Dual N-channel MOSFET

ELM38800BA-S

■General description

ELM38800BA-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate resistance.

■Features

- Vds=20V
- Id=6.3A
- Rds(on) < 22mΩ (Vgs=4.5V)
- Rds(on) < 26mΩ (Vgs=2.5V)
- Rds(on) < 34mΩ (Vgs=1.8V)

■Maximum absolute ratings

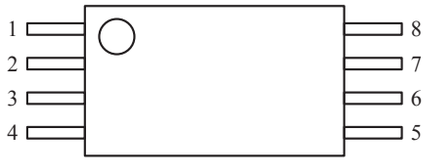
Parameter		Symbol	Limit	Unit	Note
Drain-source voltage		Vds	20	V	
Gate-source voltage		Vgs	±12	V	
Continuous drain current	Ta=25°C	Id	6.3	A	4
	Ta=70°C		5.0		
Pulsed drain current		Idm	50	A	3, 4
Avalanche current		Ias	22	A	
Avalanche energy	L=0.1mH	Eas	23	mJ	
Power dissipation	Ta=25°C	Pd	1.4	W	
	Ta=70°C		0.9		
Junction and storage temperature range		Tj, Tstg	-55 to 150	°C	

■Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-ambient	Rθja		90	°C/W	5

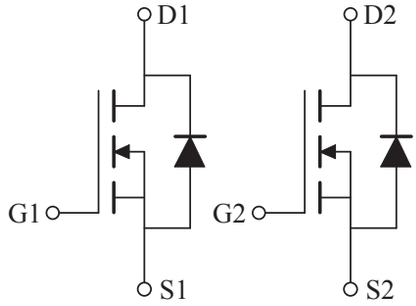
■Pin configuration

TSSOP-8(TOP VIEW)



Pin No.	Pin name
1	GATE1
2	SOURCE1
3	SOURCE1
4	DRAIN1
5	DRAIN2
6	SOURCE2
7	SOURCE2
8	GATE2

■Circuit



■Electrical characteristics

Ta=25°C

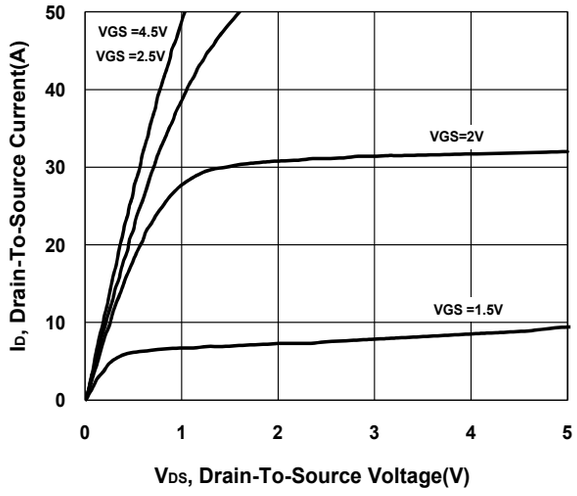
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Id=250μA, Vgs=0V	20			V	
Zero gate voltage drain current	Idss	Vds=16V, Vgs=0V			1	μA	
		Vds=10V, Vgs=0V, Tj=70°C			10		
Gate-body leakage current	Igss	Vds=0V, Vgs=±12V			±100	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=250μA	0.5	0.7	1.0	V	
On state drain current	Id(on)	Vgs=5V, Vds=5V	25			A	1
Static drain-source on-resistance	Rds(on)	Vgs=4.5V, Id=6A		15	22	mΩ	1
		Vgs=2.5V, Id=5A		18	26		
		Vgs=1.8V, Id=4A		24	34		
Forward transconductance	Gfs	Vds=5V, Id=6A		35		S	1
Diode forward voltage	Vsd	If=6A, Vgs=0V			1	V	1
Max.body-diode continuous current	Is				6.3	A	
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=10V, f=1MHz		917		pF	
Output capacitance	Coss			134		pF	
Reverse transfer capacitance	Crss			122		pF	
Gate resistance	Rg	Vgs=0V, Vds=0V, f=1MHz		3		Ω	
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=4.5V, Vds=10V, Id=6A		12.7		nC	2
Gate-source charge	Qgs			1.5		nC	2
Gate-drain charge	Qgd			4.4		nC	2
Turn-on delay time	td(on)	Vgs=4.5V, Vds=10V, Id≈6A Rgen=6Ω		18.0		ns	2
Turn-on rise time	tr			1.5		ns	2
Turn-off delay time	td(off)			4.7		ns	2
Turn-off fall time	tf			49.0		ns	2
Body diode reverse recovery time	trr	If=6A, dl/dt=100A/μs		13		ns	
Body diode reverse recovery charge	Qrr			4		nC	

NOTE :

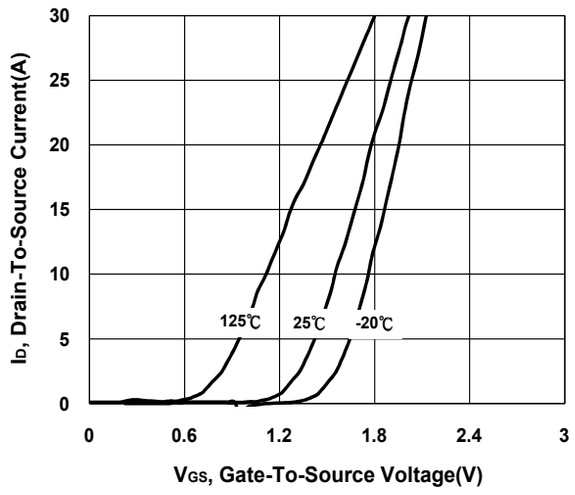
1. Pulsed width≤300μsec and Duty cycle≤2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Limited only by allowed maximum temperature.
5. The value of Rθja is measured with the device mounted on $1in^2$ FR-4 board with 2oz. Copper, in a still air environment with Ta =25°C. The value in any given application depends on the user's specific board design.

■Typical electrical and thermal characteristics

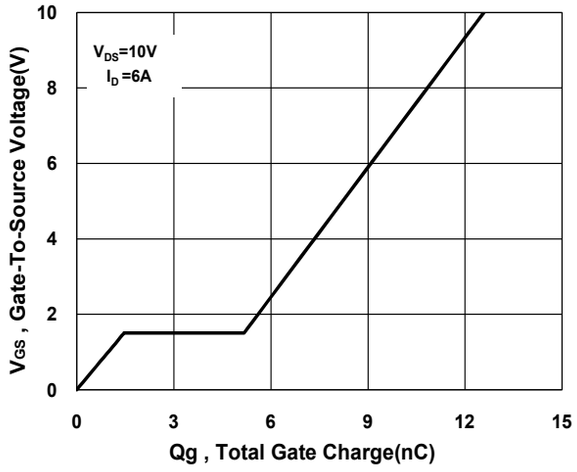
Output Characteristics



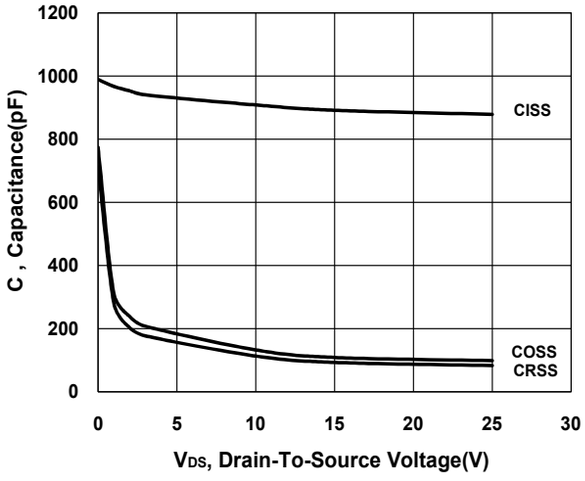
Transfer Characteristics



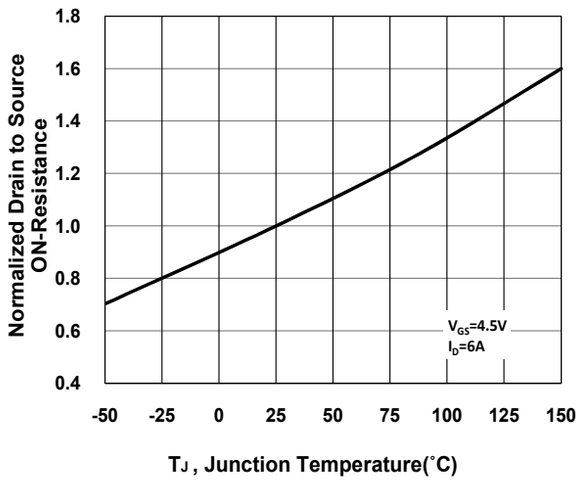
Gate charge Characteristics



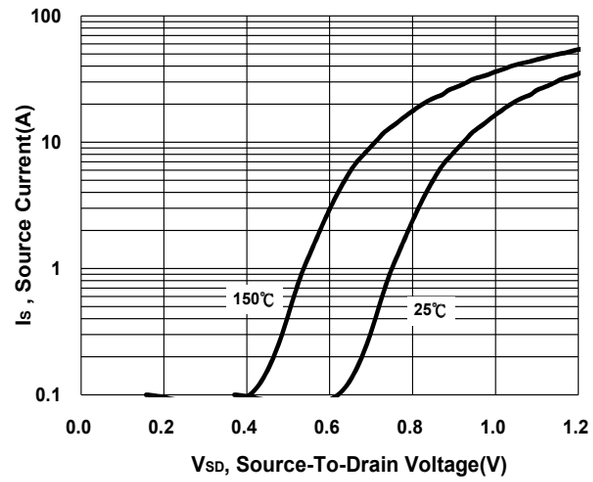
Capacitance Characteristic



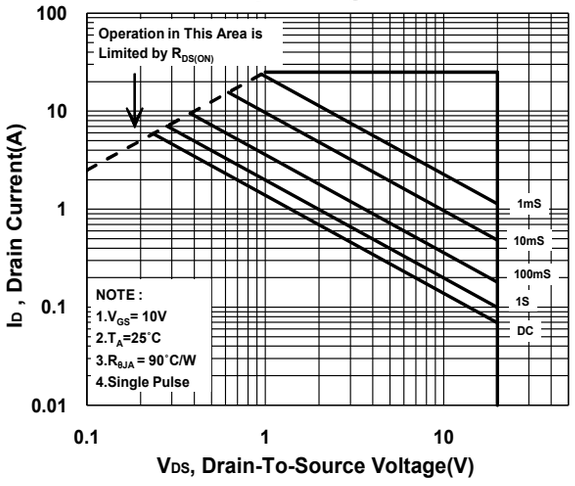
On-Resistance VS Gate-To-Source



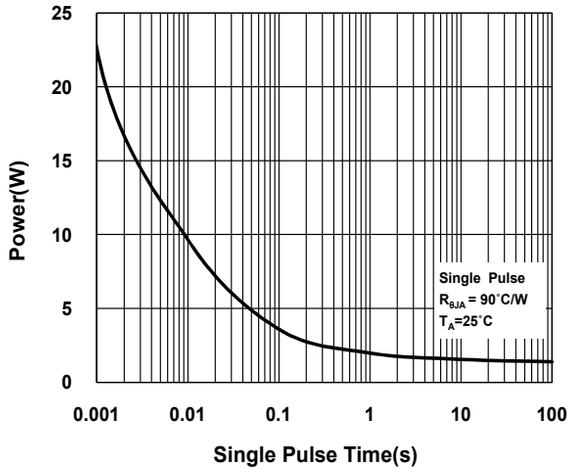
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve