

双 N 沟道 MOSFET

ELM54214WA-N

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

■概要

ELM54214WA-N 是 N 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

- $V_{ds}=30V$
- $I_d=9A$
- $R_{ds(on)} = 16m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 18m\Omega$ ($V_{gs}=4.5V$)

■绝对最大额定值

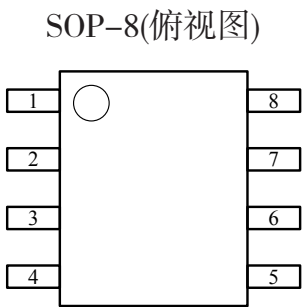
如没有特别注明时, $T_a=25^{\circ}C$

项目	记号	规格范围	单位
漏极 - 源极电压	V_{ds}	30	V
栅极 - 源极电压	V_{gs}	± 20	V
漏极电流 (定常) $T_j=150^{\circ}C$	I_d	9.0	A
		7.5	
漏极电流 (脉冲)	I_{dm}	20	A
容许功耗	P_d	2.8	W
		1.8	
动作结合部温度	T_j	150	$^{\circ}C$
保存温度范围	T_{stg}	$-55 \sim 150$	$^{\circ}C$

■热特性

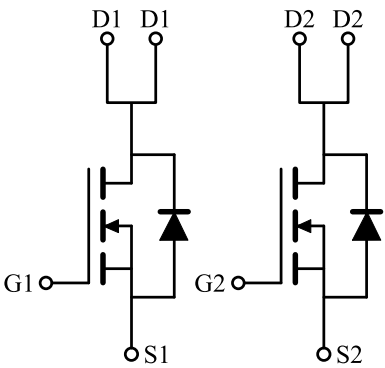
项目	记号	典型值	最大值	单位
最大结合部 - 环境热阻	$R_{\theta ja}$		62.5	$^{\circ}C/W$

■引脚配置图



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



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■电特性

如没有特别注明时, Ta=25℃

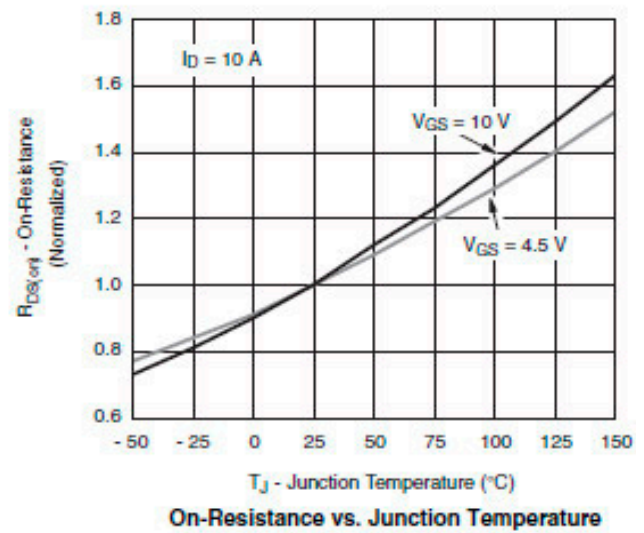
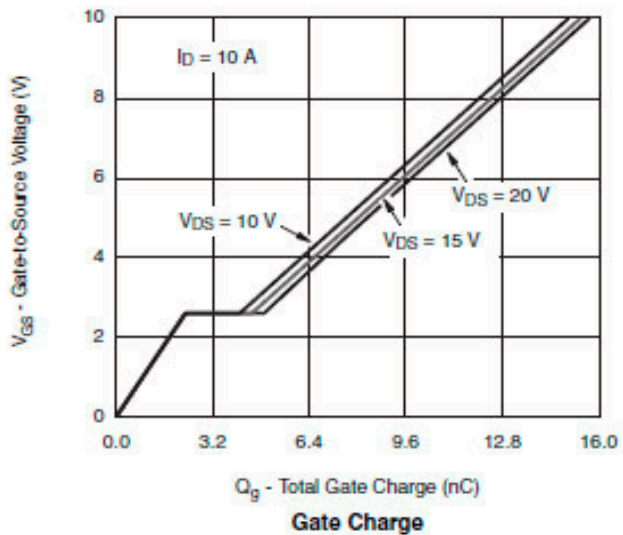
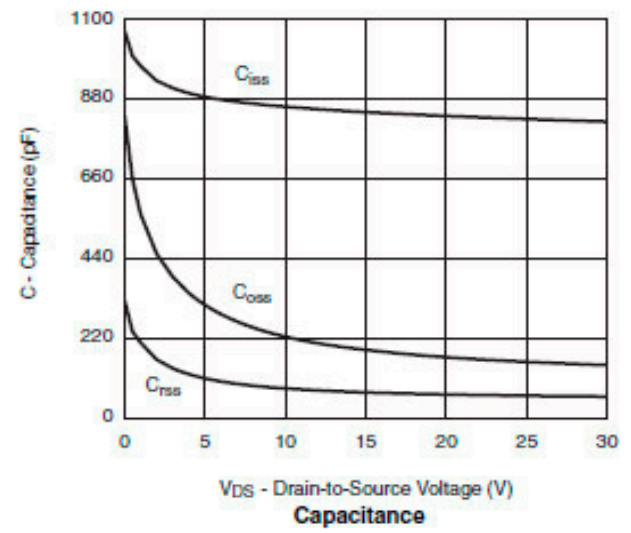
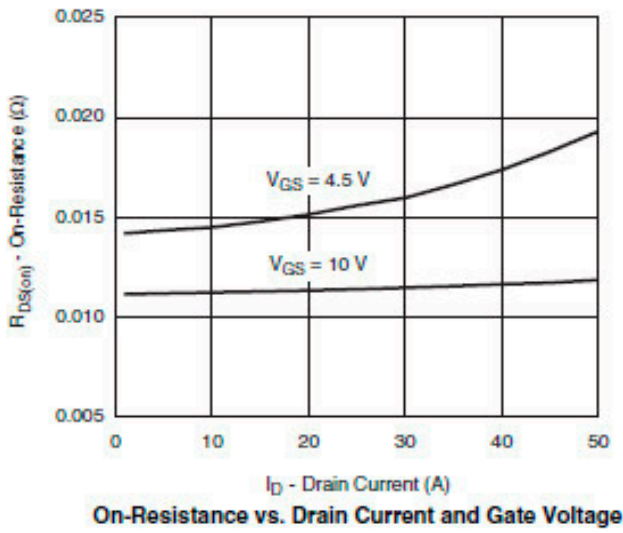
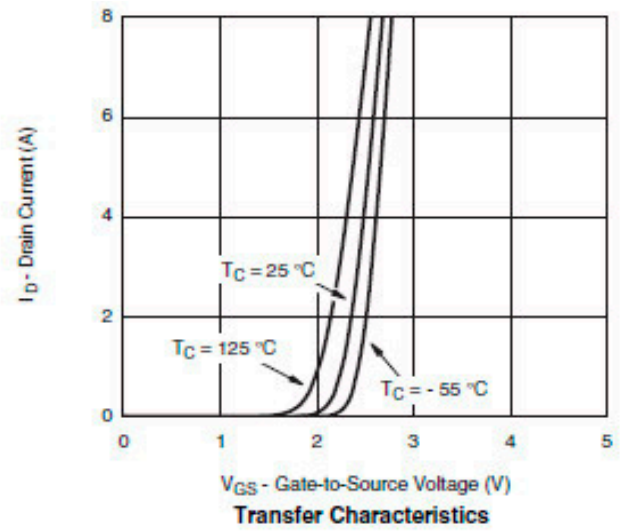
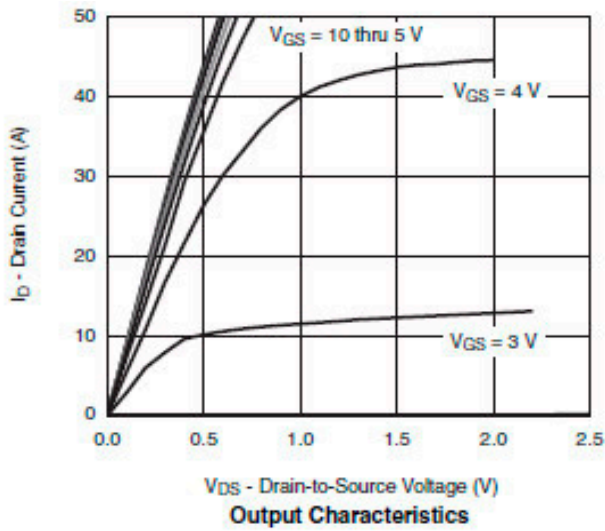
项目	记号	条件	最小值	典型值	最大值	单位	
静态特性							
漏极 – 源极击穿电压	BV _{dss}	I _d =250μA, V _{gs} =0V		30		V	
栅极接地时漏极电流	I _{dss}	V _{ds} =30V, V _{gs} =0V			1	μA	
			T _a =85℃				10
栅极漏电流	I _{gss}	V _{ds} =0V, V _{gs} = ± 20V			± 100	nA	
栅极阈值电压	V _{gs} (th)	V _{ds} =V _{gs} , I _d =250 μA		0.5	1.8	V	
导通时漏极电流	I _d (on)	V _{gs} =10V, V _{ds} ≥ 5V		15		A	
漏极 – 源极导通电阻	R _{ds} (on)	V _{gs} =10V, I _d =9A			13	16	mΩ
		V _{gs} =4.5V, I _d =8A			14	18	
正向跨导	G _{fs}	V _{ds} =15V, I _d =10A			24	S	
二极管正向压降	V _{sd}	I _s =3.0A, V _{gs} =0V			0.8	1.3	V
寄生二极管最大连续电流	I _s				1.5	A	
动态特性							
输入电容	C _{iss}	V _{gs} =0V, V _{ds} =15V, f=1MHz			800		pF
输出电容	C _{oss}				180		pF
反馈电容	C _{rss}				70		pF
开关特性							
总栅极电荷	Q _g	V _{gs} =4.5V, V _{ds} =15V, I _d =10A			8.0	12.0	nC
栅极 – 源极电荷	Q _{gs}				2.0		nC
栅极 – 漏极电荷	Q _{gd}				2.3		nC
导通延迟时间	t _d (on)	V _{gs} =10V, V _{ds} =15V, I _d =10A			8	15	ns
导通上升时间	t _r				8	15	ns
关闭延迟时间	t _d (off)				16	28	ns
关闭下降时间	t _f				8	16	ns

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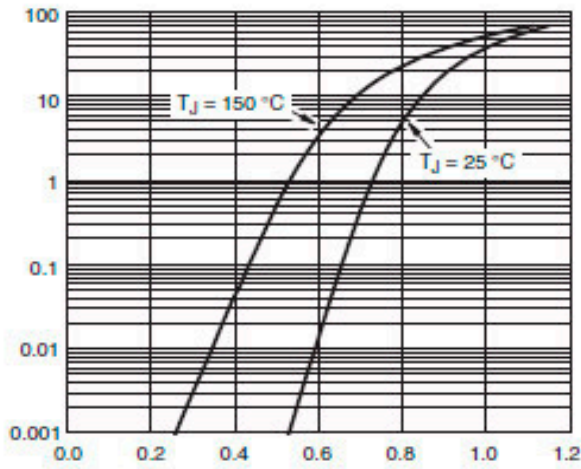
■ 标准特性和热特性曲线



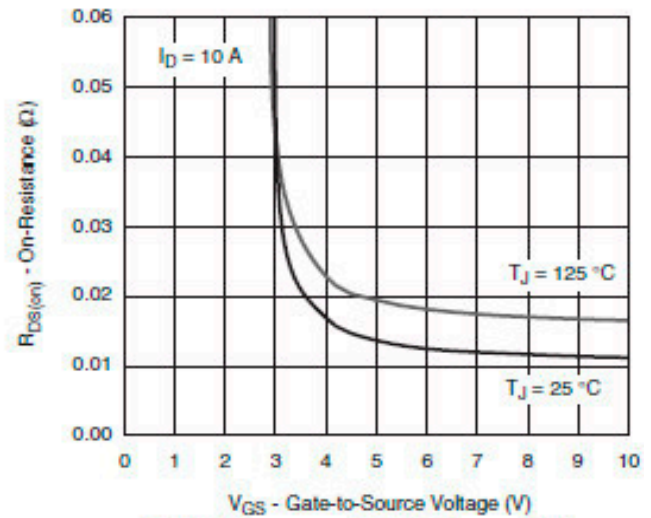
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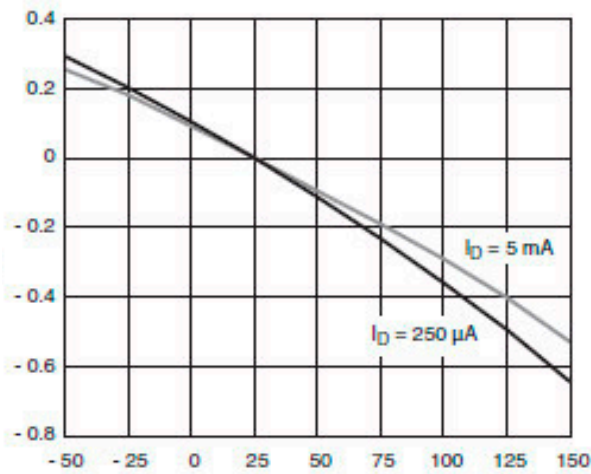
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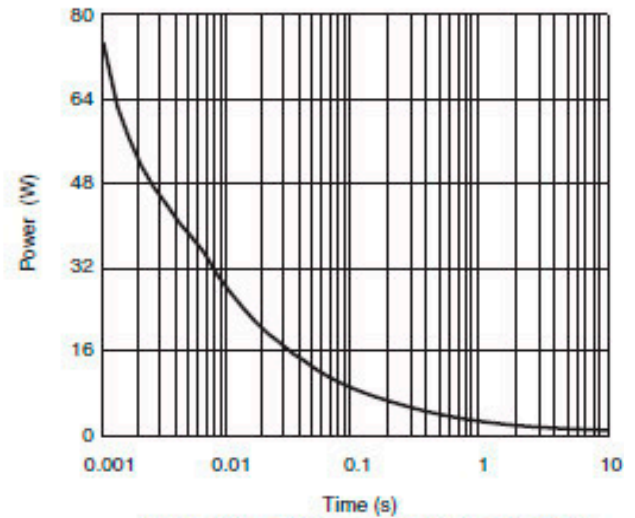
V_{SD} - Source-to-Drain Voltage (V)
Source-Drain Diode Forward Voltage



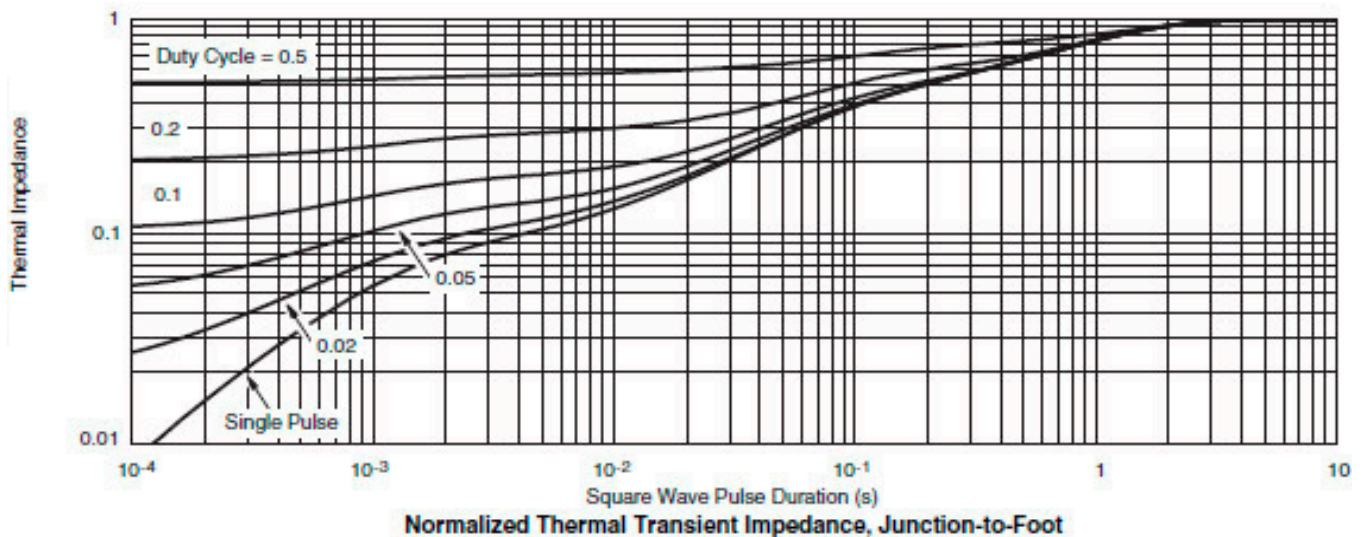
$R_{DS(on)}$ - On-Resistance (Ω)
On-Resistance vs. Gate-to-Source Voltage



T_J - Temperature ($^{\circ}\text{C}$)
Threshold Voltage



Power (W)
Single Pulse Power, Junction-to-Ambient



Thermal Impedance
Normalized Thermal Transient Impedance, Junction-to-Foot

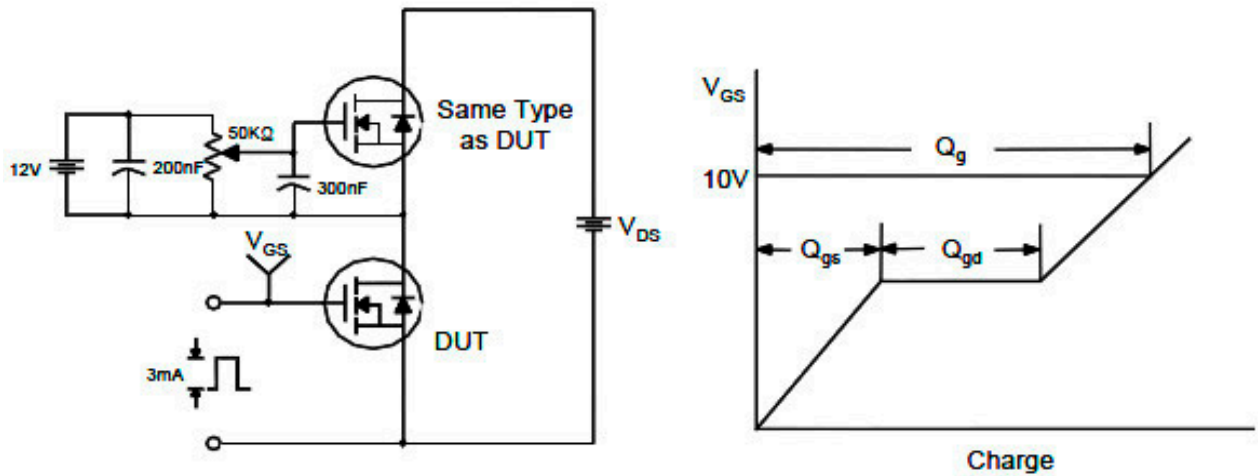
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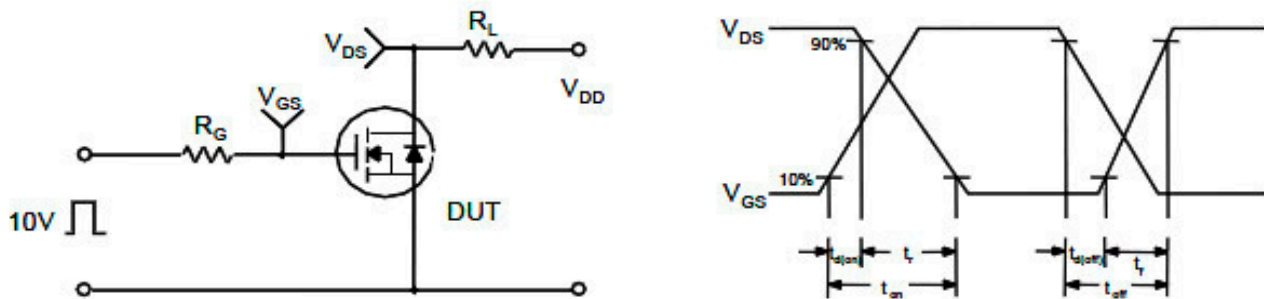
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■测试电路和波形

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

