

Dual N-channel MOSFET

ELM52920WA-N

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

■ General description

ELM52920WA-N uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and operation with gate voltages as low as 1.8V and internal ESD protection.

■ Features

- $V_{ds}=20V$
- $I_d=4.5A$
- $R_{ds(on)} = 19m\Omega$ ($V_{gs}=4.5V$)
- $R_{ds(on)} = 23m\Omega$ ($V_{gs}=2.5V$)
- $R_{ds(on)} = 34m\Omega$ ($V_{gs}=1.8V$)
- ESD protected

■ Maximum absolute ratings

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

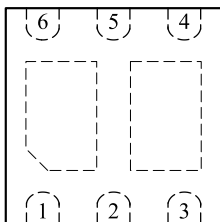
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	20	V
Gate-source voltage	V_{gs}	± 12	V
Continuous drain current($T_j=150^\circ C$)	I_d	$T_a=25^\circ C$	4.5
		$T_a=70^\circ C$	4.5
Pulsed drain current	I_{dm}	20	A
Power dissipation	P_d	$T_c=25^\circ C$	7.8
		$T_c=70^\circ C$	5.0
Operating junction 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	$R_{\theta ja}$		52.0	$^\circ C/W$
Thermal resistance junction-to-case(drian)	$R_{\theta jc}$		12.5	$^\circ C/W$

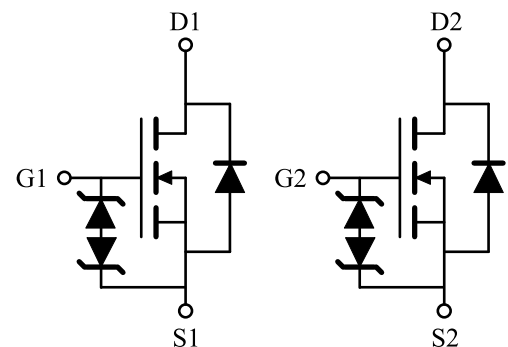
■ Pin configuration

DFN6-2x2(TOP VIEW)



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

■ Circuit



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■ Electrical characteristics

Ta=25°C. Unless otherwise noted.

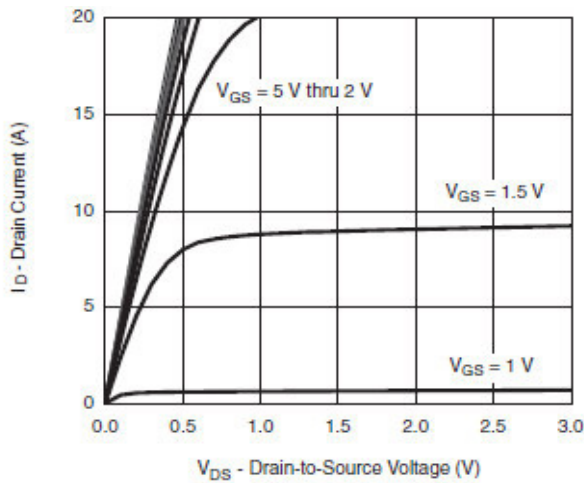
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	20			V
Zero gate voltage drain current	Idss	Vds=16V, Vgs=0V Ta=85°C			1	μA
					10	
Gate-source leakage current	Igss	Vds=0V, Vgs=±12V			±10	μA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	0.4		1.0	V
On state drain current	Id(on)	Vgs=4.5V, Vds≥5V	15			A
Static drain-source on-resistance	Rds(on)	Vgs=4.5V, Id=5.0A		15	19	mΩ
		Vgs=2.5V, Id=4.6A		18	23	
		Vgs=1.8V, Id=4.2A		27	34	
Forward transconductance	Gfs	Vds=6V, Id=5.0A		28		S
Diode forward voltage	Vsd	Is=1.5A, Vgs=0V		0.85	1.20	V
Max. body-diode continuous current	Is				1.6	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=6V, f=1MHz		620		pF
Output capacitance	Coss			180		pF
Reverse transfer capacitance	Crss			100		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=4.5V, Vds=6V, Id=5.0A		6.0	12.0	nC
Gate-source charge	Qgs			0.8		nC
Gate-drain charge	Qgd			0.8		nC
Turn-on delay time	td(on)	Vgs=4.5V, Vds=10V RL=5.5Ω, Id=3.6A Rgen=6Ω		10	20	ns
Turn-on rise time	tr			10	20	ns
Turn-off delay time	td(off)			25	40	ns
Turn-off fall time	tf			10	20	ns

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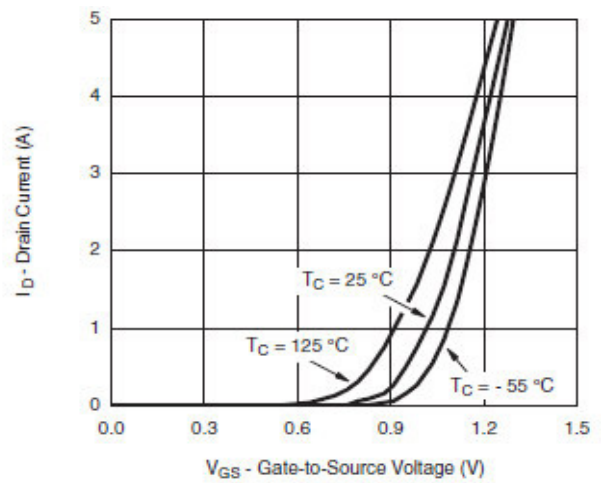
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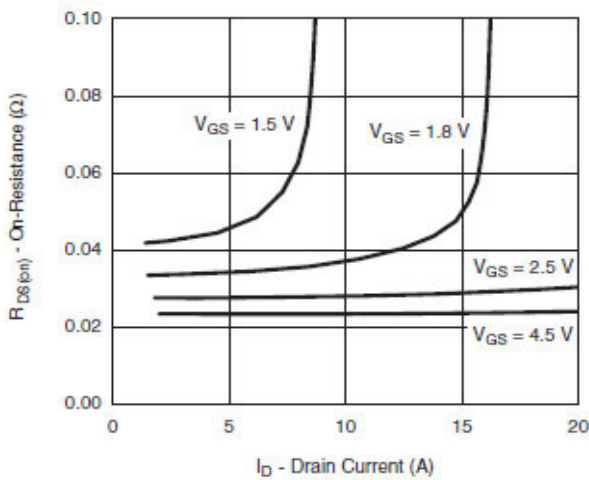
Typical electrical and thermal characteristics



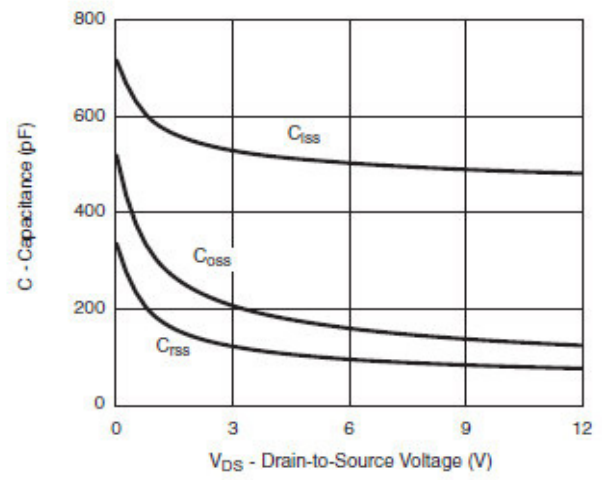
Output Characteristics



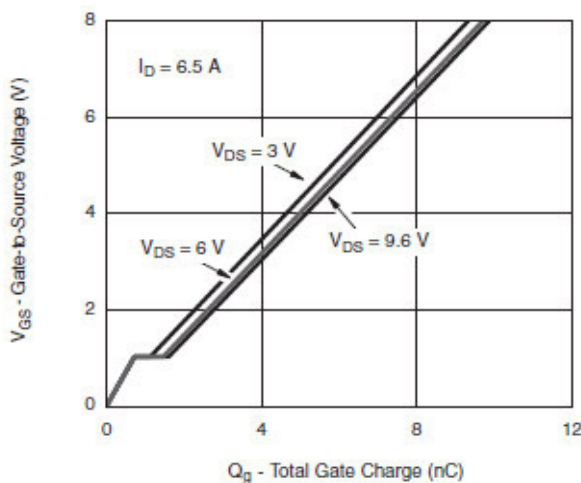
Transfer Characteristics



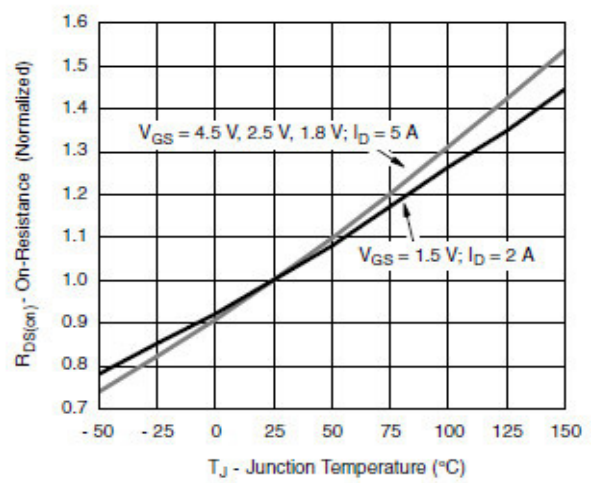
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge

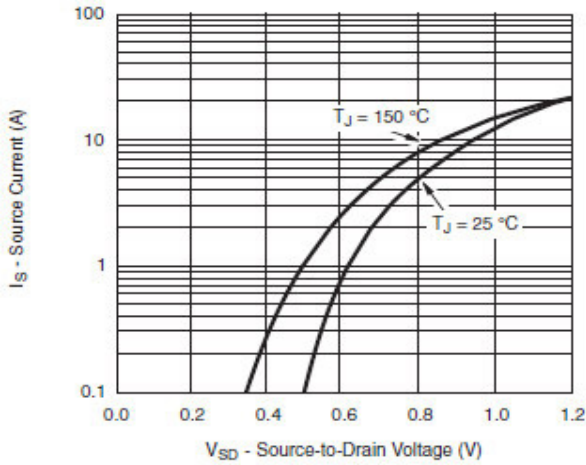


On-Resistance vs. Junction Temperature

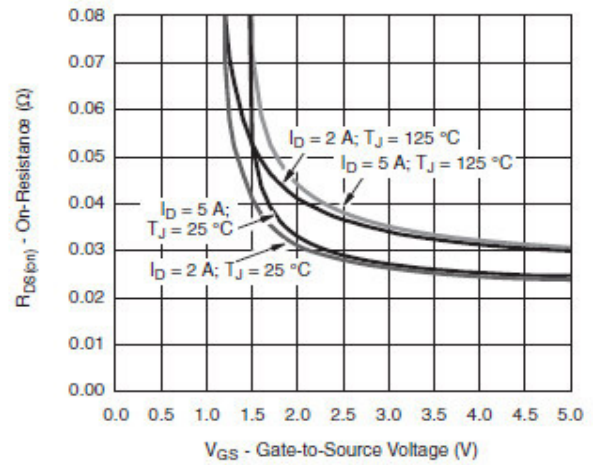
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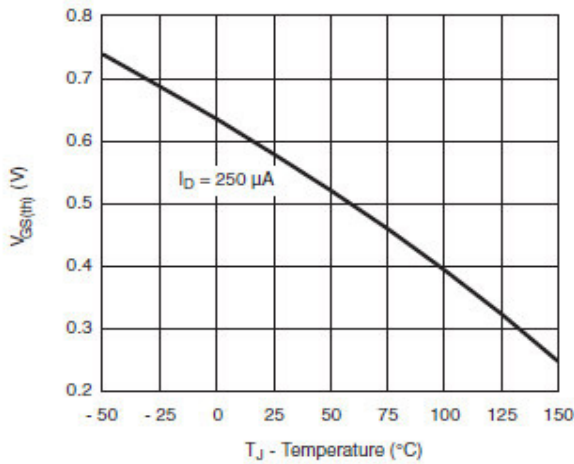
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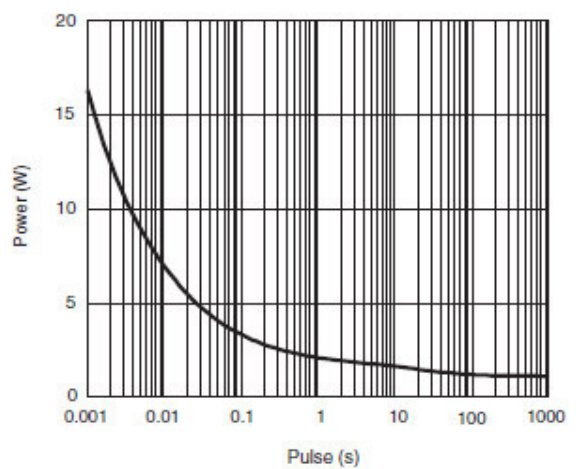
Source-Drain Diode Forward Voltage



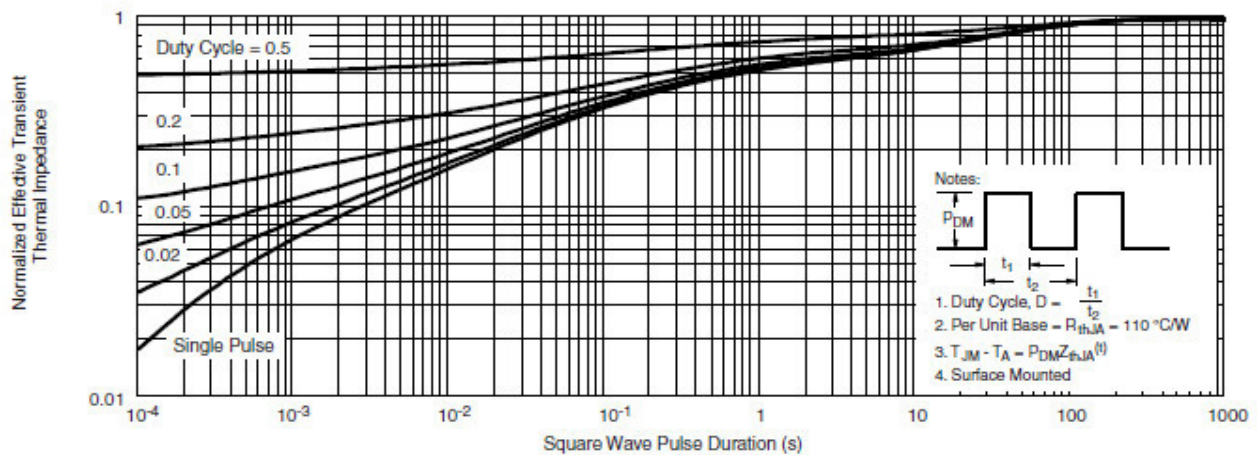
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power (Junction-to-Ambient)



Normalized Thermal Transient Impedance, Junction-to-Ambient

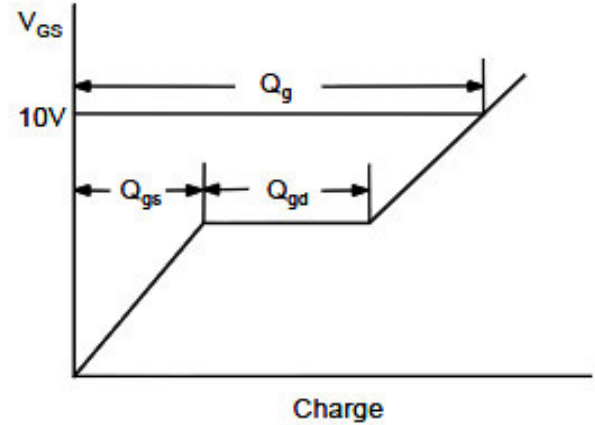
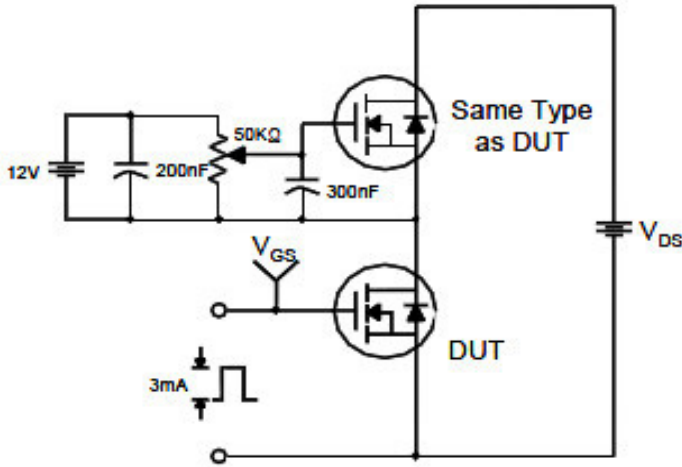
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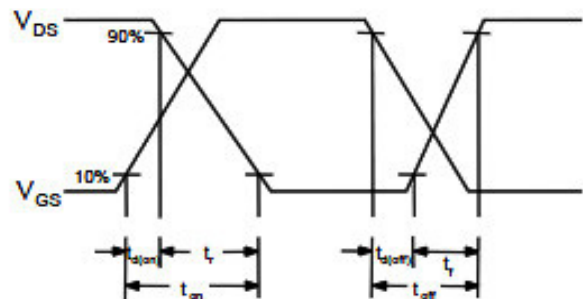
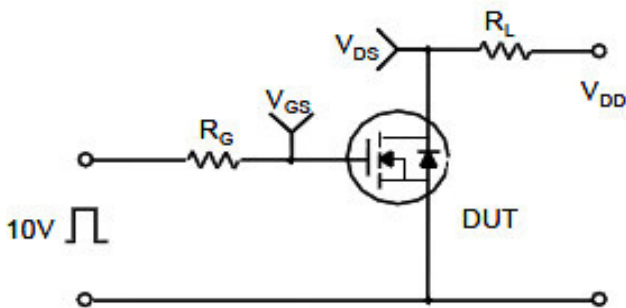
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■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

