

复合沟道 MOSFET

ELM54616CWSA-N

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

■概要

ELM54616CWSA-N 是低输入电容、低工作电压、低导通电阻的大电流 MOSFET。同时内藏有 N 沟道和 P 沟道的复合产品。

■特点

- | | |
|--|---|
| N 沟道 | P 沟道 |
| • $V_{ds}=30V$ | • $V_{ds}=-30V$ |
| • $I_d=8.0A$ | • $I_d=-8.0A$ |
| • $R_{ds(on)} = 18m\Omega (V_{gs}=10V)$ | • $R_{ds(on)} = 18m\Omega (V_{gs}=-10V)$ |
| • $R_{ds(on)} = 22m\Omega (V_{gs}=4.5V)$ | • $R_{ds(on)} = 22m\Omega (V_{gs}=-4.5V)$ |

■绝对最大额定值

如没有特别注明时, $T_a=25^\circ C$

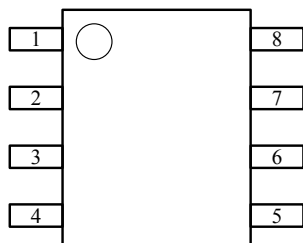
项目	记号	N 沟道 (最大值)	P 沟道 (最大值)	单位
漏极 - 源极电压	V_{ds}	30	-30	V
栅极 - 源极电压	V_{gs}	± 20	± 20	V
漏极电流 (定常) ($T_j=150^\circ C$)	I_d	$T_a=25^\circ C$	8.0	-8.0
		$T_a=70^\circ C$	6.0	-6.0
漏极电流 (脉冲)	I_{dm}	25	-30	A
容许功耗	P_d	$T_c=25^\circ C$	2.8	2.8
		$T_c=70^\circ C$	1.8	1.8
结合部温度	T_j	150	150	$^\circ C$
保存温度范围	T_{stg}	-55 ~ 150	-55 ~ 150	$^\circ C$

■热特性

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

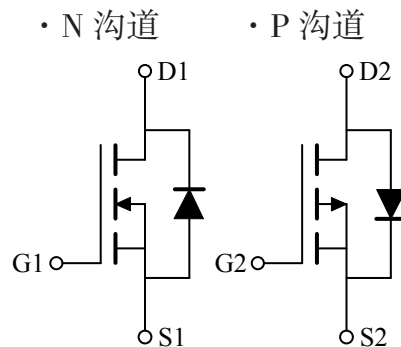
■引脚配置图

SOP-8(俯视图)



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 (N 沟道)

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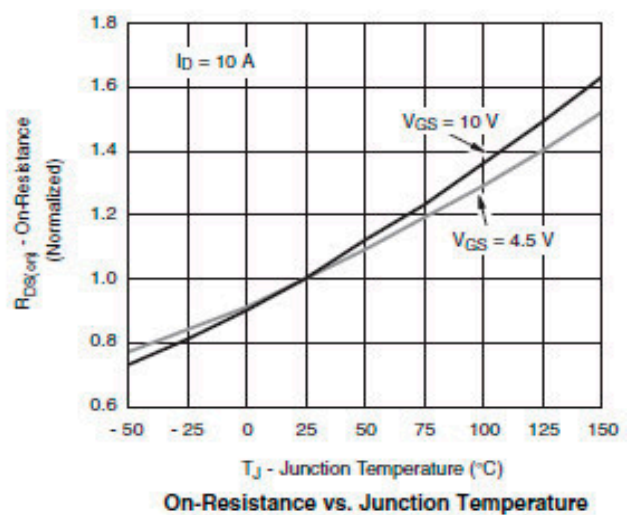
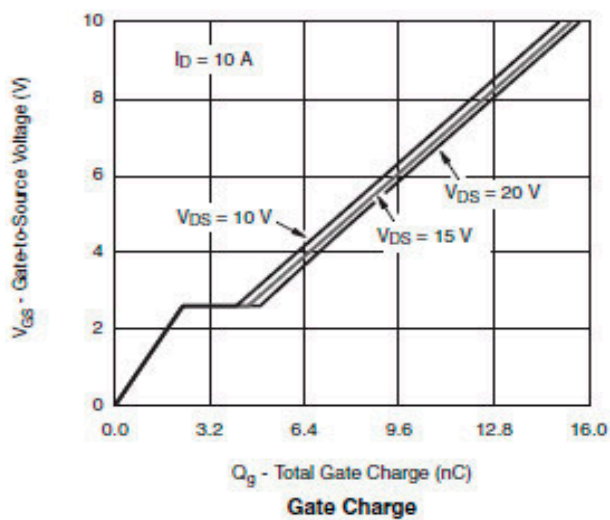
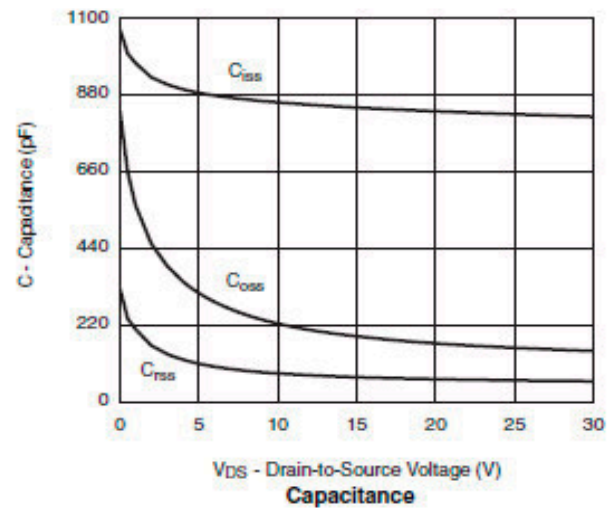
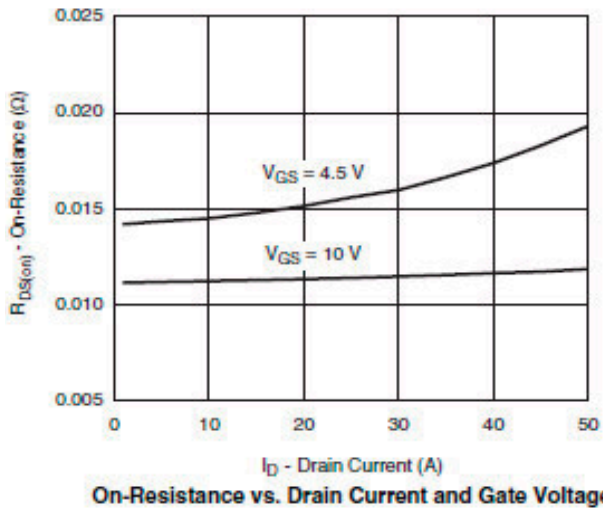
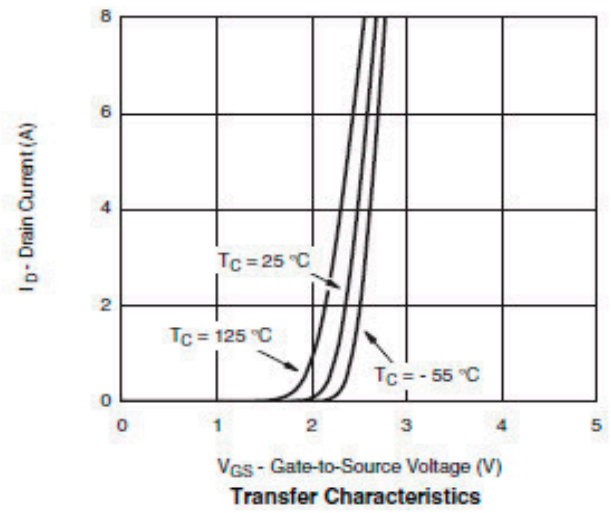
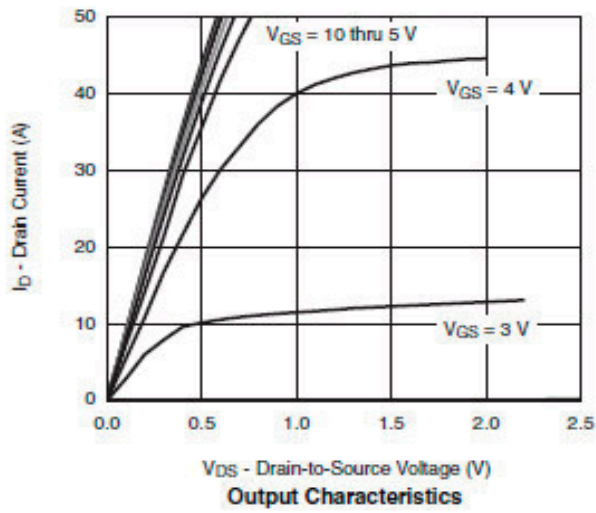
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 - 源极击穿电压	BVdss	Id=250μA, Vgs=0V	30			V
栅极接地时漏极电流	Idss	Vds=30V, Vgs=0V Ta=85℃			1	μA
					10	
栅极漏电电流	Igss	Vds=0V, Vgs=±20V			±100	nA
栅极阈值电压	Vgs(th)	Vds=Vgs, Id=250μA	0.5		1.8	V
导通时漏极电流	Id(on)	Vgs=10V, Vds≥5V	15			A
漏极 - 源极导通电阻	Rds(on)	Vgs=10V, Id=8.0A		13	18	mΩ
		Vgs=4.5V, Id=6.0A		14	22	
正向跨导	Gfs	Vds=15V, Id=10.0A		24		S
二极管正向压降	Vsd	Is=3.0A, Vgs=0V		0.8	1.3	V
寄生二极管最大连续电流	Is				1.5	A
动态特性						
输入电容	Ciss	Vgs=0V, Vds=15V, f=1MHz		800		pF
输出电容	Coss			180		pF
反馈电容	Crss			70		pF
开关特性						
总栅极电荷	Qg	Vgs=4.5V, Vds=15V, Id≐10.0A		8.0	12.0	nC
栅极 - 源极电荷	Qgs			2.0		nC
栅极 - 漏极电荷	Qgd			2.3		nC
导通延迟时间	td(on)	Vgs=10V, Vds=15V, Id≐10.0A RL=1.5Ω, Rgen=1Ω		8	15	ns
导通上升时间	tr			8	15	ns
关闭延迟时间	td(off)			16	28	ns
关闭下降时间	tf			8	16	ns

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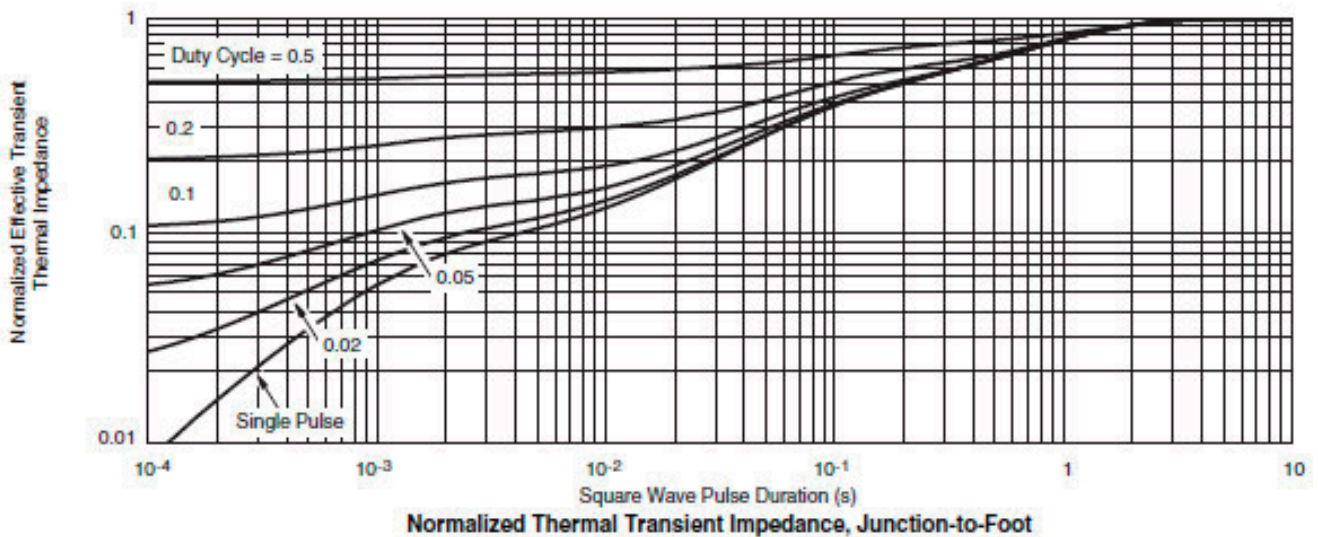
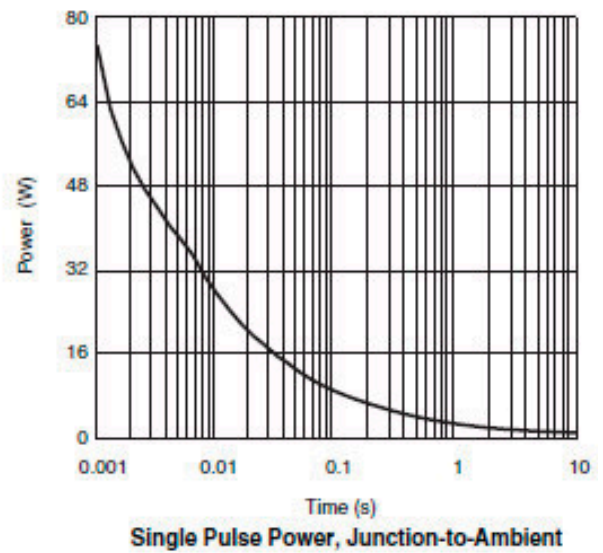
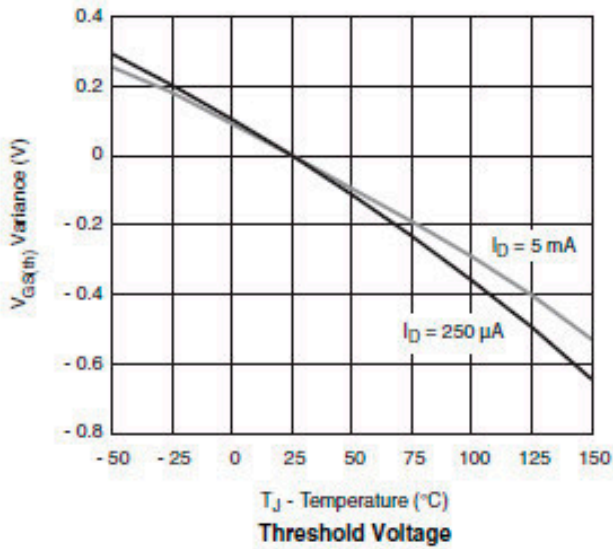
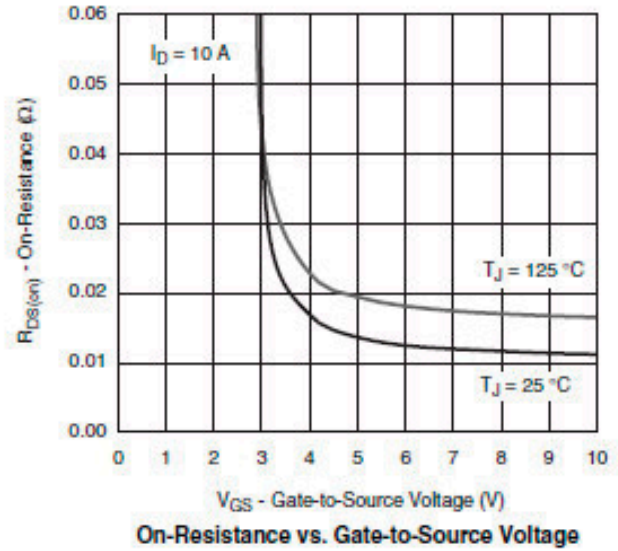
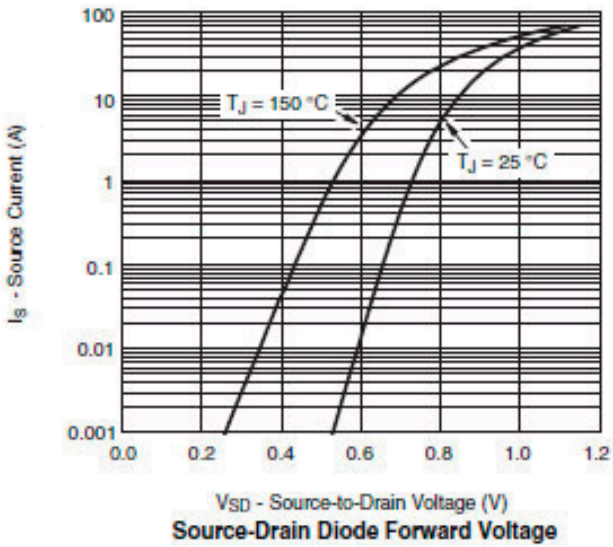
■ 标准特性曲线 (N 沟道)



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■电特性 (P 沟道)

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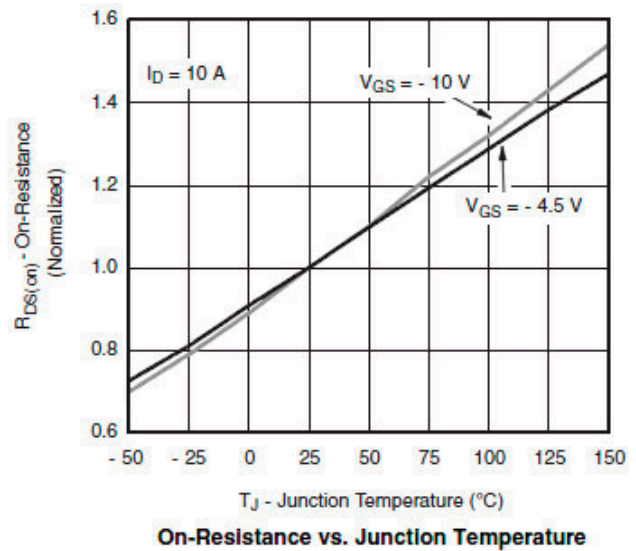
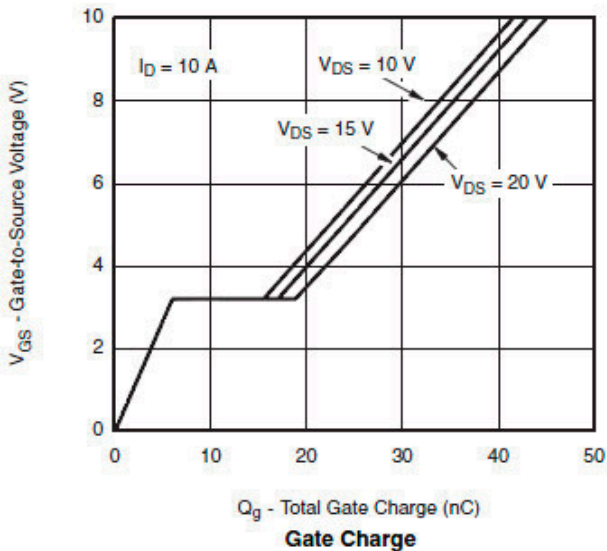
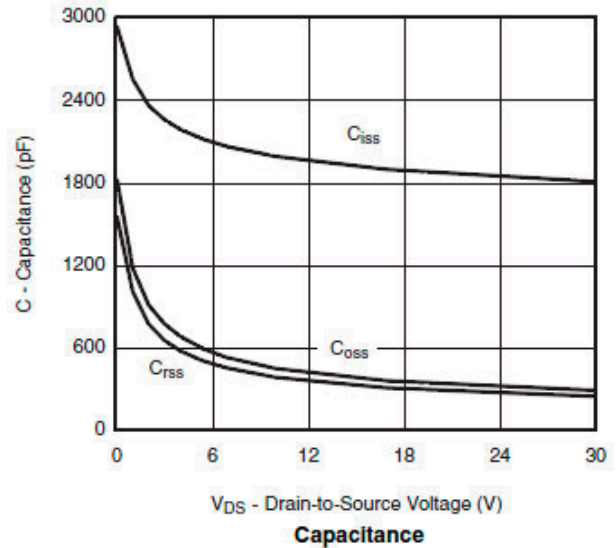
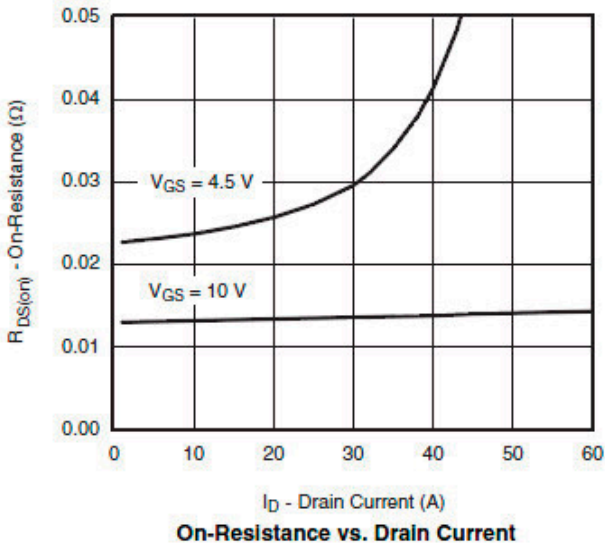
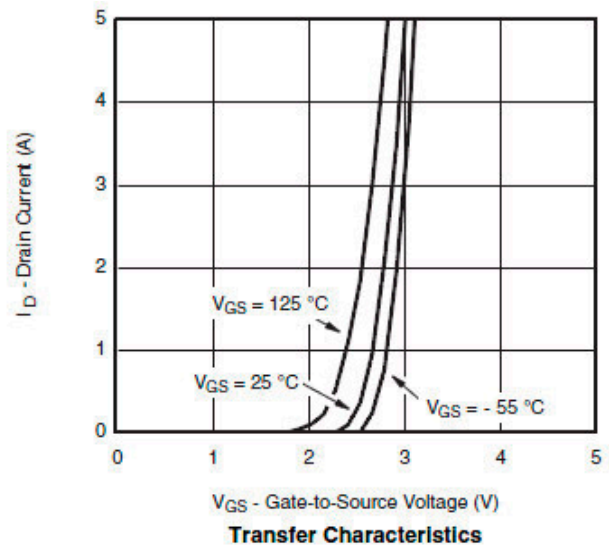
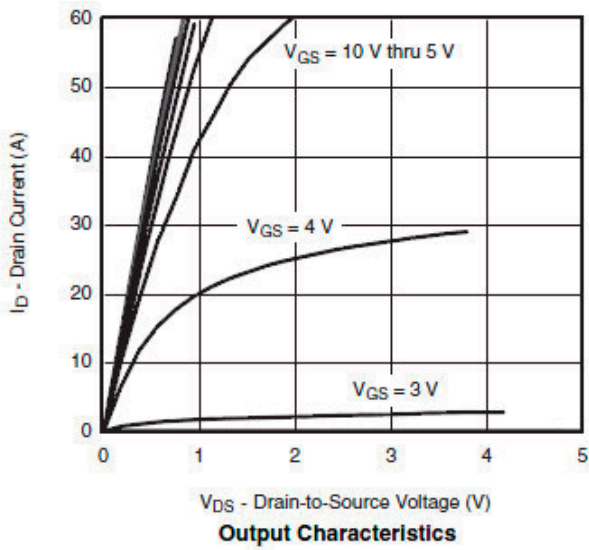
项目	记号	条件	最小值	典型值	最大值	单位
静态特性						
漏极 - 源极击穿电压	BVdss	Id=-250μA, Vgs=0V	-30			V
栅极接地时漏极电流	Idss	Vds=-24V, Vgs=0V Ta=85℃			-1	μA
					-30	
栅极漏电流	Igss	Vds=0V, Vgs=±25V			±100	nA
栅极阈值电压	Vgs(th)	Vds=Vgs, Id=-250μA	-1.0		-2.0	V
导通时漏极电流	Id(on)	Vgs=-10V, Vds≥-10V	-30			A
		Vgs=-4.5V, Vds≥-5V	-5			
漏极 - 源极导通电阻	Rds(on)	Vgs=-10V, Id=-8.0A		15	18	mΩ
		Vgs=-4.5V, Id=-6.0A		19	22	
正向跨导	Gfs	Vds=-10V, Id=-9.0A		22		S
二极管正向压降	Vsd	Is=-2.3A, Vgs=0V		-0.7	-1.3	V
寄生二极管最大连续电流	Is				-1.7	A
动态特性						
输入电容	Ciss	Vgs=0V, Vds=-15V, f=1MHz		1600		pF
输出电容	Coss			350		pF
反馈电容	Crss			300		pF
开关特性						
总栅极电荷	Qg	Vgs=-4.5V, Vds=-15V Id≐-6.0A		20	30	nC
栅极 - 源极电荷	Qgs			6		nC
栅极 - 漏极电荷	Qgd			10		nC
导通延迟时间	td(on)	Vgs=-10V, Vds=-15V Id≐-5.0A, RL=3Ω		10	20	ns
导通上升时间	tr			12	24	ns
关闭延迟时间	td(off)	Rgen=1Ω		30	45	ns
关闭下降时间	tf			10	20	ns

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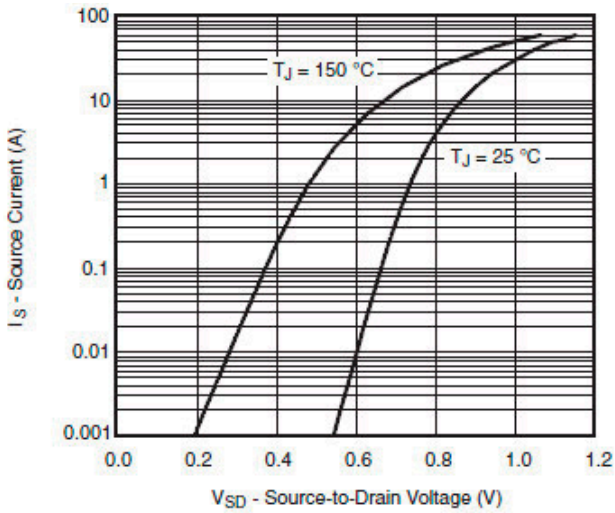
■ 标准特性曲线 (P 沟道)



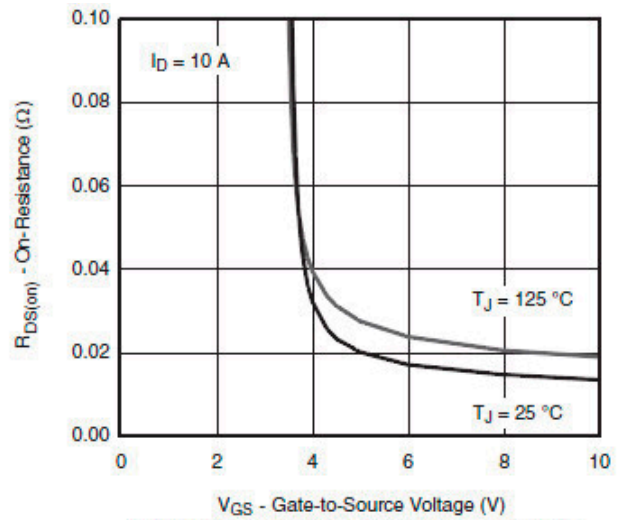
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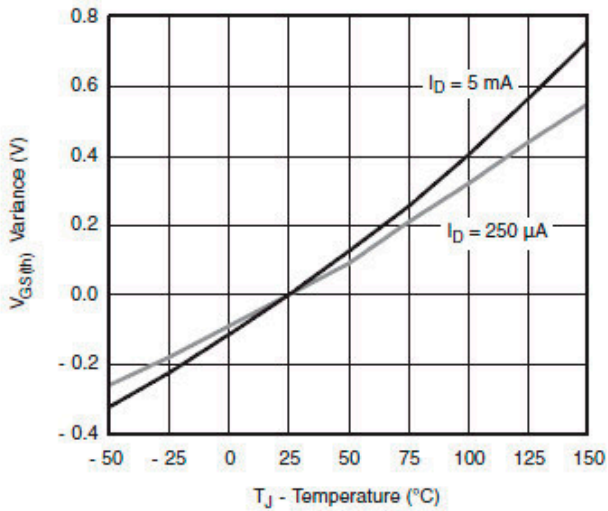
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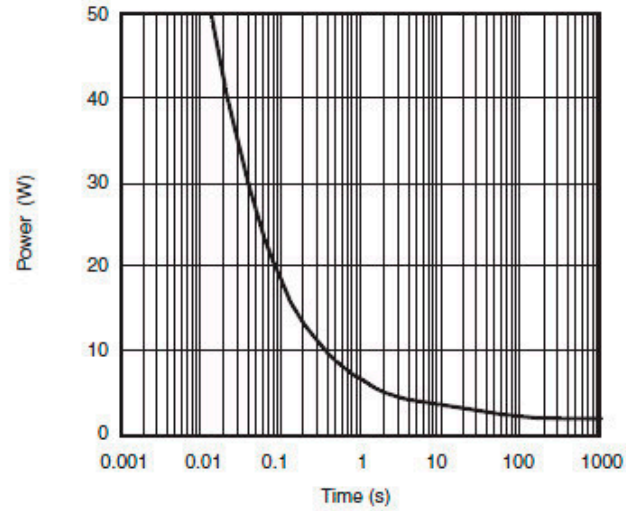
Source-Drain Diode Forward Voltage



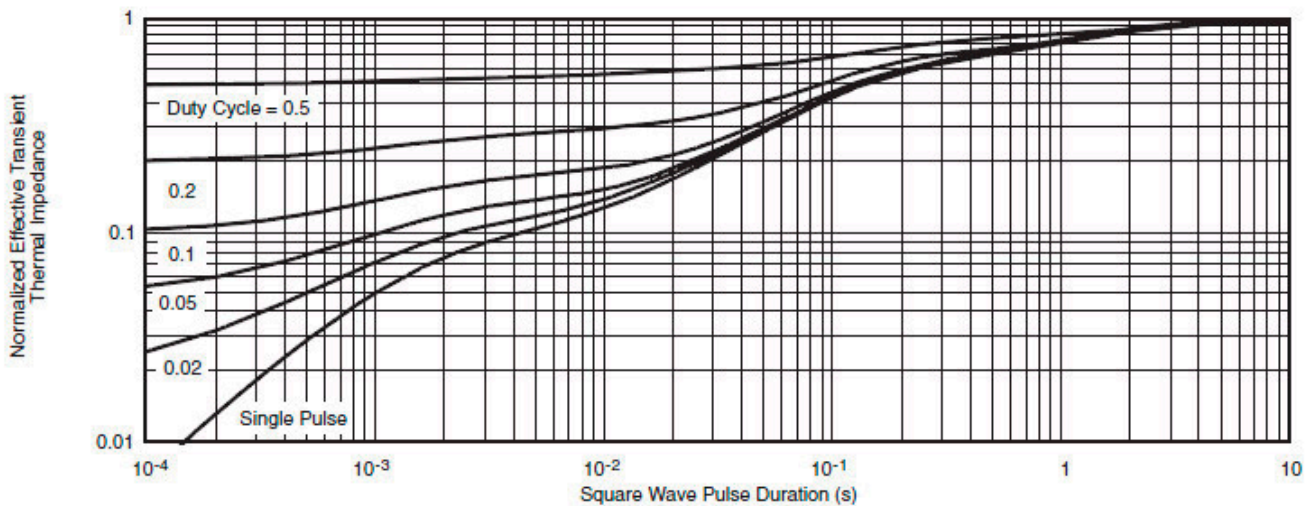
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

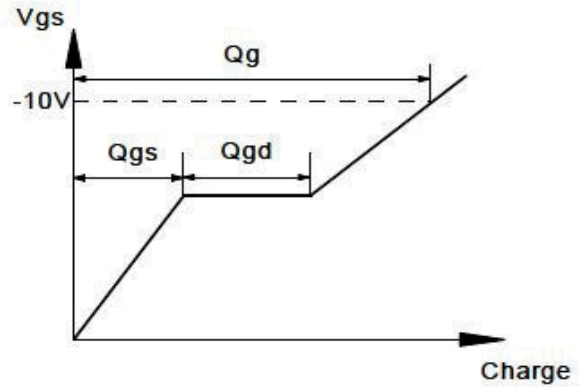
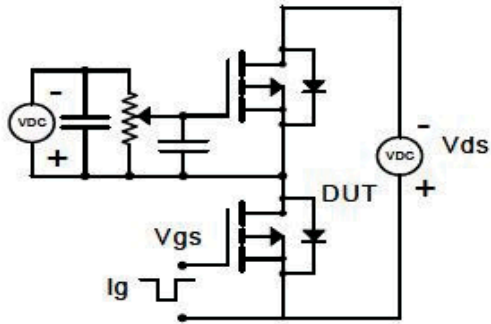
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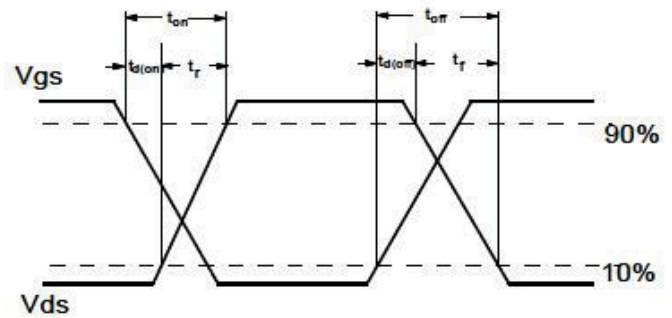
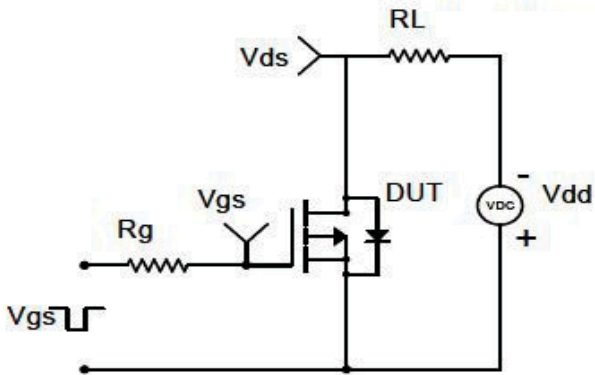
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