TAIYO KOGYO CO.,LTD.
Printed Circuit Company

HCPCB Technology Guide

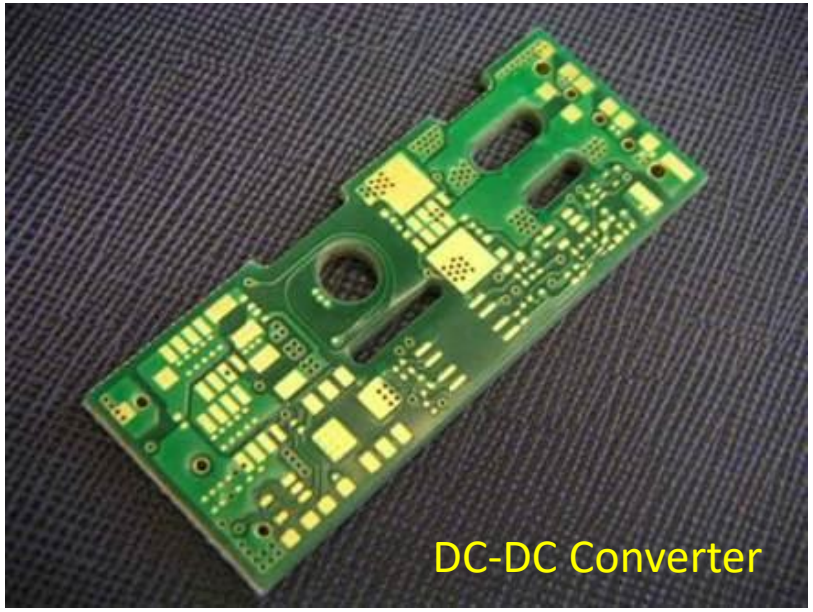
Taiyo Kogyo Co., Ltd.

Thick Copper PCB

High Current

Heat Dissipation

- Copper foil thickness : 3oz / 4oz / 5oz / 6oz / 6.8oz
- Number of Layers : 2-16Layers (*depending on copper foil thickness)
- Board thickness : 0.023”-0.137” (0.6-3.5 mm)
- Available : IVH / To combine with less than 2oz copper is available.
- UL : Certified



10Layers IVH
All layers 3oz
Board thickness
0.102” (2.6mm)

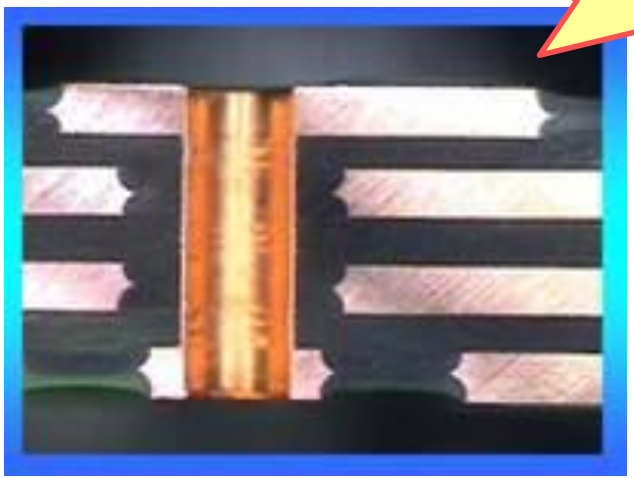
Ultra Thick Copper PCB

High Current

Heat Dissipation

- Copper foil thickness : 8.6oz / 11.4oz / 14.3oz (using rolled copper foil)
- Number of Layers : 2-6Layers (*depending on copper foil thickness)
- Board thickness : 0.051”-0.137” (1.3-3.5 mm)
- Available : IVH / To combine with less than 6.8oz copper is available.
- UL : Certified

All layer 14.3oz
Board thickness
0.125” (3.2mm)

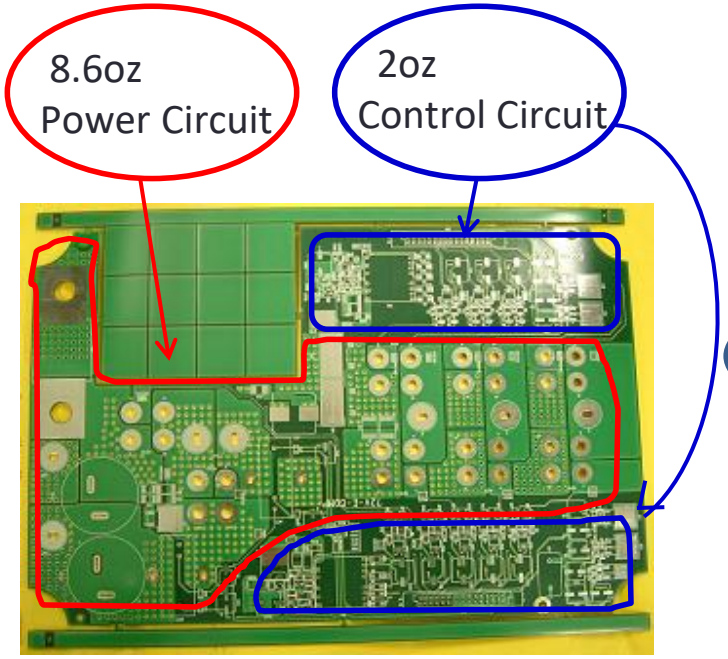


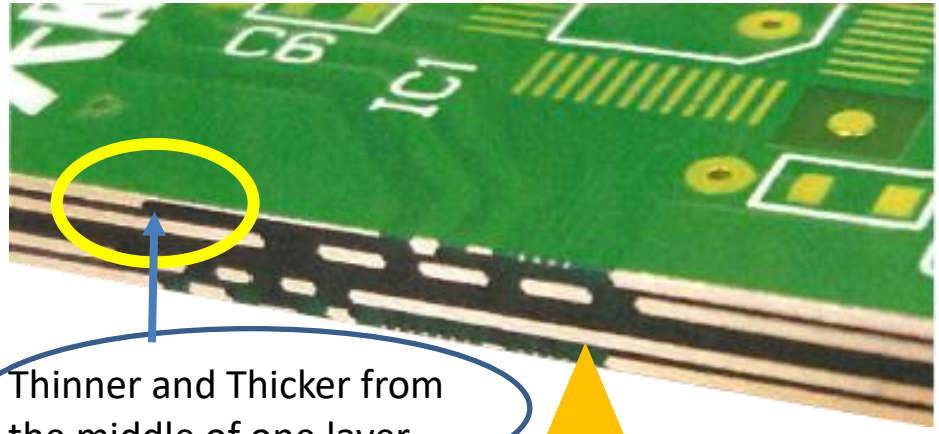
Combination PCB

High Current

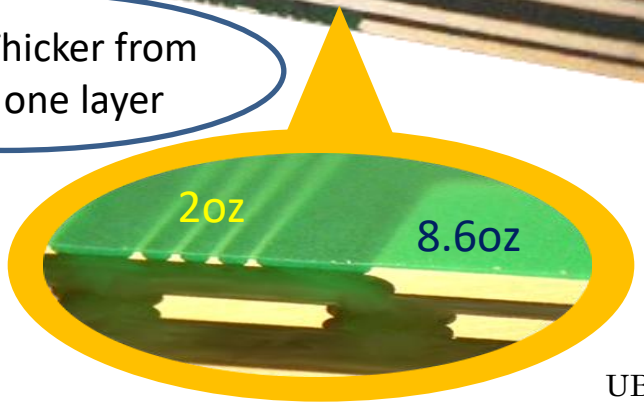
Heat Dissipation

- Copper foil thickness : 8.6oz & 2oz copper on the very same layer
- Number of Layers : 2- 6 Layers
- Board thickness : 0.051”-0.137” (1.3 - 3.5 mm)
- Available : IVH / To combine less than 11.4oz, 14.3oz and 6.8oz copper is available.
- UL : Certified





Thinner and Thicker from the middle of one layer

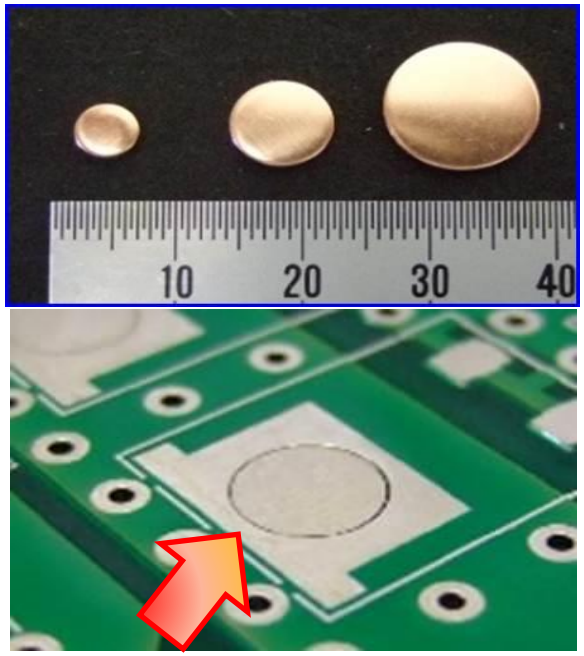


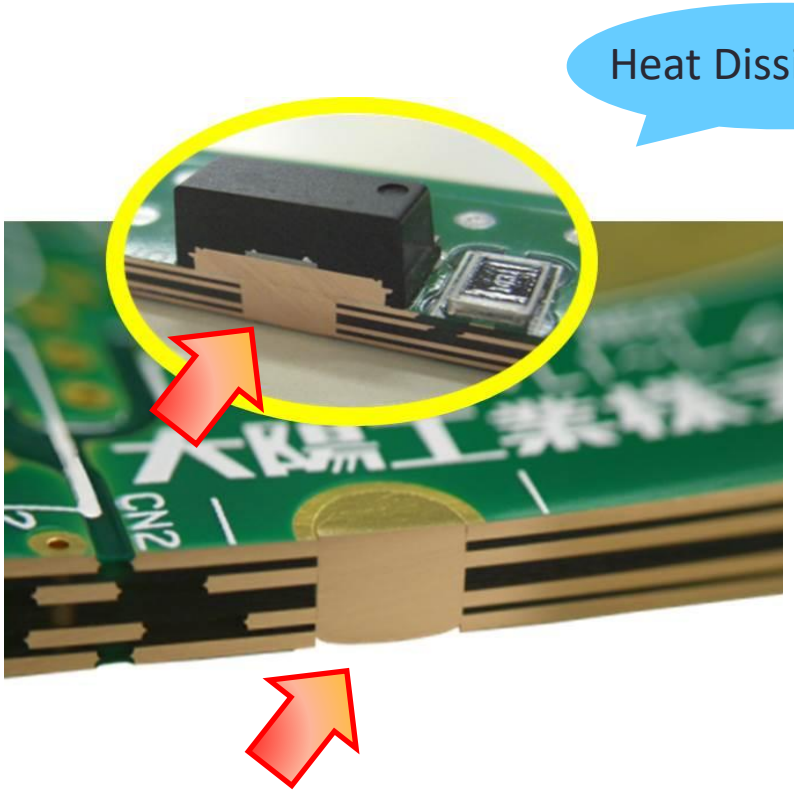
UB022.010

※Copper foil thickness of 8.6oz is fixed, but it is possible to adjust thickness on thinner copper foil part, if it is more than 2oz.

Copper Inlay PCB (Heat dissipation PCB for Power device)

Pure copper chips(copper inlays) are pressed in direct under heat generating components on the board. Copper inlays transfer heat from the surface layer to the other side of the board.



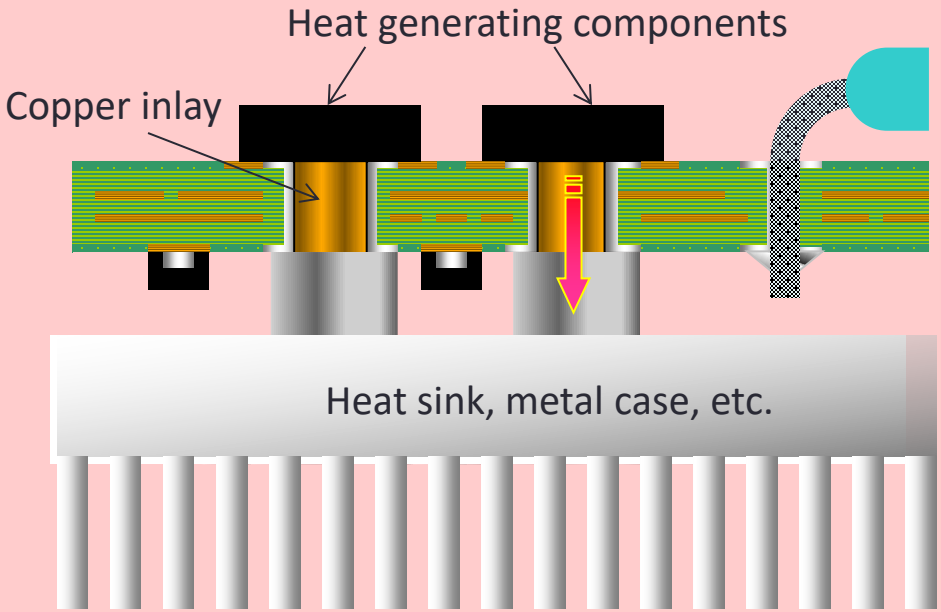


Realize highly efficient heat dissipation for power device such as SiC and GaN

Copper Inlay PCB

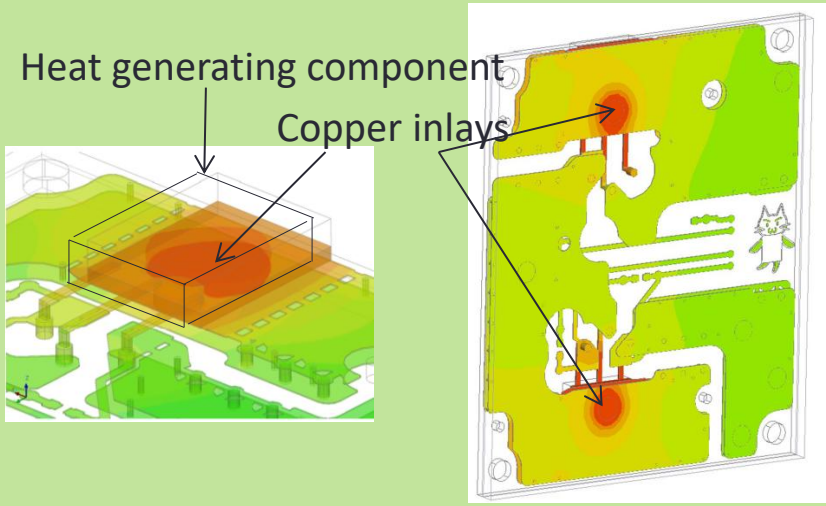
- Available for all copper foil thickness
- Diameters of inlay : 0.118”/0.157”/0.196”/0.236”
  (3 / 4 / 5 / 6 mm)

*High-efficient heat dissipation with heat sink or metal case as heat sink in the bottom.



Heat Dissipation

Heat is concentrated on copper inlay areas, and it protects other neighboring areas from heat !

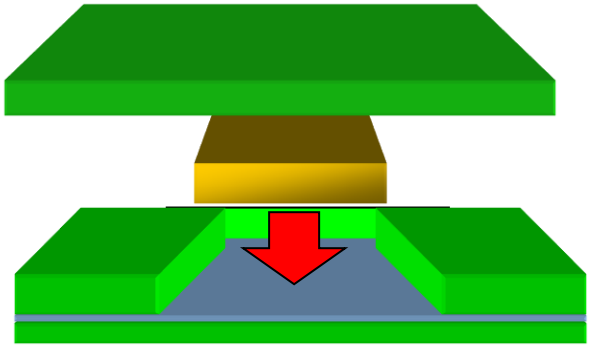


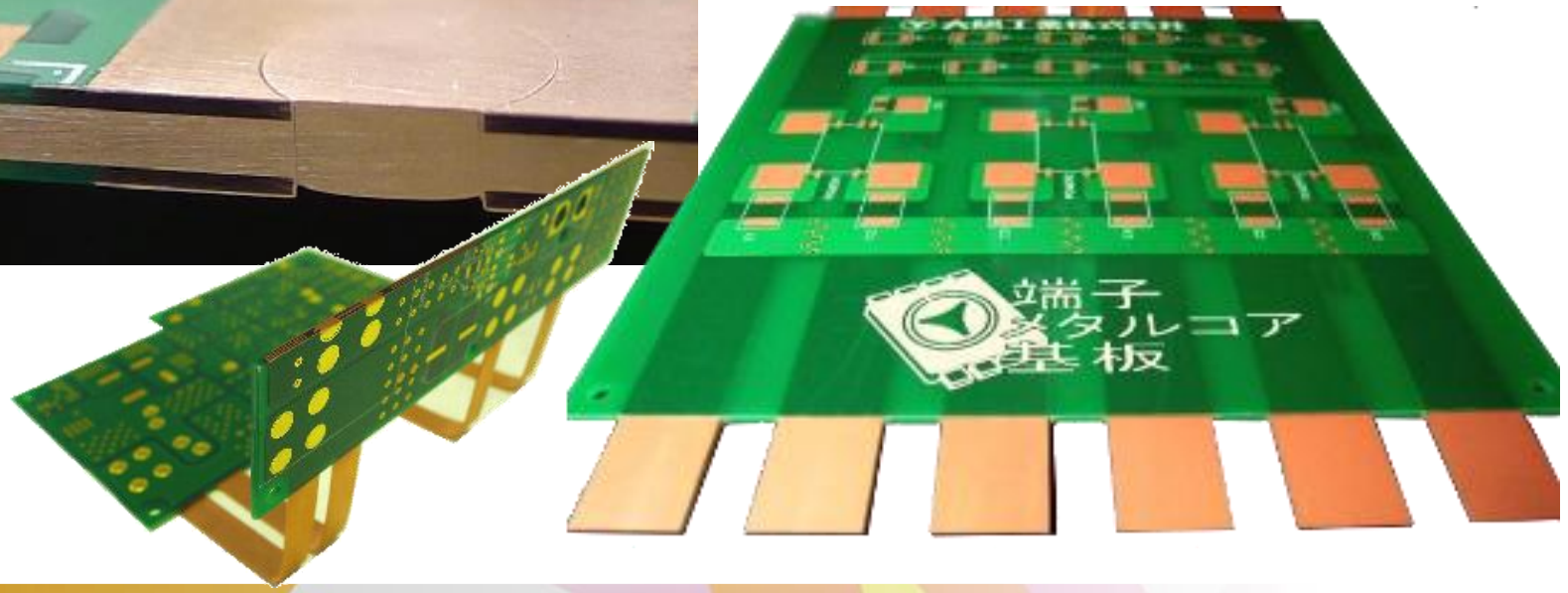
Bus Bar Embedded PCB

High Current

Heat Dissipation

Instead of using etching process to make traces,
14.3oz. or heavier Bus-Bar is made with
rolled copper foils by metal fabrication,
and it can be embedded in the PCB.





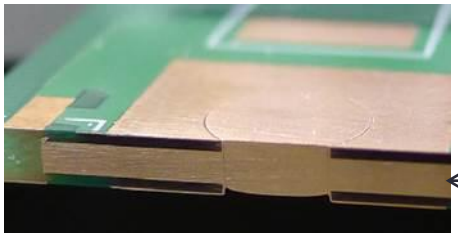
Bus Bar Embedded PCB

High Current

Heat Dissipation

■ Bus Bar thickness : 14.3 / 22.8 / 28.5 / 57.1 oz.

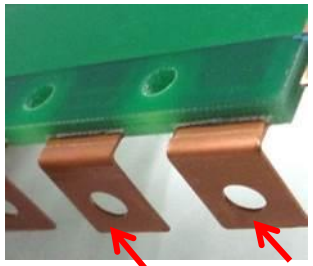
☑ Embedding Bus Bar into Inner layer



← Bus Bar

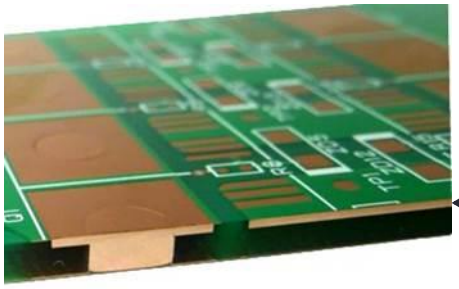
☑ Extracting copper and bending copper terminal

Surface Layer



Layer 2 Layer 3

☑ Embedding Bus Bar into External Layer



← Bus Bar

☑ The shape of Bus Bar is flexible.

Selecting optimum copper foil thickness and designing conductive traces.

For above designing, “what is allowable temperature rise?” is an important factor.

Select optimum copper foil thickness and design conductive patterns based on actual data chart.

Actual data for Handling current value for “Signal trace width” and “Copper foil thickness” based on each allowable temperature rise（⊿t）.

The example is based on allowable temperature rise of 30 degrees C (⊿t = 30℃)

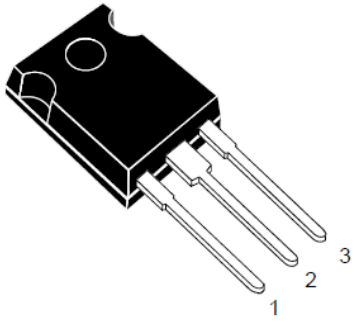
Trace Width (inch)	Copper foil thickness （oz.）							
	0.5	1	2	3	4	5	6	6.8
0.031	0.84	1.43	1.84	2.14	2.28	2.39	2.48	2.55
0.035	0.94	1.59	2.06	2.36	2.51	2.63	2.73	2.80
0.039	1.04	1.75	2.27	2.53	2.84	3.14	3.45	3.71

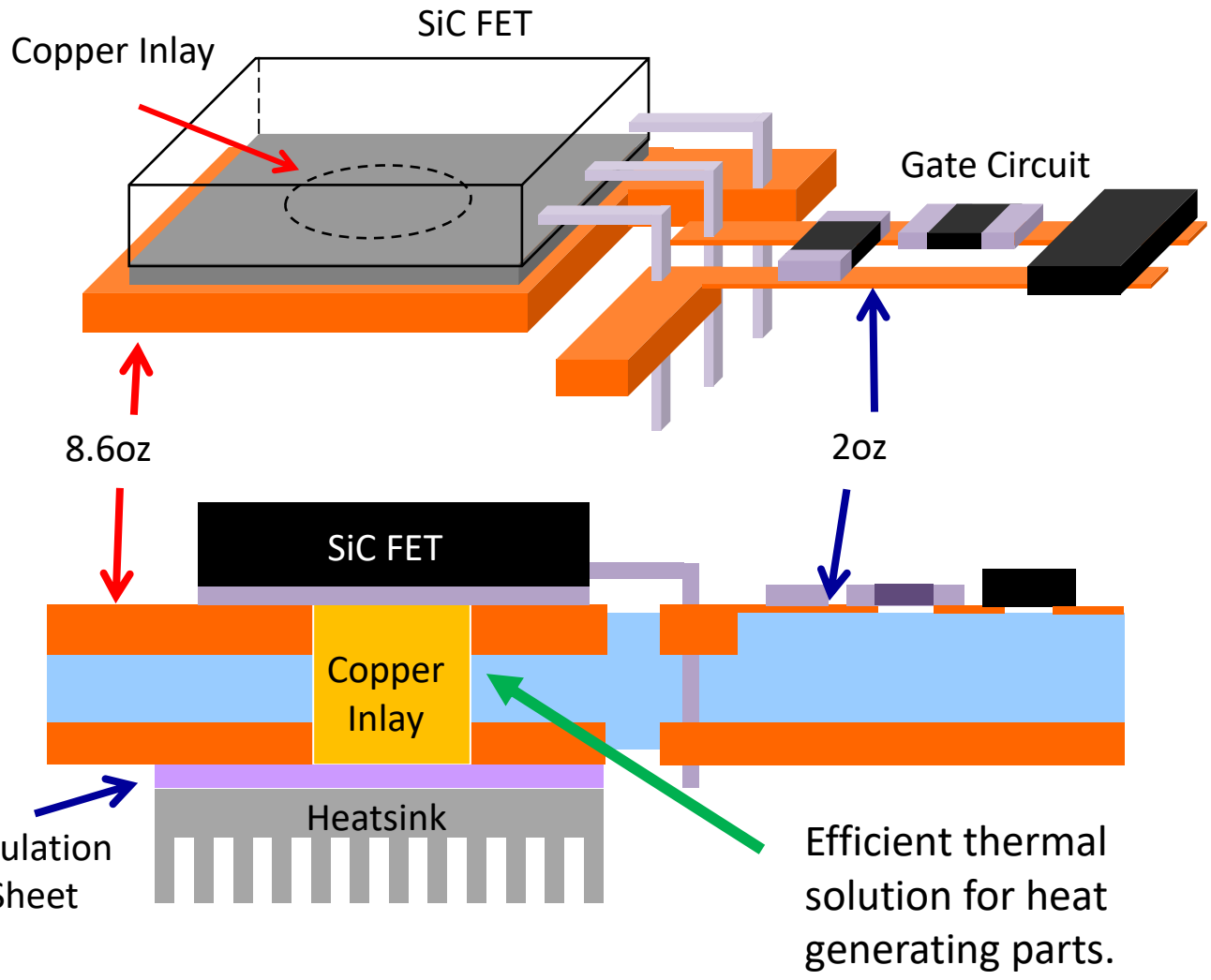
We have data for:
Temperature rise: 10 - 100℃
Copper foil thickness 0.5 - 14.3oz.
Trace width 0.031” - 2.362”
(0.8～60mm)

Handling current value (A)

We can provide optimum PCB according to customer’s requirement specs.

Value of Combination & Copper Inlay PCB
– DIP type SiC device





Source and Drain
↓
Thick Copper 8.6oz

Gate
↓
Thin Copper 2oz

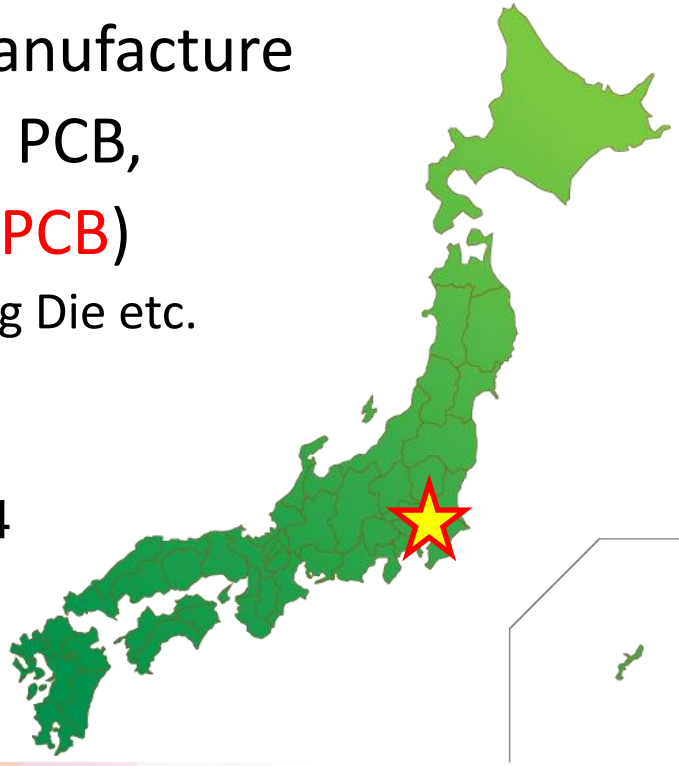
Combination PCB

Company Profile

- Company Name : TAIYO KOGYO CO., LTD.
- Head Office : Tokyo, Japan
- Established : August 15th, 1947
- Employees : 353 as of September 30, 2025
- Business field : To design and manufacture Printed Circuit Board (Conventional PCB, High Current PCB, Heat Dissipation PCB)

  *Sheet metal processing / Painting / Punching Die etc.

- ISO-9001 : Date of Acquisition: June, 1997
- ISO-14001 : Date of Acquisition: March, 2004
- UL : E44308 Listed



Main Facilities

- Automatic Imaging Machine
- AOI (Automated Optical Inspection)
- Mat Surface Treatment Line
- Press Machines
- NC Drilling Machines
- Copper Plating Line
- Etching Lines
- Soldermask Spray Coating
- Soldermask Curtain Coating Line
- Silk legend printing machines
- NC Router machines
- OSP Treatment Line
- Flying Probe Testers
- Custom-made Electrical Testers
- Copper Inlay Auto Press Machine

and more…

Taiyo Kogyo Co., Ltd.

↓Please visit our website.↓

https://www.taiyo-technologies.jp/solution/pcb-en

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