

# Dual N-channel MOSFET

ELM34802AA-N

## General description

ELM34802AA-N uses advanced trench technology to provide excellent  $R_{ds(on)}$ , low gate charge and low gate resistance.

## Features

- $V_{ds}=30V$
- $I_d=4.5A$
- $R_{ds(on)} < 68m\Omega$  ( $V_{gs}=10V$ )
- $R_{ds(on)} < 98m\Omega$  ( $V_{gs}=5V$ )

## Maximum absolute ratings

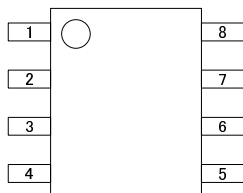
Parameter	Symbol	Limit	Unit	Note
Drain-source voltage	$V_{ds}$	30	V	
Gate-source voltage	$V_{gs}$	$\pm 20$	V	
Continuous drain current	$I_d$	4.5	A	
		3.6		
Pulsed drain current	$I_{dm}$	20	A	3
Power dissipation	$P_d$	2.0	W	
		1.3		
Junction and storage temperature range	$T_j, T_{stg}$	-55 to 150	$^{\circ}C$	

## Thermal characteristics

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

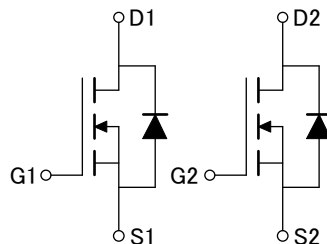
## Pin configuration

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<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	30			V	
Zero gate voltage drain current	I <sub>dss</sub>	V <sub>ds</sub> =24V, V <sub>gs</sub> =0V			1	μA	
		V <sub>ds</sub> =20V, V <sub>gs</sub> =0V, T <sub>j</sub> =55°C			10		
Gate-body leakage current	I <sub>gss</sub>	V <sub>ds</sub> =0V, V <sub>gs</sub> =±20V			±100	nA	
Gate threshold voltage	V <sub>gs(th)</sub>	V <sub>ds</sub> =V <sub>gs</sub> , I <sub>d</sub> =250 μA	1.0	1.5	3.0	V	
On state drain current	I <sub>d(on)</sub>	V <sub>gs</sub> =10V, V <sub>ds</sub> =5V	20			A	1
Static drain-source on-resistance	R <sub>ds(on)</sub>	V <sub>gs</sub> =10V, I <sub>d</sub> =4.5A		55	68	mΩ	1
		V <sub>gs</sub> =5V, I <sub>d</sub> =3.5A		75	98	mΩ	
Forward transconductance	G <sub>fs</sub>	V <sub>ds</sub> =5V, I <sub>d</sub> =4.5A		4.5		S	1
Diode forward voltage	V <sub>sd</sub>	I <sub>f</sub> =1A, V <sub>gs</sub> =0V			1.2	V	1
<b>DYNAMIC PARAMETERS</b>							
Input capacitance	C <sub>iss</sub>	V <sub>gs</sub> =0V, V <sub>ds</sub> =15V, f=1MHz		200	240	pF	
Output capacitance	C <sub>oss</sub>			40	55	pF	
Reverse transfer capacitance	C <sub>rss</sub>			20	30	pF	
<b>SWITCHING PARAMETERS</b>							
Total gate charge	Q <sub>g</sub>	V <sub>gs</sub> =10V, V <sub>ds</sub> =15V, I <sub>d</sub> =4.5A		6.5	8.5	nC	2
Gate-source charge	Q <sub>gs</sub>			1.2	1.8	nC	2
Gate-drain charge	Q <sub>gd</sub>			1.6	2.4	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> ≈ 1A R <sub>l</sub> =15 Ω, R <sub>gen</sub> =6 Ω		7	11	ns	2
Turn-on rise time	t <sub>r</sub>			12	18	ns	2
Turn-off delay time	t <sub>d(off)</sub>			12	18	ns	2
Turn-off fall time	t <sub>f</sub>			7	11	ns	2
Body diode reverse recovery time	t <sub>rr</sub>	I <sub>f</sub> =1A, dI/dt=100A/μs		40	80	ns	

NOTE :

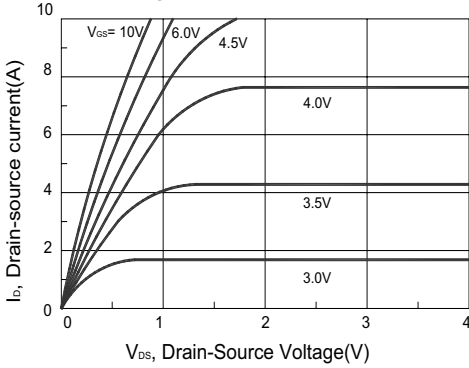
1. Pulsed width ≤ 300 μsec and Duty cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle ≤ 1%.

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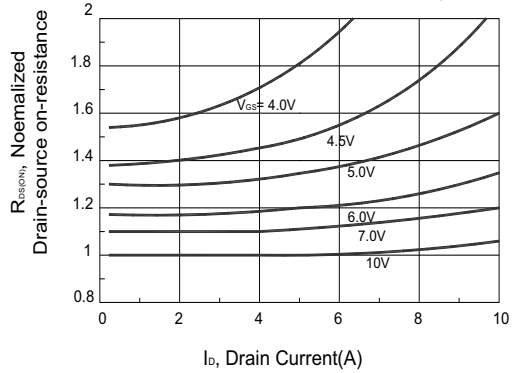
ELM34802AA-N

## Typical electrical and thermal characteristics

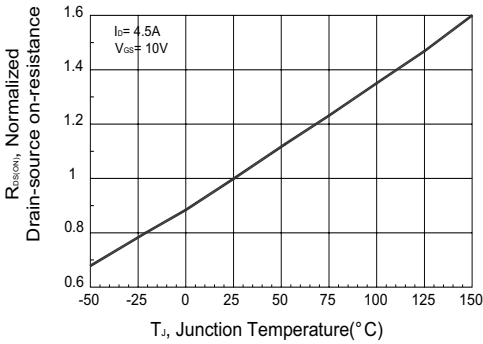
On-Region Characteristics.



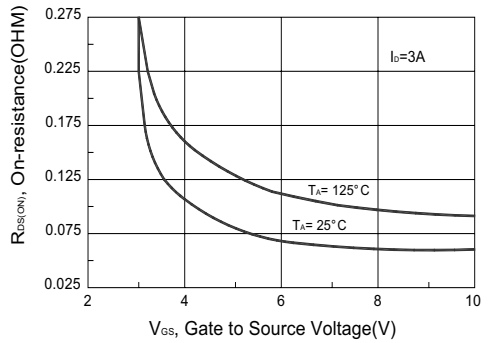
On-Resistance Variation with Drain Current and Gate Voltage.



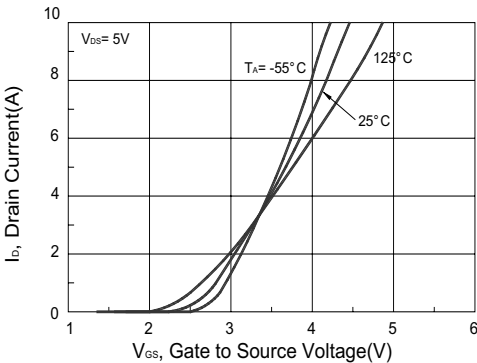
On-Resistance Variation with Temperature.



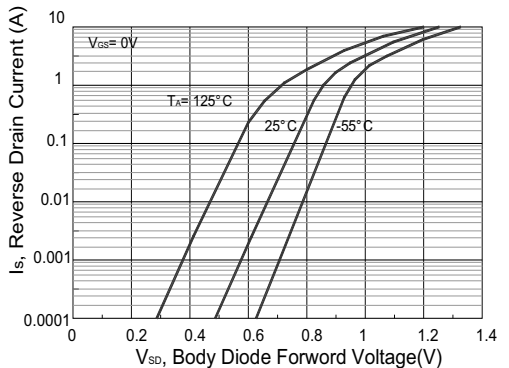
On-Resistance Variation with Gate-to-Source Voltage.



Transfer Characteristics.



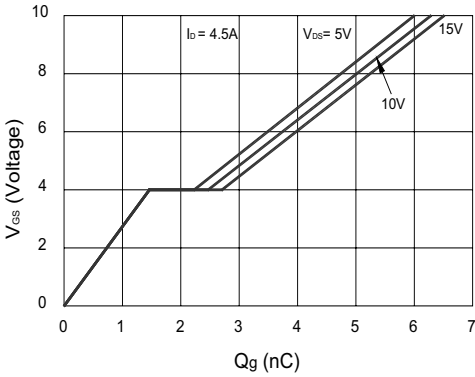
Body Diode Forward Voltage Variation with Source Current and Temperature.



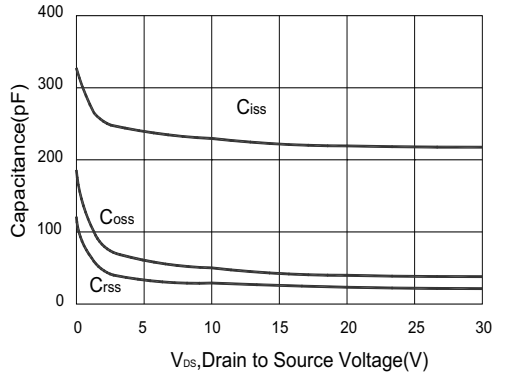
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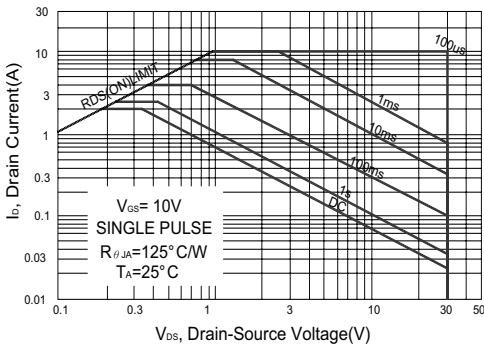
Gate-Charge Characteristics



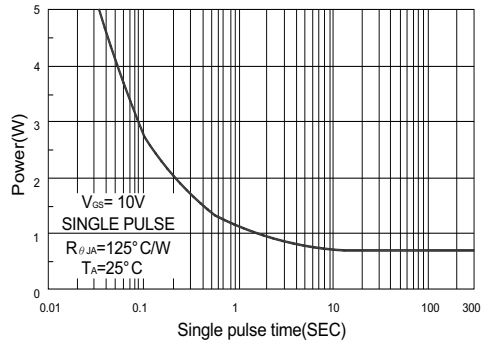
Capacitance Characteristics



Maximum Safe Operating Area.



Single Pulse Maximum Power Dissipation.



Transient Thermal Response Curve.

