

# 单 P 沟道 MOSFET

ELM52307AA-S

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## ■概要

ELM52307AA-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。

## ■特点

- $V_{ds} = -20V$
- $I_d = -1.8A$
- $R_{ds(on)} < 520m\Omega$  ( $V_{gs} = -4.5V$ )
- $R_{ds(on)} < 870m\Omega$  ( $V_{gs} = -2.5V$ )

## ■绝对最大额定值

如没有特别注明时,  $T_a = 25^\circ C$

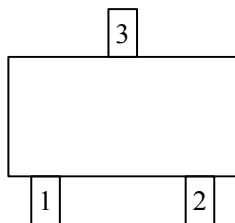
项目	记号	规格范围	单位	
漏极 - 源极电压	$V_{ds}$	-20	V	
栅极 - 源极电压	$V_{gs}$	$\pm 12$	V	
漏极电流 (定常)	$I_d$	$T_a = 25^\circ C$	-1.8	A
		$T_a = 70^\circ C$	-1.2	
漏极电流 (脉冲)	$I_{dm}$	-6	A	
容许功耗	$P_d$	$T_c = 25^\circ C$	1.25	W
		$T_c = 70^\circ C$	0.80	
结合部温度及保存温度范围	$T_j, T_{stg}$	-55 ~ 150	$^\circ C$	

## ■热特性

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

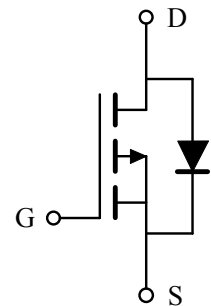
## ■引脚配置图

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

如没有特别注明时, Ta=25℃

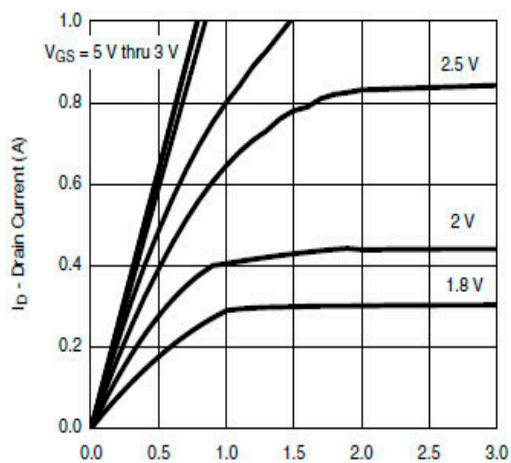
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 - 源极击穿电压	BV <sub>dss</sub>	V <sub>gs</sub> =0V, I <sub>d</sub> =-250μA	-20			V
栅极接地时漏极电流	I <sub>dss</sub>	V <sub>ds</sub> =-20V, V <sub>gs</sub> =0V			-1	μA
		V <sub>ds</sub> =-20V, V <sub>gs</sub> =0V, Ta=85℃			-5	
栅极漏电流	I <sub>gss</sub>	V <sub>ds</sub> =0V, V <sub>gs</sub> =±12V			±100	nA
栅极阈值电压	V <sub>gs(th)</sub>	V <sub>ds</sub> =V <sub>gs</sub> , I <sub>d</sub> =-250μA	-0.4		-1.0	V
导通时漏极电流	I <sub>d(on)</sub>	V <sub>gs</sub> =-4.5V, V <sub>ds</sub> =-5V	-0.7			A
漏极 - 源极导通电阻	R <sub>ds(on)</sub>	V <sub>gs</sub> =-4.5V, I <sub>d</sub> =-1.8A		420	520	mΩ
		V <sub>gs</sub> =-2.5V, I <sub>d</sub> =-1.5A		770	870	
正向跨导	G <sub>fs</sub>	V <sub>ds</sub> =-10V, I <sub>d</sub> =-0.4A		1		S
二极管正向压降	V <sub>sd</sub>	I <sub>s</sub> =-0.15A, V <sub>gs</sub> =0V		-0.65	-1.20	V
寄生二极管最大连续电流	I <sub>s</sub>				-1	A
动态特性						
输入电容	C <sub>iss</sub>	V <sub>gs</sub> =0V, V <sub>ds</sub> =-10V, f=1MHz		70	100	pF
输出电容	C <sub>oss</sub>			20		pF
反馈电容	C <sub>rss</sub>			10		pF
开关特性						
总栅极电荷	Q <sub>g</sub>	V <sub>gs</sub> =-4.5V, V <sub>ds</sub> =-10V I <sub>d</sub> =-0.25A		1.0	1.3	nC
栅极 - 源极电荷	Q <sub>gs</sub>			0.1		nC
栅极 - 漏极电荷	Q <sub>gd</sub>			0.3		nC
导通延迟时间	t <sub>d(on)</sub>	V <sub>gs</sub> =-4.5V, V <sub>ds</sub> =-10V R <sub>L</sub> =30Ω, I <sub>d</sub> =-0.2A R <sub>gen</sub> =10Ω		10	15	ns
导通上升时间	t <sub>r</sub>			10	15	ns
关闭延迟时间	t <sub>d(off)</sub>			40	60	ns
关闭下降时间	t <sub>f</sub>			30	50	ns

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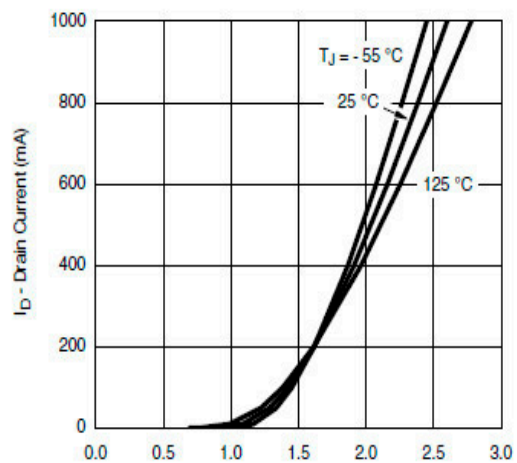
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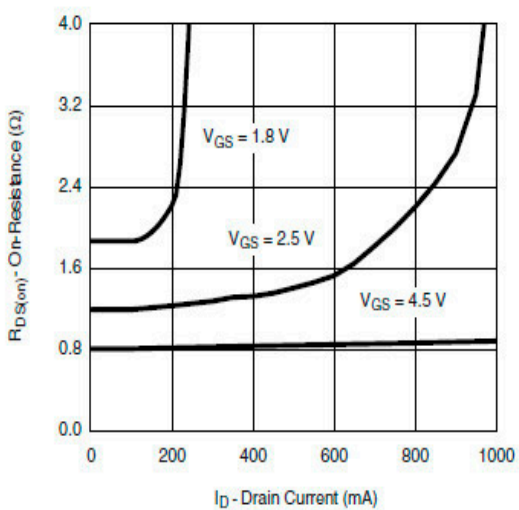
## 标准特性和热特性曲线



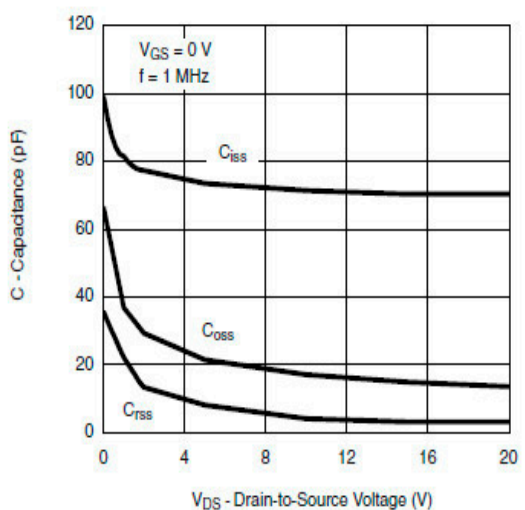
Output Characteristics



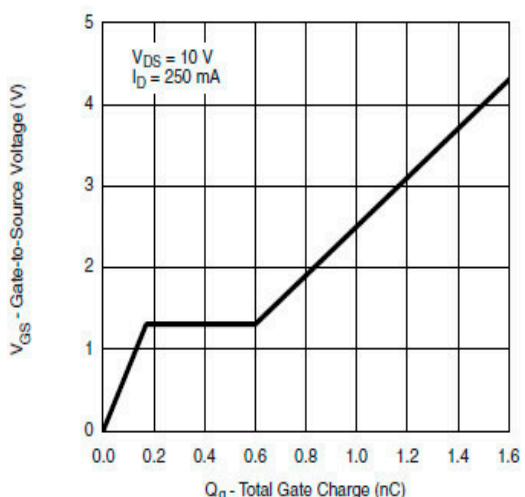
Transfer Characteristics



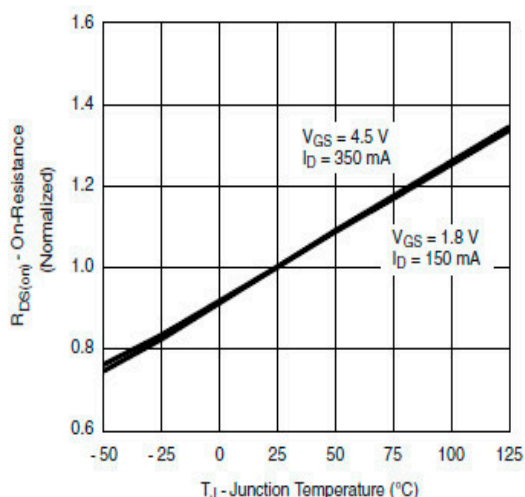
On-Resistance vs. Drain Current



Capacitance



Gate Charge



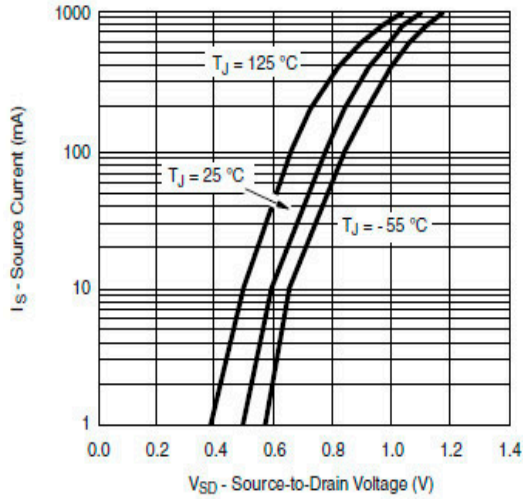
On-Resistance vs. Junction Temperature



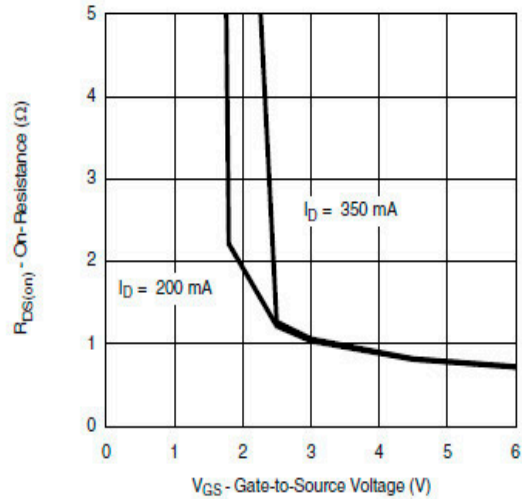
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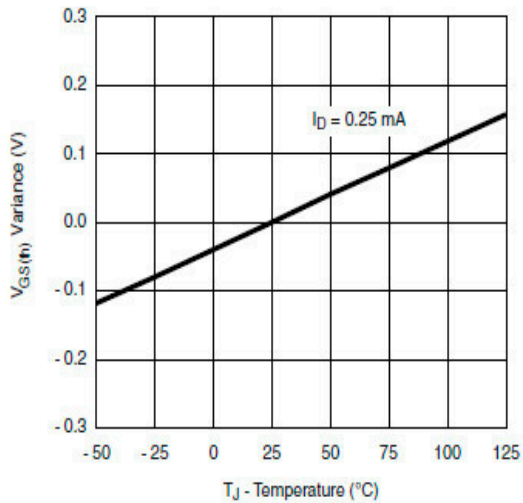
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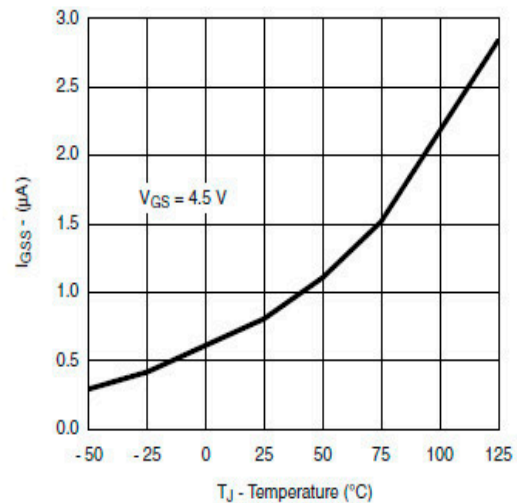
Source-Drain Diode Forward Voltage



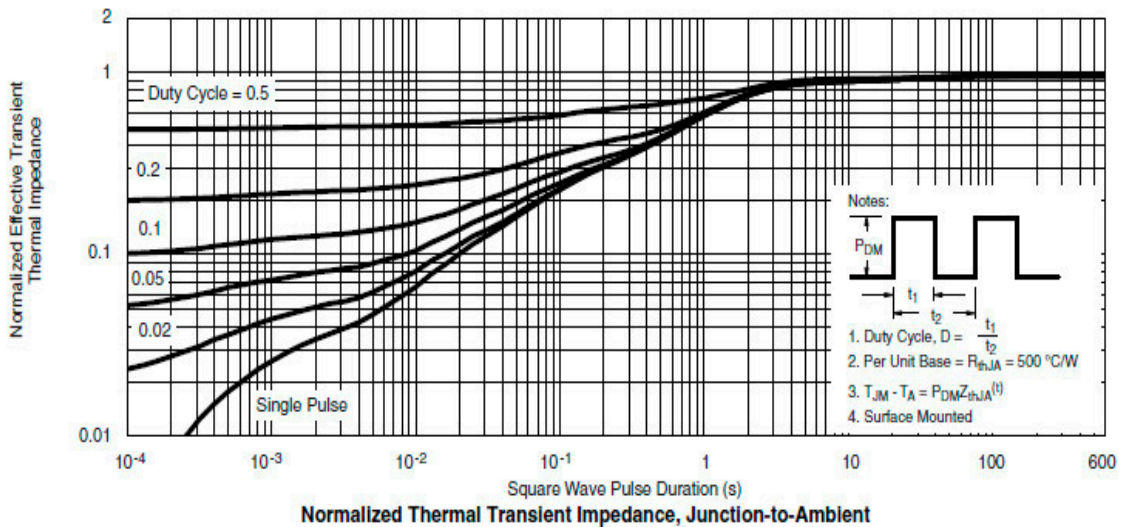
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage Variance vs. Temperature



$I_{GSS}$  vs. Temperature



Normalized Thermal Transient Impedance, Junction-to-Ambient

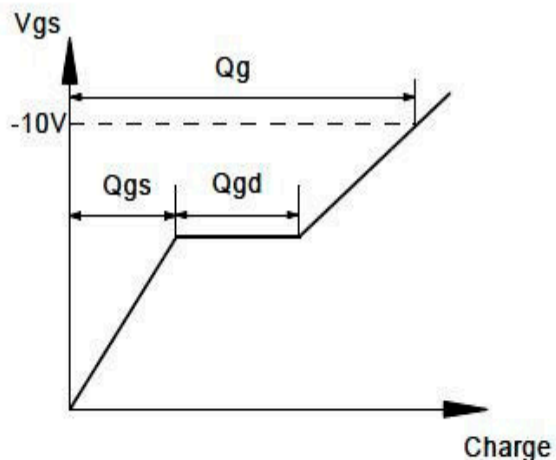
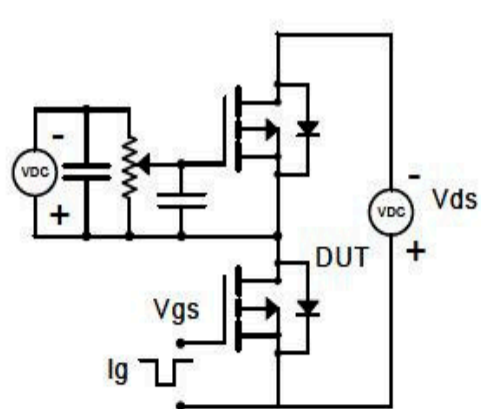
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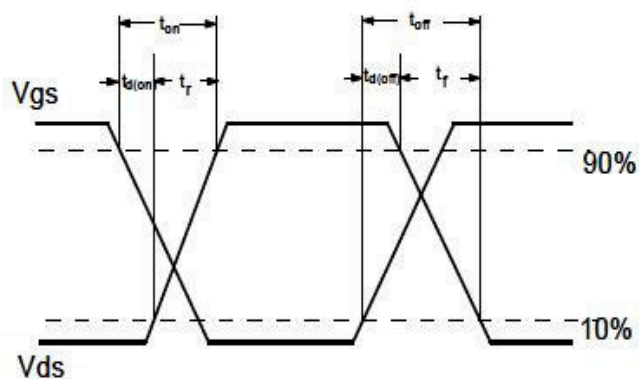
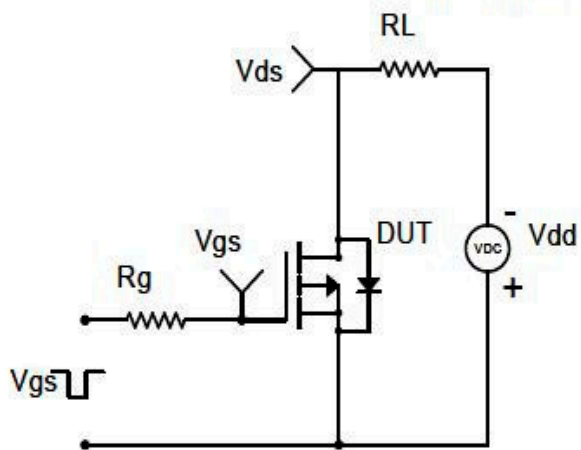
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## 测试电路和波形

### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms



### Diode Recovery Test Circuit & Waveforms

