

单 N 沟道 MOSFET

ELM52444WSA-N

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

■概要

ELM52444WSA-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。

■特点

- $V_{ds}=30V$
- $I_d=11A$
- $R_{ds(on)} = 15m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 20m\Omega$ ($V_{gs}=4.5V$)

■绝对最大额定值

如没有特别注明时, $T_a=25^\circ C$

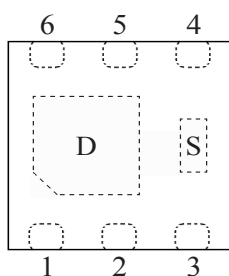
项目	记号	规格范围	单位
漏极 - 源极电压	V_{ds}	30	V
栅极 - 源极电压	V_{gs}	± 20	V
漏极电流 ($T_j=150^\circ C$)	I_d	11.0	A
		8.8	
漏极电流 (脉冲)	I_{dm}	40	A
容许功耗	P_d	3.5	W
		2.2	
动作结合部温度	T_j	150	$^\circ C$
保存温度范围	T_{stg}	$-55 \sim 150$	$^\circ C$

■热特性

项目	记号	典型值	最大值	单位
最大结合部 - 环境热阻	$R_{\theta ja}$		36	$^\circ C/W$

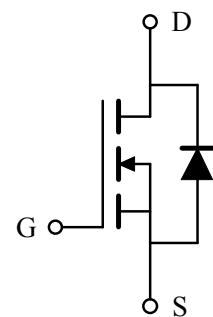
■引脚配置图

DFN6-2×2(俯视图)



引脚编号	引脚名称
1	DRAIN
2	DRAIN
3	GATE
4	SOURCE
5	DRAIN
6	DRAIN

■电路图



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■电特性

如没有特别注明时, Ta=25℃

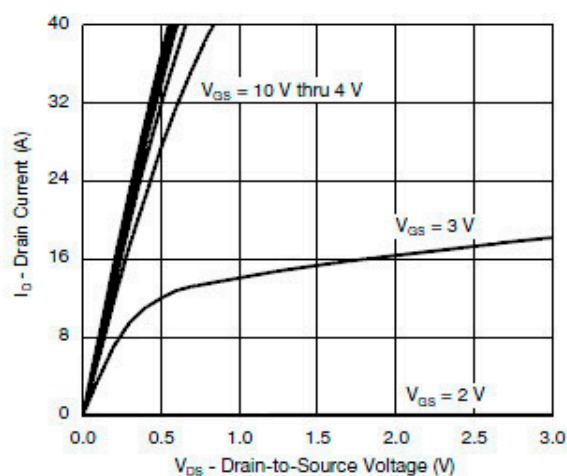
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 – 源极击穿电压	BV _{dss}	I _d =250μA, V _{gs} =0V	30			V
栅极接地时漏极电流	I _{dss}	V _{ds} =24V, V _{gs} =0V			1	μA
		V _{ds} =24V, V _{gs} =0V, T _a =85℃			10	
栅极漏电流	I _{gss}	V _{ds} =0V, V _{gs} = ± 12V			± 100	nA
栅极阈值电压	V _{gs} (th)	V _{ds} =V _{gs} , I _d =250μA	1.0		2.5	V
导通时漏极电流	I _d (on)	V _{gs} =10V, V _{ds} ≥5V	20			A
漏极 – 源极导通电阻	R _{ds} (on)	V _{gs} =10V, I _d =3.0A		11	15	mΩ
		V _{gs} =4.5V, I _d =3.0A		14	20	
正向跨导	G _{fs}	V _{ds} =10V, I _d =7.4A		24		S
二极管正向压降	V _{sd}	I _s =3.0A, V _{gs} =0V		0.85	1.30	V
寄生二极管最大连续电流	I _s				2.9	A
动态特性						
输入电容	C _{iss}	V _{gs} =0V, V _{ds} =15V, f=1MHz		560		pF
输出电容	C _{oss}			125		pF
反馈电容	C _{rss}			55		pF
开关特性						
总栅极电荷	Q _g	V _{gs} =4.5V, V _{ds} =15V, I _d ≡11A		5.0	10.0	nC
栅极 – 源极电荷	Q _{gs}			1.5		nC
栅极 – 漏极电荷	Q _{gd}			1.7		nC
导通延迟时间	t _d (on)	V _{gs} =4.5V, V _{ds} =15V RL=1.7Ω, I _d ≡8.8A R _{gen} =1Ω		12	25	ns
导通上升时间	t _r			12	25	ns
关闭延迟时间	t _d (off)			15	30	ns
关闭下降时间	t _f			10	20	ns

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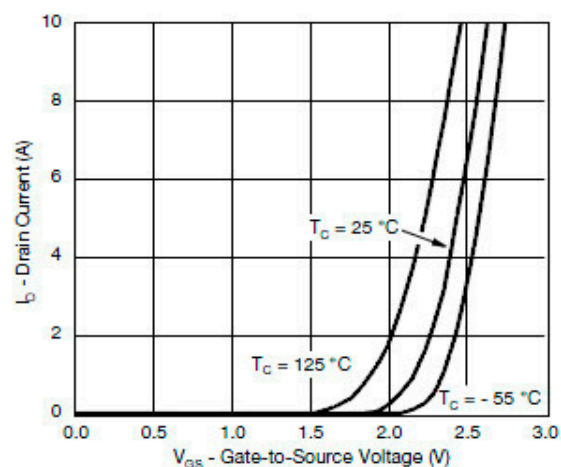
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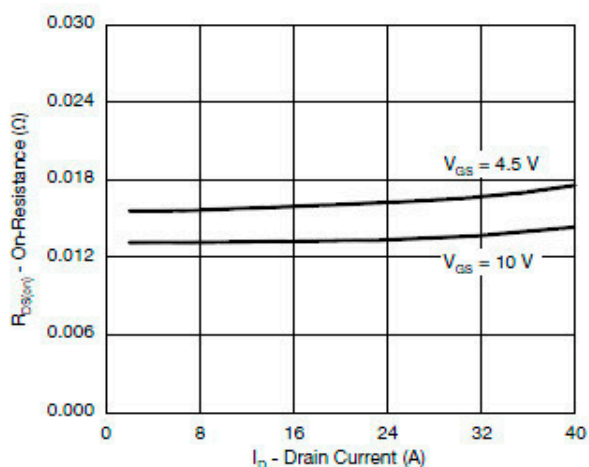
■ 标准特性和热特性曲线



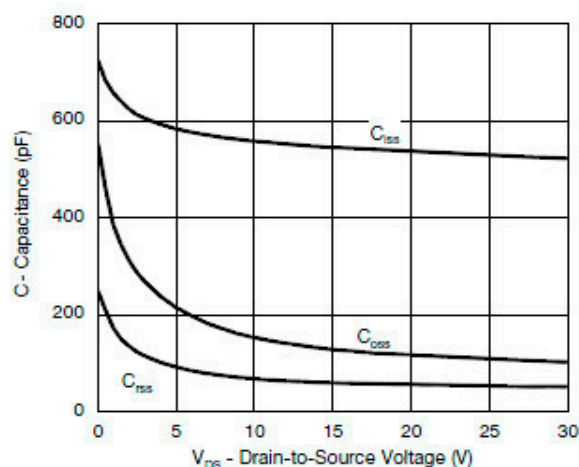
Output Characteristics



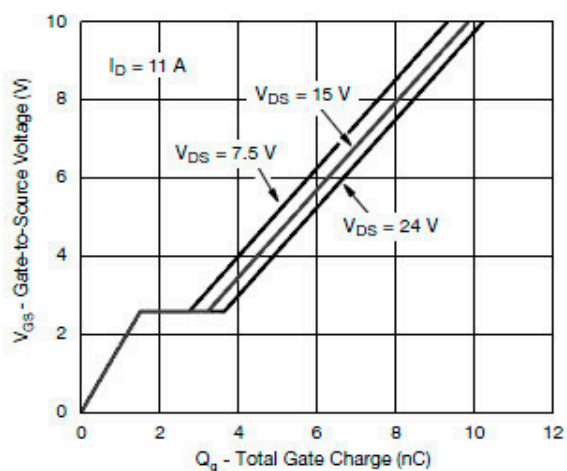
Transfer Characteristics



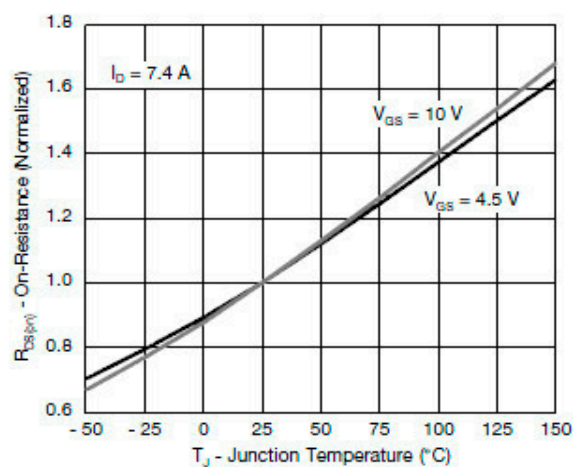
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge

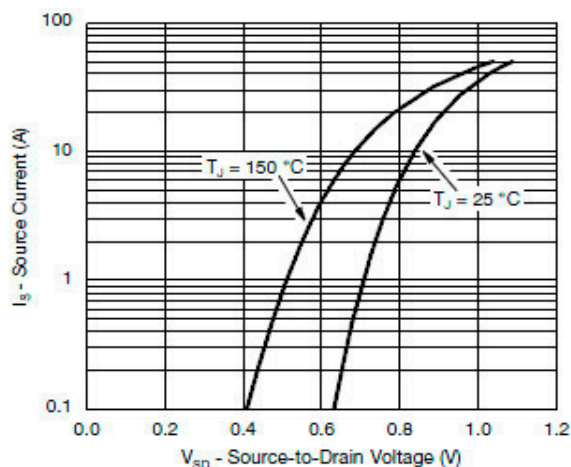


On-Resistance vs. Junction Temperature

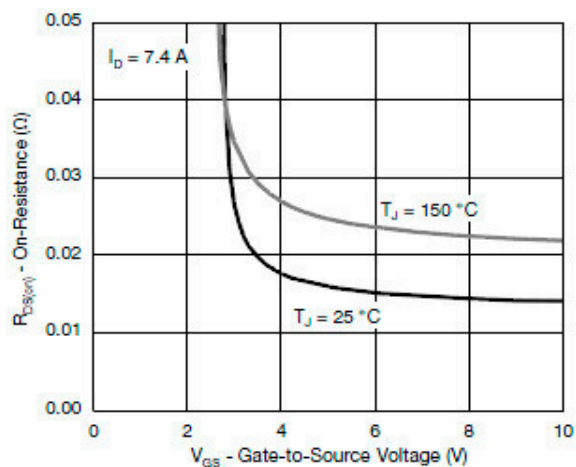
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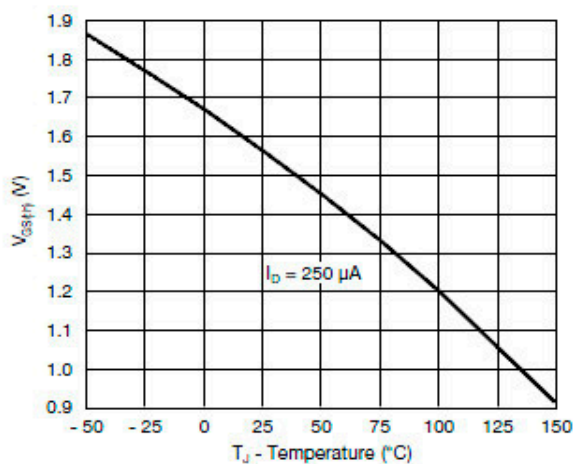
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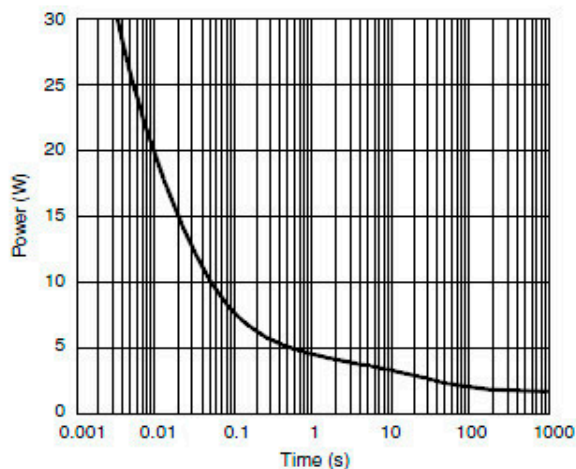
Source-Drain Diode Forward Voltage



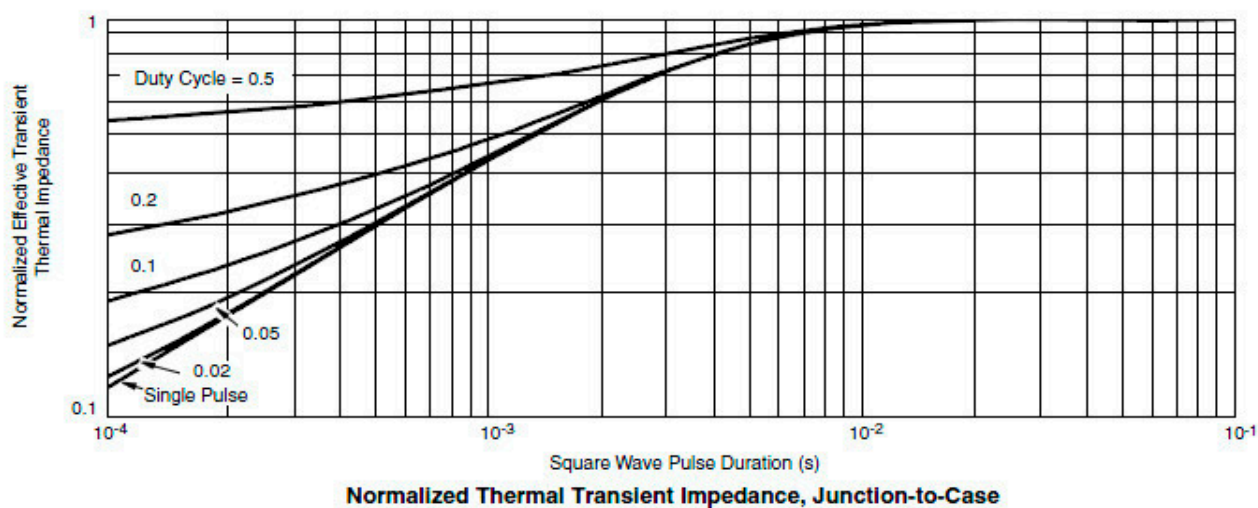
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power (Junction-to-Ambient)



Normalized Thermal Transient Impedance, Junction-to-Case

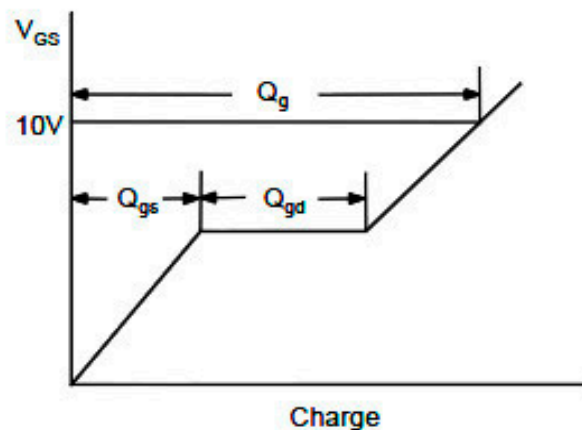
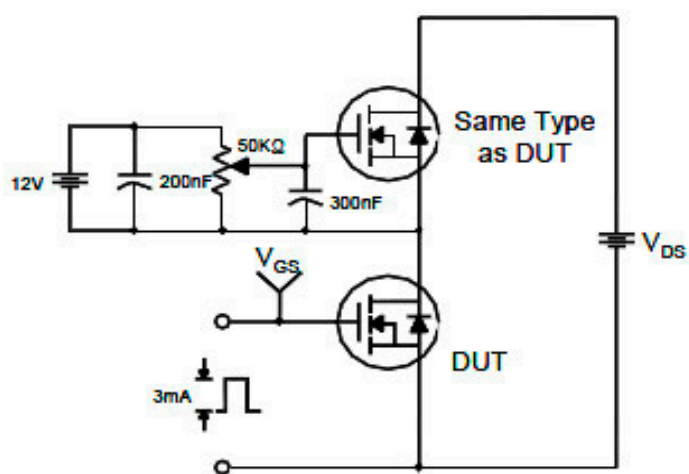
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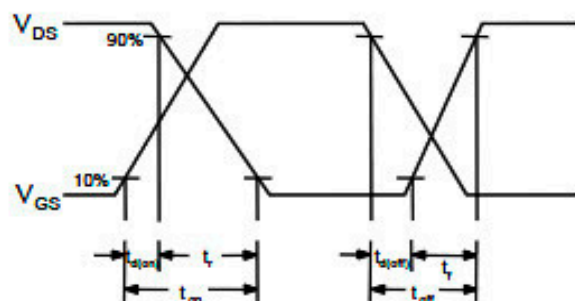
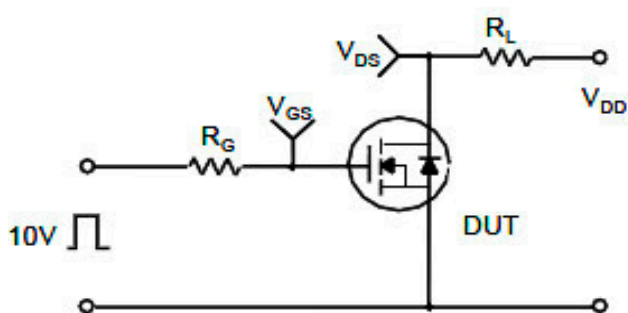
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■测试电路和波形

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

