

Single N-channel MOSFET

ELM529977A-S

■ General description

ELM529977A-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

■ Features

- $V_{ds}=60V$
- $I_d=12A$
- $R_{ds(on)} = 118m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 130m\Omega$ ($V_{gs}=4.5V$)

■ Maximum absolute ratings

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

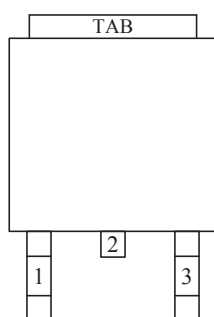
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	60	V
Gate-source voltage	V_{gs}	± 20	V
Continuous drain current	I_d	$T_a=25^\circ C$	12
		$T_a=70^\circ C$	8
Pulsed drain current	I_{dm}	30	A
Avalanche current	I_{as}	15	A
Power dissipation	P_d	$T_c=25^\circ C$	40
		$T_c=70^\circ C$	15
Junction and storage temperature range	T_j, T_{stg}	-55 to 150	$^\circ C$

■ Thermal characteristics

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

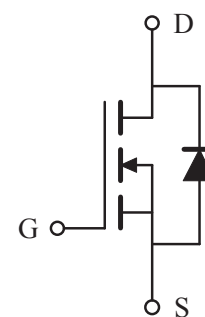
■ Pin configuration

TO-252-3(TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

■ Circuit



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■ Electrical characteristics

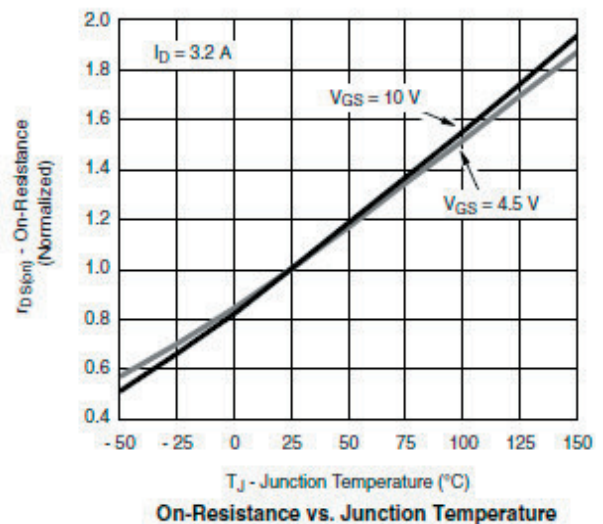
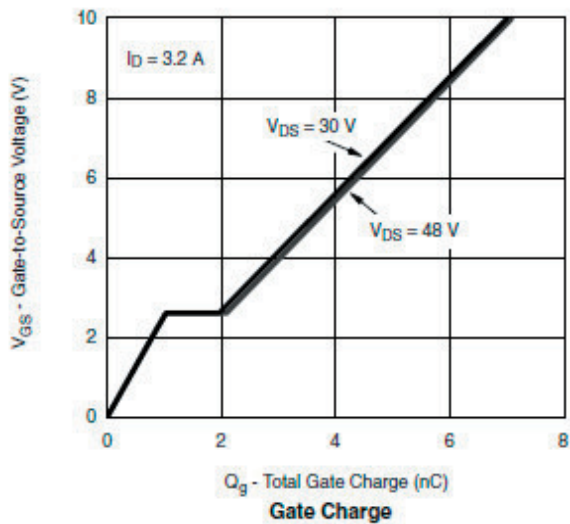
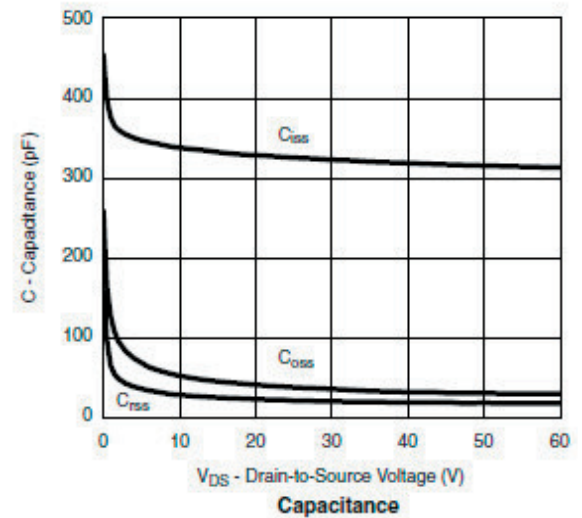
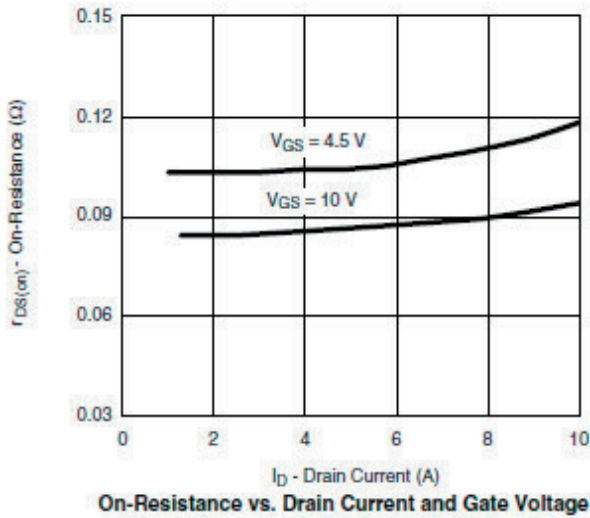
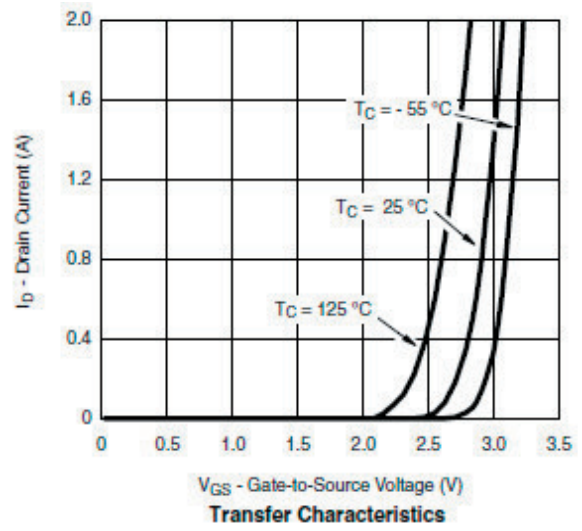
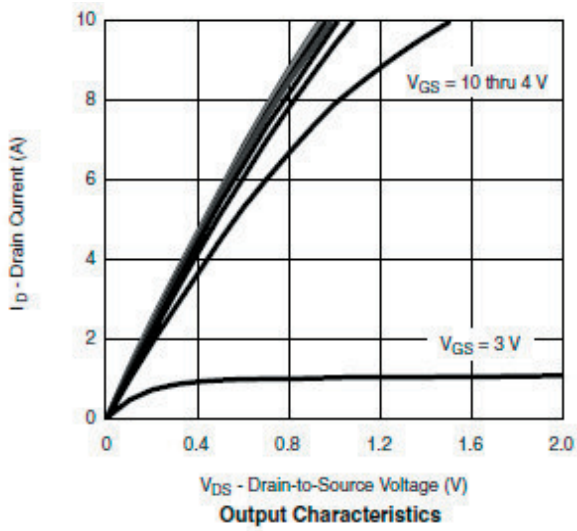
Ta=25°C. Unless otherwise noted.

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	60			V
Zero gate voltage drain current	Idss	Vds=60V, Vgs=0V			1	μA
		Vds=60V, Vgs=0V, Ta=85°C			5	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	0.7		2.5	V
On state drain current	Id(on)	Vgs=4.5V, Vds=5V	30			A
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=8A			118	mΩ
		Vgs=4.5V, Id=6A			130	
Forward transconductance	Gfs	Vds=15V, Id=5.3A		12		S
Diode forward voltage	Vsd	Is=2A, Vgs=0V		0.8	1.2	V
Max. body-diode continuous current	Is				12	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=25V, f=1MHz		480		pF
Output capacitance	Coss			50		pF
Reverse transfer capacitance	Crss			35		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=4.5V, Vds=48V, Id=5A		6	12	nC
Gate-source charge	Qgs			2		nC
Gate-drain charge	Qgd			3		nC
Turn-on delay time	td(on)	Vgs=10V, Vds=30V, RL=6Ω Id=5A, Rgen=3.3Ω		6	12	ns
Turn-on rise time	tr			6	12	ns
Turn-off delay time	td(off)			12	20	ns
Turn-off fall time	tf			4	10	ns

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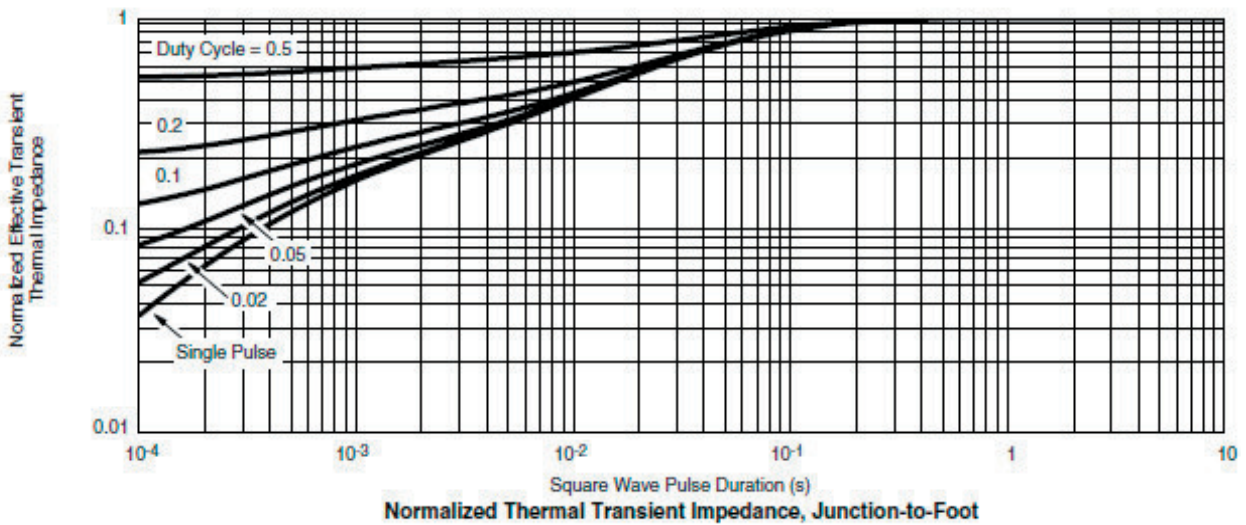
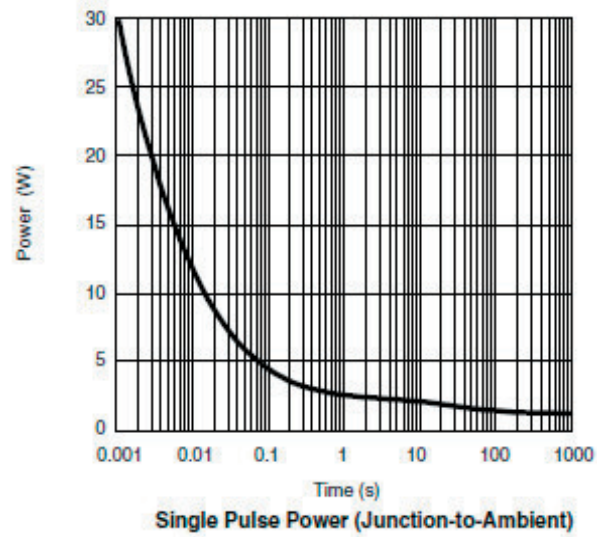
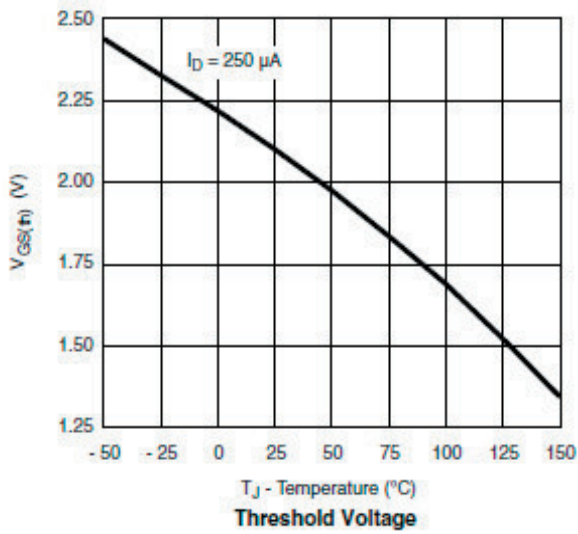
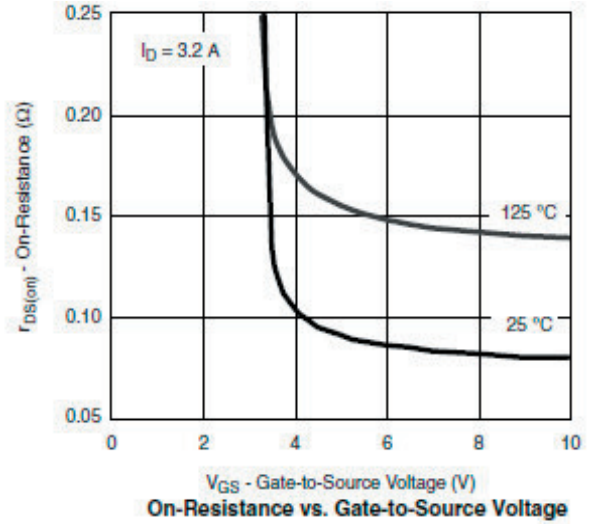
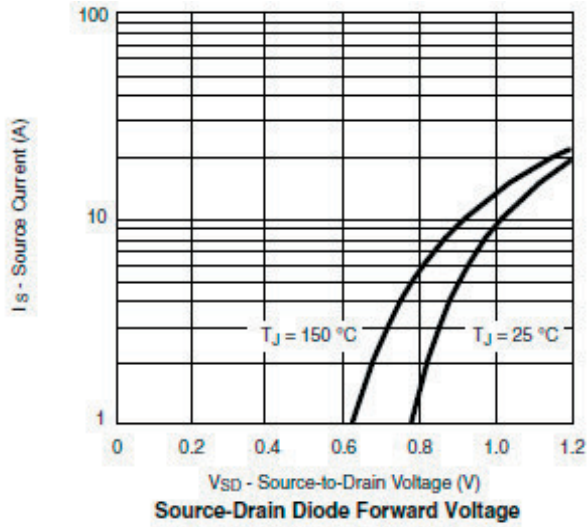
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■ Typical electrical and thermal characteristics



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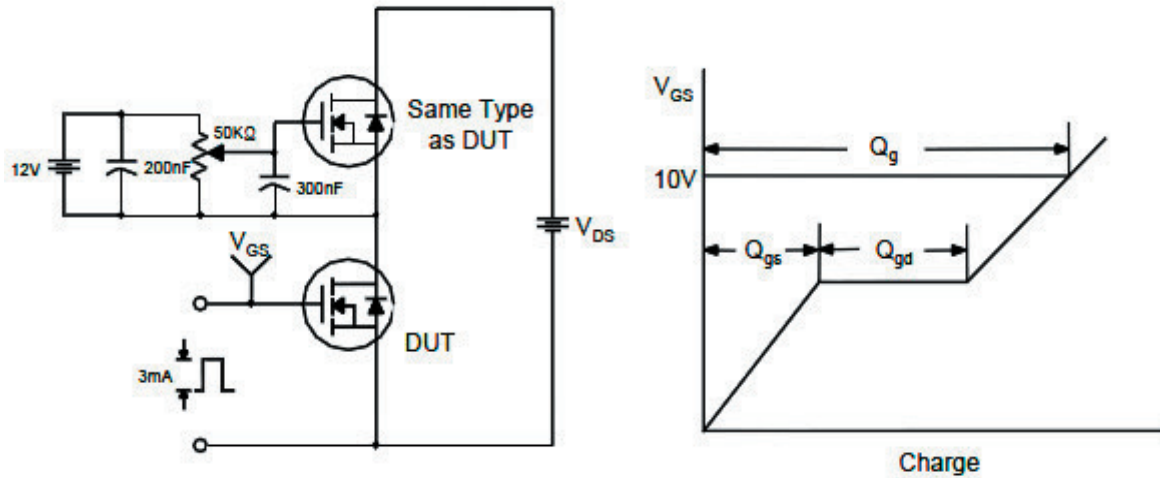


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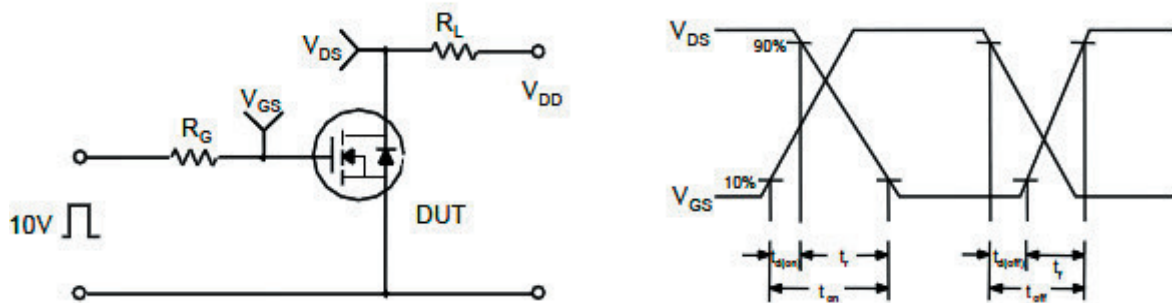
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■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

