

Single N-channel MOSFET

ELM34402AA-N

General description

ELM34402AA-N uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

Features

- $V_{ds}=30V$
- $I_d=8A$
- $R_{ds(on)} < 20m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} < 32m\Omega$ ($V_{gs}=4.5V$)

Maximum absolute ratings

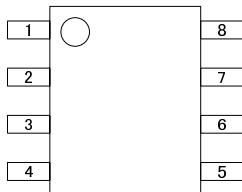
Parameter		Symbol	Limit	Unit	Note
Drain-source voltage		V_{ds}	30	V	
Gate-source voltage		V_{gs}	± 20	V	
Continuous drain current	$T_a=25^{\circ}C$	I_d	8	A	
	$T_a=70^{\circ}C$		6		
Pulsed drain current		I_{dm}	32	A	3
Power dissipation	$T_a=25^{\circ}C$	P_d	2.5	W	
	$T_a=70^{\circ}C$		1.6		
Junction and storage temperature range		T_j, T_{stg}	-55 to 150	$^{\circ}C$	

Thermal characteristics

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

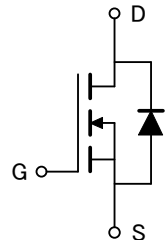
Pin configuration

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=250 μ A, Vgs=0V	30			V	
Zero gate voltage drain current	Idss	Vds=24V, Vgs=0V			1	μ A	
		Vds=20V, Vgs=0V, Tj=55°C			10		
Gate-body leakage current	Igss	Vds=0V, Vgs= $\pm$ 20V			$\pm$ 100	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250 μ A	1.0	1.5	2.5	V	
On state drain current	Id(on)	Vgs=10V, Vds=5V	8			A	1
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=8A		17	20	m Ω	1
		Vgs=4.5V, Id=6A		26	32	m Ω	
Forward transconductance	Gfs	Vds=15V, Id=8A		16		S	1
Diode forward voltage	Vsd	If=1A, Vgs=0V			1.1	V	1
Max. body-diode continuous current	Is				2.3	A	
Pulsed body-diode current	Ism				4.6	A	3
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=15V, f=1MHz		1200		pF	
Output capacitance	Coss			220		pF	
Reverse transfer capacitance	Crss			100		pF	
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=4.5V, Vds=15V, Id=2A		15.0	20.0	nC	2
Gate-source charge	Qgs			5.8		nC	2
Gate-drain charge	Qgd			3.8		nC	2
Turn-on delay time	td(on)	Vgs=10V, Vds=15V, Id $\approx$ 1A Rgen=0.2 Ω		11	18	ns	2
Turn-on rise time	tr			17	26	ns	2
Turn-off delay time	td(off)			37	54	ns	2
Turn-off fall time	tf			20	30	ns	2
Body diode reverse recovery time	trr	If=2.3A, dl/dt=100A/ μ s		50	80	ns	

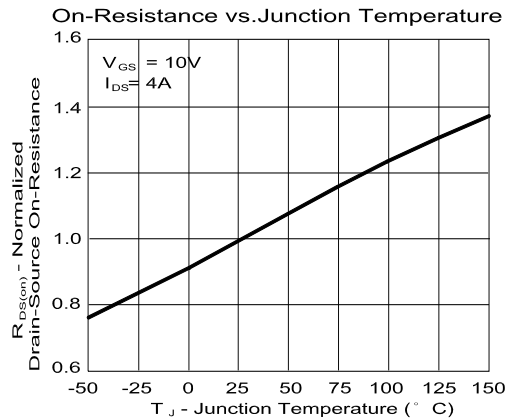
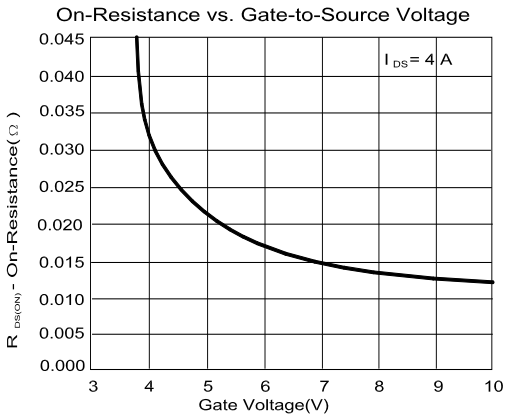
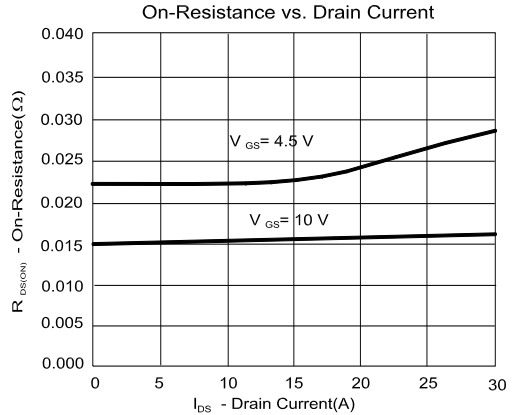
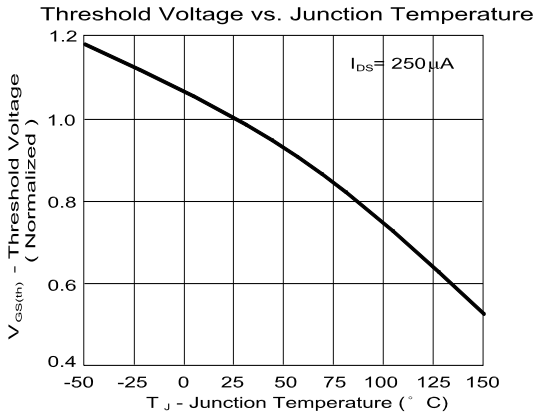
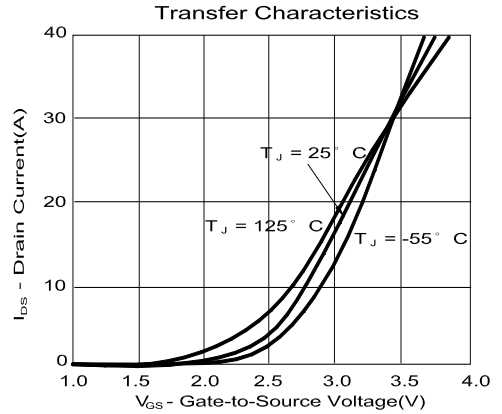
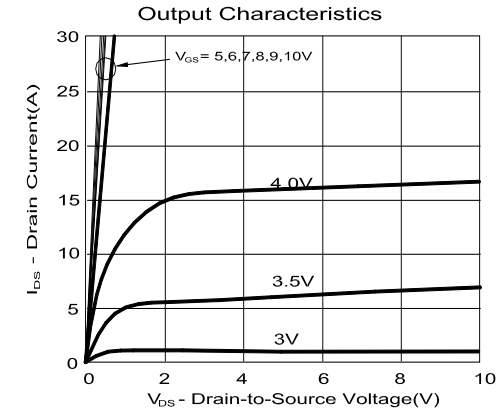
NOTE :

1. Pulsed width $\leq$ 300 μ sec and Duty cycle $\leq$ 2%;
2. Independent of operating temperature;
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle $\leq$ 1%.

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Typical electrical and thermal characteristics



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