Single N-channel MOSFET

ELM52354ASA-S

■General description

ELM52354ASA-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate threshold voltage.

■Features

- Vds=100V
- Id=3.6A
- Rds(on) = 145mΩ (Vgs=10V)
- Rds(on) = 155mΩ (Vgs=4.5V)

■Maximum absolute ratings

Ta=25°C. Unless otherwise noted.

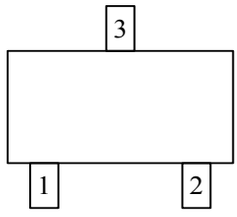
Parameter		Symbol	Limit	Unit
Drain-source voltage		Vds	100	V
Gate-source voltage		Vgs	±20	V
Continuous drain current(Tj=150°C)	Ta=25°C	Id	3.6	A
	Ta=70°C		2.8	
Pulsed drain current		Idm	10	A
Power dissipation	Tc=25°C	Pd	1.25	W
	Tc=70°C		0.80	
Operating junction temperature		Tj	150	°C
Storage temperature range		Tstg	- 55 to 150	°C

■Thermal characteristics

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

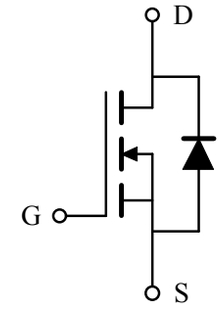
■Pin configuration

SOT-23(TOP VIEW)



Pin No.	Pin name
1	GATE
2	SOURCE
3	DRAIN

■Circuit

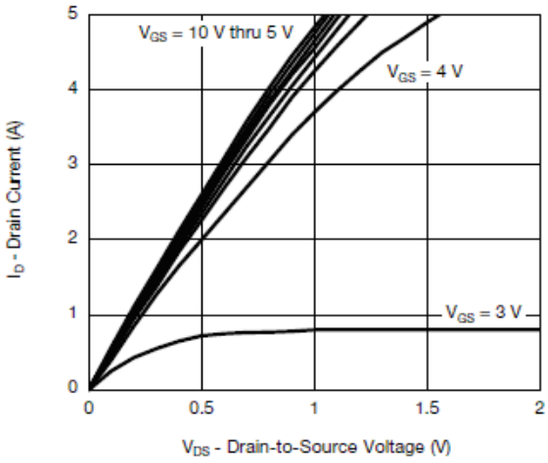


■Electrical characteristics

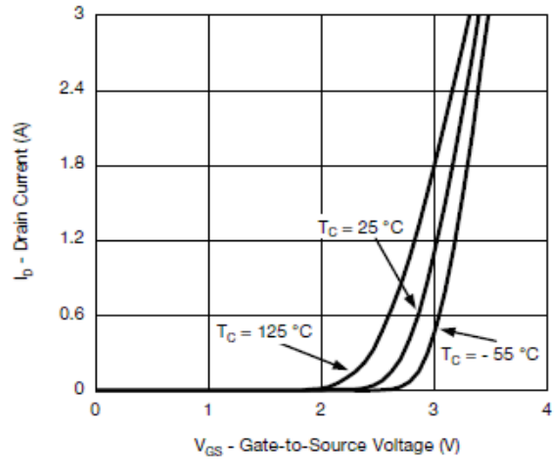
Ta=25°C. Unless otherwise noted.

Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V		100			V
Zero gate voltage drain current	Idss	Vds=80V, Vgs=0V				5	μA
			Ta=85°C			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=4.5V, Vds≥5V		5			A
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=3.6A			125	145	mΩ
		Vgs=4.5V, Id=2.8A			130	155	
Forward transconductance	Gfs	Vds=20V, Id=1.5A			2		S
Diode forward voltage	Vsd	Is=1.6A, Vgs=0V			0.85	1.20	V
Max. body-diode continuous current	Is					1.6	A
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=50V, f=1MHz			450		pF
Output capacitance	Coss				50		pF
Reverse transfer capacitance	Crss				25		pF
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=4.5V, Vds=50V Id≡1.6A			5.0	10.0	nC
Gate-source charge	Qgs				1.5		nC
Gate-drain charge	Qgd				2.5		nC
Turn-on delay time	td(on)	Vgs=4.5V, Vds=50V RL=39Ω, Id≡1.3A Rgen=1.0Ω			45	60	ns
Turn-on rise time	tr				35	55	ns
Turn-off delay time	td(off)				25	40	ns
Turn-off fall time	tf				20	35	ns

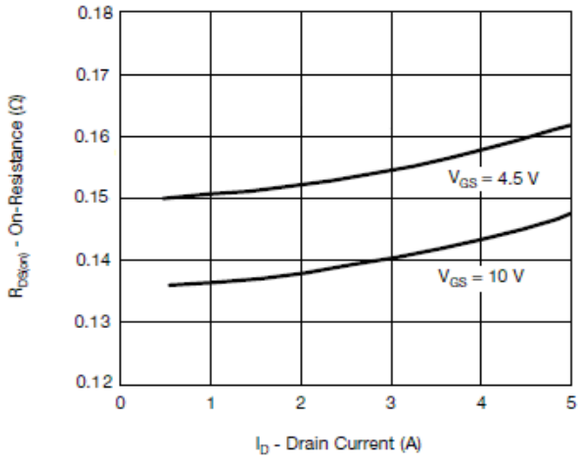
■Typical electrical and thermal characteristics



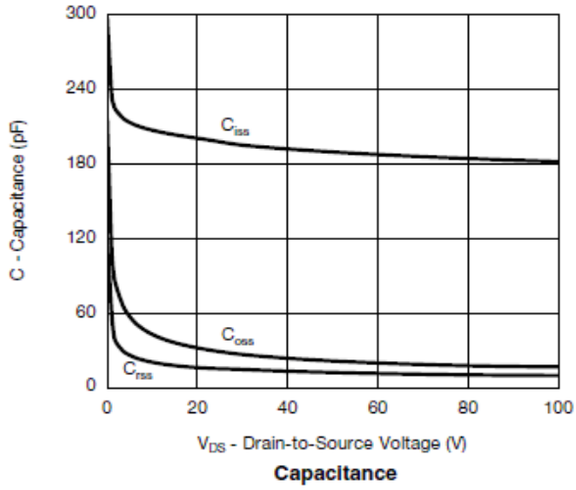
Output Characteristics



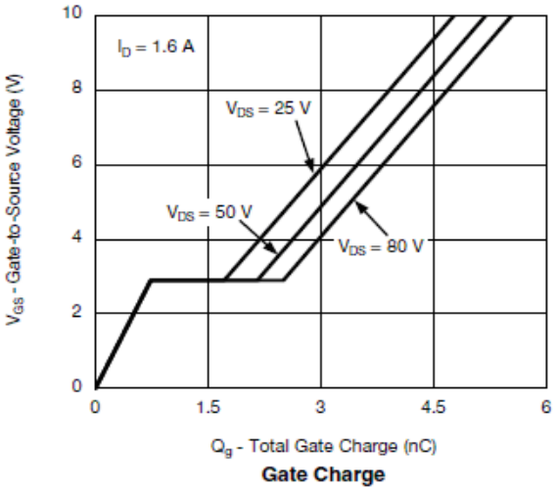
Transfer Characteristics



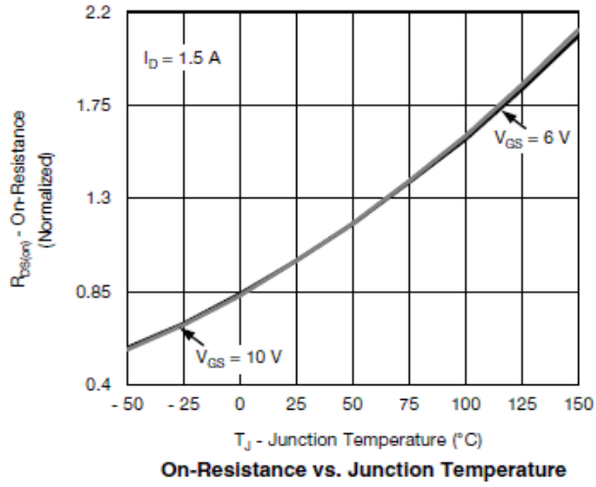
On-Resistance vs. Drain Current and Gate Voltage



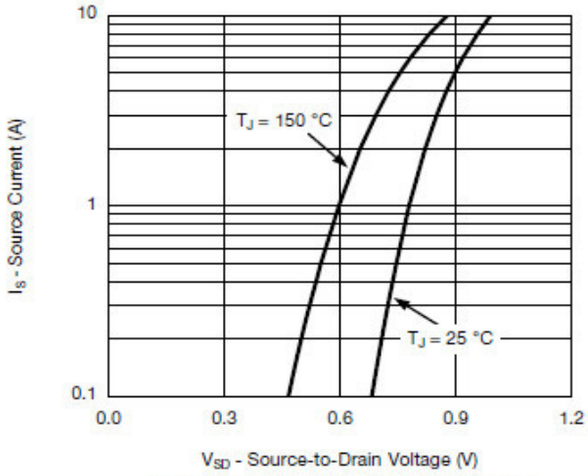
Capacitance



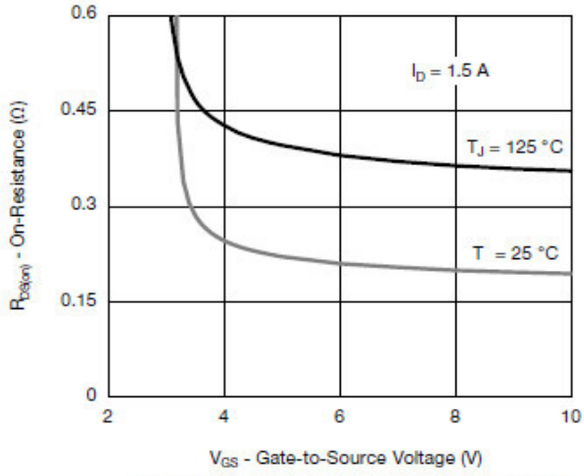
Gate Charge



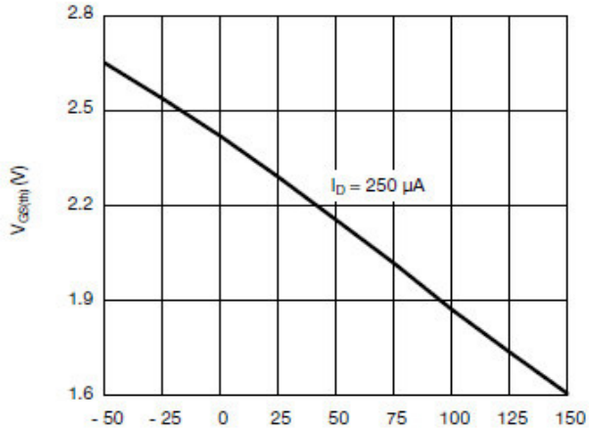
On-Resistance vs. Junction Temperature



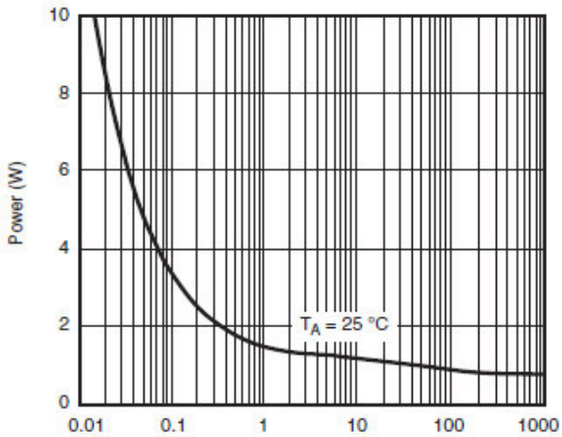
Source-Drain Diode Forward Voltage



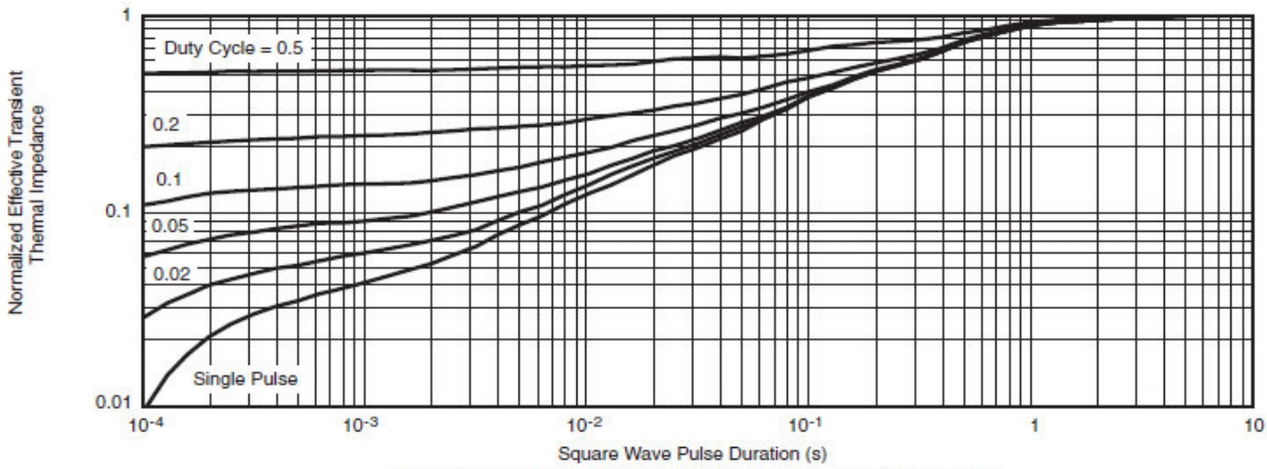
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



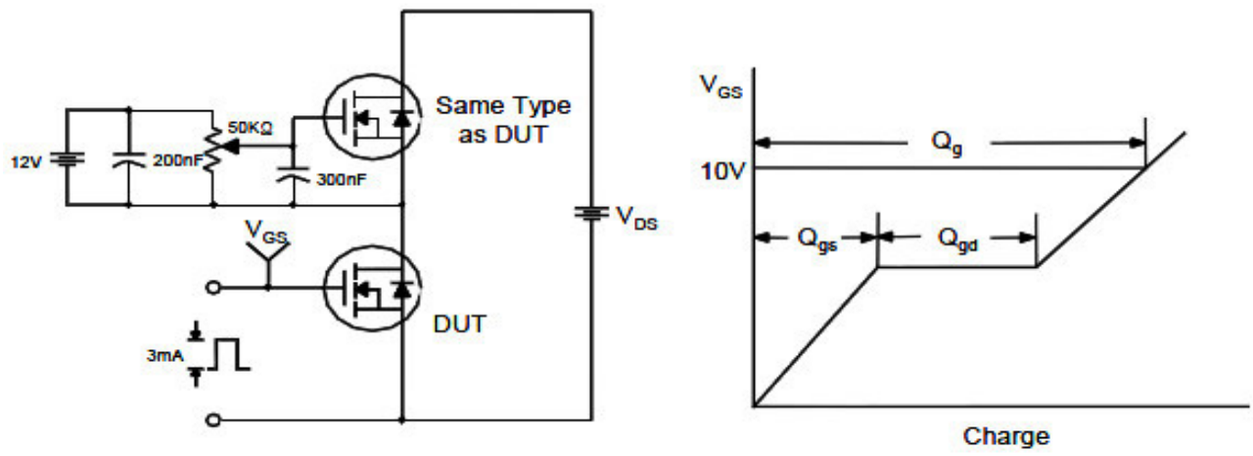
Single Pulse Power



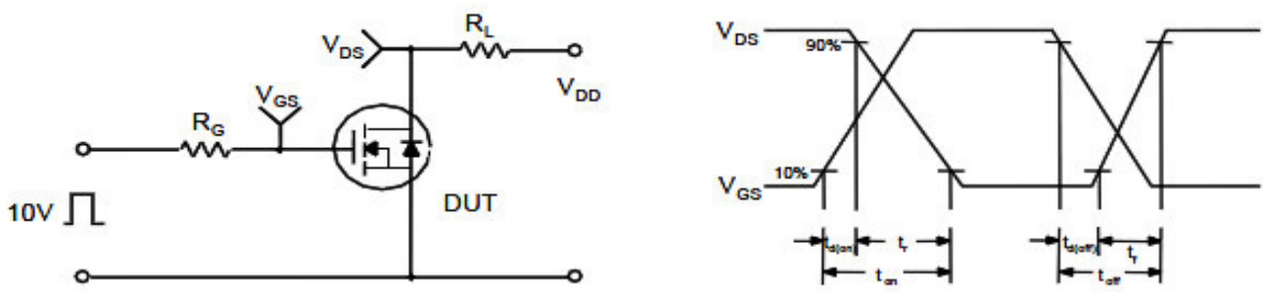
Normalized Thermal Transient Impedance, Junction-to-Foot

■Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms