

Single P-channel MOSFET

ELM32403LA-S

■ General description

ELM32403LA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

■ Features

- $V_{ds} = -40V$
- $I_d = -8A$
- $R_{ds(on)} < 55m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} < 94m\Omega$ ($V_{gs} = -4.5V$)

■ Maximum absolute ratings

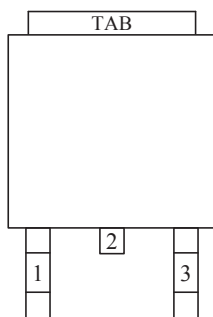
Parameter	Symbol	Limit	Unit	Note
Drain-source voltage	V_{ds}	-40	V	
Gate-source voltage	V_{gs}	± 20	V	
Continuous drain current	I_d	Ta=25°C	-8	A
		Ta=70°C	-6	
Pulsed drain current	I_{dm}	-32	A	3
Power dissipation	P_d	Ta=25°C	28	W
		Ta=70°C	18	
Junction and storage temperature range	T_j, T_{stg}	-55 to 150	°C	

■ Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-case	Steady-state	$R\theta_{jc}$		3	°C/W	
Maximum junction-to-ambient	Steady-state	$R\theta_{ja}$		75	°C/W	

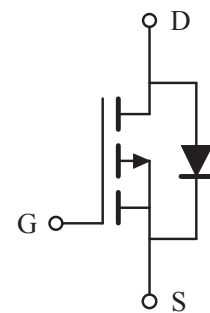
■ Pin configuration

TO-252-3(TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

■ Circuit



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■Electrical characteristics

Ta=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=-250μA, Vgs=0V	-40			V	
Zero gate voltage drain current	Idss	Vds=-32V, Vgs=0V			-1	μA	
		Vds=-30V, Vgs=0V, Tj=125°C			-10		
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±250	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-1.0	-1.5	-2.5	V	
On state drain current	Id(on)	Vgs=-10V, Vds=-5V	-32			A	1
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-8A		38	55	mΩ	1
		Vgs=-4.5V, Id=-6A		65	94	mΩ	
Forward transconductance	Gfs	Vds=-10V, Id=-8A		11		S	1
Diode forward voltage	Vsd	Is=If, Vgs=0V			-1	V	1
Max. body-diode continuous current	Is				-1.3	A	
Pulsed body-diode current	Ism				-2.6	A	3
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=-10V, f=1MHz		690		pF	
Output capacitance	Coss			310		pF	
Reverse transfer capacitance	Crss			75		pF	
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=-10V, Vds=-20V Id=-8A		14.0		nC	2
Gate-source charge	Qgs			2.2		nC	2
Gate-drain charge	Qgd			1.9		nC	2
Turn-on delay time	td(on)	Vgs=-10V, Vds=-20V Id≈-1A, RI=1Ω, Rgen=6Ω		6.7	13.4	ns	2
Turn-on rise time	tr			9.7	19.4	ns	2
Turn-off delay time	td(off)			19.8	35.6	ns	2
Turn-off fall time	tf			12.3	22.2	ns	2
Body diode reverse recovery time	trr			15.5		ns	
Body diode reverse recovery charge	Qrr	If=-5A, dI/dt=100A/μs		7.9		nC	

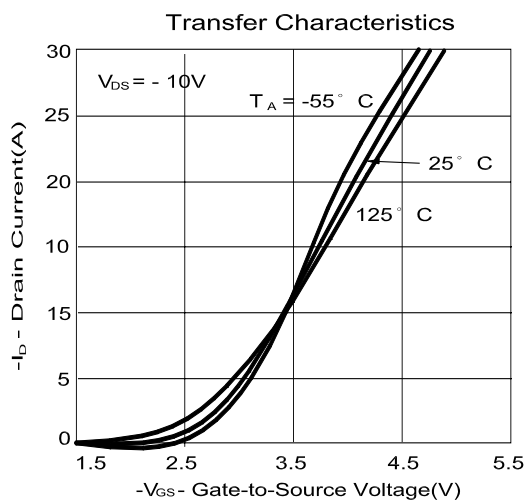
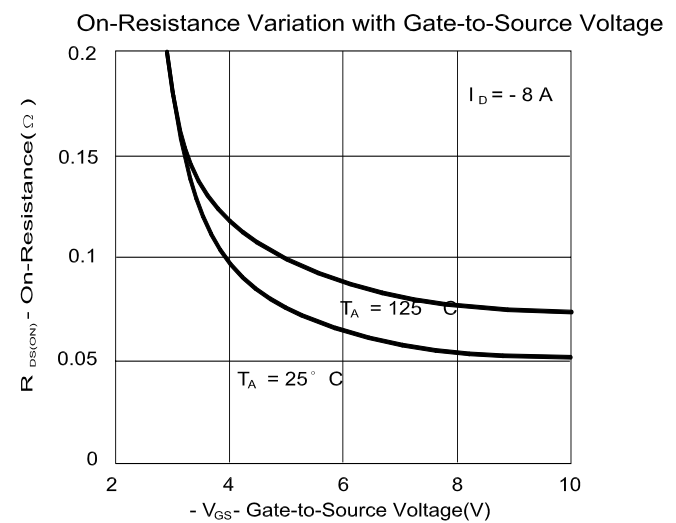
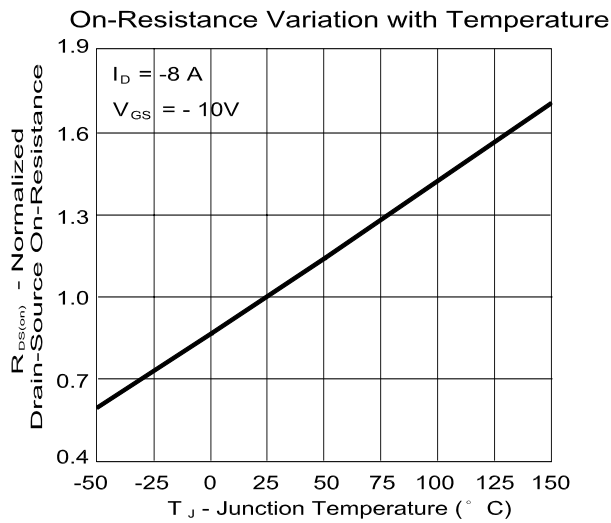
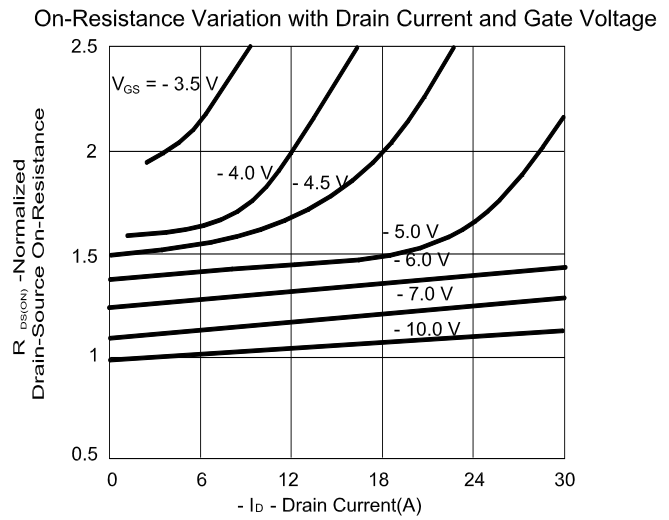
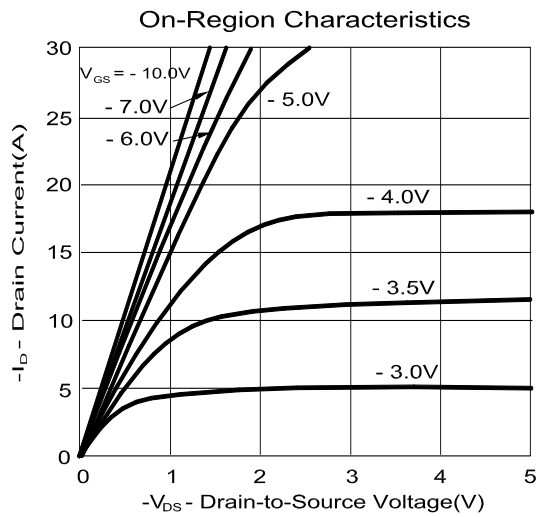
NOTE :

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

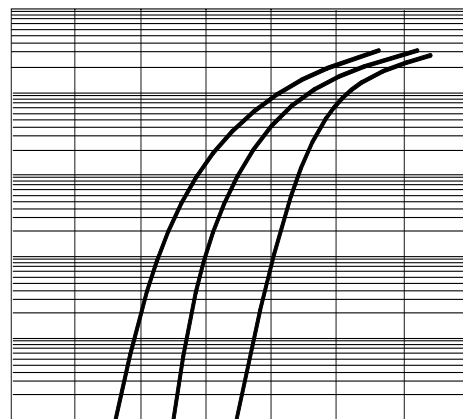
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■ Typical electrical and thermal characteristics



Body Diode Forward Voltage Variation with Source Current and Temperature



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