Single N-channel MOSFET

ELM32D548A-S

■General description

ELM32D548A-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate resistance.

■Features

- Vds=30V
- Id=85A
- Rds(on) < 4.6mΩ (Vgs=10V)
- Rds(on) < 7.2mΩ (Vgs=4.5V)

■Maximum absolute ratings

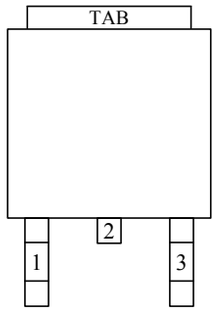
Parameter		Symbol	Limit	Unit	Note
Drain-source voltage		Vds	30	V	
Gate-source voltage		Vgs	±20	V	
Continuous drain current	Ta=25°C	Id	85	A	4
	Ta=100°C		54		
Pulsed drain current		Idm	170	A	3
Avalanche current		Ias	38	A	
Avalanche energy	L=0.1mH	Eas	72	mJ	
Power dissipation	Ta=25°C	Pd	59	W	
	Ta=100°C		23		
Junction and storage temperature range		Tj, Tstg	-55 to 150	°C	

■Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-case	Rθjc		2.1	°C/W	
Maximum junction-to-ambient	Rθja		62.5	°C/W	

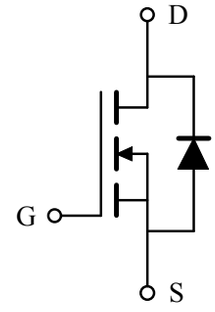
■Pin configuration

TO-252-3(TOP VIEW)



Pin No.	Pin name
1	GATE
2	DRAIN
3	SOURCE

■Circuit



■Electrical characteristics

Ta=25°C

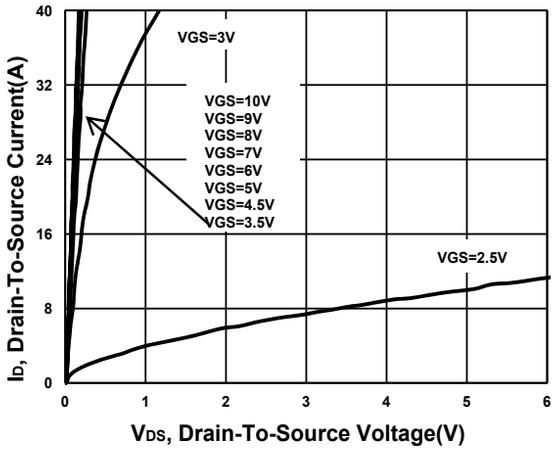
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	30			V	
Zero gate voltage drain current	Idss	Vds=24V, Vgs=0V			1	μA	
		Vds=20V, Vgs=0V, Tj=125°C			10		
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	1.50	1.75	2.35	V	
Static drain-source on-resistance	Rds(on)	Vgs=10V, Id=20A		3.8	4.6	mΩ	1
		Vgs=4.5V, Id=15A		4.5	7.2		
Forward transconductance	Gfs	Vds=5V, Id=20A		70		S	1
Diode forward voltage	Vsd	If=20A, Vgs=0V			1.3	V	1
Max. body-diode continuous current	Is				85	A	4
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=15V, f=1MHz		2320		pF	
Output capacitance	Coss			346		pF	
Reverse transfer capacitance	Crss			285		pF	
Gate resistance	Rg	Vgs=0V, Vds=0V, f=1MHz		0.9		Ω	
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=10V, Vds=15V, Id=20A		54.0		nC	2
Gate-source charge	Qgs			7.5		nC	2
Gate-drain charge	Qgd			17.3		nC	2
Turn-on delay time	td(on)	Vgs=10V, Vds=15V, Id≈20A Rgen=6Ω		24		ns	2
Turn-on rise time	tr			16		ns	2
Turn-off delay time	td(off)			63		ns	2
Turn-off fall time	tf			24		ns	2
Body diode reverse recovery time	trr	If=20A, dIf/dt=100A/μs		23		ns	
Body diode reverse recovery charge	Qrr			10		nC	

NOTE :

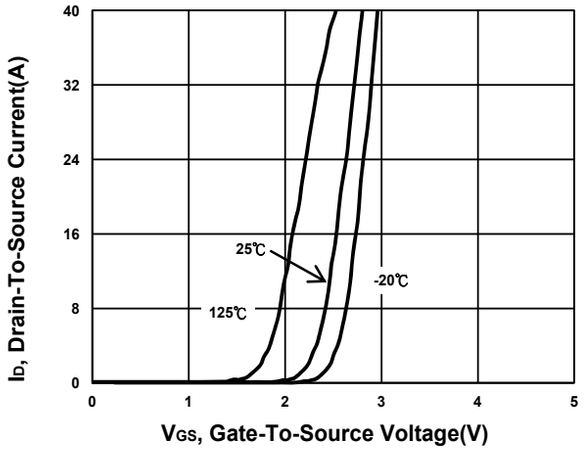
1. Pulse test : Pulsed width ≤ 300μsec and Duty cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Calculated continuous current based on maximum allowable junction temperature, Package limitation current is 40A.

■Typical electrical and thermal characteristics

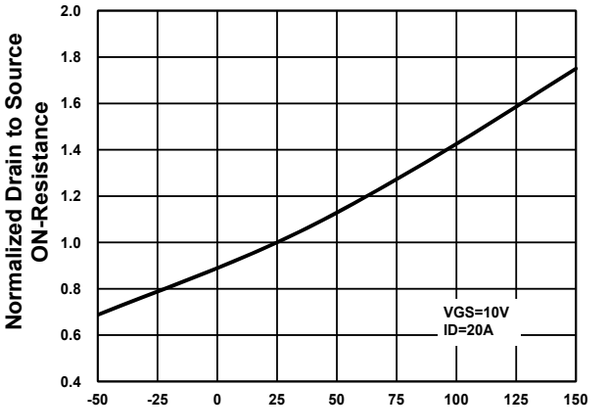
Output Characteristics



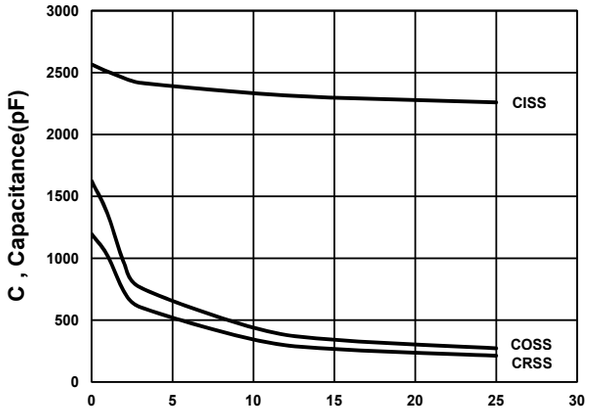
Transfer Characteristics



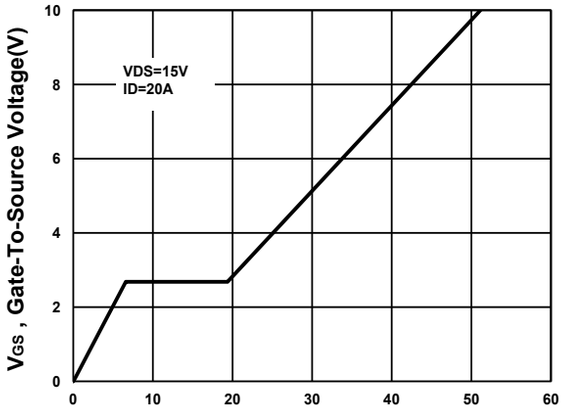
On-Resistance VS Temperature



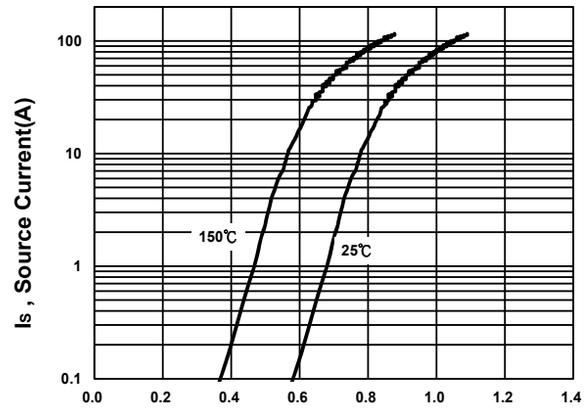
Capacitance Characteristic



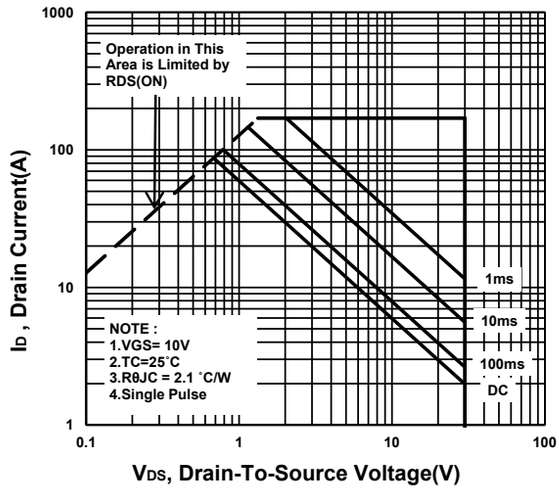
Gate charge Characteristics



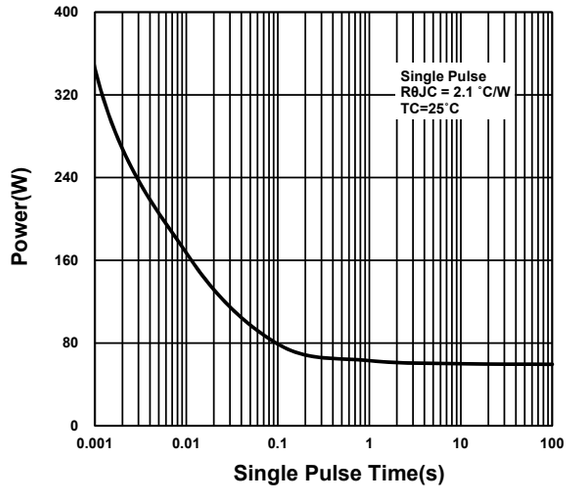
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve