Single P-channel MOSFET

ELM36403EA-S

■General description

ELM36403EA-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate resistance.

■Features

- Vds=-30V
- Id=-5A
- Rds(on) < 51mΩ (Vgs=-10V)
- Rds(on) < 85mΩ (Vgs=-4.5V)

■Maximum absolute ratings

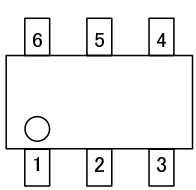
Parameter		Symbol	Limit	Unit	Note
Drain-source voltage		Vds	-30	V	
Gate-source voltage		Vgs	±20	V	
Continuous drain current	Ta=25℃	Id	-5.0	A	
	Ta=70℃		-4.2		
Pulsed drain current		Idm	-20	A	3
Power dissipation	Ta=25℃	Pd	2.0	W	
	Ta=70℃		1.4		
Junction and storage temperature range		Tj, Tstg	-55 to 150	℃	

■Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Maximum junction-to-ambient	t≤5s	Rθja		62.5	℃/W	
Maximum junction-to-ambient	Steady-state			110.0	℃/W	
Maximum junction-to-lead	Steady-state	Rθjl		50.0	℃/W	

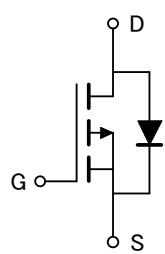
■Pin configuration

SOT-26 (TOP VIEW)



Pin No.	Pin name
1	DRAIN
2	DRAIN
3	GATE
4	SOURCE
5	DRAIN
6	DRAIN

■Circuit



■Electrical characteristics

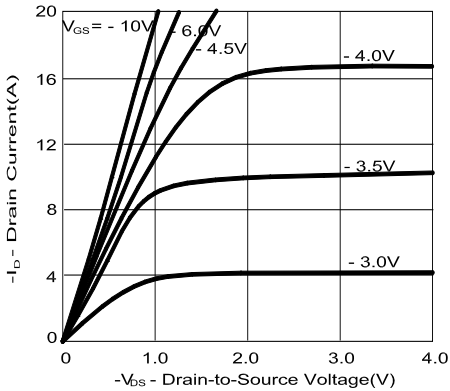
Ta=25℃

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Vgs=0V, Id=-250μA	-30			V	
Zero gate voltage drain current	Idss	Vds=-24V, Vgs=0V			-1	μA	
		Vds=-20V, Vgs=0V, Tj=125℃			-10		
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V			±100	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-1.0	-1.8	-3.0	V	
On state drain current	Id(on)	Vgs=-10V, Vds=-5V	-20			A	1
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-5A		42	51	mΩ	1
		Vgs=-4.5V, Id=-4A		66	85	mΩ	
Forward transconductance	Gfs	Vds=-10V, Id=-5A		10		S	1
Diode forward voltage	Vsd	Is=-1A, Vgs=0V			-1	V	1
Max. body-diode continuous current	Is				-3	A	
Pulsed body-diode current	Ism				-6	A	3
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=-10V, f=1MHz		700		pF	
Output capacitance	Coss			120		pF	
Reverse transfer capacitance	Crss			75		pF	
SWITCHING PARAMETERS							
Total gate charge	Qg	Vgs=-10V, Vds=-15V Id=-5A		12.5		nC	2
Gate-source charge	Qgs			2.1		nC	2
Gate-drain charge	Qgd			3.5		nC	2
Turn-on delay time	td(on)	Vgs=-10V, Vds=-15V Id≅-1A, Rgen=6Ω		7		ns	2
Turn-on rise time	tr			10		ns	2
Turn-off delay time	td(off)			30		ns	2
Turn-off fall time	tf			22		ns	2
Body diode reverse recovery charge	Qrr			13.4		nC	

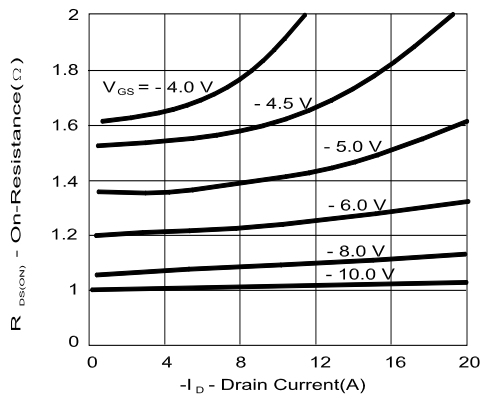
NOTE :
1. Pulsed width≤300μsec and Duty cycle≤2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle ≤ 1%.

■Typical electrical and thermal characteristics

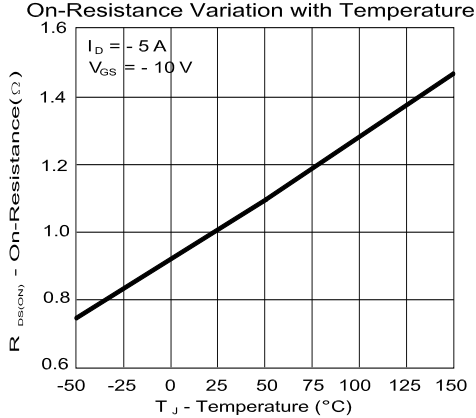
Output Characteristics



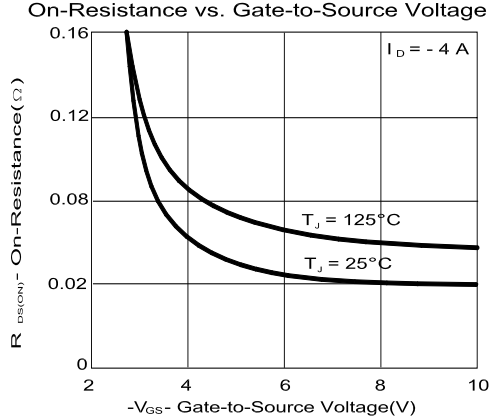
On-Resistance vs. Drain Current



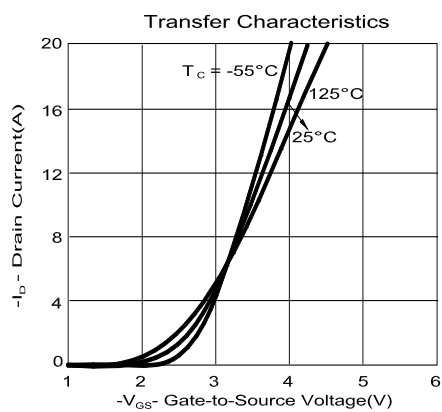
On-Resistance Variation with Temperature



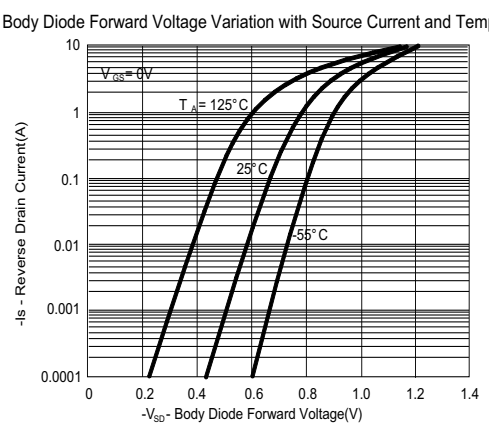
On-Resistance vs. Gate-to-Source Voltage



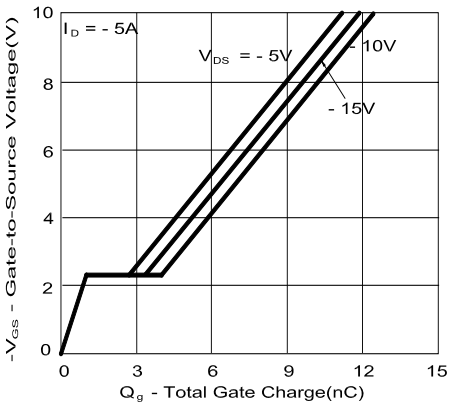
Transfer Characteristics



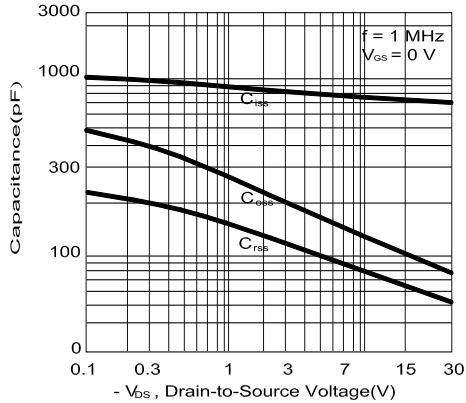
Body Diode Forward Voltage Variation with Source Current and Temperature



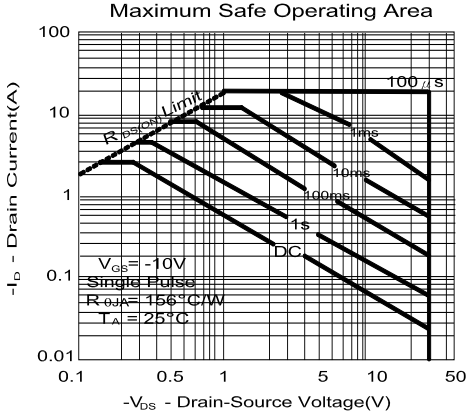
Gate Charge



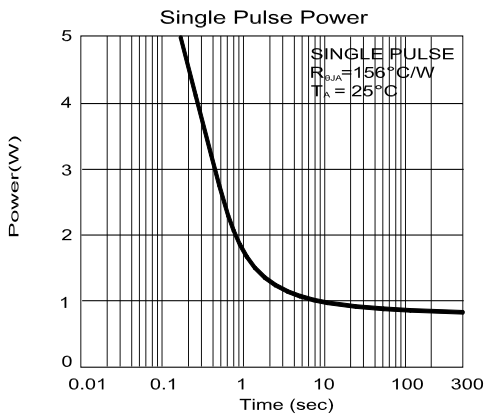
Capacitance Characteristics



Maximum Safe Operating Area



Single Pulse Power



Transient Thermal Response Curve