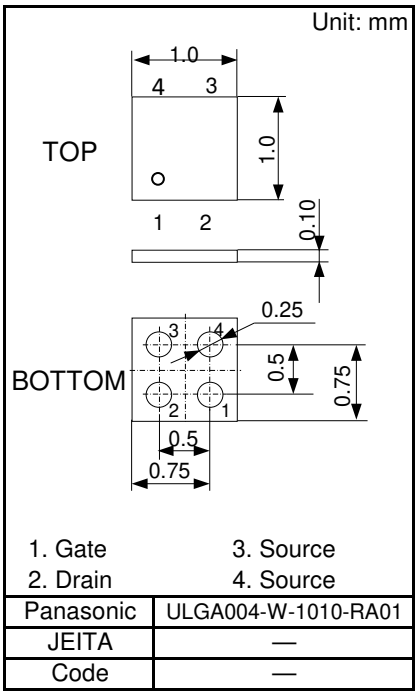
FK4B01120L1

Single N-channel MOS FET

For Load switching circuits



1. Gate
2. Drain
3. Source
4. Source

Panasonic	ULGA004-W-1010-RA01
JEITA	—
Code	—

■ Features

- Low Drain-source ON resistance:RDS(on) typ. = 17mΩ（VGS = 2.5 V)
- CSP (Chip Size Package)
- RoHS compliant (EU RoHS / MSL:Level 1 compliant)

■ Marking Symbol: 1C

■ 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	ID1*1	3.9	A
	ID2*2	6.5	
	ID3*3	7.9	
Peak Drain Current	IDp1*1*4	31	A
	IDp2*2*4	52	
	IDp3*3*4	63	
Power Dissipation	PD1*1	0.37	W
	PD2*2	0.94	
	PD3*3	1.5	
Channel Temperature	Tch	150	°C
Operating Ambient Temperature	Topr	-40 ~ +85	°C
Storage Temperature	Tstg	-55 ~ +150	°C

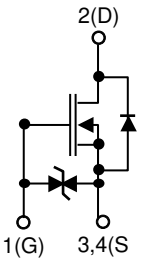
Note *1 FR4 board (25.4mm×25.4mm×t1.0mm)、Min Cu 36mm^2 Copper

*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%

■ Internal Connection



■ Electrical Characteristics Ta = 25 ºC ± 3 ºC

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			10	µA
Gate-Source Leakage Current	IGSS	VGS = ±8 V, VDS = 0 V			±10	µA
Gate Threshold Voltage	Vth	ID = 394 µA, VDS =10 V	0.3		1.0	V
Drain-Source ON Resistance	RDS(on)	ID = 1.5 A, VGS = 4.5 V		14	24	mΩ
		ID = 1.0 A, VGS = 2.5 V		17	27	
		ID = 0.5 A, VGS = 1.8 V		21	36	
		ID = 0.25 A, VGS = 1.5 V		27	62	
Input Capacitance *1	Ciss	VDS = 10 V VGS = 0 f = 1MHz		490		pF
Output Capacitance *1	Coss			184		
Reverse Transfer Capacitance *1	Crss			128		
Turn-on delay time *1,*2	td(on)	VDD = 6 V VGS = 0 to 4.5 V ID=1.0 A		4.3		ns
Rise time *1,*2	tr			3.7		
Turn-off delay time *1,*2	td(off)			235		
Fall time *1,*2	tf			147		
Total Gate Charge *1	Qg	VDD = 6 V VGS = 4.5 V ID= 1.0 A		7		nC
Gate to Source Charge *1	Qgs			1.4		nC
Gate to Drain Miller Charge *1	Qgd			1.5		nC
Body Diode Forward Voltage	VF(D-S)	IF = 0.2A, VGS = 0V		0.6	1.2	V

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

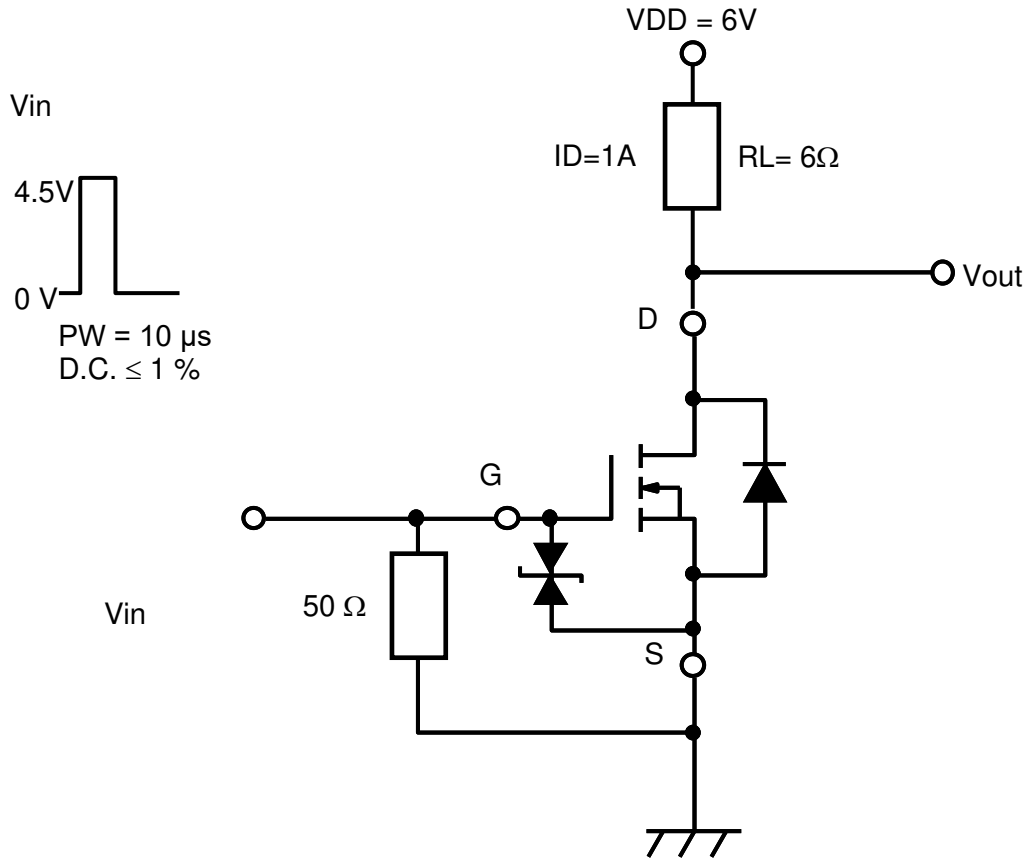
*1 Guaranteed by design, not subject to production testing

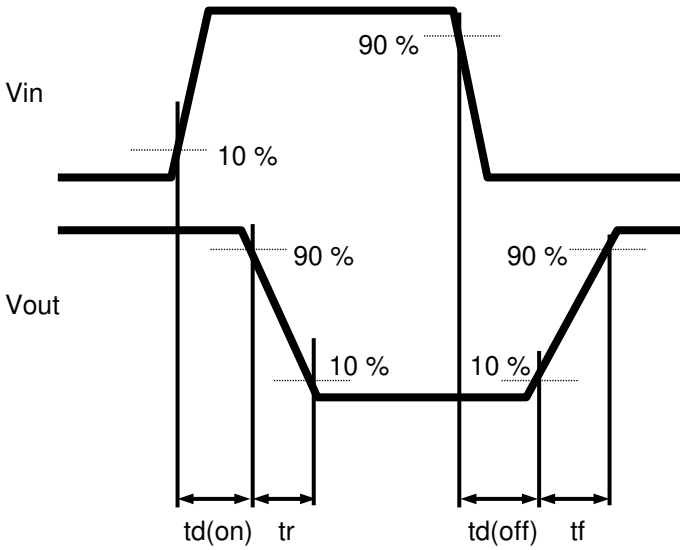
*2 Measurement circuit for Turn-on delay time / Rise time / Turn-off delay time / Fall time

■ Electrical State Discharge Characteristics

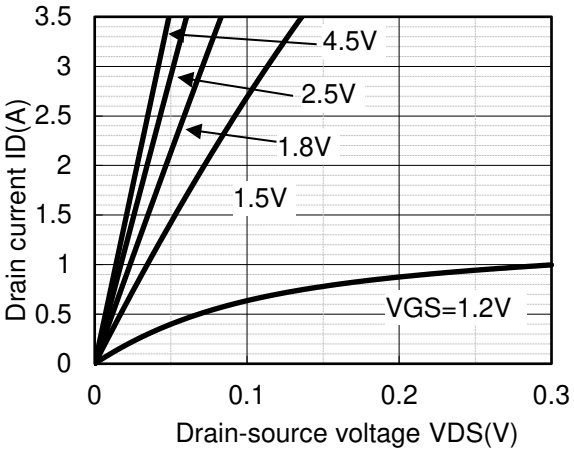
Standard	Test Type	Symbol	Conditions	Class	Value	Unit
AEC-Q101-001	Human body model	HBM	C = 100 pF, R = 1.5 kΩ	H2	>2k to ≦ 4k	V
	Machine model	MM	C = 200 pF, R = 0 Ω	M2	>100 to ≦ 200	V

Note2: Measurement circuit

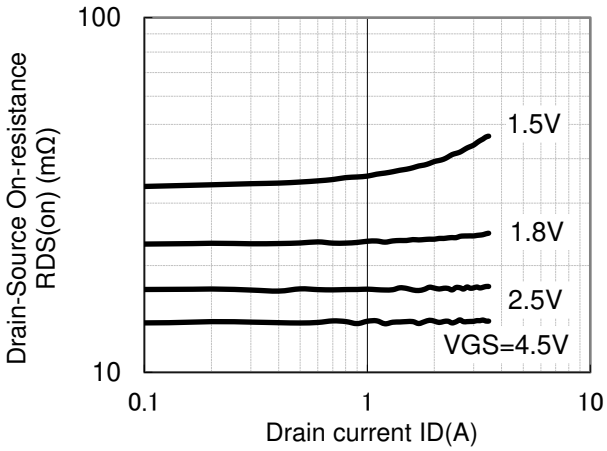




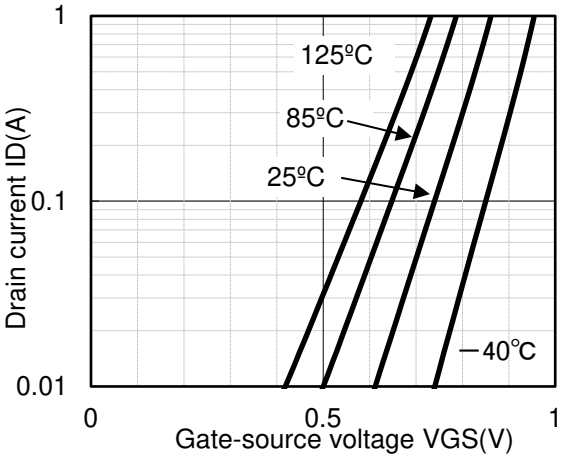
ID - VDS



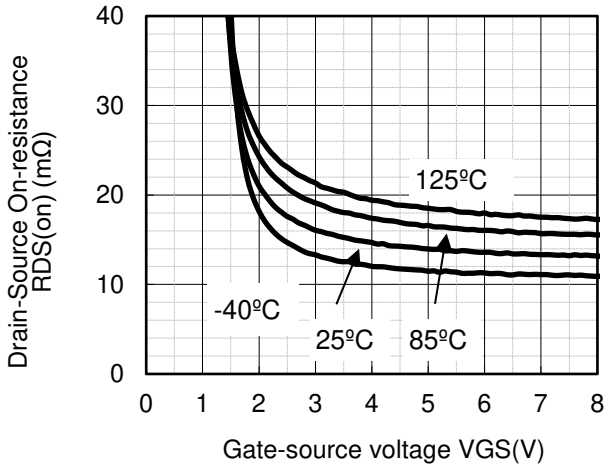
RDS(on) - ID



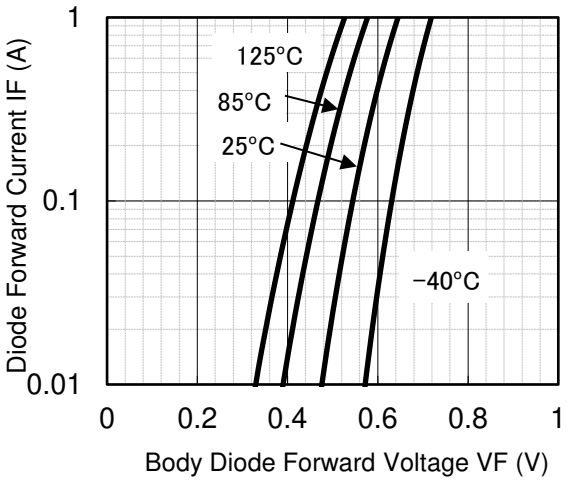
ID - VGS



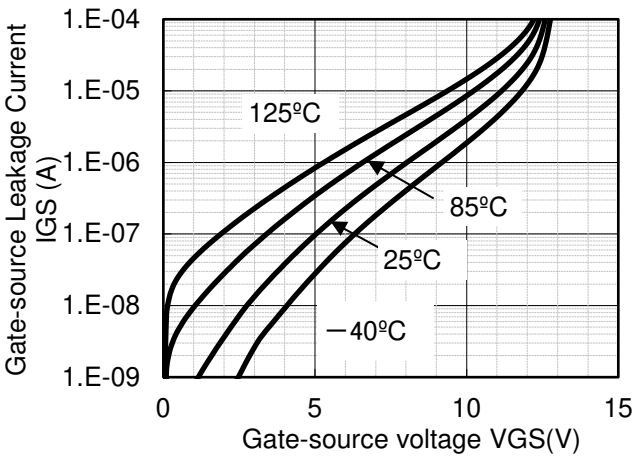
RDS(on) - VGS



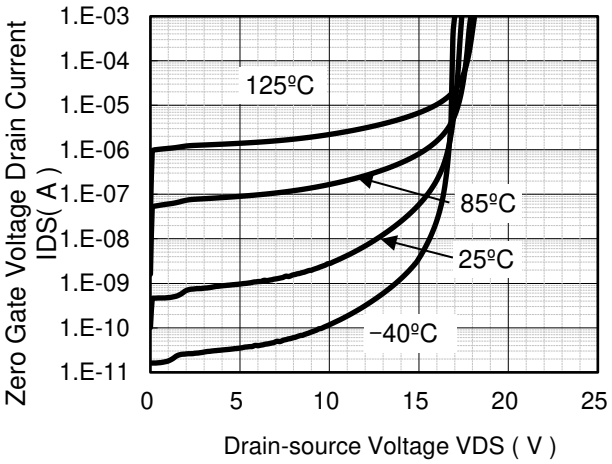
IF - VF



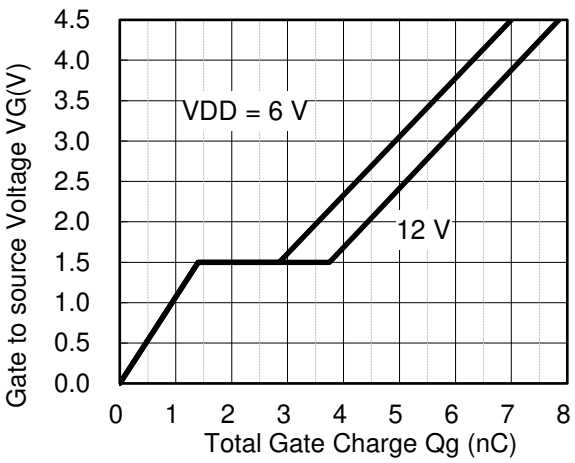
IGS - VGS



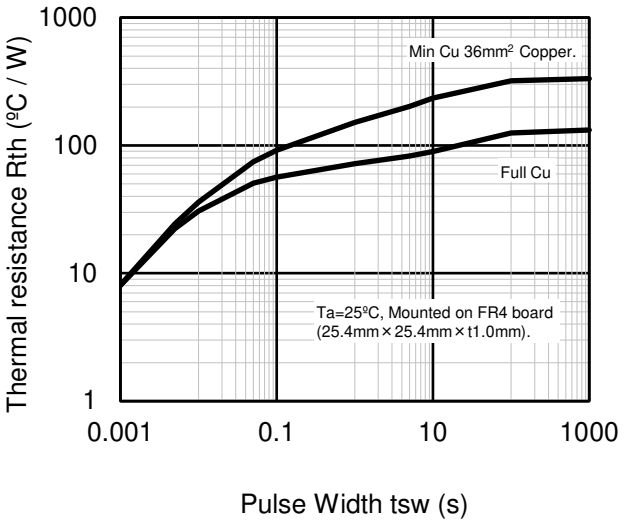
IDS - VDS



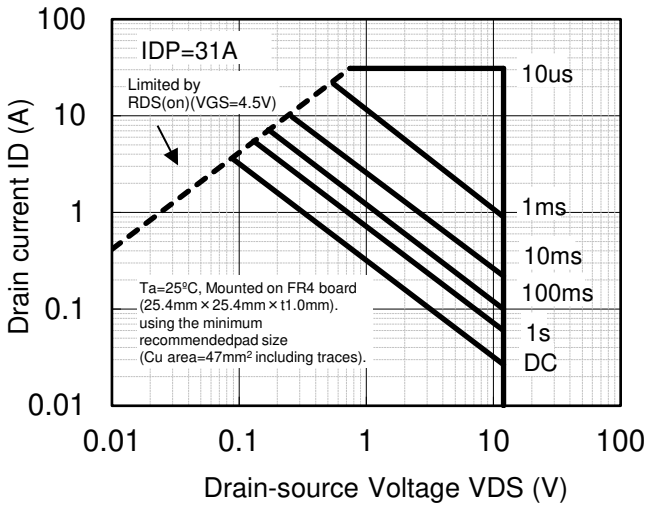
Dynamic Input/Output Characteristics



Rth - tsw

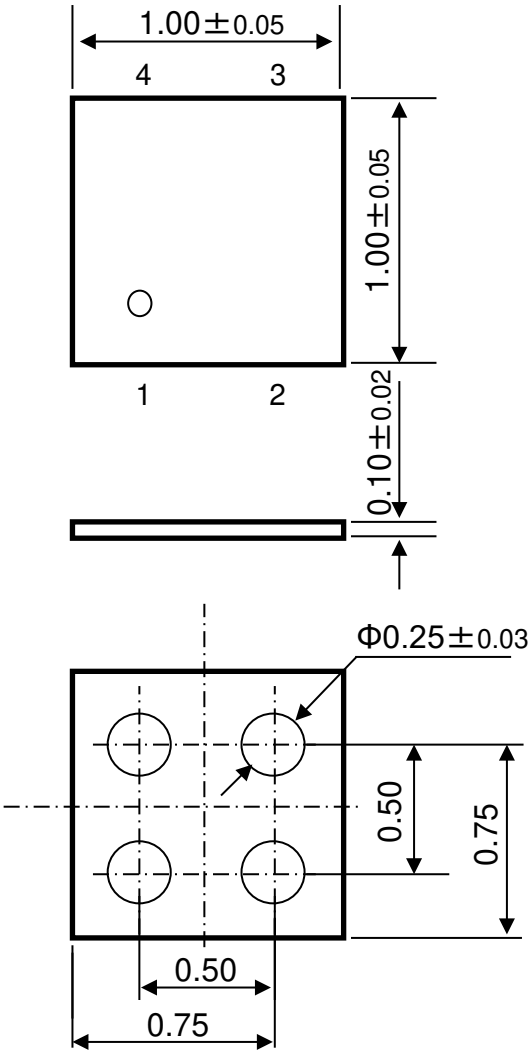


Safe Operating Area



■ ULGA004-W-1010-RA01

Unit: mm



■ Land Pattern (Reference)