Gate resistor installed
Dual N-channel MOSFET

KFC4B22070L
Data Sheet

For additional information or question, please contact Nuvoton Technology Corporation Japan.
www.nuvoton.co.jp

1. GENERAL DESCRIPTION

Gate resistor installed Dual N-channel MOSFET
For lithium-ion secondary battery protection circuits

2. FEATURES

- Low source-source ON resistance: RSS (on) typ. = 17.5 mΩ (VGS = 4.5 V)
- CSP (Chip Size Package)
- RoHS compliant (EU RoHS / MSL: Level 1 compliant)

3. MARKING SYMBOL: 14

4. PACKAGING

Embossed type (Thermo-compression sealing): 8,000 pcs / reel (standard)

5. ABSOLUTE MAXIMUM RATINGS Ta = 25 °C

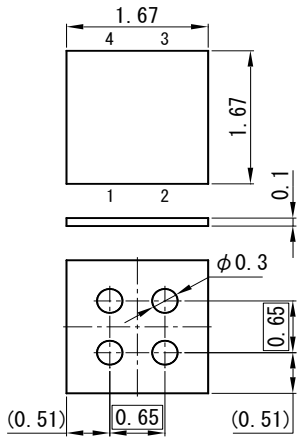
Parameter		Symbol	Rating	Unit
Source-source Voltage		VSS	24	V
Gate-source Voltage		VGS	±12	V
Source Current	DC	IS *1	6	A
	Pulsed	ISp *2	60	
Total Power Dissipation	DC	PD *1	1.5	W
Channel Temperature		Tch	150	°C
Storage Temperature Range		Tstg	-55 to +150	°C

6. THERMAL CHARACTERISTICS Ta = 25 °C

Parameter	Symbol	Rating	Unit
Thermal Resistance (ch-a)	Rth *1	83	°C / W

Note *1 Mounted on Ceramic substrate (70 mm x 70 mm x t1.0 mm).
*2 t = 10 μs, Duty Cycle ≤ 1 %

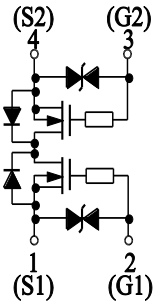
Unit: mm



1. Source (FET1) 3. Gate (FET2)
2. Gate (FET1) 4. Source (FET2)

Package	MLGA004-W-1717-RA
JEITA	—
Code	—

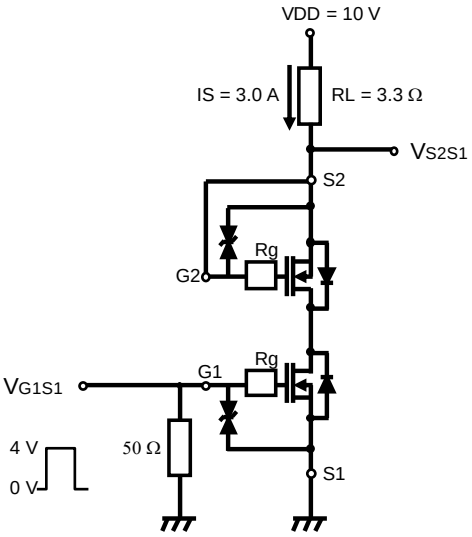
Equivalent circuit

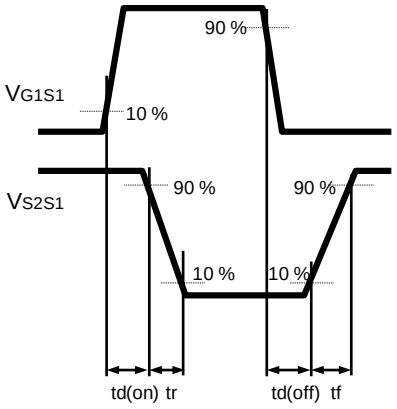


7. ELECTRLCAL CHARACTERISTICS Ta = 25 °C ± 3 °C

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Source-source Breakdown Voltage	VSSS	IS = 1 mA, VGS = 0 V	24			V
Zero Gate Voltage Source Current	ISSS	VSS = 24 V, VGS = 0 V			1.0	μA
Gate-source Leakage Current	IGSS	VGS = ±8 V, VSS = 0 V			±10	μA
Gate-source Threshold Voltage	Vth	IS = 1.0 mA, VSS = 10 V	0.4	0.9	1.4	V
Source-source On-state Resistance	RSS(on)1	IS = 3.0 A, VGS = 4.5 V	12.0	17.5	22.0	mΩ
	RSS(on)2	IS = 3.0 A, VGS = 3.1 V	13.0	20.0	28.0	
	RSS(on)3	IS = 3.0 A, VGS = 2.5 V	15.0	23.0	37.0	
Body Diode Forward Voltage	VF(s-s)	IF = 6.0 A, VGS = 0 V		0.8	1.2	V
Input Capacitance *1	Ciss	VSS = 10 V, VGS = 0 V, f = 1 kHz		1780		pF
Output Capacitance *1	Coss			410		
Reverse Transfer Capacitance *1	Crss			407		
Turn-on Delay Time *1,*2	td(on)	VDD = 10 V, VGS = 0 to 4 V IS = 3.0 A		0.8		μs
Rise Time *1,*2	tr			1.5		
Turn-off Delay Time *1,*2	td(off)	VDD = 10 V, VGS = 4 to 0 V IS = 3.0 A		6.0		μs
Fall Time *1,*2	tf			3.0		
Total Gate Charge *1	Qg	VDD = 10 V VGS = 0 to 4 V IS = 6.0 A		15.0		nC
Gate-source Charge *1	Qgs			4.1		
Gate-drain Charge *1	Qgd			3.8		

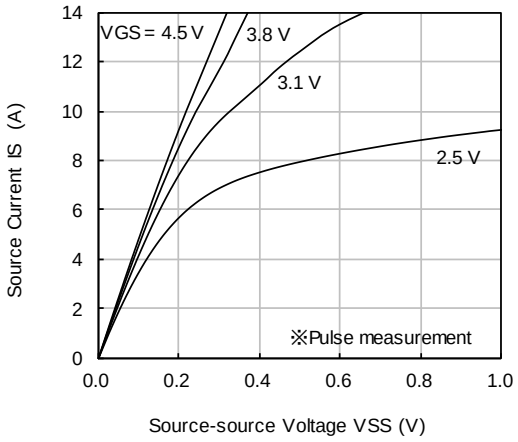
Note Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 Measuring methods for transistors.
*1 Guaranteed by design, not subject to production testing
*2 Measurement circuit for Turn-on Delay Time / Rise Time / Turn-off Delay Time / Fall Time



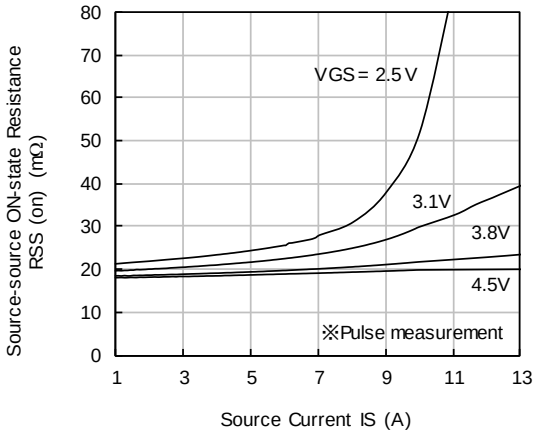


8. TECHNICAL DATA (Reference)

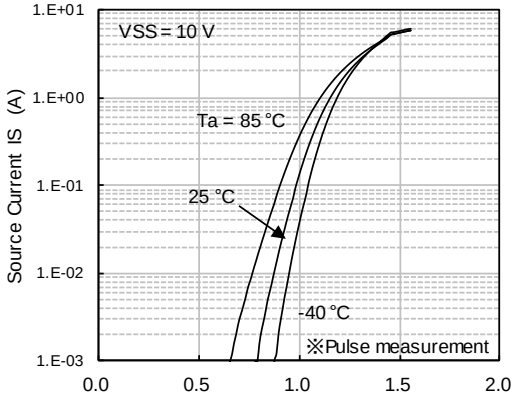
IS - VSS



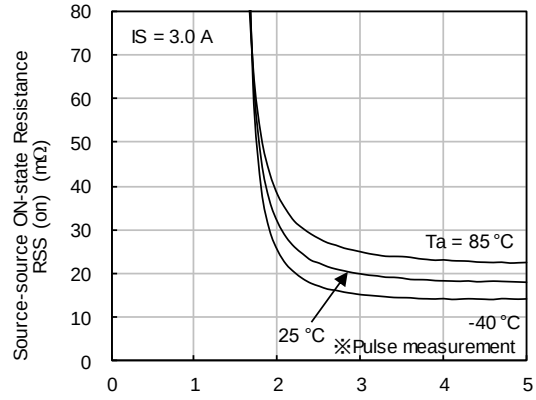
RSS(on) - IS



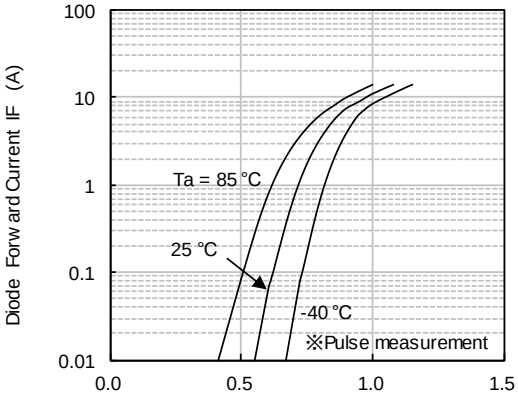
IS - VGS



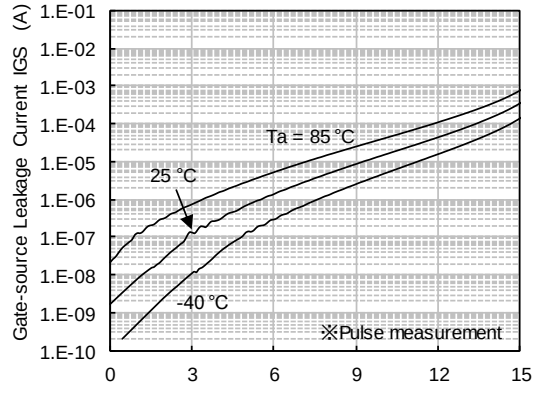
RSS(on) - VGS



IF - VF

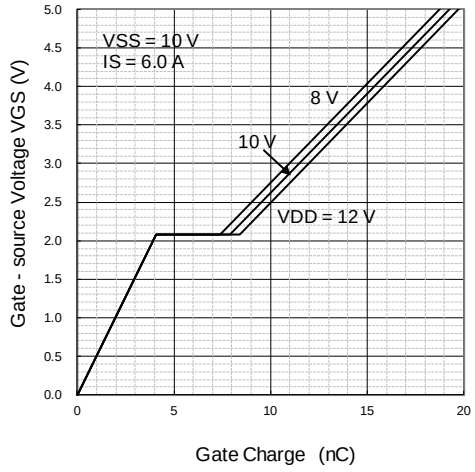


IGS - VGS

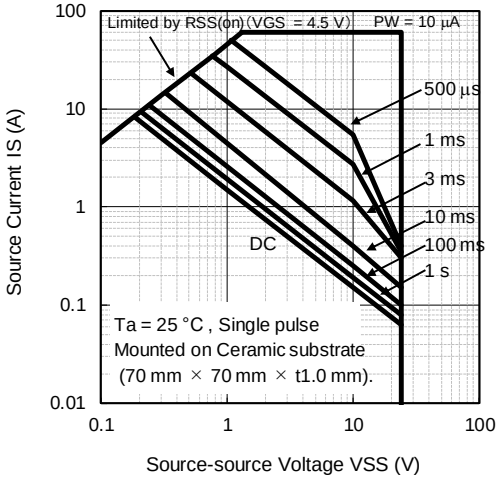


TECHNICAL DATA (Reference)

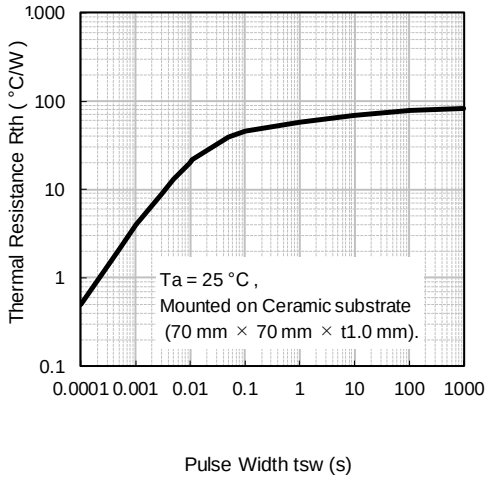
Dynamic Input/Output Characteristics



Safe Operating Area

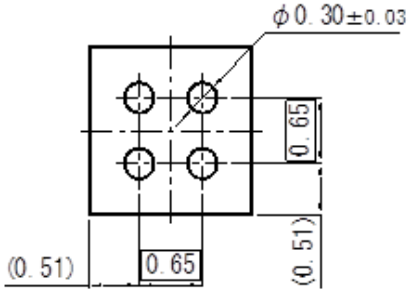


Rth - tsw



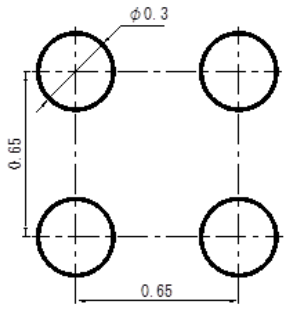
9. OUTLINE

Unit : mm



10. LAND PATTERN (Reference)

Unit: mm



12. REVISION HISTORY

Date	Revision	Description
2021.2.3	1.00	1. initially issued.

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