

Single N-channel MOSFET

ELM52416WA-N

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

■ General description

ELM52416WA-N uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■ Features

- $V_{ds}=100V$
- $I_d=8A$
- $R_{ds(on)} = 120m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 130m\Omega$ ($V_{gs}=4.5V$)

■ Maximum absolute ratings

$T_a=25^\circ C$. Unless otherwise noted.

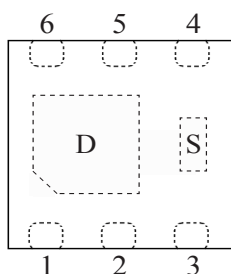
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	100	V
Gate-source voltage	V_{gs}	± 20	V
Continuous drain current($T_j=150^\circ C$)	I_d	$T_a=25^\circ C$	8
		$T_a=70^\circ C$	6
Pulsed drain current	I_{dm}	15	A
Power dissipation	P_d	$T_c=25^\circ C$	3.5
		$T_c=70^\circ C$	2.2
Operating junction temperature	T_j	150	$^\circ C$
Storage temperature range	T_{stg}	- 55 to 150	$^\circ C$

■ Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal resistance junction-to-ambient	$R_{\theta ja}$		36	$^\circ C/W$

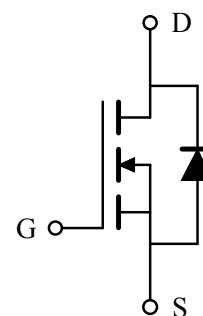
■ Pin configuration

DFN6-2x2(TOP VIEW)



Pin No.	Pin name
1	DRAIN
2	DRAIN
3	GATE
4	SOURCE
5	DRAIN
6	DRAIN

■ Circuit



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■ Electrical characteristics

Ta=25°C. Unless otherwise noted.

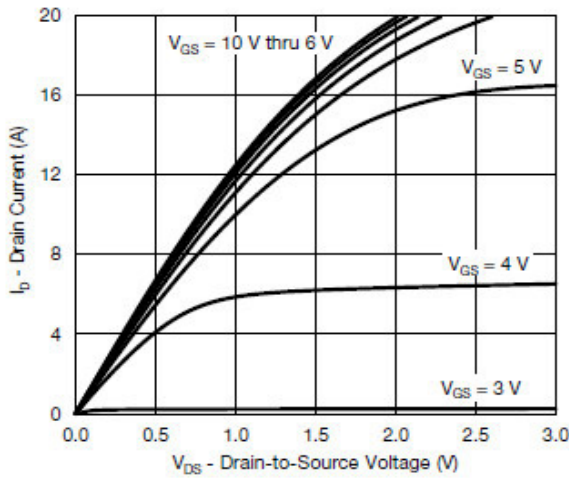
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	100			V
Zero gate voltage drain current	Idss	Vds=80V, Vgs=0V Ta=85°C			1	μA
					10	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	0.8		2.5	V
On state drain current	Id(on)	Vgs=10V, Vds≥5V	8			A
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=3.2A		105	120	mΩ
		Vgs=4.5V, Id=2.6A		115	130	
Forward transconductance	Gfs	Vds=10V, Id=3.2A		8		S
Diode forward voltage	Vsd	Is=2.6A, Vgs=0V		0.85	1.20	V
Max. body-diode continuous current	Is				2.9	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=50V, f=1MHz		350		pF
Output capacitance	Coss			98		pF
Reverse transfer capacitance	Crss			20		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=4.5V, Vds=50V Id≐4.8A		4.0	8.0	nC
Gate-source charge	Qgs			1.4		nC
Gate-drain charge	Qgd			2.0		nC
Turn-on delay time	td(on)	Vgs=10V, Vds=50V RL=12.8Ω, Id≐3.9A Rgen=1Ω		8	20	ns
Turn-on rise time	tr			15	30	ns
Turn-off delay time	td(off)			12	25	ns
Turn-off fall time	tf			12	25	ns

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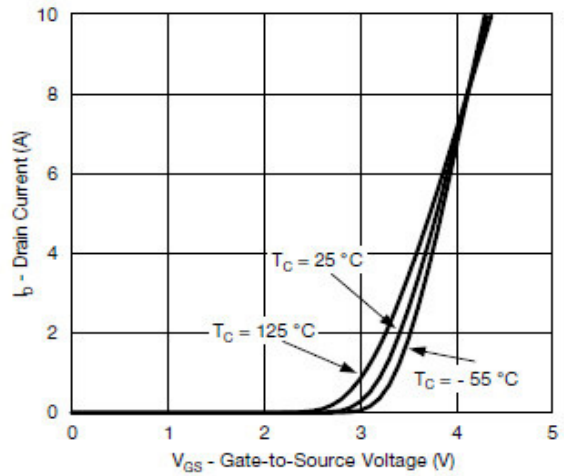
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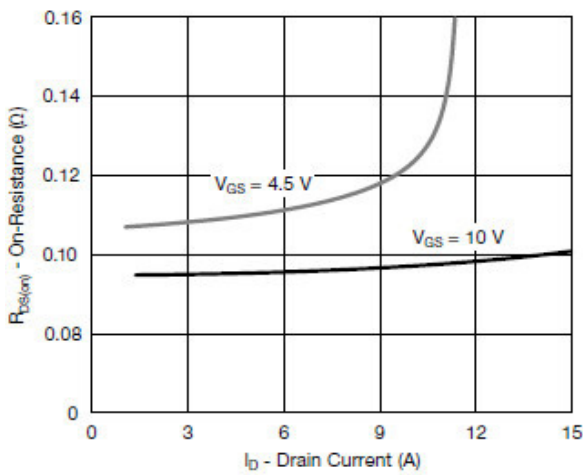
■ Typical electrical and thermal characteristics



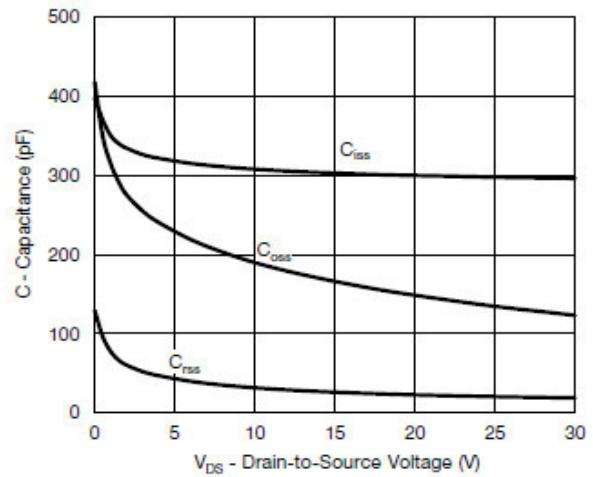
Output Characteristics



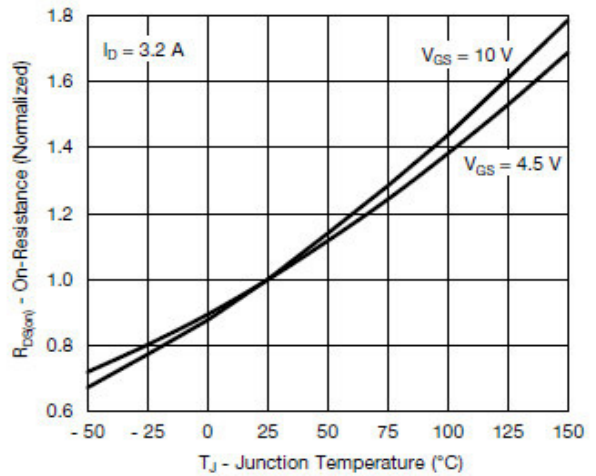
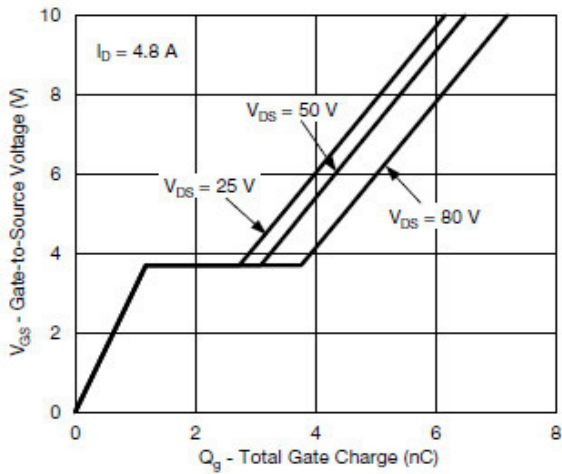
Transfer Characteristics



On-Resistance vs. Drain Current and Gate Voltage



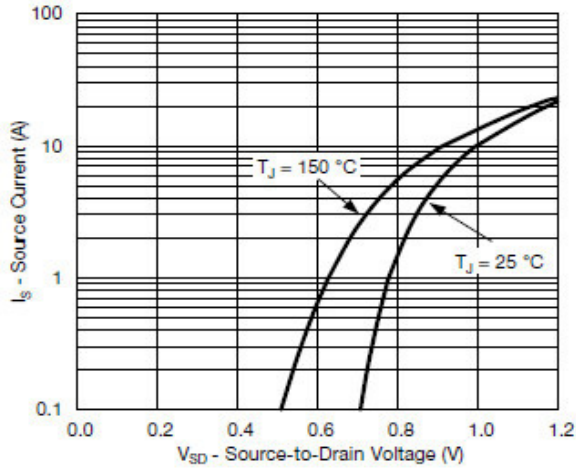
Capacitance



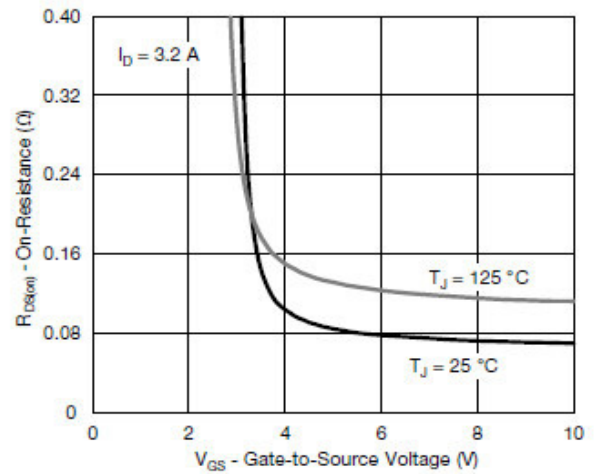
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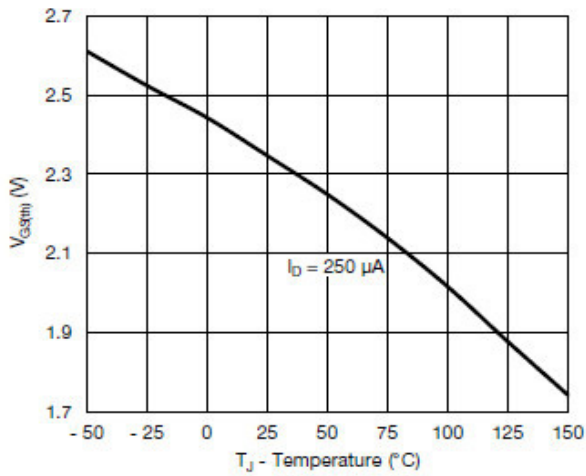
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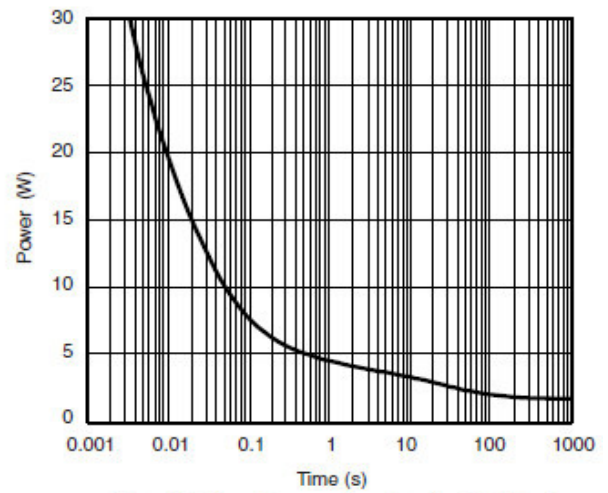
Source-Drain Diode Forward Voltage



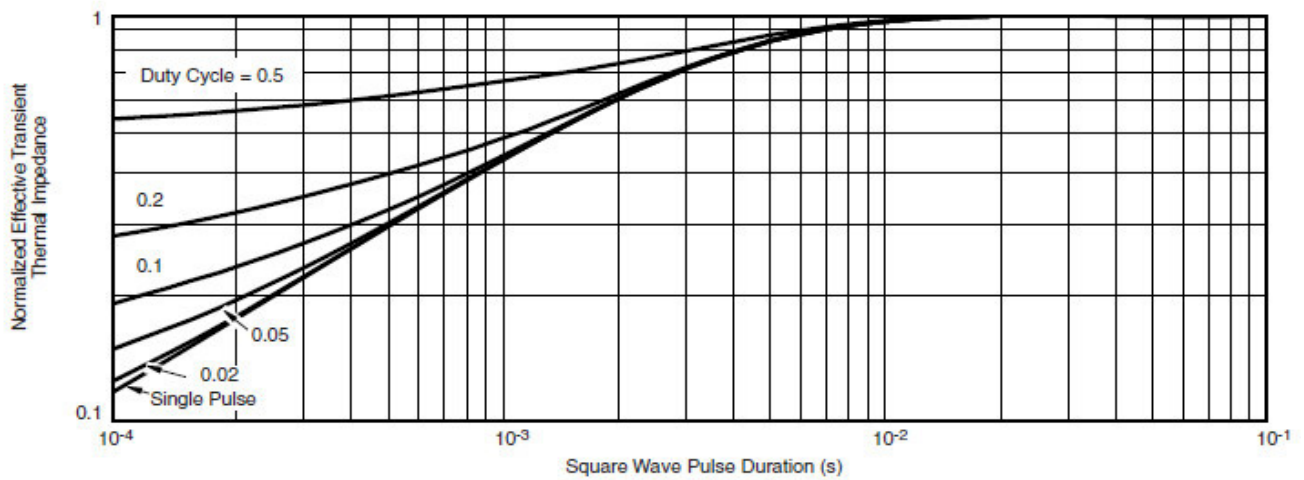
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance. Junction-to-Case

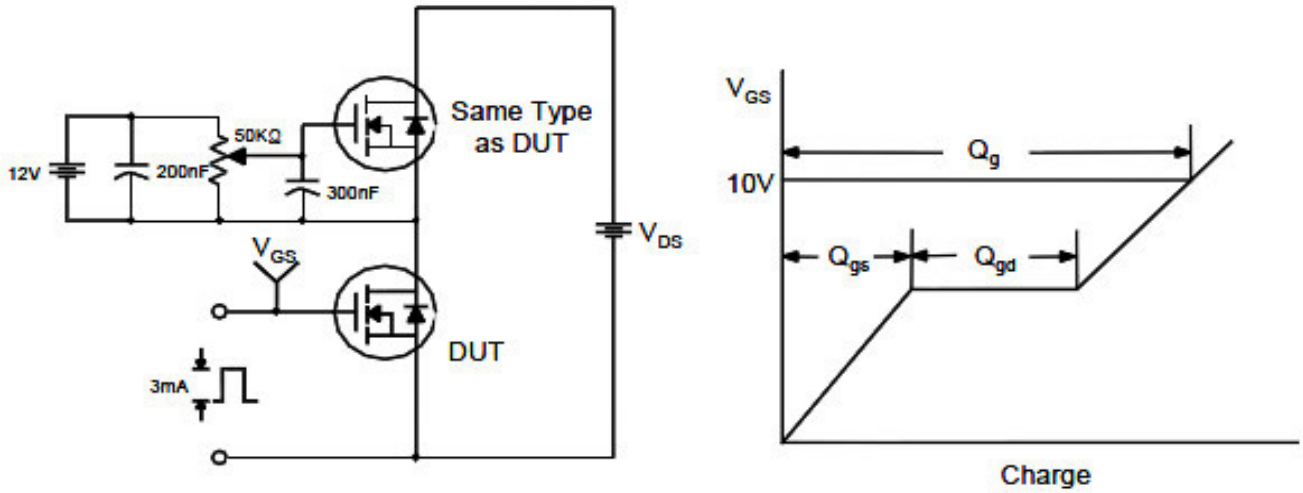
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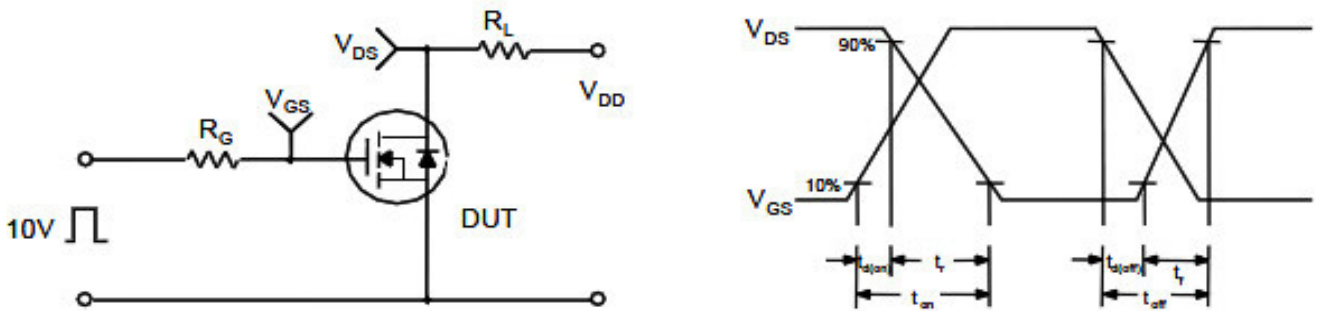
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■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

