

Complementary MOSFET

ELM53366CWA-N

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

■ General Description

ELM53366CWA-N uses advanced trench technology to provide excellent Rds(on) and low gate charge.

■ Features

- | | |
|--------------------------|----------------------------|
| N-channel | P-channel |
| • Vds=60V | • Vds=-60V |
| • Id=12.0A | • Id=-8.0A |
| • Rds(on)=48mΩ(Vgs=10V) | • Rds(on)=105mΩ(Vgs=-10V) |
| • Rds(on)=54mΩ(Vgs=4.5V) | • Rds(on)=115mΩ(Vgs=-4.5V) |

■ Maximum Absolute Ratings

Ta=25°C. Unless otherwise noted.

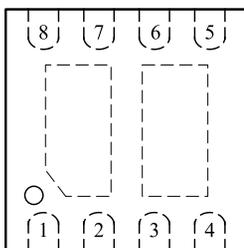
Parameter	Symbol	N-ch (Max.)	P-ch (Max.)	Unit
Drain-source voltage	Vds	60	-60	V
Gate-source voltage	Vgs	±20	±20	V
Continuous drain current(Tj=150°C)	Id	Ta=25°C	-8	A
		Ta=70°C	-6	
Pulsed drain current	Idm	30	-30	A
Power dissipation	Pd	Tc=25°C	1.8	W
		Tc=70°C	1.2	
Operating junction temperature	Tj	150	150	°C
Storage temperature range	Tstg	-55 to 150	-55 to 150	°C

■ Thermal Characteristics

Parameter	Symbol	Device	Typ.	Max.	Unit
Thermal resistance junction-to-ambient	Rθja	N-ch		56.0	°C/W
Thermal resistance junction-to-ambient	Rθja	P-ch		62.5	°C/W

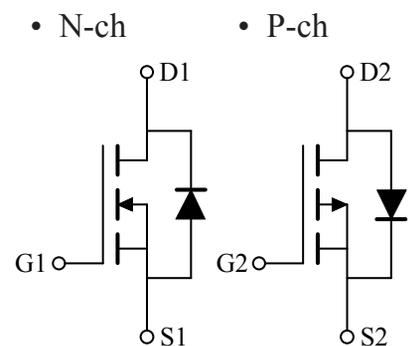
■ Pin configuration

DFN8-3×3(TOP VIEW)



Pin No.	Pin name
1	SOURCE1
2	GATE1
3	SOURCE2
4	GATE2
5	DRAIN2
6	DRAIN2
7	DRAIN1
8	DRAIN1

■ Circuit



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■ Electrical Characteristics (N-ch)

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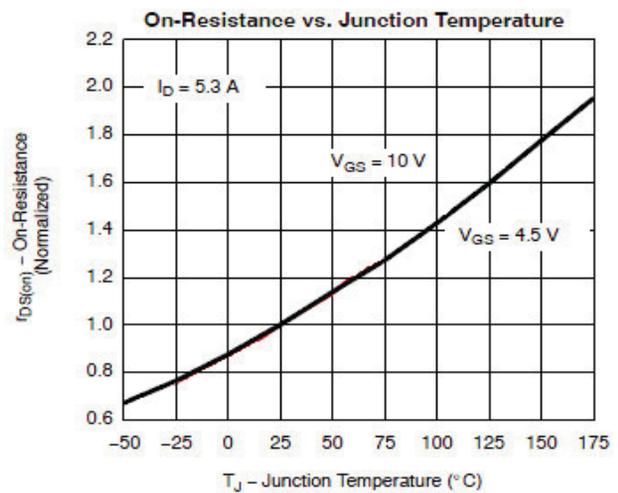
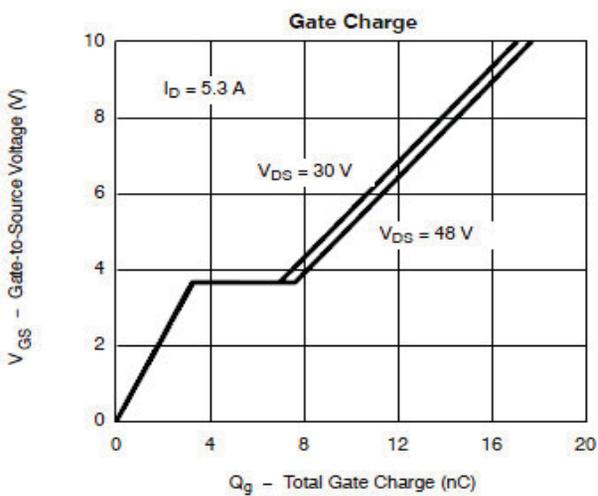
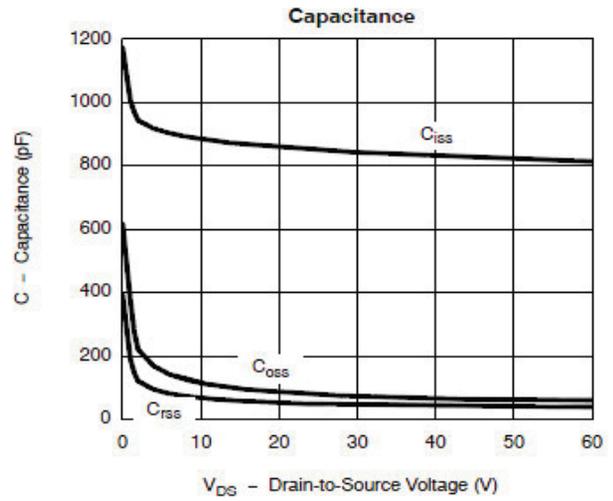
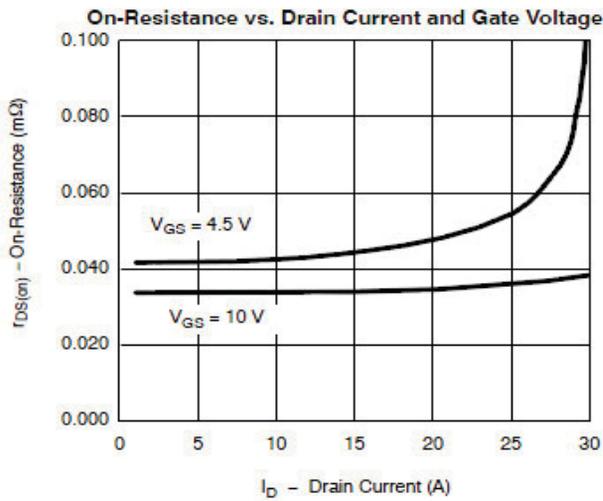
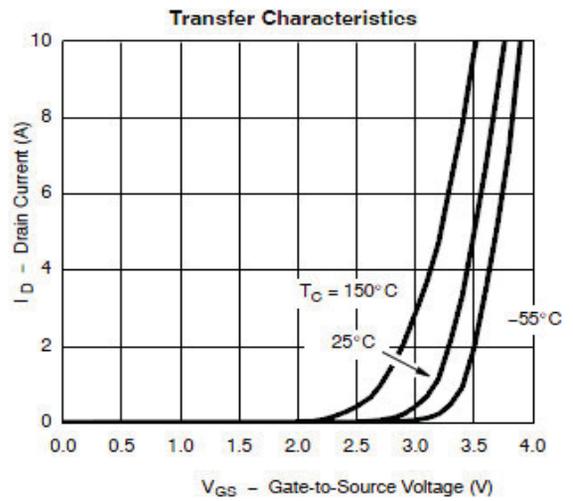
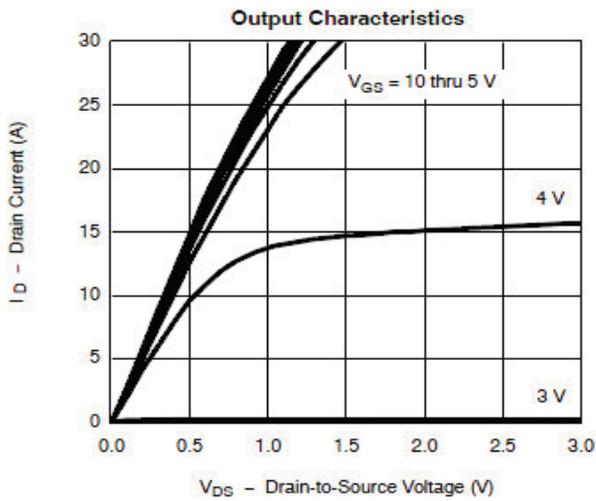
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	60			V
Zero gate voltage drain current	Idss	Vds=48V, Vgs=0V Ta=85°C			1	μA
					5	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	0.8		2.5	V
On state drain current	Id(on)	Vgs=4.5V, Vds≥5V	30			A
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=12.0A		40	48	mΩ
		Vgs=4.5V, Id=10.0A		44	54	
Forward transconductance	Gfs	Vds=15V, Id=5.3A		24		S
Diode forward voltage	Vsd	Is=2A, Vgs=0V		0.8	1.2	V
Max.body-diode continuous current	Is				10	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=30V, f=1MHz		890		pF
Output capacitance	Coss			85		pF
Reverse transfer capacitance	Crss			48		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=5V, Vds=30V, Id=5.6A		10.0	15.0	nC
Gate-source charge	Qgs			3.5		nC
Gate-drain charge	Qgd			3.6		nC
Turn-on delay time	td(on)	Vgs=4.5V, Vds=30V, Id=5.0A RL=6.8Ω, Rgen=6.0Ω		10	15	ns
Turn-on rise time	tr			12	20	ns
Turn-off delay time	td(off)			25	35	ns
Turn-off fall time	tf			10	15	ns

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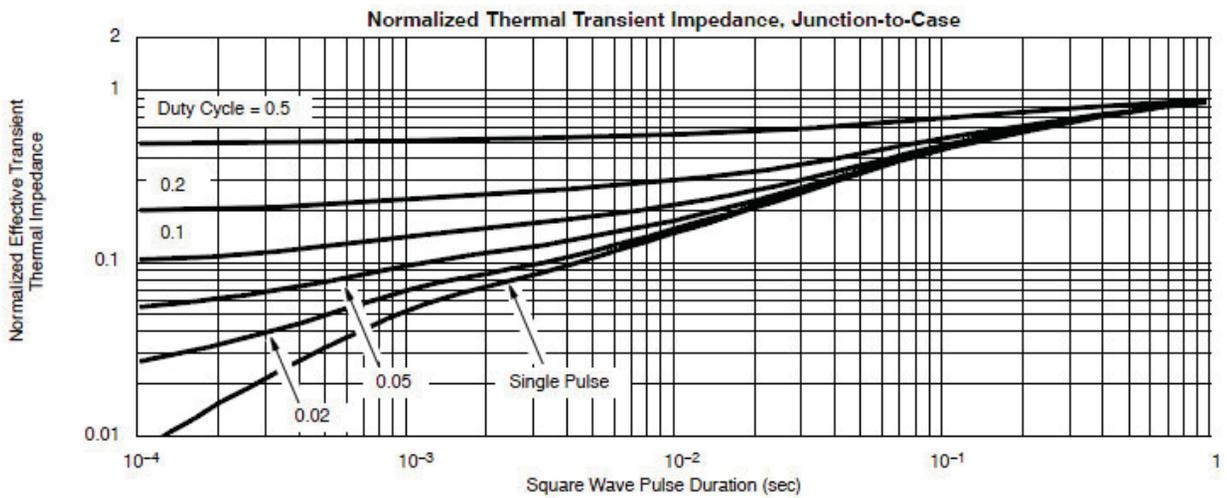
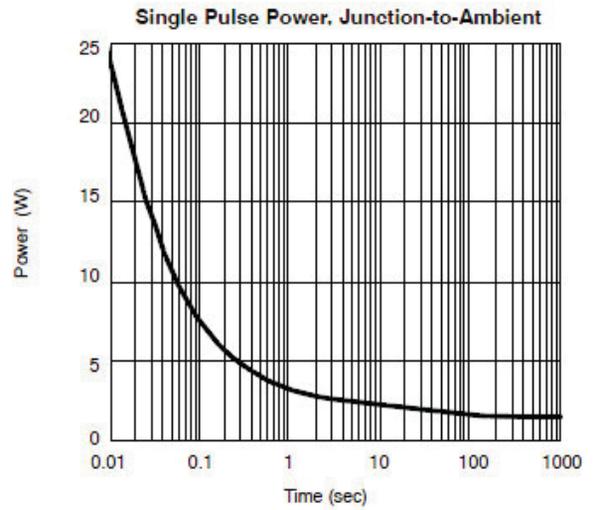
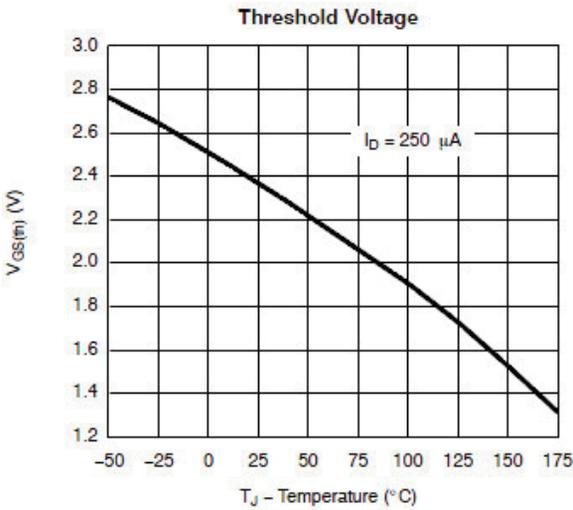
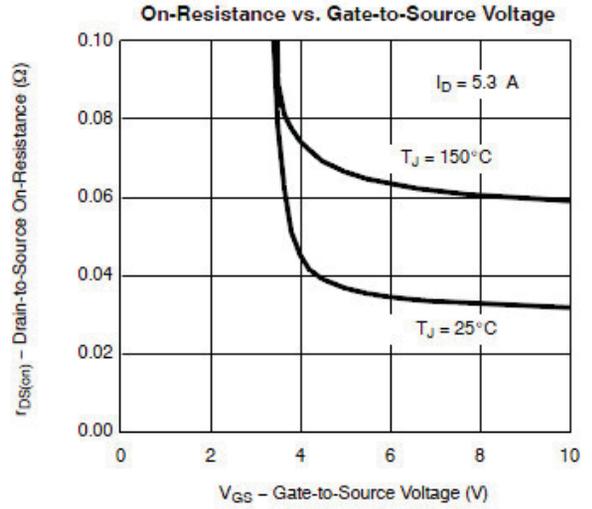
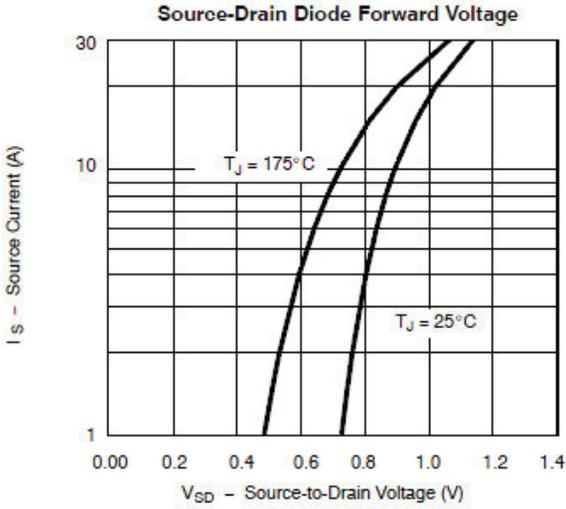
■ Typical Electrical and Thermal Characteristics (N-ch)



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■Electrical Characteristics (P-ch)

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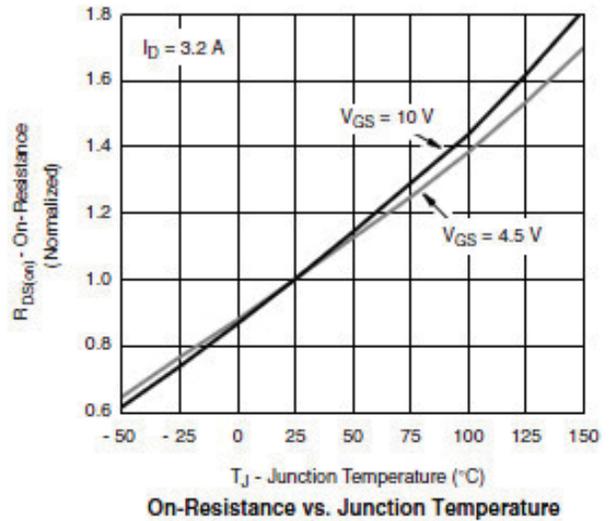
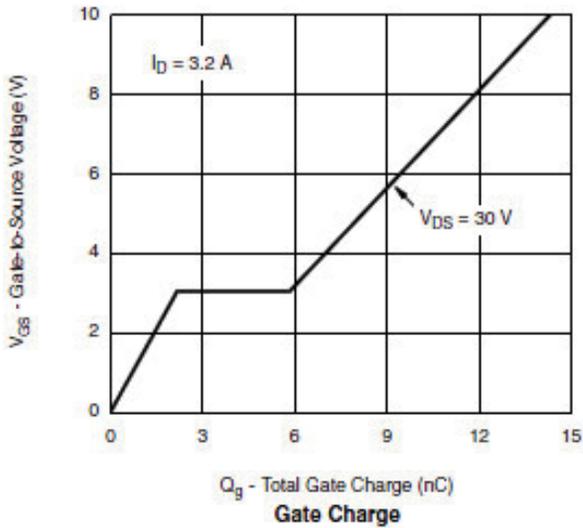
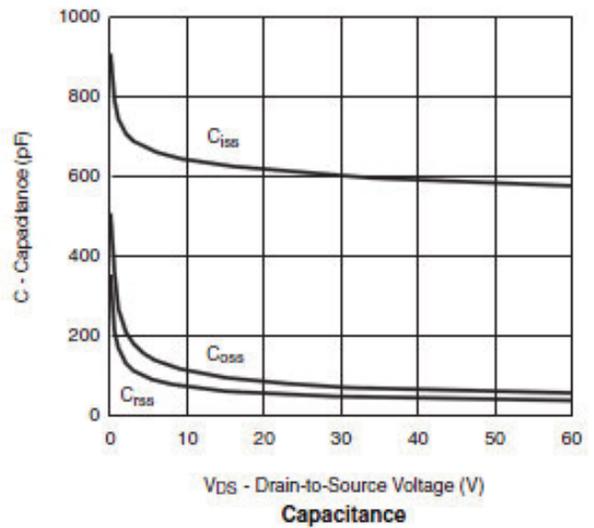
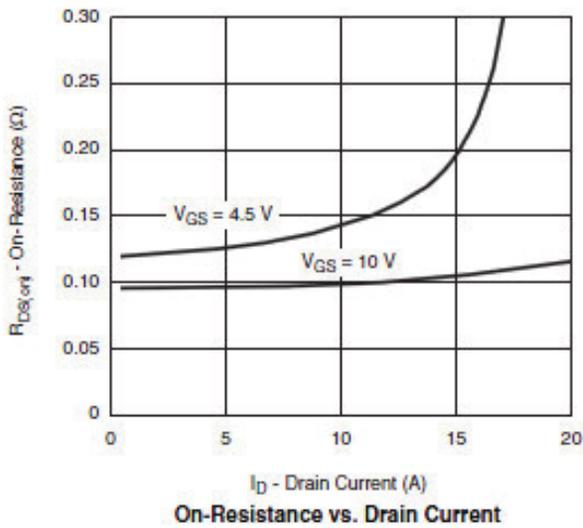
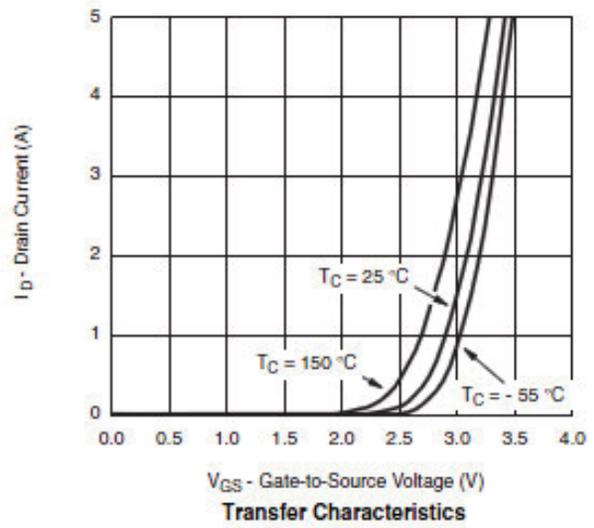
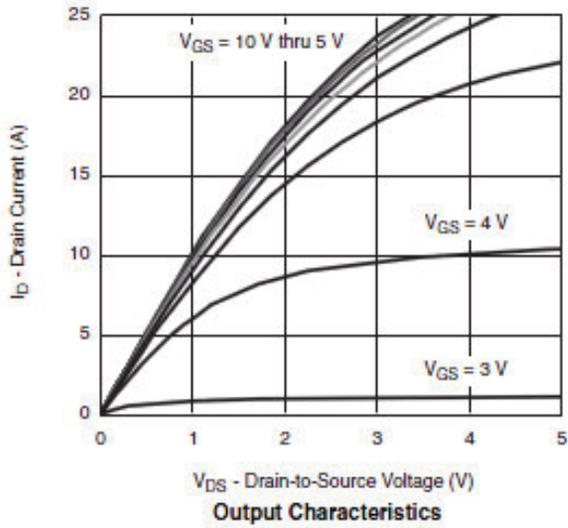
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Zero gate voltage drain current	Idss	Vds=-48V, Vgs=0V Ta=85°C			-1	μA
					-20	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-0.8		-2.5	V
On state drain current	Id(on)	Vgs=-10V, Vds≥-5V	-20			A
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-8.0A		96	105	mΩ
		Vgs=-4.5V, Id=-6.0A		104	115	
Forward transconductance	Gfs	Vds=-15V, Id=-3.2A		12		S
Diode forward voltage	Vsd	Is=-2A, Vgs=0V		-0.8	-1.2	V
Max. body-diode continuous current	Is				-10	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=-30V, f=1MHz		900		pF
Output capacitance	Coss			90		pF
Reverse transfer capacitance	Crss			40		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=-10V, Vds=-30V Id≐4.0A		12.0	20.0	nC
Gate-source charge	Qgs			2.5		nC
Gate-drain charge	Qgd			3.5		nC
Turn-on delay time	td(on)	Vgs=-10V, Vds=-30V Id≐3.0A, RL=7.5Ω Rgen=3.0Ω		10	20	ns
Turn-on rise time	tr			6	10	ns
Turn-off delay time	td(off)			30	45	ns
Turn-off fall time	tf			12	25	ns

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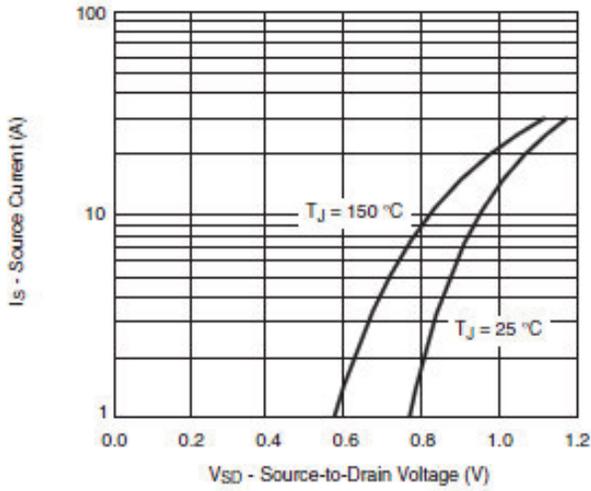
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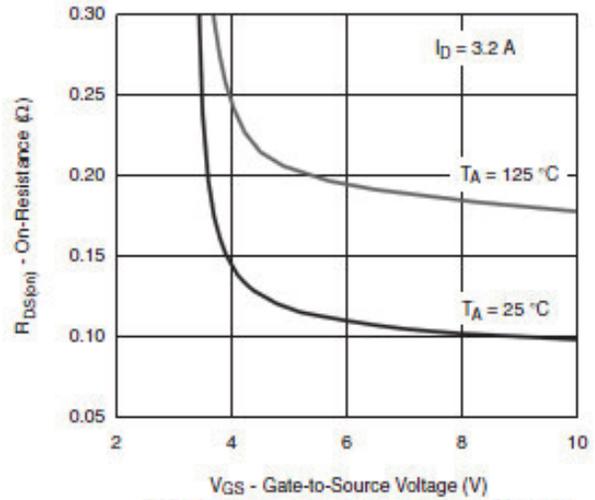
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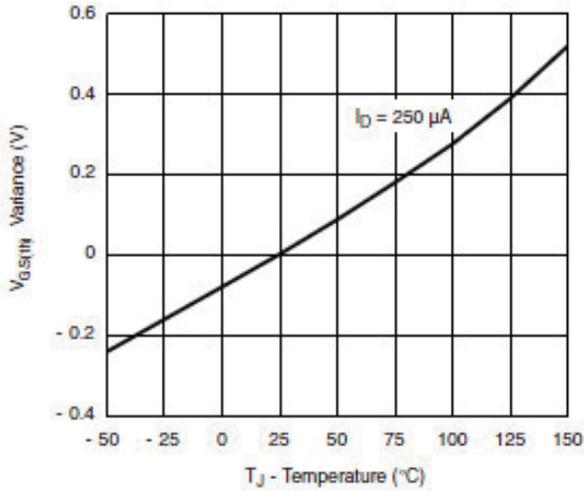
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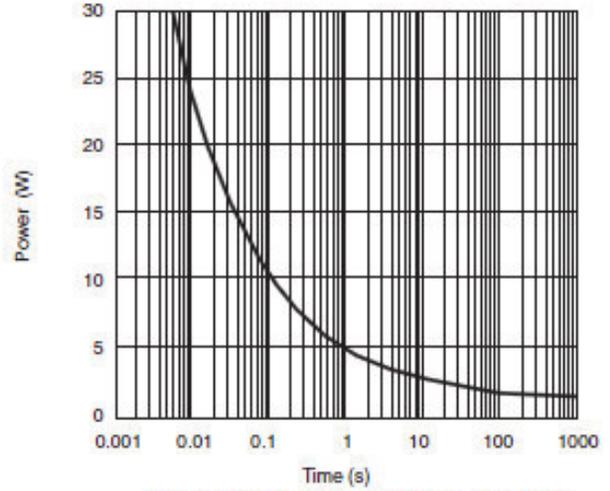
Source-Drain Diode Forward Voltage



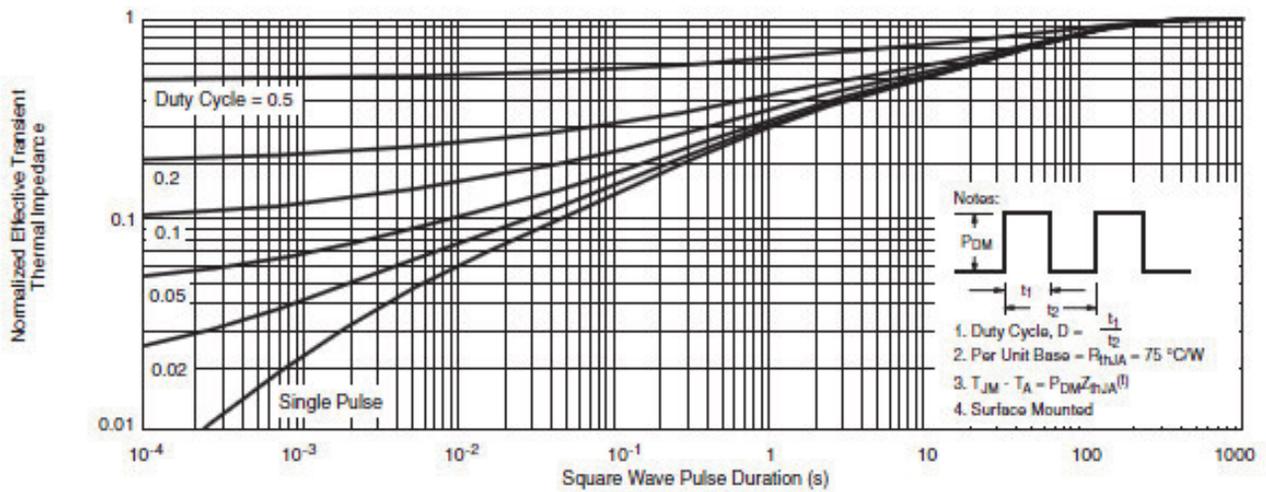
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

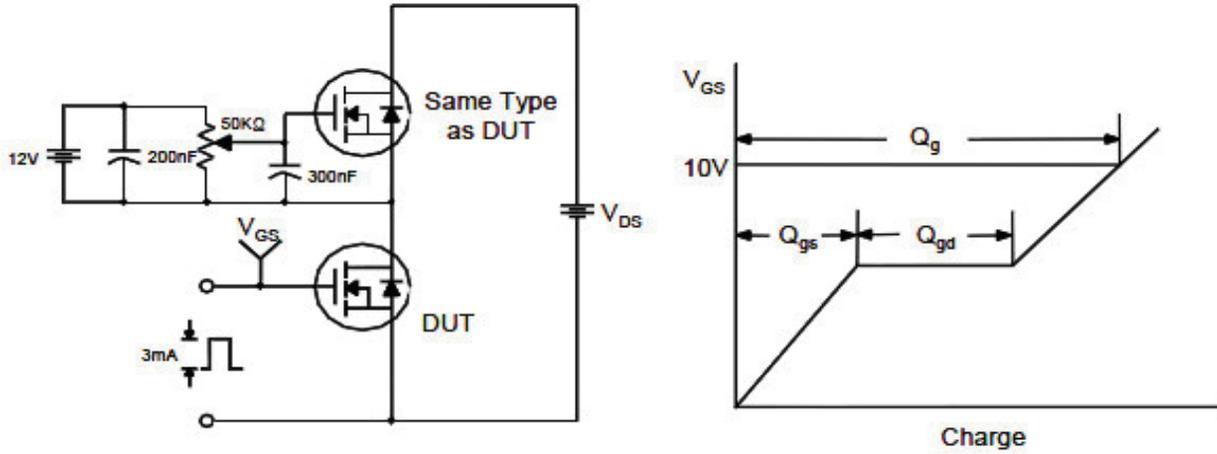
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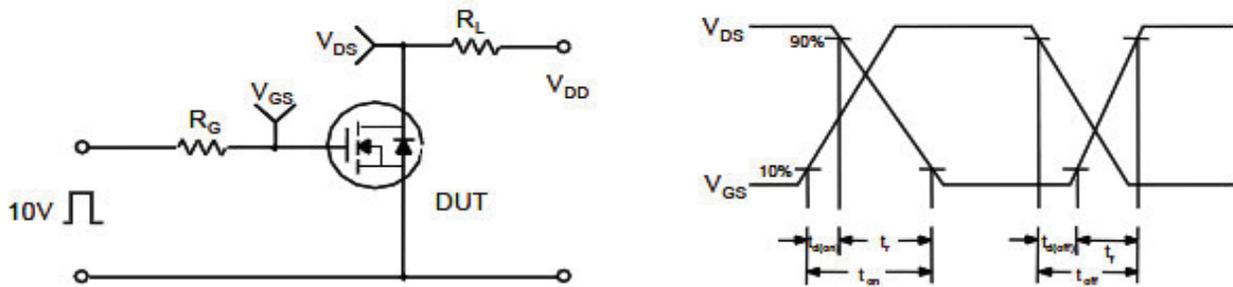
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■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

