

Single N-channel MOSFET

ELM584710A-S

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

■General description

ELM584710A-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■Features

- $V_{ds}=60V$
- $I_d=5.8A$
- $R_{ds(on)} < 54m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} < 60m\Omega$ ($V_{gs}=4.5V$)

■Maximum absolute ratings

Ta=25°C. Unless otherwise noted.

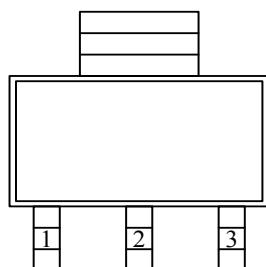
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	60	V
Gate-source voltage	V_{gs}	± 20	V
Continuous drain current $T_j=150^{\circ}C$	I_d	5.8	A
		4.2	
Pulsed drain current	I_{dm}	10	A
Power dissipation	P_d	2.8	W
		1.2	
Junction and storage temperature range	T_j, T_{stg}	-55 to 150	°C

■Thermal characteristics

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

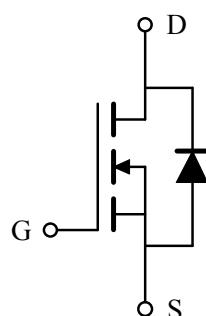
■Pin configuration

SOT-223(TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

■Circuit



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■ Electrical characteristics

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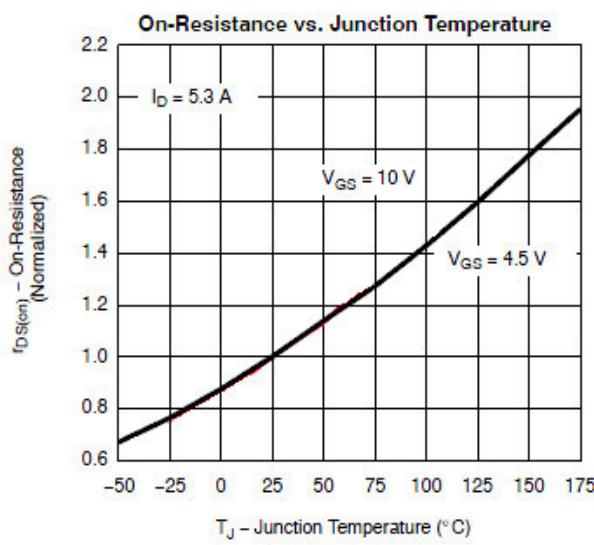
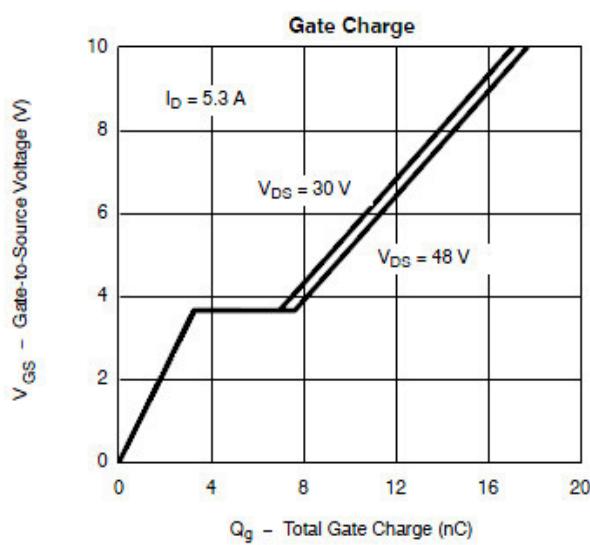
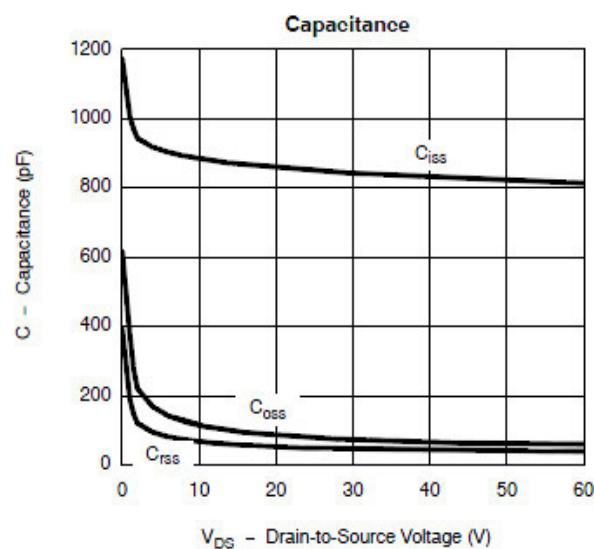
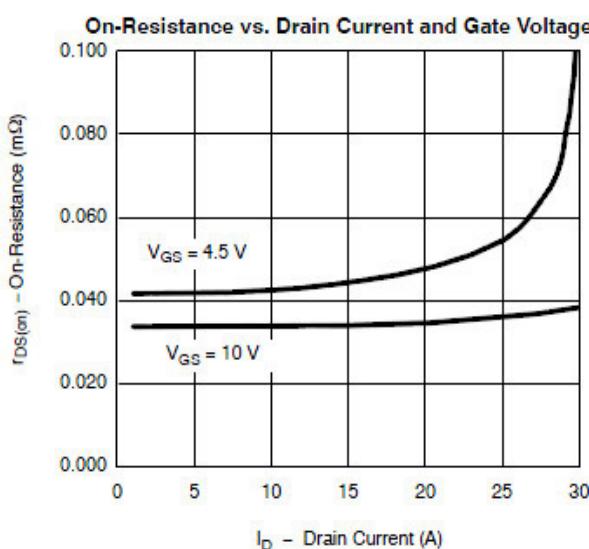
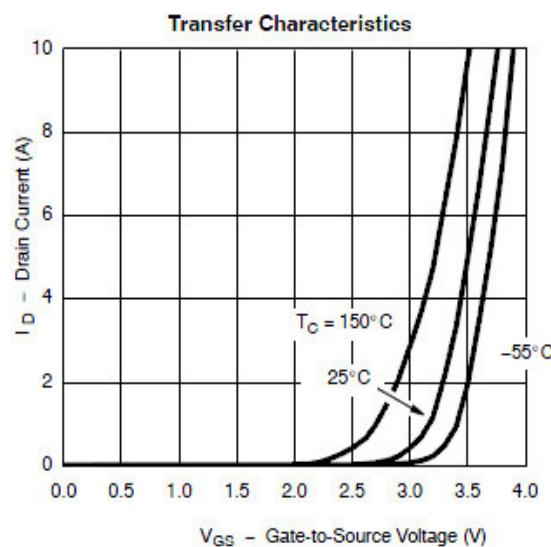
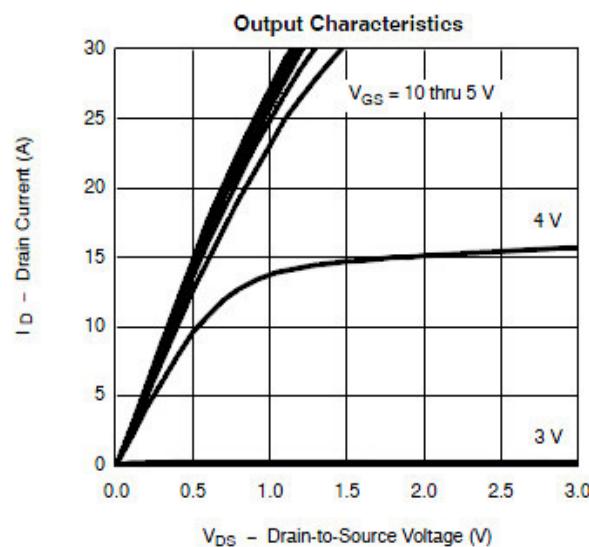
Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=250µA, Vgs=0V		60			V
Zero gate voltage drain current	Idss	Vds=60V, Vgs=0V			1		µA
			Ta=85°C			5	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V				±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250µA		1.0		2.5	V
On state drain current	Id(on)	Vgs=4.5V, Vds=5V		10			A
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=5.8A			48	54	mΩ
		Vgs=4.5V, Id=4.2A			54	60	
Forward transconductance	Gfs	Vds=15V, Id=2.4A			24		S
Diode forward voltage	Vsd	Is=1.6A, Vgs=0V			0.8	1.2	V
Max. body-diode continuous current	Is					1.6	A
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=30V, f=1MHz			890		pF
Output capacitance	Coss				85		pF
Reverse transfer capacitance	Crss				48		pF
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=5V, Vds=30V, Id=3.0A			10.0	15.0	nC
Gate-source charge	Qgs				3.5		nC
Gate-drain charge	Qgd				3.6		nC
Turn-on delay time	td(on)	Vgs=4.5V, Vds=30V RL=6.8Ω, Id=3.0A, Rgen=6Ω			10	15	ns
Turn-on rise time	tr				12	20	ns
Turn-off delay time	td(off)				25	35	ns
Turn-off fall time	tf				10	15	ns

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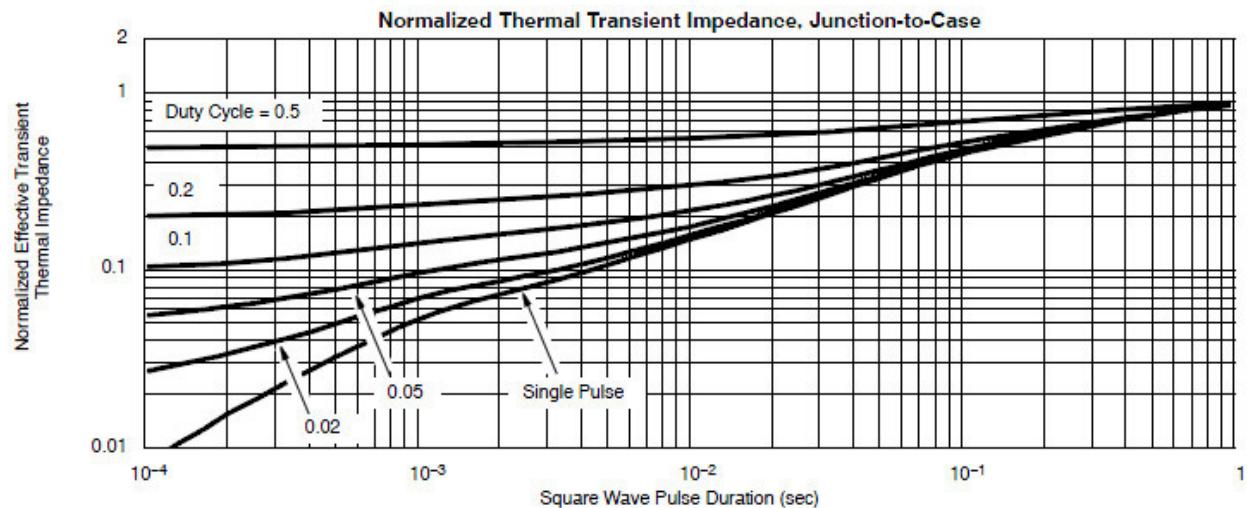
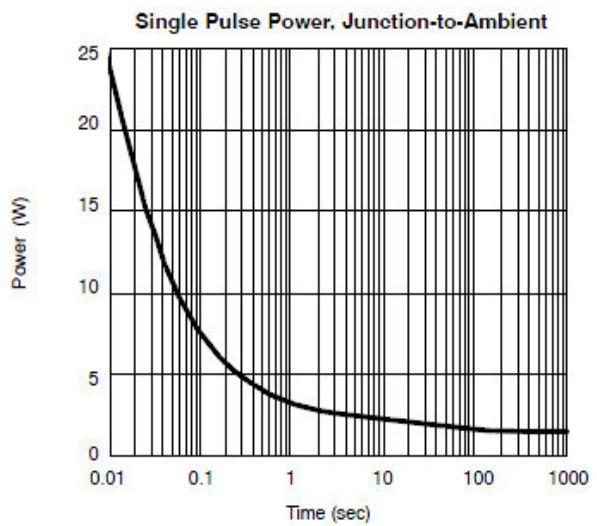
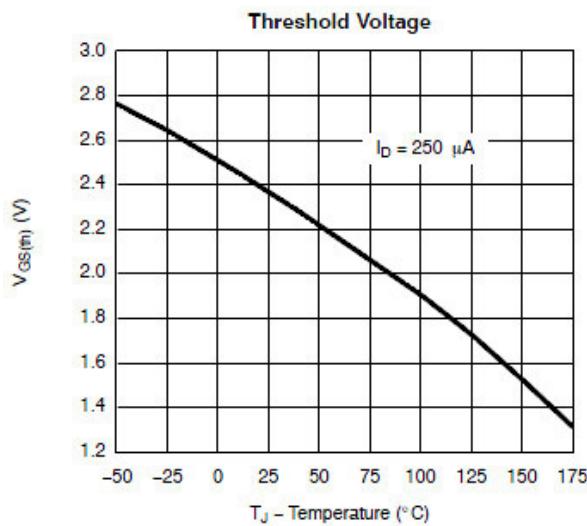
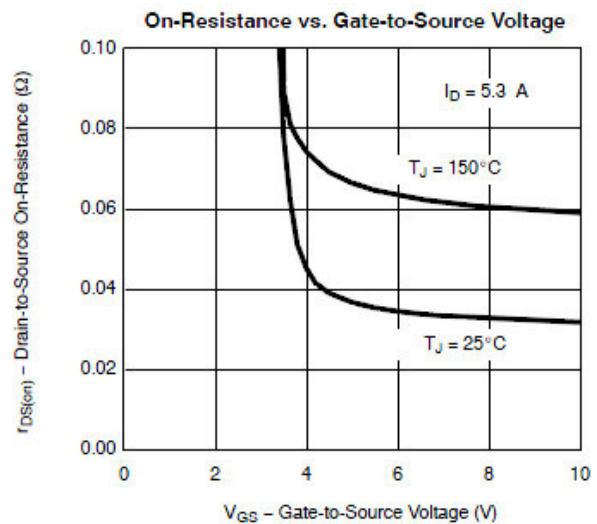
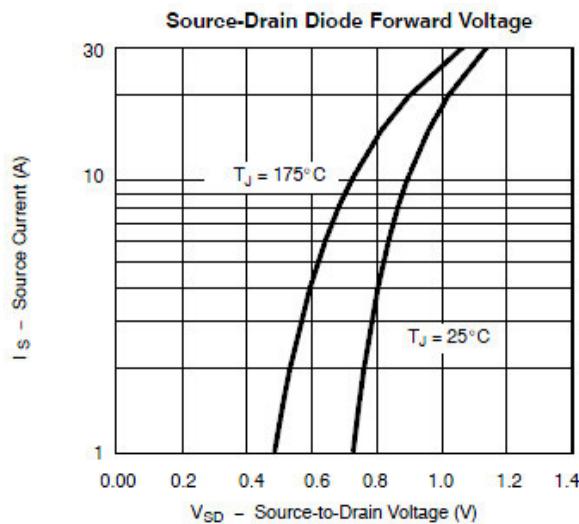
■ Typical electrical and thermal characteristics



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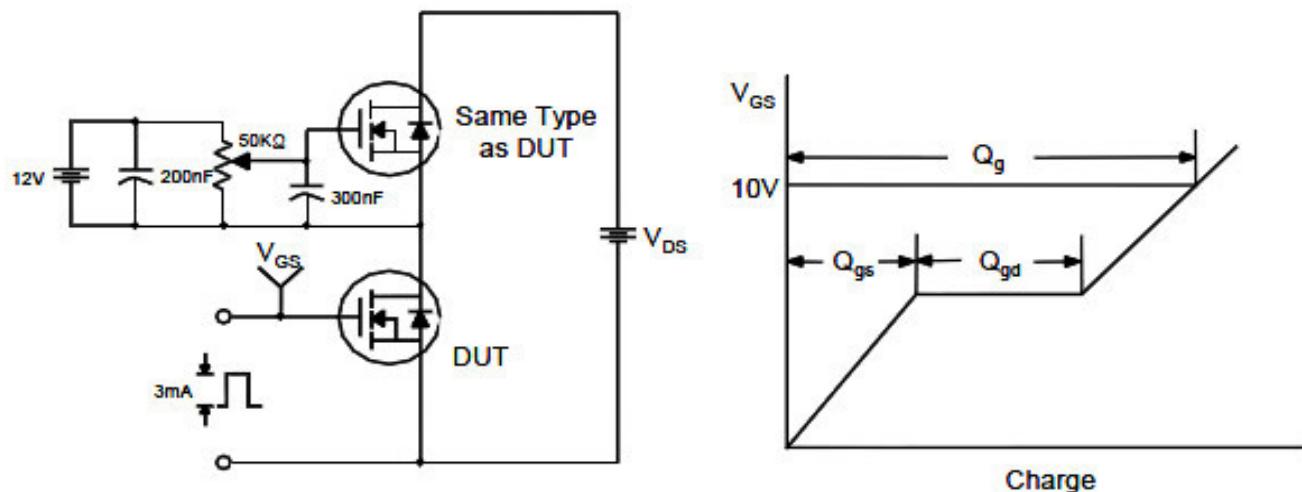
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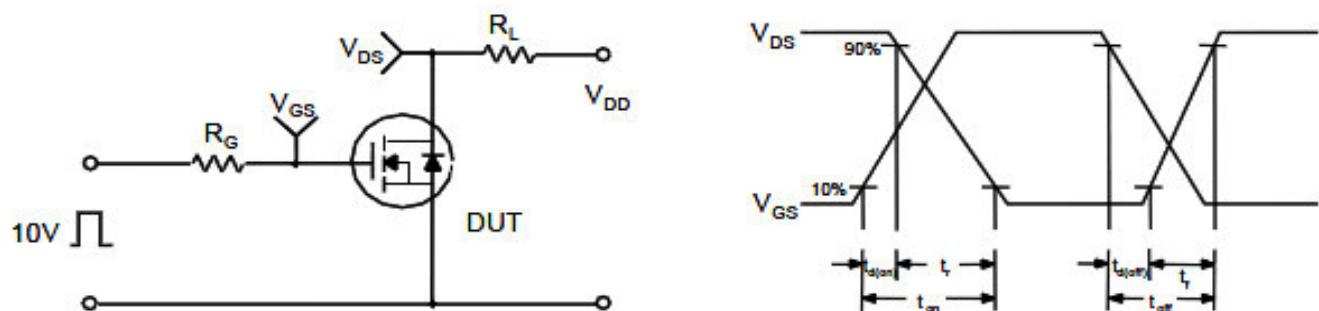
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■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

