

Single P-channel MOSFET

ELM34421AA-N

■ General description

ELM34421AA-N uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

■ Features

- $V_{ds} = -30V$
- $I_d = -15A$
- $R_{ds(on)} < 7.5m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} < 12m\Omega$ ($V_{gs} = -4.5V$)

■ Maximum absolute ratings

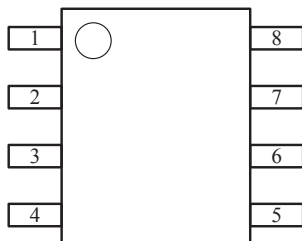
Parameter	Symbol	Limit	Unit	Note
Drain-source voltage	V_{ds}	-30	V	
Gate-source voltage	V_{gs}	± 25	V	
Continuous drain current	I_d	$T_a = 25^\circ C$	-15	A
		$T_a = 70^\circ C$	-11	
Pulsed drain current	I_{dm}	-67	A	3
Avalanche current	I_{as}	-66	A	
Avalanche energy	E_{as}	218	mJ	
Power dissipation	P_d	$T_a = 25^\circ C$	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-case	$R_{\theta jc}$		25	$^\circ C/W$	
Maximum junction-to-ambient	$R_{\theta ja}$		50	$^\circ C/W$	

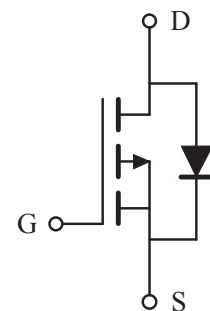
■ Pin configuration

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=-250μA, Vgs=0V	-30			V	
Zero gate voltage drain current	Idss	Vds=-24V, Vgs=0V			-1	μA	
		Vds=-20V, Vgs=0V, Tj=125°C			-10		
Gate-body leakage current	Igss	Vds=0V, Vgs=±25V			±100	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-1.0	-1.7	-3.0	V	
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-15A		4.8	7.5	mΩ	1
		Vgs=-4.5V, Id=-10A		6.8	12.0	mΩ	
Forward transconductance	Gfs	Vds=-5V, Id=-15A		25		S	1
Diode forward voltage	Vsd	Is=-15A, Vgs=0V			-1.2	V	1
Max. body-diode continuous current	Is				-2	A	
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=-15V, f=1MHz		5590		pF	
Output capacitance	Coss			1070		pF	
Reverse transfer capacitance	Crss			889		pF	
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=-10V, Vds=-15V Id=-15A		120		nC	2
Gate-source charge	Qgs			16		nC	2
Gate-drain charge	Qgd			30		nC	2
Turn-on delay time	td(on)	Vgs=-10V, Vds=-15V Id≈-15A, Rgen=6Ω		10		ns	2
Turn-on rise time	tr			16		ns	2
Turn-off delay time	td(off)			200		ns	2
Turn-off fall time	tf			100		ns	2
Reverse recovery time	trr	If=-15A, dI/dt=100A/μs		42		ns	
Reverse recovery charge	Qrr			30		nC	

NOTE :

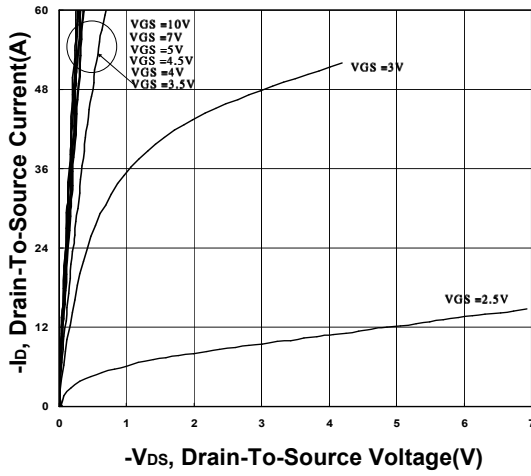
1. Pulsed width ≤ 300μsec and Duty cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle ≤ 1%.

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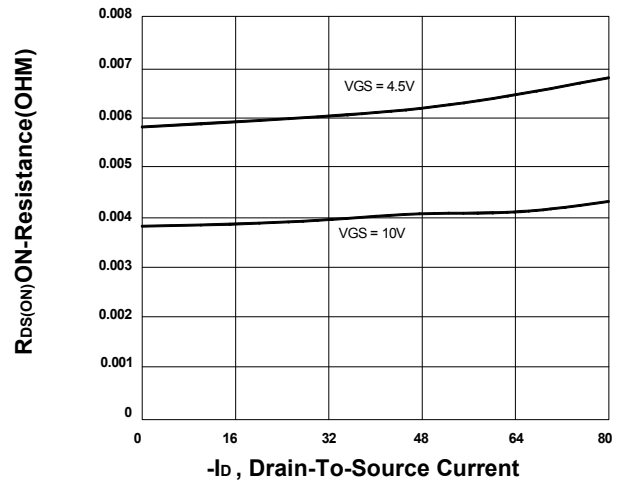
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■ Typical electrical and thermal characteristics

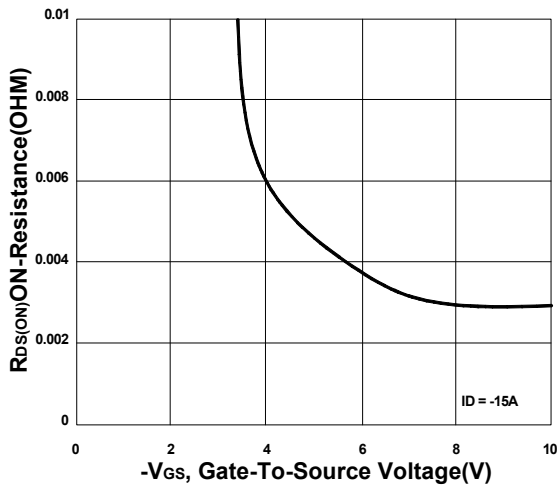
Output Characteristics



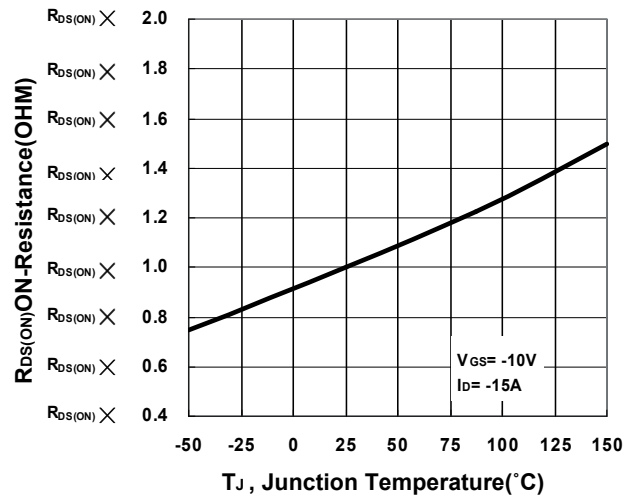
On-Resistance VS Drain Current



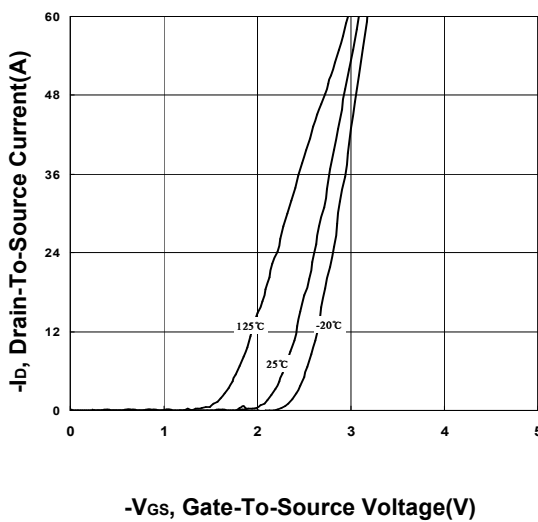
On-Resistance VS Gate-To-Source



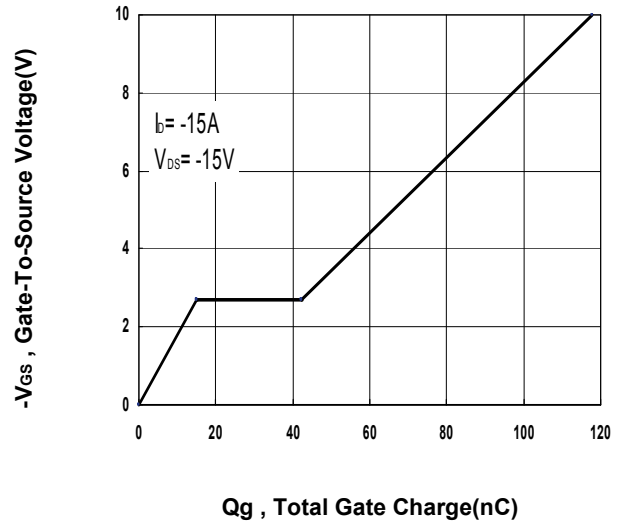
On-Resistance VS Temperature



Transfer Characteristics



Gate charge Characteristics



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