

Single P-channel MOSFET

ELM530561WSA-S

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

■ General description

ELM530561WSA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■ Features

- $V_{ds} = -30V$
- $I_d = -5.0A$
- $R_{ds(on)} = 55m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} = 70m\Omega$ ($V_{gs} = -4.5V$)

■ Maximum absolute ratings

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

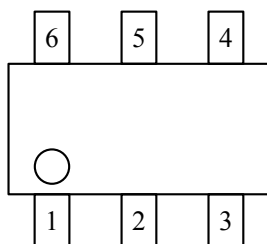
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	-30	V
Gate-source voltage	V_{gs}	± 20	V
Continuous drain current ($T_j = 150^\circ C$)	I_d	$T_a = 25^\circ C$	-5.0
		$T_a = 70^\circ C$	-4.0
Pulsed drain current	I_{dm}	-20	A
Power dissipation	P_d	$T_c = 25^\circ C$	2.0
		$T_c = 70^\circ C$	1.3
Operating junction temperature	T_j	150	$^\circ C$
Junction and storage temperature range	T_{stg}	-55 to 150	$^\circ C$

■ Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal resistance junction-to-ambient	$R_{\theta ja}$		120	$^\circ C/W$

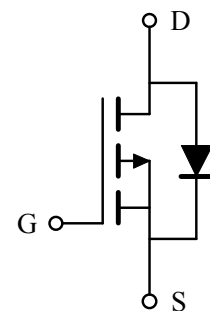
■ Pin configuration

SOT-26(TOP VIEW)



Pin No.	Pin name
1	DRAIN
2	DRAIN
3	GATE
4	SOURCE
5	DRAIN
6	DRAIN

■ Circuit



Single P-channel MOSFET

ELM530561WSA-S

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

■ Electrical characteristics

Ta=25°C. Unless otherwise noted.

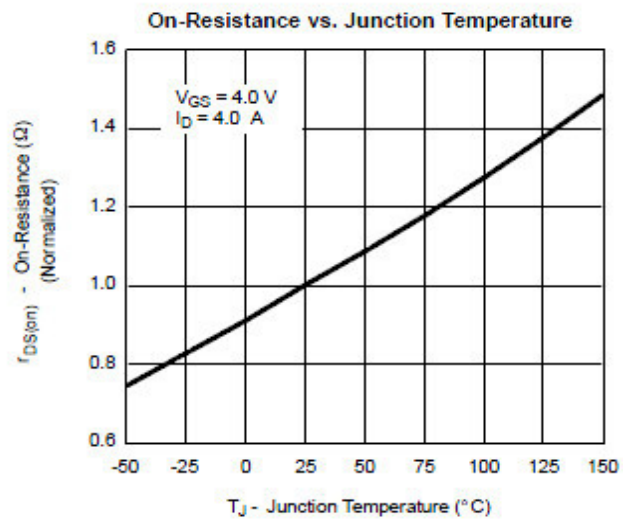
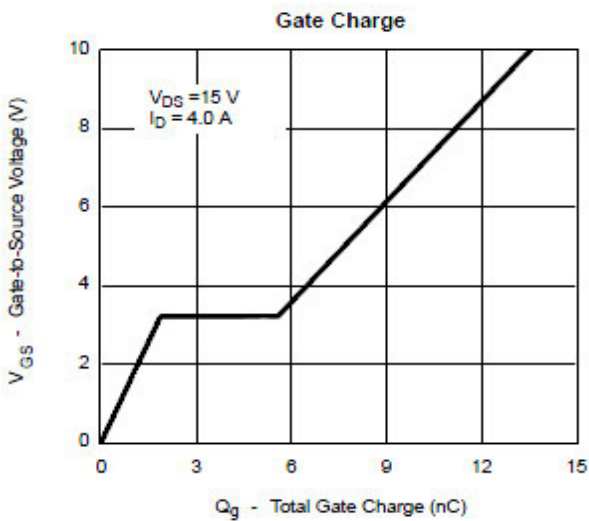
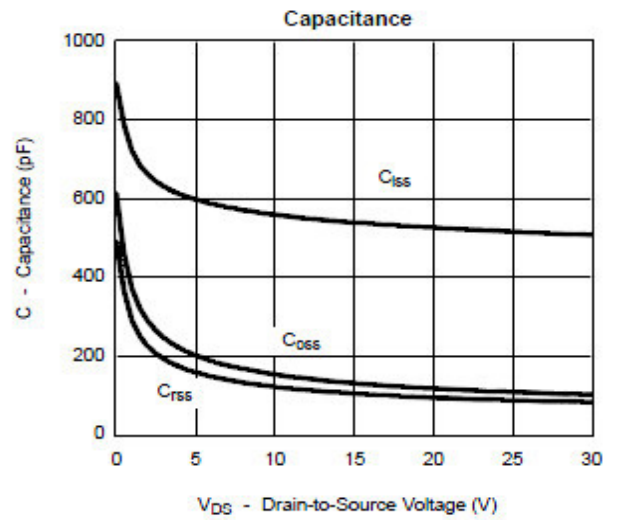
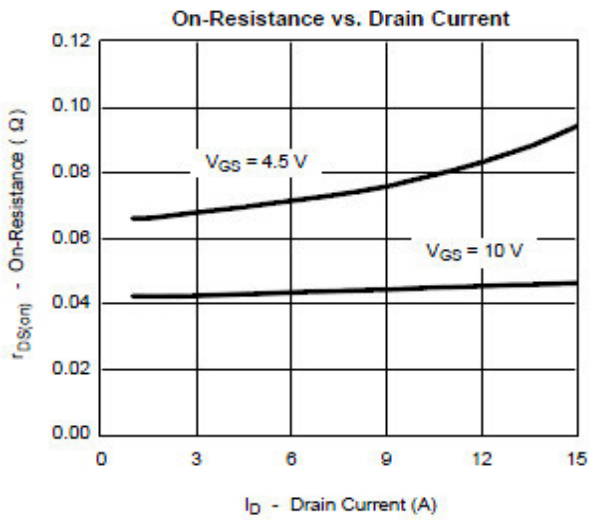
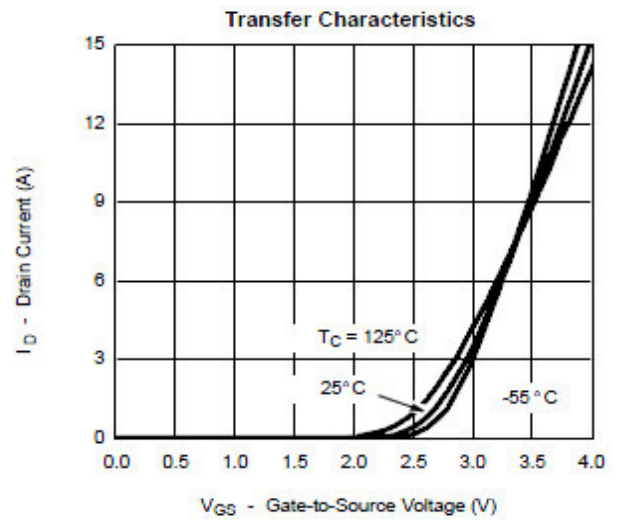
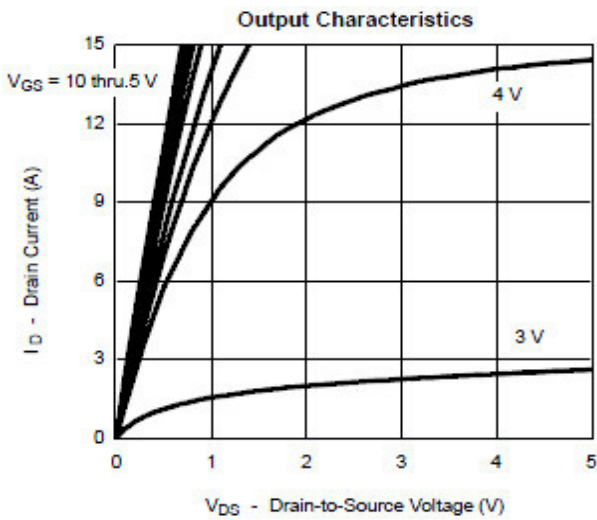
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Id=-250μA, Vgs=0V	-30			V
Zero gate voltage drain current	Idss	Vds=-24V			-1	μA
		Vgs=0V		Ta=85°C	-30	
Gate-body leakage current	Igss	Vds=0V, Vgs=±12V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-1.0		-2.5	V
On state drain current	Id(on)	Vgs=-10V, Vds≥-5V	-10			A
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-5.0A		47	55	mΩ
		Vgs=-4.5V, Id=-4.0A		62	70	
Forward transconductance	Gfs	Vds=-5V, Id=-4.0A		10		S
Diode forward voltage	Vsd	Is=-1.7A, Vgs=0V		-0.7	-1.3	V
Max. body-diode continuous current	Is				-1.7	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss			450		pF
Output capacitance	Coss	Vgs=0V, Vds=-15V, f=1MHz		95		pF
Reverse transfer capacitance	Crss			55		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=-10V, Vds=-15V Id≐-3.5A		10.0	18.0	nC
Gate-source charge	Qgs			1.6		nC
Gate-drain charge	Qgd			3.0		nC
Turn-on delay time	td(on)	Vgs=-10V, Vds=-15V RL=15Ω, Id≐-1.0A Rgen=6.0Ω		8	18	ns
Turn-on rise time	tr			8	18	ns
Turn-off delay time	td(off)			25	50	ns
Turn-off fall time	tf			25	35	ns

Single P-channel MOSFET

ELM530561WSA-S

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

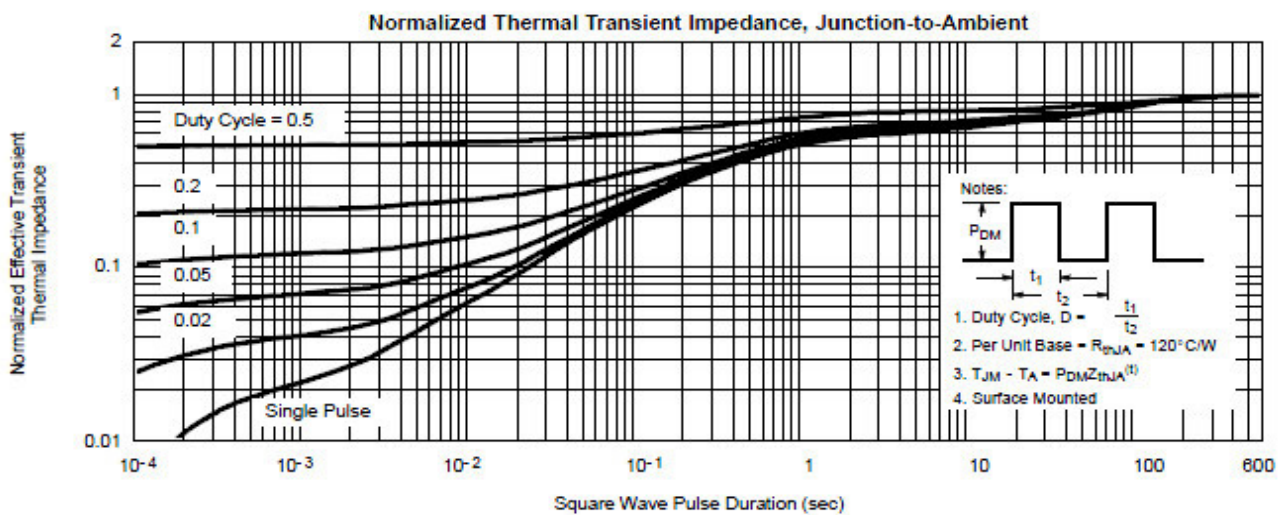
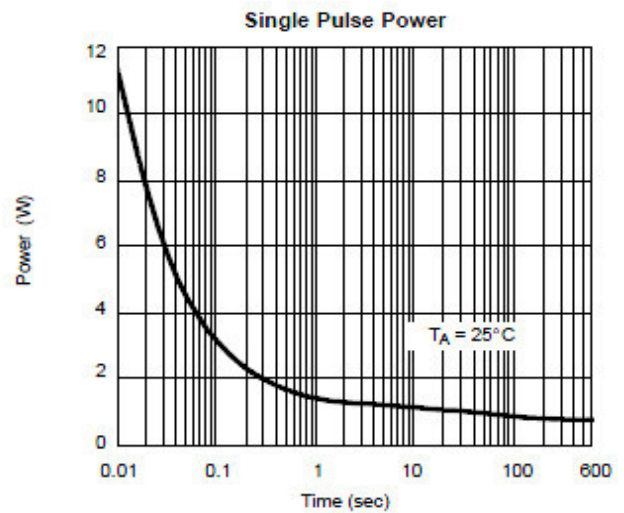
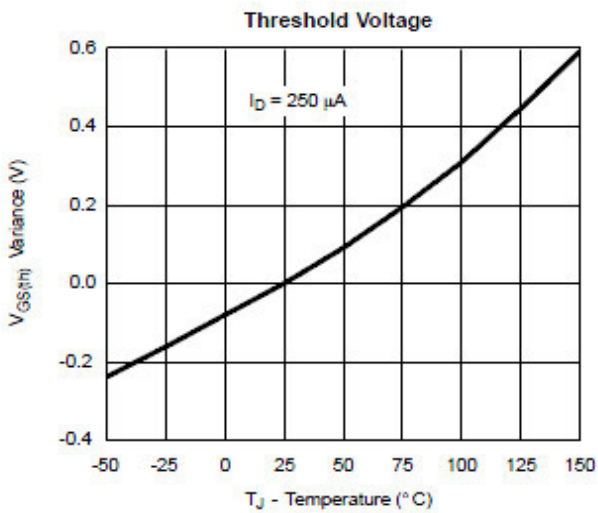
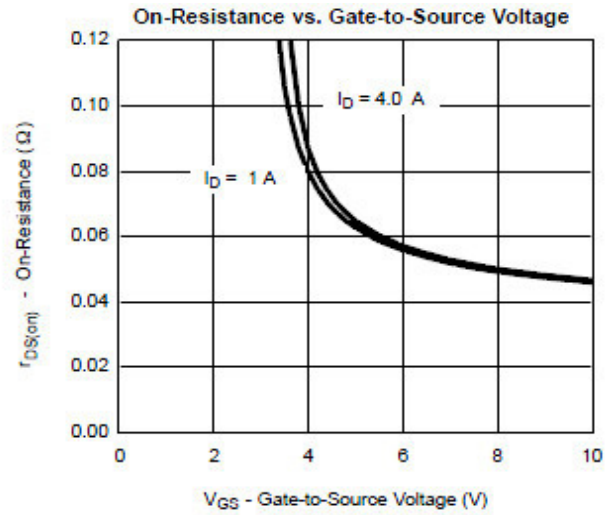
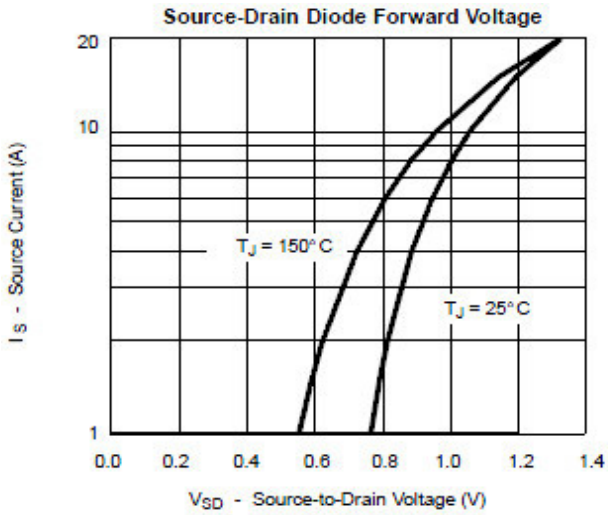
■ Typical electrical and thermal characteristics



Single P-channel MOSFET

ELM530561WSA-S

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



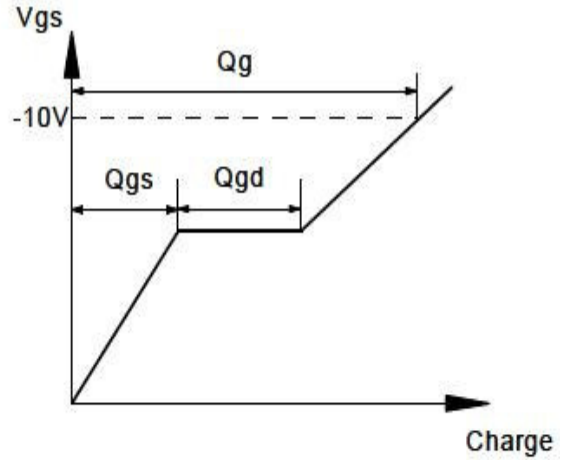
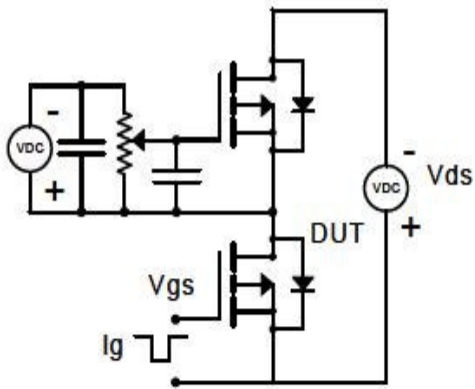
Single P-channel MOSFET

ELM530561WSA-S

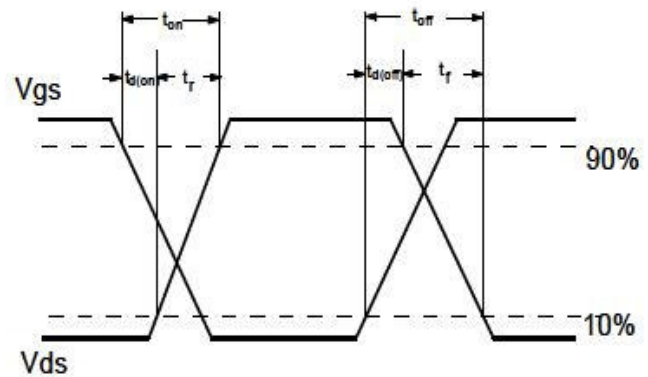
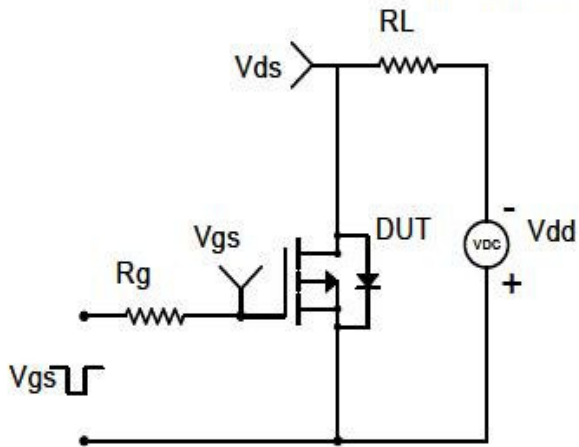
<http://www.elm-tech.com>

■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

