



# FJ4B01120L1

## Single P-channel MOS FET

■ Features

- Drain-source On-state Resistance : RDS(on) typ. = 40 mΩ ( VGS = -2.5 V )
- CSP( Chip Size Package )
- Halogen-free / RoHS compliant ( EU RoHS / UL-94 V-0 / MSL : Level 1 )

■ Marking Symbol : 1F

■ Packaging

Embossed type ( Thermo-compression sealing ) : 1 000 pcs / reel ( standard )

■ Absolute Maximum Ratings Ta = 25 °C

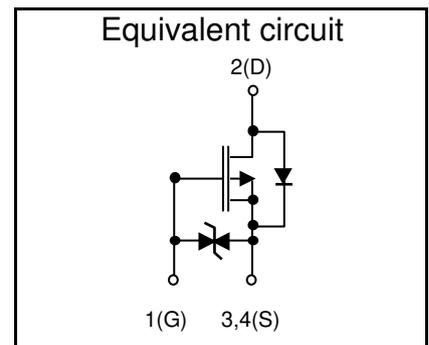
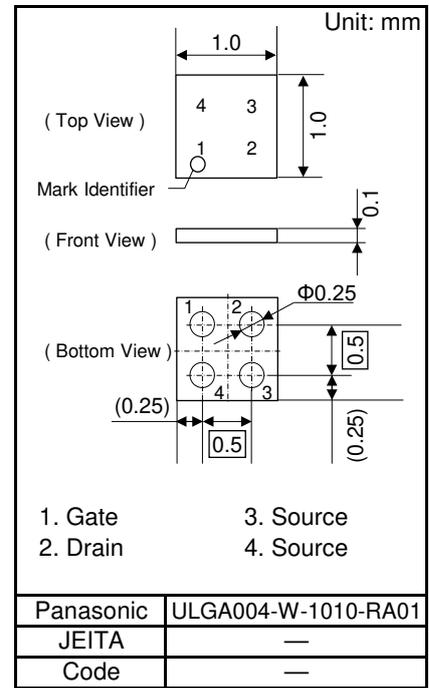
Parameter	Symbol	Rating	Unit	
Drain-source Voltage	VDS	-12	V	
Gate-source Voltage	VGS	±8	V	
Drain Current	DC	ID1 <sup>*1</sup>	-2.6	A
		ID2 <sup>*2</sup>	-4.2	A
		ID3 <sup>*3</sup>	-5.4	A
	Pulsed <sup>*4</sup>	IDp1	-20	A
		IDp2	-33	A
		IDp3	-43	A
Total Power Dissipation	PD1 <sup>*1</sup>	0.37	W	
	PD2 <sup>*2</sup>	0.94	W	
	PD3 <sup>*3</sup>	1.5	W	
Channel Temperature	Tch	150	°C	
Operating Ambient Temperature	Topr	-40 to +85	°C	
Storage Temperature Range	Tstg	-55 to +150	°C	

Note \*1 FR4 board (25.4mm×25.4mm×t1.0mm), Min Cu 36mm<sup>2</sup> Copper.

\*2 FR4 board (25.4mm×25.4mm×t1.0mm), Full Cu.

\*3 Ceramic substrate (70mm×70mm×t1.0mm).

\*4 t = 10 μs, Duty Cycle ≤ 1 %



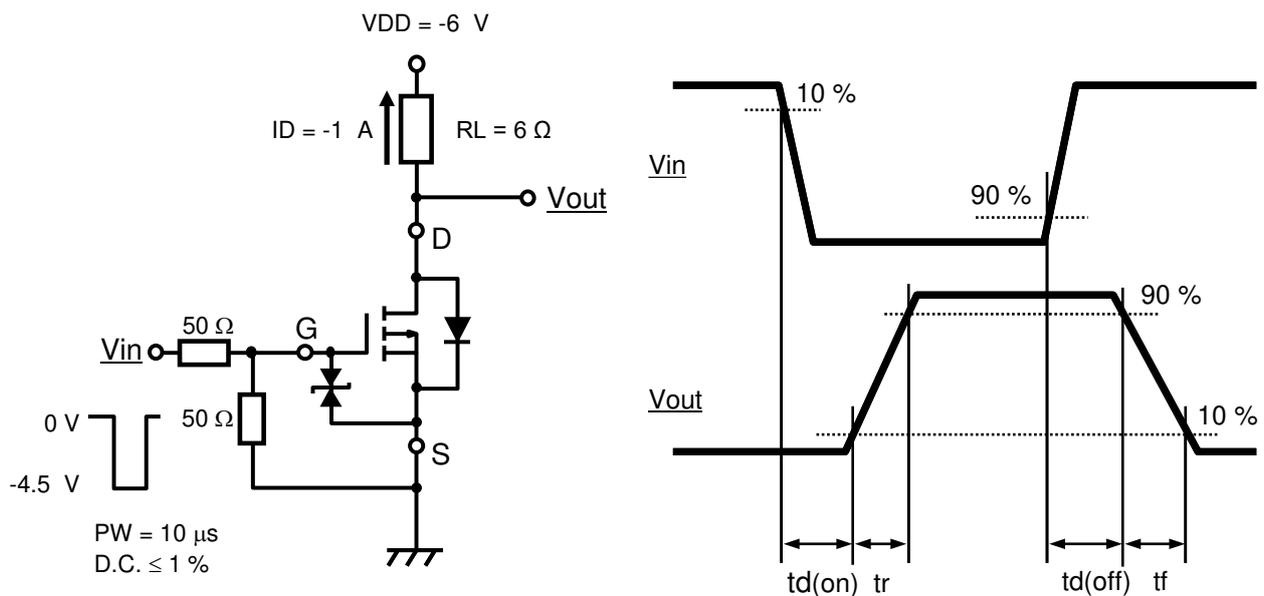
### ■ Electrical Characteristics Ta = 25 °C ± 3 °C

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source Breakdown Voltage	VDSS	ID = -1 mA, VGS = 0	-12			V
Zero Gate Voltage Drain Current	IDSS	VDS = -12 V, VGS = 0			-1	μA
Gate-source Leakage Current	IGSS	VGS = ±8 V, VDS = 0 V			±10	μA
Gate-source Threshold Voltage	Vth	ID = -2 mA, VDS = -10 V	-0.3		-1.0	V
Drain-source On-state Resistance	RDS(on)1	ID = -2 A, VGS = -4.5 V		34	51	mΩ
	RDS(on)2	ID = -2 A, VGS = -2.5 V		40	61	
	RDS(on)3	ID = -0.2 A, VGS = -1.8 V		48	85	
	RDS(on)4	ID = -0.1 A, VGS = -1.5 V		57	170	
Body Diode Forward Voltage	VF(s-d)	IF = -0.2 A, VGS = 0 V		-0.7	-1.2	V
Input Capacitance <sup>*1</sup>	Ciss	VDS = -10 V, VGS = 0 V f = 1 MHz		814		pF
Output Capacitance <sup>*1</sup>	Coss			201		
Reverse Transfer Capacitance <sup>*1</sup>	Crss			187		
Turn-on Delay Time <sup>*1,*2</sup>	td(on)	VDD = -6 V, VGS = 0 to -4.5 V		6		ns
Rise Time <sup>*1,*2</sup>	tr	ID = -1 A		4		
Turn-off Delay Time <sup>*1,*2</sup>	td(off)	VDD = -6 V, VGS = -4.5 to 0 V		63		
Fall Time <sup>*1,*2</sup>	tf	ID = -1 A		46		
Total Gate Charge <sup>*1</sup>	Qg	VDD = -6 V, VGS = -4.5 V ID = -1 A		10.7		nC
Gate-source Charge <sup>*1</sup>	Qgs			1.4		
Gate-drain Charge <sup>*1</sup>	Qgd			2.1		

Note Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 Measuring methods for transistors.

\*1 Guaranteed by design, not subject to production testing.

\*2 Measurement circuit for Turn-on Delay Time / Rise Time / Turn-off Delay Time / Fall Time.



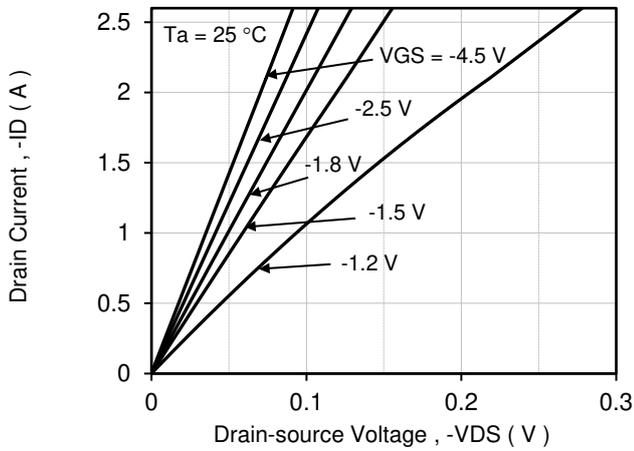
### ■ Electrical State Discharge Characteristics

Standard	Test Type	Symbol	Conditions	Class	Value	Unit
AEC-Q101	Human Body Model	HBM	C = 100 pF, R = 1.5 kΩ	H1C	> 1k to ≤ 2k	V
	Machine Model	MM	C = 200 pF, R = 0 Ω	M2	> 100 to ≤ 200	V

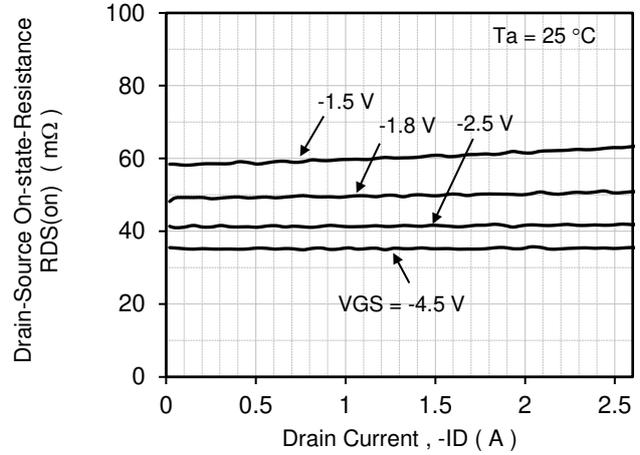


Technical Data ( reference )

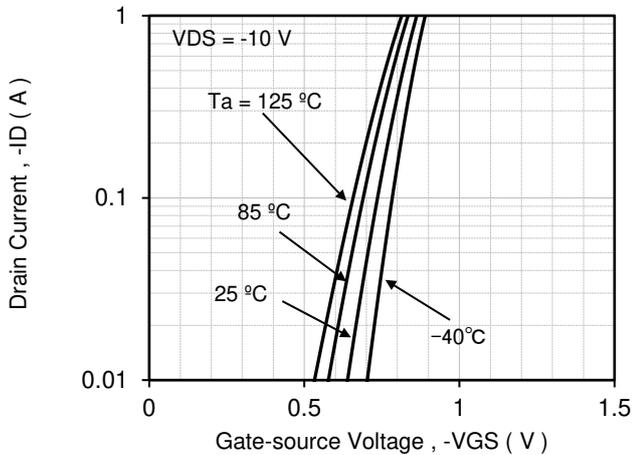
$I_D - V_{DS}^{*1}$



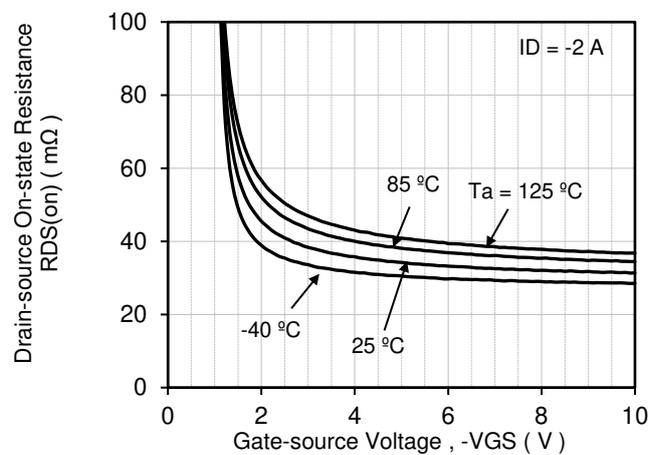
$R_{DS(on)} - I_D^{*1}$



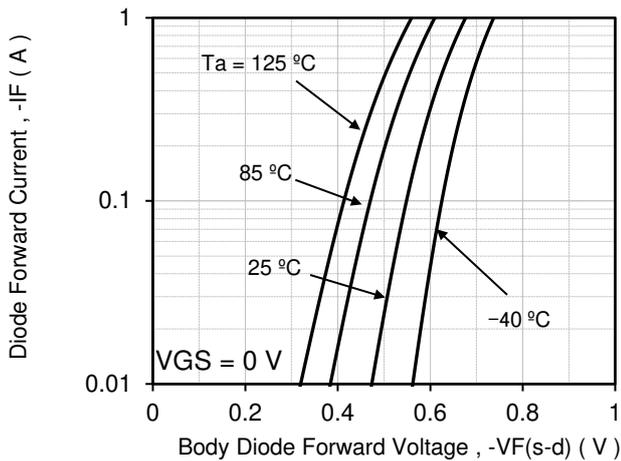
$I_D - V_{GS}^{*1}$



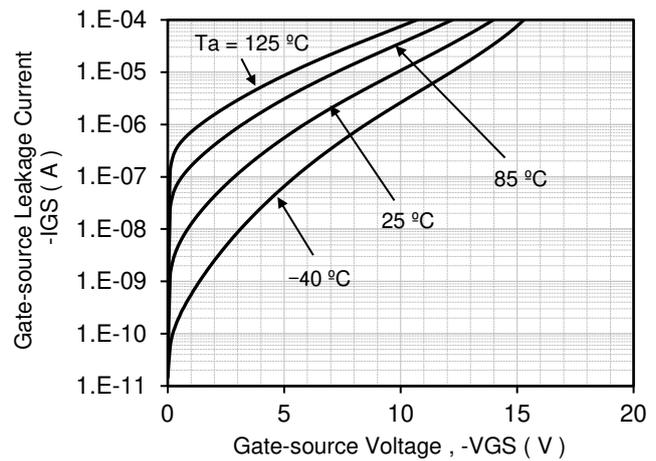
$R_{DS(on)} - V_{GS}^{*1}$



$I_F - V_F(s-d)^{*1}$



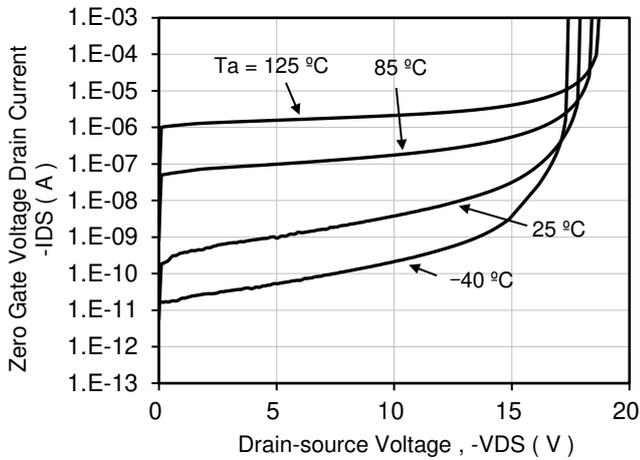
$I_{GS} - V_{GS}^{*1}$



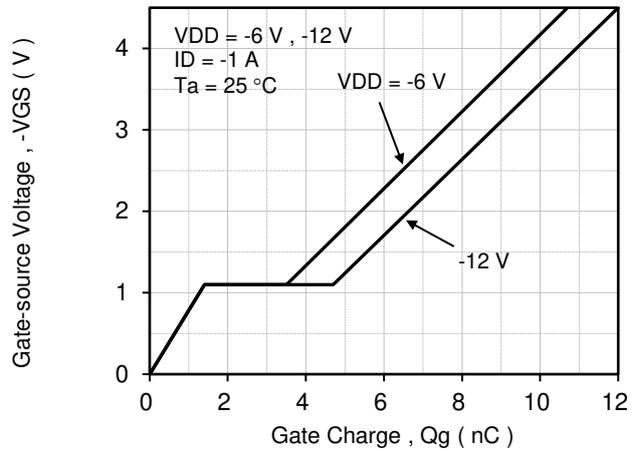


Technical Data ( reference )

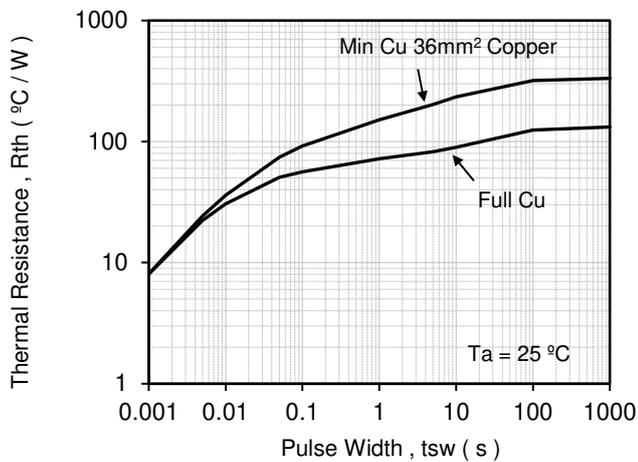
$I_{DS} - V_{DS}^{*1}$



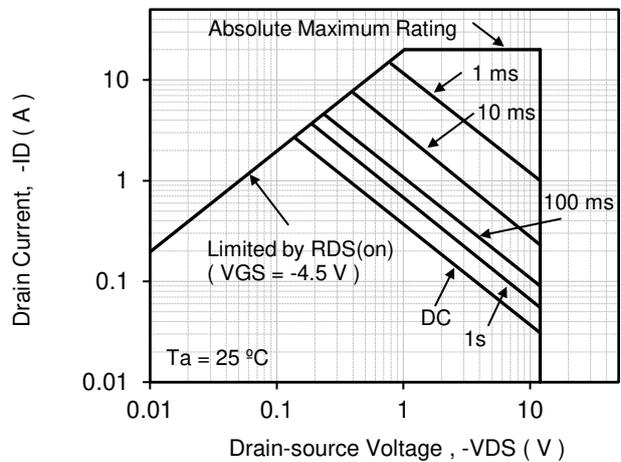
Dynamic Input / Output Characteristics



$R_{th} - t_{sw}^{*2*3}$



Safe Operating Area <sup>\*2</sup>



Note

\*1 Pulse measurement

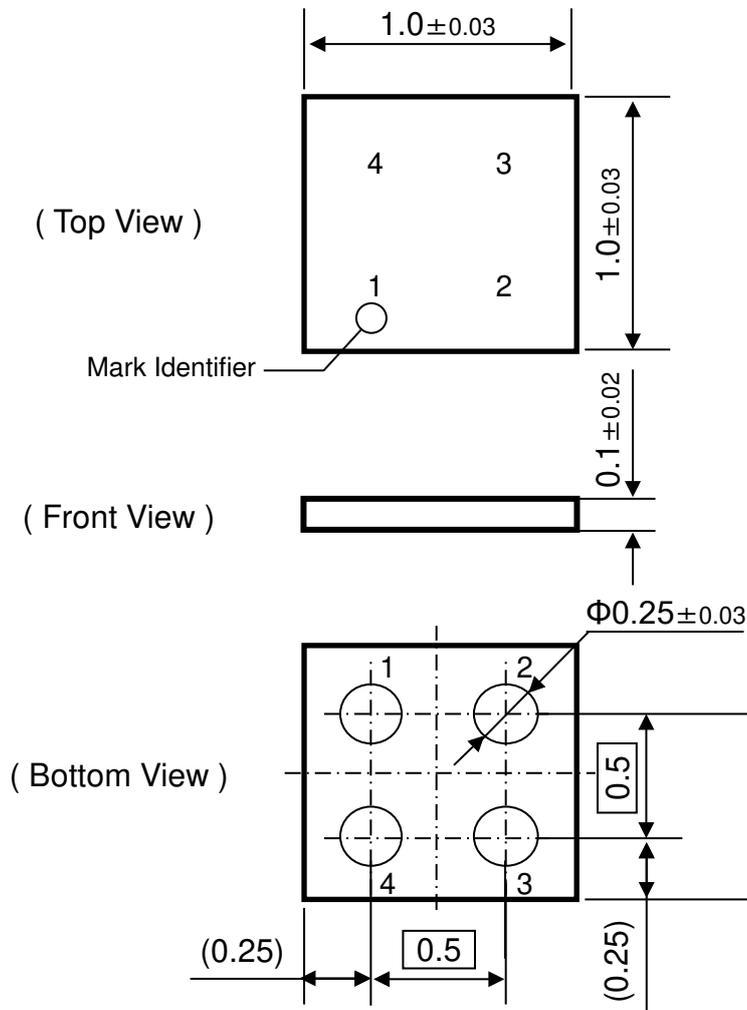
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\*3 FR4 board (25.4mm×25.4mm×t1.0mm), Full Cu.



■ Outline

Unit: mm



■ Land & Stencil Pattern ( Reference )

Unit: mm

