Single P-channel MOSFET

ELM32405LA-S

■General description

ELM32405LA-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate resistance.

■Features

- Vds=-30V
- Id=-12A
- Rds(on) < 45mΩ (Vgs=-10V)
- Rds(on) < 75mΩ (Vgs=-4.5V)

■Maximum absolute ratings

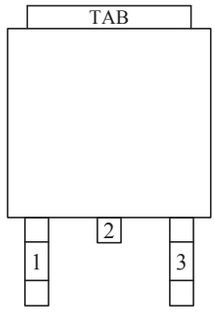
Parameter		Symbol	Limit	Unit	Note
Drain-source voltage		Vds	-30	V	
Gate-source voltage		Vgs	±20	V	
Continuous drain current	Ta=25°C	Id	-12	A	
	Ta=70°C		-10		
Pulsed drain current		Idm	-30	A	3
Power dissipation	Ta=25°C	Pd	48	W	
	Ta=70°C		20		
Junction and storage temperature range		Tj, Tstg	-55 to 150	°C	

■Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-case	Steady-state	Rθjc		3	°C/W	
Maximum junction-to-ambient	Steady-state	Rθja		75	°C/W	

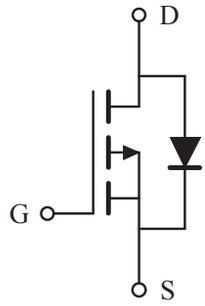
■Pin configuration

TO-252-3(TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

■Circuit



■Electrical characteristics

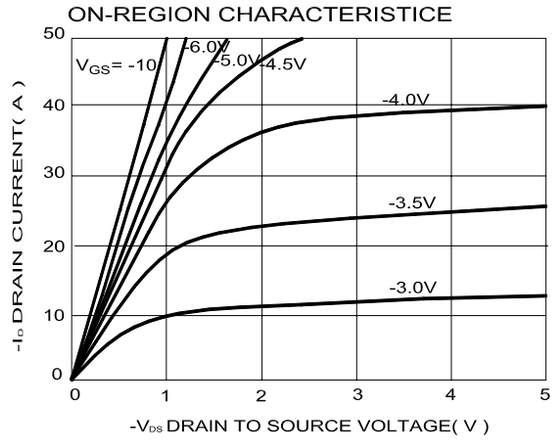
Ta=25°C

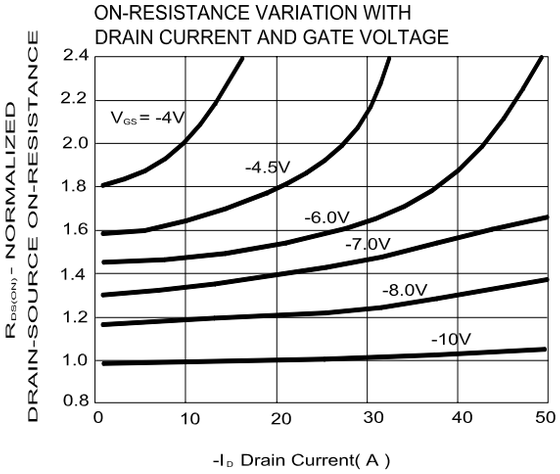
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=-250μA, Vgs=0V	-30			V	
Zero gate voltage drain current	Idss	Vds=-24V, Vgs=0V			-1	μA	
		Vds=-20V, Vgs=0V, Tj=125°C			-10		
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±250	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-1.0	-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=-12A		37	45	mΩ	1
		Vgs=-4.5V, Id=-10A		60	75	mΩ	
Forward transconductance	Gfs	Vds=-10V, Id=-12A		16		S	1
Diode forward voltage	Vsd	Is=-1A, Vgs=0V			-1.2	V	1
Max. body-diode continuous current	Is				-12	A	
Pulsed body-diode current	Ism				-30	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=-12A		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≈-1A, Rl=1Ω, Rgen=6Ω		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, dI/dt=100A/μs		15.5		ns	
Body diode reverse recovery charge	Qrr			7.9		nC	

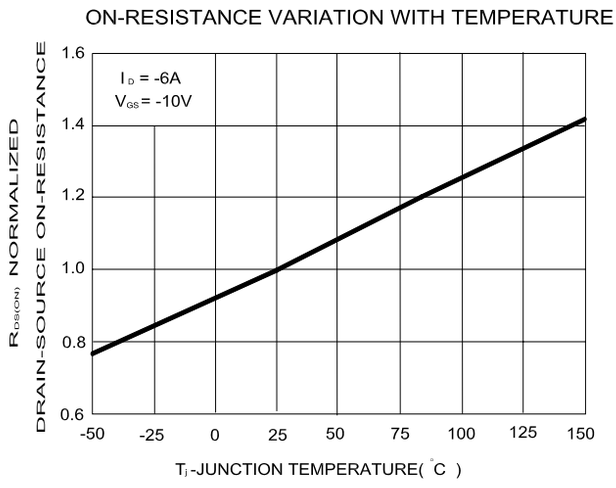
NOTE :

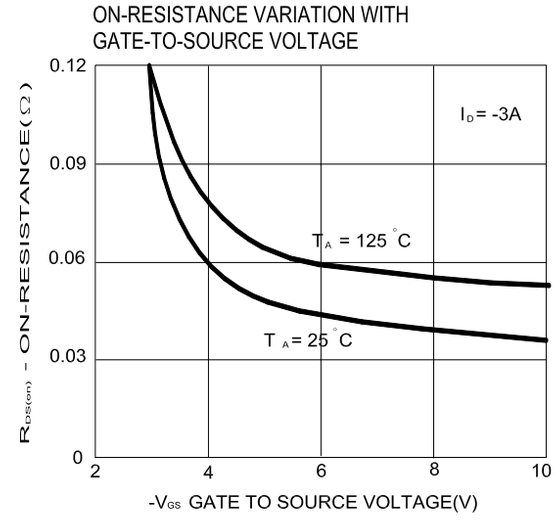
1. Pulse test : Pulsed width ≤ 300μsec and Duty cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle ≤ 1%.

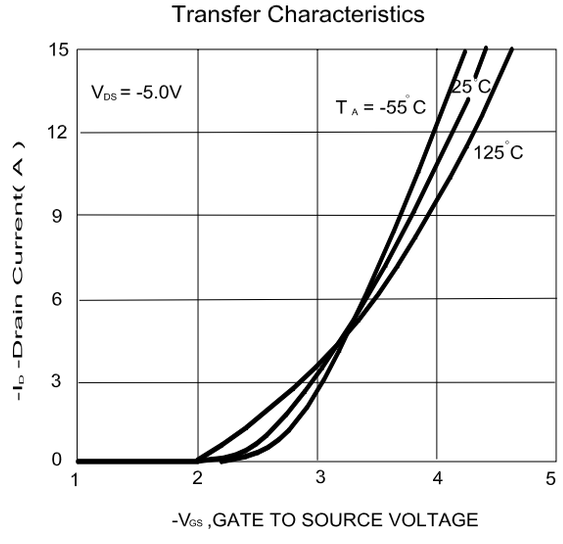
■Typical electrical and thermal characteristics

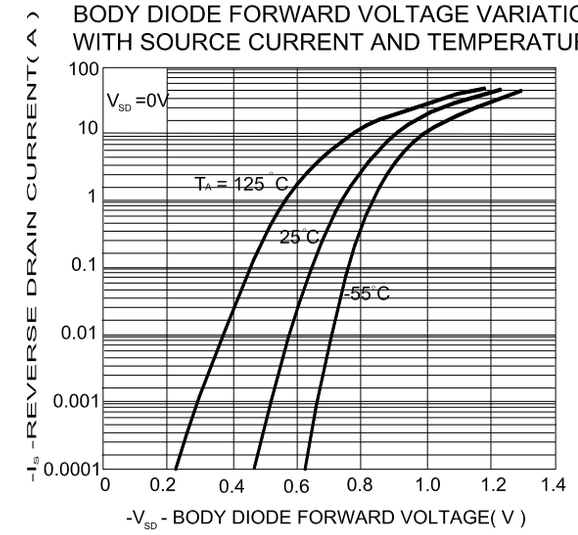




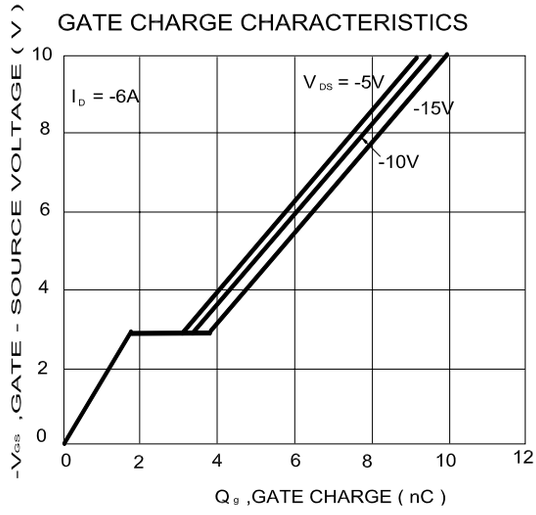




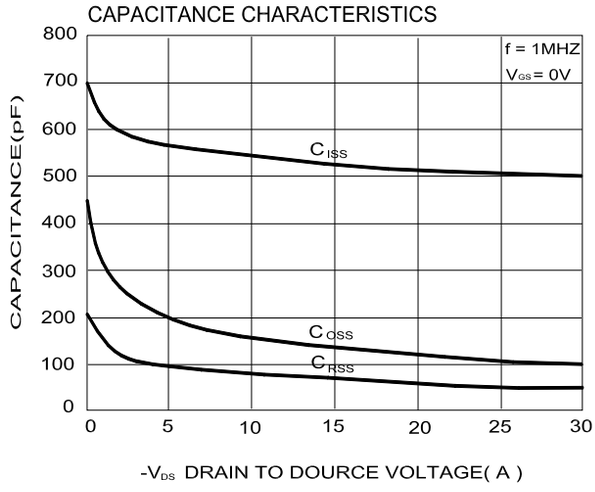




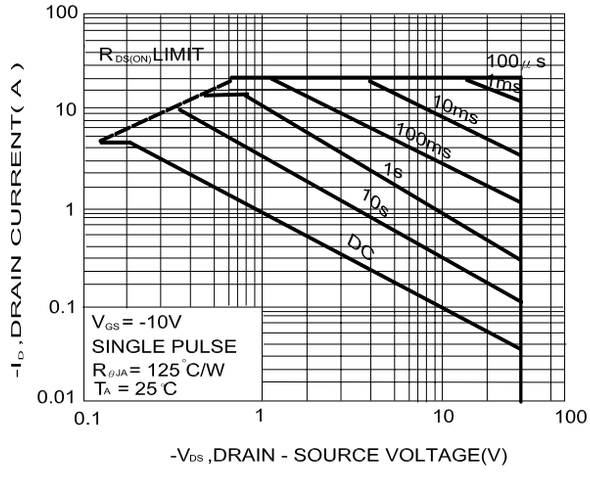
GATE CHARGE CHARACTERISTICS



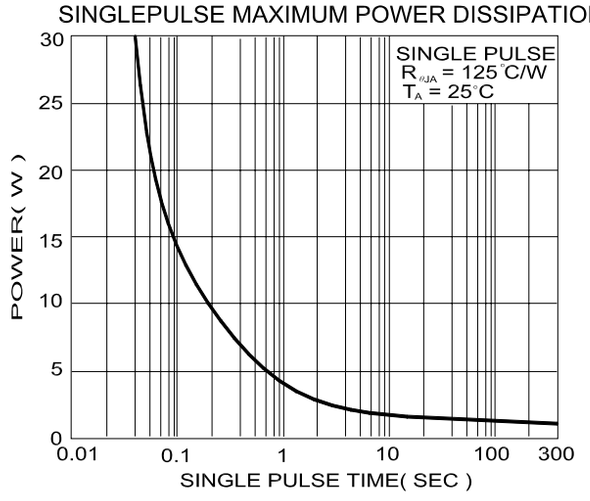
CAPACITANCE CHARACTERISTICS



GATE CHARGE CHARACTERISTICS.



SINGLEPULSE MAXIMUM POWER DISSIPATION



TRANSIENT THERMAL RESPONSE CURVE