

# Single N-channel MOSFET

ELM34404AA-N

## General description

ELM34404AA-N uses advanced trench technology to provide excellent  $R_{ds(on)}$ , low gate charge and low gate resistance.

## Features

- $V_{ds}=60V$
- $I_d=5.5A$
- $R_{ds(on)} < 55m\Omega$  ( $V_{gs}=10V$ )
- $R_{ds(on)} < 75m\Omega$  ( $V_{gs}=4.5V$ )

## Maximum absolute ratings

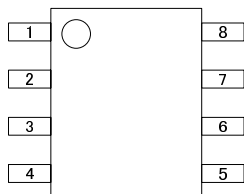
Parameter	Symbol	Limit	Unit	Note	
Drain-source voltage	$V_{ds}$	60	V		
Gate-source voltage	$V_{gs}$	$\pm 20$	V		
Continuous drain current	$I_d$	$T_a=25^\circ C$	5.5	A	
		$T_a=70^\circ C$	4.5		
Pulsed drain current	$I_{dm}$	20	A	3	
Power dissipation	$P_d$	$T_a=25^\circ C$	2.5	W	
		$T_a=70^\circ C$	1.3		
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	$R\theta_{ja}$		50	$^\circ C/W$	

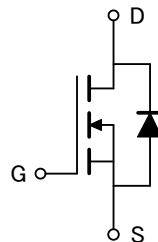
## Pin configuration

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
<b>STATIC PARAMETERS</b>							
Drain-source breakdown voltage	BVdss	Id=250 μA, Vgs=0V	60			V	
Zero gate voltage drain current	Idss	Vds=48V, Vgs=0V			1	μA	
		Vds=40V, 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=250 μA	1.0	1.5	2.5	V	
On state drain current	Id(on)	Vgs=10V, Vds=5V	20			A	1
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=5.5A		42	55	mΩ	1
		Vgs=4.5V, Id=4.5A		55	75	mΩ	
Forward transconductance	Gfs	Vds=10V, Id=5.5A		14		S	1
Diode forward voltage	Vsd	If=1A, Vgs=0V			1	V	1
Max. body-diode continuous current	Is				1.3	A	
Pulsed body-diode current	Ism				2.6	A	3
<b>DYNAMIC PARAMETERS</b>							
Input capacitance	Ciss	Vgs=0V, Vds=25V, f=1MHz		650		pF	
Output capacitance	Coss			80		pF	
Reverse transfer capacitance	Crss			35		pF	
<b>SWITCHING PARAMETERS</b>							
Total gate charge	Qg	Vgs=10V, Vds=30V, Id=5.5A		12.5	18.0	nC	2
Gate-source charge	Qgs			2.4		nC	2
Gate-drain charge	Qgd			2.6		nC	2
Turn-on delay time	td(on)	Vgs=10V, Vds=30V, Id ≈ 1A Rgen=6 Ω		11	20	ns	2
Turn-on rise time	tr			8	18	ns	2
Turn-off delay time	td(off)			19	35	ns	2
Turn-off fall time	tf			6	15	ns	2

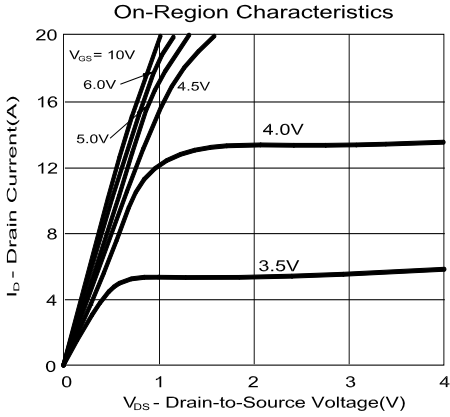
NOTE :

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%.

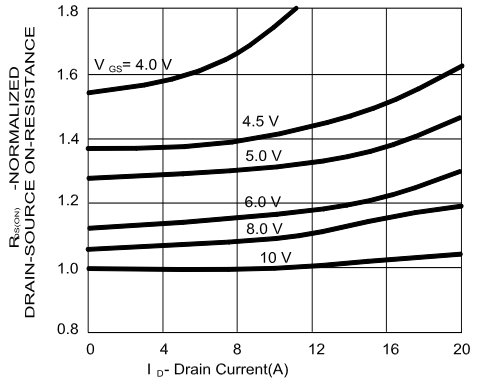
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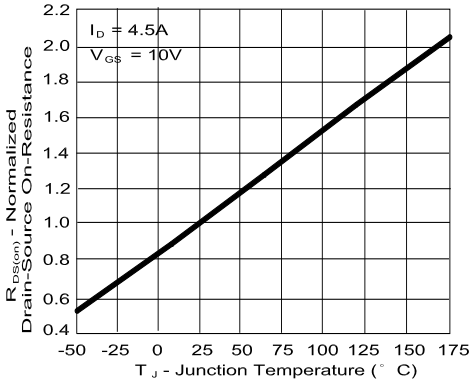
### Typical electrical and thermal characteristics



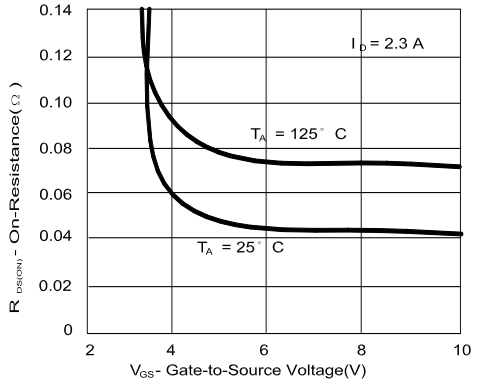
On-Resistance Variation with Drain Current and Gate Voltage



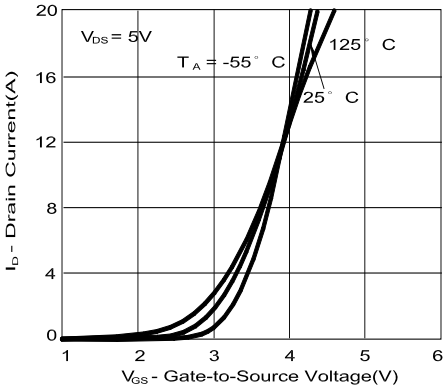
On-Resistance Variation with Temperature



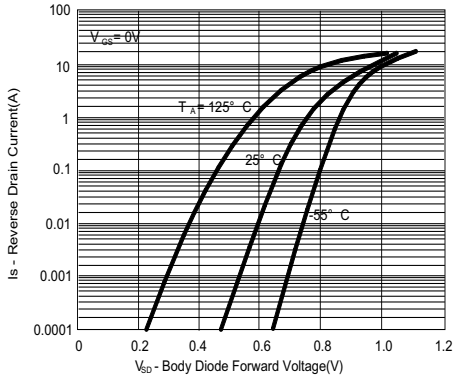
On-Resistance Variation with Gate-to-Source Voltage



Transfer Characteristics



Body Diode Forward Voltage Variation with Source Current and Temperature



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