Notification about the transfer of the semiconductor business

The semiconductor business of Panasonic Corporation was transferred on September 1, 2020 to Nuvoton Technology Corporation (hereinafter referred to as "Nuvoton"). Accordingly, Panasonic Semiconductor Solutions Co., Ltd. became under the umbrella of the Nuvoton Group, with the new name of Nuvoton Technology Corporation Japan (hereinafter referred to as "NTCJ").

In accordance with this transfer, semiconductor products will be handled as NTCJ-made products after September 1, 2020. However, such products will be continuously sold through Panasonic Corporation.

Publisher of this Document is NTCJ.
If you would find description “Panasonic” or “Panasonic semiconductor solutions”, please replace it with NTCJ.

※ Except below description page
“Request for your special attention and precautions in using the technical information and semiconductors described in this book”

Nuvoton Technology Corporation Japan

MOS FET

Panasonic FC8V36120L

FC8V36120L

Dual N-channel MOS FET

For lithium-ion secondary battery protection circuits
For load switching

■ Features

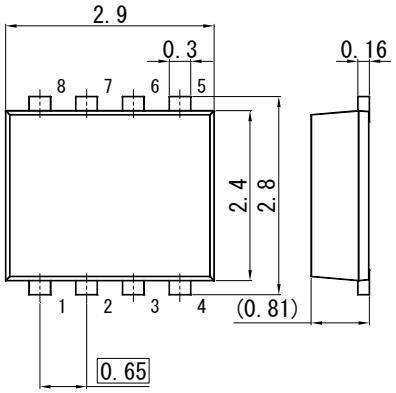
- Low drain-source ON resistance:RDS(on) typ. = 50 mΩ (VGS = 4.5 V)
- Low drive voltage: 2.5 V drive
- RoHS compliant (EU RoHS / UL-94 V-0 / MSL : Level 1 compliant)

■ Marking Symbol: M5

■ Packaging

Embossed type (Thermo-compression sealing) : 3 000 pcs / reel (standard)

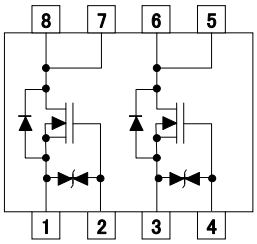
■ Package dimension Unit: mm



1. Source 5. Drain
2. Gate 6. Drain
3. Source 7. Drain
4. Gate 8. Drain

Panasonic	WMini8-F1
JEITA	SC-115
Code	—

■ Equivalent circuit, Pin name



1. Source 5. Drain
2. Gate 6. Drain
3. Source 7. Drain
4. Gate 8. Drain

■ Absolute Maximum Ratings Ta = 25 °C

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		VDS	60	V
Gate-source Voltage		VGS	±20	
Drain Current	Ta = 25°C, t = 10sec *1	ID1	6.0	A
	Ta = 25°C, DC *1	ID2	4.5	
	Ta = 25°C, DC *2		5.7	
	Ta = 25°C, DC *3		2.4	
	Pulsed, Tch < 150°C *1	IDp	18	
Total Power Dissipation	Ta = 25°C, DC *1	PD	1.4	W
Thermal Resistance	Junction to Ambient	Rθja	90	°C / W
Avalanche Current (Single pulse) *4		IAR	1.5	A
Avalanche Energy (Single pulse) *4		EAR	9	mJ
Channel Temperature		Tch	150	°C
Storage Temperature Range		Tstg	-55 to +150	

Note *1 Mounted on FR-4 glass epoxy board, 25.4mm x 25.4mm x t 1.0mm coated with copper foil > 500 mm^2.
*2 Mounted on Ceramic substrate, 70.0mm x 70.0mm x t 1.0mm
*3 Mounted on FR-4 glass epoxy board, 25.4mm x 25.4mm x t 1.0mm
*4 VDD = 30 V, VGS = 4.5 to 0 V, L = 5 mH, Tch = 25°C(initial)

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source Breakdown Voltage	VDSS	ID = 1 mA, VGS = 0 V	60			V
Zero Gate Voltage Drain Current	IDSS	VDS = 60 V, VGS = 0 V			10	μA
Gate-source Leakage Current	IGSS	VGS = ±20 V, VDS = 0 V			±10	μA
Gate-source Threshold Voltage	Vth	ID = 0.48 mA, VDS = 10 V	0.6		2.0	V
Drain-source On-state Resistance	RDS(on)1	ID = 2.0 A, VGS = 4.5 V	-	50	70	mΩ
	RDS(on)2	ID = 2.0 A, VGS = 2.5 V	-	60	110	
Input Capacitance *1	Ciss	VDS = 30 V, VGS = 0 V, f = 1 MHz		400		pF
Output Capacitance *1	Coss			30		
Reverse Transfer Capacitance *1	Crss			20		
Turn-on delay Time *1,*2	td(on)	VDD = 30 V, VGS = 0 to 10 V		10		ns
Rise Time *1,*2	tr	ID = 2.0 A		15		
Turn-off delay Time *1,*2	td(off)	VDD = 30 V, VGS = 10 to 0 V		45		ns
Fall Time *1,*2	tf	ID = 2.0 A		40		
Total Gate Charge *1	Qg	VDD = 30 V		10		nC
Gate-source Charge *1	Qgs	VGS = 0 to 10 V		1.0		
Gate-drain Charge *1	Qgd	ID = 4.5 A		1.5		
Body Diode Forward Voltage	VSD	IF = 2.0 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 Assured by design

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

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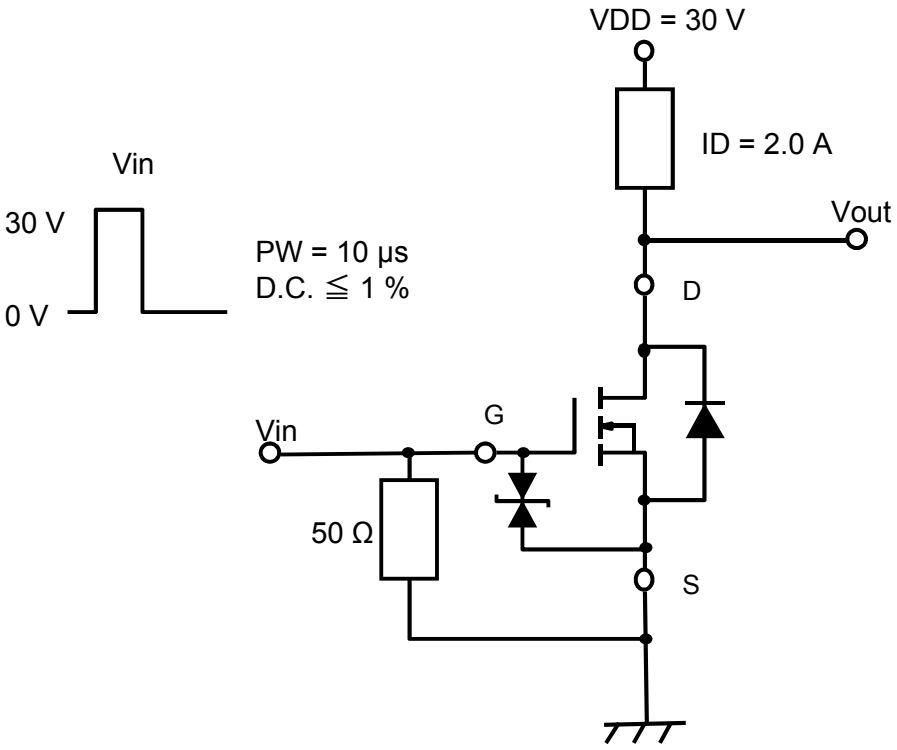
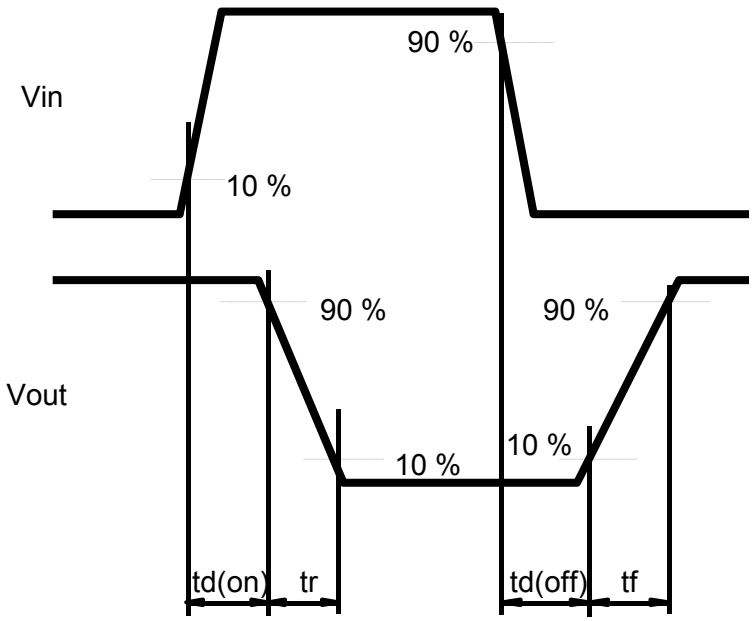
*2 Measurement circuit for Turn-on delay time / Rise time / Turn-off delay time / Fall time





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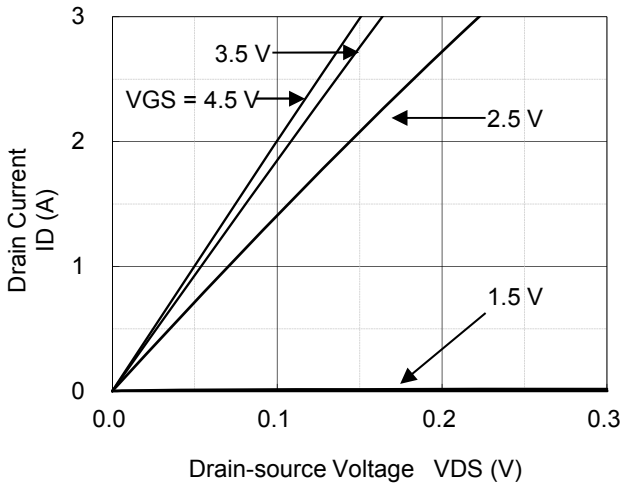
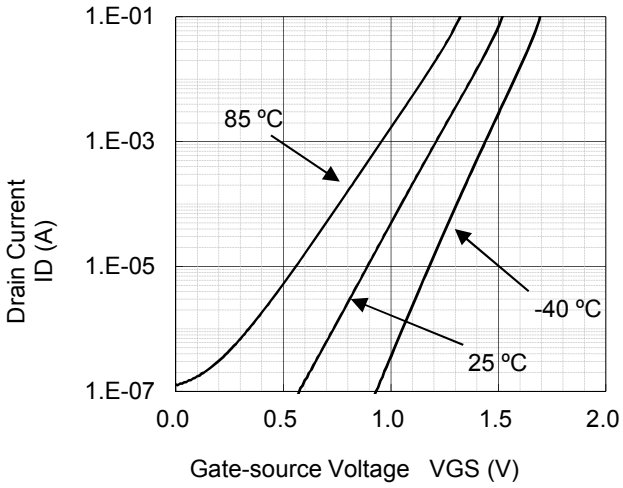
Technical Data (reference)

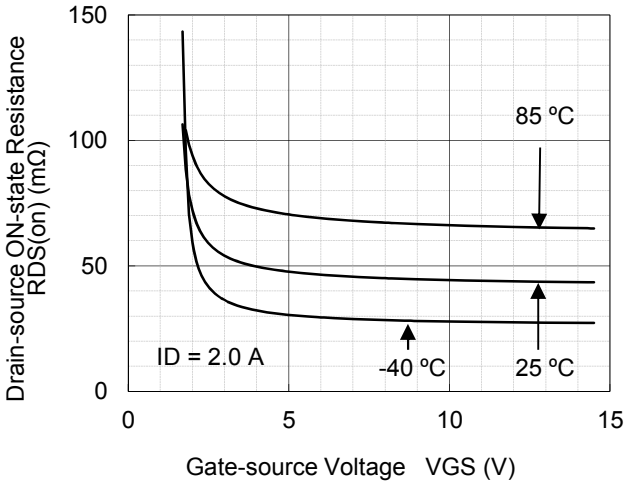
ID - VDS



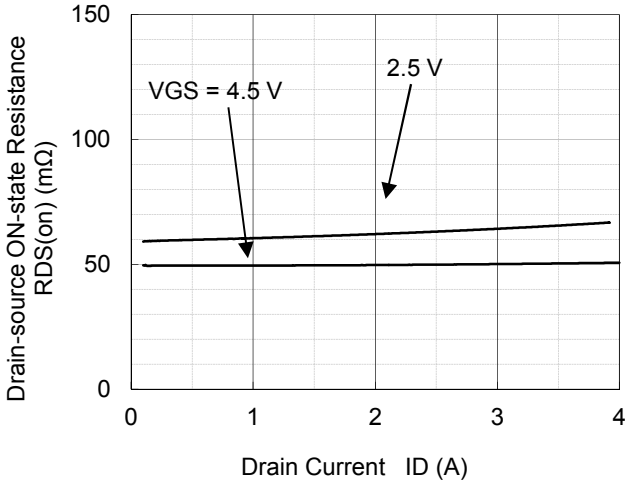
ID - VGS



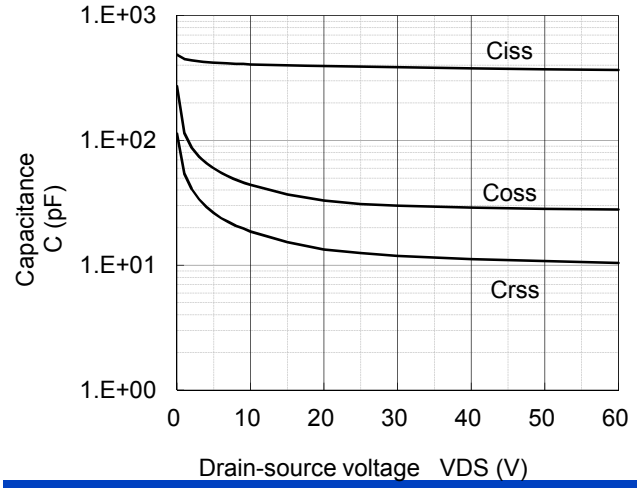
RDS(on) - VGS



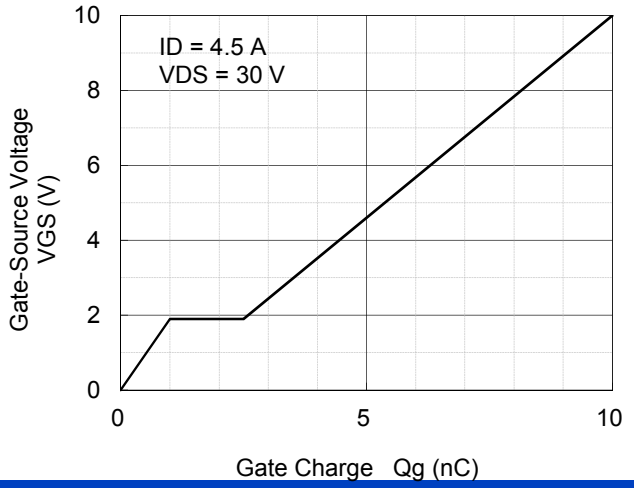
RDS(on) - ID



Capacitance - VDS



Dynamic Input/Output Characteristics



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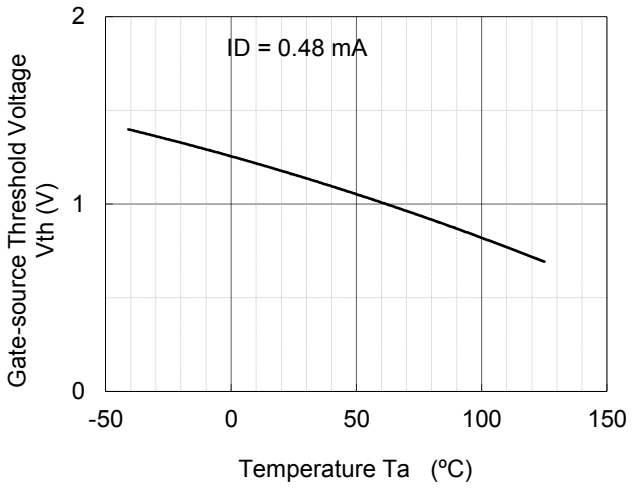
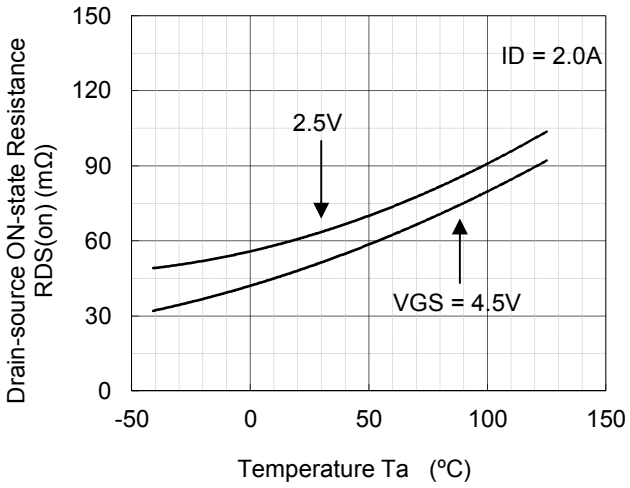
Technical Data (reference)

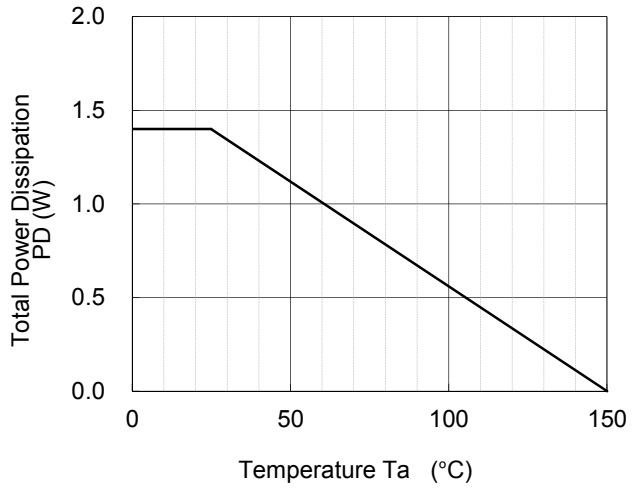
Vth - Ta



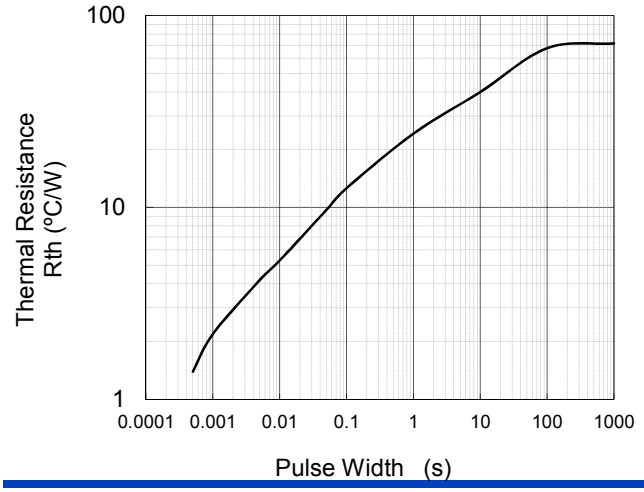
RDS(on) - Ta



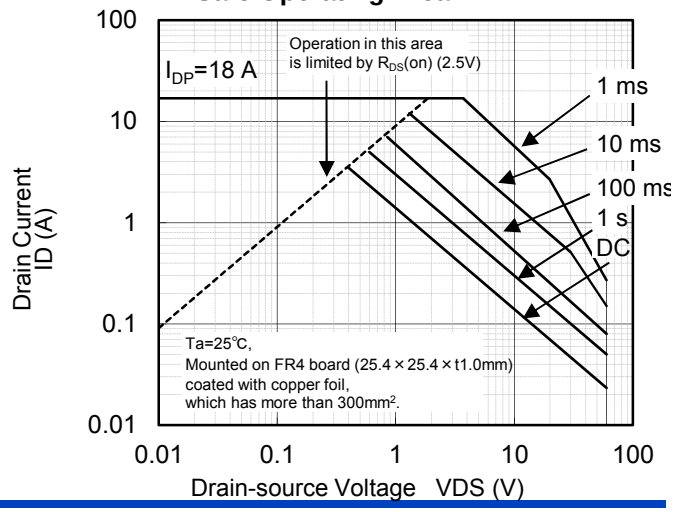
PD - Ta



Rth - tsw



Safe Operating Area



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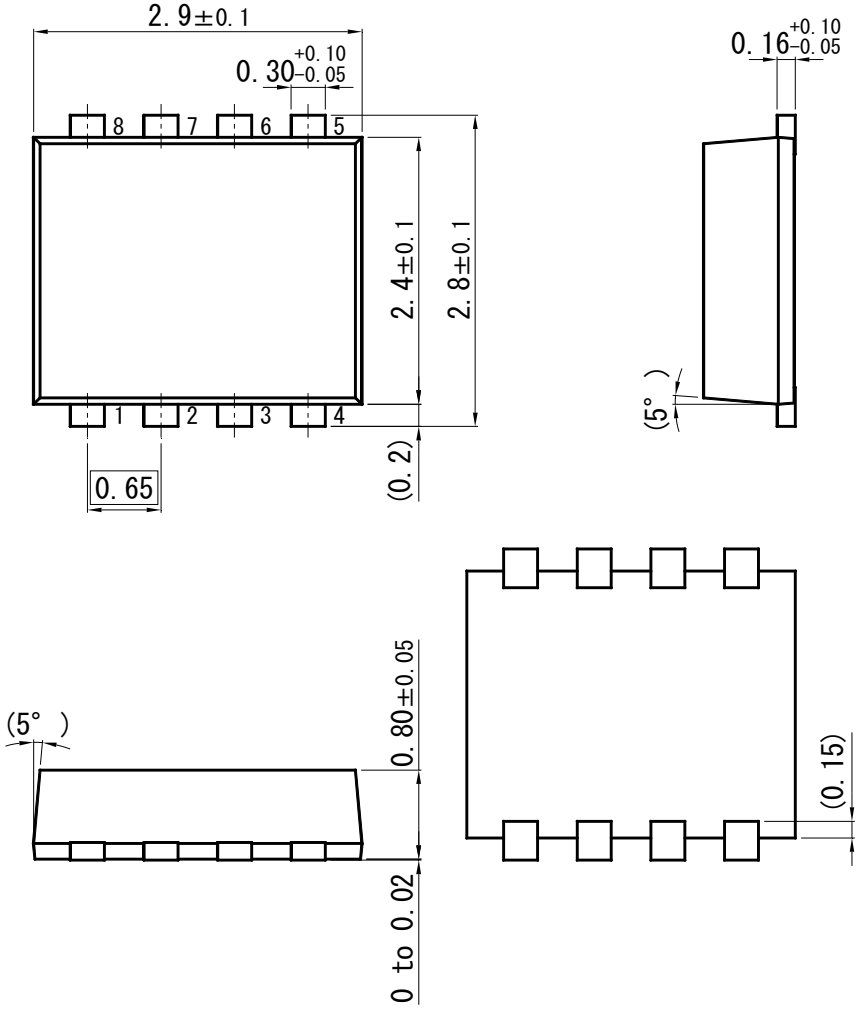
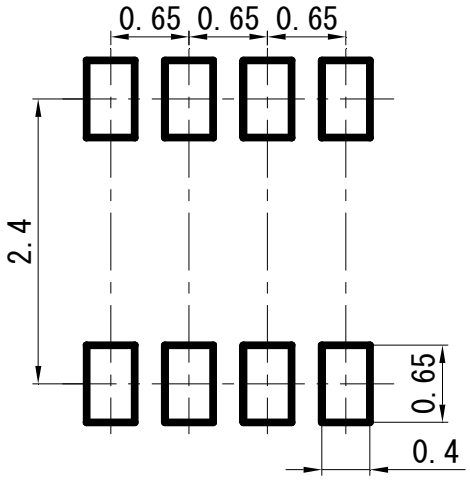
WMini8-F1

Unit: mm



■ Land Pattern (Reference) (Unit: mm)



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