

# Single N-channel MOSFET

## ELM32434LA-S

### ■ General description

ELM32434LA-S uses advanced trench technology to provide excellent  $R_{ds(on)}$ , low gate charge and low gate resistance.

### ■ Features

- $V_{ds}=600V$
- $I_d=2A$
- $R_{ds(on)} < 4.4\Omega$  ( $V_{gs}=10V$ )

### ■ Maximum absolute ratings

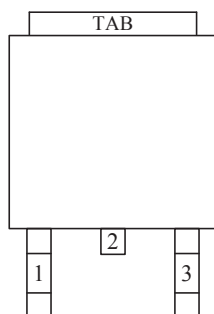
Parameter	Symbol	Limit	Unit	Note	
Drain-source voltage	$V_{ds}$	600	V		
Gate-source voltage	$V_{gs}$	$\pm 30$	V		
Continuous drain current	$I_d$	$T_a=25^\circ C$	2.0	A	4
		$T_a=100^\circ C$	1.1		
Pulsed drain current	$I_{dm}$	7	A	3, 4	
Avalanche current	$I_{as}$	2.4	A	5	
Avalanche energy	$E_{as}$	29	mJ	5	
Power dissipation	$P_d$	$T_a=25^\circ C$	50	W	
		$T_a=100^\circ C$	20		
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	$R_{\theta jc}$		2.5	$^\circ C/W$	
Maximum junction-to-ambient	$R_{\theta ja}$		62.5	$^\circ C/W$	

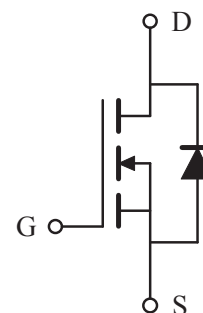
### ■ Pin configuration

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note	
<b>STATIC PARAMETERS</b>								
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	600			V		
Zero gate voltage drain current	Idss	Vds=600V, Vgs=0V, Ta=25°C			25	μA		
		Vds=600V, Vgs=0V, Ta=100°C			250			
Gate-body leakage current	Igss	Vds=0V, Vgs=±30V			±100	nA		
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	2.5		4.5	V		
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=1A		3.7	4.4	Ω	1	
Forward transconductance	Gfs	Vds=10V, Id=1A		1.9		S	1	
Diode forward voltage	Vsd	If=2A, Vgs=0V			1.5	V	1	
Max. body-diode continuous current	Is				2	A	3	
<b>DYNAMIC PARAMETERS</b>								
Input capacitance	Ciss	Vgs=0V, Vds=15V, f=1MHz		342		pF		
Output capacitance	Coss				47		pF	
Reverse transfer capacitance	Crss				6		pF	
<b>SWITCHING PARAMETERS</b>								
Total gate charge	Qg	Vgs=10V, Vds=300V, Id=1.2A		7.8		nC	2	
Gate-source charge	Qgs				3.1		nC	2
Gate-drain charge	Qgd				2.3		nC	2
Turn-on delay time	td(on)	Vds=300V, Id=2A, Rgen=25Ω		15		ns	2	
Turn-on rise time	tr				30		ns	2
Turn-off delay time	td(off)				28		ns	2
Turn-off fall time	tf				36		ns	2
Body diode reverse recovery time	trr	If=2A, dI/dt=100A/μs		780		ns		
Body diode reverse recovery charge	Qrr	Vgs=0V		3.8		μC		

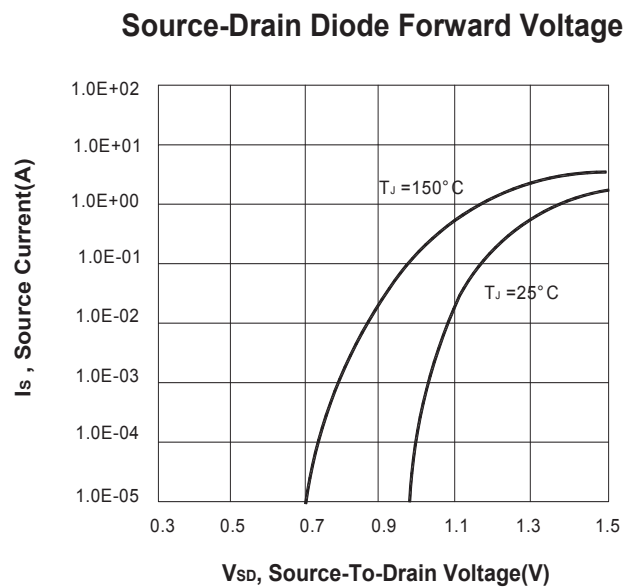
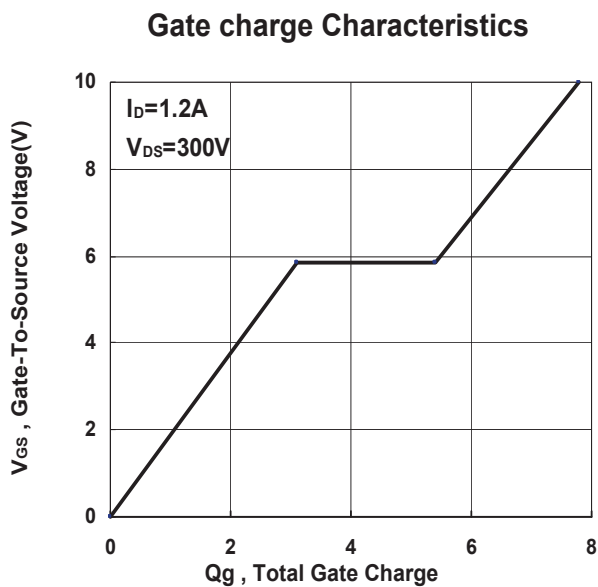
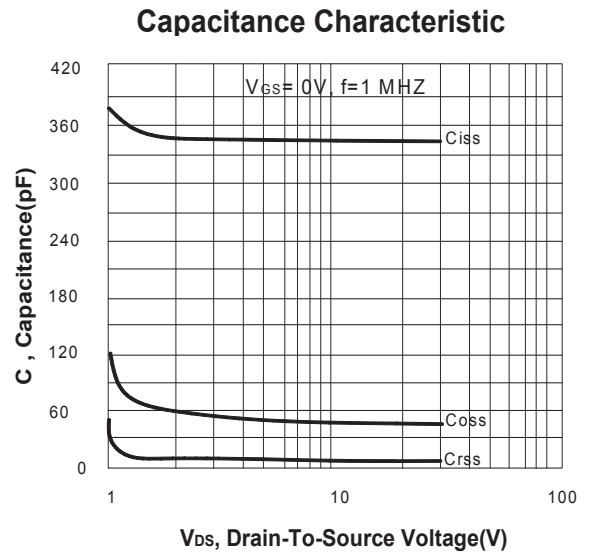
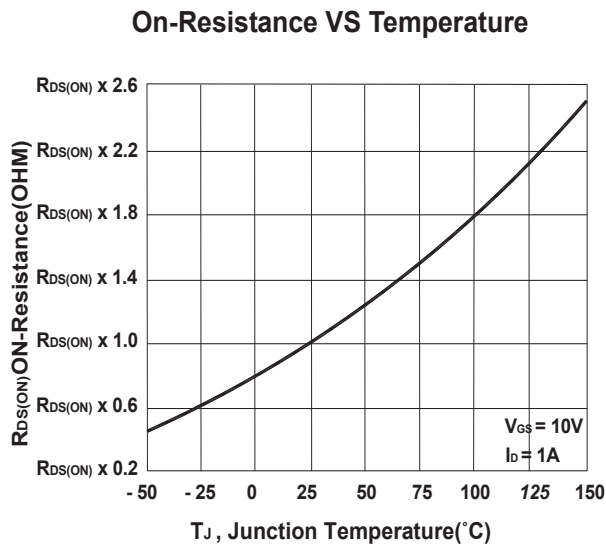
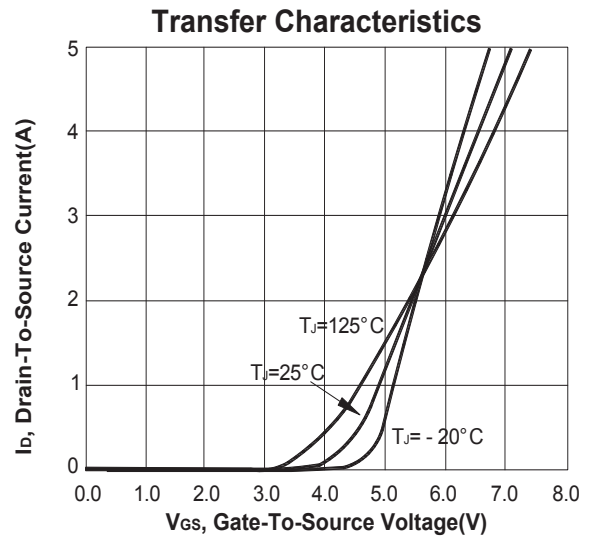
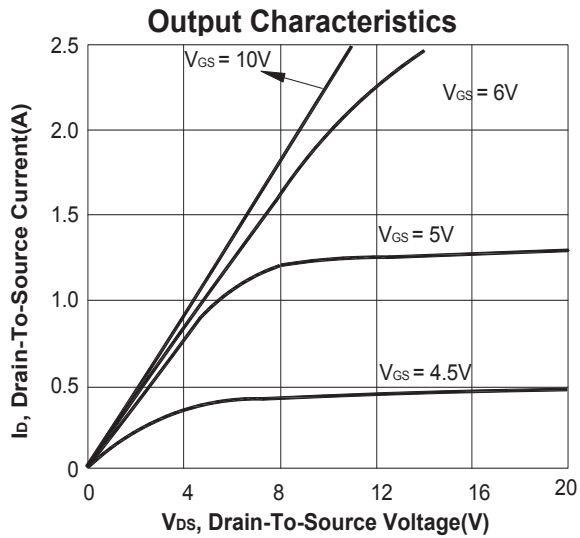
NOTE :

1. Pulse test : Pulsed width  $\leq 300\mu\text{sec}$  and Duty cycle  $\leq 2\%$ .
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Limited only by maximum temperature allowed.
5. Vdd=60V, starting Tj=25°C.

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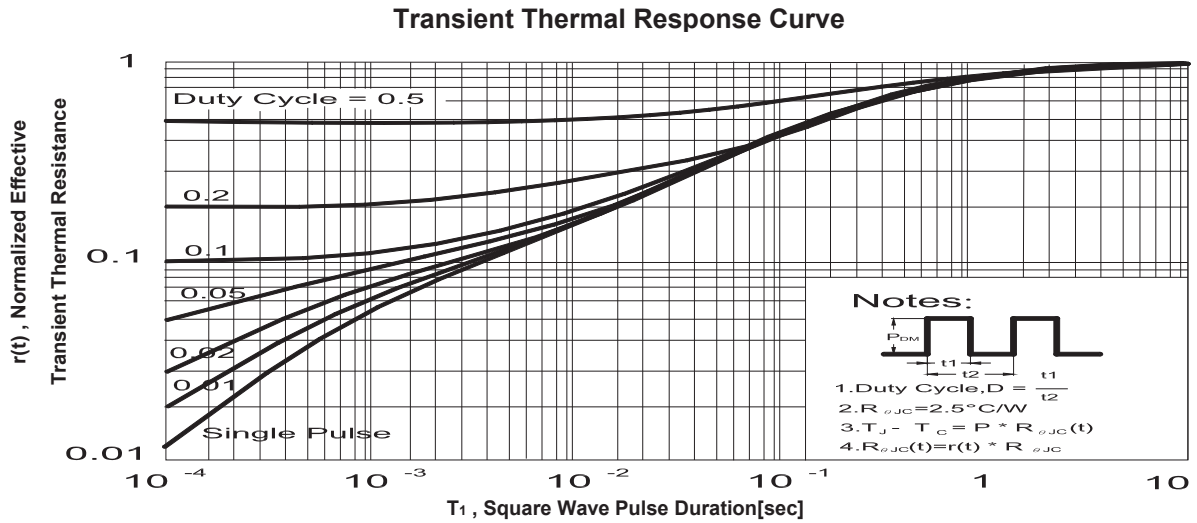
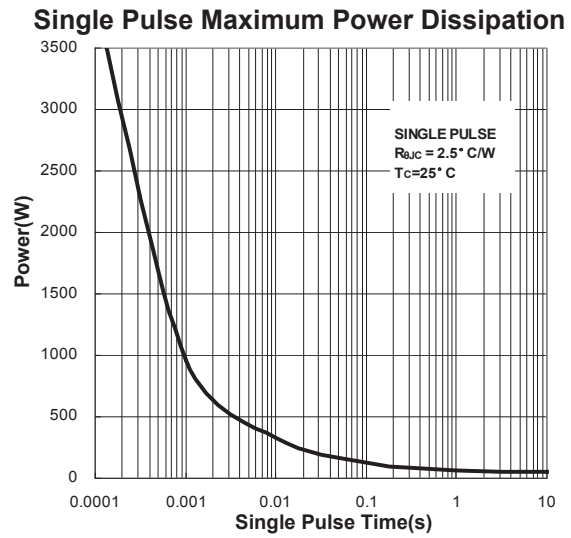
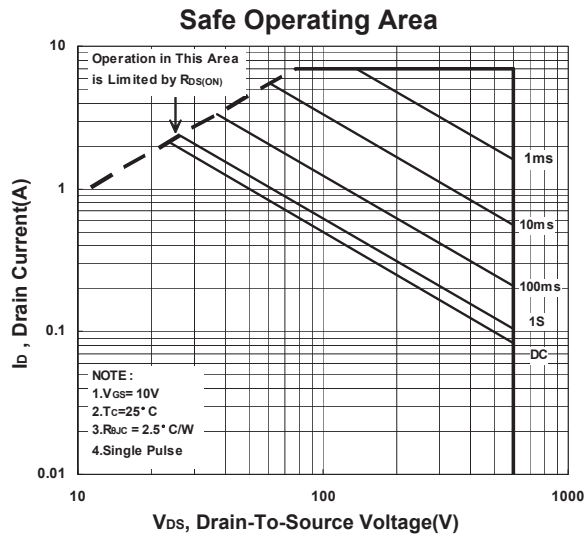
## ELM32434LA-S

### ■ Typical electrical and thermal characteristics



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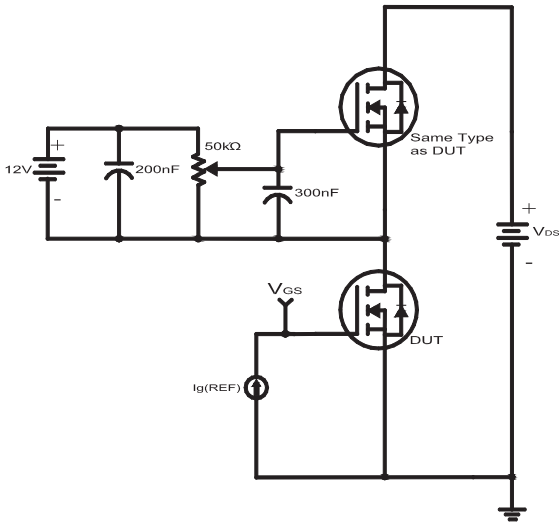
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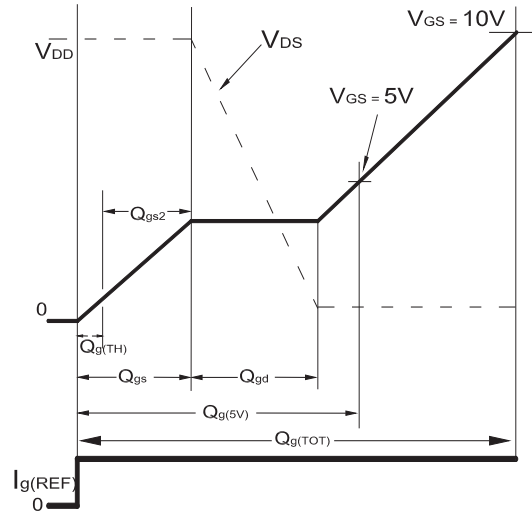
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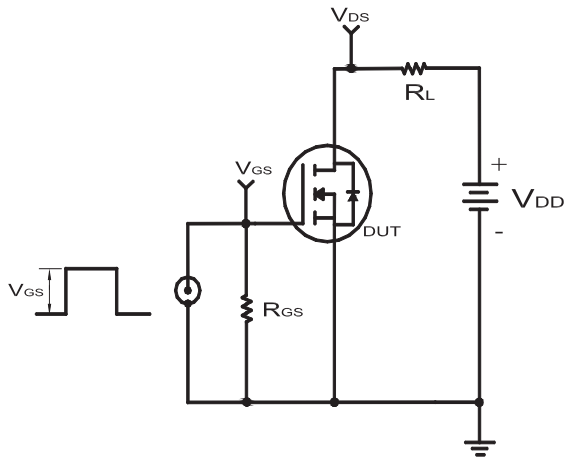
**Figure 1**  
Gate Charge Test Circuit



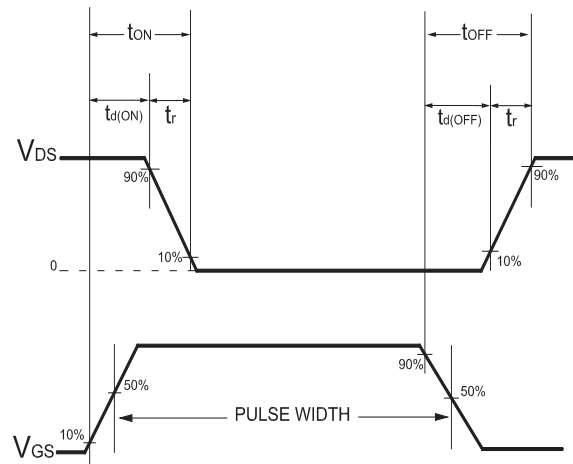
**Figure 2**  
Gate Charge Waveforms



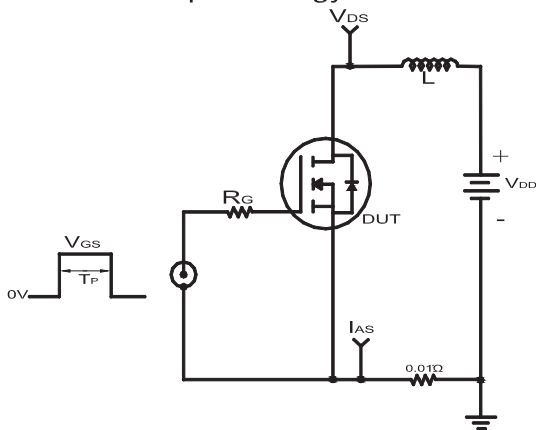
**Figure 3**  
Switching Time Test Circuit



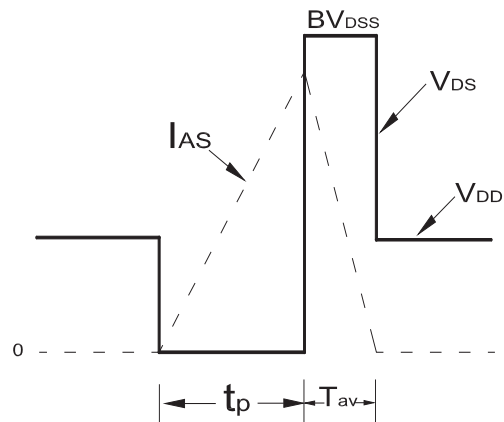
**Figure 4**  
Switching Time Waveforms



**Figure 5**  
Unclamped Energy Test Circuit



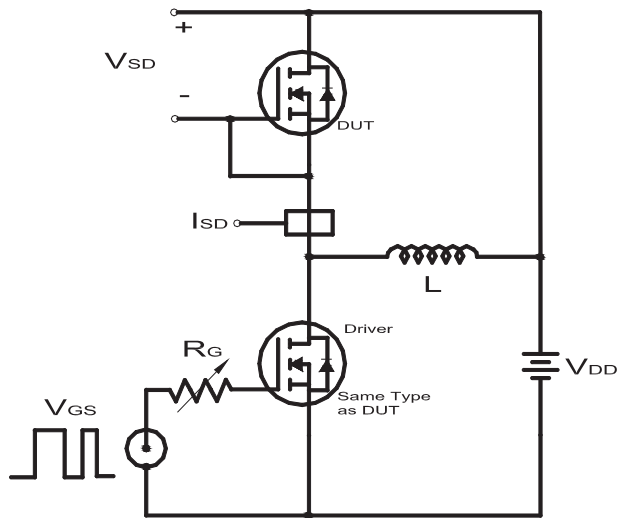
**Figure 6**  
Unclamped Energy Waveforms



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**Figure 7**  
Diode Recovery Test Circuit



**Figure 8**  
Diode Recovery Test Waveforms

