Single N-channel MOSFET

ELM52308AA-S

■General description

ELM52308AA-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate resistance.

■Features

- Vds=60V
- Id=3.5A
- Rds(on) = 98mΩ (Vgs=10V)
- Rds(on) = 118mΩ (Vgs=4.5V)

■Maximum absolute ratings

Ta=25°C. Unless otherwise noted.

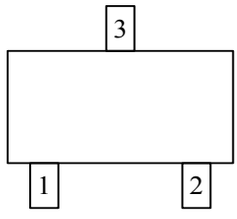
Parameter		Symbol	Limit	Unit
Drain-source voltage		Vds	60	V
Gate-source voltage		Vgs	±20	V
Continuous drain current(Tj=150°C)	Ta=25°C	Id	3.5	A
	Ta=70°C		2.5	
Pulsed drain current		Idm	10	A
Power dissipation	Tc=25°C	Pd	1.25	W
	Tc=70°C		0.80	
Operating junction temperature		Tj	150	°C
Storage temperature range		Tstg	- 55 to 150	°C

■Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Maximum junction-to-ambient	Rθja		120	°C/W

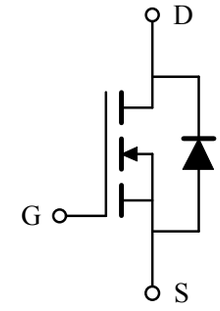
■Pin configuration

SOT-23(TOP VIEW)



Pin No.	Pin name
1	GATE
2	SOURCE
3	DRAIN

■Circuit

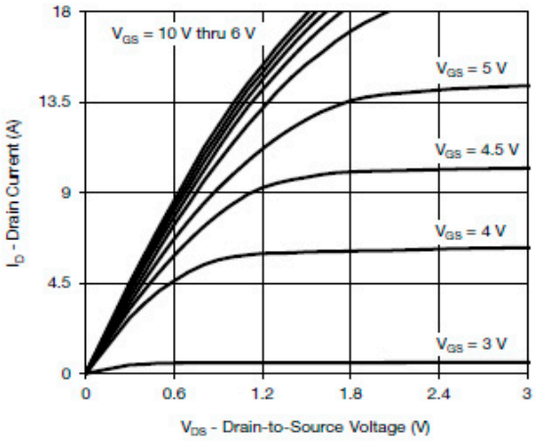


■Electrical characteristics

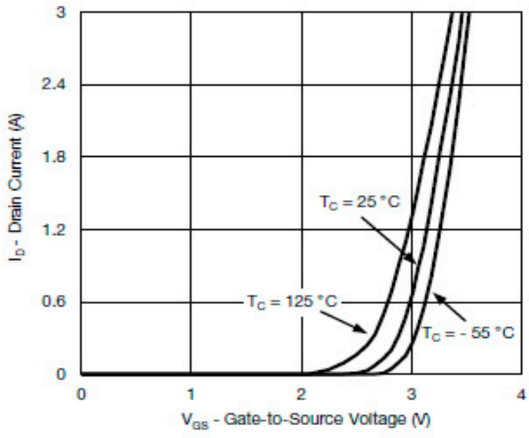
Ta=25°C. Unless otherwise noted.

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

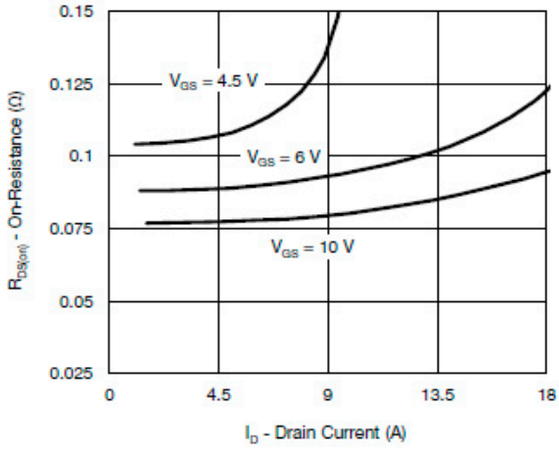
■Typical electrical and thermal characteristics



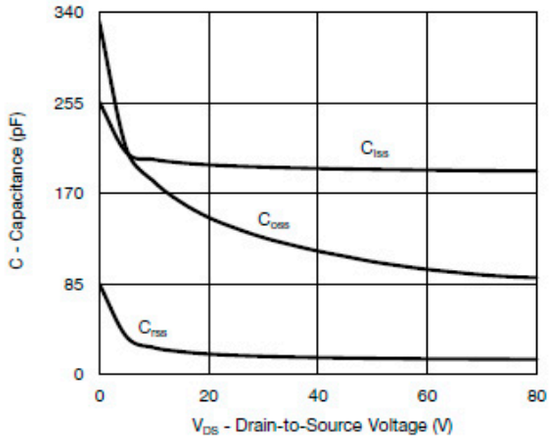
Output Characteristics



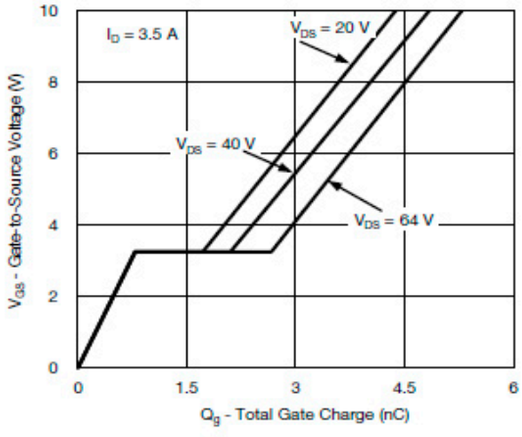
Transfer Characteristics Curves vs. Temp.



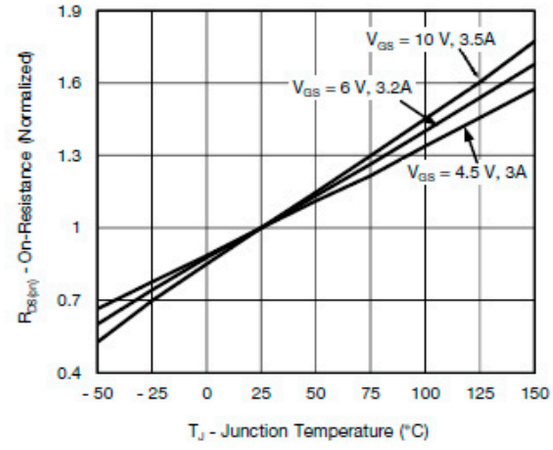
On-Resistance vs. Drain Current



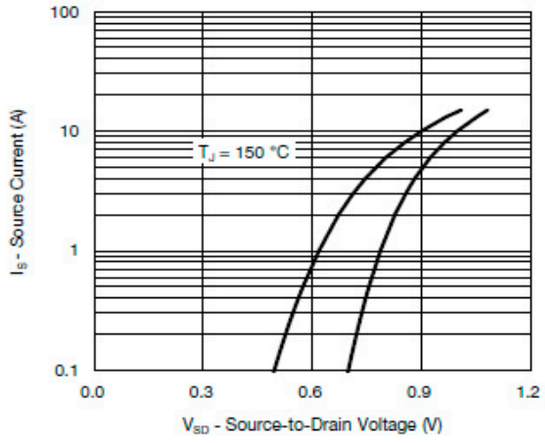
Capacitance



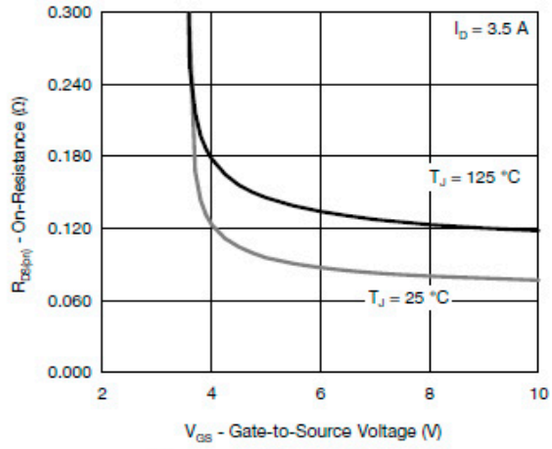
Gate Charge



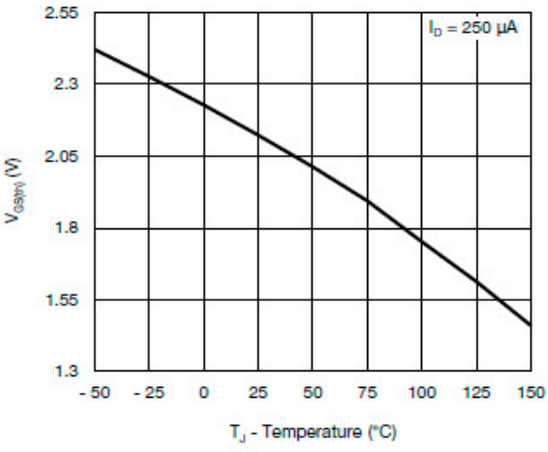
On-Resistance vs. Junction Temperature



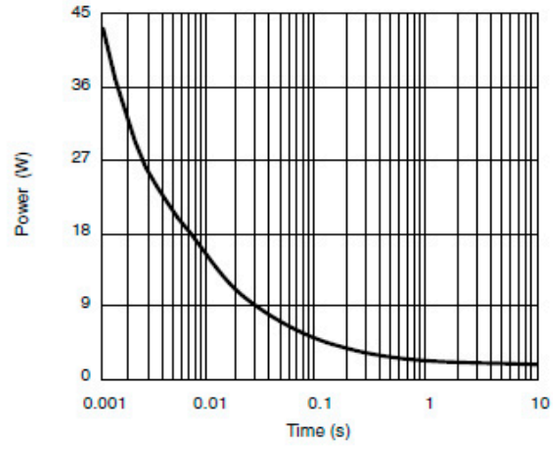
Source-Drain Diode Forward Voltage



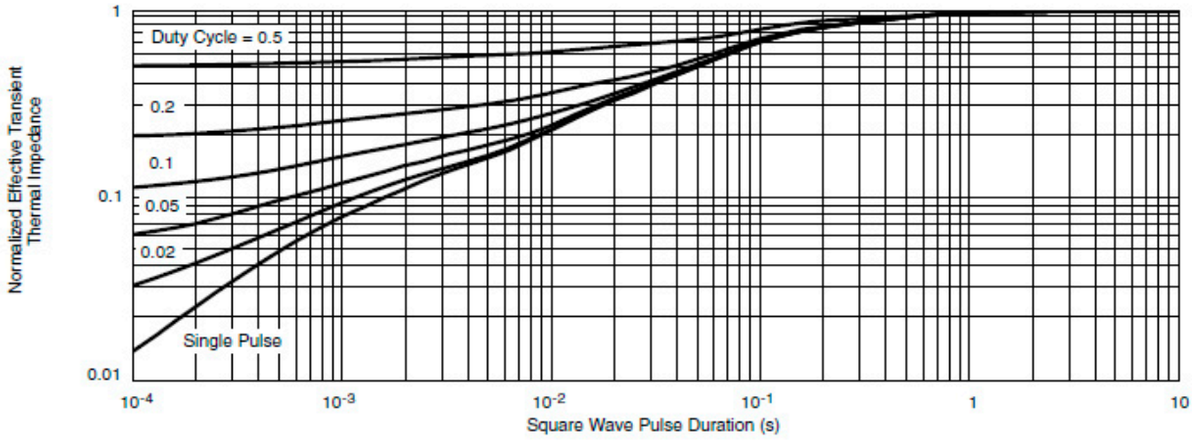
$R_{DS(on)}$ vs. V_{GS} vs. Temperature



Threshold Voltage



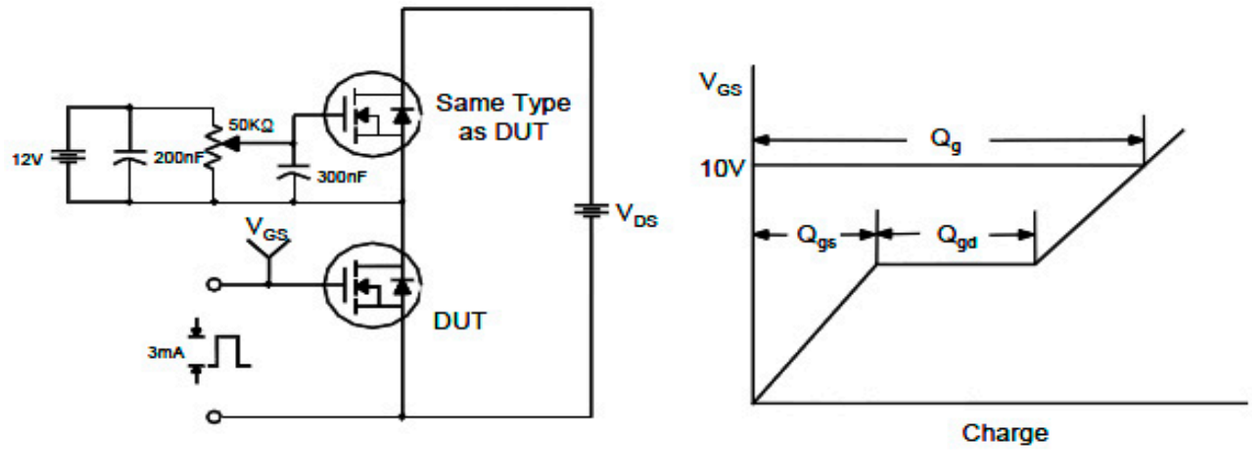
Single Pulse Power (Junction-to-Ambient)



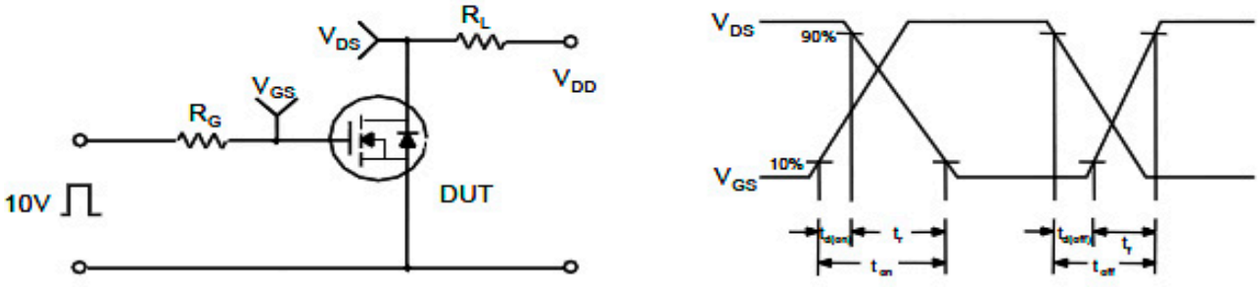
Normalized Thermal Transient Impedance, Junction-to-Foot

■Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms