Dual N-channel

MOSFET

KFC7P23440L
Data Sheet

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

1. GENERAL DESCRIPTION

Dual N-channel MOSFET
For lithium-ion secondary battery protection circuits
For load switching

2. FEATURES

- Low source-source ON resistance: RSS(on) typ. = 2.0 mΩ (VGS = 10 V)
- Low threshold voltage: 4.5 V drive
- Halogen-free / RoHS compliant
  (EU RoHS / UL-94 V-0 / MSL: Level 1)
- Metal package with enhanced thermal conduction design
- Minimized the junction to foot thermal resistance
- Compatible with conventional SMT assembly and test techniques

3. MARKING SYMBOL: AC

4. PACKAGING

Embossed type (Thermo-compression sealing): 6,000 pcs / reel (standard)

5. ABSOLUTE MAXIMUM RATINGS Ta = 25 °C

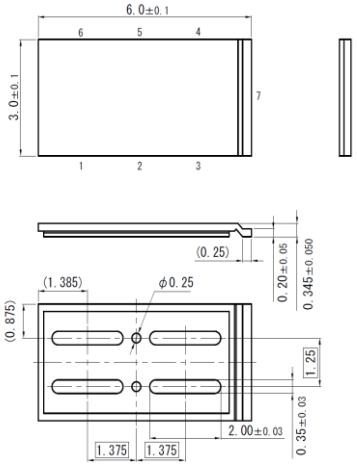
Parameter		Symbol	Rating	Unit
Source-source Voltage		VSS	30	V
Gate-source Voltage		VGS	±20	
Source Current	DC *1	IS1	19	A
	DC *2	IS2	30	
	Pulsed *3	ISp	90	
Total Power Dissipation	DC *1	PD1	1.0	W
	DC *2	PD2	2.4	
Channel Temperature		Tch	150	°C
Storage Temperature Range		Tstg	-55 to +150	

6. THERMAL CHARACTERISTICS Ta = 25 °C

Parameter			Symbol	Rating	Unit
Thermal Resistance	Junction to Ambient	DC *1	Rθja1	125	°C / W
		DC *2	Rθja2	52	

Note *1 Mounted on FR4 board (25.4mm x 25.4mm x t1.0mm) using the minimum recommended pad size (36μm Copper).
*2 Mounted on FR4 board (25.4mm x 25.4mm x t1.0mm) coated with copper foil ≧ 500 mm² (36μm Copper).
*3 t = 10μs, Duty Cycle ≦ 1 %

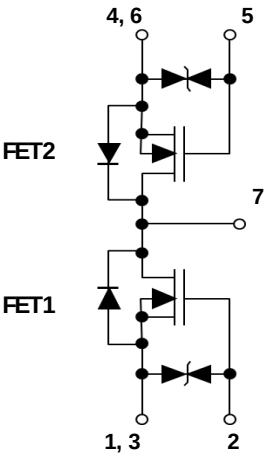
■ Package dimension Unit: mm



1. Source1-1(FET1)
2. Gate1(FET1)
3. Source1-2(FET1)
4. Source2-1(FET2)
5. Gate2(FET2)
6. Source2-2(FET2)
7. Drain

Package	PMCP-6030-Z2
JEITA	—
Code	—

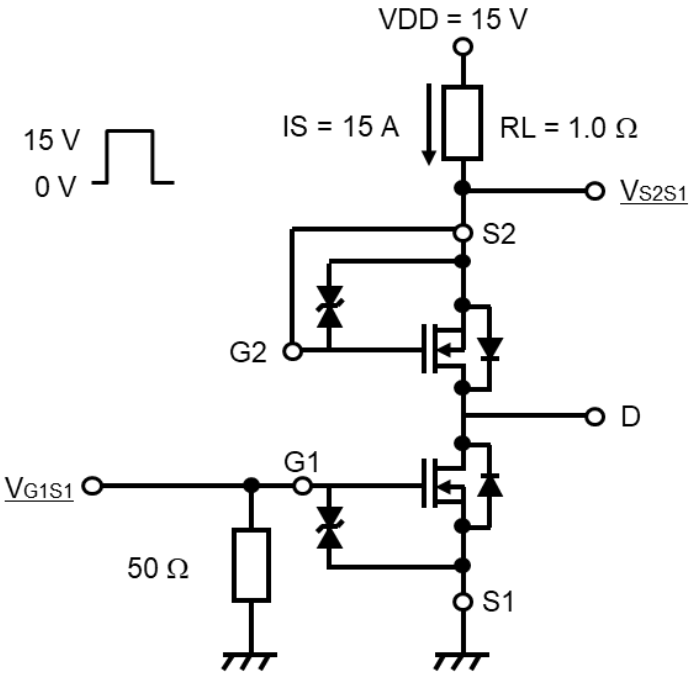
■ Equivalent circuit

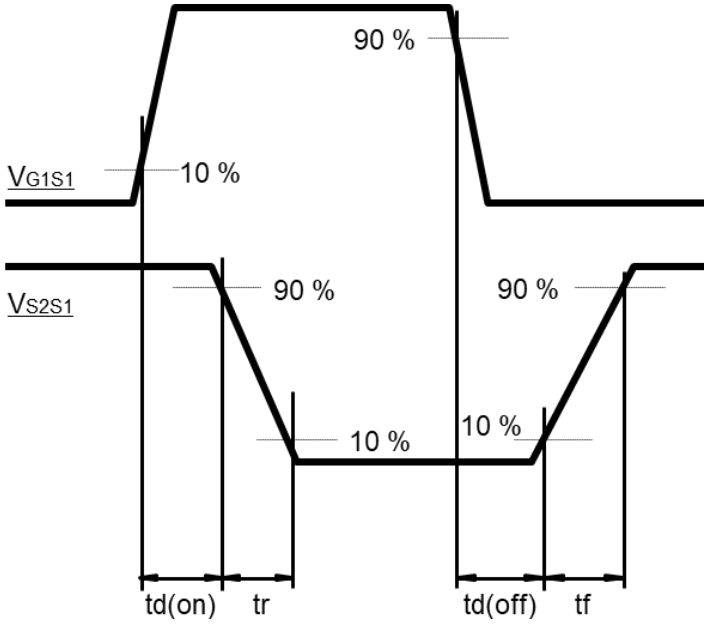


7. ELECTRICAL CHARACTERISTICS Ta = 25 °C ± 3 °C

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Source-source Breakdown Voltage	VSSS	IS = 1 mA, VGS = 0 V	30			V
Zero Gate Voltage Source Current	ISSS	VSS = 30 V, VGS = 0 V			1.0	μA
Gate-source Leakage Current	IGSS	VGS = ±20 V, VSS = 0 V			±10	μA
Gate-source Threshold Voltage	Vth	IS = 2.68 mA, VSS = 10 V	1.0	2.0	3.0	V
Source-source On-state Resistance	RSS(on)1	IS = 15 A, VGS = 10 V	1.2	2.0	2.6	mΩ
	RSS(on)2	IS = 15 A, VGS = 8.0 V	1.3	2.2	3.3	
	RSS(on)3	IS = 15 A, VGS = 4.5 V	2.0	3.4	5.1	
Input Capacitance *1	Ciss	VSS = 10 V, VGS = 0 V, f = 1 MHz		4800		pF
Output Capacitance *1	Coss			690		
Reverse Transfer Capacitance *1	Crss			440		
Turn-on Delay Time *1,*2	td(on)	VDD = 15 V, VGS = 0 to 10 V IS = 15 A		75		ns
Rise Time *1,*2	tr			430		
Turn-off Delay Time *1,*2	td(off)	VDD = 15 V, VGS = 10 to 0 V IS = 15 A		220		ns
Fall Time *1,*2	tf			170		
Total Gate Charge *1	Qg	VDD = 15 VGS = 0 to 10 V IS = 30 A		85		nC
Gate-source Charge *1	Qgs			15		
Gate-drain Charge *1	Qgd			10		
Body Diode Forward Voltage	$V_{F(S-S)}$	IF = 15 A, VGS = 0 V		0.8	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

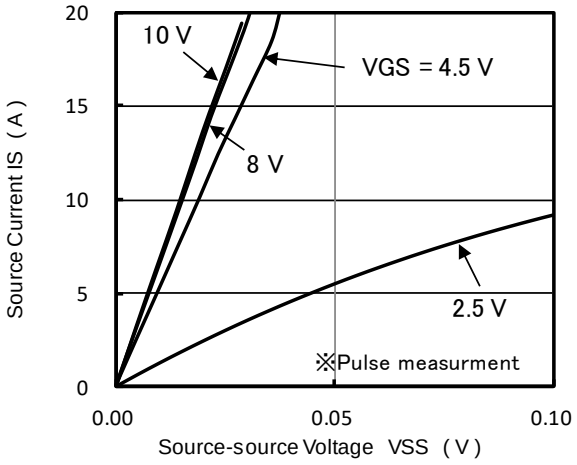




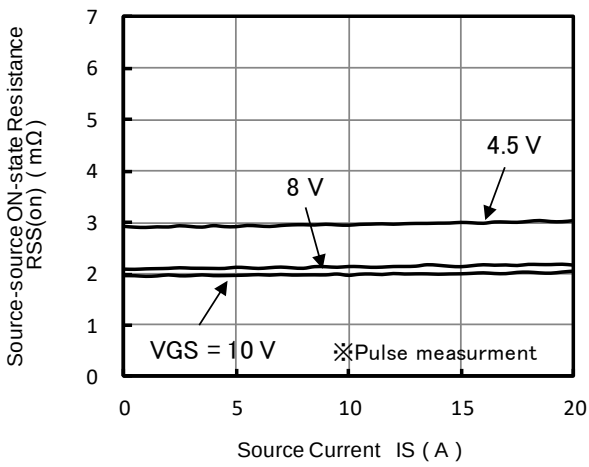
8. TECHNICAL DATA (Reference)

Technical Data (reference)

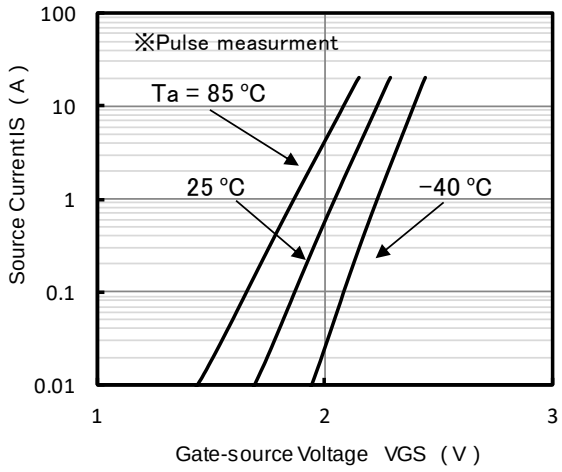
IS - VSS



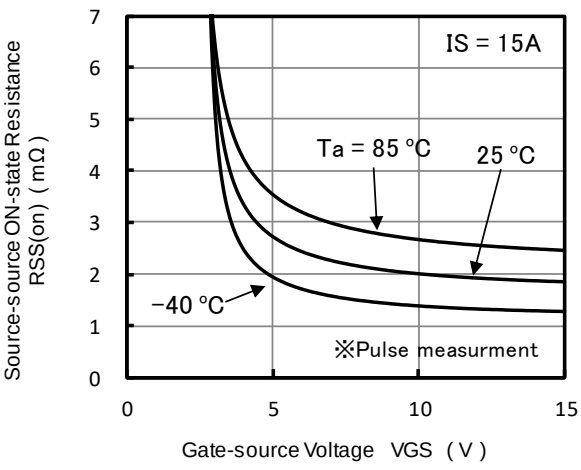
RSS(on) - IS



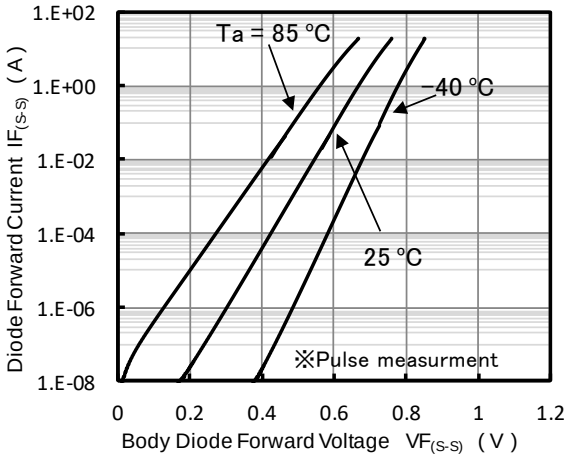
IS - VGS



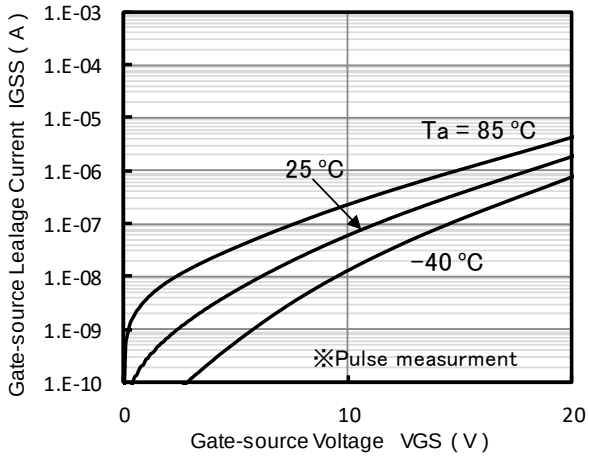
RSS(on) - VGS



$IF_{(S-S)}$ - $VF_{(S-S)}$



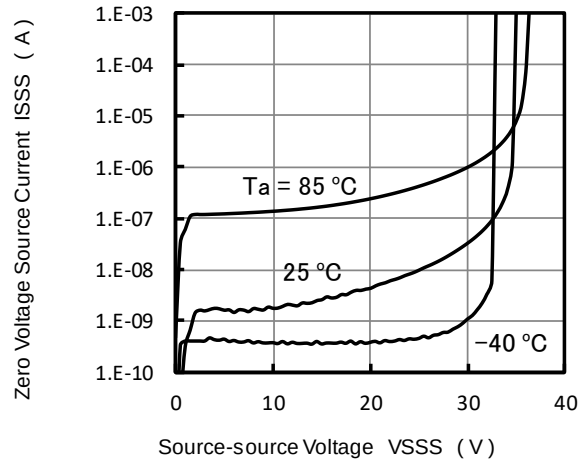
IGSS - VGS



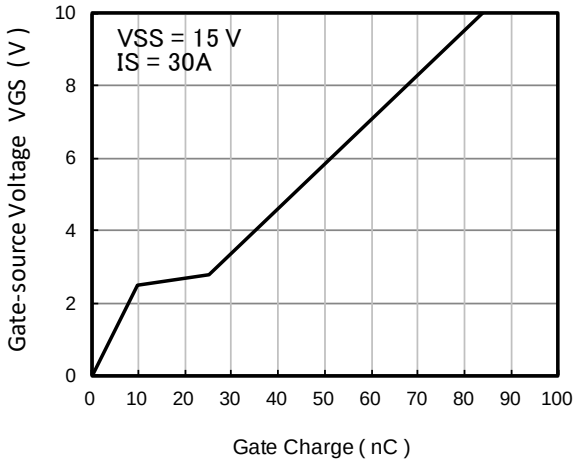
9. TECHNICAL DATA (Reference)

Technical Data (reference)

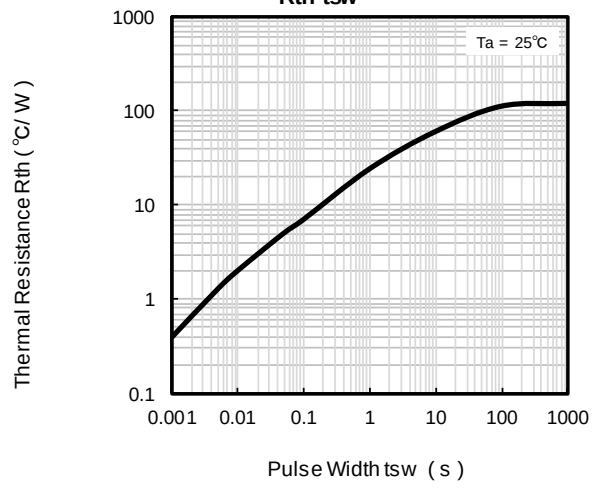
ISSS - VSSS



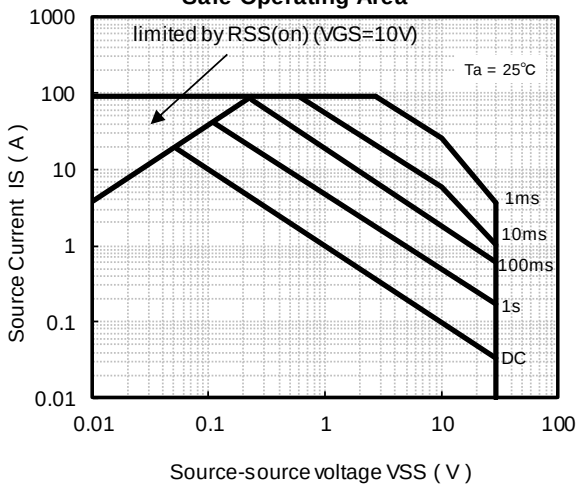
Dynamic Input/Output Characersitics



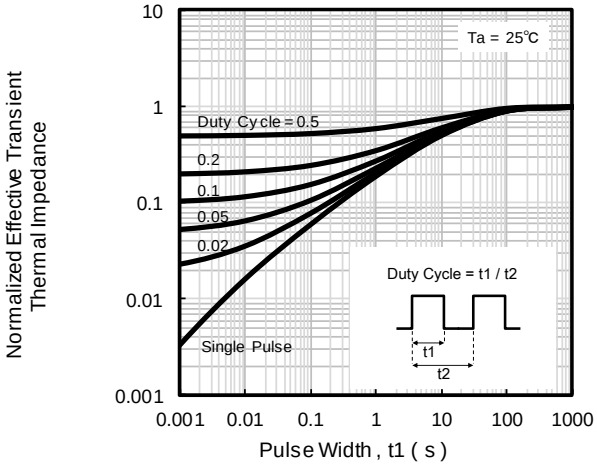
Rth-tsw *1



Safe Operating Area *1



Thermal Response *1

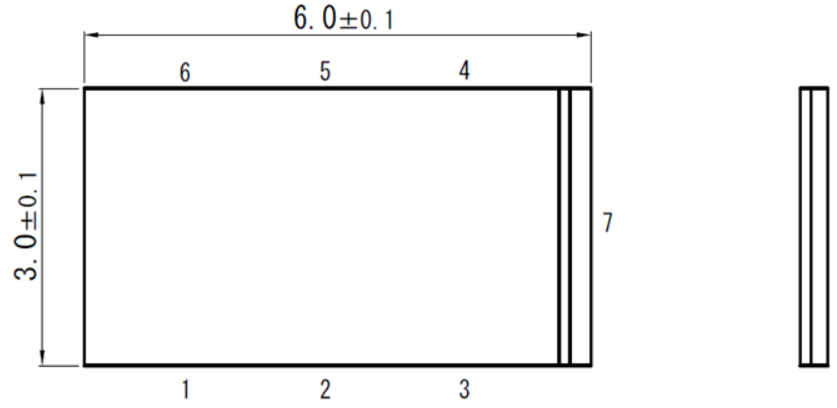


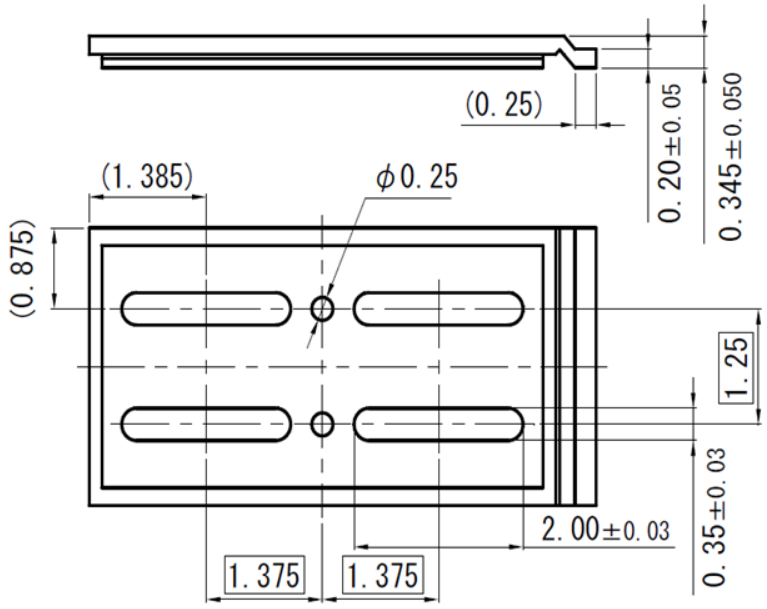
Note

*1 Mounted on FR4 board (25.4mm x 25.4mm x t1.0mm) using the minimum recommended pad size (36µm Copper).

10. OUTLINE

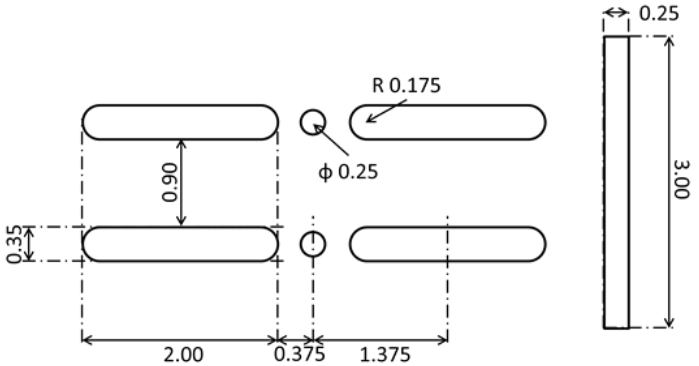
Unit : mm





11. LAND PATTERN (Reference)

Unit : mm



12. REVISION HISTORY

Date	Revision	Description
2021.3.8	1.00	1. initially issued.

Important Notice

Nuvoton Products are neither intended nor warranted for usage in systems or equipment, any malfunction or failure of which may cause loss of human life, bodily injury or severe property damage. Such applications are deemed, "Insecure Usage".

Insecure usage includes, but is not limited to: equipment for surgical implementation, atomic energy control instruments, airplane or spaceship instruments, the control or operation of dynamic, brake or safety systems designed for vehicular use, traffic signal instruments, all types of safety devices, and other applications intended to support or sustain life.

All Insecure Usage shall be made at customer's risk, and in the event that third parties lay claims to Nuvoton as a result of customer's Insecure Usage, customer shall indemnify the damages and liabilities thus incurred by Nuvoton.