

Single P-channel MOSFET

ELM323506A-S

■ General description

ELM323506A-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

■ Features

- $V_{ds} = -60V$
- $I_d = -26A$
- $R_{ds(on)} < 35m\Omega$ ($V_{gs} = -10V$)
- $R_{ds(on)} < 55m\Omega$ ($V_{gs} = -7V$)

■ Maximum absolute ratings

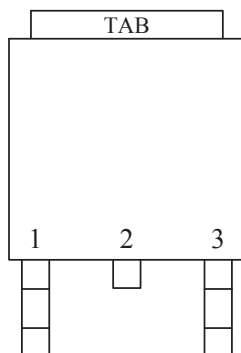
Parameter	Symbol	Limit	Unit	Note	
Drain-source voltage	V_{ds}	-60	V		
Gate-source voltage	V_{gs}	± 20	V		
Continuous drain current	I_d	$T_a = 25^\circ C$	-26	A	
		$T_a = 100^\circ C$	-16		
Pulsed drain current	I_{dm}	-100	A	3	
Avalanche current	I_{as}	-39	A		
Avalanche energy	E_{as}	77	mJ	5	
Power dissipation	P_d	$T_a = 25^\circ C$	42	W	
		$T_a = 100^\circ C$	17		
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	$R_{\theta jc}$		3	$^\circ C/W$	
Maximum junction-to-ambient	$R_{\theta ja}$		50	$^\circ C/W$	

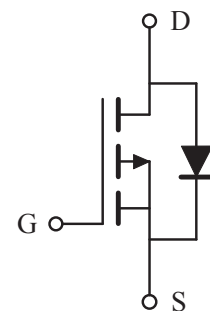
■ Pin configuration

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note	
STATIC PARAMETERS								
Drain-source breakdown voltage	BVdss	Id=-250μA, Vgs=0V	-60			V		
Zero gate voltage drain current	Idss	Vds=-48V, Vgs=0V			-1	μA		
		Vds=-40V, Vgs=0V, Tj=55°C			-10			
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA		
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-2.0	-2.7	-4.0	V		
On-state drain current	Id(on)	Vds=-5V, Vgs=-10V	-100			A	1	
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-25A		29	35	mΩ	1	
		Vgs=-7V, Id=-20A		32	55			
Forward transconductance	Gfs	Vds=-5V, Id=-25A		15		S	1	
Diode forward voltage	Vsd	If=-25A, Vgs=0V			-1.3	V	1	
Max. body-diode continuous current	Is				-26	A		
DYNAMIC PARAMETERS								
Input capacitance	Ciss	Vgs=0V, Vds=-30V, f=1MHz		2550		pF		
Output capacitance	Coss			241		pF		
Reverse transfer capacitance	Crss			140		pF		
Gate resistance	Rg	Vgs=0V, Vds=0V, f=1MHz		4.85		Ω		
SWITCHING PARAMETERS								
Total gate charge	Qg	Vgs=-10V, Vds=-30V Id=-25A		39		nC	2	
Gate-source charge	Qgs			13		nC	2	
Gate-drain charge	Qgd			8		nC	2	
Turn-on delay time	td(on)	Vgs=-10V, Vds=-30V, RL=1Ω Id≈-20A, Rgen=6Ω		30		ns	2	
Turn-on rise time	tr			90		ns	2	
Turn-off delay time	td(off)			70		ns	2	
Turn-off fall time	tf			15		ns	2	
Reverse recovery time	trr		If=-25A, dI/dt=100A/μs		30		ns	
Reverse recovery charge	Qrr				100		nC	

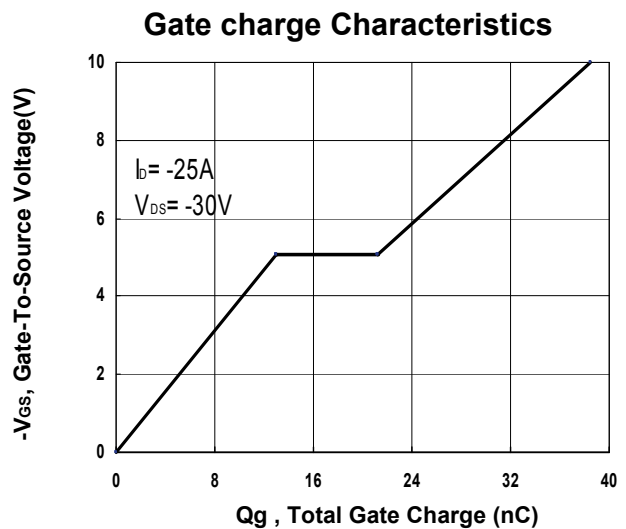
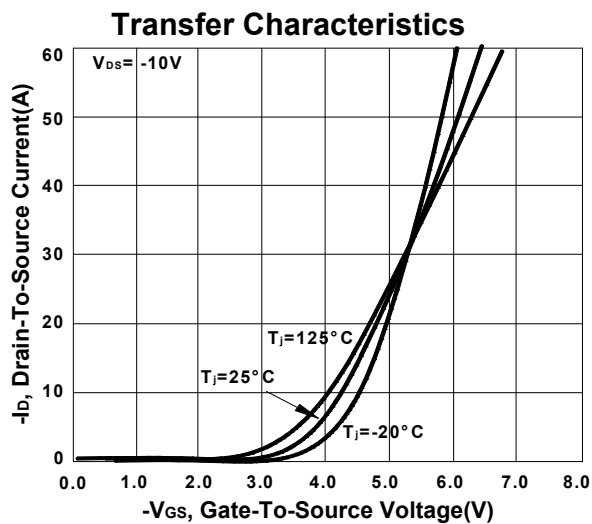
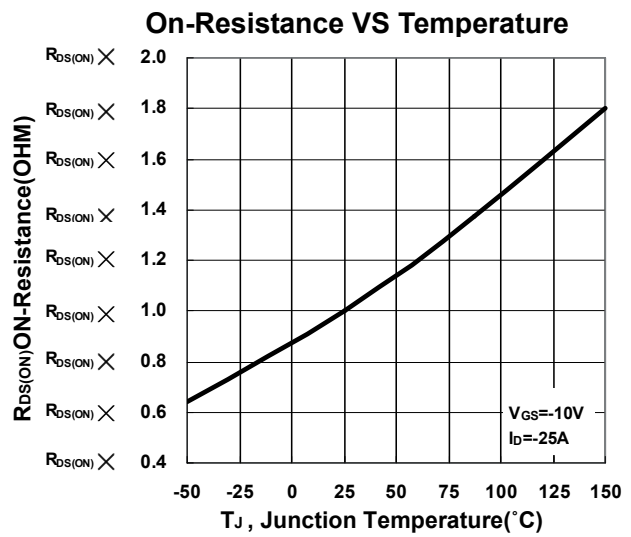
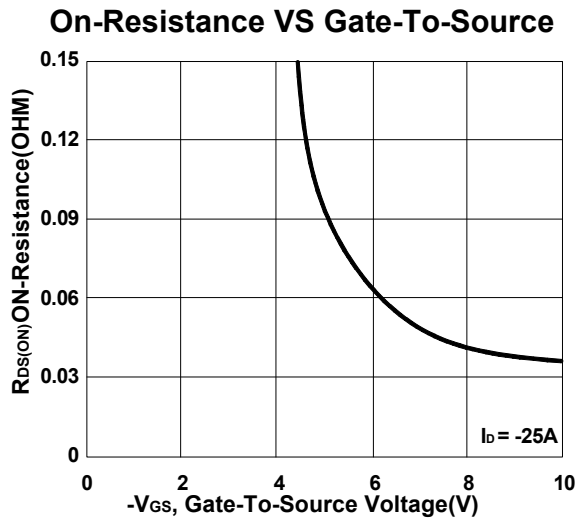
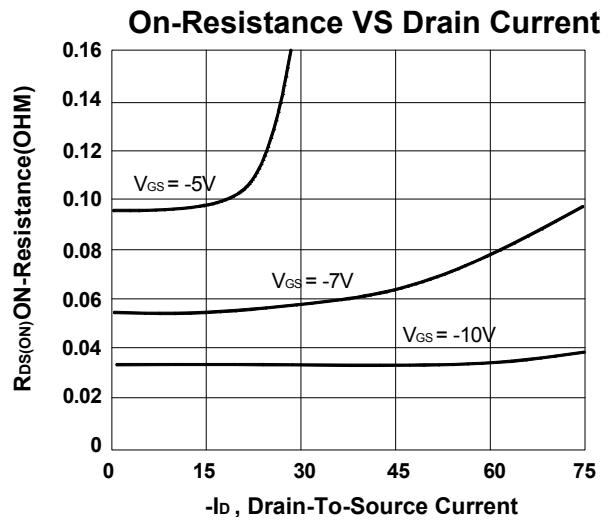
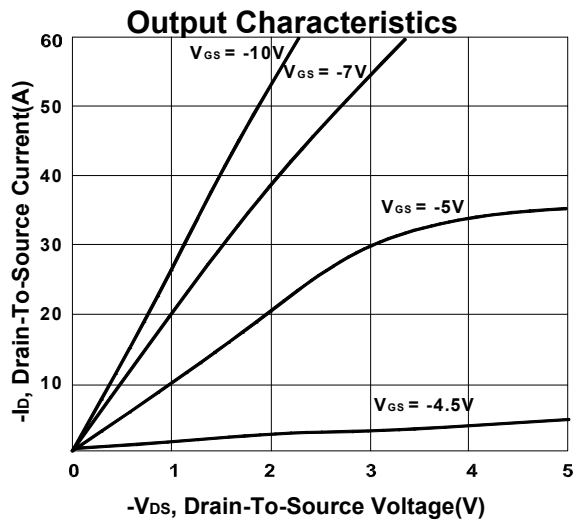
NOTE :

1. Pulsed width ≤ 300μsec and Duty cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle ≤ 1%.
5. Vdd=-30V, Starting Tj=25°C.

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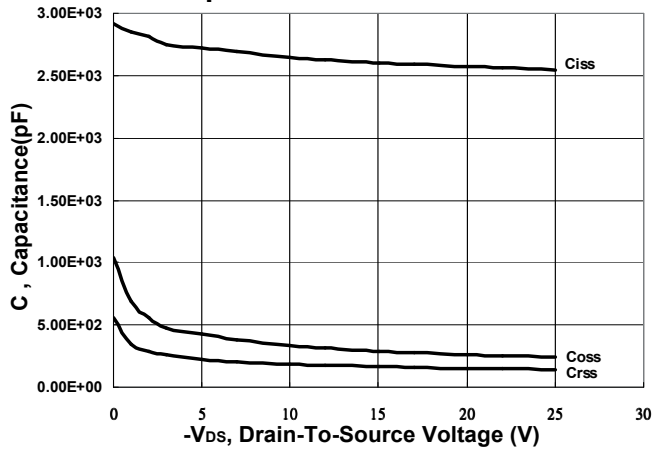
■ Typical electrical and thermal characteristics



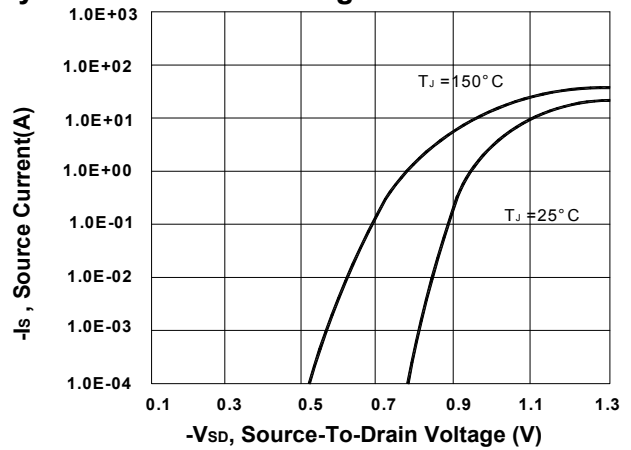
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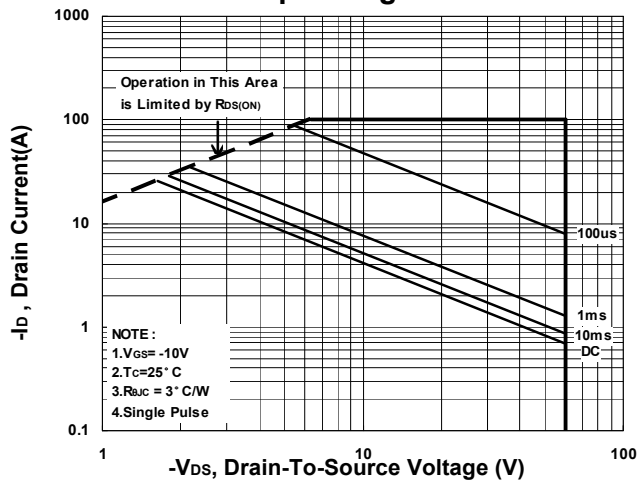
Capacitance Characteristic



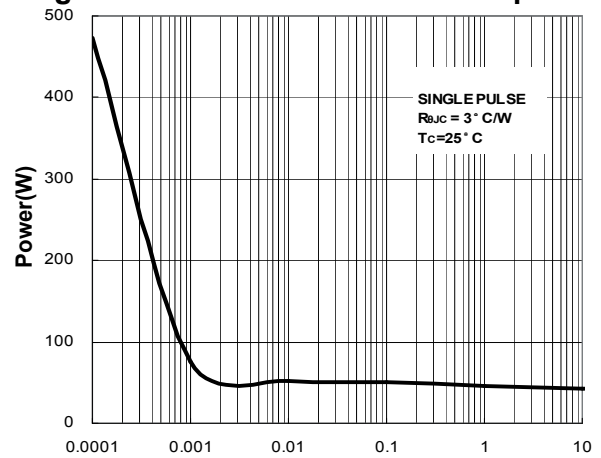
Body Diode Forward Voltage VS Source current



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

