


 MOS FET
FCAB21490L1

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Gate resistor installed Dual N-channel MOS FET

For lithium-ion secondary battery protection circuits

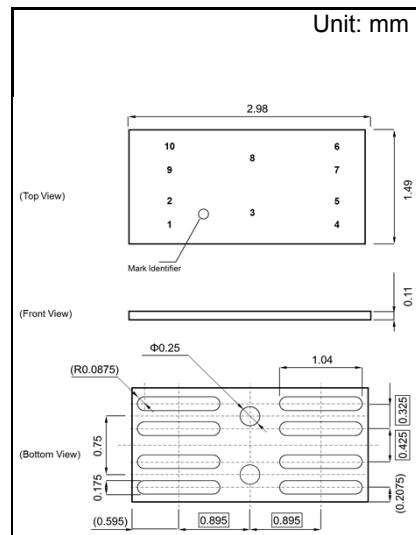
■ Features

- Source-source ON resistance: RSS(on) typ. = 2.2 mΩ (VGS = 3.8 V)
- CSP(Chip Size Package)
- Halogen-free / RoHS compliant (EU RoHS / UL-94 V-0 / MSL : Level 1)

■ Marking Symbol: 7F

■ Packaging

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



■ Absolute Maximum Ratings Ta = 25 °C

Parameter	Symbol	Rating	Unit
Source-source Voltage	VSS	12	V
Gate-source Voltage	VGS	±8	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	°C
Storage Temperature Range	Tstg	-55 to +150	°C

Note ^{*1} Mounted on FR4 board (25.4 mm × 25.4 mm × t1.0 mm)
using the minimum recommended pad size (36µm Copper).

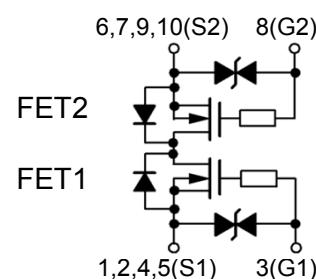
^{*2} Mounted on Ceramic substrate (70 mm × 70 mm × t1.0 mm).

^{*3} t = 10 µs, Duty Cycle ≤ 1 %

1,2,4,5. Source1(FET1)	3. Gate1 (FET1)
6,7,9,10. Source2(FET2)	8. Gate2 (FET2)

Panasonic	TCSP1530011-N1
JEITA	—
Code	—

Equivalent circuit



■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

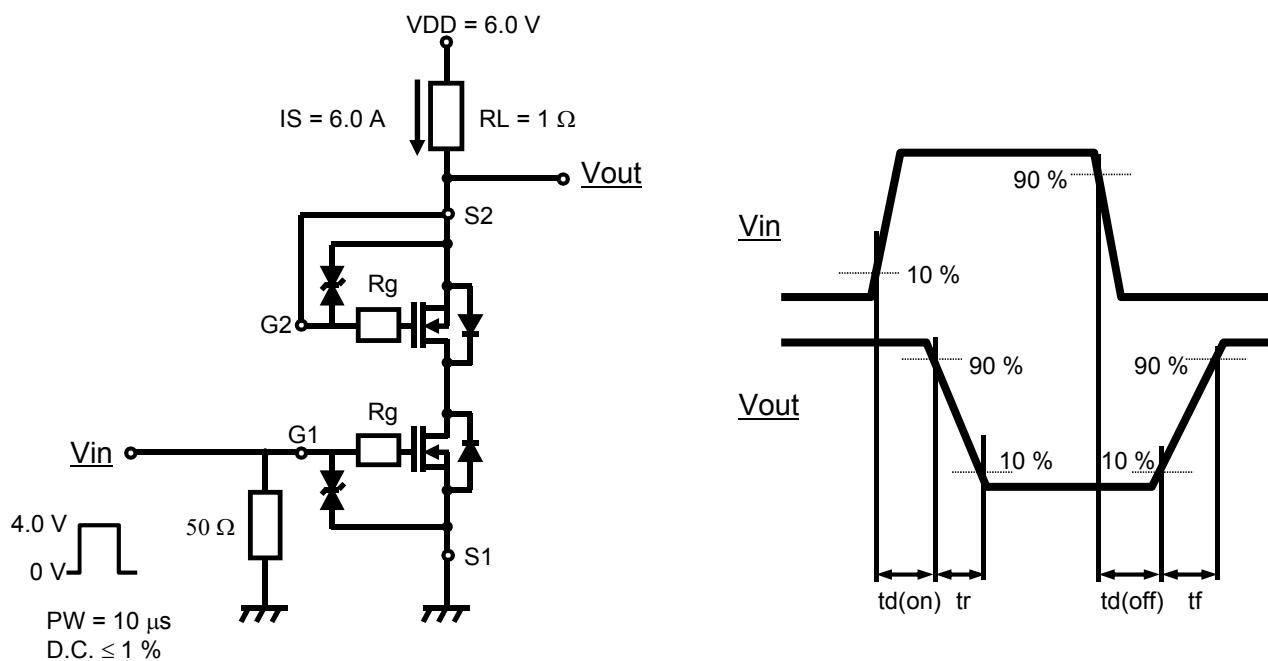
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Source-source Breakdown Voltage	V _{SSS}	$I_S = 1.0 \text{ mA}, V_{GS} = 0 \text{ V}$	12			V
Zero Gate Voltage Source Current	I _{SSS}	$V_{SS} = 12 \text{ V}, V_{GS} = 0 \text{ V}$			1.0	μA
Gate-source Leakage Current	I _{GSS}	$V_{GS} = \pm 8 \text{ V}, V_{SS} = 0 \text{ V}$			± 10	μA
		$V_{GS} = \pm 5 \text{ V}, V_{SS} = 0 \text{ V}$			± 1.0	
Gate-source Threshold Voltage	V _{th}	$I_S = 1.11 \text{ mA}, V_{SS} = 10 \text{ V}$	0.35	0.90	1.4	V
Source-source On-state Resistance	R _{S(on)1}	$I_S = 6.0 \text{ A}, V_{GS} = 4.5 \text{ V}$	1.55	2.1	2.75	$\text{m}\Omega$
	R _{S(on)2}	$I_S = 6.0 \text{ A}, V_{GS} = 3.8 \text{ V}$	1.6	2.2	2.85	
	R _{S(on)3}	$I_S = 6.0 \text{ A}, V_{GS} = 3.1 \text{ V}$	1.65	2.4	3.95	
	R _{S(on)4}	$I_S = 6.0 \text{ A}, V_{GS} = 2.5 \text{ V}$	1.9	3.1	6.1	
Body Diode Forward Voltage	V _{F(s-s)}	$I_F = 6.0 \text{ A}, V_{GS} = 0 \text{ V}$		0.6	1.2	V
Input Capacitance ¹	C _{iss}			3570		pF
Output Capacitance ¹	C _{oss}	$V_{SS} = 10 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ kHz}$		460		
Reverse Transfer Capacitance ¹	C _{rss}			410		
Turn-on delay Time ^{1,2}	t _{d(on)}	$V_{DD} = 6.0 \text{ V}, V_{GS} = 0 \text{ to } 4.0 \text{ V}$		0.7		μs
Rise Time ^{1,2}	t _r	$I_S = 6.0 \text{ A}$		1.5		
Turn-off delay Time ^{1,2}	t _{d(off)}	$V_{DD} = 6.0 \text{ V}, V_{GS} = 4.0 \text{ to } 0 \text{ V}$		6.7		μs
Fall Time ^{1,2}	t _f	$I_S = 6.0 \text{ A}$		4.1		
Total Gate Charge ¹	Q _g	$V_{DD} = 6.0 \text{ V}$		25		nC
Gate-source Charge ¹	Q _{gs}	$V_{GS} = 0 \text{ to } 4.0 \text{ V}, I_S = 6.0 \text{ A}$		12		
Gate-drain Charge ¹	Q _{gd}	$I_S = 6.0 \text{ A}$		6		

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

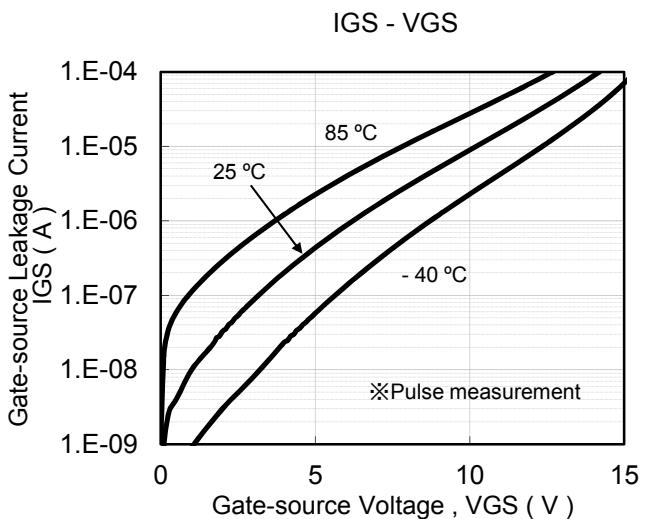
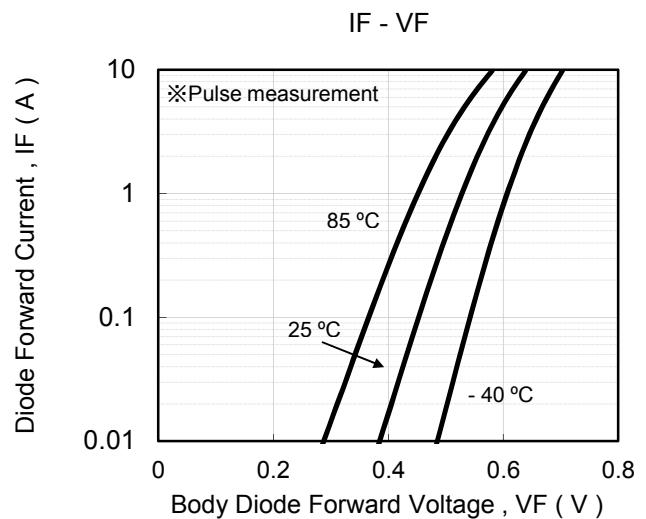
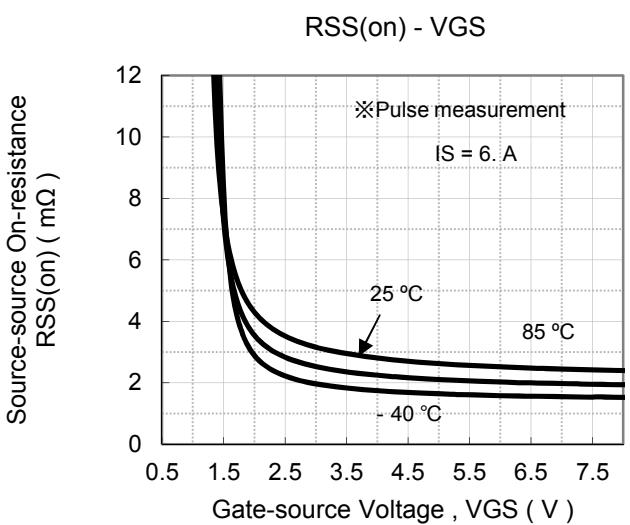
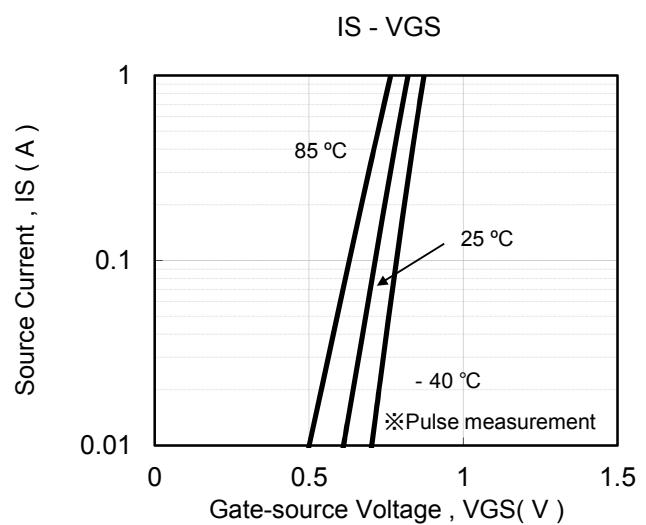
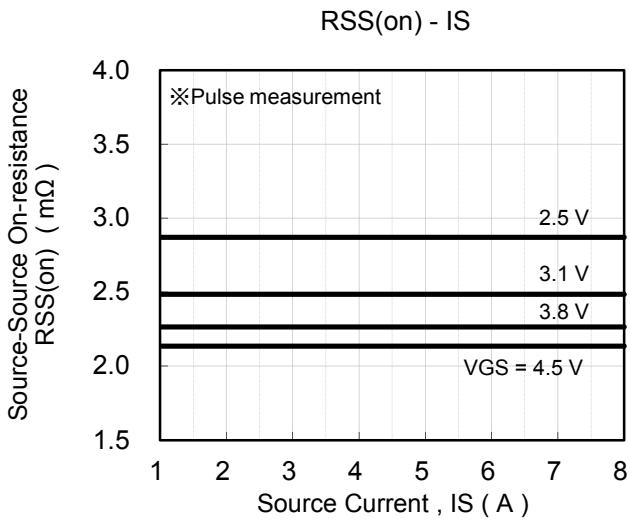
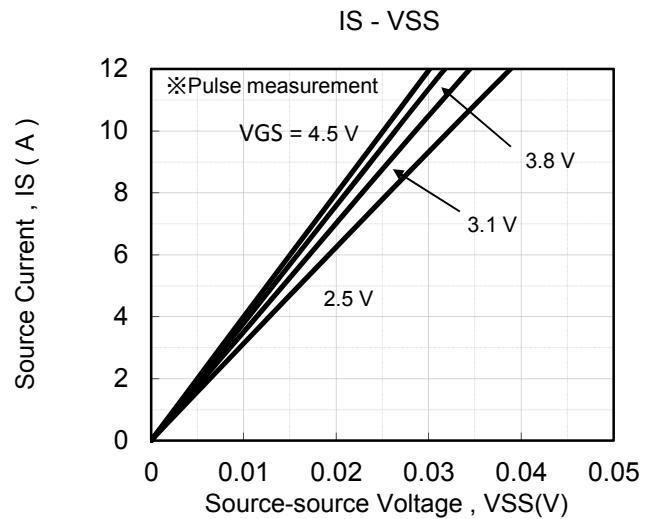
*2 Measurement circuit for Turn-on Delay Time / Rise Time / Turn-off Delay Time / Fall Time

Note2:Measurement circuit



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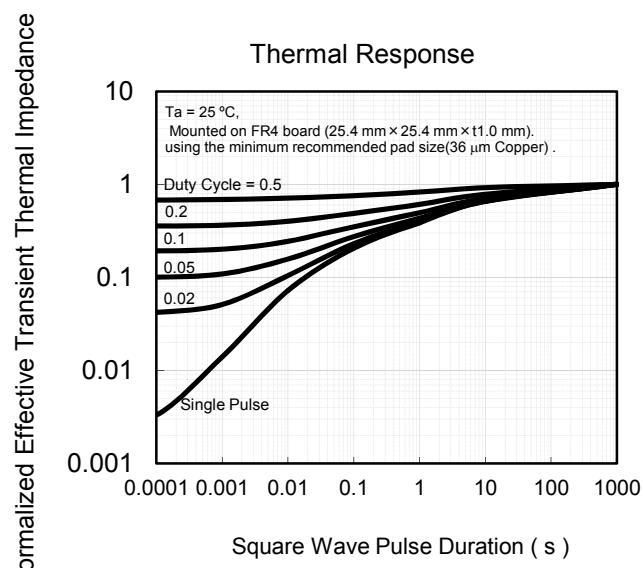
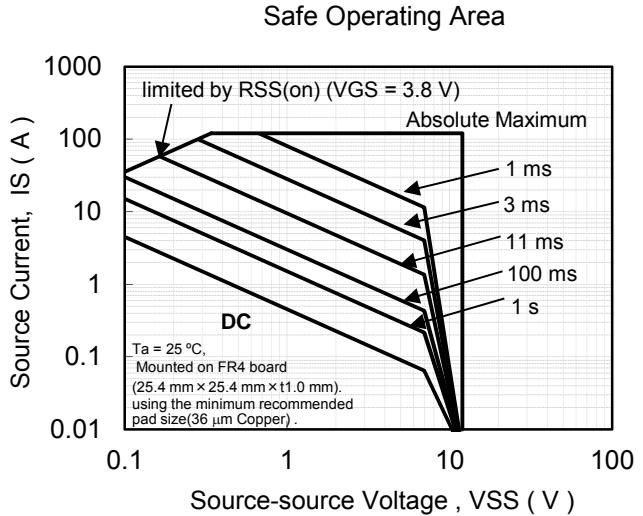
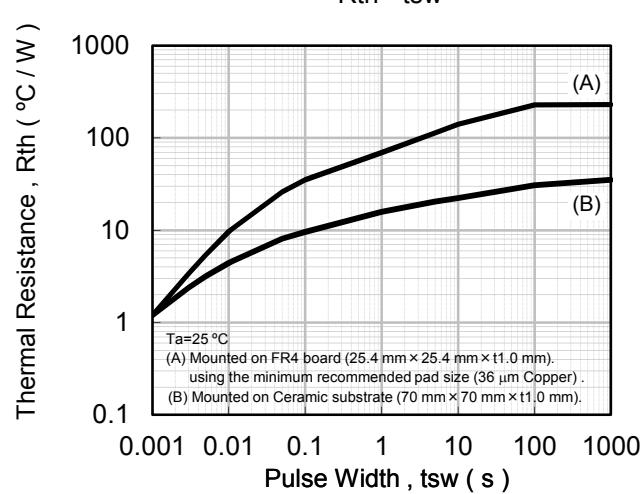
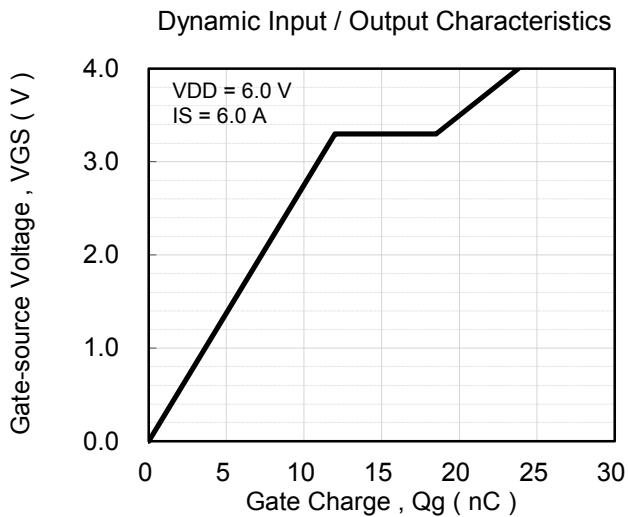
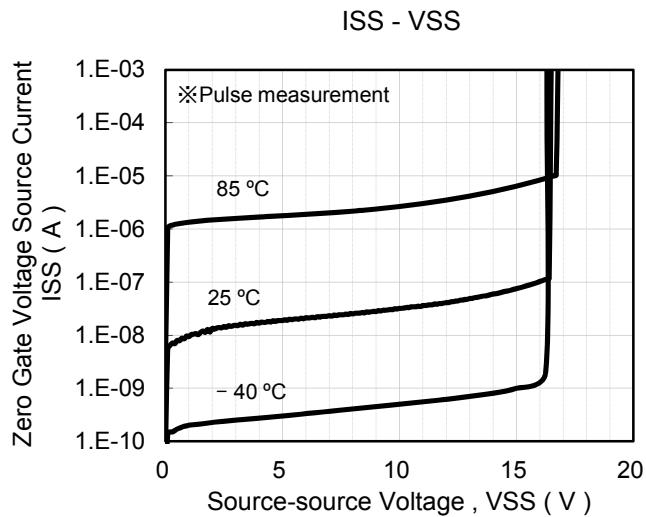
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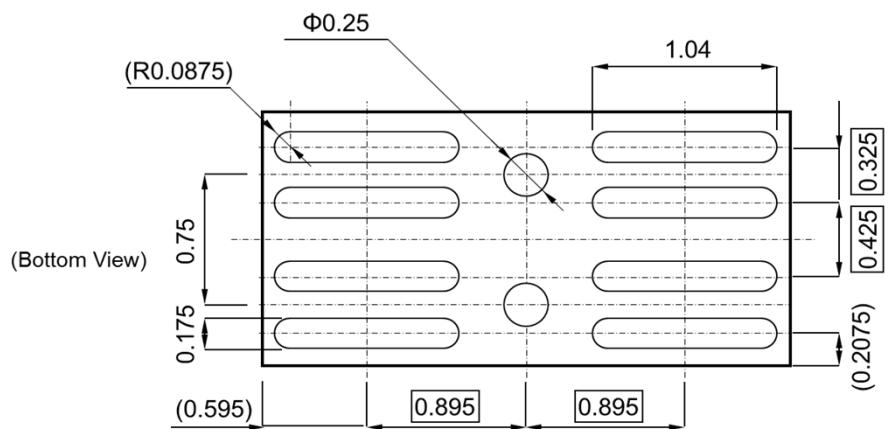
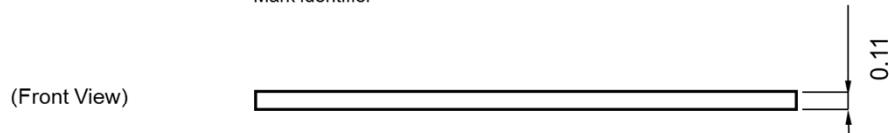
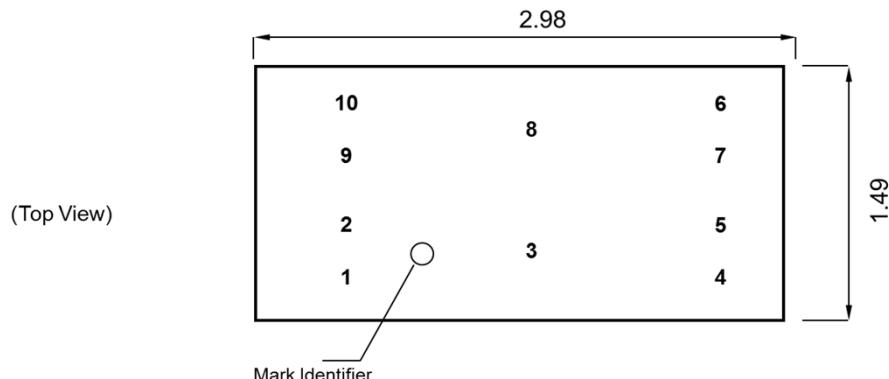


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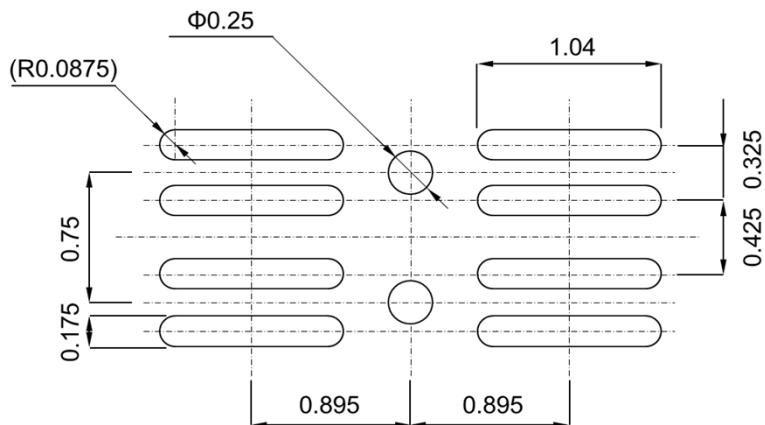
MOS FET

FCAB21490L1**■ Outline**

Unit: mm

**■ Land Pattern (Reference)**

Unit: mm



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