

单 N 沟道 MOSFET

ELM54804A-S

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

■概要

ELM54804A-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

- $V_{ds}=40V$
- $I_d=18A$
- $R_{ds(on)} = 48m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 70m\Omega$ ($V_{gs}=4.5V$)

■绝对最大额定值

如没有特别注明时, $T_a=25^\circ C$

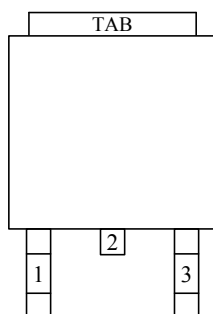
项目	记号	规格范围	单位	
漏极 - 源极电压	V_{ds}	40	V	
栅极 - 源极电压	V_{gs}	± 20	V	
漏极电流 ($T_j=150^\circ C$)	Id	$T_a=25^\circ C$	18	A
		$T_a=70^\circ C$	15	
漏极电流 (脉冲)	I_{dm}	40	A	
单脉冲崩溃电流	L=0.1mH	I_{as}	25	A
持续崩溃能量		E_{as}	35	mJ
容许功耗	Pd	$T_c=25^\circ C$	40	W
		$T_c=70^\circ C$	15	
动作结合部温度	T_j	150	$^\circ C$	
保存温度范围	T_{stg}	- 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	$^\circ C/W$

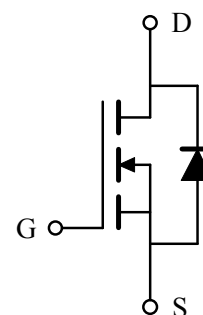
■引脚配置图

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

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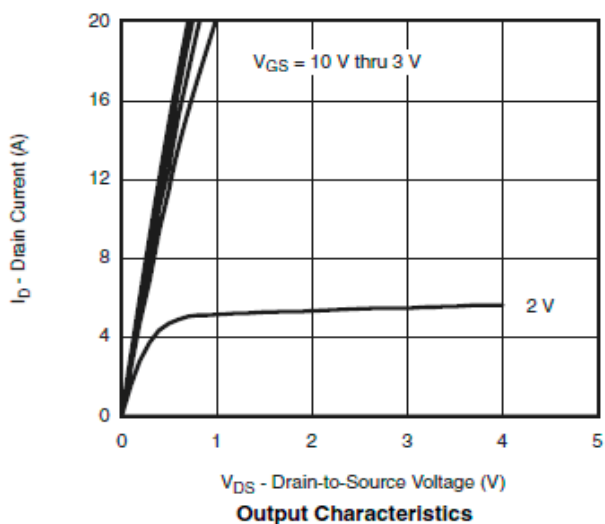
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 - 源极击穿电压	BV _{dss}	$I_d=250\mu\text{A}, V_{gs}=0\text{V}$	40			V
栅极接地时漏极电流	I _{dss}	$V_{ds}=40\text{V}, V_{gs}=0\text{V}$			1	μA
		$V_{ds}=40\text{V}, V_{gs}=0\text{V}, T_a=85^\circ\text{C}$			10	
栅极漏电流	I _{gss}	$V_{ds}=0\text{V}, V_{gs}=\pm 20\text{V}$			± 100	nA
栅极阈值电压	V _{gs(th)}	$V_{ds}=V_{gs}, I_d=250\mu\text{A}$	1.0		2.0	V
导通时漏极电流	I _{d(on)}	$V_{gs}=10\text{V}, V_{ds}\geq 5\text{V}$	10			A
漏极 - 源极导通电阻	R _{ds(on)}	$V_{gs}=10\text{V}, I_d=16\text{A}$		42	48	m Ω
		$V_{gs}=4.5\text{V}, I_d=10\text{A}$		56	70	
正向跨导	G _{fs}	$V_{ds}=15\text{V}, I_d=5.0\text{A}$		25		S
二极管正向压降	V _{sd}	$I_s=2\text{A}, V_{gs}=0\text{V}$		0.85	1.20	V
寄生二极管最大连续电流	I _s				8	A
动态特性						
输入电容	C _{iss}	$V_{gs}=0\text{V}, V_{ds}=20\text{V}, f=1\text{MHz}$		850		pF
输出电容	C _{oss}			110		pF
反馈电容	C _{rss}			75		pF
开关特性						
总栅极电荷	Q _g	$V_{gs}=4.5\text{V}, V_{ds}=20\text{V}$ $I_d\equiv 5.0\text{A}$		10.0	14.0	nC
栅极 - 源极电荷	Q _{gs}			2.8		nC
栅极 - 漏极电荷	Q _{gd}			3.2		nC
导通延迟时间	t _{d(on)}	$V_{gs}=10\text{V}, V_{ds}=20\text{V}$ $R_L=4\Omega, I_d\equiv 5.0\text{A}$ $R_{gen}=1\Omega$		6	12	ns
导通上升时间	t _r			10	20	ns
关闭延迟时间	t _{d(off)}			20	36	ns
关闭下降时间	t _f			6	12	ns

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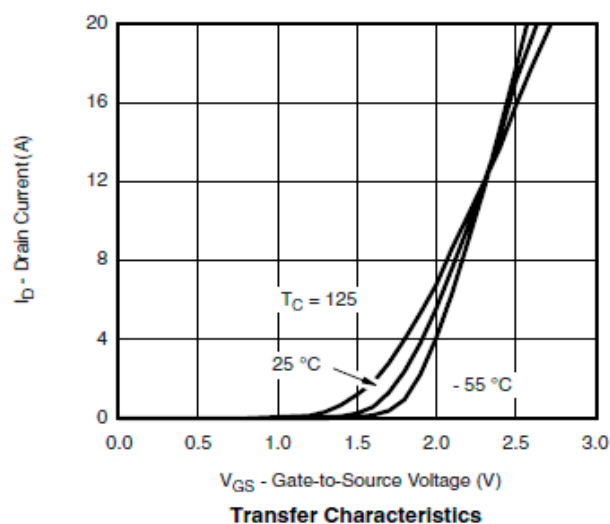
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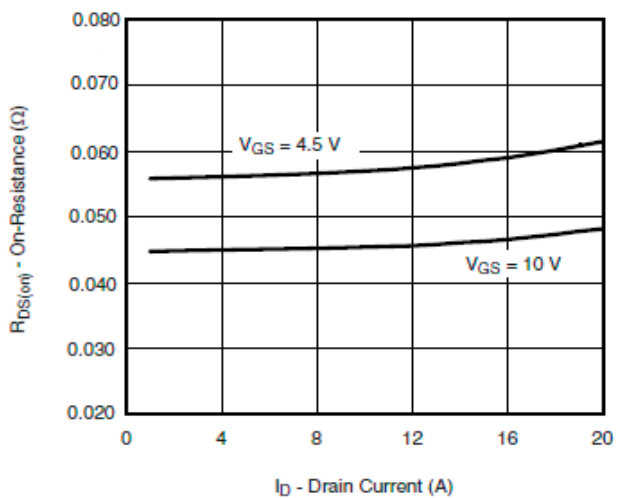
标准特性和热特性曲线



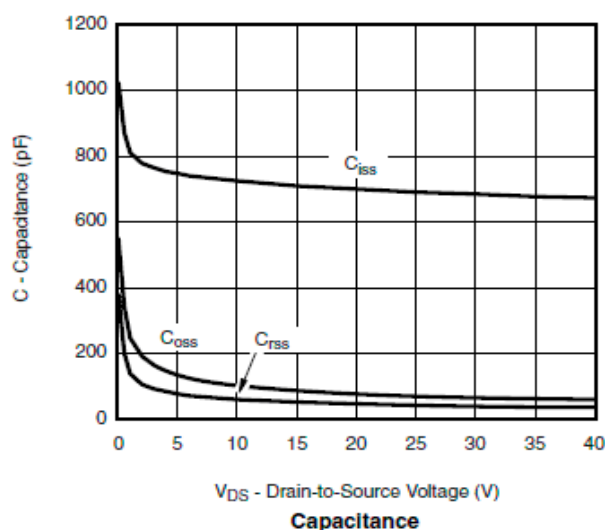
Output Characteristics



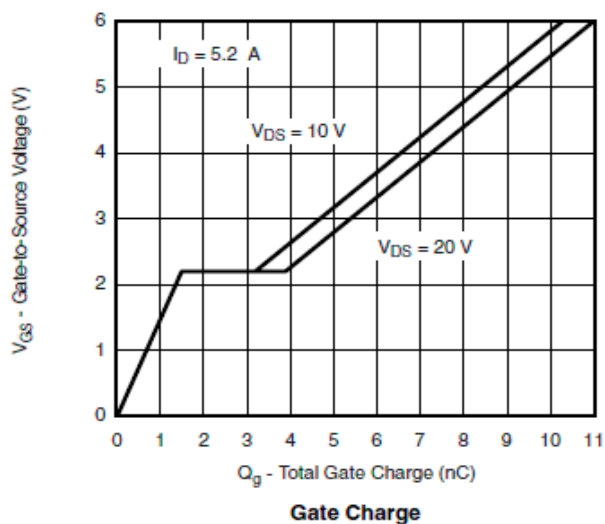
Transfer Characteristics



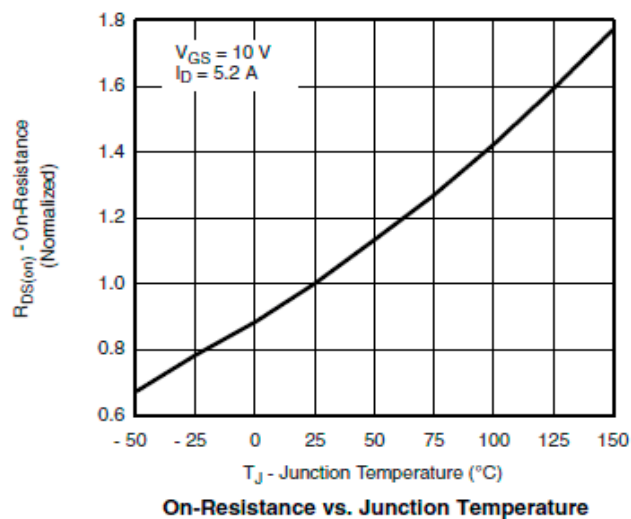
On-Resistance vs. Drain Current



Capacitance



Gate Charge

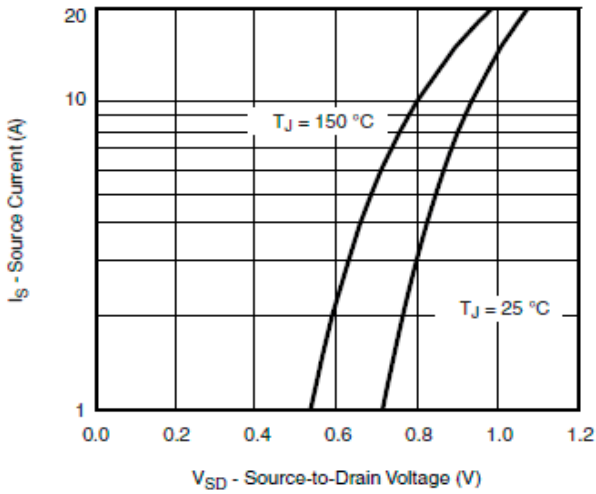


On-Resistance vs. Junction Temperature

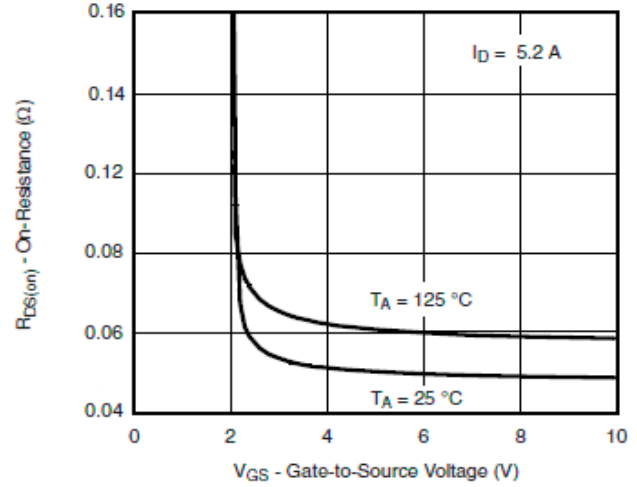
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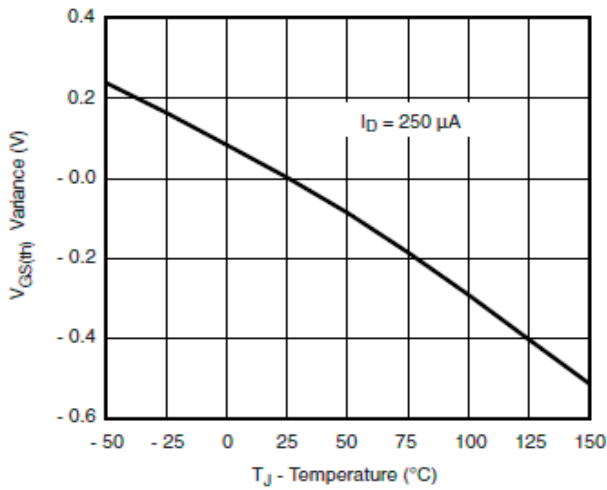
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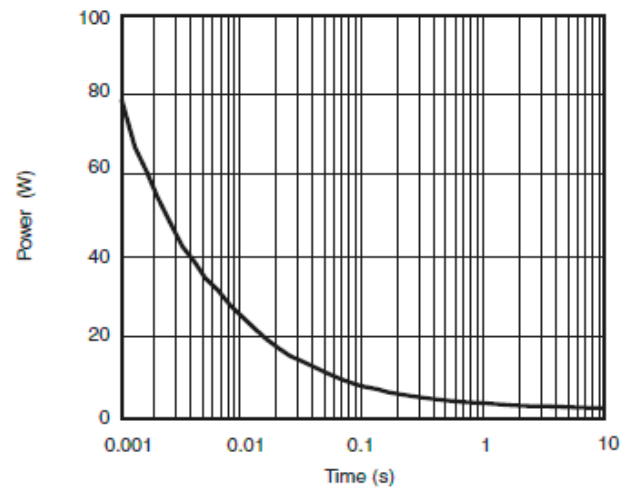
Source-Drain Diode Forward Voltage



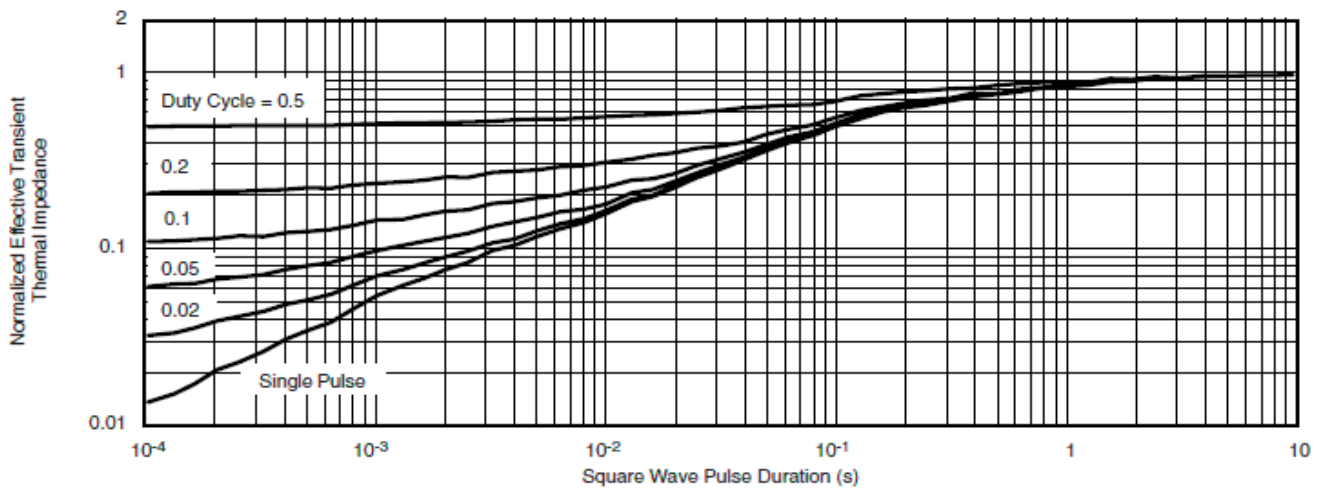
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

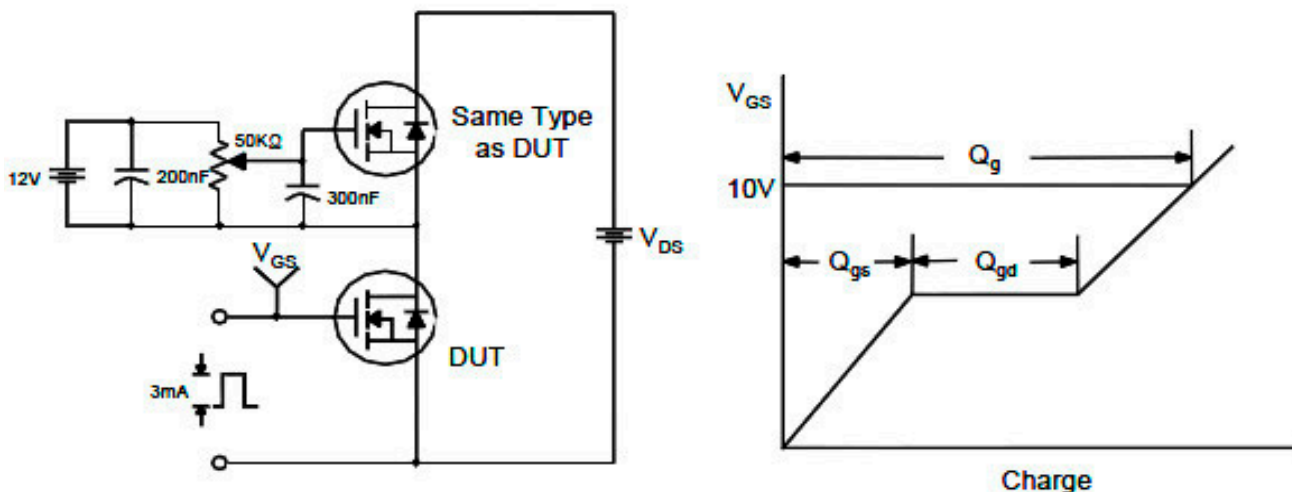
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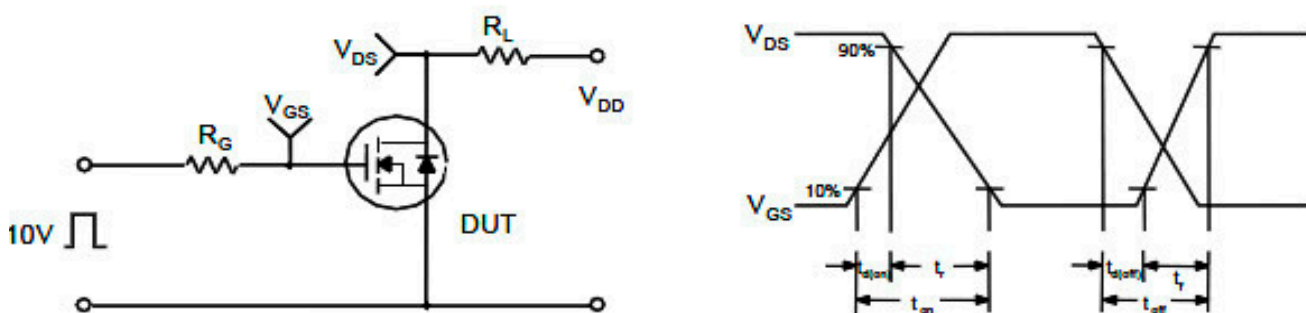
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■ 测试电路和波形

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

