

单 N 沟道 MOSFET

ELM55004SA-S

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

■概要

ELM55004SA-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

- $V_{ds}=40V$
- $I_d=15A$
- $R_{ds(on)} = 5.5m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 6.5m\Omega$ ($V_{gs}=4.5V$)

■绝对最大额定值

如没有特别注明时, $T_a=25^\circ C$

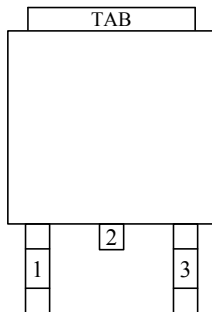
项目	记号	规格范围	单位	
漏极 - 源极电压	V_{ds}	40	V	
栅极 - 源极电压	V_{gs}	± 20	V	
漏极电流 ($T_j=150^\circ C$)	Id	$T_a=25^\circ C$	15	A
		$T_a=70^\circ C$	12	
漏极电流 (脉冲)	I_{dm}	40	A	
单脉冲崩溃电流	L=0.1mH	I_{as}	25	A
持续崩溃能量		E_{as}	35	mJ
容许功耗	Pd	$T_c=25^\circ C$	40	W
		$T_c=70^\circ C$	15	
动作结合部温度	T_j	150	$^\circ C$	
保存温度范围	T_{stg}	- 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	$R_{\theta ja}$		62.5	$^\circ C/W$

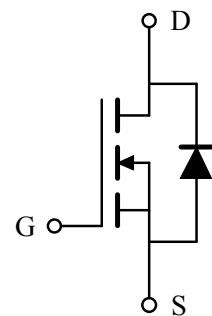
■引脚配置图

TO-252-3(俯视图)



引脚编号	引脚名称
1	GATE
2	DRAIN
3	SOURCE

■电路图



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■电特性

如没有特别注明时, Ta=25℃

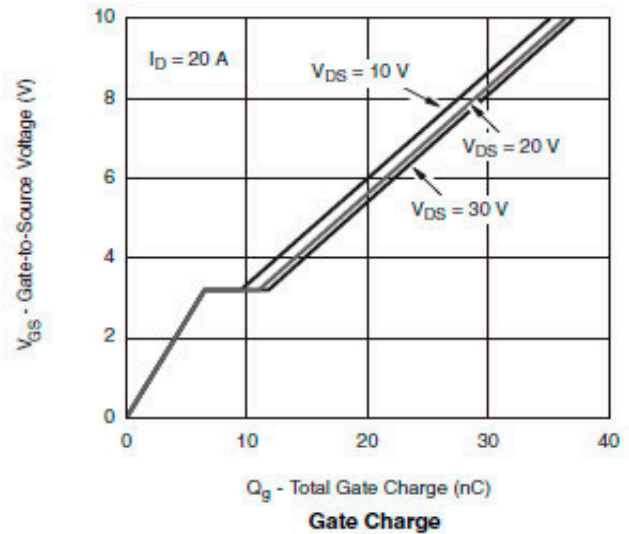
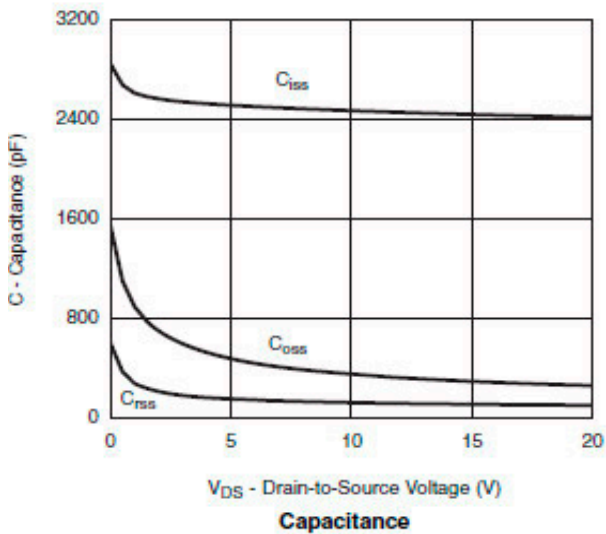
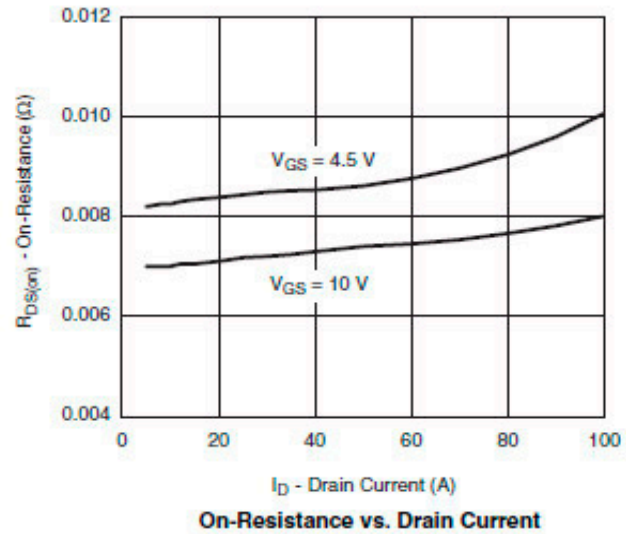
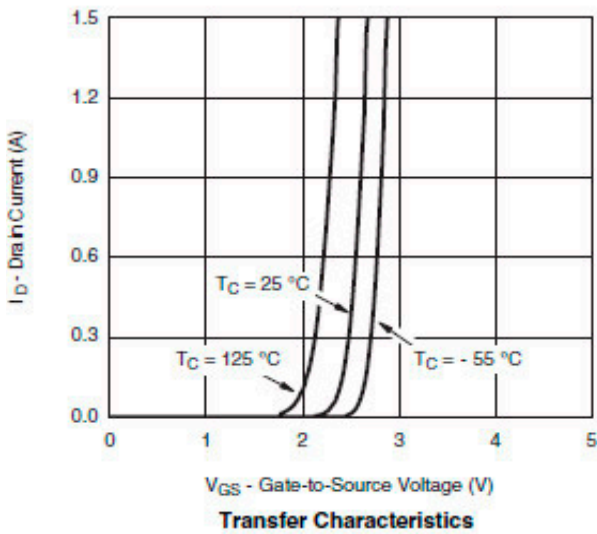
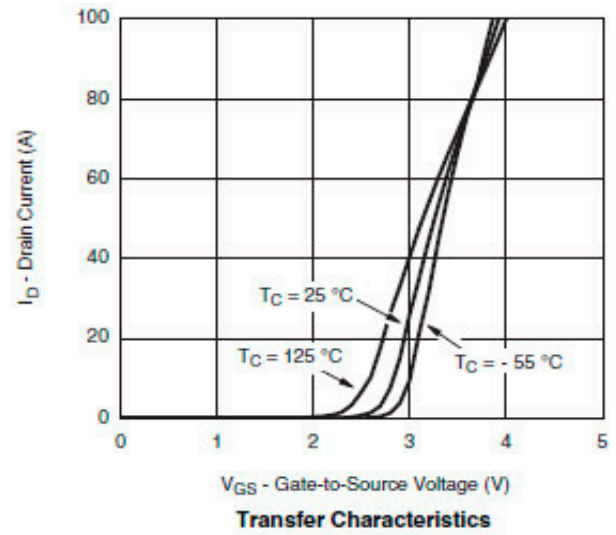
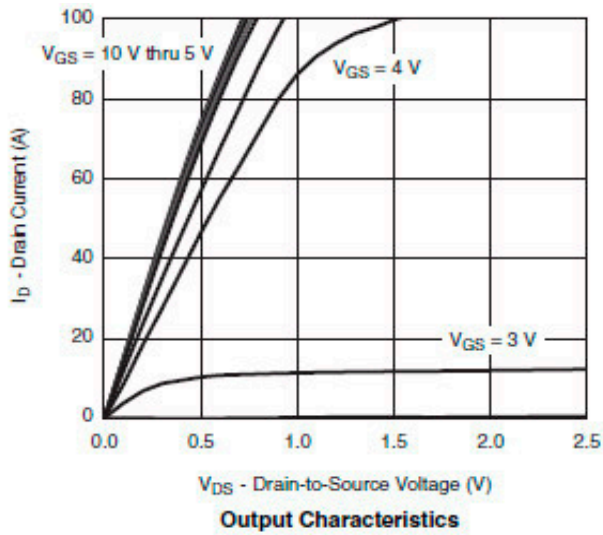
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 - 源极击穿电压	BVdss	Id=250μA, Vgs=0V	40			V
栅极接地时漏极电流	Idss	Vds=32V, Vgs=0V			1	μA
		Vds=32V, Vgs=0V, Ta=85℃			10	
栅极漏电电流	Igss	Vds=0V, Vgs=±20V			±100	nA
栅极阈值电压	Vgs(th)	Vds=Vgs, Id=250μA	1.0		2.0	V
导通时漏极电流	Id(on)	Vgs=10V, Vds≥5V	50			A
漏极 - 源极导通电阻	Rds(on)	Vgs=10V, Id=20A		3.5	5.5	mΩ
		Vgs=4.5V, Id=15A		4.5	6.5	
正向跨导	Gfs	Vds=15V, Id=15A		75		S
二极管正向压降	Vsd	Is=10A, Vgs=0V		0.85	1.30	V
寄生二极管最大连续电流	Is				2.6	A
动态特性						
输入电容	Ciss	Vgs=0V, Vds=20V, f=1MHz		2500		pF
输出电容	Coss			280		pF
反馈电容	Crss			120		pF
开关特性						
总栅极电荷	Qg	Vgs=4.5V, Vds=20V Id≐20A		18	30	nC
栅极 - 源极电荷	Qgs			7		nC
栅极 - 漏极电荷	Qgd			5		nC
导通延迟时间	td(on)	Vgs=10V, Vds=20V RL=1Ω, Id≐20A Rgen=1Ω		10	20	ns
导通上升时间	tr			6	15	ns
关闭延迟时间	td(off)			40	65	ns
关闭下降时间	tf			6	15	ns

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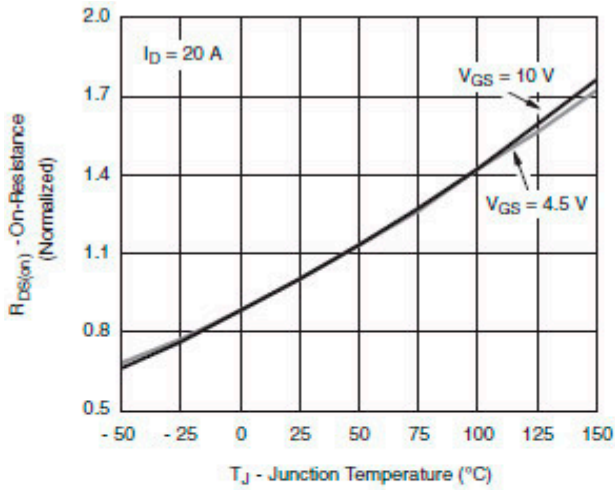
■ 标准特性和热特性曲线



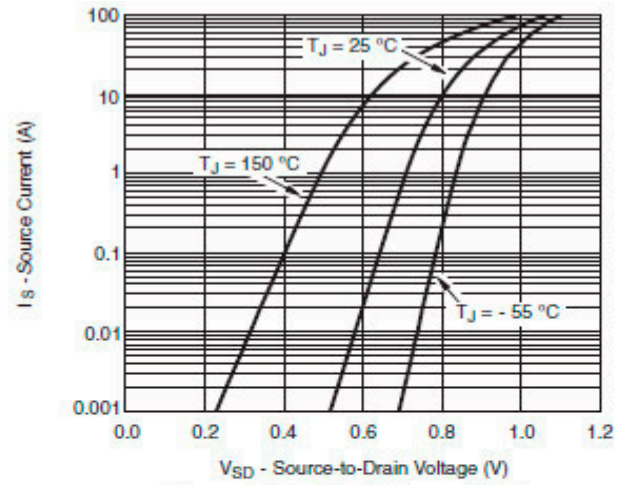
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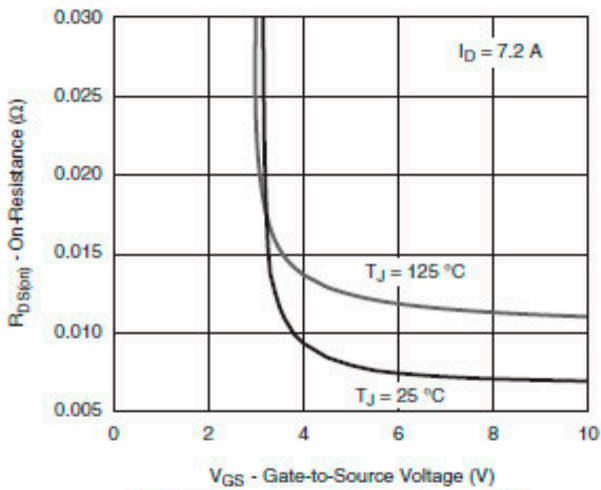
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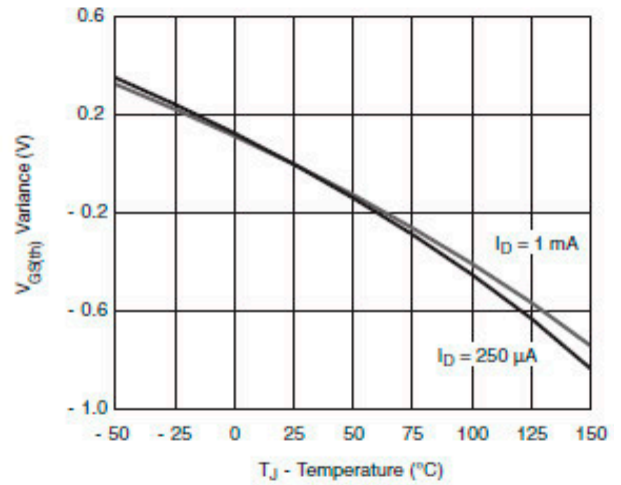
On-Resistance vs. Junction Temperature



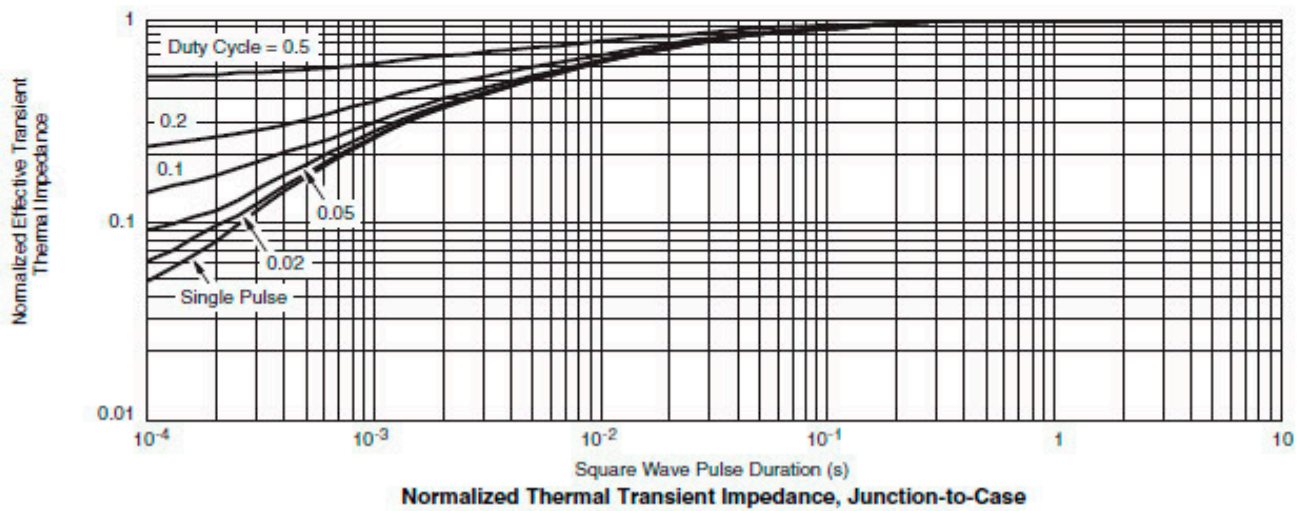
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Normalized Thermal Transient Impedance, Junction-to-Case

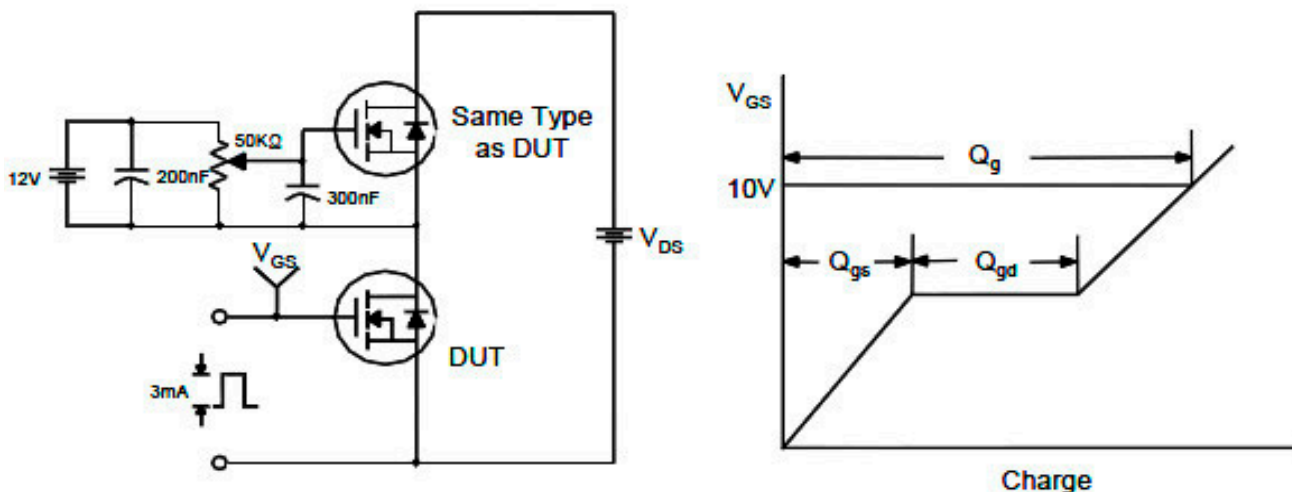
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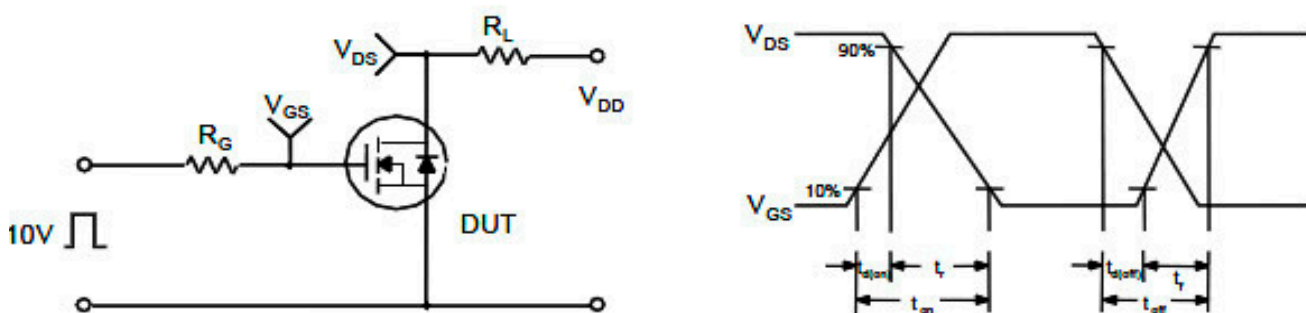
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■ 测试电路和波形

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

