

Single P-channel MOSFET

ELM34417AA-N

General description

ELM34417AA-N uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

Features

- $V_{ds} = -30V$
- $I_d = -6A$
- $R_{ds(on)} < 45m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} < 75m\Omega$ ($V_{gs} = -4.5V$)

Maximum absolute ratings

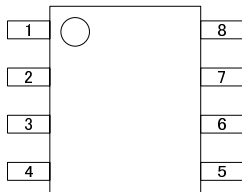
Parameter		Symbol	Limit	Unit	Note
Drain-source voltage		V_{ds}	-30	V	
Gate-source voltage		V_{gs}	± 20	V	
Continuous drain current	$T_a = 25^\circ C$	I_d	-6	A	
	$T_a = 70^\circ C$		-5		
Pulsed drain current		I_{dm}	-30	A	3
Power dissipation	$T_a = 25^\circ C$	P_d	2.5	W	
	$T_a = 70^\circ C$		1.3		
Junction and storage temperature range		T_j, T_{stg}	-55 to 150	$^\circ C$	

Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-case	Steady-state	$R\theta_{jc}$		25	$^\circ C/W$	
Maximum junction-to-ambient	Steady-state	$R\theta_{ja}$		50	$^\circ C/W$	

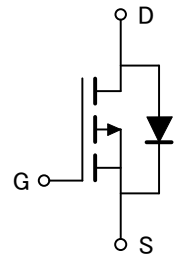
Pin configuration

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=125°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	-0.9	-1.5	-3.0	V	
On state drain current	Id(on)	Vgs=-10V, Vds=-5V	-30			A	1
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-6A		37	45	m Ω	1
		Vgs=-4.5V, Id=-5A		60	75	m Ω	
Forward transconductance	Gfs	Vds=-10V, Id=-6A		16		S	1
Diode forward voltage	Vsd	Is=-1A, Vgs=0V			-1.2	V	1
Max. body-diode continuous current	Is				-2.1	A	
Pulsed body-diode current	Ism				-4	A	3
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=-15V, f=1MHz		530		pF	
Output capacitance	Coss			135		pF	
Reverse transfer capacitance	Crss			70		pF	
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=-10V, Vds=-15V Id=-6A		10.0	14.0	nC	2
Gate-source charge	Qgs			2.2		nC	2
Gate-drain charge	Qgd			2.0		nC	2
Turn-on delay time	td(on)	Vgs=-10V, Vds=-15V Id $\cong$ -1A, Rl=1 Ω , Rgen=6 Ω		5.7		ns	2
Turn-on rise time	tr			10.0		ns	2
Turn-off delay time	td(off)			18.0		ns	2
Turn-off fall time	tf			5.0		ns	2
Body diode reverse recovery time	trr	If=-5A, dl/dt=100A/ μ s		15.5		ns	
Body diode reverse recovery charge	Qrr	If=-5A, dl/dt=100A/ μ s		7.9		nC	

NOTE :

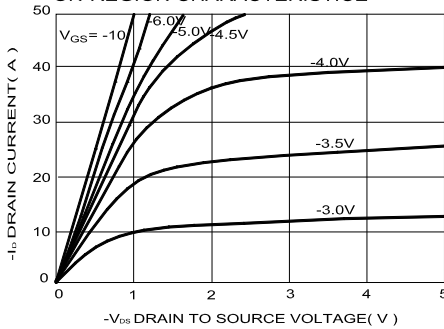
1. Pulsed width $\leq$ 300 μ sec and Duty cycle $\leq$ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle $\leq$ 1%.

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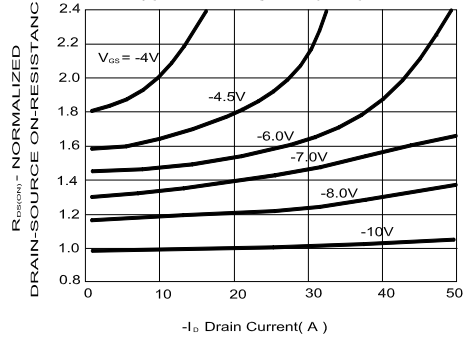
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■ Typical electrical and thermal characteristics

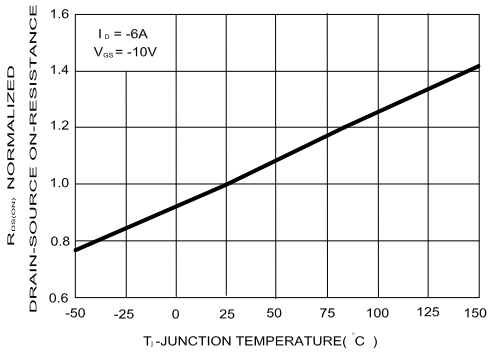
ON-REGION CHARACTERISTIC



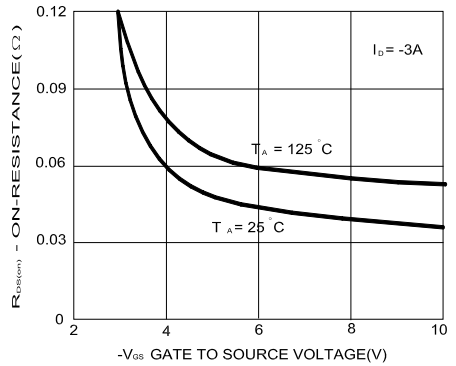
ON-RESISTANCE VARIATION WITH DRAIN CURRENT AND GATE VOLTAGE



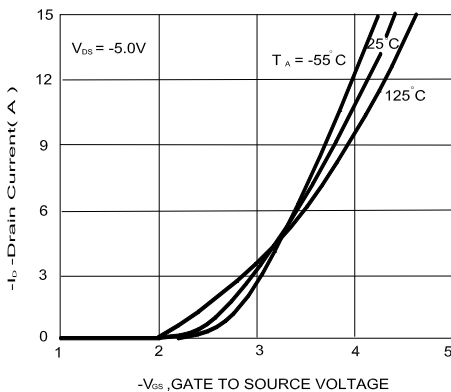
ON-RESISTANCE VARIATION WITH TEMPERATURE



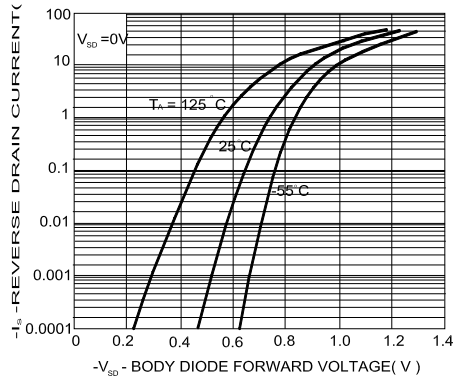
ON-RESISTANCE VARIATION WITH GATE-TO-SOURCE VOLTAGE



Transfer Characteristics



BODY DIODE FORWARD VOLTAGE VARIATION WITH SOURCE CURRENT AND TEMPERATURE



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