

Single N-channel MOSFET

ELM34414AA-N

■ General description

ELM34414AA-N uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

■ Features

- $V_{ds}=30V$
- $I_d=15A$
- $R_{ds(on)} < 8m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} < 12m\Omega$ ($V_{gs}=4.5V$)

■ Maximum absolute ratings

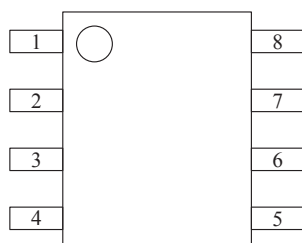
Parameter	Symbol	Limit	Unit	Note
Drain-source voltage	V_{ds}	30	V	
Gate-source voltage	V_{gs}	± 20	V	
Continuous drain current	I_d	Ta=25°C	15	A
		Ta=90°C	12	
Pulsed drain current	I_{dm}	50	A	3
Power dissipation	P_d	Ta=25°C	2.5	W
		Ta=90°C	2.0	
Junction and storage temperature range	T_j, T_{stg}	-55 to 150	°C	

■ Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-ambient	Steady-state	$R\theta_{ja}$		50	°C/W	

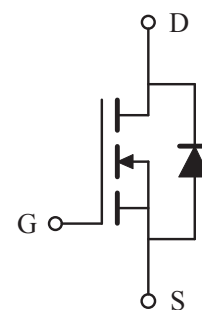
■ Pin configuration

SOP-8(TOP VIEW)



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

■ Circuit



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■Electrical characteristics

Ta=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	30			V	
Zero gate voltage drain current	Idss	Vds=24V, Vgs=0V			1	μA	
		Vds=20V, Vgs=0V, Tj=55°C			10		
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	1.0	1.5	3.0	V	
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=15A		6.8	8.0	mΩ	1
		Vgs=4.5V, Id=12A		8.8	12.0	mΩ	
Forward transconductance	Gfs	Vds=15V, Id=15A		60		S	1
Diode forward voltage	Vsd	If=3A, Vgs=0V			1.1	V	1
Max. body-diode continuous current	Is				3	A	
Pulsed body-diode current	Ism				6	A	3
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=15V, f=1MHz		1900		pF	
Output capacitance	Coss			530		pF	
Reverse transfer capacitance	Crss			120		pF	
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=10V, Vds=15V, Id=15A		18.0	28.0	nC	2
Gate-source charge	Qgs			4.2		nC	2
Gate-drain charge	Qgd			5.4		nC	2
Turn-on delay time	td(on)	Vgs=10V, Vds=15V, Id≈1A Rl=15Ω, Rgen=6Ω		10		ns	2
Turn-on rise time	tr			24		ns	2
Turn-off delay time	td(off)			48		ns	2
Turn-off fall time	tf			12		ns	2
Body diode reverse recovery time	trr	If=3A, dl/dt=100A/μs		50	80	ns	

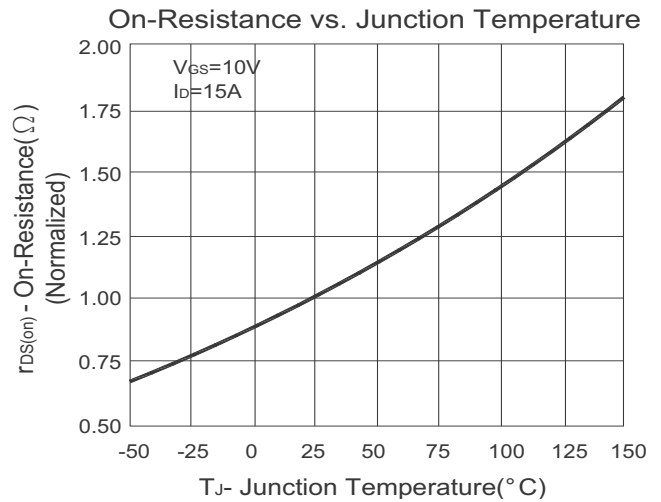
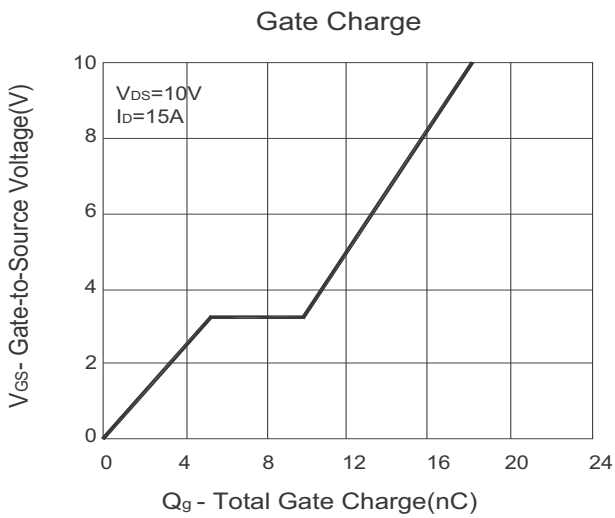
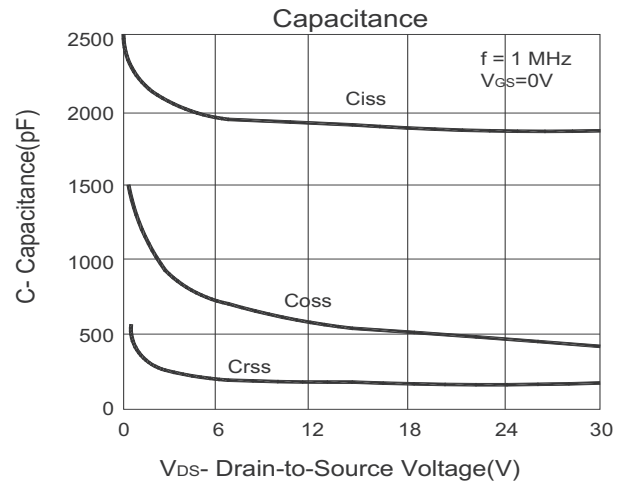
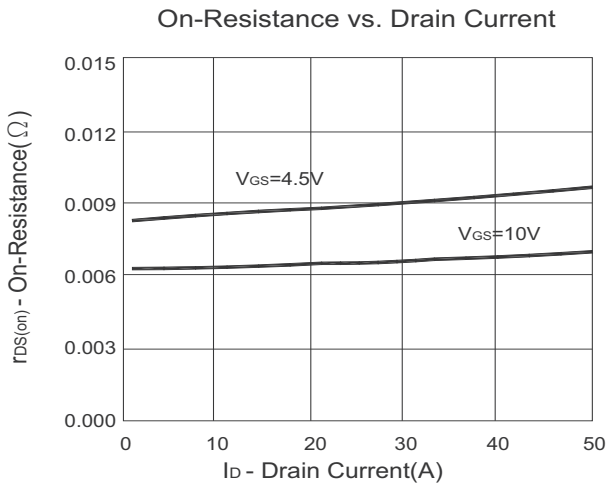
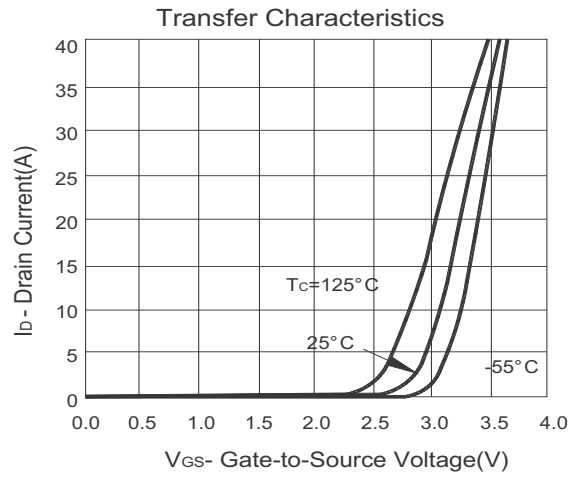
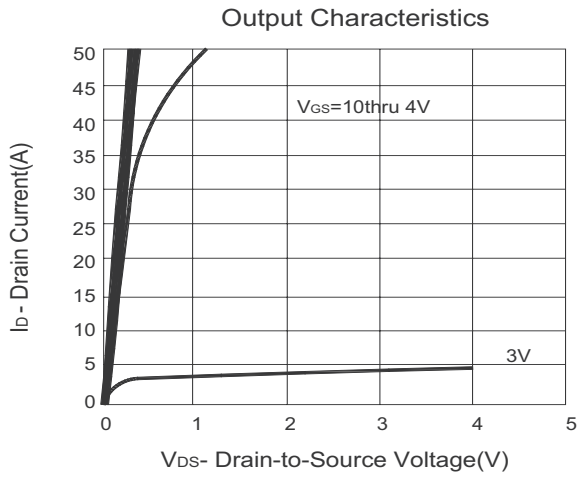
NOTE :

1. 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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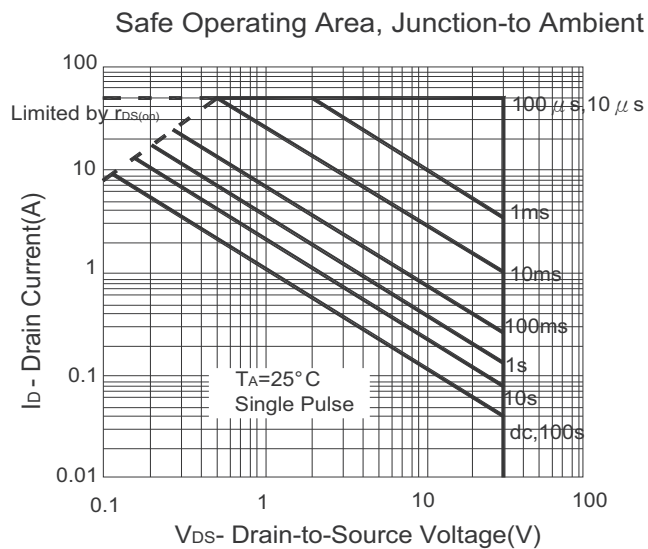
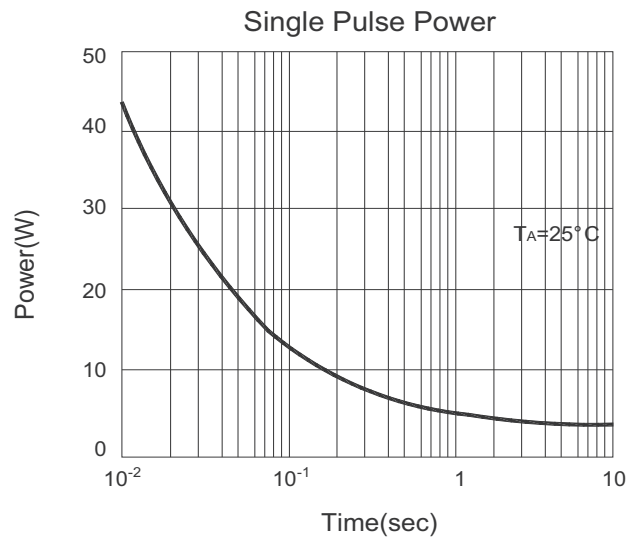
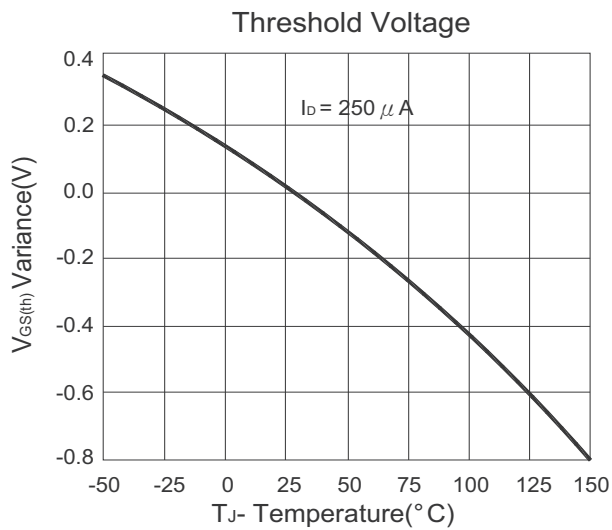
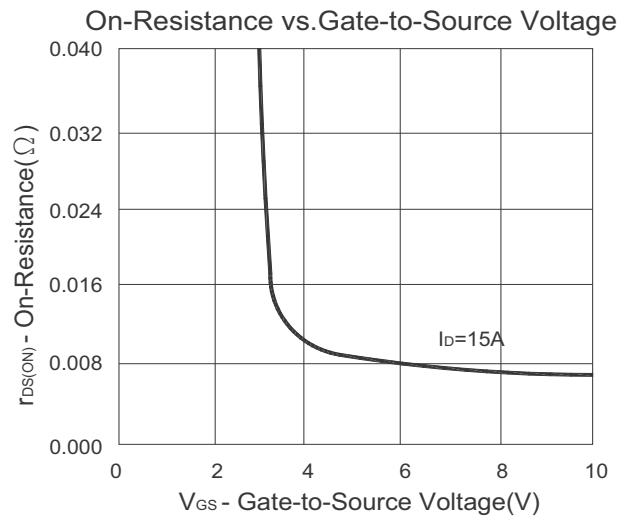
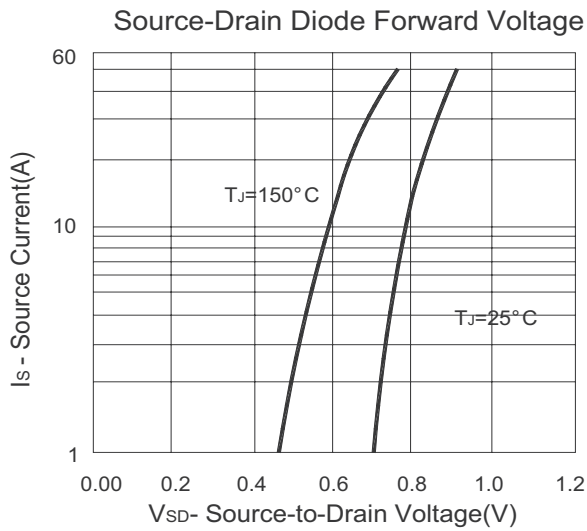
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■ Typical electrical and thermal characteristics



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