

# Single N-channel MOSFET

## ELM32430LA-S

### ■ General description

ELM32430LA-S uses advanced trench technology to provide excellent  $R_{ds(on)}$ , low gate charge and low gate resistance.

### ■ Features

- $V_{ds}=25V$
- $I_d=45A$
- $R_{ds(on)} < 28m\Omega$  ( $V_{gs}=10V$ )
- $R_{ds(on)} < 30m\Omega$  ( $V_{gs}=7V$ )

### ■ Maximum absolute ratings

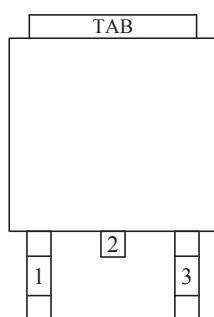
Parameter	Symbol	Limit	Unit	Note
Gate-source voltage	$V_{gs}$	$\pm 20$	V	
Continuous drain current	$I_d$	$T_a=25^\circ C$	45	A
		$T_a=100^\circ C$	28	
Pulsed drain current	$I_{dm}$	140	A	3
Avalanche current	$I_{ar}$	20	A	
Avalanche energy	$E_{as}$	140	mJ	
Repetitive avalanche energy	$E_{ar}$	5.6	mJ	4
Power dissipation	$P_d$	$T_a=25^\circ C$	55	W
		$T_a=100^\circ C$	33	
Junction and storage temperature range	$T_j, T_{stg}$	-55 to 150	$^\circ C$	

### ■ Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-case	$R_{\theta jc}$		3.0	$^\circ C/W$	
Maximum junction-to-ambient	$R_{\theta ja}$		70.0	$^\circ C/W$	
Maximum case-to-heatsink	$R_{\theta cs}$	0.7		$^\circ C/W$	

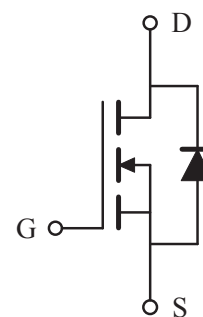
### ■ Pin configuration

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
<b>STATIC PARAMETERS</b>							
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	25			V	
Zero gate voltage drain current	Idss	Vds=20V, Vgs=0V			25	μA	
		Vds=20V, Vgs=0V, Tj=125°C			250		
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±250	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	0.8	1.2	2.5	V	
On state drain current	Id(on)	Vgs=10V, Vds=10V	45			A	1
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=20A		15	28	mΩ	1
		Vgs=7V, Id=18A		20	30	mΩ	
Forward transconductance	Gfs	Vds=15V, Id=30A		16		S	1
Diode forward voltage	Vsd	If=Is, Vgs=0V			1.3	V	1
Max. body-diode continuous current	Is				45	A	
Pulsed body-diode current	Ism				150	A	3
<b>DYNAMIC PARAMETERS</b>							
Input capacitance	Ciss	Vgs=0V, Vds=15V, f=1MHz		600		pF	
Output capacitance	Coss			290		pF	
Reverse transfer capacitance	Crss			100		pF	
<b>SWITCHING PARAMETERS</b>							
Total gate charge	Qg	Vgs=10V, Vds=12.5V Id=20A		25.0		nC	2
Gate-source charge	Qgs			2.9		nC	2
Gate-drain charge	Qgd			7.0		nC	2
Turn-on delay time	td(on)	Vgs=10V, Vds=15V, Id≈30A Rl=1Ω, Rgen=2.5Ω		7		ns	2
Turn-on rise time	tr			7		ns	2
Turn-off delay time	td(off)			24		ns	2
Turn-off fall time	tf			6		ns	2
Body diode reverse recovery time	trr			37		ns	
Peak reverse recovery current	Irm(rec)		If=Is, dI/dt=100A/μs		200		A
Body diode reverse recovery charge	Qrr			0.043		μC	

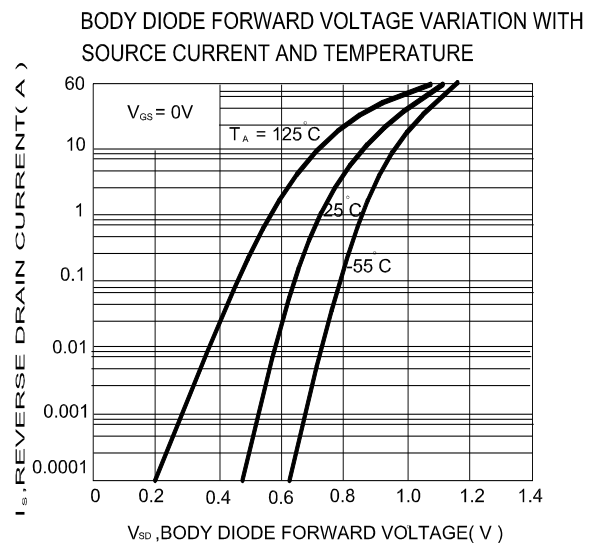
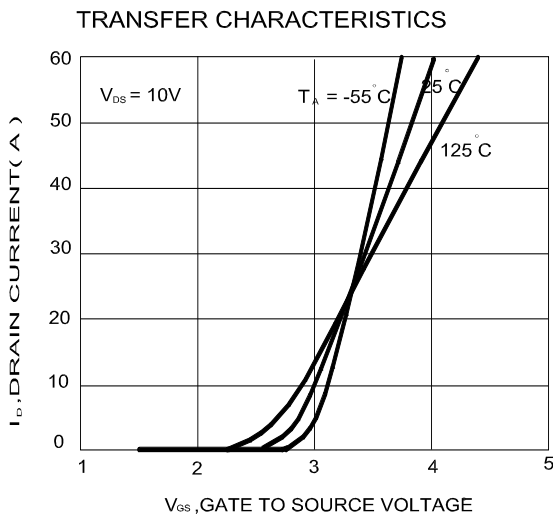
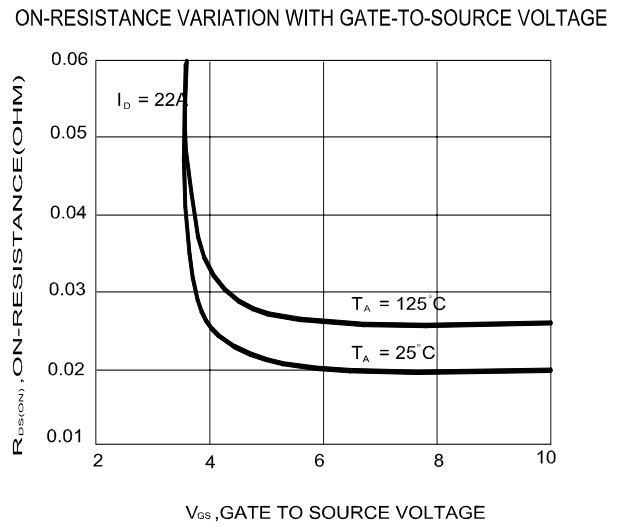
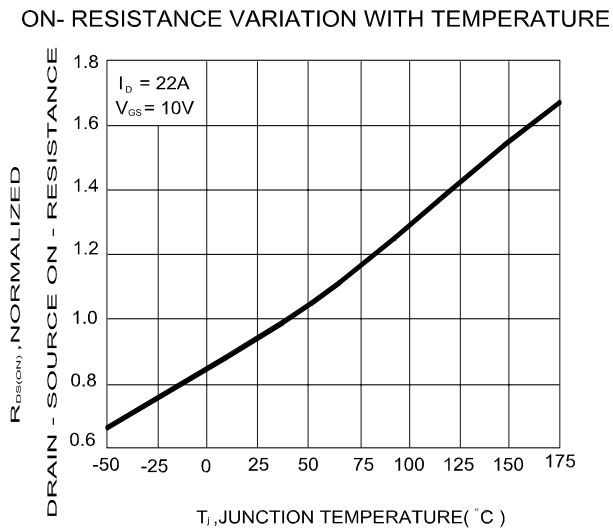
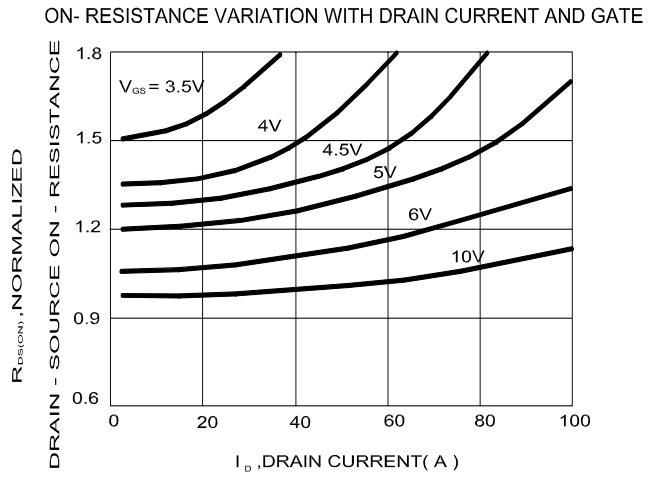
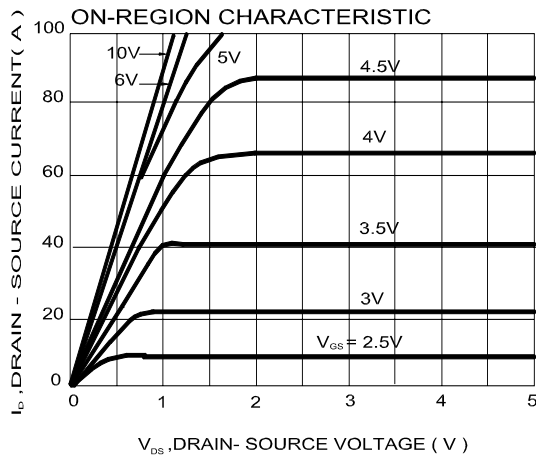
NOTE :

1. Pulse test : Pulsed width ≤ 300μsec and Duty cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle ≤ 1%.

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### ■ Typical electrical and thermal characteristics



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