Single N-channel MOSFET

ELM52376A-S

■General description

ELM52376A-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate resistance.

■Features

- Vds=60V
- Id=3.6A (Vgs=10V)
- Rds(on) < 70mΩ (Vgs=10V)
- Rds(on) < 78mΩ (Vgs=4.5V)

■Maximum absolute ratings

Ta=25°C. Unless otherwise noted.

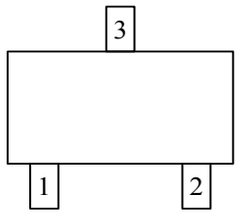
Parameter		Symbol	Limit	Unit
Drain-source voltage		Vds	60	V
Gate-source voltage		Vgs	±20	V
Continuous drain current(Tj=150°C)	Ta=25°C	Id	3.6	A
	Ta=70°C		2.8	
Pulsed drain current		Idm	10	A
Power dissipation	Tc=25°C	Pd	1.25	W
	Tc=70°C		0.80	
Junction and storage temperature range		Tj, Tstg	- 55 to 150	°C

■Thermal characteristics

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

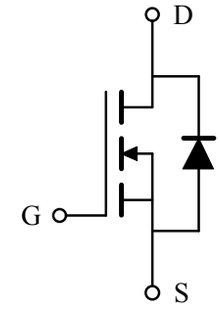
■Pin configuration

SOT-23(TOP VIEW)



Pin No.	Pin name
1	GATE
2	SOURCE
3	DRAIN

■Circuit

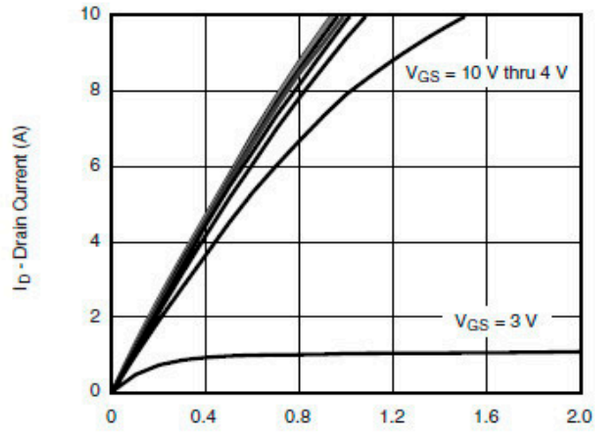


■Electrical characteristics

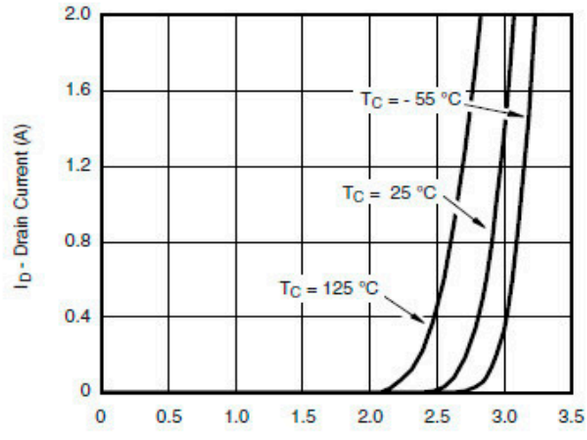
Ta=25°C. Unless otherwise noted.

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			10	
Gate-body leakage current	Igss	Vds=0V, Vgs=±12V				±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA		1.0		2.0	V
On state drain current	Id(on)	Vgs=10V, Vds=5V		6			A
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=3.6A			55	70	mΩ
		Vgs=4.5V, Id=2.8A			60	78	
Forward transconductance	Gfs	Vds=15V, Id=3.2A			15		S
Diode forward voltage	Vsd	Is=2.5A, Vgs=0V			0.85	1.20	V
Max. body-diode continuous current	Is					1.6	A
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=30V, f=1MHz			400		pF
Output capacitance	Coss				40		pF
Reverse transfer capacitance	Crss				20		pF
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=4.5V, Vds=30V Id=3.2A			6.0	12.0	nC
Gate-source charge	Qgs				1.5		nC
Gate-drain charge	Qgd				1.2		nC
Turn-on delay time	td(on)	Vgs=10V, Vds=30V RL=12Ω, Id=2.5A Rgen=1Ω			8	15	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

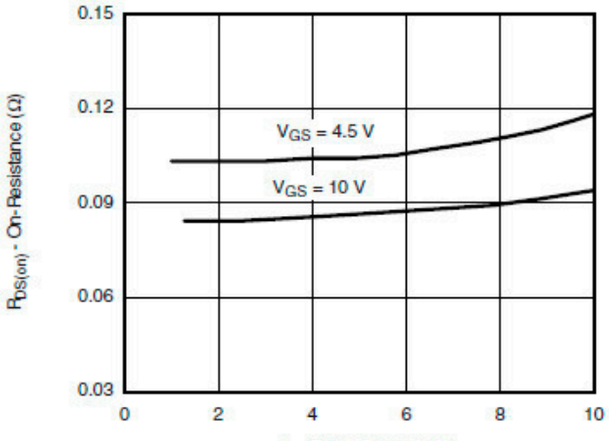
■Typical electrical and thermal characteristics



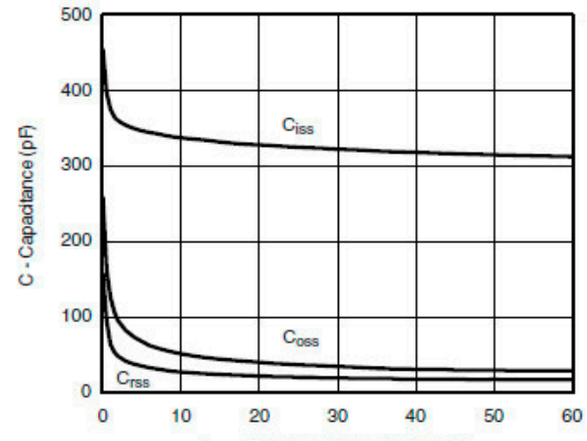
Output Characteristics



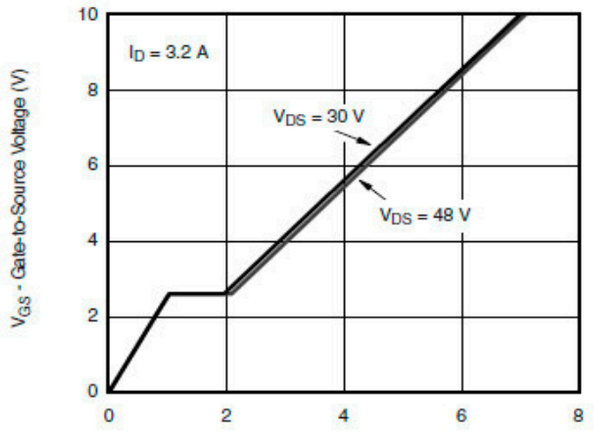
Transfer Characteristics



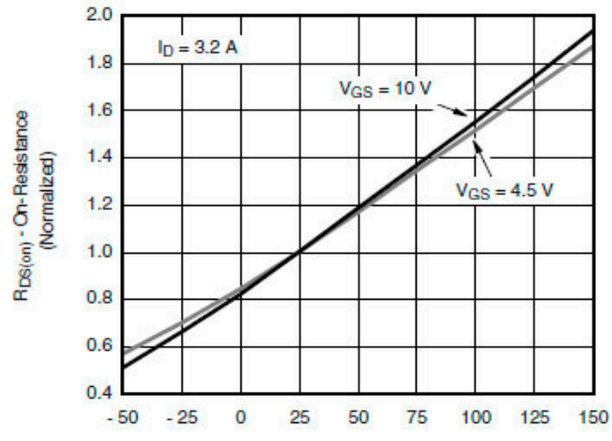
On-Resistance vs. Drain Current and Gate Voltage



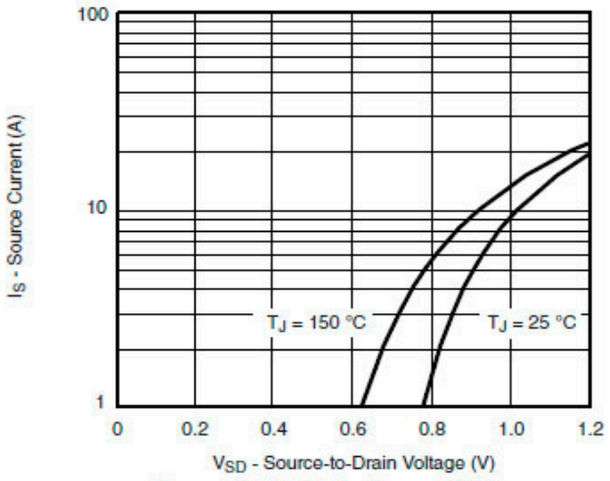
Capacitance



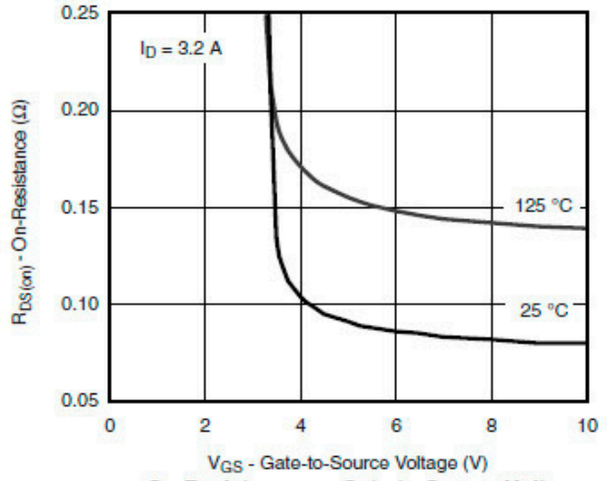
Gate Charge



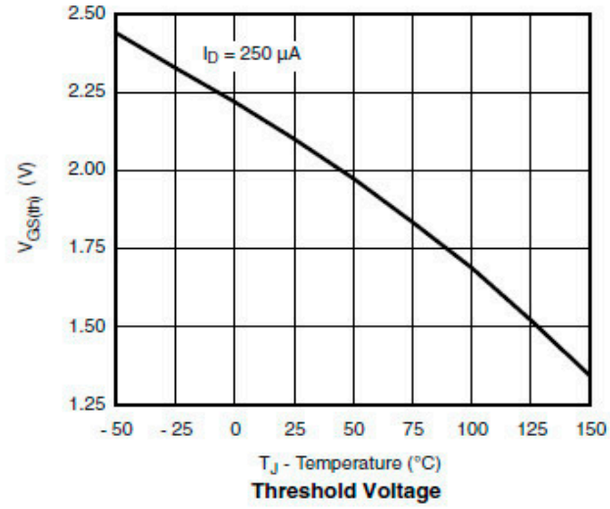
On-Resistance vs. Junction Temperature



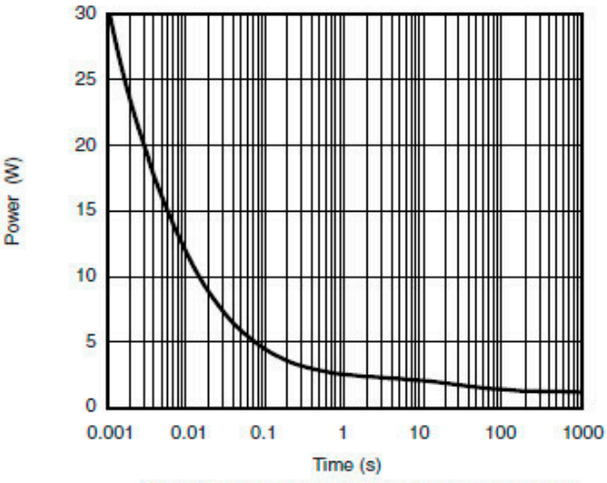
Source-Drain Diode Forward Voltage



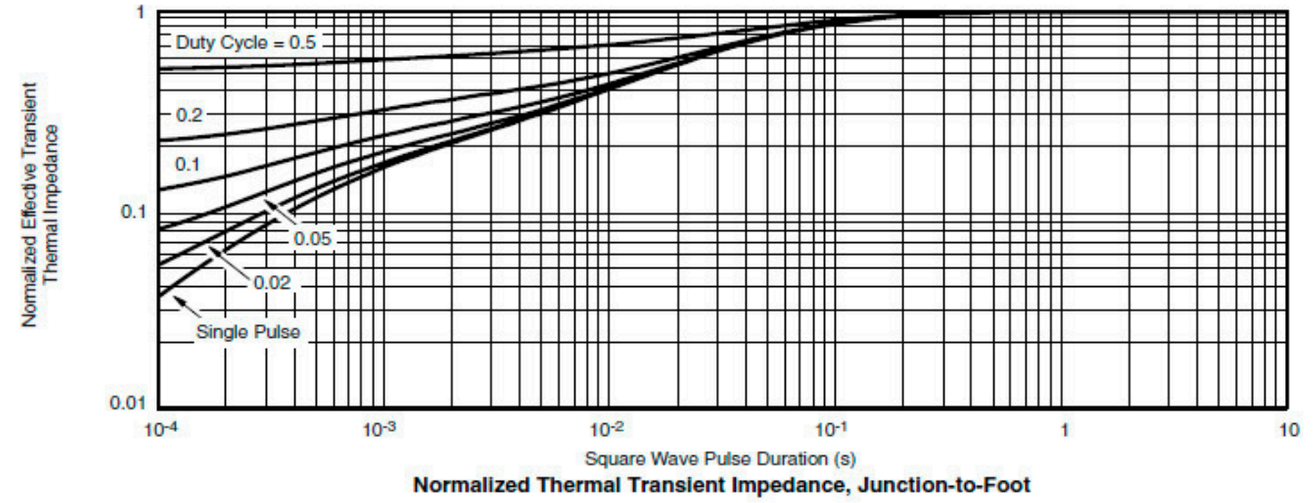
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



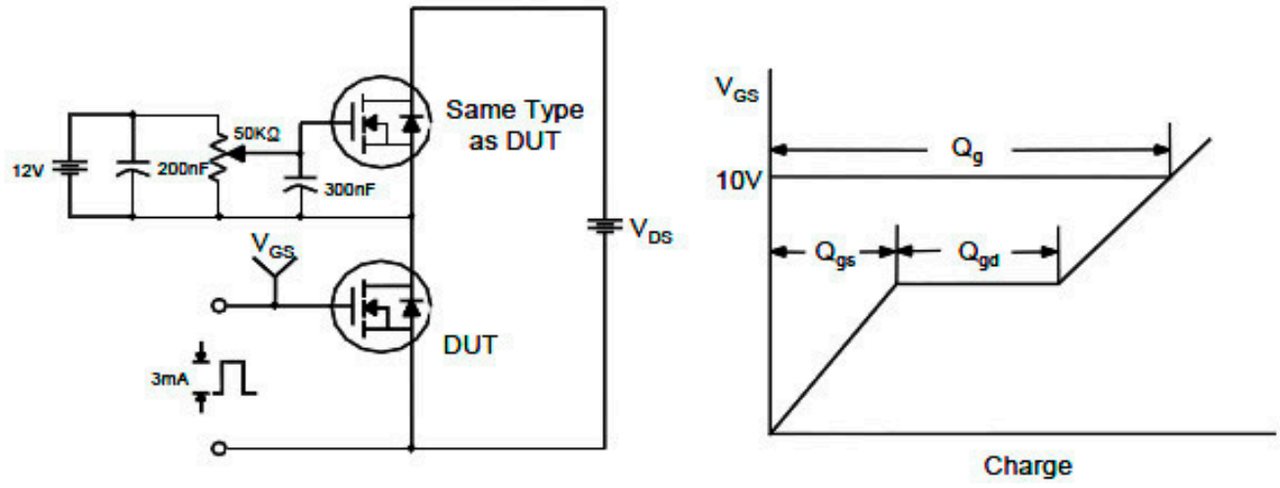
Single Pulse Power (Junction-to-Ambient)



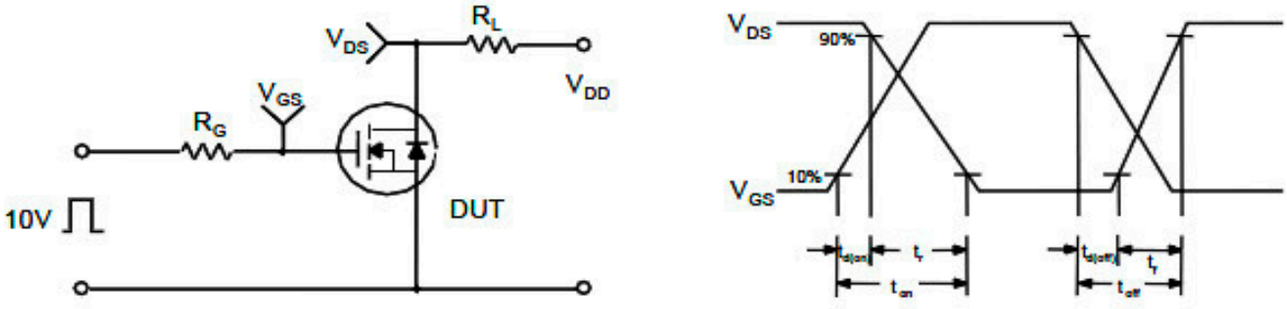
Normalized Thermal Transient Impedance, Junction-to-Foot

■Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms