

Single N-channel MOSFET

ELM52308AA-S

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

■General description

ELM52308AA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■Features

- $V_{ds}=60V$
- $I_d=3.5A$
- $R_{ds(on)} = 98m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 118m\Omega$ ($V_{gs}=4.5V$)

■Maximum absolute ratings

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

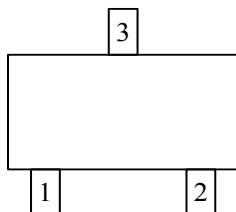
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	60	V
Gate-source voltage	V_{gs}	± 20	V
Continuous drain current($T_j=150^\circ C$)	I_d	3.5	A
		2.5	
Pulsed drain current	I_{dm}	10	A
Power dissipation	P_d	1.25	W
		0.80	
Operating junction temperature	T_j	150	$^\circ C$
Storage temperature range	T_{stg}	- 55 to 150	$^\circ C$

■Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal resistance junction-to-ambient	$R_{\theta ja}$		120	$^\circ C/W$

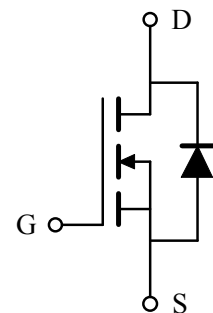
■Pin configuration

SOT-23(TOP VIEW)



Pin No.	Pin name
1	GATE
2	SOURCE
3	DRAIN

■Circuit



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■Electrical characteristics

Ta=25°C. Unless otherwise noted.

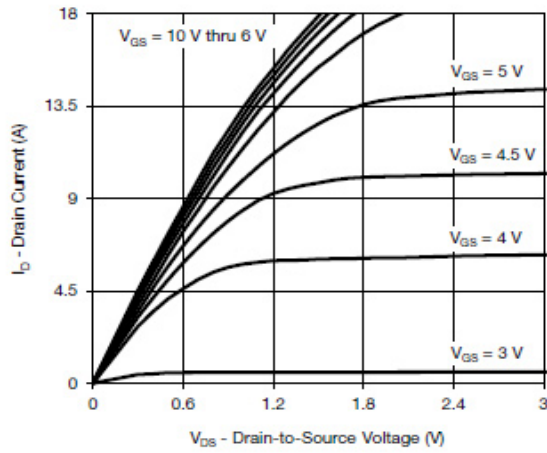
Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V		60			V
Zero gate voltage drain current	Idss	Vds=48V, Vgs=0V				1	μA
			Ta=85°C			30	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V				±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA		1.0		2.5	V
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=3.5A			82	98	mΩ
		Vgs=4.5V, Id=2.5A			100	118	mΩ
Forward transconductance	Gfs	Vds=5V, Id=3.0A			5		S
Diode forward voltage	Vsd	Is=1.0A, Vgs=0V			0.75	1.30	V
Max. body-diode continuous current	Is					1.2	A
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=40V, f=1MHz			210		pF
Output capacitance	Coss				120		pF
Reverse transfer capacitance	Crss				18		pF
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=4.5V, Vds=40V Id=3.5A			3.0	6.0	nC
Gate-source charge	Qgs				1.0		nC
Gate-drain charge	Qgd				1.5		nC
Turn-on delay time	td(on)	Vgs=10V, Vds=40V RL=14.3Ω, Id=2.8A Rgen=1.0Ω			8	15	ns
Turn-on rise time	tr				5	10	ns
Turn-off delay time	td(off)				15	30	ns
Turn-off fall time	tf				4	8	ns

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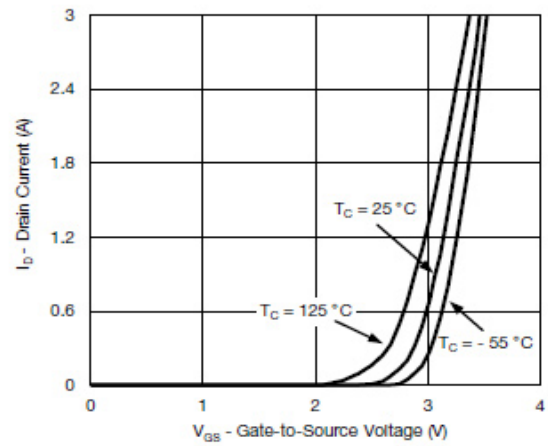
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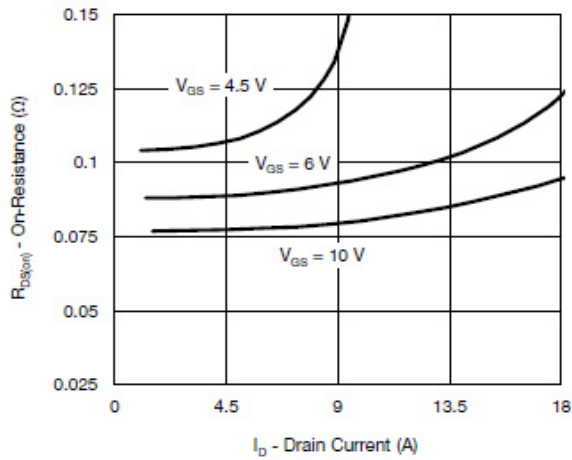
■ Typical electrical and thermal characteristics



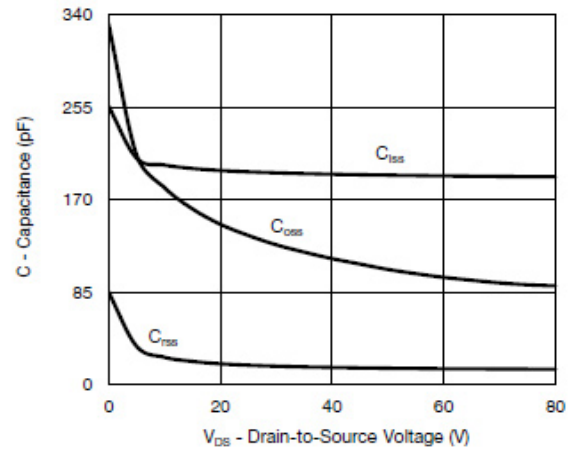
Output Characteristics



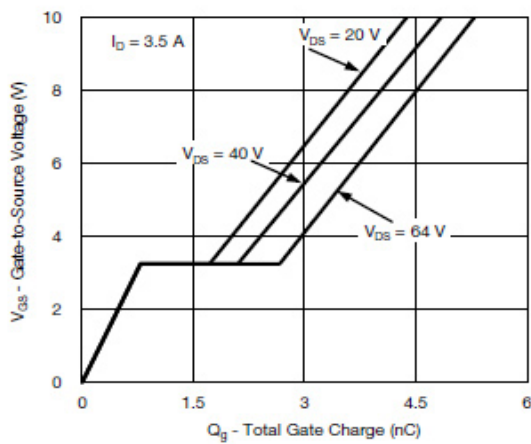
Transfer Characteristics Curves vs. Temp.



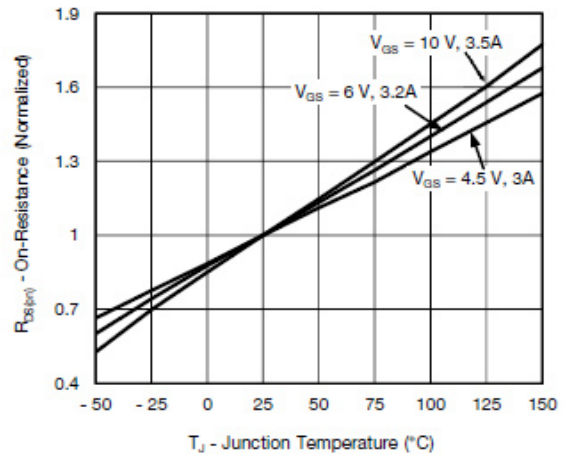
On-Resistance vs. Drain Current



Capacitance



Gate Charge

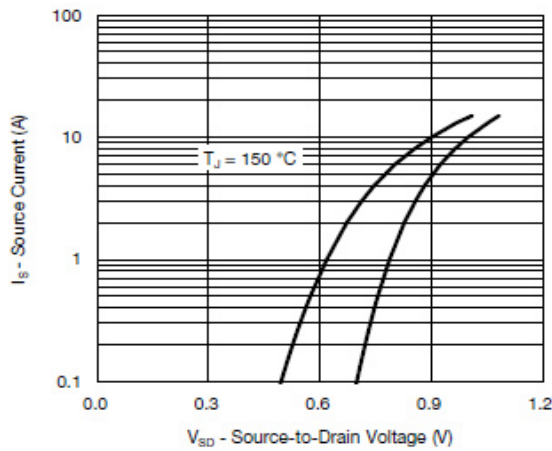


On-Resistance vs. Junction Temperature

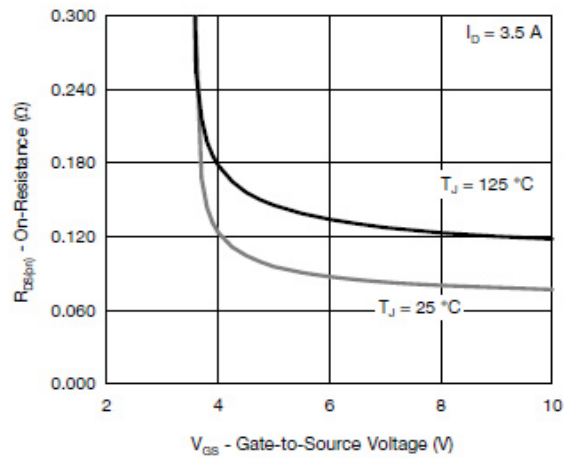
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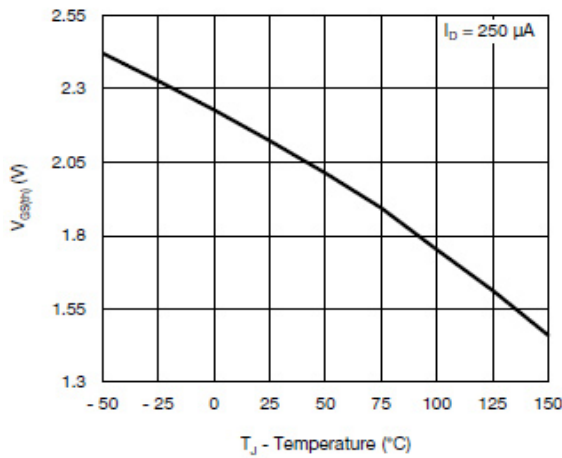
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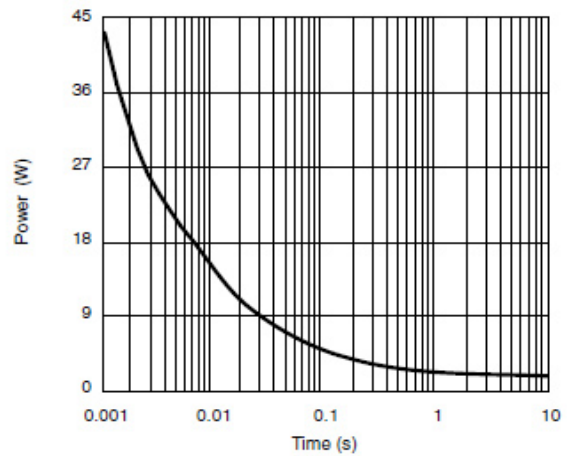
Source-Drain Diode Forward Voltage



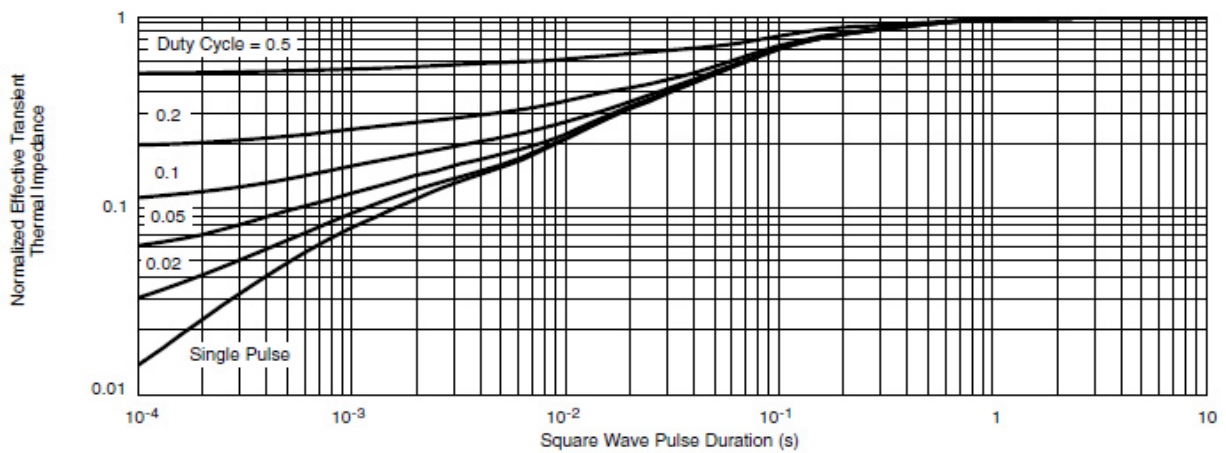
$R_{DS(on)}$ vs. V_{GS} vs. Temperature



Threshold Voltage



Single Pulse Power (Junction-to-Ambient)



Normalized Thermal Transient Impedance, Junction-to-Foot

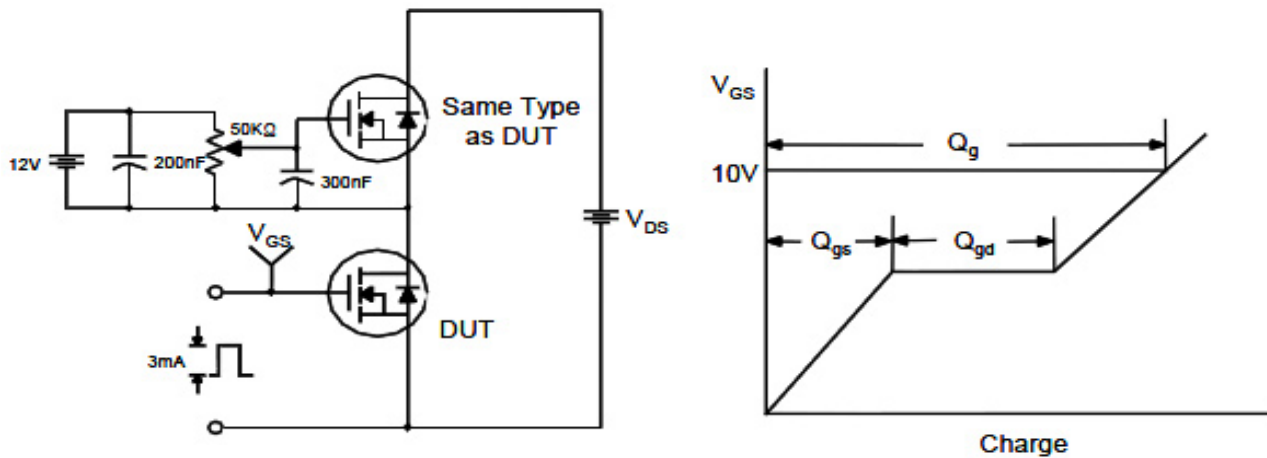
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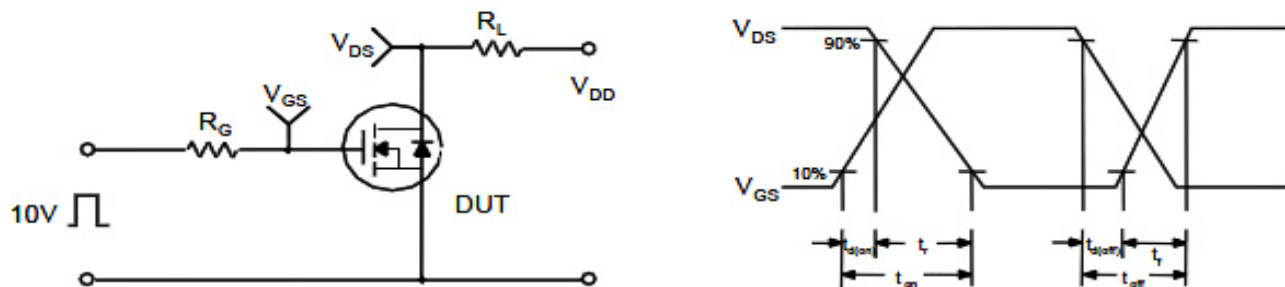
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■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

