Single P-channel MOSFET

ELM595301SA-S

■General description

ELM595301SA-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate threshold voltage.

■Features

- Vds=-60V
- Id=-35A
- Rds(on) = 26mΩ (Vgs=-10V)
- Rds(on) = 36mΩ (Vgs=-4.5V)

■Maximum absolute ratings

Ta=25°C. Unless otherwise noted.

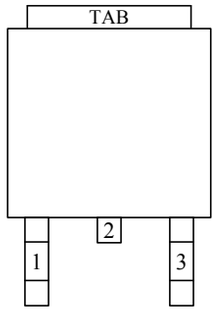
Parameter		Symbol	Limit	Unit
Drain-source voltage		Vds	-60	V
Gate-source voltage		Vgs	±20	V
Continuous drain current	Tc=25°C	Id	-35	A
	Tc=70°C		-20	
Pulsed drain current		Idm	-25	A
Power dissipation	Ta=25°C	Pd	40	W
	Ta=70°C		15	
Operating junction temperature		Tj	150	°C
Storage temperature range		Tstg	-55 to 150	°C

■Thermal characteristics

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

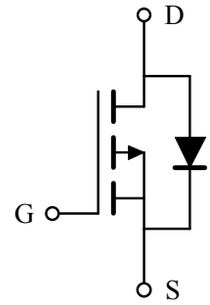
■Pin configuration

TO-252-3(TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

■Circuit

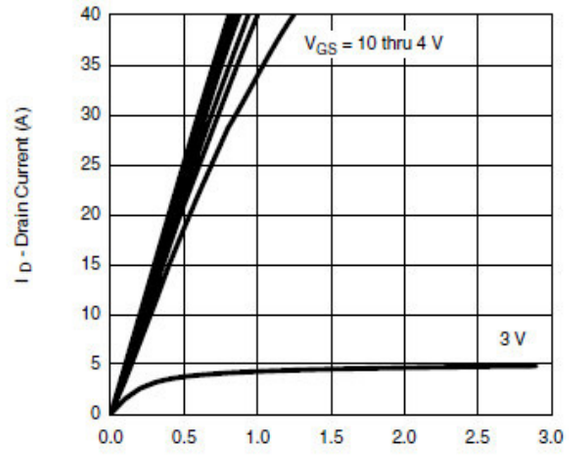


■Electrical characteristics

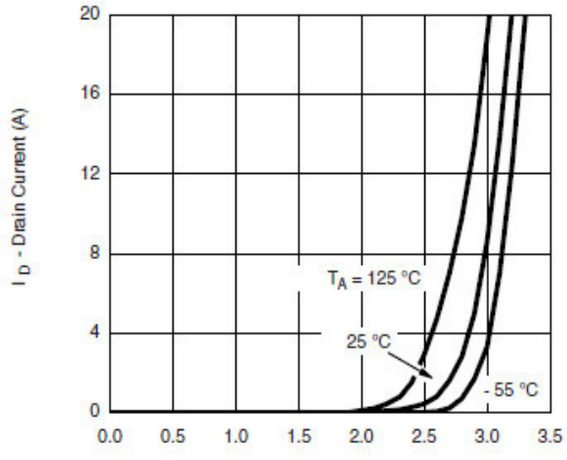
Ta=25°C. Unless otherwise noted.

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Vgs=0V, Id=-250μA	-60			V
Zero gate voltage drain current	Idss	Vds=-48V, Vgs=0V			-1	μA
		Vds=-48V, Vgs=0V, Ta=85°C			-20	
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	-10			A
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-25A		20	26	mΩ
		Vgs=-4.5V, Id=-15A		28	36	
Forward transconductance	Gfs	Vds=-15V, Id=-15A		45		S
Diode forward voltage	Vsd	Is=-3A, Vgs=0V		-0.8	-1.3	V
Max. body-diode continuous current	Is				-6	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=-30V, f=1MHz		4200		pF
Output capacitance	Coss			300		pF
Reverse transfer capacitance	Crss			210		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=-4.5V, Vds=-30V Id=-15A		50	95	nC
Gate-source charge	Qgs			15		nC
Gate-drain charge	Qgd			25		nC
Turn-on delay time	td(on)	Vgs=-10V, Vds=-30V RL=3.8Ω, Id≡-15A Rgen=1Ω		45	80	ns
Turn-on rise time	tr			220	380	ns
Turn-off delay time	td(off)			95	185	ns
Turn-off fall time	tf			110	200	ns

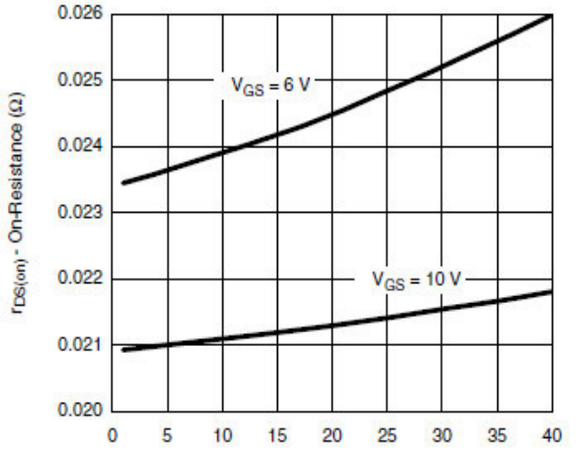
■Typical electrical and thermal characteristics



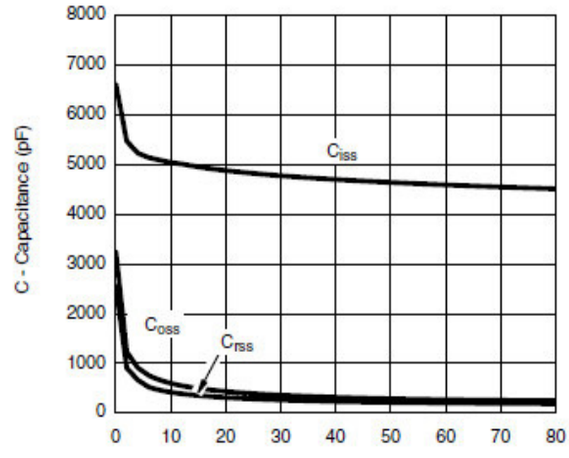
Output Characteristics



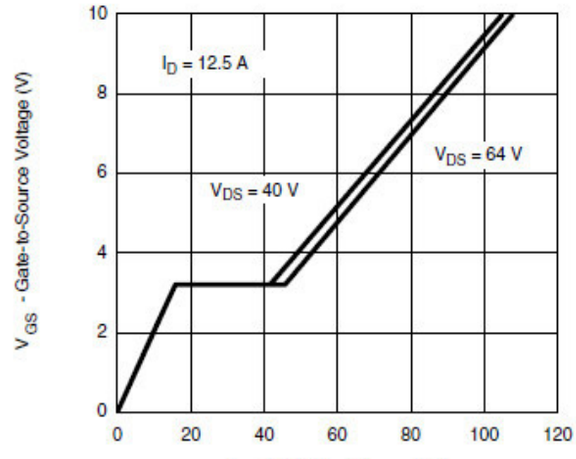
Transfer Characteristics



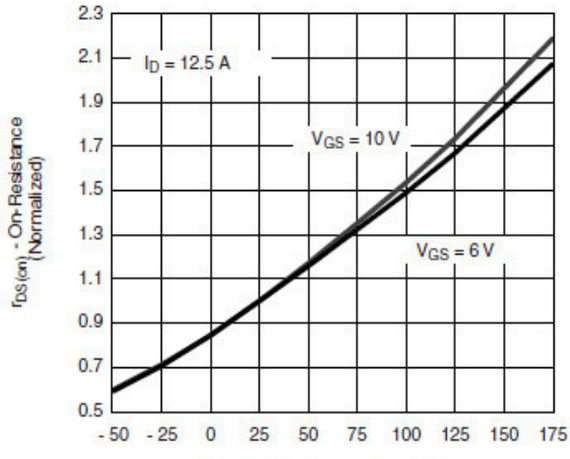
On-Resistance vs. Drain Current and Gate Voltage



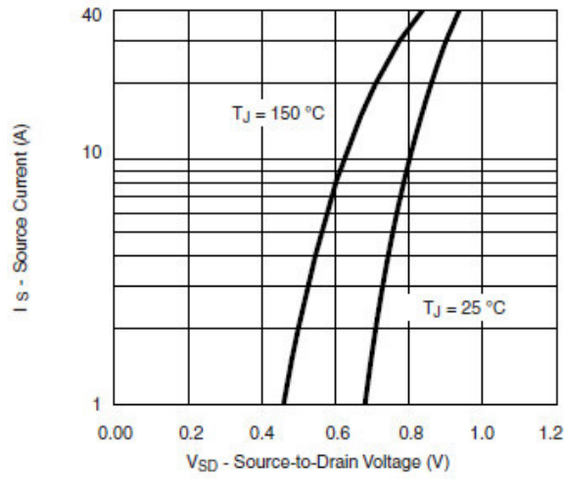
Capacitance



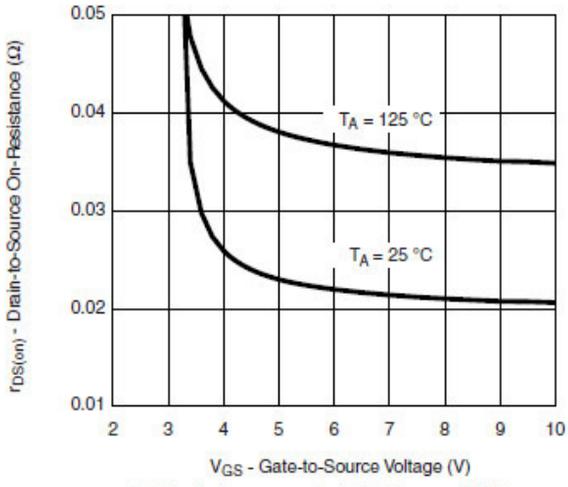
Gate Charge



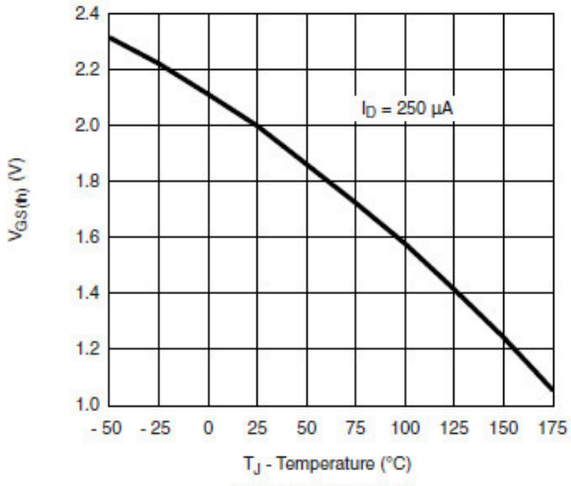
On-Resistance vs. Junction Temperature



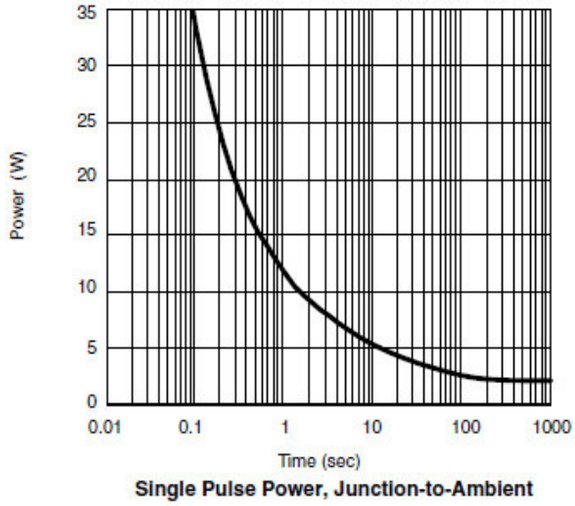
Source-Drain Diode Forward Voltage



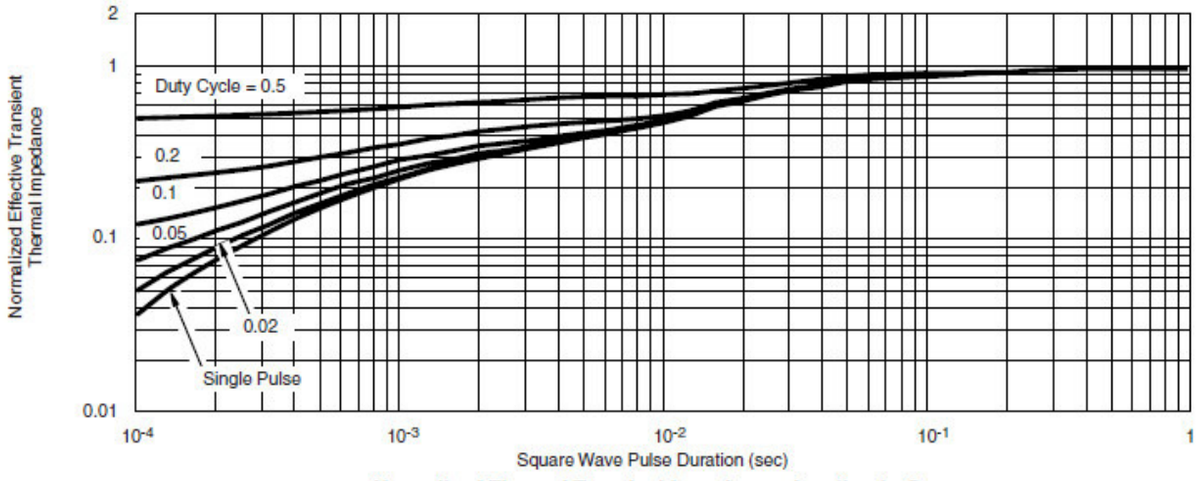
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



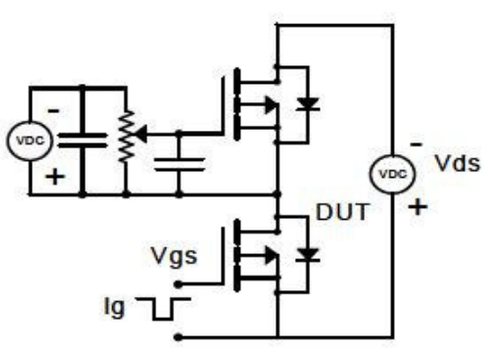
Single Pulse Power, Junction-to-Ambient

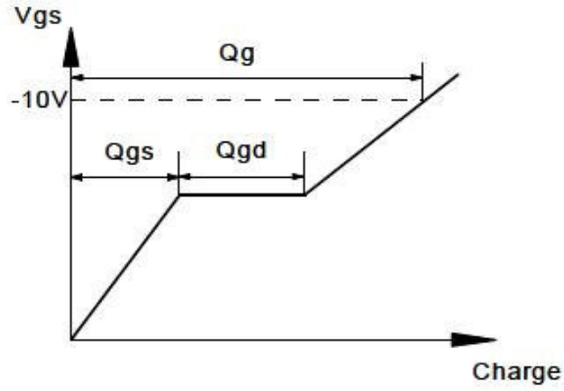


Normalized Thermal Transient Impedance, Junction-to-Case

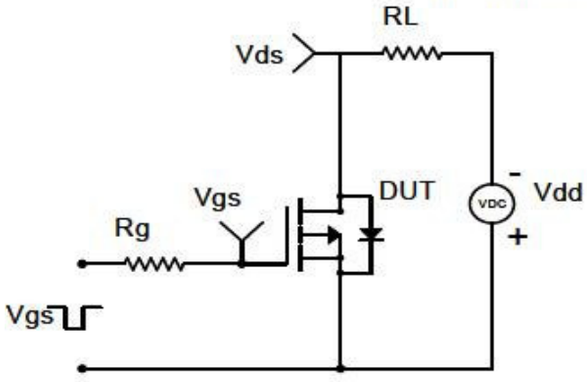
■Test circuit and waveform

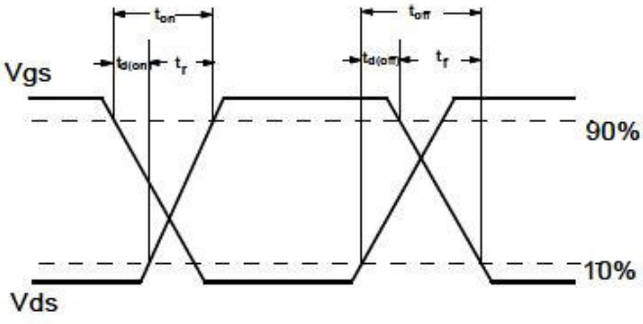
Gate Charge Test Circuit & Waveform





Resistive Switching Test Circuit & Waveforms





Diode Recovery Test Circuit & Waveforms