

Single P-channel MOSFET

ELM32411LA-S

General description

ELM32411LA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

Features

- $V_{ds} = -55V$
- $I_d = -7A$
- $R_{ds(on)} < 80m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} < 150m\Omega$ ($V_{gs} = -4.5V$)

Maximum absolute ratings

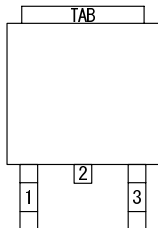
Parameter	Symbol	Limit	Unit	Note	
Drain-source voltage	V_{ds}	-55	V		
Gate-source voltage	V_{gs}	± 20	V		
Continuous drain current	I_d	$T_a = 25^\circ C$	-7	A	
		$T_a = 70^\circ C$	-6		
Pulsed drain current	I_{dm}	-30	A	3	
Power dissipation	P_d	$T_a = 25^\circ C$	28	W	
		$T_a = 70^\circ C$	18		
Junction 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	$R\theta_{jc}$		3	$^\circ C/W$	
Maximum junction-to-ambient	Steady-state	$R\theta_{ja}$		75	$^\circ C/W$	

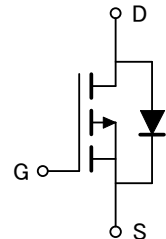
Pin configuration

TO-252-3 (TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

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	-55			V	
Zero gate voltage drain current	I _{dss}	V _{ds} =-44V, V _{gs} =0V			-1	μA	
		V _{ds} =-36V, V _{gs} =0V, T _j =125°C			-10		
Gate-body leakage current	I _{gss}	V _{ds} =0V, V _{gs} =±20V			±250	nA	
Gate threshold voltage	V _{gs(th)}	V _{ds} =V _{gs} , I _d =-250 μA	-1.0	-1.5	-2.5	V	
On state drain current	I _{d(on)}	V _{gs} =-10V, V _{ds} =-5V	-32			A	1
Static drain-source on-resistance	R _{ds(on)}	V _{gs} =-10V, I _d =-7A		60	80	mΩ	1
		V _{gs} =-4.5V, I _d =-6A		90	150	mΩ	
Forward transconductance	G _{fs}	V _{ds} =-10V, I _d =-7A		9		S	1
Diode forward voltage	V _{sd}	I _s =I _f , V _{gs} =0V			-1	V	1
Max. body-diode continuous current	I _s				-1.3	A	
Pulsed body-diode current	I _{sm}				-2.6	A	3
DYNAMIC PARAMETERS							
Input capacitance	C _{iss}	V _{gs} =0V, V _{ds} =-30V, f=1MHz		760		pF	
Output capacitance	C _{oss}			90		pF	
Reverse transfer capacitance	C _{rss}			40		pF	
SWITCHING PARAMETERS							
Total gate charge	Q _g	V _{gs} =-10V, V _{ds} =-27.5V I _d =-7A		15.0		nC	2
Gate-source charge	Q _{gs}			2.5		nC	2
Gate-drain charge	Q _{gd}			3.0		nC	2
Turn-on delay time	t _{d(on)}	V _{gs} =-10V, V _{ds} =-20V I _d ≈ -1A, R _l =1 Ω, R _{gen} =6 Ω		7	14	ns	2
Turn-on rise time	t _r			10	20	ns	2
Turn-off delay time	t _{d(off)}			19	34	ns	2
Turn-off fall time	t _f			12	22	ns	2
Body diode reverse recovery time	t _{rr}			15.5		ns	
Body diode reverse recovery charge	Q _{rr}	I _f =-7A, dI/dt=100A/μs		7.9		nC	

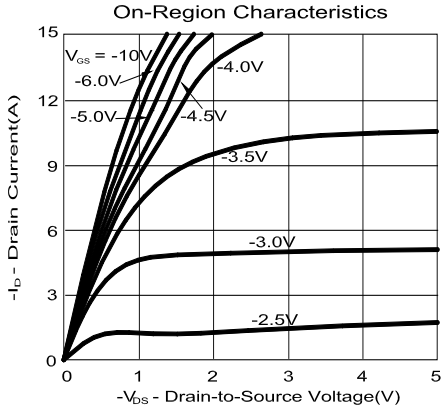
NOTE :

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

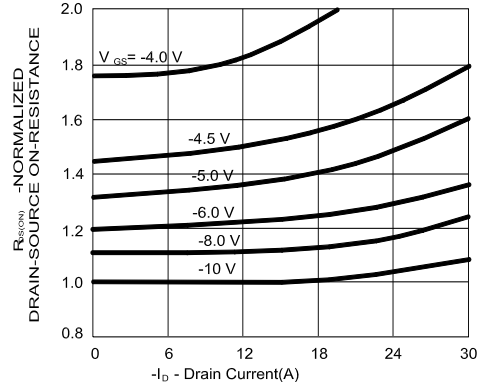
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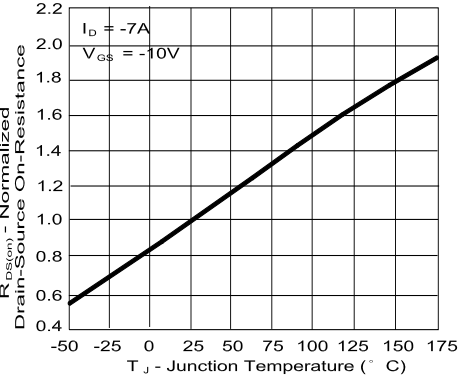
Typical electrical and thermal characteristics



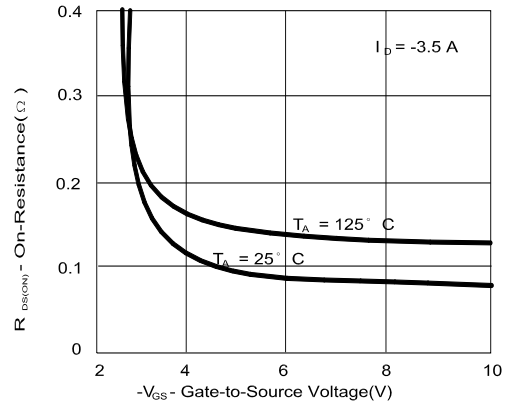
On-Resistance Variation with Drain Current and Gate Voltage



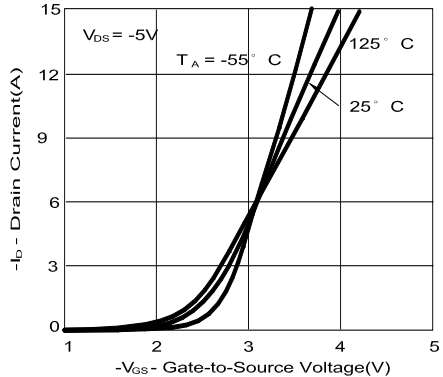
On-Resistance Variation with Temperature



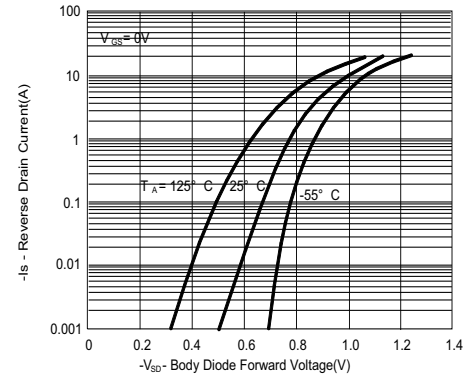
On-Resistance Variation with Gate-to-Source Voltage



Transfer Characteristics



Body Diode Forward Voltage Variation with Source Current and Temperature



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