

Single P-channel MOSFET

ELM595301SA-S

<http://www.elm-tech.com>

■General description

ELM595301SA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

■Features

- $V_{ds}=-60V$
- $I_d=-35A$
- $R_{ds(on)} = 26m\Omega$ ($V_{gs}=-10V$)
- $R_{ds(on)} = 36m\Omega$ ($V_{gs}=-4.5V$)

■Maximum absolute ratings

$T_a=25^{\circ}C$. Unless otherwise noted.

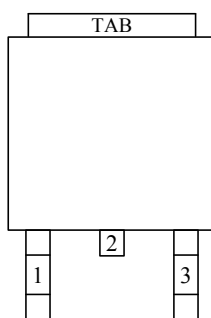
Parameter		Symbol	Limit	Unit
Drain-source voltage		V_{ds}	-60	V
Gate-source voltage		V_{gs}	± 20	V
Continuous drain current	$T_a=25^{\circ}C$	I_d	-35	A
	$T_a=70^{\circ}C$		-20	
Pulsed drain current		I_{dm}	-25	A
Power dissipation	$T_c=25^{\circ}C$	P_d	40	W
	$T_c=70^{\circ}C$		15	
Operating junction temperature		T_j	150	$^{\circ}C$
Storage temperature range		T_{stg}	-55 to 150	$^{\circ}C$

■Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Maximum junction-to-ambient	$R_{\theta ja}$		62.5	$^{\circ}C/W$

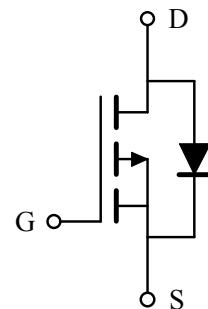
■Pin configuration

TO-252-3(TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

■Circuit



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■Electrical characteristics

Ta=25°C. Unless otherwise noted.

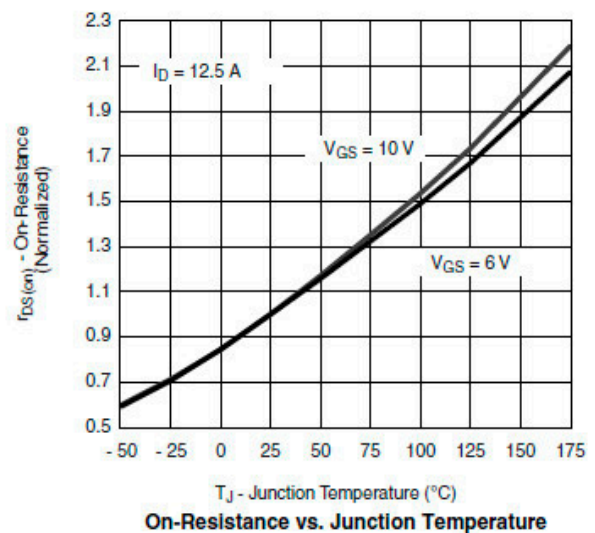
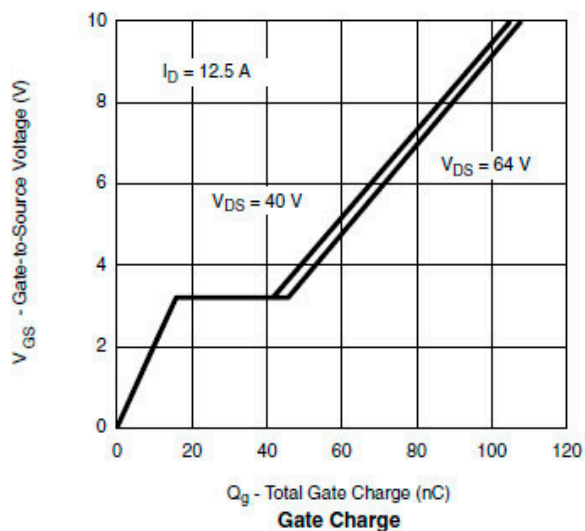
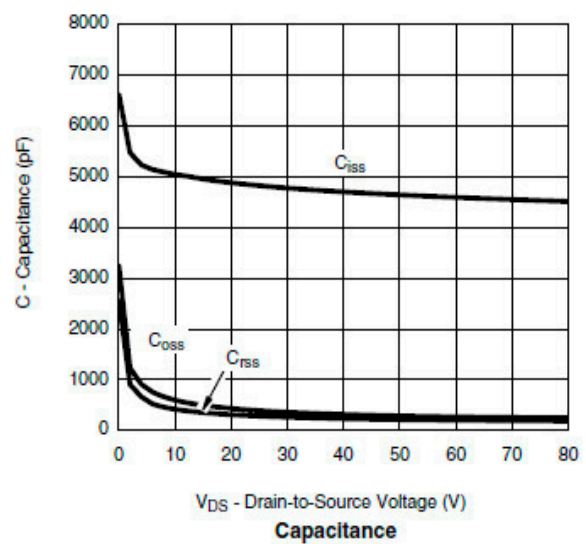
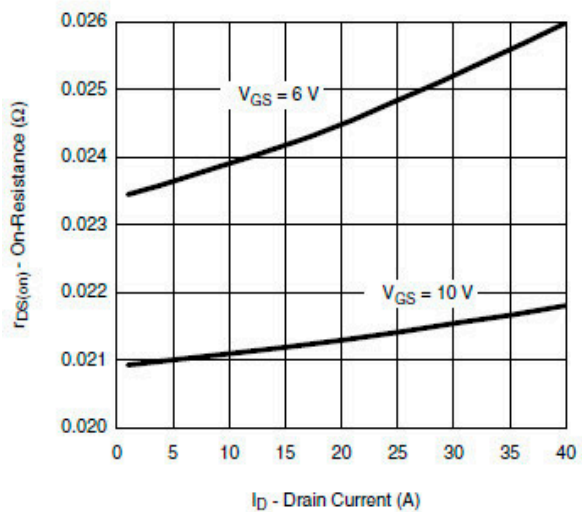
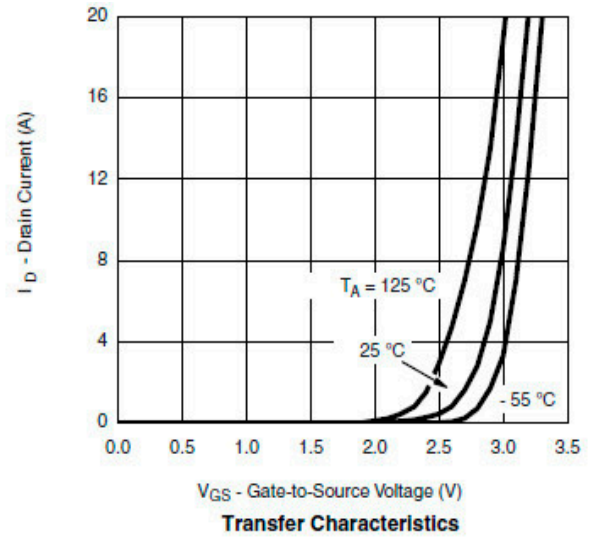
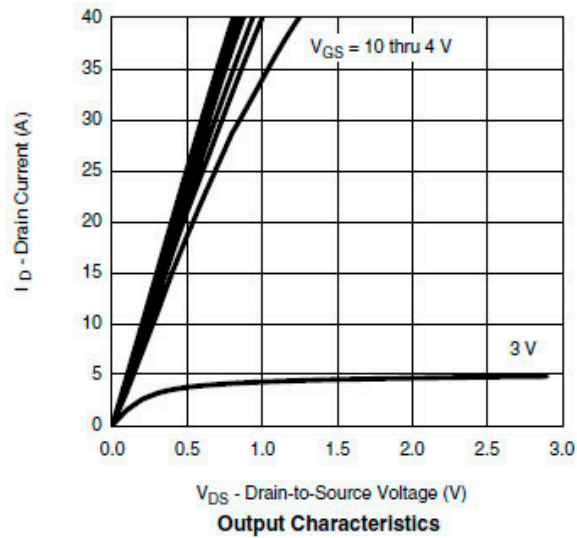
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Vgs=0V, Id=-250μA	-60			V
Zero gate voltage drain current	Idss	Vds=-48V, Vgs=0V			-1	μA
		Vds=-48V, Vgs=0V, Ta=85°C			-20	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA
Gate threshold 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

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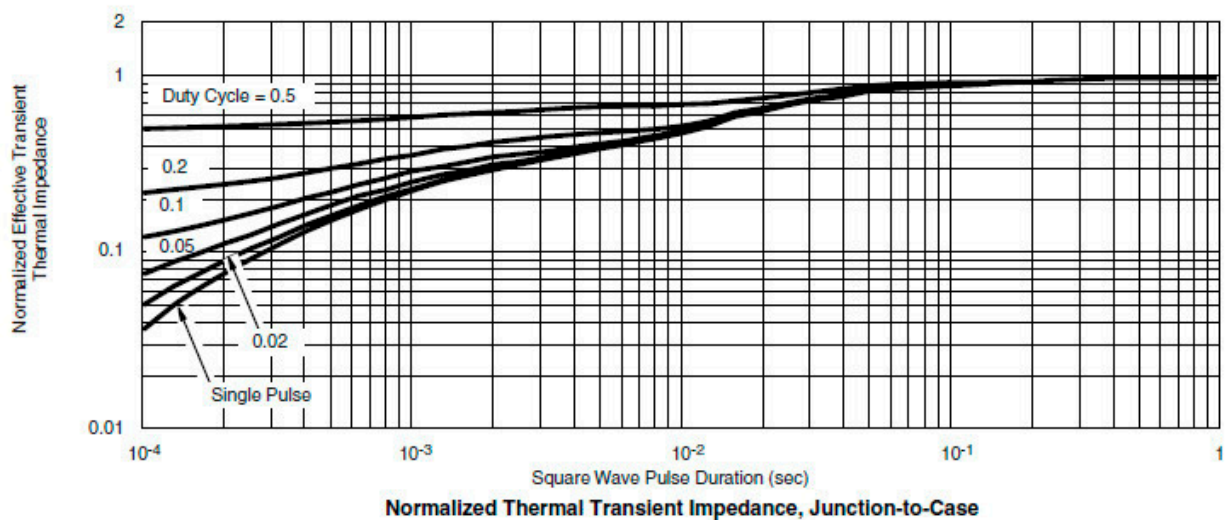
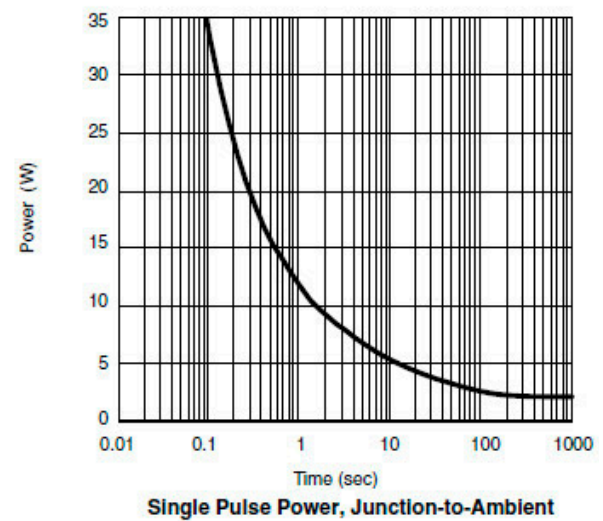
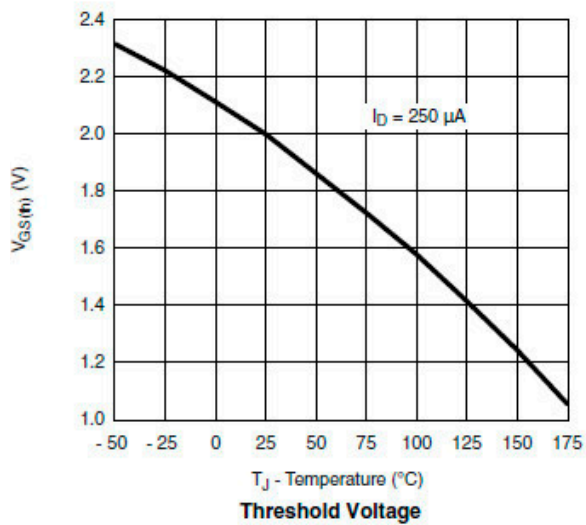
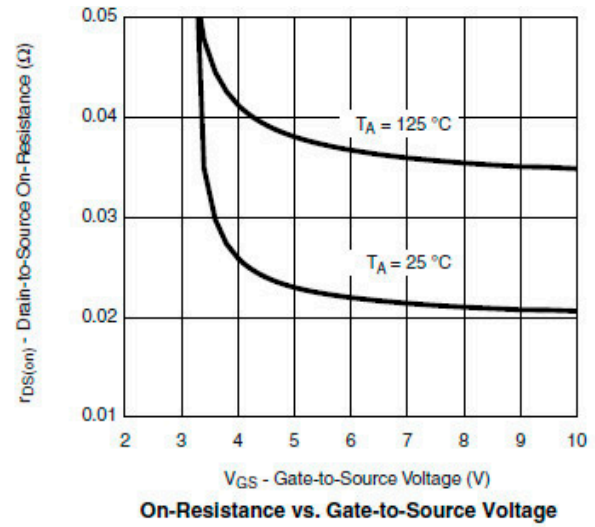
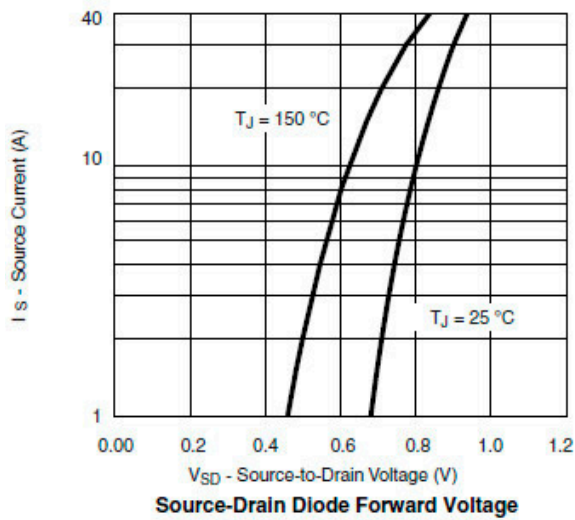
■ Typical electrical and thermal characteristics



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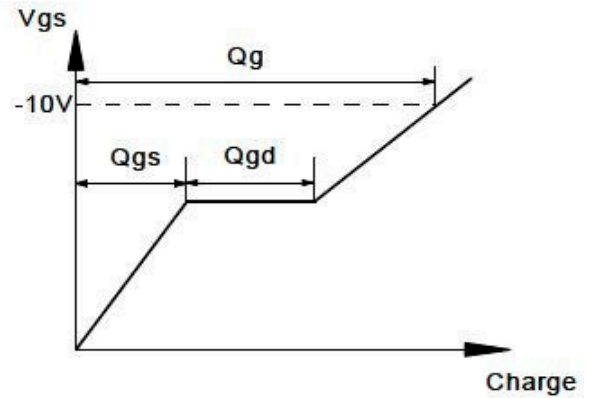
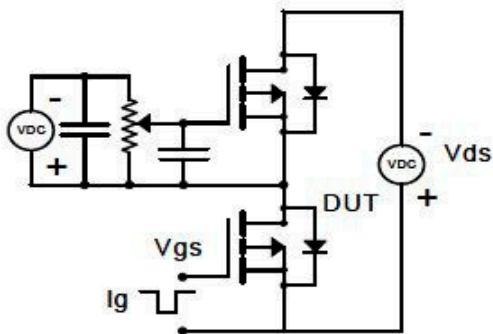
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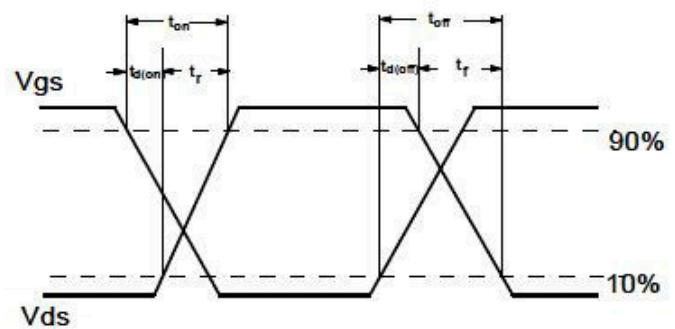
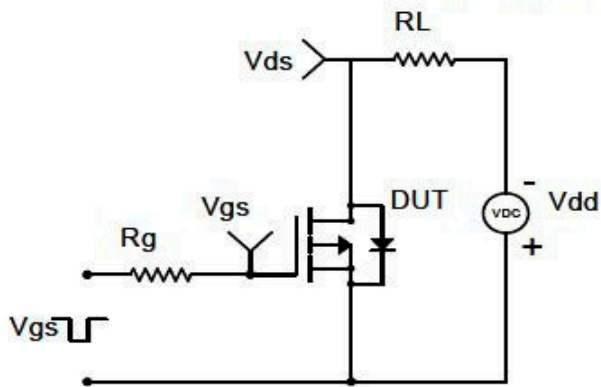
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■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

