

# Single N-channel MOSFET

ELM32422LA-S

## General description

ELM32422LA-S uses advanced trench technology to provide excellent  $R_{ds(on)}$ , low gate charge and low gate resistance.

## Features

- $V_{ds}=25V$
- $I_d=60A$
- $R_{ds(on)} < 13.8m\Omega$  ( $V_{gs}=10V$ )
- $R_{ds(on)} < 17.8m\Omega$  ( $V_{gs}=7V$ )

## Maximum absolute ratings

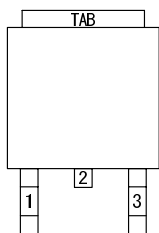
Parameter	Symbol	Limit	Unit	Note	
Gate-source voltage	$V_{gs}$	$\pm 20$	V		
Continuous drain current	$I_d$	$T_a=25^\circ C$	60	A	
		$T_a=100^\circ C$	36		
Pulsed drain current	$I_{dm}$	140	A	3	
Avalanche current	$I_{ar}$	20	A		
Avalanche energy	$L=0.1mH$	$E_{as}$	140	mJ	
Repetitive avalanche energy	$L=0.05mH$	$E_{ar}$	5.6	mJ	4
Power dissipation	$P_d$	$T_a=25^\circ C$	60	W	
		$T_a=100^\circ C$	38		
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	Steady-state	$R\theta_{jc}$		3.0	$^\circ C/W$	
Maximum junction-to-ambient	Steady-state	$R\theta_{ja}$		70.0	$^\circ C/W$	
Maximum case-to-heatsink		$R\theta_{cs}$	0.7		$^\circ C/W$	

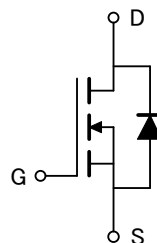
## Pin configuration

TO-252-3 (TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

## Circuit



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## Electrical characteristics

T<sub>a</sub>=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
<b>STATIC PARAMETERS</b>							
Drain-source breakdown voltage	BV <sub>dss</sub>	I <sub>d</sub> =250 μA, V <sub>gs</sub> =0V	25			V	
Zero gate voltage drain current	I <sub>dss</sub>	V <sub>ds</sub> =20V, V <sub>gs</sub> =0V			25	μA	
		V <sub>ds</sub> =20V, V <sub>gs</sub> =0V, T <sub>j</sub> =125°C			250		
Gate-body leakage current	I <sub>gss</sub>	V <sub>ds</sub> =0V, V <sub>gs</sub> =±20V			±250	nA	
Gate threshold voltage	V <sub>gs(th)</sub>	V <sub>ds</sub> =V <sub>gs</sub> , I <sub>d</sub> =250 μA	0.8	1.2	2.5	V	
On state drain current	I <sub>d(on)</sub>	V <sub>gs</sub> =10V, V <sub>ds</sub> =10V	60			A	1
Static drain-source on-resistance	R <sub>ds(on)</sub>	V <sub>gs</sub> =10V, I <sub>d</sub> =22A		10.5	13.8	mΩ	1
		V <sub>gs</sub> =7V, I <sub>d</sub> =20A		13.5	17.8	mΩ	
Forward transconductance	G <sub>fs</sub>	V <sub>ds</sub> =15V, I <sub>d</sub> =30A		16		S	1
Diode forward voltage	V <sub>sd</sub>	I <sub>f</sub> =I <sub>s</sub> , V <sub>gs</sub> =0V			1.3	V	1
Max. body-diode continuous current	I <sub>s</sub>				60	A	
Pulsed body-diode current	I <sub>sm</sub>				140	A	3
<b>DYNAMIC PARAMETERS</b>							
Input capacitance	C <sub>iss</sub>	V <sub>gs</sub> =0V, V <sub>ds</sub> =15V, f=1MHz		600		pF	
Output capacitance	C <sub>oss</sub>			290		pF	
Reverse transfer capacitance	C <sub>rss</sub>			100		pF	
<b>SWITCHING PARAMETERS</b>							
Total gate charge	Q <sub>g</sub>	V <sub>gs</sub> =10V, V <sub>ds</sub> =10V, I <sub>d</sub> =22A		30.0		nC	2
Gate-source charge	Q <sub>gs</sub>			2.9		nC	2
Gate-drain charge	Q <sub>gd</sub>			7.0		nC	2
Turn-on delay time	t <sub>d(on)</sub>	V <sub>gs</sub> =10V, V <sub>ds</sub> =15V, I <sub>d</sub> ≈ 30A R <sub>l</sub> =1 Ω, R <sub>gen</sub> =2.5 Ω		7		ns	2
Turn-on rise time	t <sub>r</sub>			7		ns	2
Turn-off delay time	t <sub>d(off)</sub>			24		ns	2
Turn-off fall time	t <sub>f</sub>			6		ns	2
Body diode reverse recovery time	t <sub>rr</sub>			37		ns	
Peak reverse recovery current	I <sub>rm(rec)</sub>	I <sub>f</sub> =I <sub>s</sub> , dI/dt=100A/μs		200		A	
Body diode reverse recovery charge	Q <sub>rr</sub>			0.043		μC	

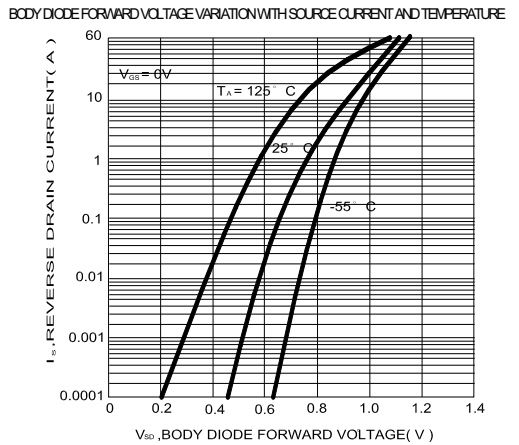
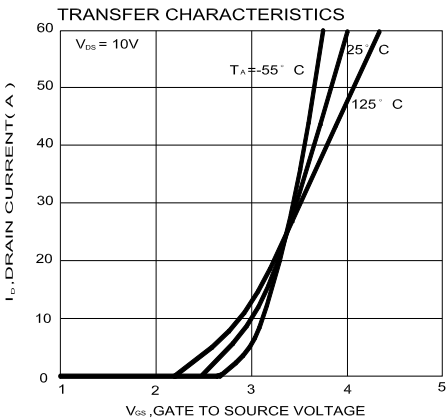
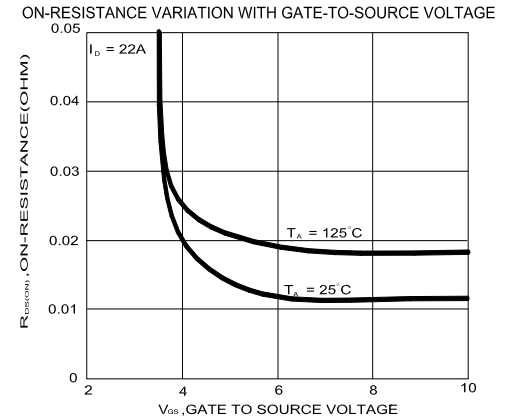
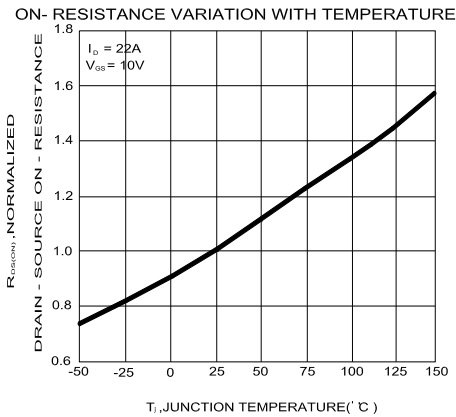
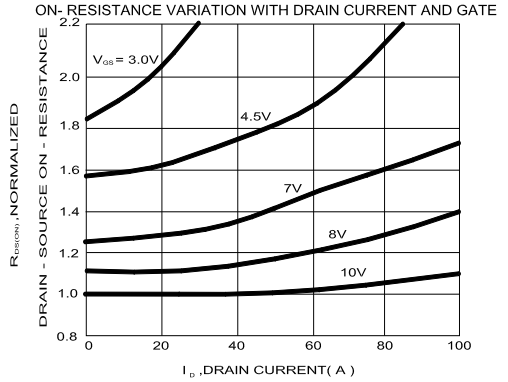
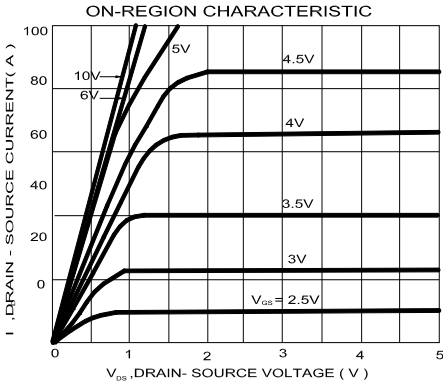
### NOTE :

1. Pulse test : Pulsed width ≤ 300 μsec 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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