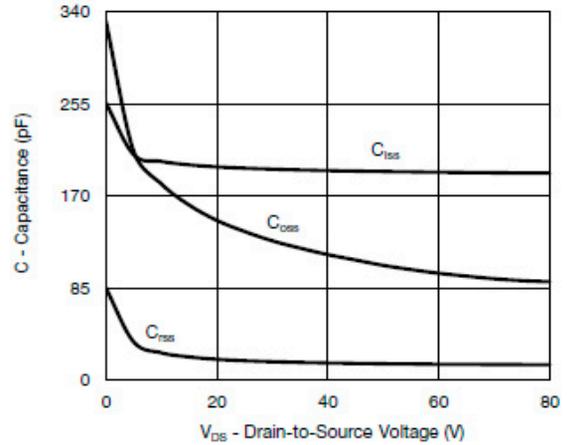
Output Characteristics



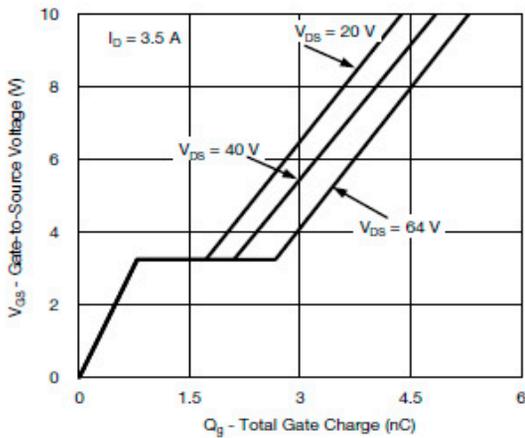
Transfer Characteristics Curves vs. Temp.



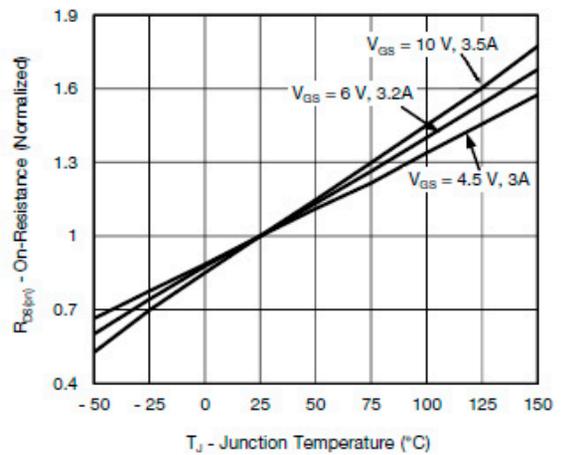
On-Resistance vs. Drain Current



Capacitance



Gate Charge

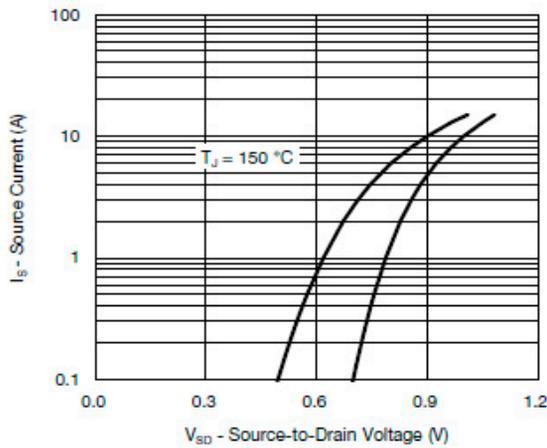


On-Resistance vs. Junction Temperature

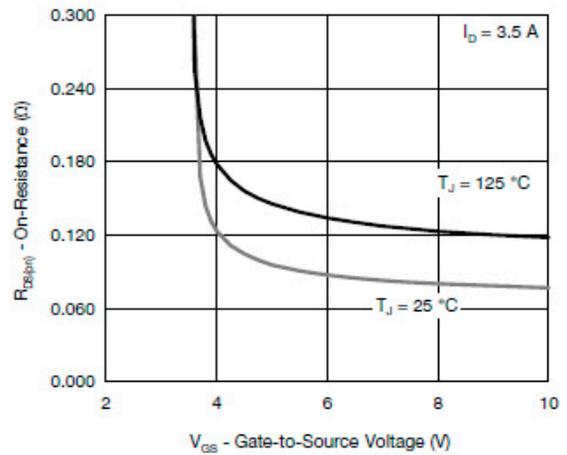
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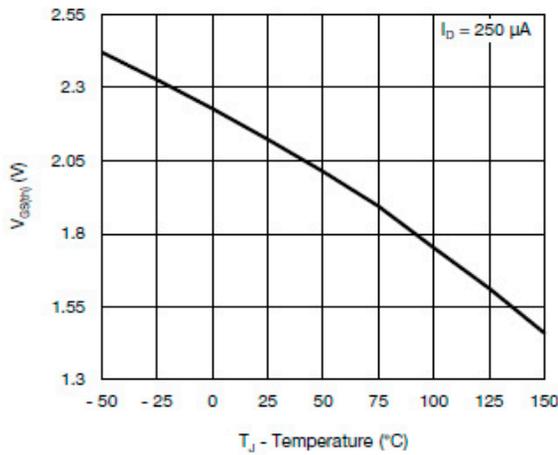
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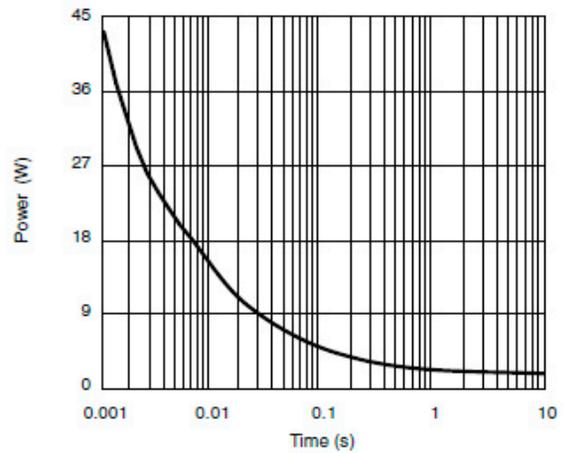
Source-Drain Diode Forward Voltage



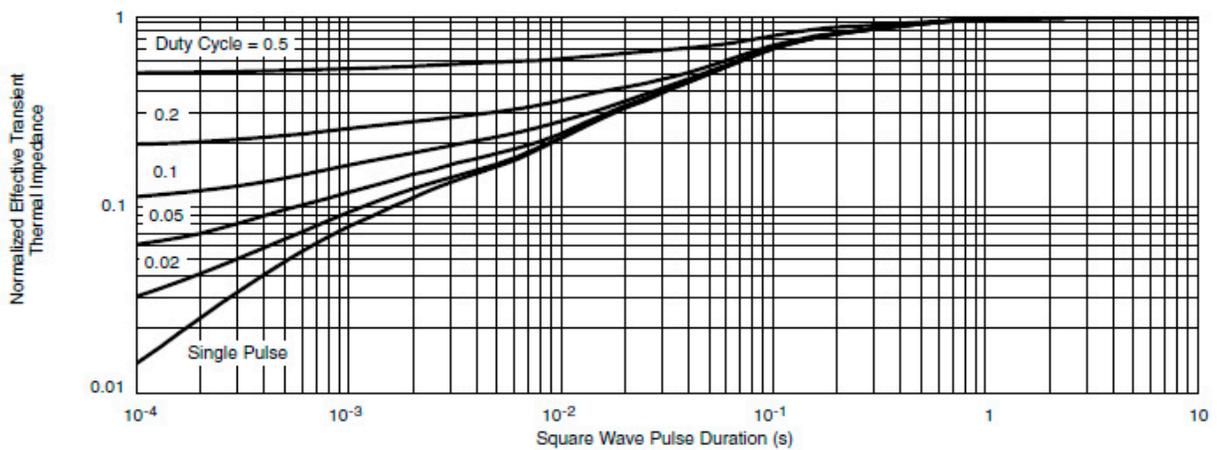
$R_{DS(on)}$ vs. V_{GS} vs. Temperature



Threshold Voltage



Single Pulse Power (Junction-to-Ambient)



Normalized Thermal Transient Impedance, Junction-to-Foot

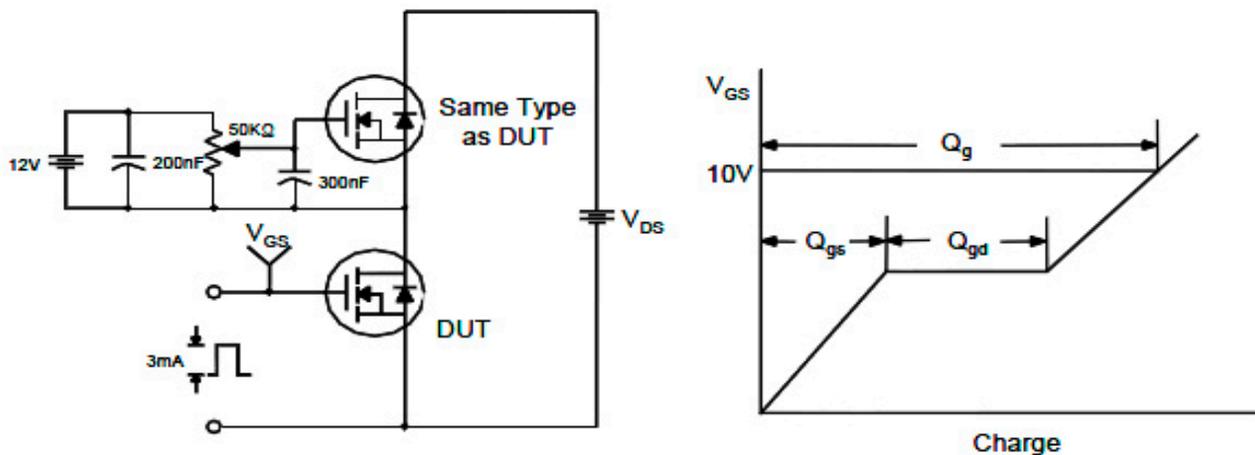
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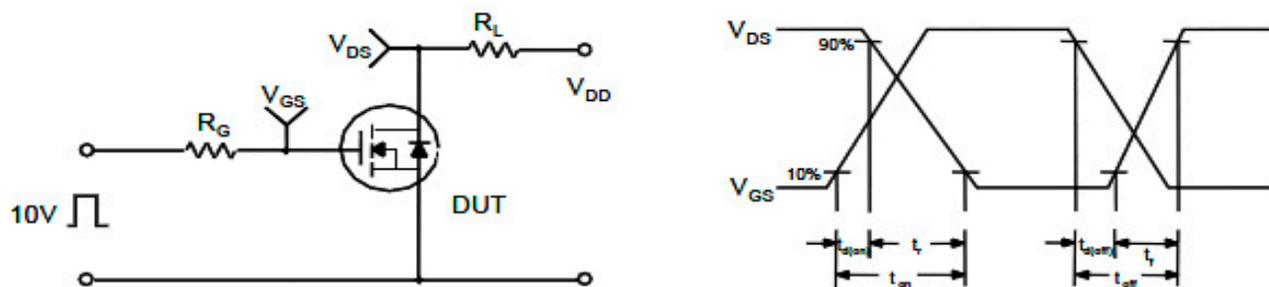
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测试电路和波形

Gate Charge Test Circuit & Waveform



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