

Single P-channel MOSFET

ELM595761A-S

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

■ General description

ELM595761A-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■ Features

- $V_{ds} = -60V$
- $I_d = -14A$
- $R_{ds(on)} = 115m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} = 125m\Omega$ ($V_{gs} = -4.5V$)

■ Maximum absolute ratings

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

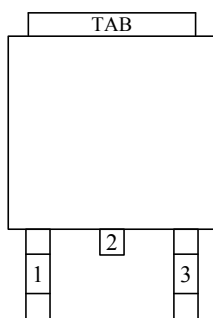
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	-60	V
Gate-source voltage	V_{gs}	± 20	V
Continuous drain current	I_d	$T_a = 25^\circ C$	-14
		$T_a = 70^\circ C$	-10
Pulsed drain current	I_{dm}	-30	A
Single pulse avalanche current	I_{as}	-12	A
Avalanche energy	E_{as}	23	mJ
Power dissipation	P_d	$T_c = 25^\circ C$	40
		$T_c = 70^\circ C$	15
Junction and storage temperature range	T_j, T_{stg}	-55 to 150	$^\circ C$

■ Thermal characteristics

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

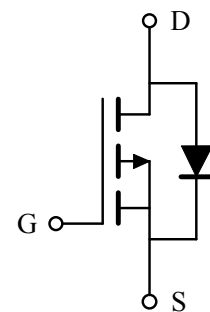
■ Pin configuration

TO-252-3(TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

■ Circuit



Single P-channel MOSFET

ELM595761A-S

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

■ Electrical characteristics

Ta=25°C. Unless otherwise noted.

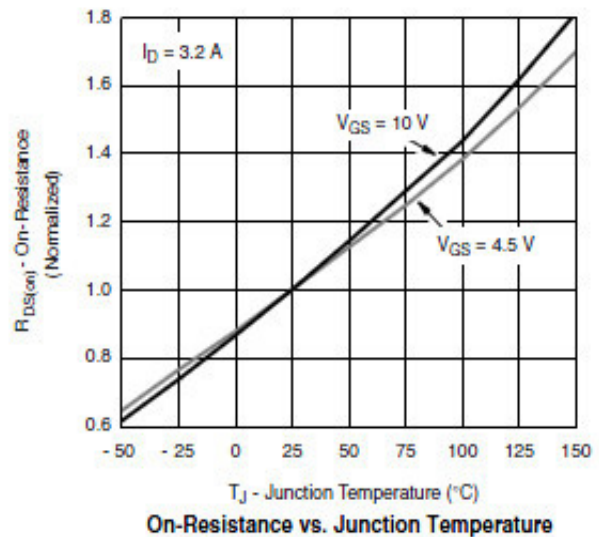
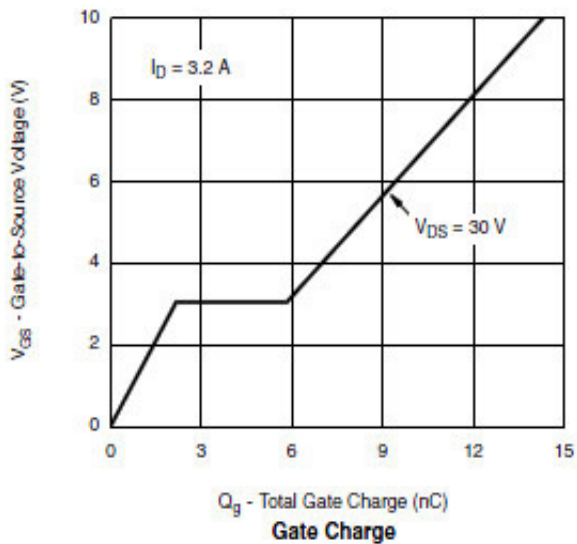
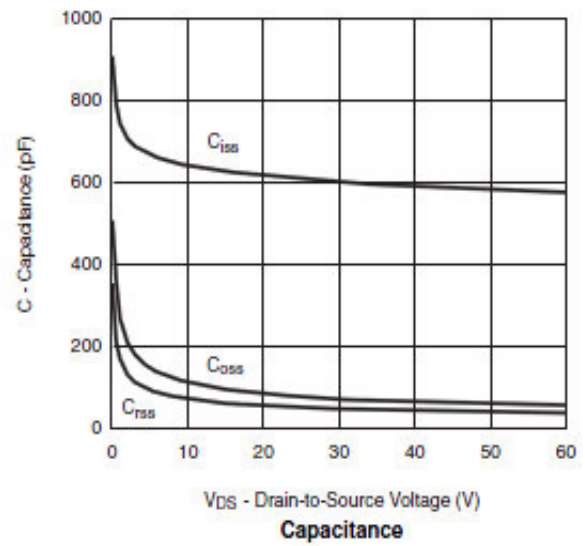
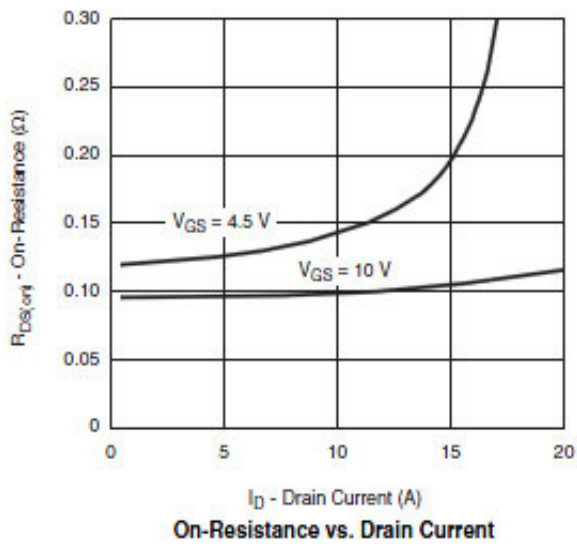
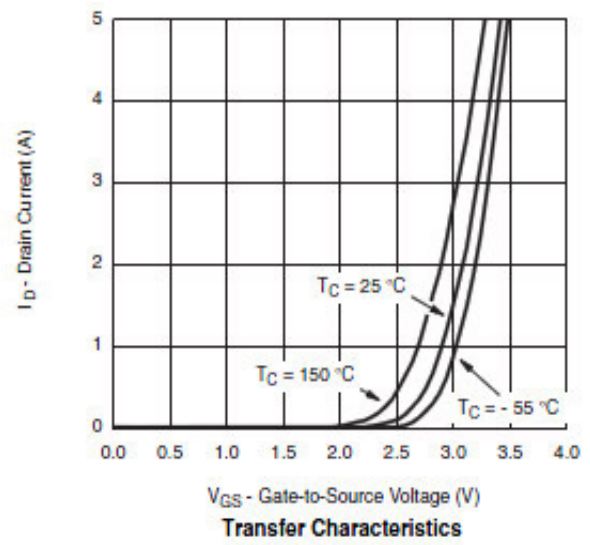
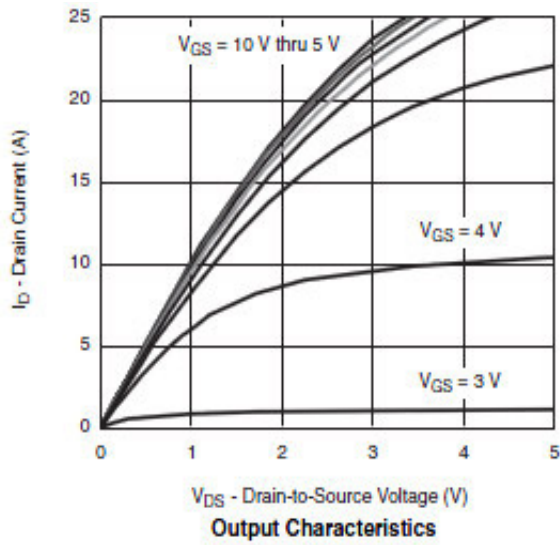
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Vgs=0V, Id=-250μA	-60			V
Zero gate voltage drain current	Idss	Vds=-48V, Vgs=0V			-1	μA
		Vds=-48V, Vgs=0V, Ta=85°C			-20	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-0.8		-2.5	V
On state drain current	Id(on)	Vgs=-10V, Vds≥-5V	-20			A
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-14A		105	115	mΩ
		Vgs=-4.5V, Id=-10A		110	125	
Forward transconductance	Gfs	Vds=-15V, Id=-3.2A		12		S
Diode forward voltage	Vsd	Is=-2A, Vgs=0V		-0.8	-1.2	V
Max. body-diode continuous current	Is				-8	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=-30V, f=1MHz		980		pF
Output capacitance	Coss			110		pF
Reverse transfer capacitance	Crss			45		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=-10V, Vds=-30V Id=-4.0A		12.0	20.0	nC
Gate-source charge	Qgs			2.5		nC
Gate-drain charge	Qgd			3.5		nC
Turn-on delay time	td(on)	Vgs=-10V, Vds=-30V RL=7.5Ω, Id=-3.8A Rgen=3.0Ω		10	20	ns
Turn-on rise time	tr			6	10	ns
Turn-off delay time	td(off)			30	45	ns
Turn-off fall time	tf			12	25	ns

Single P-channel MOSFET

ELM595761A-S

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

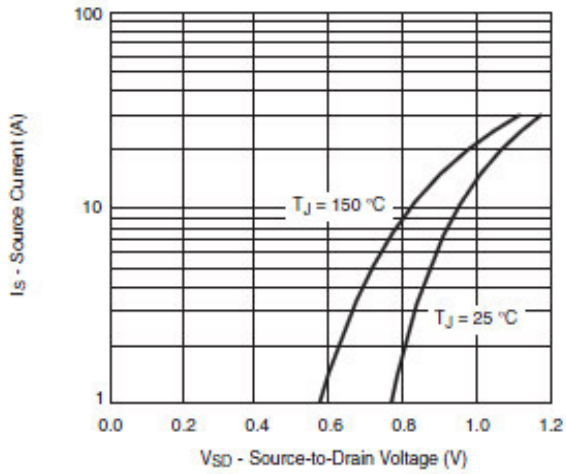
■ Typical electrical and thermal characteristics



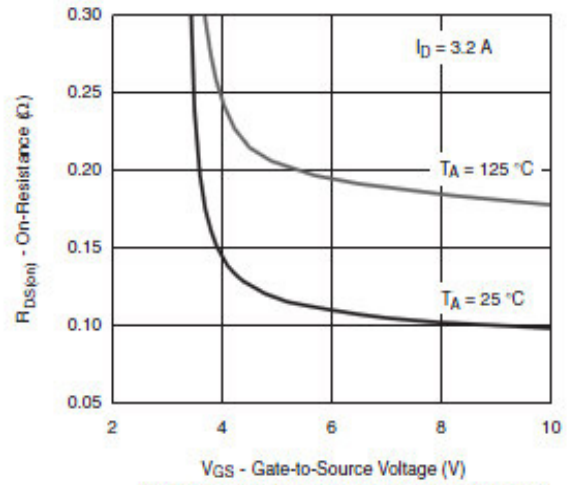
Single P-channel MOSFET

ELM595761A-S

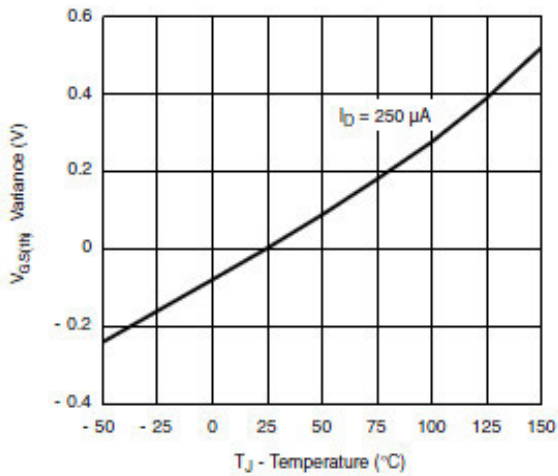
<http://www.elm-tech.com>



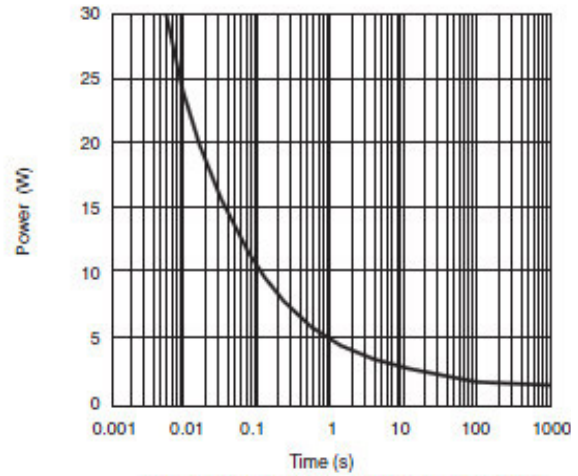
Source-Drain Diode Forward Voltage



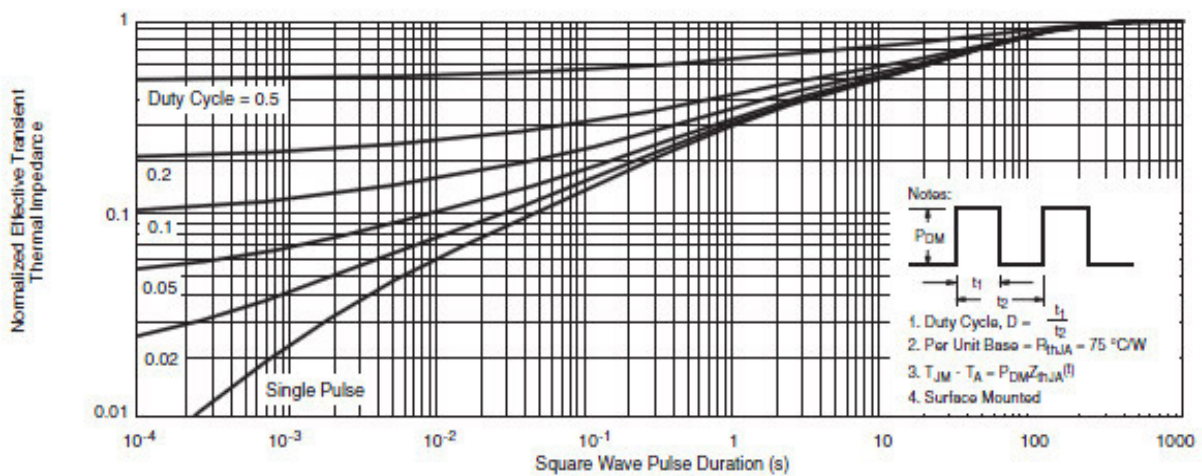
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

- Notes:
- Duty Cycle, $D = \frac{t_1}{t_2}$
 - Per Unit Base - $R_{thJA} = 75 \text{ } ^\circ\text{C/W}$
 - $T_{JM} - T_A = P_{DM} Z_{thJA}^{(t)}$
 - Surface Mounted

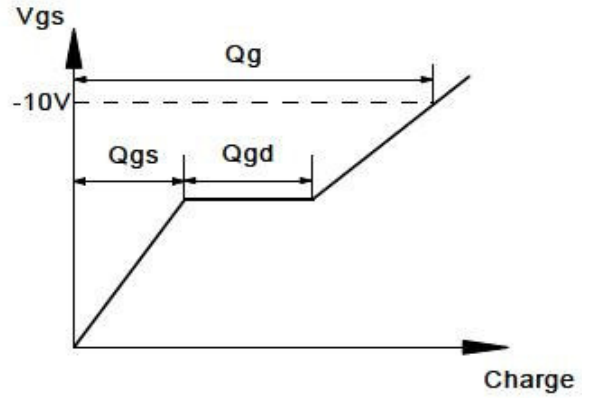
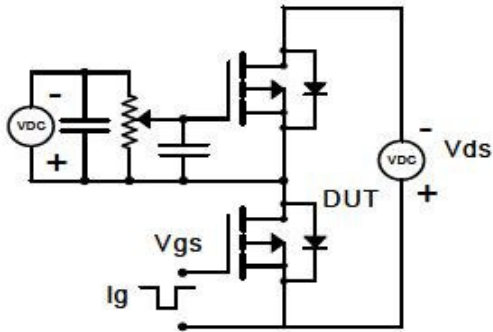
Single P-channel MOSFET

ELM595761A-S

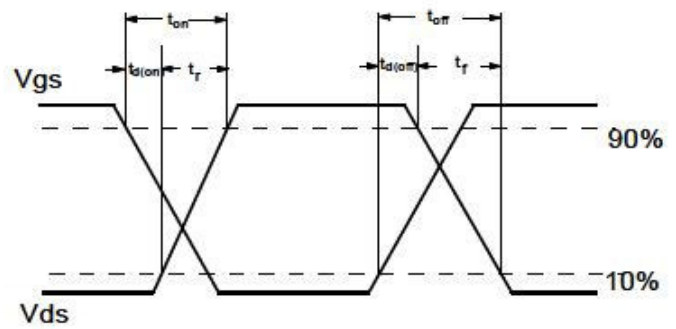
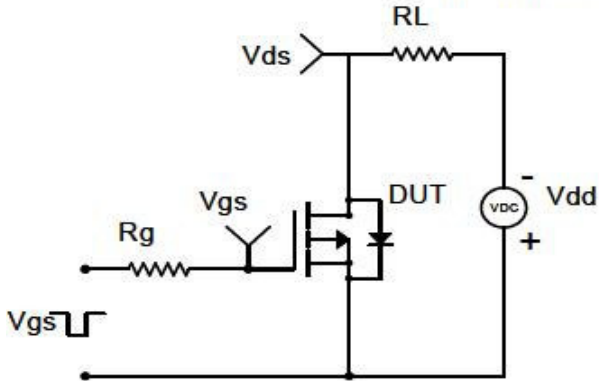
<http://www.elm-tech.com>

■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

