

FC6B21150L1

Gate resistor installed Dual N-channel MOS FET

For lithium-ion secondary battery protection circuits

■ Features

- Low source-source ON resistance: $R_{ss(on)}$ typ. = $4.3\text{ m}\Omega$ ($V_{GS} = 3.8\text{ V}$)
- CSP (Chip Size Package)
- RoHS compliant (EU RoHS / MSL: Level 1 compliant)

■ Marking Symbol: 16

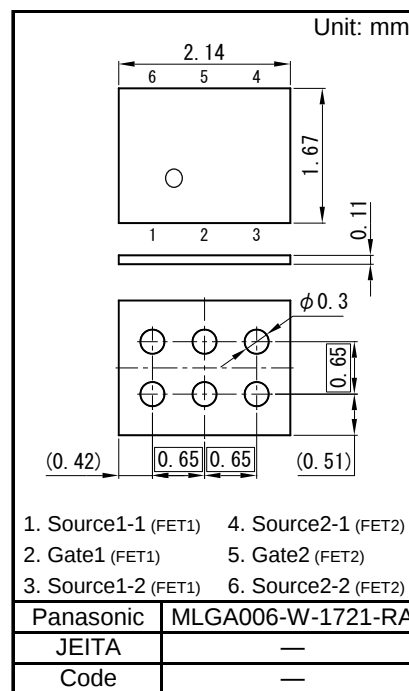
■ Packaging

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

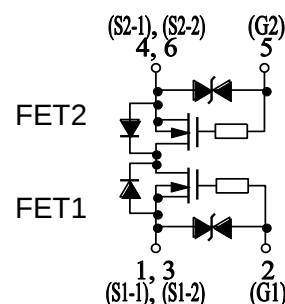
■ Absolute Maximum Ratings $T_a = 25\text{ }^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Source-source Voltage	VSS	12	V
Gate-source Voltage ^{*3}	VGS	± 10.5	V
Source Current	DC ^{*1}	IS1	A
	DC ^{*2}	IS2	A
	Pulse ^{*3}	ISp	A
Total Power Dissipation	DC ^{*1}	PD1	W
	DC ^{*2}	PD2	W
Channel Temperature	Tch	150	$^\circ\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^\circ\text{C}$
Thermal resistance (ch-a)	DC ^{*1}	Rth1	$^\circ\text{C/W}$
	DC ^{*2}	Rth2	$^\circ\text{C/W}$

- Note
- *1 Mounted on FR4 board
($25.4\text{ mm} \times 25.4\text{ mm} \times t1.0\text{ mm}$, $36\mu\text{m}$ Copper)
 - *2 Mounted on Ceramic substrate
($70\text{ mm} \times 70\text{ mm} \times t1.0\text{ mm}$).
 - *3 $t = 10\text{ }\mu\text{s}$, Duty Cycle $\leq 1\%$



Equivalent circuit



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

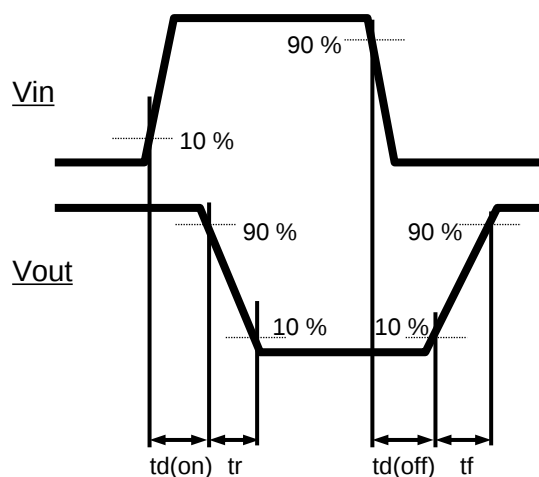
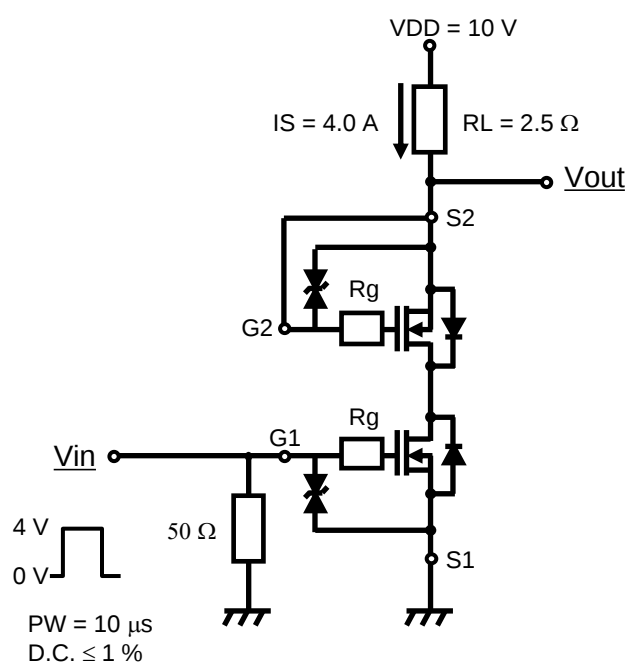
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Source-source Breakdown Voltage	VSSS	IS = 1 mA, VGS = 0 V	12			V
Zero Gate Voltage Source Current	ISSS	VSS = 12 V, VGS = 0 V			1.0	μA
Gate-source Leakage Current	IGSS	VGS = ±8 V, VSS = 0 V			±10	μA
		VGS = ±5 V, VSS = 0 V			±1.0	
Gate-source Threshold Voltage	Vth	IS = 0.84 mA, VSS = 10 V	0.35	0.90	1.4	V
Source-source On-state Resistance	RSS(on)1	IS = 4.0 A, VGS = 4.5 V	3	4	5.1	mΩ
	RSS(on)2	IS = 4.0 A, VGS = 3.8 V	3.2	4.3	5.5	
	RSS(on)3	IS = 4.0 A, VGS = 3.1 V	3.5	4.8	6.8	
	RSS(on)4	IS = 4.0 A, VGS = 2.5 V	3.8	5.9	10	
Body Diode Forward Voltage	VF(s-s)	IF = 4.0 A, VGS = 0 V		0.8	1.2	V
Input Capacitance ^{*1}	Ciss	VSS = 10 V, VGS = 0 V, f = 1 MHz		2760		pF
Output Capacitance ^{*1}	Coss			450		
Reverse Transfer Capacitance ^{*1}	Crss			390		
Turn-on delay Time ^{*1,*2}	td(on)	VDD = 10 V, VGS = 0 to 4.0 V		4.1		μs
Rise Time ^{*1,*2}	tr	IS = 4.0 A		5.2		
Turn-off delay Time ^{*1,*2}	td(off)	VDD = 10 V, VGS = 4.0 to 0 V		12.9		μs
Fall Time ^{*1,*2}	tf	IS = 4.0 A		8.3		
Total Gate Charge ^{*1}	Qg	VDD = 10 V		26		nC
Gate-source Charge ^{*1}	Qgs	VGS = 0 to 4.0 V,		9		
Gate-drain Charge ^{*1}	Qgd	IS = 4.0 A		8		

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

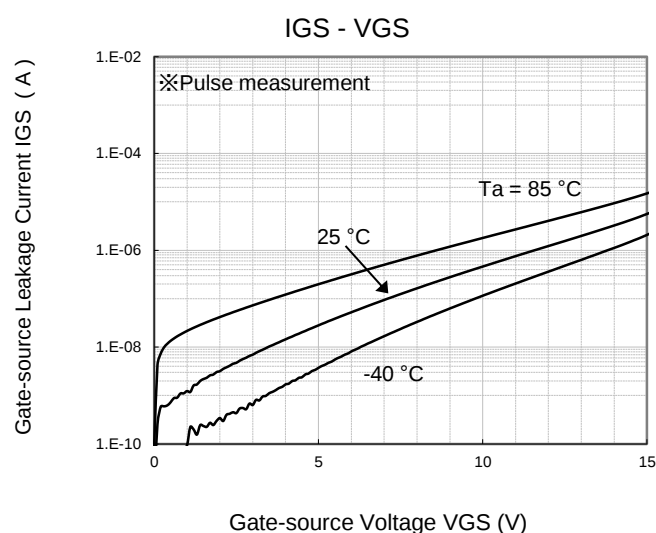
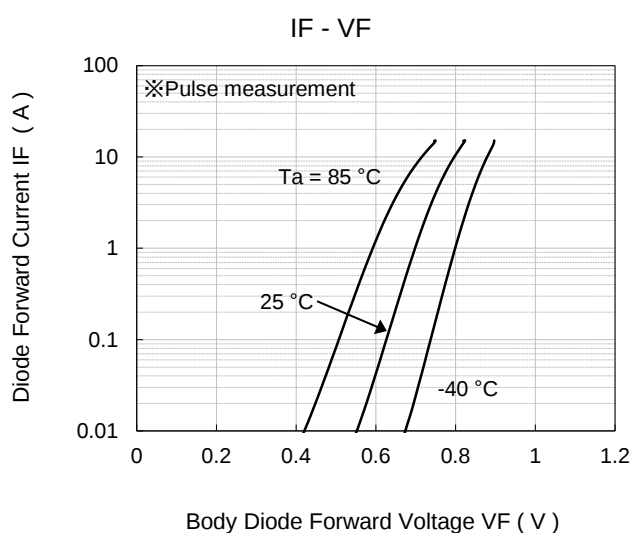
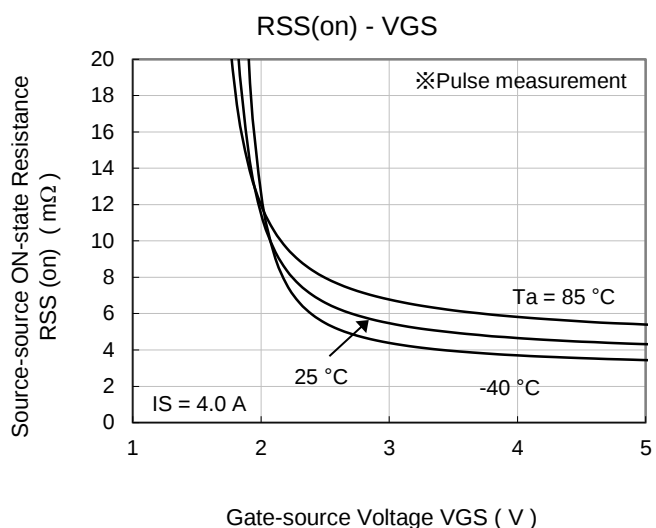
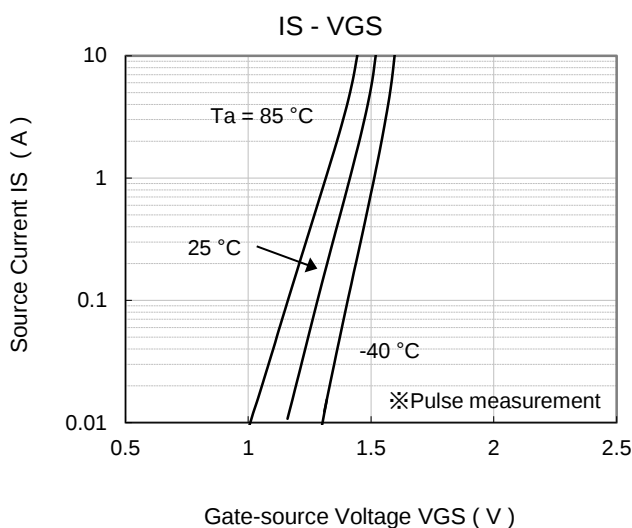
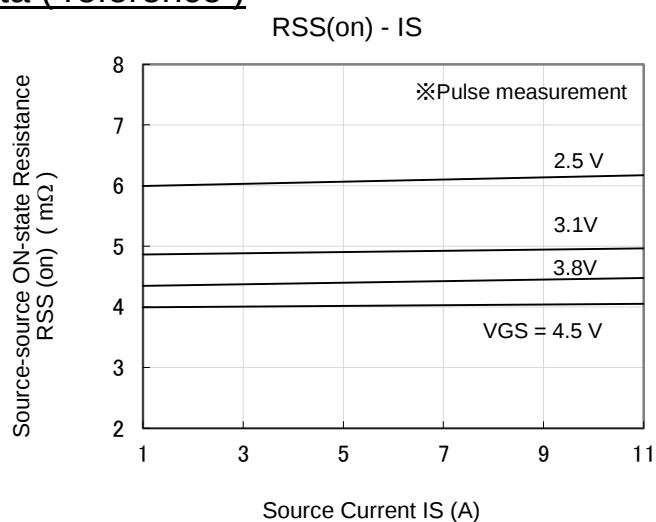
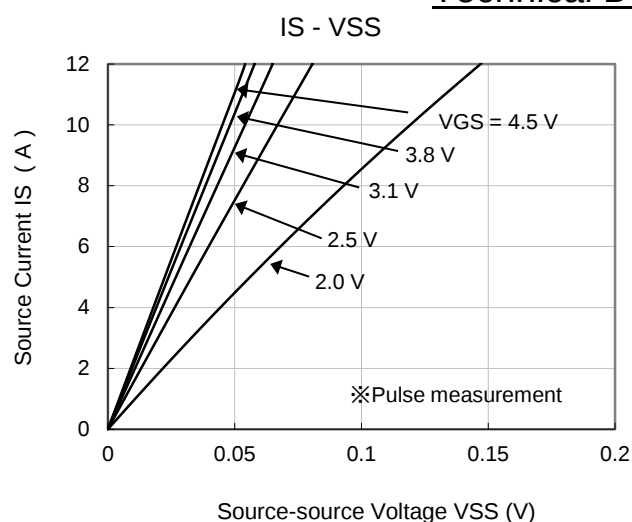
*1 Guaranteed by design, not subject to production testing

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

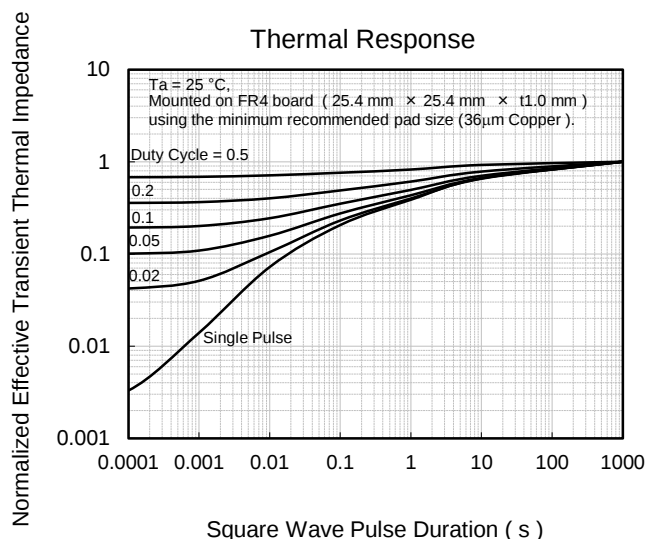
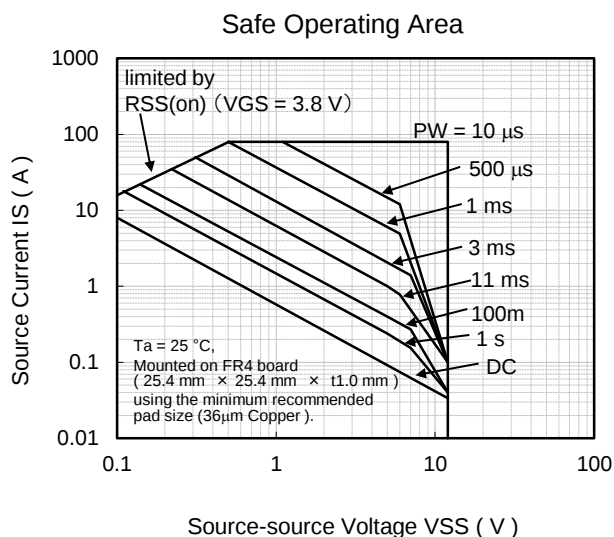
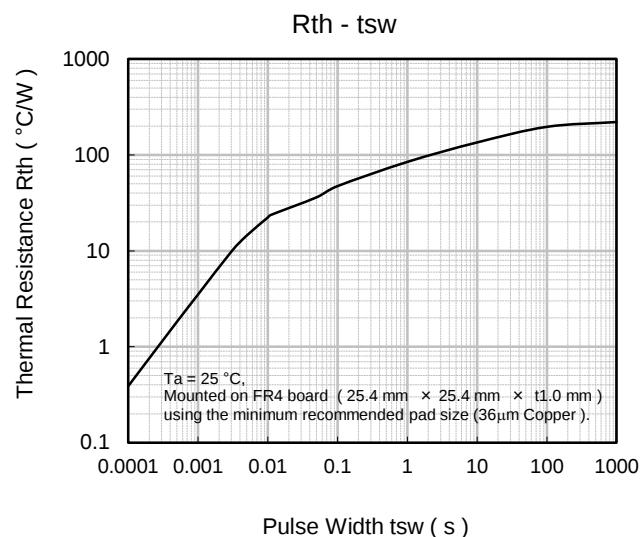
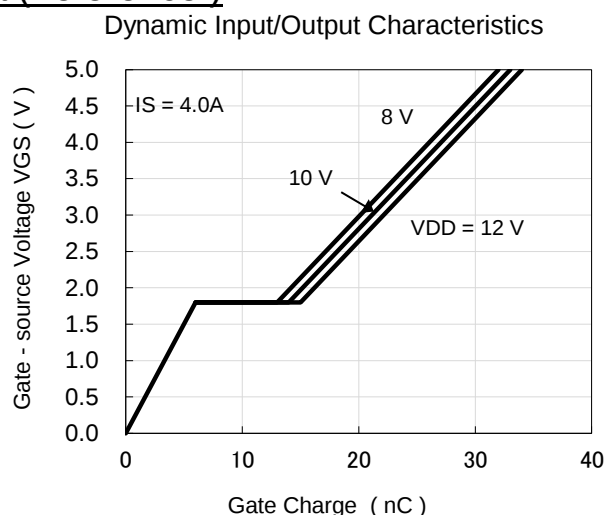
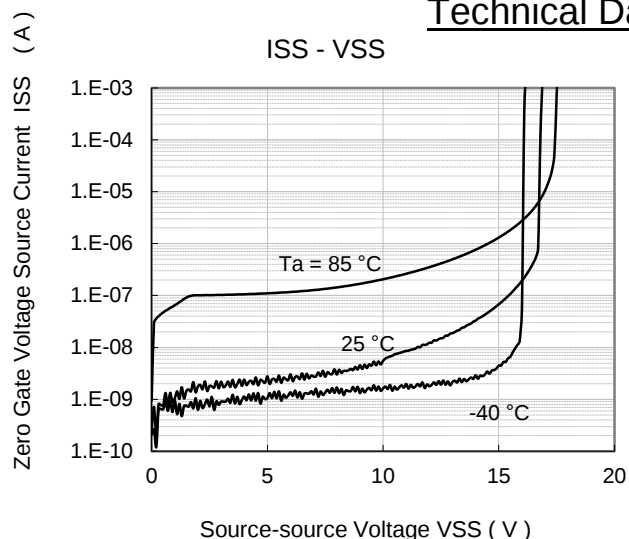
Note2 : Measurement circuit



Technical Data (reference)

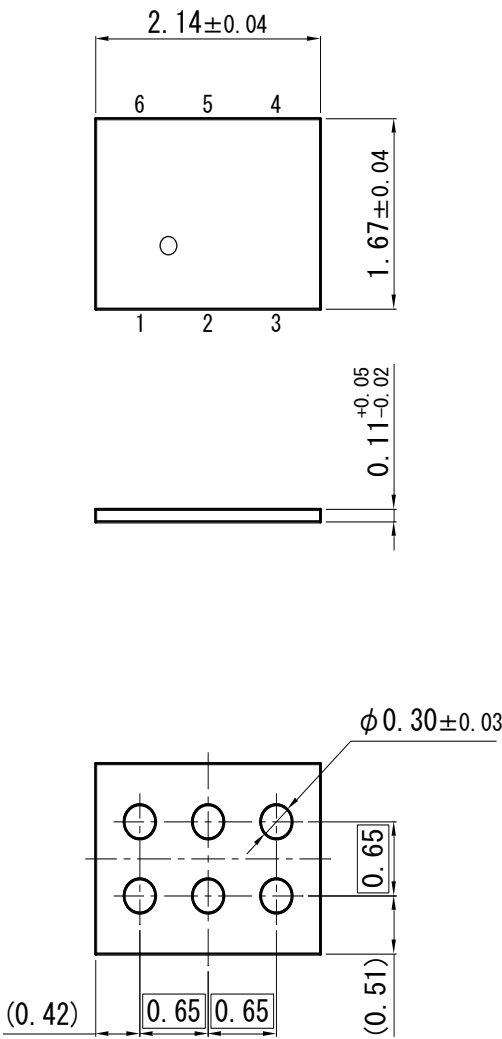


Technical Data (reference)



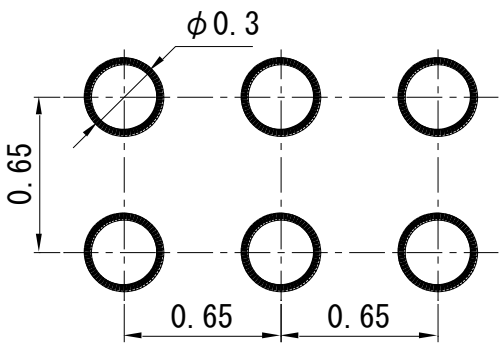
Outline (MLGA006-W-1721-RA)

Unit: mm



Land Pattern (Reference)

Unit: mm



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