Single N-channel MOSFET

ELM32432LA-S

■General description

ELM32432LA-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate resistance.

■Features

- Vds=27V
- Id=50A
- Rds(on) < 12mΩ (Vgs=10V)
- Rds(on) < 18mΩ (Vgs=4.5V)

■Maximum absolute ratings

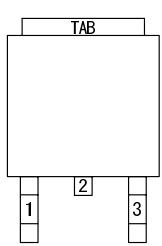
Parameter		Symbol	Limit	Unit	Note
Gate-source voltage		Vgs	±20	V	
Continuous drain current	Ta=25℃	Id	50	A	
	Ta=100℃		35		
Pulsed drain current		Idm	150	A	3
Avalanche current		Iar	33	A	
Avalanche energy	L=0.1mH	Eas	250	mJ	
Repetitive avalanche energy	L=0.05mH	Ear	8.6	mJ	4
Power dissipation	Ta=25℃	Pd	50	W	
	Ta=100℃		30		
Junction and storage temperature range		Tj, Tstg	-55 to 150	℃	

■Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-case	Steady-state	Rθjc		2.5	℃/W	
Maximum junction-to-ambient	Steady-state	Rθja		62.5	℃/W	
Maximum case-to-heatsink		Rθcs	0.6		℃/W	

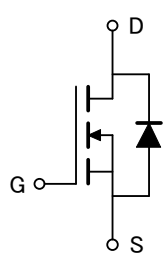
■Pin configuration

TO-252-3 (TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

■Circuit



■Electrical characteristics

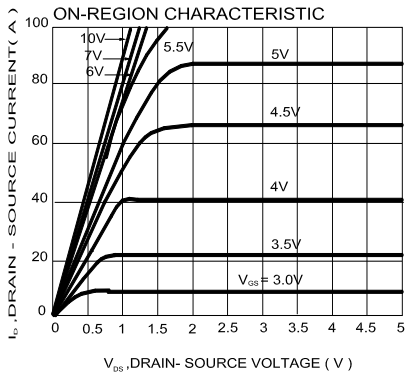
Ta=25℃

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	27			V	
Zero gate voltage drain current	Idss	Vds=20V, Vgs=0V			25	μA	
		Vds=20V, Vgs=0V, Tj=125℃			250		
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±250	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	1.0	1.6	3.0	V	
On state drain current	Id(on)	Vgs=10V, Vds=10V	50			A	1
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=25A		10	12	mΩ	1
		Vgs=4.5V, Id=20A		15	18	mΩ	
Forward transconductance	Gfs	Vds=10V, Id=25A		32		S	1
Diode forward voltage	Vsd	Is=25A, Vgs=0V		0.9	1.3	V	1
Max. body-diode continuous current	Is				50	A	
Pulsed body-diode current	Ism				150	A	3
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=15V, f=1MHz		1200	1800	pF	
Output capacitance	Coss			600	1000	pF	
Reverse transfer capacitance	Crss			350	500	pF	
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=10V, Vds=10V, Id=25A		25	50	nC	2
Gate-source charge	Qgs			15		nC	2
Gate-drain charge	Qgd			10		nC	2
Turn-on delay time	td(on)	Vgs=10V, Vds=15V, Id≅50A Rl=1Ω, Rgen=24Ω		6	16	ns	2
Turn-on rise time	tr			120	250	ns	2
Turn-off delay time	td(off)			40	90	ns	2
Turn-off fall time	tf			105	200	ns	2
Body diode reverse recovery time	trr	If=Is, dI/dt=100A/μs		70		ns	
Peak reverse recovery current	Irm(rec)			200		A	
Body diode reverse recovery charge	Qrr			0.043		μC	

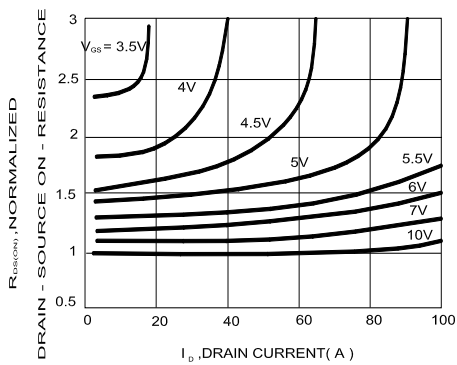
NOTE :
1. Pulse test : Pulsed width ≤ 300μsec and Duty cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle ≤ 1%.

■Typical electrical and thermal characteristics

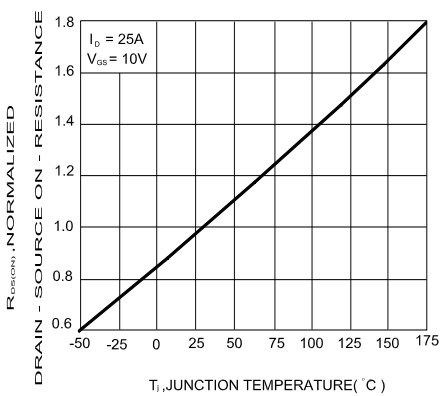
ON-REGION CHARACTERISTIC



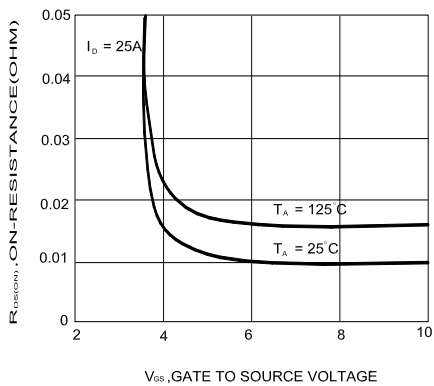
ON- RESISTANCE VARIATION WITH DRAIN CURRENT AND GATE



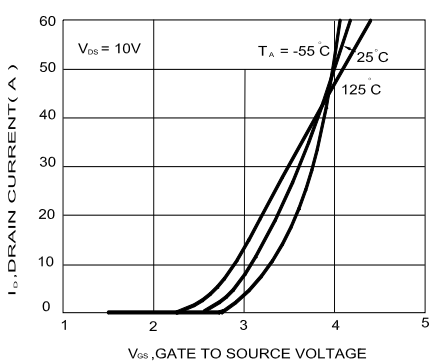
ON- RESISTANCE VARIATION WITH TEMPERATURE



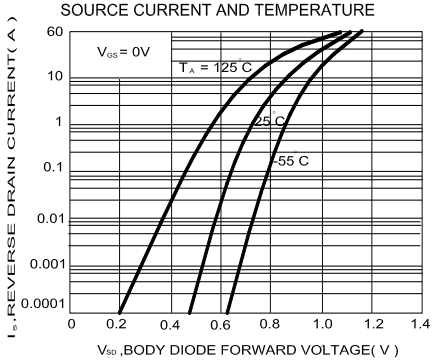
ON-RESISTANCE VARIATION WITH GATE-TO-SOYRCE VOLTAGE



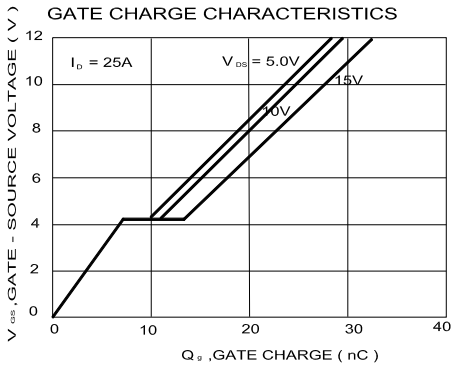
TRANSFER CHARACTERISTICS



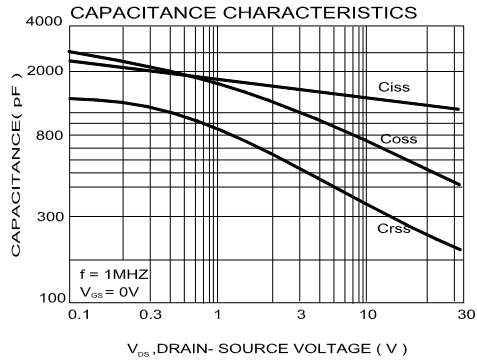
BODY DIODE FORWARD VOLTAGE VARIATION WITH SOURCE CURRENT AND TEMPERATURE



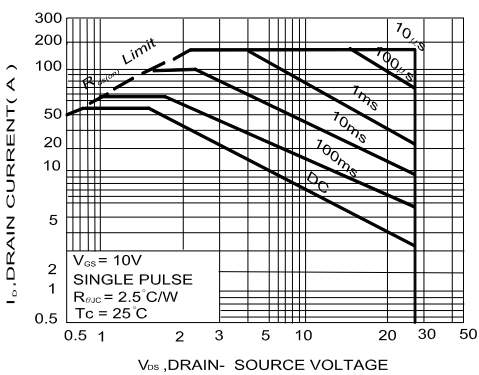
GATE CHARGE CHARACTERISTICS



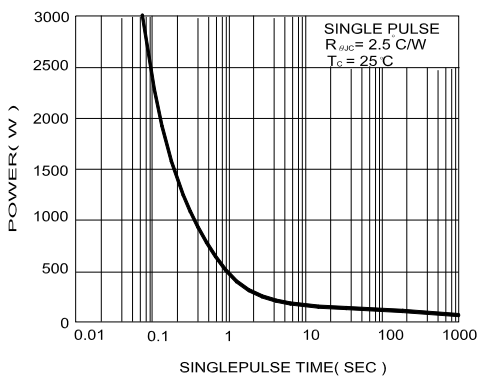
CAPACITANCE CHARACTERISTICS



MAXIMUMSAFE OPERATINGAREA



SINGLEPULSE MAXIMUM POWER DISSIPATION



TRANSIENT THERMAL RESPONSE CURVE