

Single N-channel MOSFET

ELM32D548A-S

■ General description

ELM32D548A-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

■ Features

- $V_{ds}=30V$
- $I_d=85A$
- $R_{ds(on)} < 4.6m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} < 7.2m\Omega$ ($V_{gs}=4.5V$)

■ Maximum absolute ratings

$T_a=25^\circ C$. Unless otherwise noted.

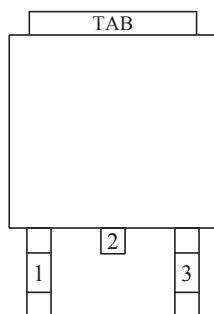
Parameter	Symbol	Limit	Unit	Note	
Drain-source voltage	V_{ds}	30	V		
Gate-source voltage	V_{gs}	± 20	V		
Continuous drain current	I_d	$T_a=25^\circ C$	85	A	4
		$T_a=100^\circ C$	54		
Pulsed drain current	I_{dm}	170	A	3	
Avalanche current	I_{as}	38	A		
Avalanche energy	E_{as}	72	mJ		
Power dissipation	P_d	$T_c=25^\circ C$	59	W	
		$T_c=100^\circ C$	23		
Junction and storage temperature range	T_j, T_{stg}	-55 to 150	$^\circ C$		

■ Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-case	$R_{\theta jc}$		2.1	$^\circ C/W$	
Maximum junction-to-ambient	$R_{\theta ja}$		62.5	$^\circ C/W$	

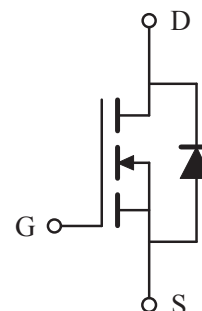
■ Pin configuration

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. Unless otherwise noted.

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, Ta=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 :

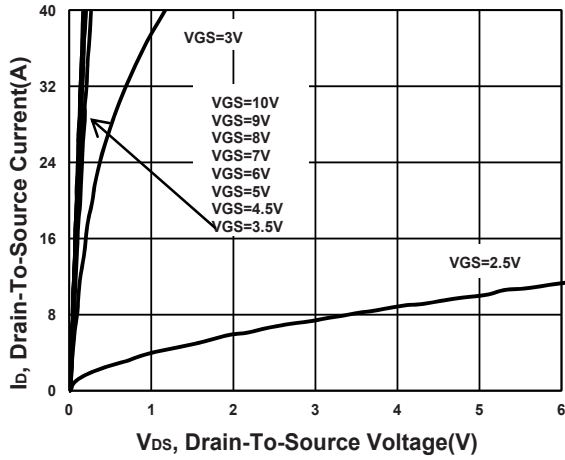
1. Pulse test : Pulsed width $\leq 300\mu\text{sec}$ and Duty cycle $\leq 2\%$.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Calculated continuous current based on maximum allowable junction temperature, Package limitation current is 40A.

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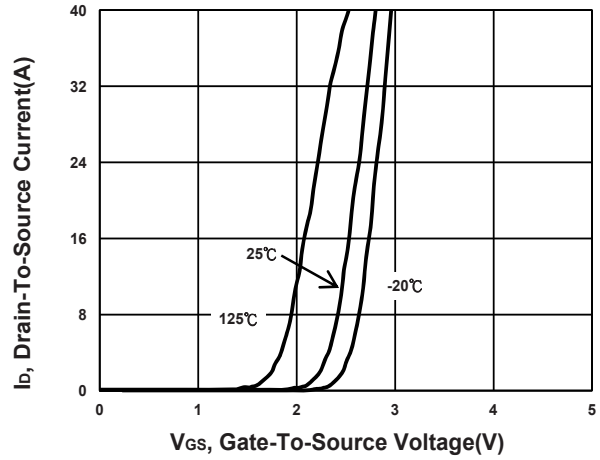
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■ Typical electrical and thermal characteristics

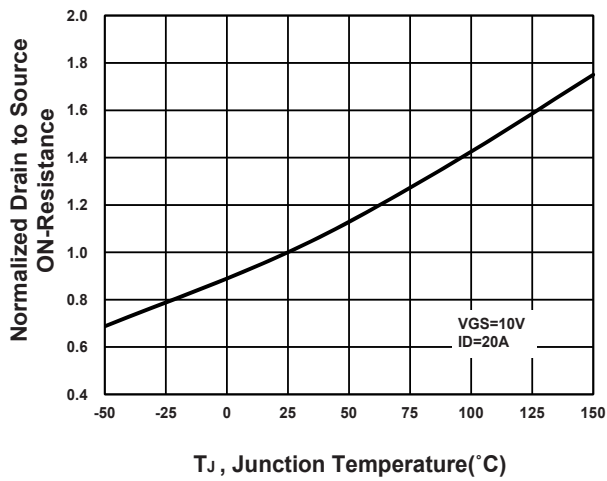
Output Characteristics



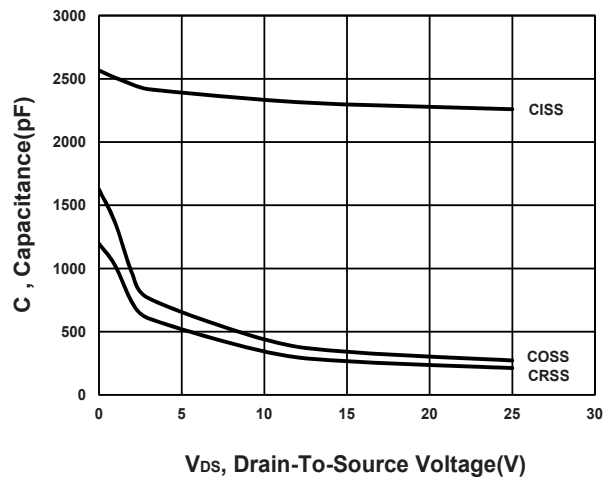
Transfer Characteristics



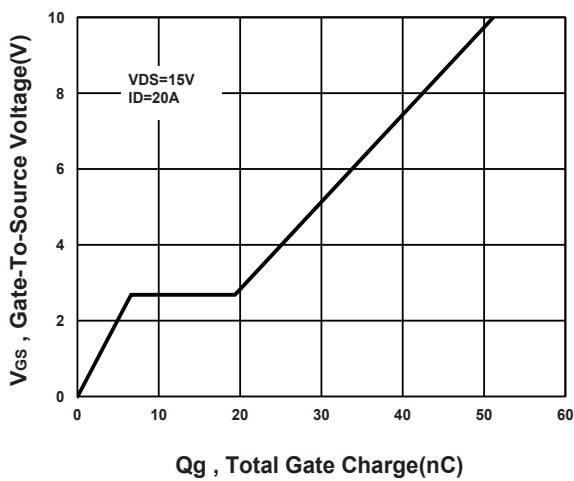
On-Resistance VS Temperature



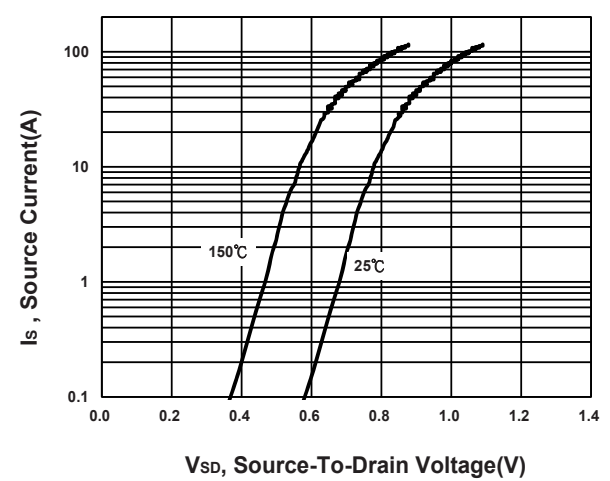
Capacitance Characteristic



Gate charge Characteristics



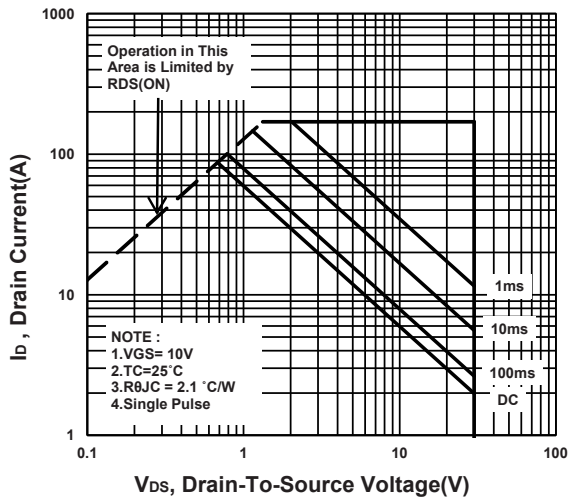
Source-Drain Diode Forward Voltage



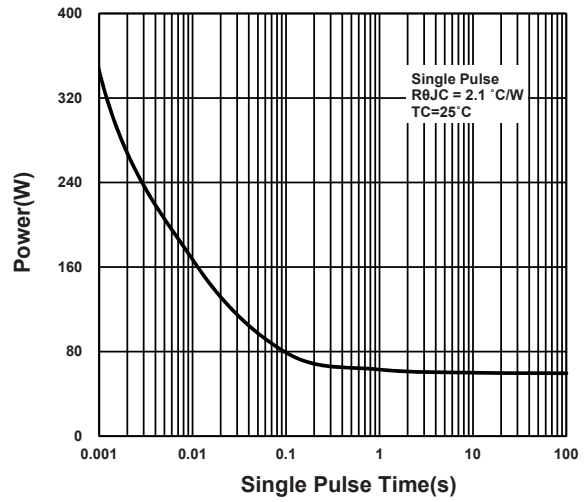
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Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

