

Single N-channel MOSFET

ELM32D606A-S

■General description

ELM32D606A-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

■Features

- $V_{ds}=30V$
- $I_d=24A$
- $R_{ds(on)} < 18m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} < 27m\Omega$ ($V_{gs}=4.5V$)

■Maximum absolute ratings

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

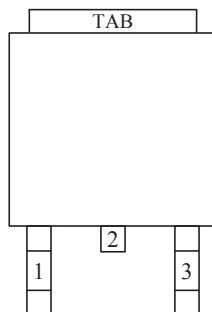
Parameter		Symbol	Limit	Unit	Note
Drain-source voltage		V_{ds}	30	V	
Gate-source voltage		V_{gs}	± 20	V	
Continuous drain current	$T_a=25^{\circ}C$	I_d	24	A	
	$T_a=100^{\circ}C$		15		
Pulsed drain current		I_{dm}	60	A	3
Avalanche current		I_{as}	12.7	A	
Avalanche energy	$L=0.1mH$	E_{as}	8.1	mJ	
Power dissipation	$T_c=25^{\circ}C$	P_d	19.5	W	
	$T_c=100^{\circ}C$		7.8		
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	$R_{\theta jc}$		6.4	$^{\circ}C/W$	
Maximum junction-to-ambient	$R_{\theta ja}$		62.5	$^{\circ}C/W$	

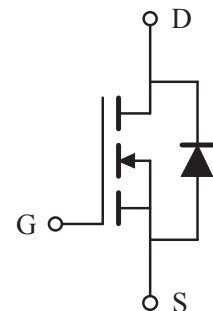
■Pin configuration

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	BV _{dss}	I _d =250μA, V _{gs} =0V	30			V	
Zero gate voltage drain current	I _{dss}	V _{ds} =24V, V _{gs} =0V			1	μA	
		V _{ds} =20V, V _{gs} =0V, Ta=125°C			10		
Gate-body leakage current	I _{gss}	V _{ds} =0V, V _{gs} =±20V			±100	nA	
Gate threshold voltage	V _{gs(th)}	V _{ds} =V _{gs} , I _d =250μA	1.30	1.75	2.30	V	
Static drain-source on-resistance	R _{ds(on)}	V _{gs} =10V, I _d =7A		13.5	18.0	mΩ	1
		V _{gs} =4.5V, I _d =6A		20.0	27.0		
Forward transconductance	G _{fs}	V _{ds} =5V, I _d =7A		33		S	1
Diode forward voltage	V _{sd}	I _f =7A, V _{gs} =0V			1.1	V	1
Max. body-diode continuous current	I _s				17	A	
DYNAMIC PARAMETERS							
Input capacitance	C _{iss}	V _{gs} =0V, V _{ds} =15V, f=1MHz		328		pF	
Output capacitance	C _{oss}			64		pF	
Reverse transfer capacitance	C _{rss}			42		pF	
Gate resistance	R _g	V _{gs} =0V, V _{ds} =0V, f=1MHz		3		Ω	
SWITCHING PARAMETERS							
Total gate charge	Q _g	V _{gs} =10V, V _{ds} =15V, I _d =7A		7.6		nC	2
Gate-source charge	Q _{gs}			1.1		nC	2
Gate-drain charge	Q _{gd}			2.5		nC	2
Turn-on delay time	t _{d(on)}	V _{gs} =10V, V _{ds} =15V, I _d =7A R _{gen} =6Ω		19		ns	2
Turn-on rise time	t _r			18		ns	2
Turn-off delay time	t _{d(off)}			39		ns	2
Turn-off fall time	t _f			20		ns	2
Body diode reverse recovery time	t _{rr}	I _f =7A, dI _f /dt=100A/μs		8.4		ns	
Body diode reverse recovery charge	Q _{rr}			2.2		nC	

NOTE :

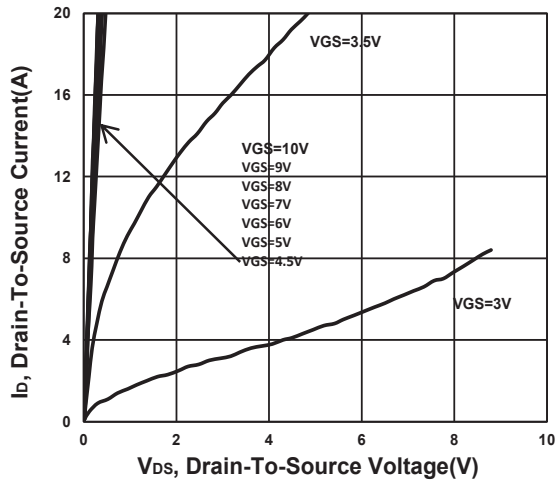
1. Pulse test : Pulsed width ≤ 300μsec and Duty cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.

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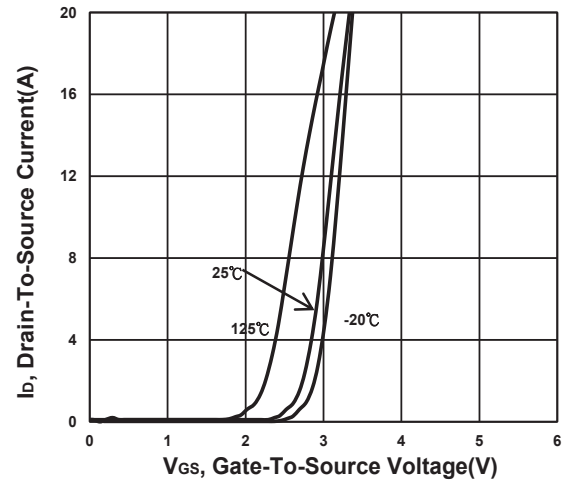
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■ Typical electrical and thermal characteristics

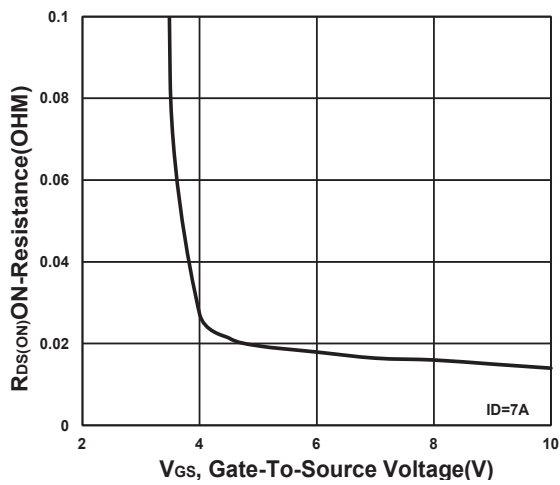
Output Characteristics



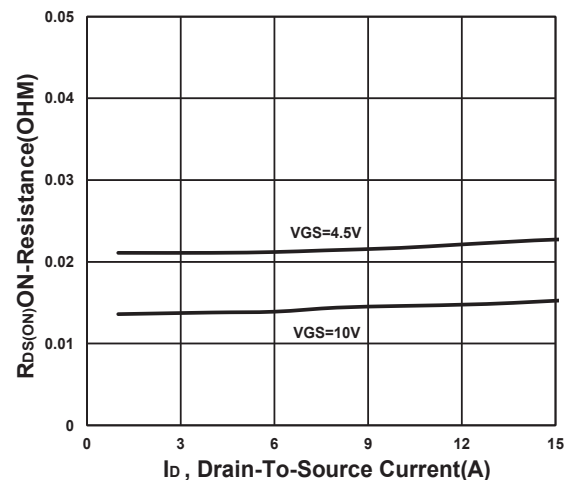
Transfer Characteristics



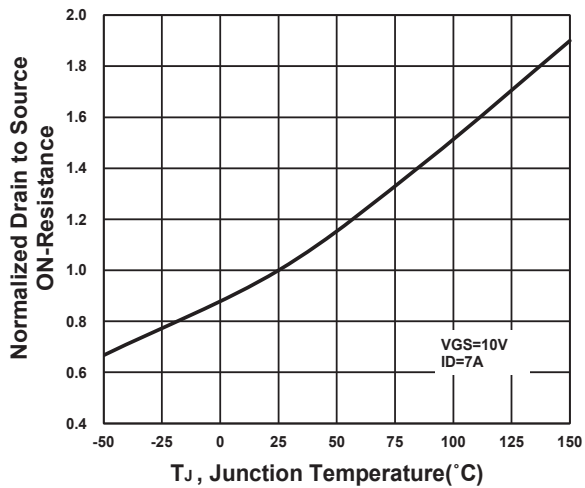
On-Resistance VS Gate-To-Source



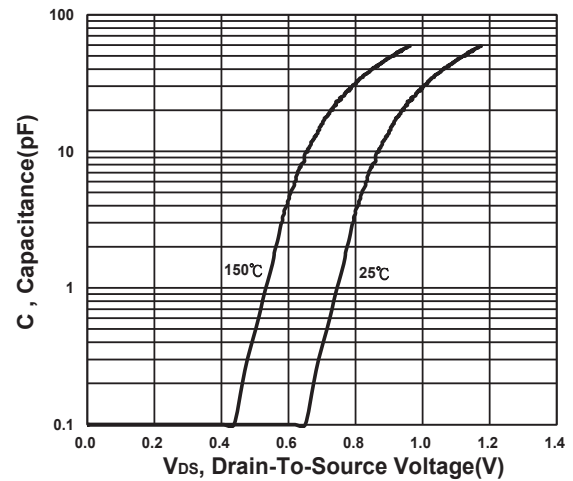
On-Resistance VS Drain Current



On-Resistance VS Temperature



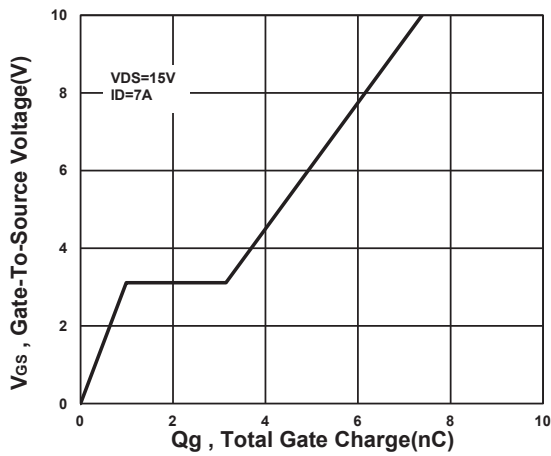
Capacitance Characteristic



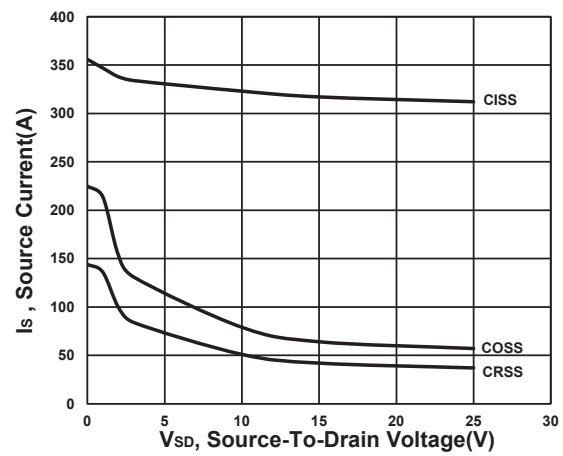
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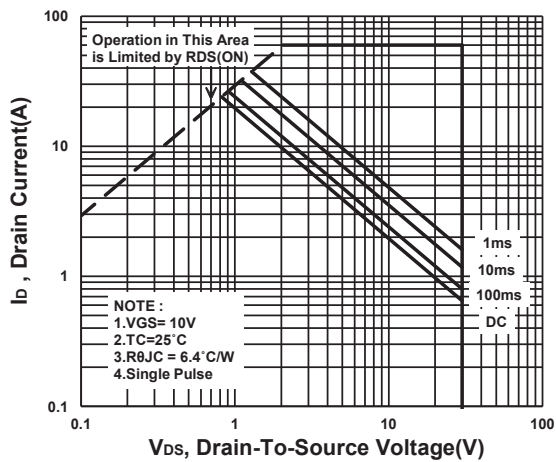
Gate charge Characteristics



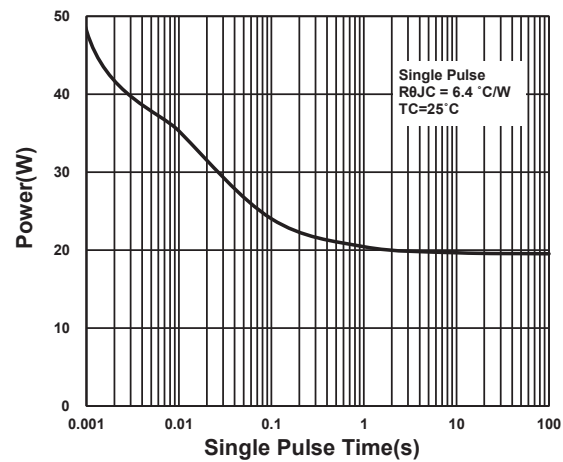
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

