Single N-channel MOSFET

ELM32428LA-S

■General description

ELM32428LA-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate resistance.

■Features

- Vds=25V
- Id=75A
- Rds(on) < 7mΩ (Vgs=10V)
- Rds(on) < 10mΩ (Vgs=4.5V)

■Maximum absolute ratings

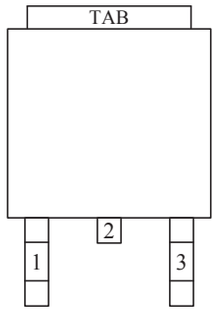
Parameter		Symbol	Limit	Unit	Note
Gate-source voltage		Vgs	±20	V	
Continuous drain current	Ta=25°C	Id	75	A	
	Ta=100°C		50		
Pulsed drain current		Idm	170	A	3
Avalanche current		Iar	60	A	
Avalanche energy	L=0.1mH	Eas	140	mJ	
Repetitive avalanche energy	L=0.05mH	Ear	5.6	mJ	4
Power dissipation	Ta=25°C	Pd	60.00	W	
	Ta=100°C		32.75		
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		2.3	°C/W	
Maximum junction-to-ambient	Steady-state	Rθja		62.5	°C/W	
Maximum case-to-heatsink		Rθcs	0.6		°C/W	

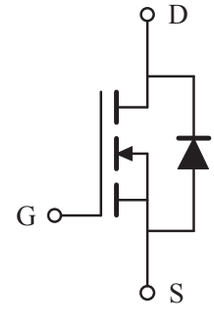
■Pin configuration

TO-252-3(TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

■Circuit



■Electrical characteristics

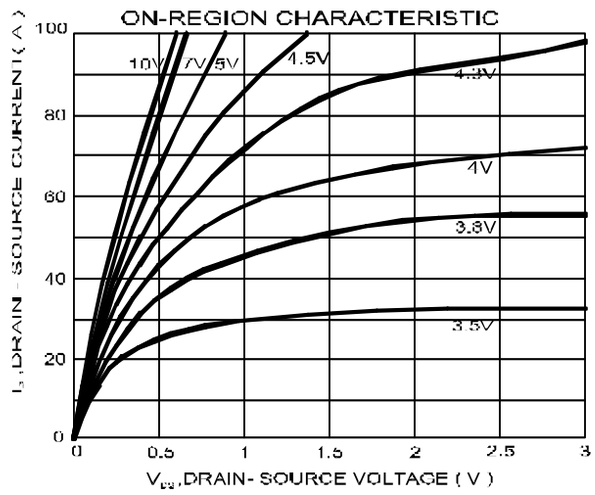
Ta=25°C

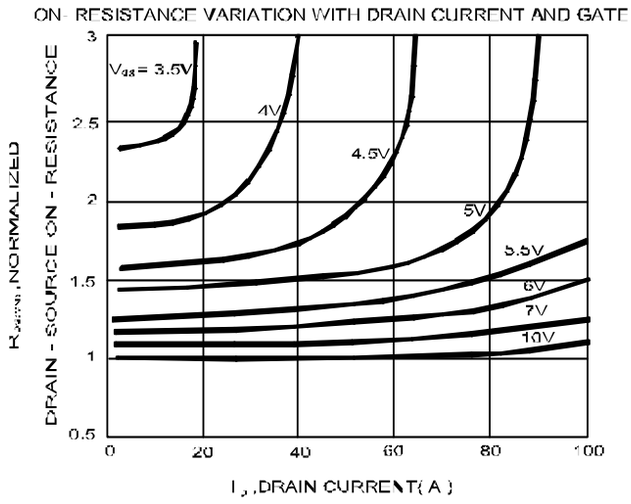
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	25			V	
Zero gate voltage drain current	Idss	Vds=20V, Vgs=0V			25	μA	
		Vds=20V, Vgs=0V, Tj=125°C			250		
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±250	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	1.0	1.5	3.0	V	
On state drain current	Id(on)	Vgs=10V, Vds=10V	70			A	1
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=30A		5.0	7.0	mΩ	1
		Vgs=4.5V, Id=24A		6.6	10.0	mΩ	
Forward transconductance	Gfs	Vds=15V, Id=30A		55		S	1
Diode forward voltage	Vsd	If=Is, Vgs=0V			1.3	V	1
Max. body-diode continuous current	Is				75	A	
Pulsed body-diode current	Ism				170	A	3
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=15V, f=1MHz		2700		pF	
Output capacitance	Coss			500	1100	pF	
Reverse transfer capacitance	Crss			200		pF	
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=4.5V, Vds=15V, Id=25A		19.0	25.0	nC	2
Gate-source charge	Qgs			7.0	9.0	nC	2
Gate-drain charge	Qgd			7.5	11.0	nC	2
Turn-on delay time	td(on)	Vgs=10V, Vds=15V, Id≈30A Rgen=2.5Ω		11.5	17.0	ns	2
Turn-on rise time	tr			17.0	26.0	ns	2
Turn-off delay time	td(off)			32.0	48.0	ns	2
Turn-off fall time	tf			7.5	11.0	ns	2
Body diode reverse recovery time	trr	If=Is, dI/dt=100A/μs		37		ns	
Peak reverse recovery current	Irm(rec)			200		A	
Body diode reverse recovery charge	Qrr			0.043		μC	

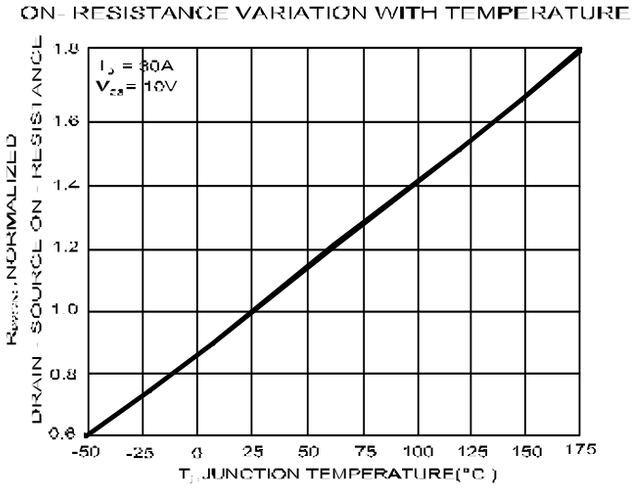
NOTE :

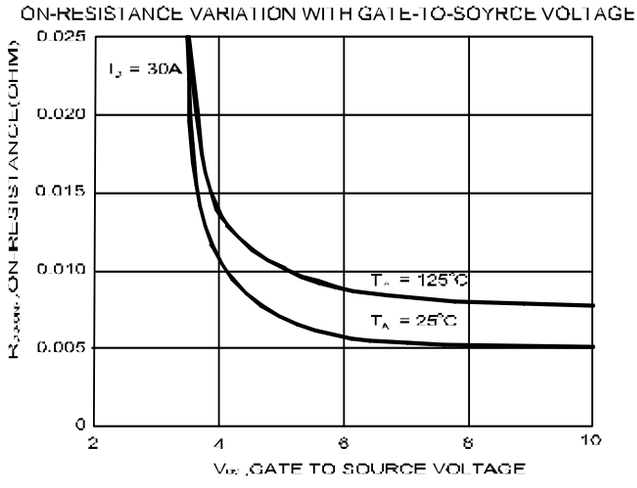
1. Pulse test : Pulsed width ≤ 300μsec and Duty cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle ≤ 1%.

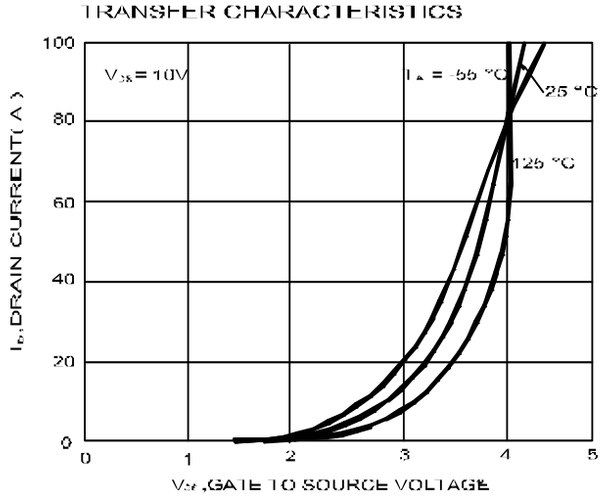
■Typical electrical and thermal characteristics

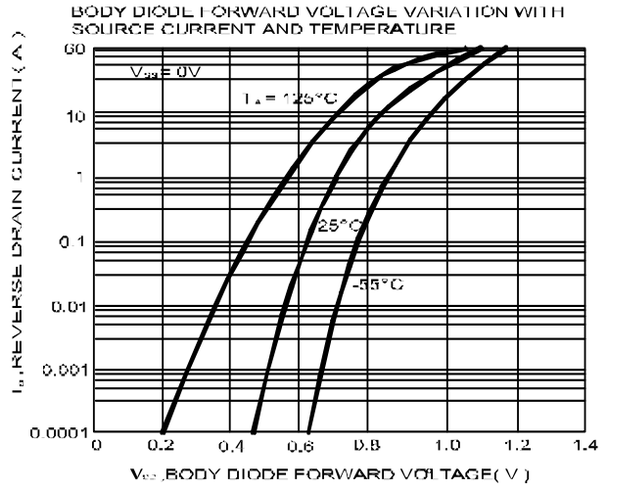




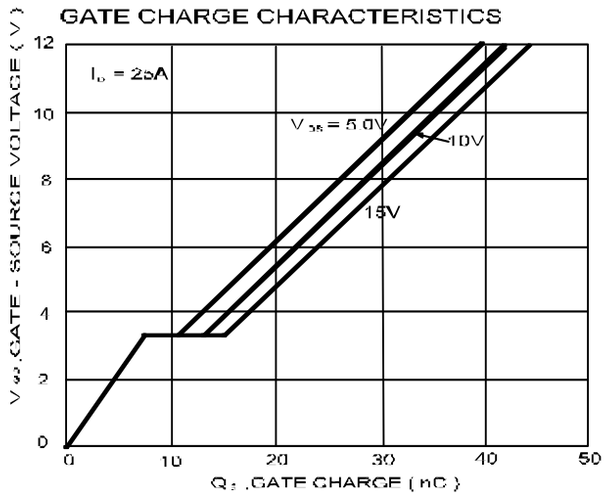




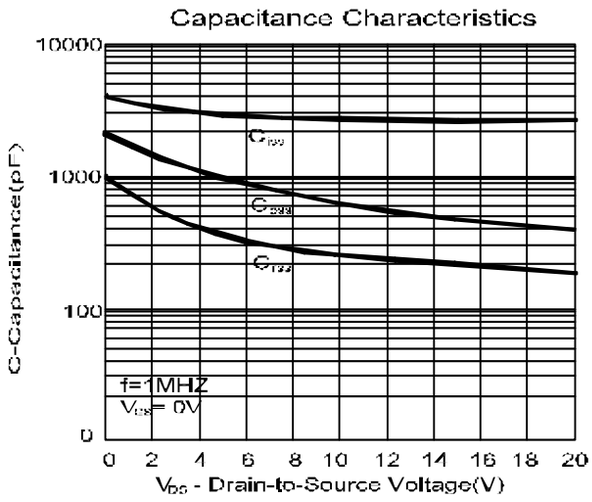




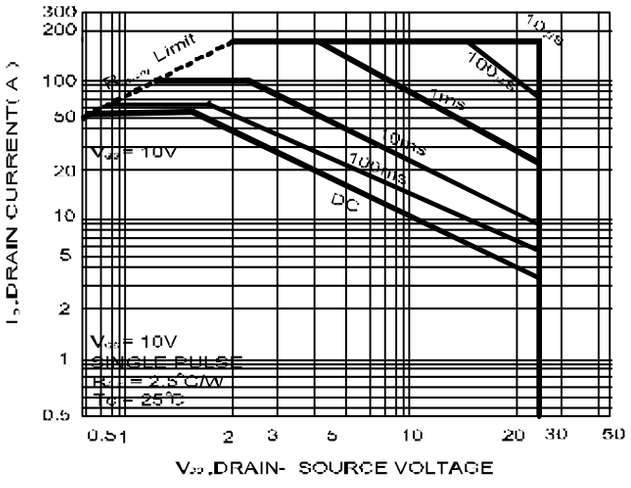
GATE CHARGE CHARACTERISTICS



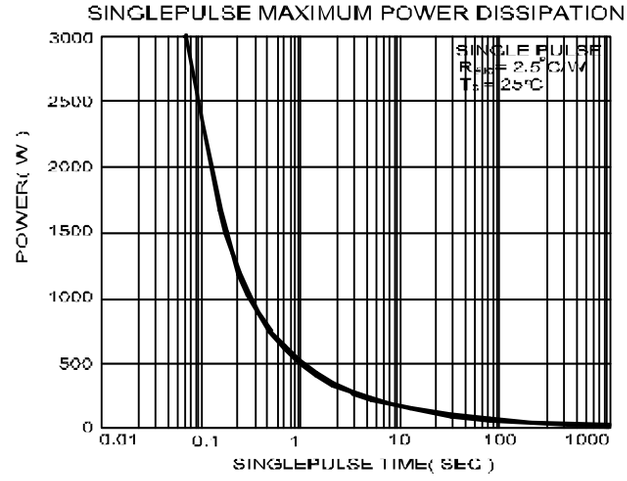
Capacitance Characteristics



MAXIMUMSAFE OPERATINGAREA



SINGLEPULSE MAXIMUM POWER DISSIPATION



Transient Thermal Response Curve