

SK830321KL

Silicon N-channel MOS FET

For Load-switching / For DC-DC Converter

■ Features

- Low Drain-source On-state Resistance: $R_{DS(on)typ} = 24\text{ m}\Omega$ ($V_{GS} = 4.5\text{ V}$)
- Halogen-free / RoHS compliant
 (EU RoHS / UL-94 V-0 / MSL:Level 1 compliant)

■ Marking Symbol: 21

■ Packaging

Embossed type (Thermo-compression sealing) : 5 000 pcs / reel (standard)

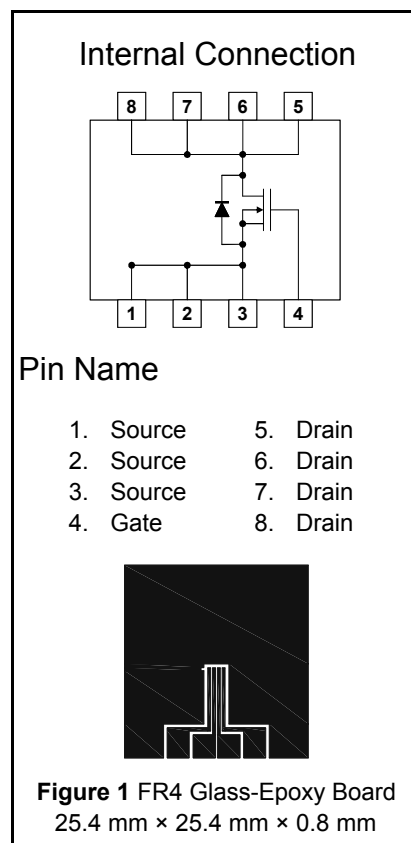
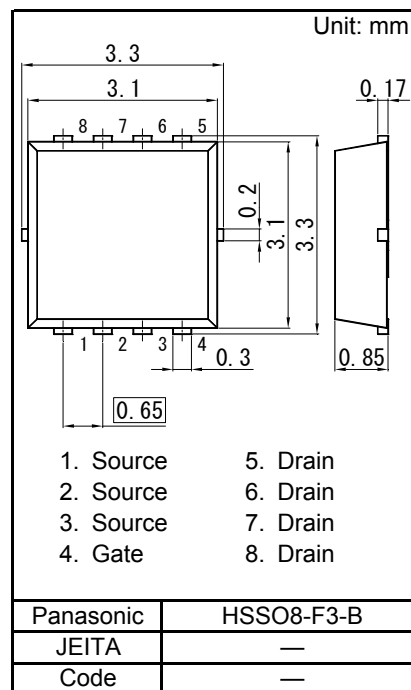
■ Absolute Maximum Ratings $T_a = 25\text{ }^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain to Source Voltage	VDS	30	V
Gate to Source Voltage	VGS	± 20	
Drain Current	ID	$T_a=25\text{ }^\circ\text{C}, t=10\text{ s}^{-1}$	9
		$T_a=25\text{ }^\circ\text{C}, DC$ ^{*1}	7
		$T_c=25\text{ }^\circ\text{C}$	18
		Pulsed, $T_{ch}<150\text{ }^\circ\text{C}$ ^{*2}	27
Total Power Dissipation	PD	$T_a=25\text{ }^\circ\text{C}, DC$ ^{*1}	2
		$T_c=25\text{ }^\circ\text{C}$	13
Thermal Resistance	Channel to Ambient	$R_{th(ch-a)}$	62.5
	Channel to Case	$R_{th(ch-c)}$	9.2
Channel Temperature	Tch	150	$^\circ\text{C}$
Operating ambient temperature	Topr	-40 to +85	
Storage Temperature Range	Tstg	-55 to +150	
Avalanche Current (Single pulse) ^{*3}	IAR	4.5	A
Avalanche Energy (Single pulse) ^{*3}	EAR	2.5	mJ

Note *1 Device mounted on a glass-epoxy board in Figure 1

*2 Pulse test: Ensure that the channel temperature does not exceed 150 $^\circ\text{C}$

*3 $V_{DD} = 24\text{ V}$, $V_{GS} = 10\text{ to }0\text{ V}$, $L = 0.1\text{ mH}$, $T_{ch} = 25\text{ }^\circ\text{C}$ (initial)



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

Static Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source Breakdown Voltage	VDSS	ID = 1.0 mA, VGS = 0 V	30			V
Zero Gate Voltage Drain Current	IDSS	VDS = 30 V, VGS = 0 V			10	μA
Gate-source Leakage Current	IGSS	VGS = ±16 V, VDS = 0 V			±10	μA
Gate-source Threshold Voltage	Vth	ID = 519 μA, VDS = 10 V	1.3		3	V
Drain-source On-state Resistance	RDS(on)1	ID = 4.5 A, VGS = 10 V		17	24	mΩ
	RDS(on)2	ID = 4.5 A, VGS = 4.5 V		24	30	

Dynamic Characteristics

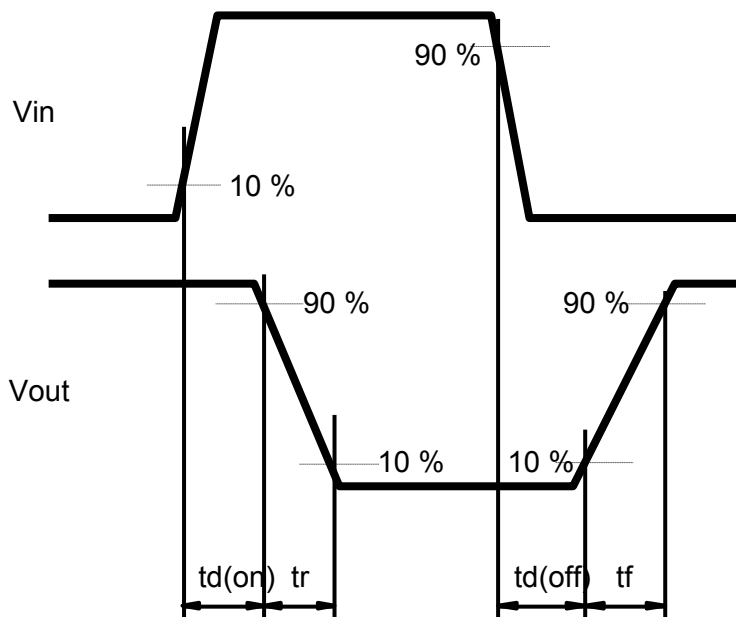
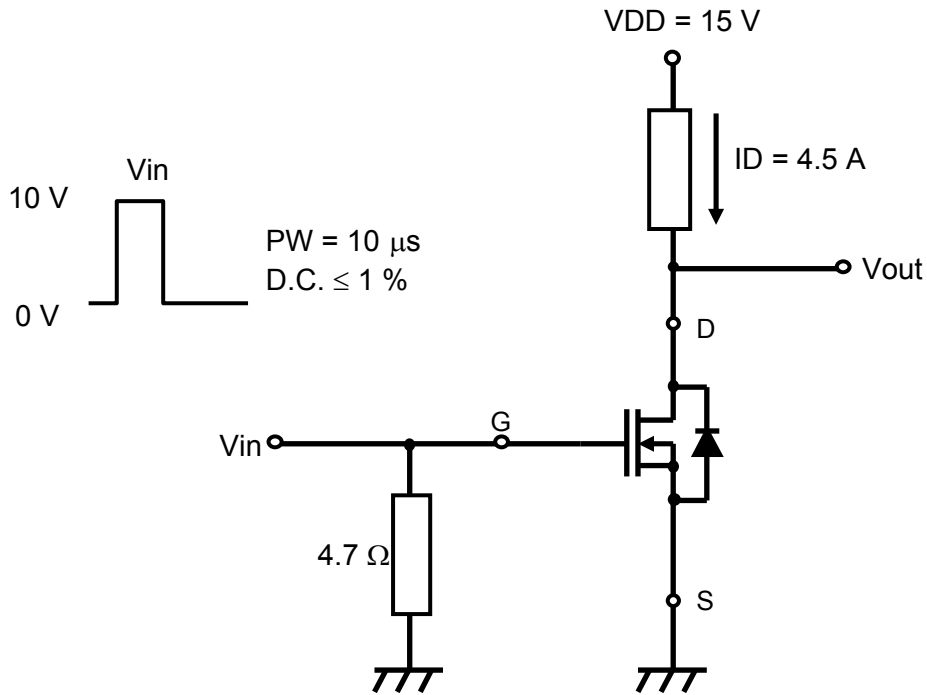
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input Capacitance	Ciss	VDS = 10 V, VGS = 0 V, f = 1 MHz		470	658	pF
Output Capacitance	Coss			69	97	
Reverse Transfer Capacitance	Crss			38	61	
Turn-on Delay Time ^{*1}	td(on)	VDD = 15 V, VGS = 0 to 10 V		4		ns
Rise Time ^{*1}	tr	ID = 4.5 A		3		
Turn-off Delay Time ^{*1}	td(off)	VDD = 15 V, VGS = 10 to 0 V		31		ns
Fall Time ^{*1}	tf	ID = 4.5 A		5		
Total Gate Charge	Qg	VDD = 15 V, VGS = 0 to 4.5 V ID = 4.5 A		3.9		nC
Gate to Source Charge	Qgs			1.4		
Gate to Drain Charge	Qgd			1.7		
Gate Resistance	rg	f = 5 MHz		1.9	3	Ω

Body Diode Characteristic

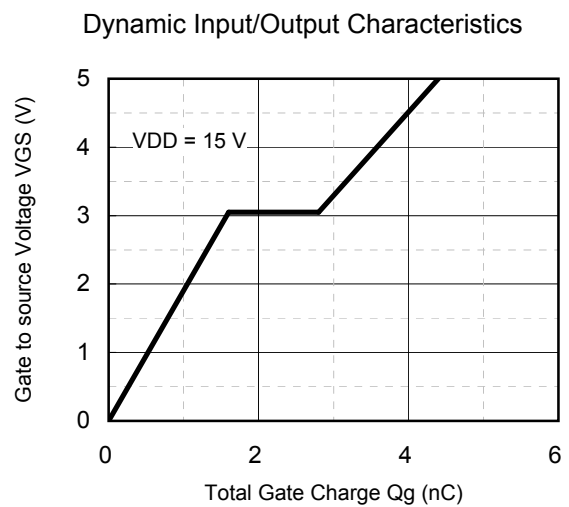
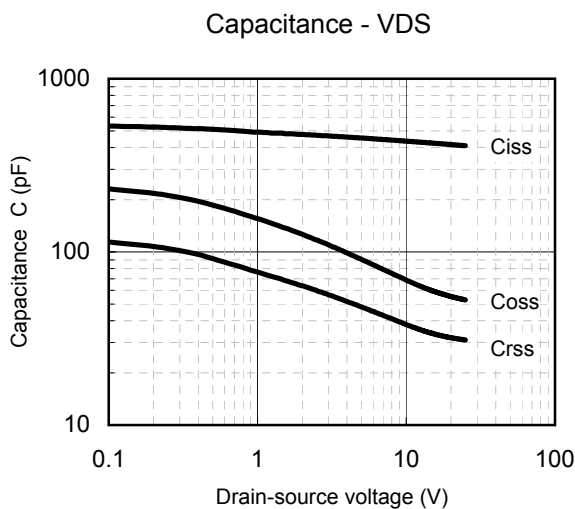
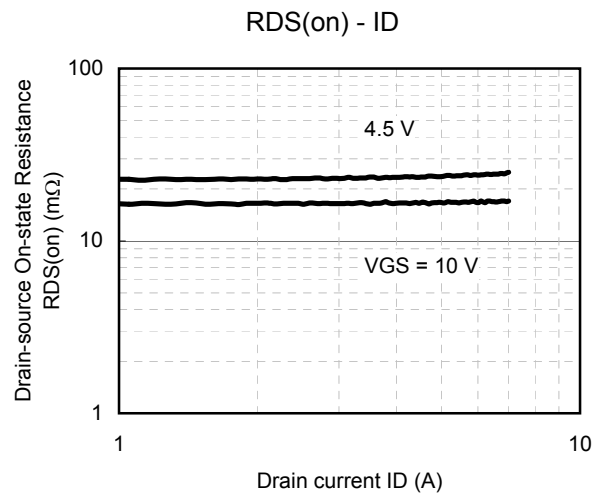
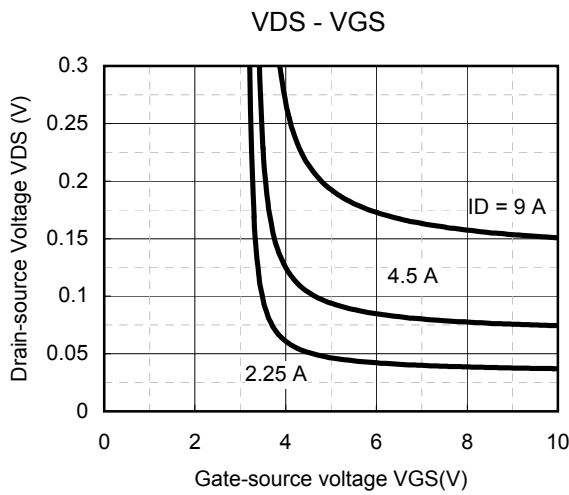
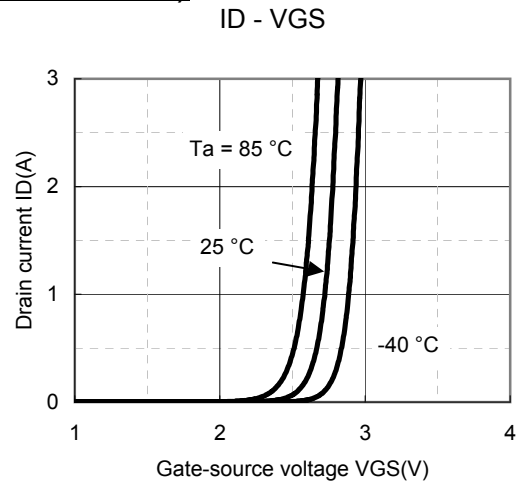
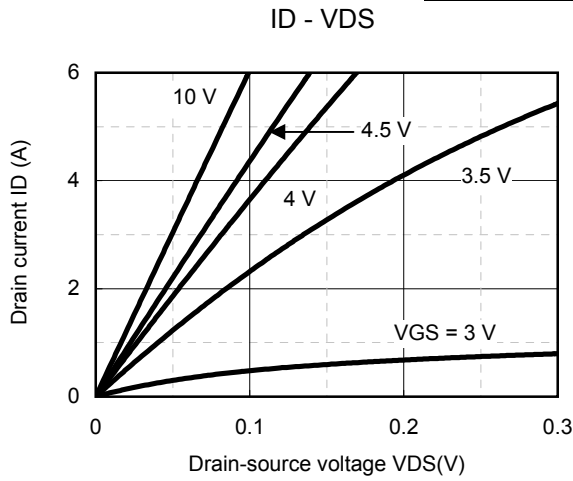
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage	VSD	IS = 4.5 A, VGS = 0 V		0.8	1.2	V

Note : 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 Measuring methods for transistors.
2. *1 Measurement circuit for Turn-on Delay Time/Rise Time/Turn-off Delay Time/Fall Time

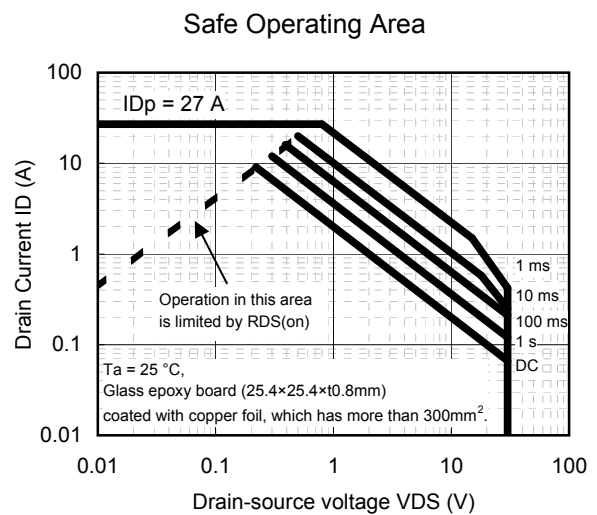
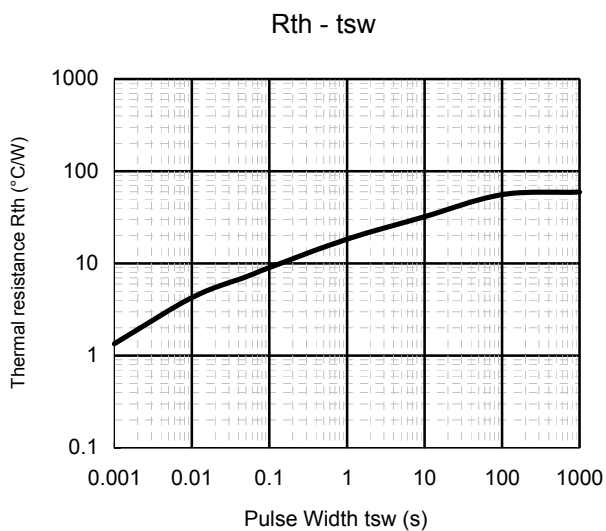
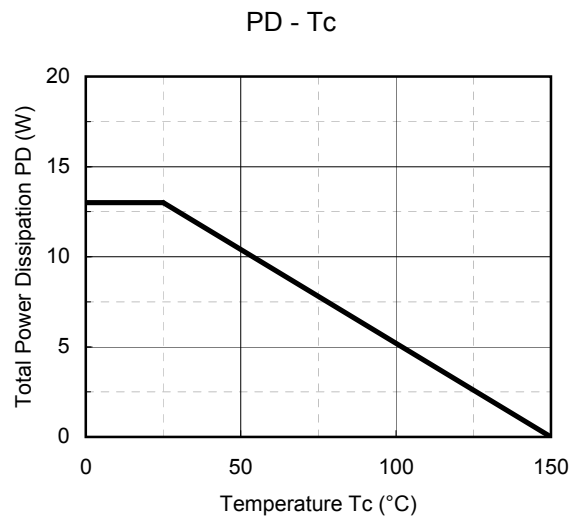
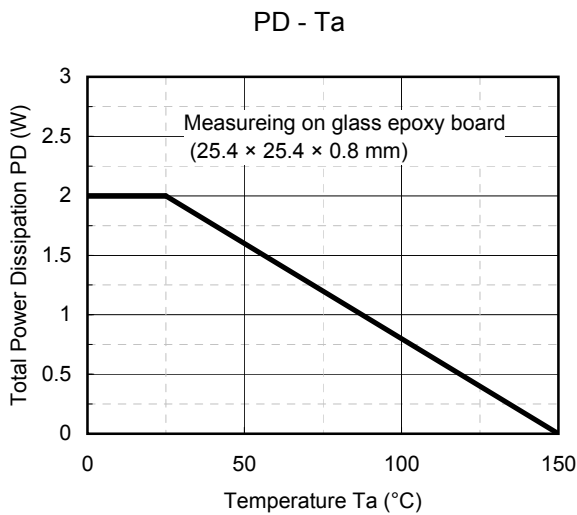
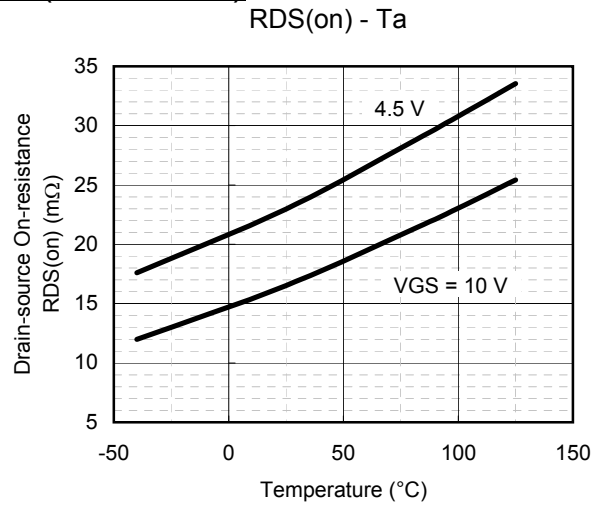
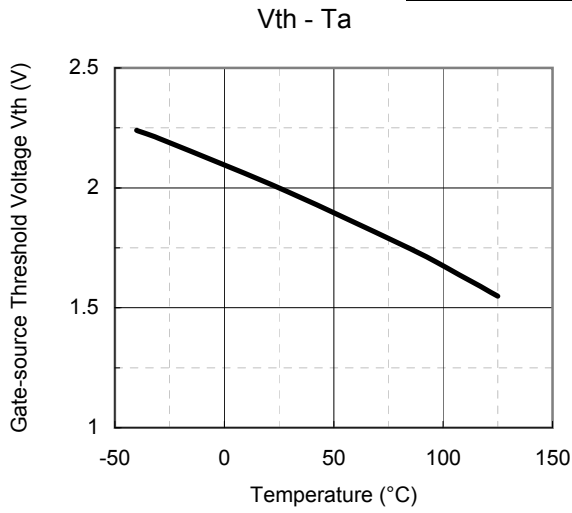
*1 Measurement circuit for Turn-on Delay Time/Rise Time/Turn-off Delay Time/Fall Time



Technical Data (reference)

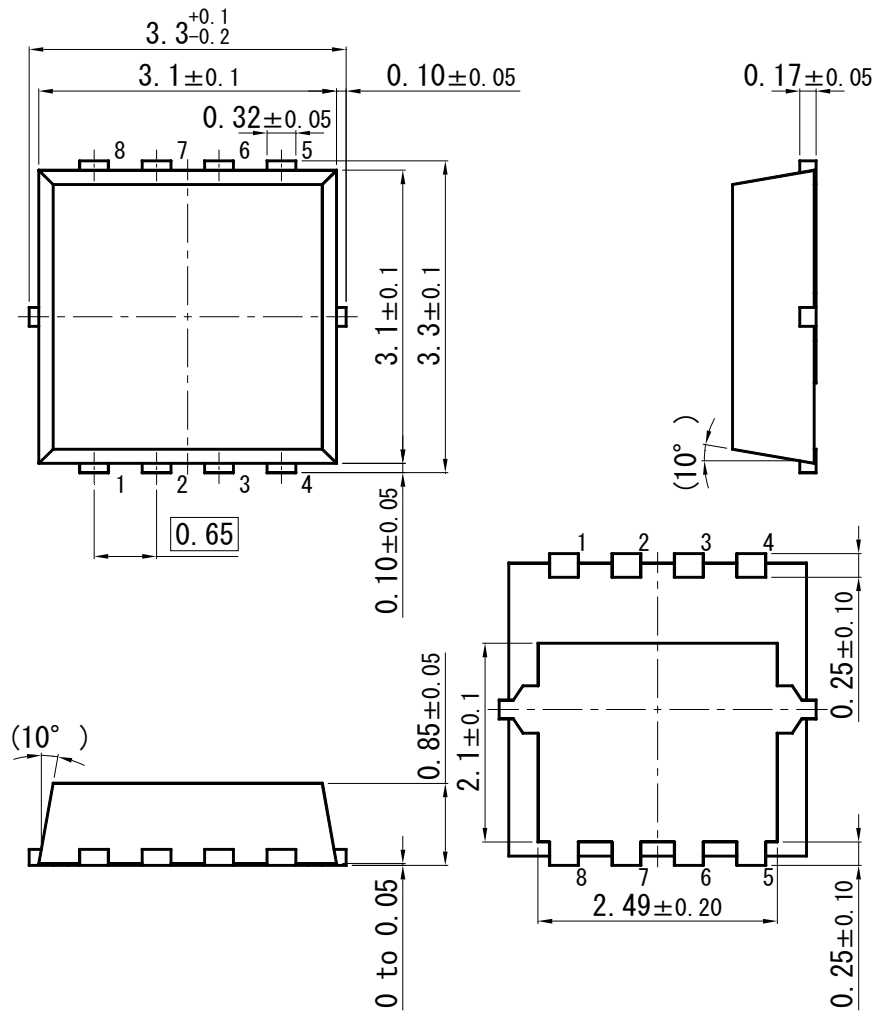


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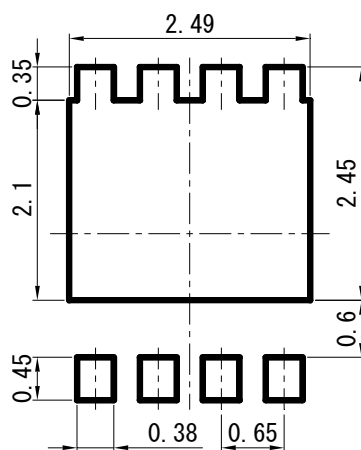


HSSO8-F3-B

Unit: mm



■ Land Pattern (Reference) (Unit: mm)



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