

Single N-channel MOSFET

ELM51432A-S

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

■ General description

ELM51432A-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■ Features

- $V_{ds}=30V$
- $I_d=4.0A$
- $R_{ds(on)} = 30m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} = 35m\Omega$ ($V_{gs}=4.5V$)

■ Maximum absolute ratings

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

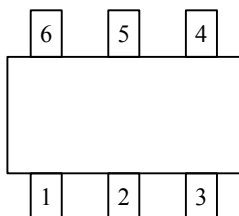
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{ds}	30	V
Gate-source voltage	V_{gs}	± 20	V
Continuous drain current($T_j=150^\circ C$)	Id	$T_a=25^\circ C$	4.0
		$T_a=70^\circ C$	3.6
Pulsed drain current	I_{dm}	15	A
Power dissipation	Pd	$T_c=25^\circ C$	1.56
		$T_c=70^\circ C$	1.00
Operating junction temperature	T_j	150	$^\circ C$
Storage temperature range	T_{stg}	- 55 to 150	$^\circ C$

■ Thermal characteristics

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

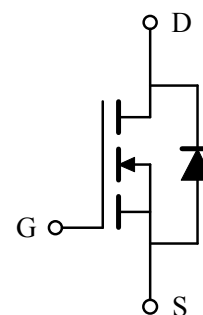
■ Pin configuration

SC-70-6(TOP VIEW)



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

■ Circuit



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■Electrical characteristics

Ta=25°C. Unless otherwise noted.

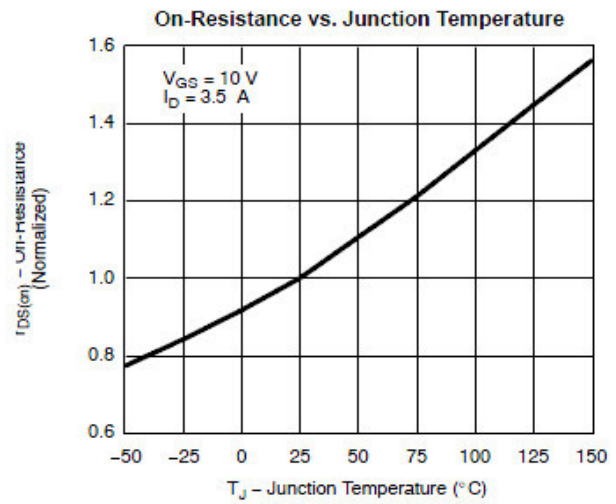
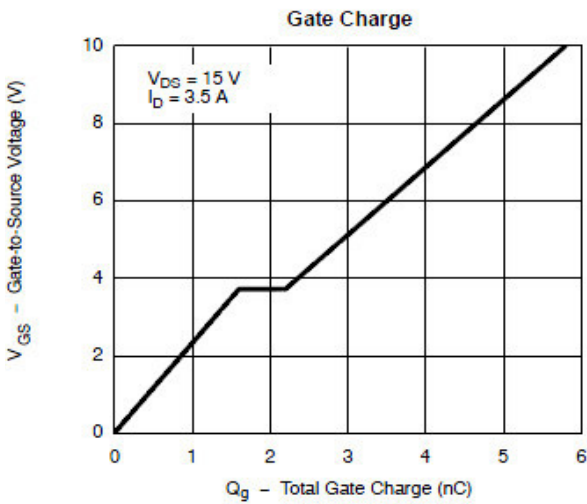
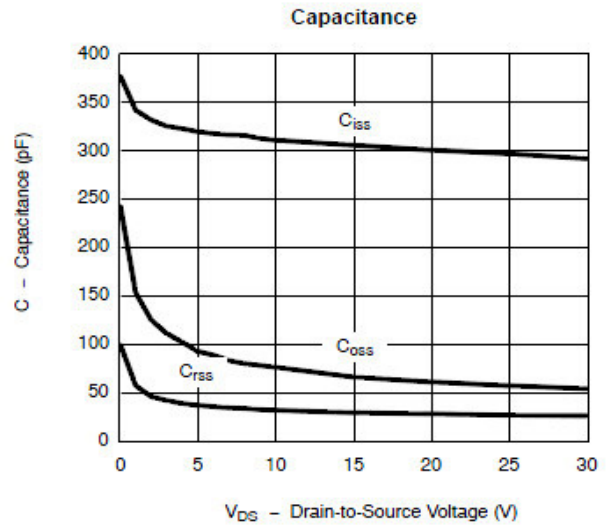
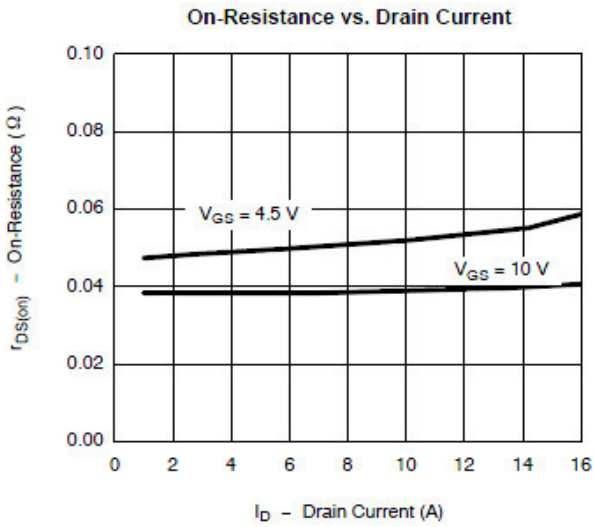
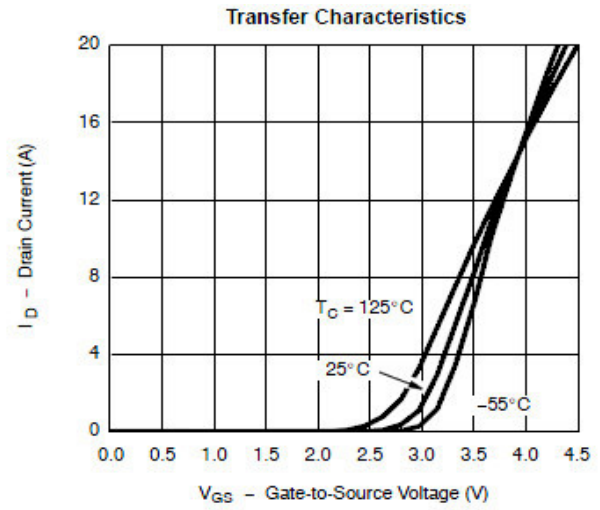
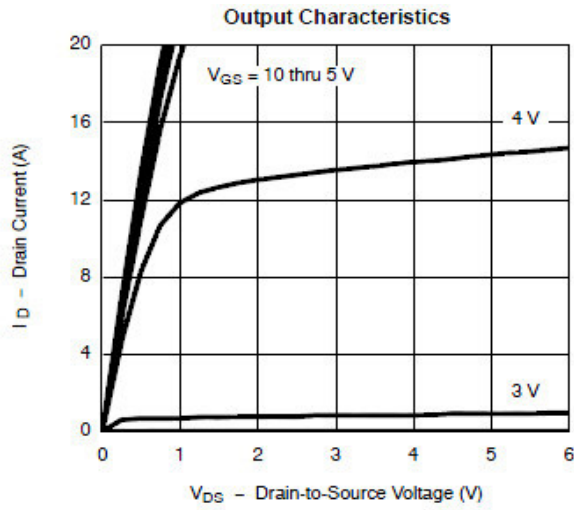
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	30			V
Zero gate voltage drain current	Idss	Vds=24V, Vgs=0V Ta=85°C			1	μA
					30	
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	1.0		2.0	V
On state drain current	Id(on)	Vgs=10V, Vds≥4.5V	6			A
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=4.0A		20	30	mΩ
		Vgs=4.5V, Id=3.5A		25	35	
Forward transconductance	Gfs	Vds=4.5V, Id=2.5A		8		S
Diode forward voltage	Vsd	Is=1.6A, Vgs=0V		0.8	1.2	V
Max. body-diode continuous current	Is				1.3	A
DYNAMIC PARAMETERS						
Input capacitance	Ciss	Vgs=0V, Vds=15V, f=1MHz		320		pF
Output capacitance	Coss			70		pF
Reverse transfer capacitance	Crss			30		pF
SWITCHING PARAMETERS						
Total gate charge	Qg	Vgs=10V, Vds=15V Id≐2.6A		3.0	4.5	nC
Gate-source charge	Qgs			1.6		nC
Gate-drain charge	Qgd			0.6		nC
Turn-on delay time	td(on)	Vgs=10V, Vds=15V RL=15Ω, Id≐1.0A Rgen=6.0Ω		8	12	ns
Turn-on rise time	tr			12	18	ns
Turn-off delay time	td(off)			15	30	ns
Turn-off fall time	tf			8	15	ns

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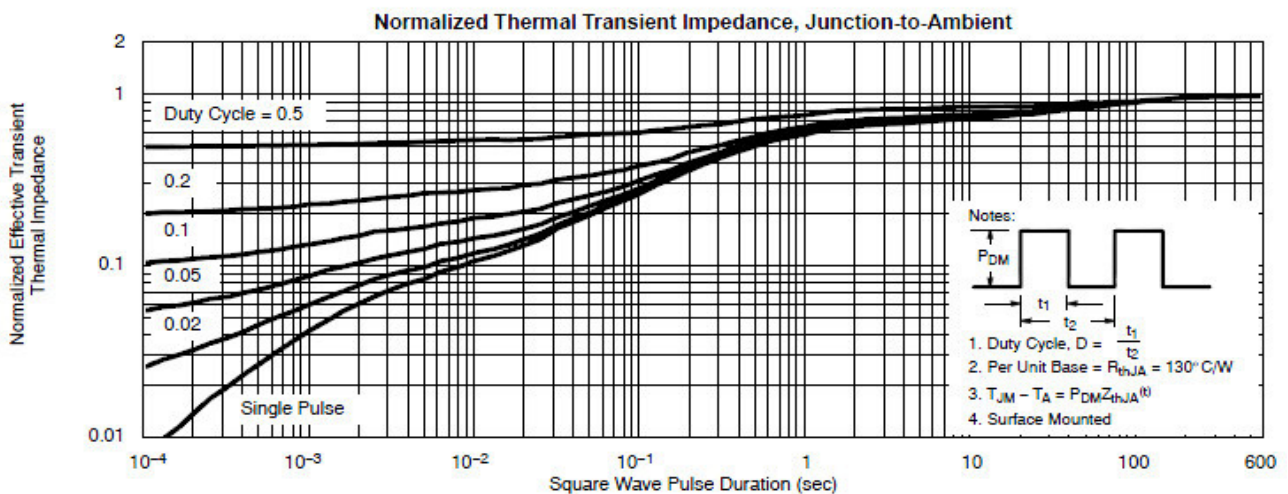
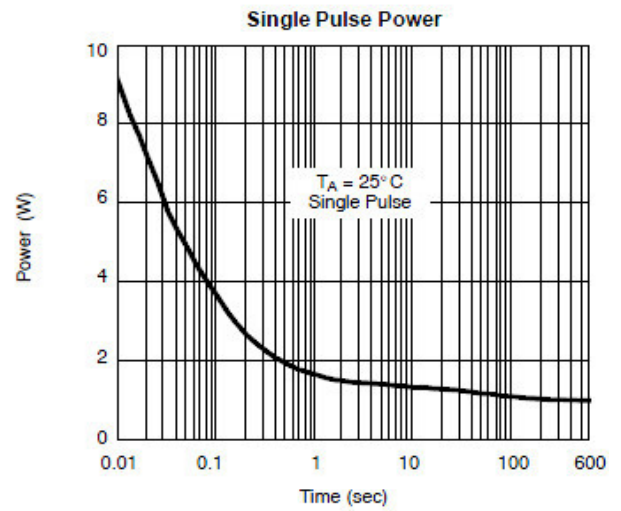
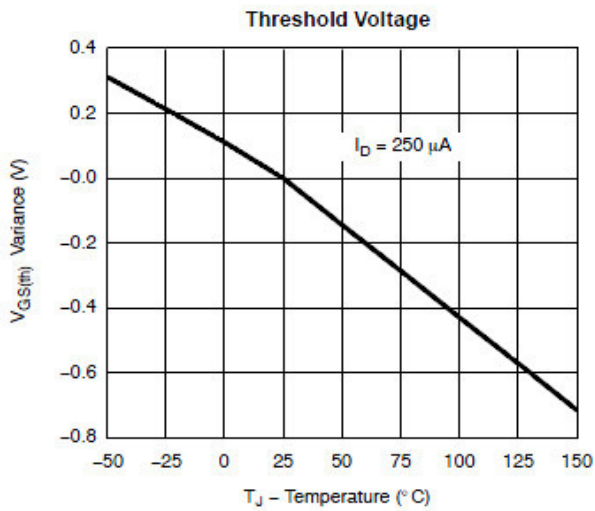
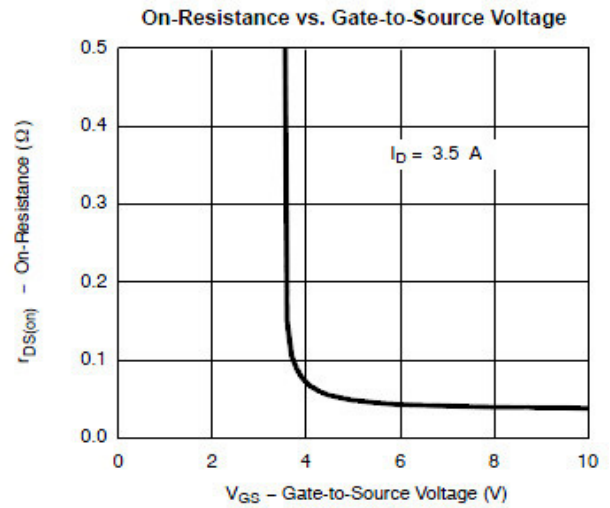
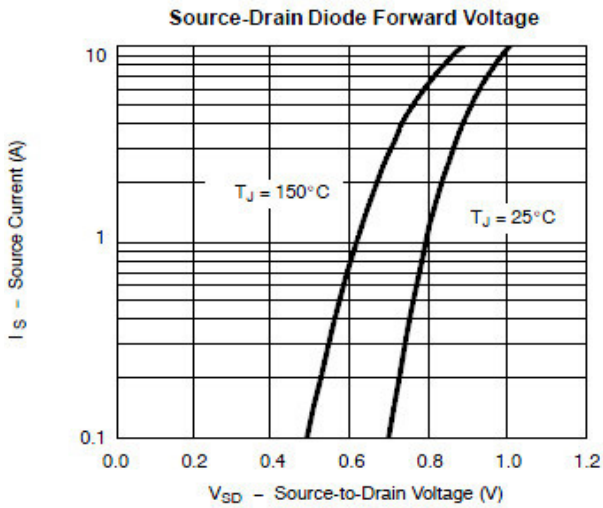
■ Typical electrical and thermal characteristics



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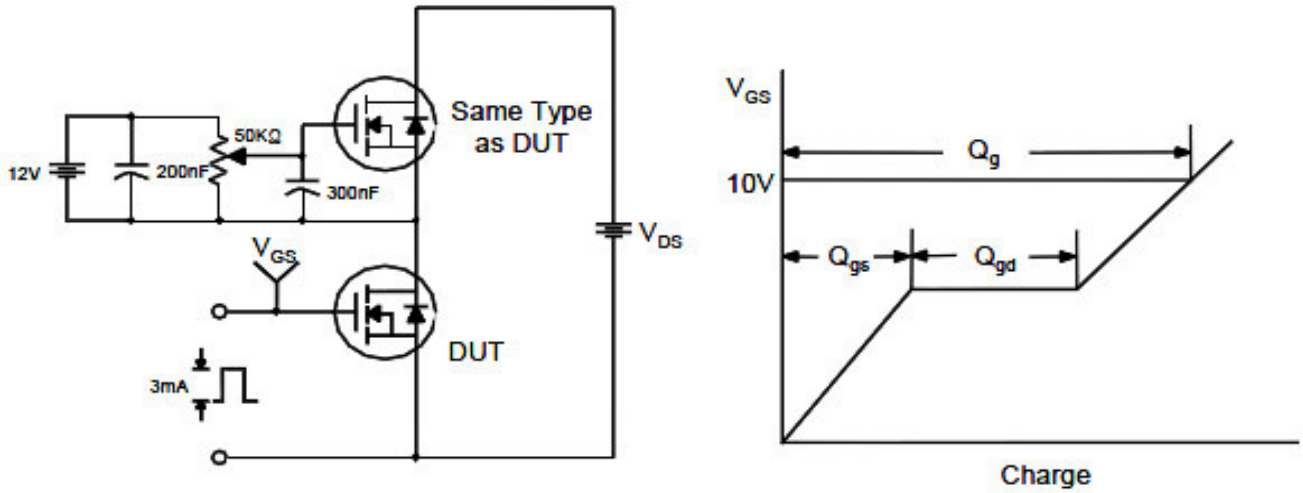
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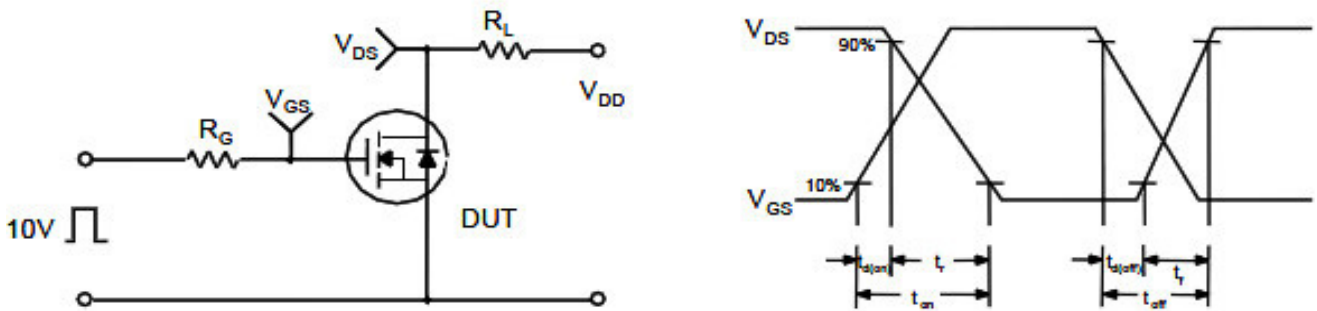
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■ Test circuit and waveform

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

