Single N-channel MOSFET

ELM53484SA-S

■General description

ELM53484SA-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate resistance.

■Features

- Vds=30V
- Id=30A
- Rds(on) = 13mΩ (Vgs=10V)
- Rds(on) = 18mΩ (Vgs=4.5V)

■Maximum absolute ratings

Ta=25°C. Unless otherwise noted.

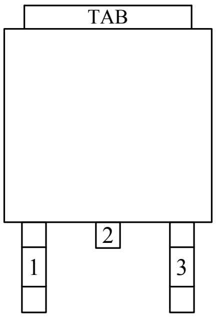
Parameter		Symbol	Limit	Unit
Drain-source voltage		Vds	30	V
Gate-source voltage		Vgs	±20	V
Continuous drain current(Tj=150°C)	Ta=25°C	Id	30	A
	Ta=70°C		18	
Pulsed drain current		Idm	40	A
Power dissipation	Tc=25°C	Pd	40	W
	Tc=70°C		15	
Operating junction temperature		Tj	150	°C
Storage temperature range		Tstg	- 55 to 150	°C

■Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Maximum junction-to-ambient	Rθja		62.5	°C/W

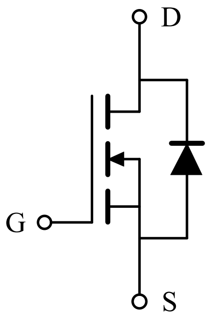
■Pin configuration

TO-252-3(TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

■Circuit



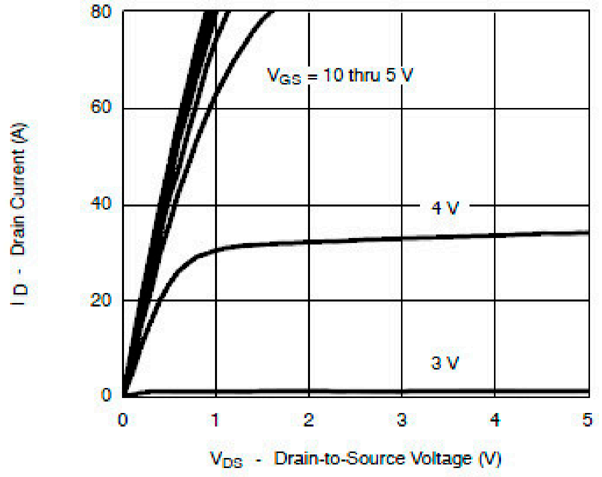
■Electrical characteristics

Ta=25°C. Unless otherwise noted.

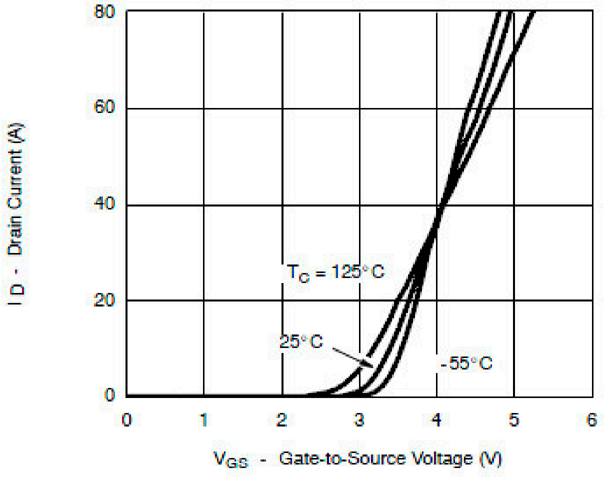
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	30			V
Zero gate voltage drain current	Idss	Vds=24V, Vgs=0V			1	μA
		Ta=85°C			10	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	1.0		2.0	V
On state drain current	Id(on)	Vgs=10V, Vds≥5V	15			A
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=12A		10	13	mΩ
		Vgs=4.5V, Id=10A		14	18	
Forward transconductance	Gfs	Vds=15V, Id=10A		24		S
Diode forward voltage	Vsd	Is=12A, Vgs=0V		0.8	1.3	V
Max. body-diode continuous current	Is				9	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=15V, f=1MHz		950		pF
Output capacitance	Coss			200		pF
Reverse transfer capacitance	Crss			85		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=4.5V, Vds=15V Id≡10A		10.0	15.0	nC
Gate-source charge	Qgs			3.8		nC
Gate-drain charge	Qgd			3.2		nC
Turn-on delay time	td(on)	Vgs=10V, Vds=15V RL=1.5Ω, Id≡10A Rgen=1.0Ω		10	20	ns
Turn-on rise time	tr			10	20	ns
Turn-off delay time	td(off)			20	35	ns
Turn-off fall time	tf			10	20	ns

■Typical electrical and thermal characteristics

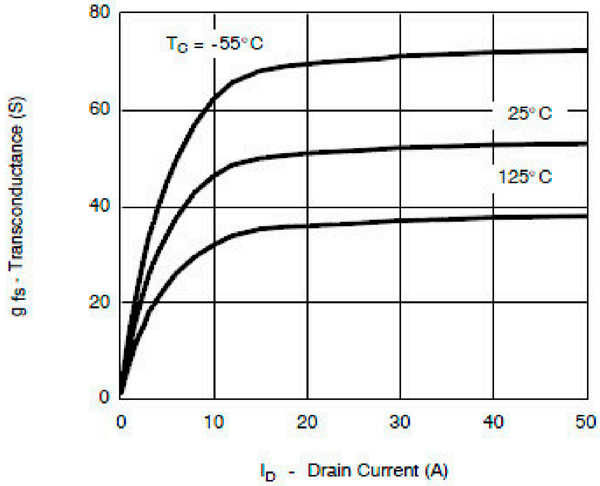
Output Characteristics



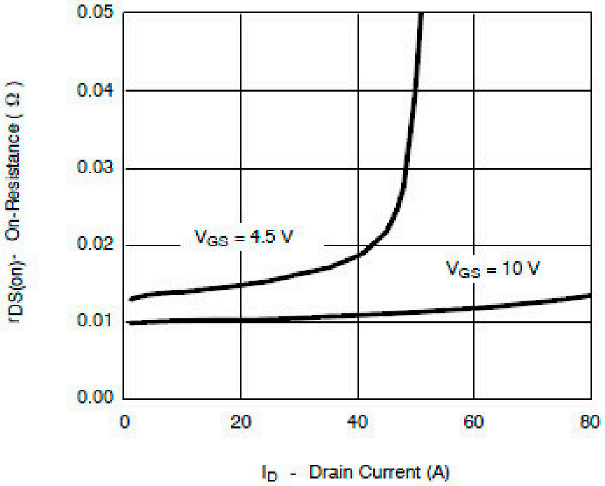
Transfer Characteristics



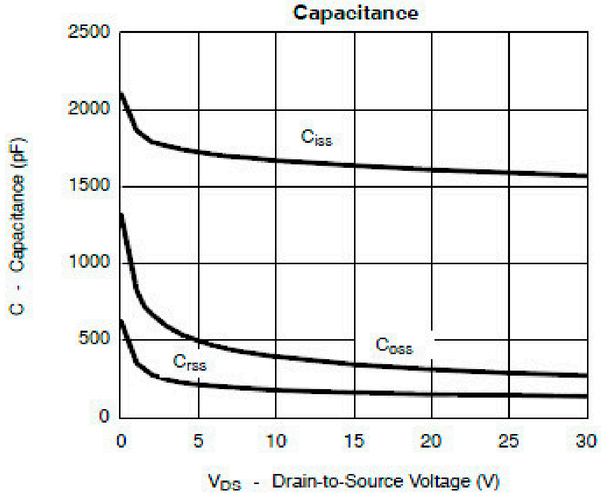
Transconductance



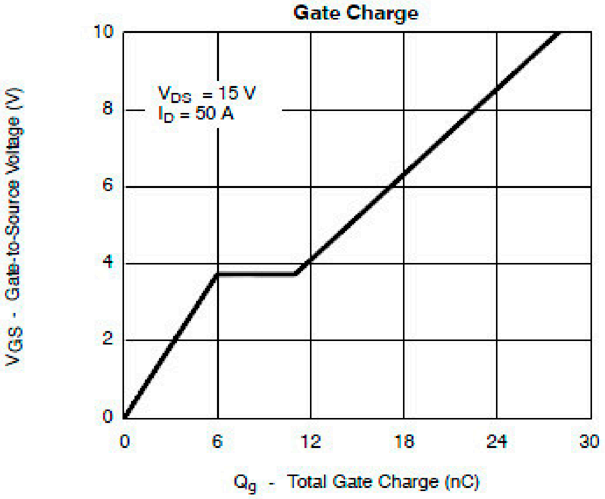
On-Resistance vs. Drain Current



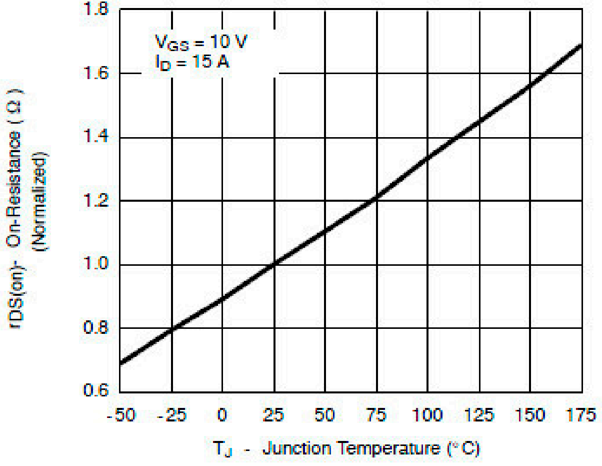
Capacitance



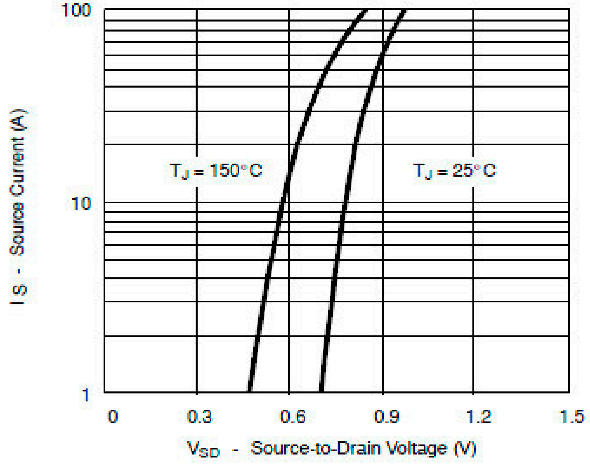
Gate Charge



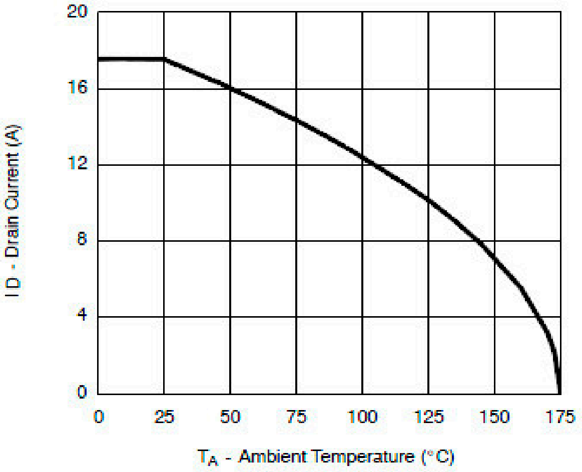
On-Resistance vs. Junction Temperature



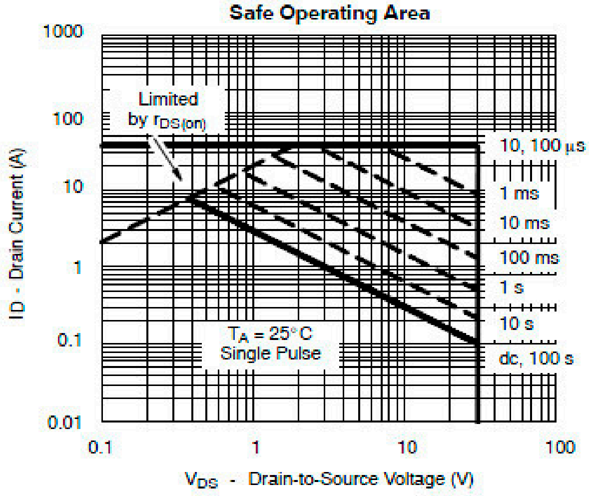
Source-Drain Diode Forward Voltage



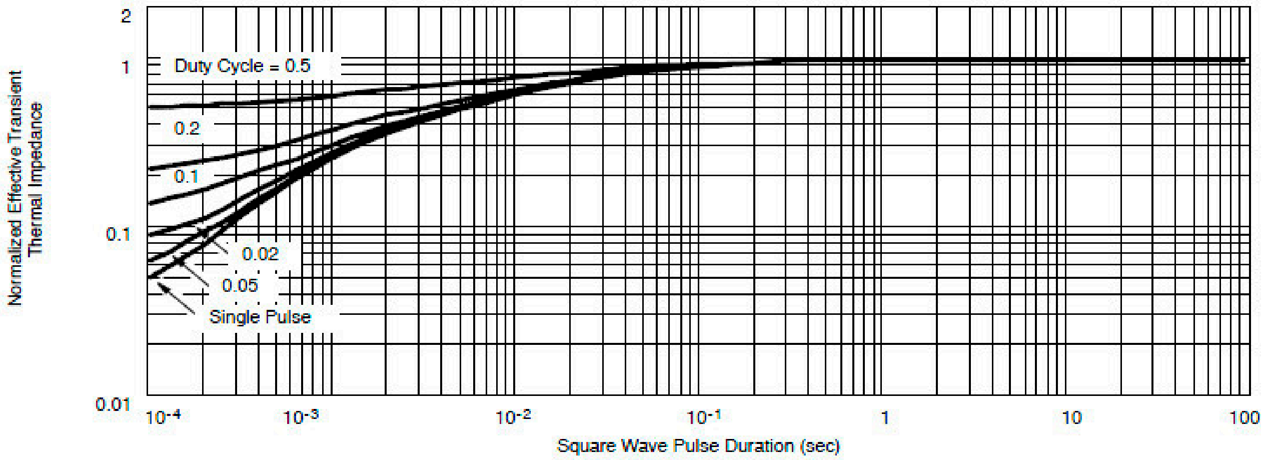
Maximum Drain Current vs. Ambiemt Temperature



Safe Operating Area

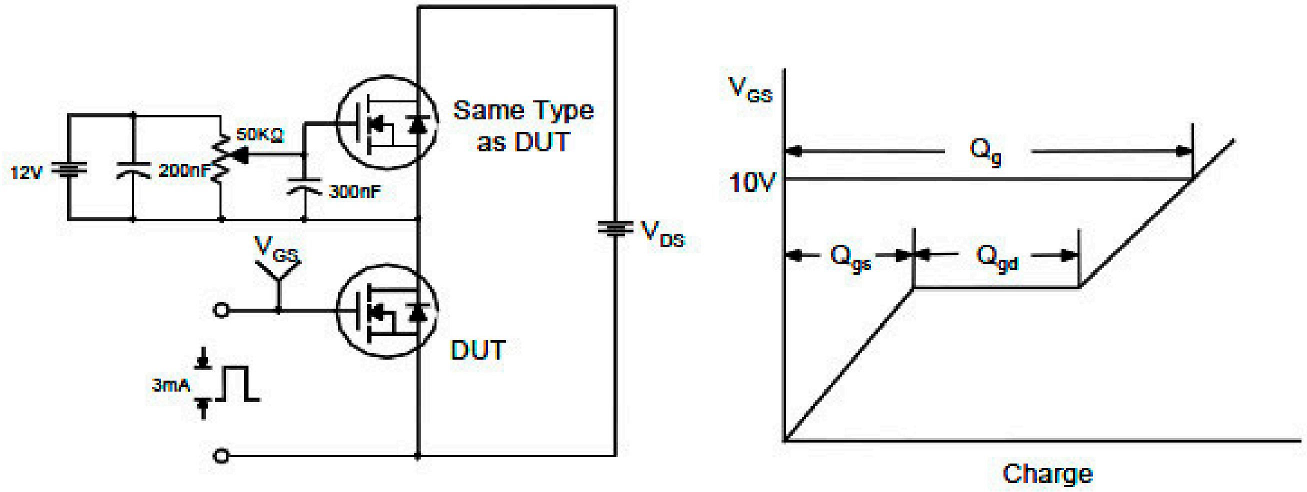


Normalized Thermal Transient Impedance, Junction-to-Case

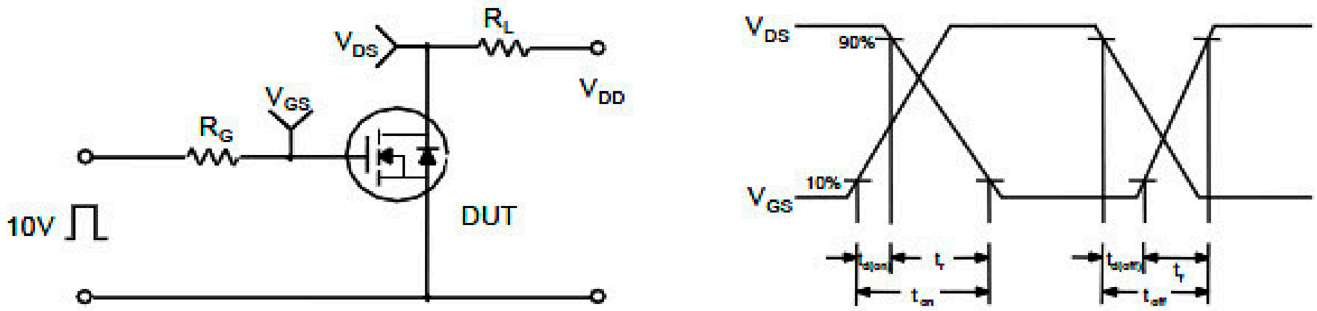


■Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms