Single P-channel MOSFET

ELM4P6107FCA-S

■General description

ELM4P6107FCA-S uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate threshold voltage.

■Features

- Vds=-60V
- Id=-1.7A (Vgs=-10V)
- Rds(on) = 180mΩ (Vgs=-10V)
- Rds(on) = 266mΩ (Vgs=-4.5V)

■Maximum absolute ratings

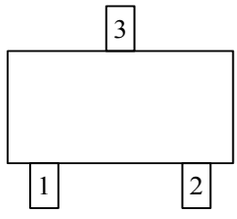
Parameter		Symbol	Limit	Unit	Note
Drain-source voltage		Vds	-60	V	
Gate-source voltage		Vgs	±20	V	
Continuous drain current (Vgs=-10V)	Ta=25°C	Id	-1.7	A	1
	Ta=70°C		-1.4		
Pulsed drain current		Idm	-7	A	2
Power dissipation	Ta=25°C	Pd	1	W	3
Junction and storage temperature range		Tj, Tstg	-55 to +150	°C	

■Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit	Note
Thermal resistance junction-to-ambient	Rθja	-	125	°C/W	1
Thermal resistance junction-to-case	Rθjc	-	80		

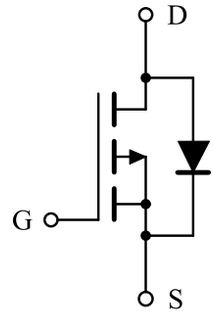
■Pin configuration

SOT-23(TOP VIEW)



Pin No.	Pin name
1	GATE
2	SOURCE
3	DRAIN

■Circuit



■Electrical characteristics

Tj=25°C. Unless otherwise noted.

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
STATIC PARAMETERS							
Drain-source breakdown voltage	BVdss	Vgs=0V, Id=-250μA	-60	-	-	V	
Zero gate voltage drain current	Idss	Vds=-48V, Vgs=0V	-	-	-1	μA	
		Vds=-48V, Vgs=0V, Tj=55°C	-	-	-5		
Gate-body leakage current	Igss	Vds=0V, Vgs=±20V	-	-	±100	nA	
Gate threshold voltage	Vgs(th)	Vds=Vgs, Id=-250μA	-1.0	-	-2.5	V	
Static drain-source on-resistance	Rds(on)	Vgs=-10V, Id=-1.5A	-	-	180	mΩ	2
		Vgs=-4.5V, Id=-1.0A	-	-	266		
Forward transconductance	Gfs	Vds=-5V, Id=-1.5A	-	5.9	-	S	
Diode forward voltage	Vsd	Is=-1A, Vgs=0V	-	-	-1.2	V	2
Max. body-diode continuous current	Is	Vgs=Vds=0V, Force Current	-	-	-1.7	A	1, 4
Pulsed source current	Ism		-	-	-7.0	A	2, 4
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vgs=0V, Vds=-15V, f=1MHz	-	531	-	pF	
Output capacitance	Coss		-	59	-	pF	
Reverse transfer capacitance	Crss		-	38	-	pF	
SWITCHING PARAMETERS							
Total gate charge (-4.5V)	Qg	Vgs=-4.5V, Vds=-20V Id=-1.5A	-	4.60	-	nC	
Gate-source charge	Qgs		-	1.40	-	nC	
Gate-drain charge	Qgd		-	1.62	-	nC	
Turn-on delay time	td(on)	Vgs=-10V, Vds=-15V Id=-1A, Rgen=3.3Ω	-	17.4	-	ns	
Turn-on rise time	tr		-	5.4	-	ns	
Turn-off delay time	td(off)		-	37.2	-	ns	
Turn-off fall time	tf		-	2.4	-	ns	

NOTE :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width ≤ 300μs and duty cycle ≤ 2%.
3. The power dissipation is limited by 150°C junction temperature.
4. The data is theoretically the same as Id and Idm, in real applications, should be limited by total power dissipation.

■Typical electrical and thermal characteristics

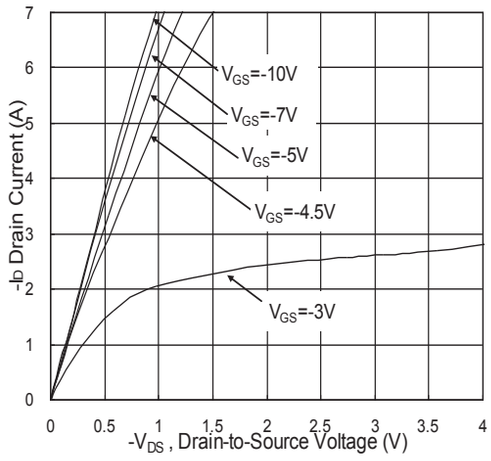


Fig.1 Typical Output Characteristics

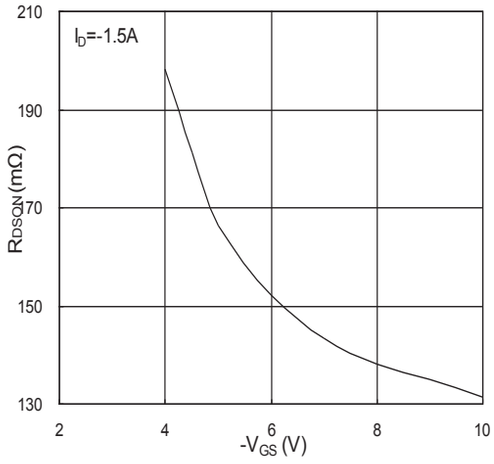


Fig.2 On-Resistance v.s Gate-Source

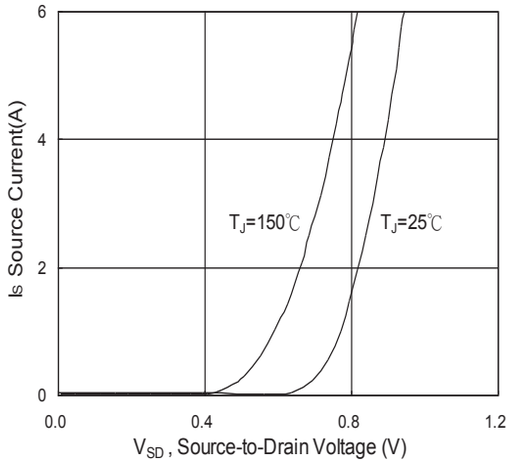


Fig.3 Forward Characteristics Of Reverse

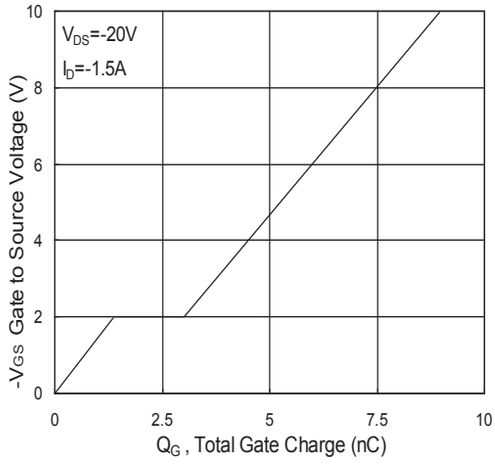


Fig.4 Gate-Charge Characteristics

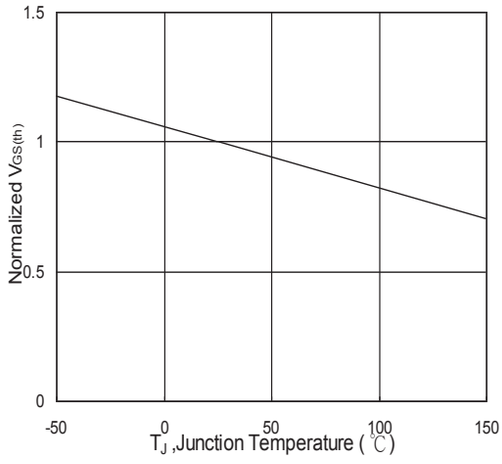


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

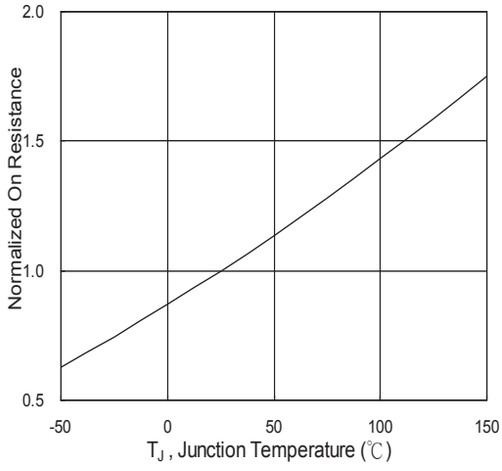


Fig.6 Normalized R_{DSON} v.s T_J

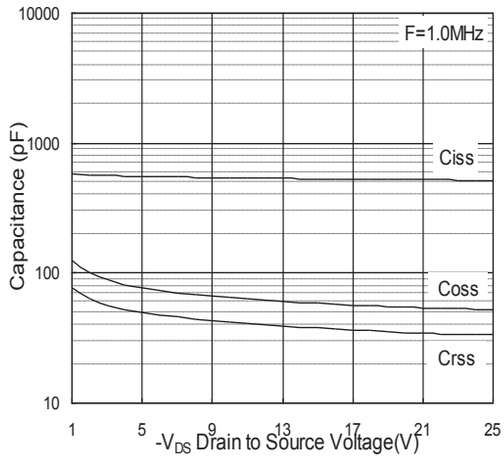


Fig.7 Capacitance

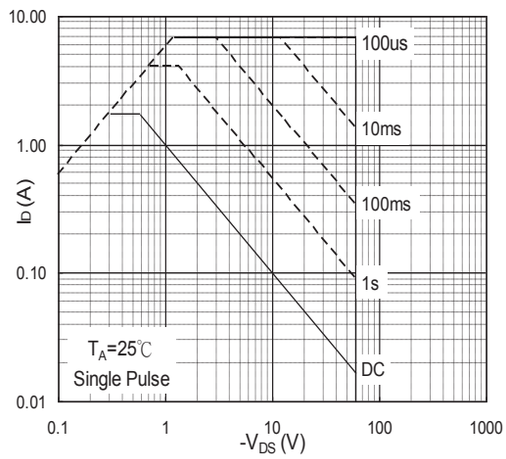


Fig.8 Safe Operating Area

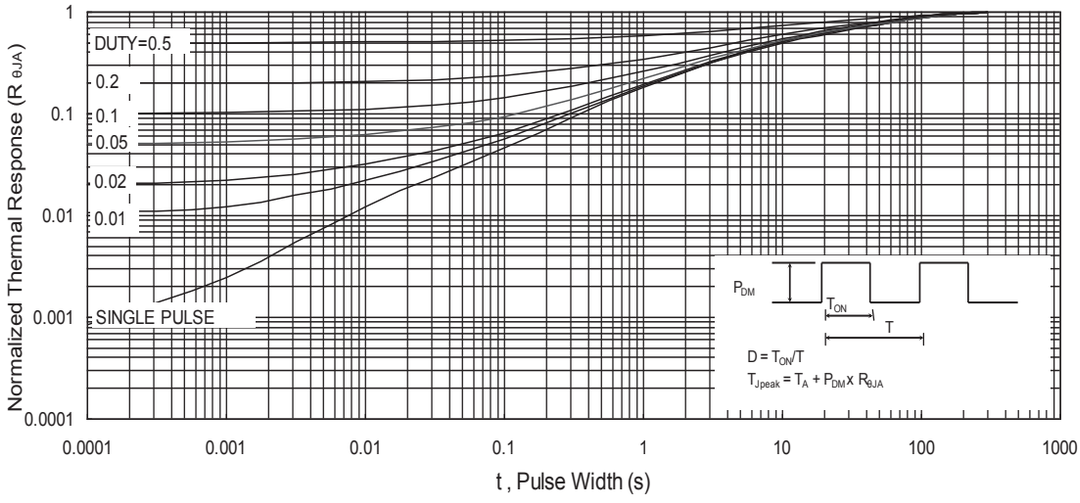


Fig.9 Normalized Maximum Transient Thermal Impedance

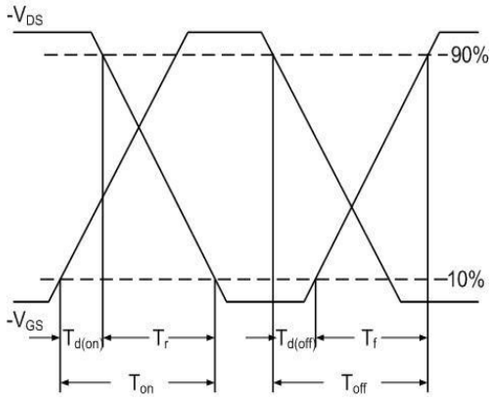


Fig.10 Switching time waveform

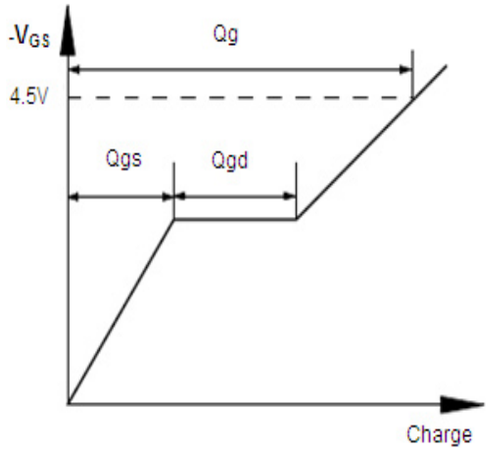
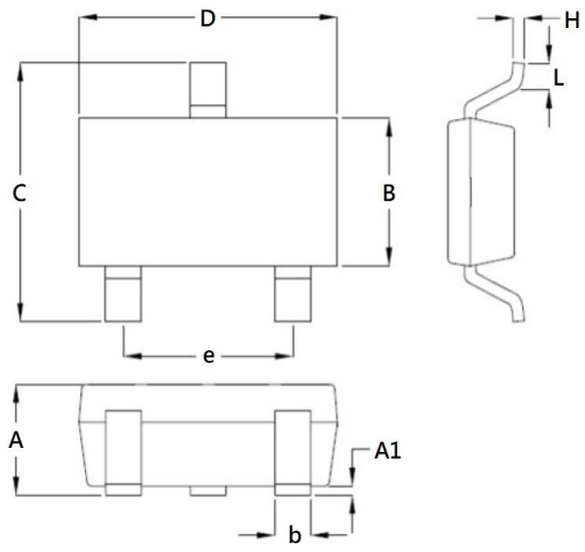


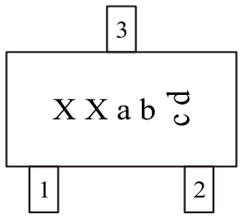
Fig.11 Gate Charge waveform

■SOT-23 dimension (3,000pcs/reel)



Symbols	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.850	1.295	0.033	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.300	0.508	0.012	0.020
C	2.591	3.010	0.102	0.119
D	2.692	3.100	0.106	0.122
e	1.900		0.075	
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024

■Marking



Symbols	Content
xx	Product code
a	Yearly code : 2019=9, 2020=A, 2021=B, 2022=C.....
b	Weekly code : A to Z, a to z (53 weeks in total)
c	Sequence : 1 to 9 or A to Z
d	Assembly code : A to Z (I, O excepted)