

Single P-channel MOSFET

ELM4P2607FAA-S

<https://www.elm-tech.com>

■General description

ELM4P2607FAA-S uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate threshold voltage.

■Features

- $V_{ds} = -20V$
- $I_d = -6.9A$ ($V_{gs} = -4.5V$)
- $R_{ds(on)} = 30m\Omega$ ($V_{gs} = -4.5V$)
- $R_{ds(on)} = 38m\Omega$ ($V_{gs} = -2.5V$)
- $R_{ds(on)} = 55m\Omega$ ($V_{gs} = -1.8V$)

■Maximum absolute ratings

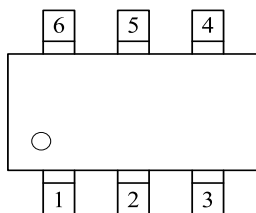
Parameter		Symbol	Limit	Unit	Note
Drain-source voltage		V_{ds}	-20	V	
Gate-source voltage		V_{gs}	± 12	V	
Continuous drain current ($V_{gs} = -4.5V$)	$T_a = 25^\circ C$	I_d	-6.9	A	1
	$T_a = 70^\circ C$		-5.4		
Pulsed drain current		I_{dm}	-20	A	2
Total power dissipation	$T_a = 25^\circ C$	P_d	1.0	W	3
Storage temperature range		T_{stg}	-55 to 150	$^\circ C$	
Operating junction temperature range		T_j	-55 to 150	$^\circ C$	

■Thermal characteristics

Parameter		Symbol	Typ.	Max.	Unit	Note
Thermal resistance junction-ambient	$t \leq 10s$	$R_{\theta ja}$	-	50	$^\circ C/W$	1
Thermal resistance junction-ambient			-	100		

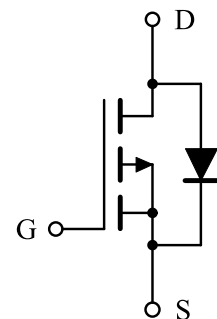
■Pin configuration

TSOP-6(TOP VIEW)



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

■Circuit



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■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	-20	-	-	V	
BVdss Temperature coefficient	$\frac{\Delta BV_{dss}}{\Delta T_j}$	Reference to 25°C, Id=-1mA	-	-0.01	-	V/°C	
Static drain-source on-resistance	Rds(on)	Vgs=-4.5V, Id=-4.0A	-	25	30	mΩ	2
		Vgs=-2.5V, Id=-2.0A	-	32	38		
		Vgs=-1.8V, Id=-1.5A	-	42	55		
Gate threshold voltage	Vgs(th)	Vgs=Vds, Id=-250μA	-0.3	-0.5	-1.0	V	
Vgs(th) Temperature coefficient	ΔVgs(th)		-	2.96	-	mV/°C	
Drain-source leakage current	Idss	Vds=-16V, Vgs=0V	-	-	-1	μA	
		Vds=-16V, Vgs=0V, Tj=55°C	-	-	-5		
Gate-source leakage current	Igss	Vgs=±12V, Vds=0V	-	-	±100	nA	
Forward transconductance	Gfs	Vds=-5V, Id=-4A	-	21	-	S	
Continuous source current	Is	Vgs=Vds=0V, Force Current	-	-	-6.9	A	1, 4
Pulsed source current	Ism		-	-	-18.8	A	2, 4
Diode forward voltage	Vsd	Vgs=0V, Is=-1A	-	-	-1	V	2
DYNAMIC PARAMETERS							
Input capacitance	Ciss	Vds=-15V, Vgs=0V, f=1MHz	-	2280	-	pF	
Output capacitance	Coss		-	220	-	pF	
Reverse transfer capacitance	Crss		-	187	-	pF	
SWITCHING PARAMETERS							
Total gate charge (-4.5V)	Qg	Vds=-15V, Vgs=-4.5V, Id=-4A	-	27.3	-	nC	
Gate-source charge	Qgs		-	3.6	-	nC	
Gate-drain charge	Qgd		-	6.5	-	nC	
Turn-on delay time	td(on)	Vdd=-10V, Vgs=-4.5V Rgen=3.3Ω, Id=-4A	-	9.2	-	ns	
Turn-on rise time	tr		-	59.0	-	ns	
Turn-off delay time	td(off)		-	99.0	-	ns	
Turn-off fall time	tf		-	71.0	-	ns	
Reverse recovery time	trr	If=-4A , dI/dt=100A/μs	-	52	-	nS	
Reverse recovery charge	Qrr		-	28	-	nC	

NOTE :

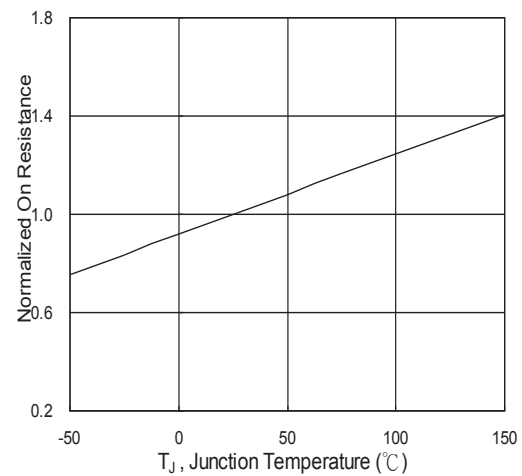
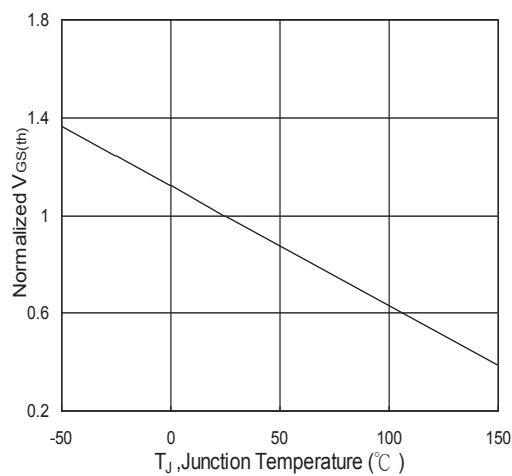
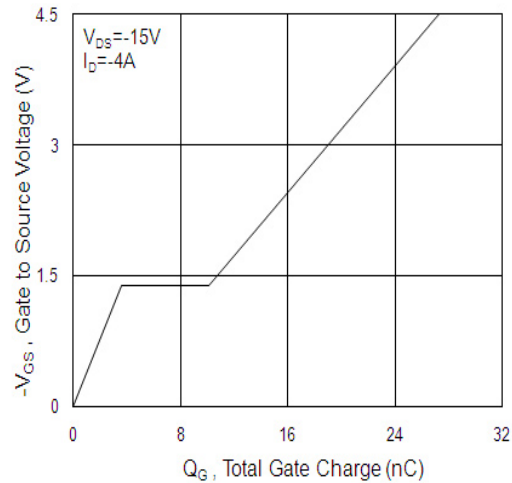
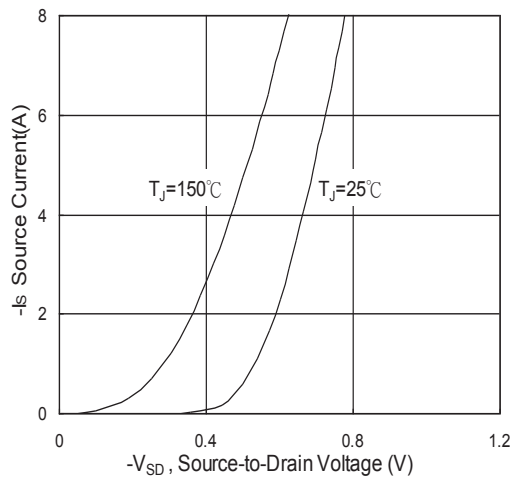
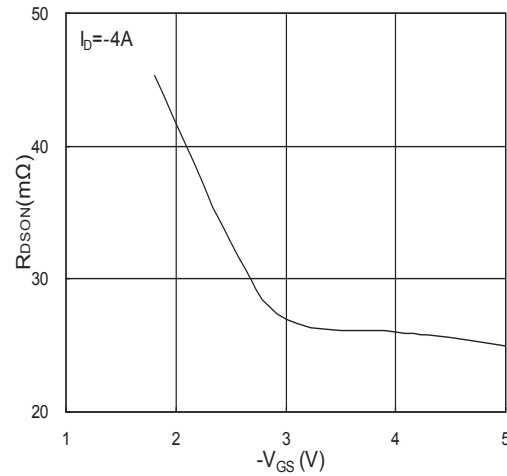
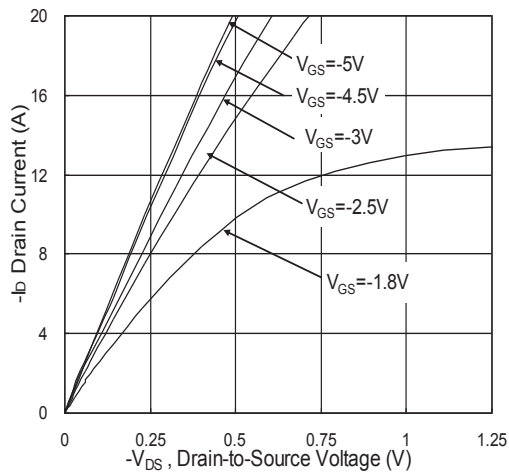
1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width ≤ 300μs and duty cycle ≤ 2%.
3. The power dissipation is limited by 150°C junction temperature.
4. The data is theoretically the same as Id and Idm, in real applications, should be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

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■ Typical electrical and thermal characteristics



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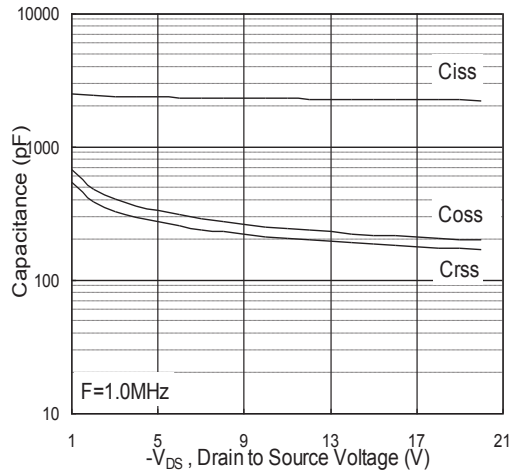


Fig.7 Capacitance

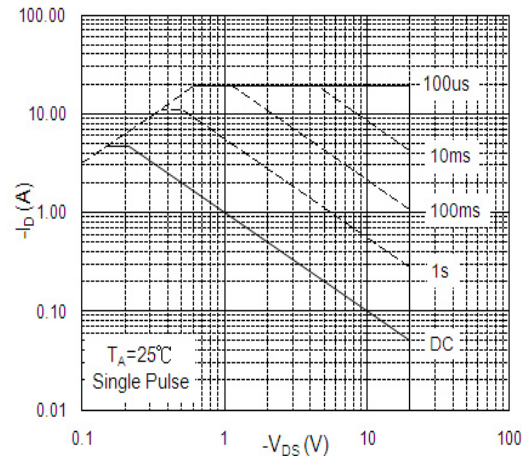


Fig.8 Safe Operating Area

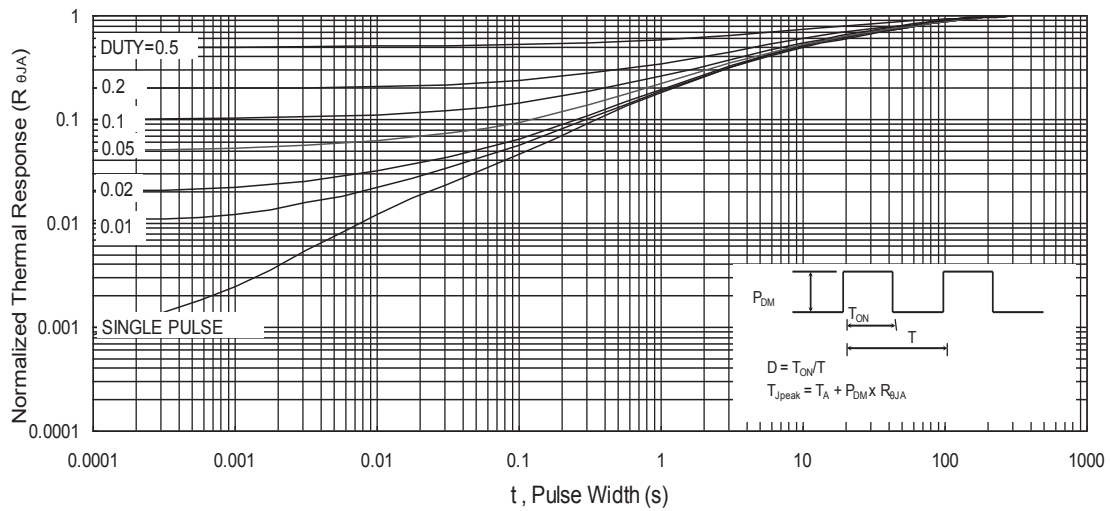


Fig.9 Normalized Maximum Transient Thermal Impedance

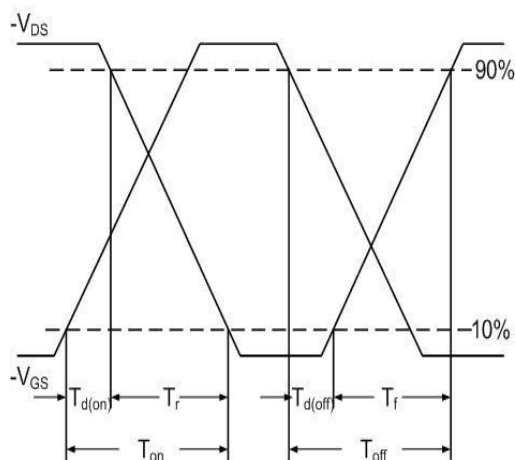


Fig.10 Switching Time Waveform

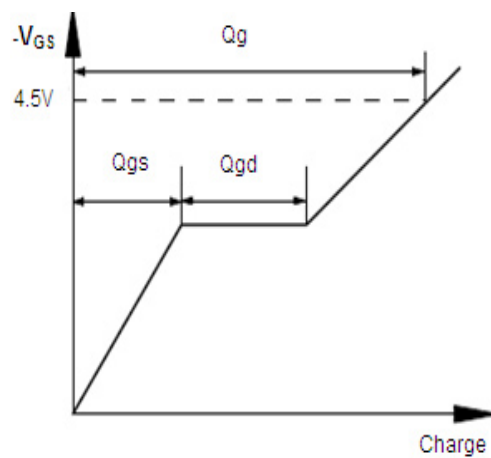


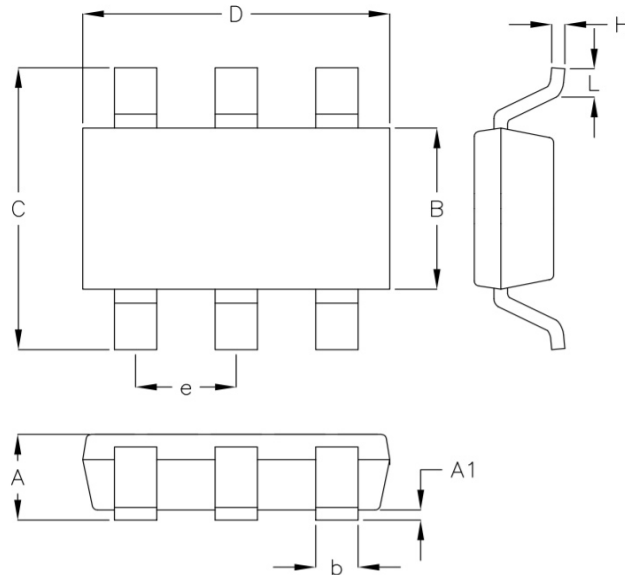
Fig.11 Gate Charge Waveform

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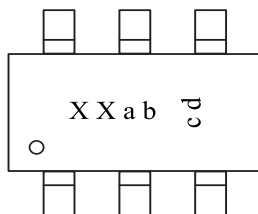
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■TSOP-6 dimension (3,000pcs/reel)



Symbols	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.70	0.90	0.028	0.035
A1	0.00	0.10	0.000	0.004
B	1.50	1.70	0.059	0.067
b	0.35	0.50	0.014	0.020
C	2.60	3.00	0.102	0.119
D	2.80	3.02	0.110	0.119
e	0.90	1.00	0.035	0.039
H	0.08	0.20	0.003	0.008
L	0.30	0.60	0.012	0.024

■Marking



Symbols	Content
x x	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)