

Dual N-channel MOSFET

ELM34814AA-N

General description

ELM34814AA-N uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

Features

- $V_{ds}=30V$
- $I_d=7A$
- $R_{ds(on)} < 23m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} < 30m\Omega$ ($V_{gs}=4.5V$)

Maximum absolute ratings

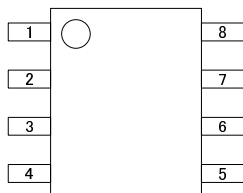
Parameter	Symbol	Limit	Unit	Note
Drain-source voltage	V_{ds}	± 30	V	
Gate-source voltage	V_{gs}	± 20	V	
Continuous drain current	I_d	7	A	
		6		
Pulsed drain current	I_{dm}	40	A	3
Power dissipation	P_d	2.0	W	
		1.3		
Junction and storage temperature range	T_j, T_{stg}	-55 to 150	$^{\circ}C$	

Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-ambient	Steady-state	$R\theta_{ja}$		62.5	$^{\circ}C/W$	

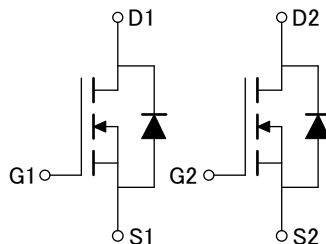
Pin configuration

SOP-8 (TOP VIEW)



Pin No.	Pin name
1	SOURCE1
2	GATE1
3	SOURCE2
4	GATE2
5	DRAIN2
6	DRAIN2
7	DRAIN1
8	DRAIN1

Circuit



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Electrical characteristics

T_a=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BV _{dss}	I _d =250 μA, V _{gs} =0V	30			V	
Zero gate voltage drain current	I _{dss}	V _{ds} =24V, V _{gs} =0V			1	μA	
		V _{ds} =20V, V _{gs} =0V, T _j =55°C			10		
Gate-body leakage current	I _{gss}	V _{ds} =0V, V _{gs} =±20V			±100	nA	
Gate threshold voltage	V _{gs(th)}	V _{ds} =V _{gs} , I _d =250 μA	1.0	1.5	3.0	V	
On state drain current	I _{d(on)}	V _{gs} =10V, V _{ds} =5V	25			A	1
Static drain-source on-resistance	R _{ds(on)}	V _{gs} =10V, I _d =7A		15	23	mΩ	1
		V _{gs} =4.5V, I _d =6A		21	30	mΩ	
Forward transconductance	G _{fs}	V _{ds} =15V, I _d =5A		16		S	1
Diode forward voltage	V _{sd}	I _f =1A, V _{gs} =0V			1	V	1
Max.body-diode continuous current	I _s				3	A	
Pulsed current	I _{sm}				6	A	3
DYNAMIC PARAMETERS							
Input capacitance	C _{iss}	V _{gs} =0V, V _{ds} =15V, f=1MHz		830		pF	
Output capacitance	C _{oss}				185		pF
Reverse transfer capacitance	C _{rss}				80		pF
SWITCHING PARAMETERS							
Total gate charge	Q _g	V _{gs} =5V, V _{ds} =15V, I _d =7A		9.0	13.0	nC	2
Gate-source charge	Q _{gs}			2.8		nC	2
Gate-drain charge	Q _{gd}			3.1		nC	2
Turn-on delay time	t _{d(on)}	V _{gs} =10V, V _{ds} =15V, I _d ≈ 1A R _{gen} =6 Ω		5.7		ns	2
Turn-on rise time	t _r			10.0		ns	2
Turn-off delay time	t _{d(off)}			18.0		ns	2
Turn-off fall time	t _f			5.0		ns	2
Body diode reverse recovery time	t _{rr}		I _f =5A, dI/dt=100A/μs		15.5		ns
Body diode reverse recovery charge	Q _{rr}			7.9		nC	

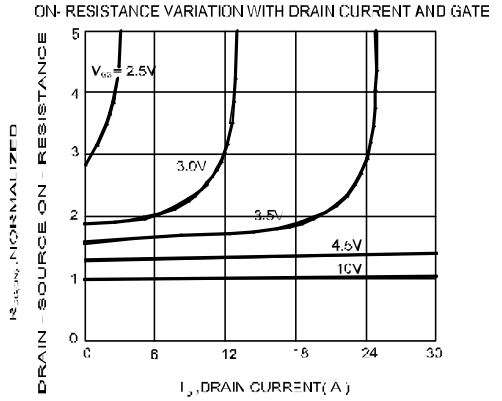
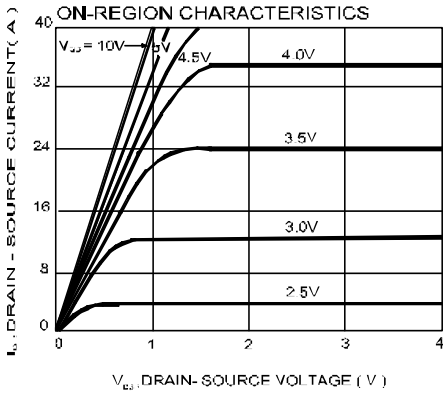
NOTE :

1. 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%.

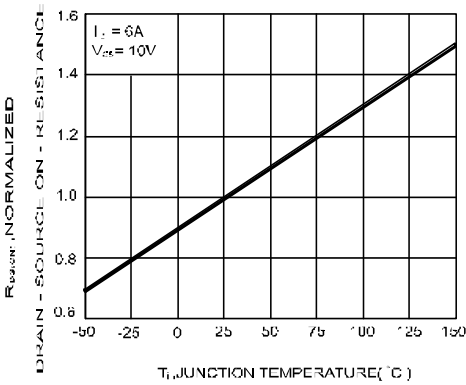
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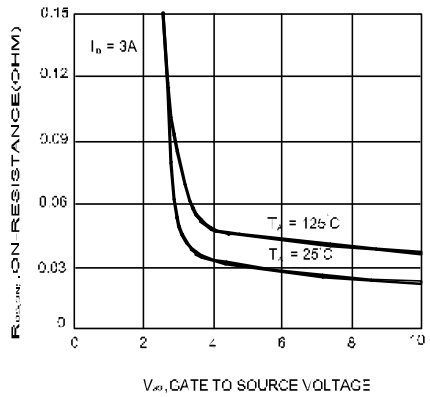
Typical electrical and thermal characteristics



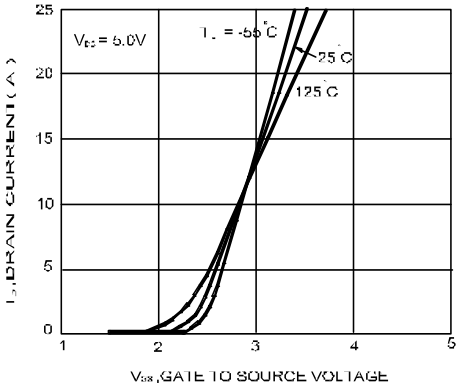
ON-RESISTANCE VARIATION WITH TEMPERATURE



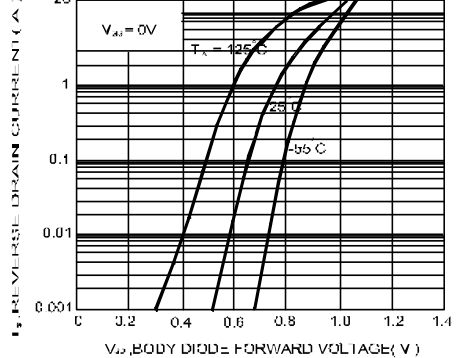
ON-RESISTANCE VARIATION WITH GATE-TO-SOURCE VOLTAGE



TRANSFER CHARACTERISTICS



BODY DIODE FORWARD VOLTAGE VARIATION WITH SOURCE CURRENT AND TEMPERATURE



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