CS-AL-88 **Aluminum Based Copper-clad Laminate**

Features

「CS-AL-88」is a kind of copper-clad metal plate, and has the following features：

- Excellent heat sink, and good electrical insulation.
- High mechanical strength, dimensional stability etc.
- Apply to the Surface Mount Technology (SMT).
- Reduce the temperature of product and extend the life of product.

Structure

「CS-AL-88」 is composed of copper foil, heat conductive insulation glue and aluminum plate:

1. Copper foil：the thickness of copper foil is Hoz ~ 5.0 oz.
2. Insulation glue：a kind of low heat-resisted, heat conductive insulating material. To Combine Copper foil with the Core. Its thickness is 2 ~ 8 mil
3. Core：it can be aluminum, copper, iron or others.

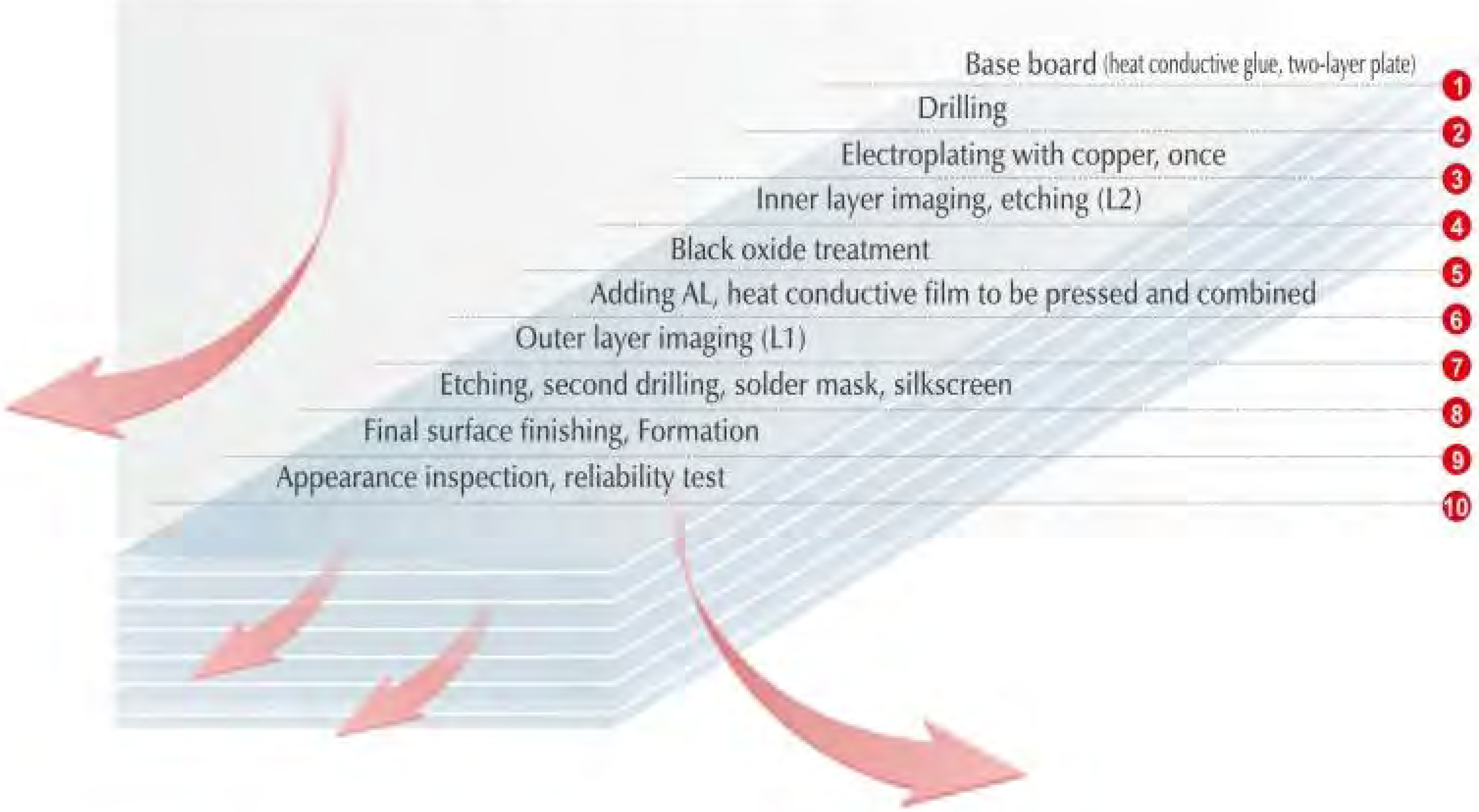
Single-Sided PCB with Aluminum Substrate

Double-Sided PCB with Aluminum Substrate

Copper Laminated with Aluminum Substrate

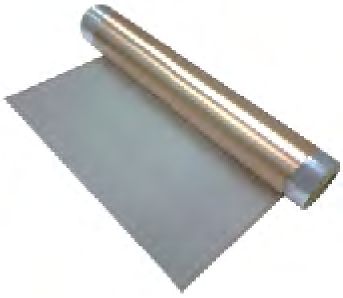
(For example: Single-sided, two-layer plate)

The manufacturing procedure of PCB



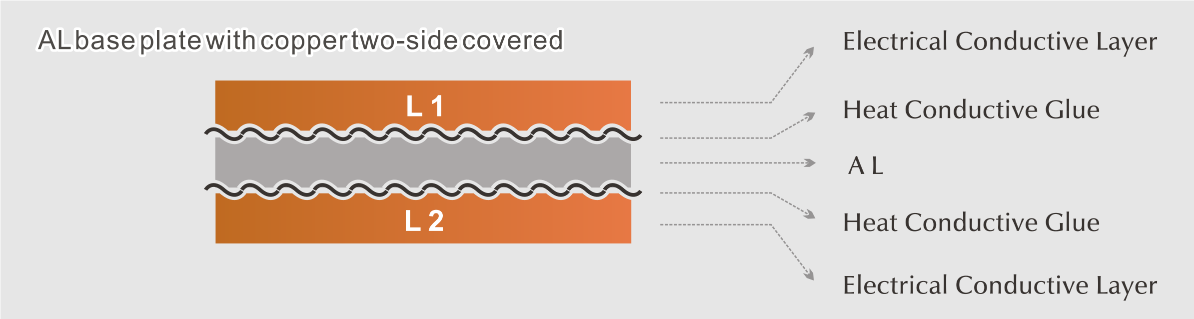
1. Base board (heat conductive glue, two-layer plate)
2. Drilling
3. Electroplating with copper, once
4. Inner layer imaging, etching (L2)
5. Black oxide treatment
6. Adding AL, heat conductive film to be pressed and combined
7. Outer layer imaging (L1)
8. Etching, second drilling, solder mask, silkscreen
9. Final surface finishing, Formation
10. Appearance inspection, reliability test

Heat Conductive(CS-88P)、Copper-Clad with Dielectric(CS-88C)、Double-Side Printed Board(CS-88TC)

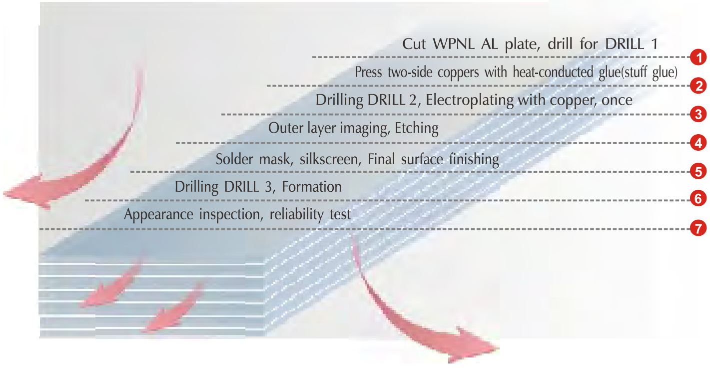


MODEL	AD2、AD3、AD5
DIMENSION	18"x24"、20"x24"、Roll type
THICKNESS	2、3、4、5、6、7、8mil
PP+CU(RCC)	The thickness of copper foil: H oz~5.0 oz.
PURPOSE	Metal base board for pressing, Multi-Layer Metal Base Substrate Laminate

Metal-Core Al Base Board



The Manufacturing Procedure of PCB (Build Up Process)



Cut WPNL AL plate, drill for DRILL 1 ①
Press two-side coppers with heat-conducted glue(stuff glue) ②
Drilling DRILL 2, Electroplating with copper, once ③
Outer layer imaging, Etching ④
Solder mask, silkscreen, Final surface finishing ⑤
Drilling DRILL 3, Formation ⑥
Appearance inspection, reliability test ⑦

CS-AL-88 AD2

Specification of Aluminum Based Copper-clad Laminate

Item	Unit		Specification
Insulation thickness	μm	Max Min	200 60
Solder resistance (288 deg. C)	min.	Min	60
Thermal shock	288˚C*10''/cycle		>6次
Peel strength Normal status	lb/in	Min	9
Breakdown Voltage	V/mil		750
Volume resistivity Normal status >E+14	Ω cm		$1.8x10^{15}$
Surface resistivity Normal status >E+12	Ω	—	$3.5x10^{14}$
Dielectric constant 1 MHz Normal status 1 GHz Normal status	—		5.6 5.3
Dissipation Factor 1 MHz Normal status 1 GHz Normal status			0.013 0.010
Water absorption	%		0.2
Thermal conductivity (measured on insulation layer only)	W/m˚C		2.0
Flammability	94V0		Pass

The thickness and dimension of Aluminum Based Copper-clad Laminate

Product category	CS-AL-88 AD2(The thickness of glue is 2~8mil)				
Dimension m/m	300x500~520 400x500~520 600x500~520 1200~1220x500~520 1200~1220x600~640				
The thickness of Single-Sided PCB with Aluminum Substrate	2.0 1/0	1.5 1/0	1.5 2/0	1.0 1/0	0.8 1/0
The thickness of Double-Sided PCB with Aluminum Substrate	2.0 1/1	1.5 H/H	1.5 1/1	1.0 1/1	0.8 1/1

- The above thicknesses exclude the thickness of glue and copper tinsel, and the thicknesses of copper tinsel and aluminum plate can be combined arbitrarily.
  The thickness of copper foil: H oz~5.0 oz.
  The thickness of aluminum plate: 0.2~5.0 m/m.
- This material is one kind of halogens-free green environmental kindly material.
- Compliance with the specification of RoHS

The scope of application

- Lighting: LED outer-wall lighting, LED stage lighting, road LED lighting, domestic LED lighting.
- Electronic devices in automobile: igniting device, voltage regulator, auto safety control system, AC transformer.
- Power supply: Switch regulator, switch, DC-DC transformer, DC-AC transformer, large power, base board of solar cell.
- Electronic control: Relay, transistor base, switchboard, radiator, insulating heat conductive board in semiconductor, motor control device.
- Computer devices: Power supply device, soft disk driver, CPU.
- Communication electronic products: automobile telephone, high frequency booster of mobile telephone, filter circuit, transmitting circuit.

CS-AL-88 AD3

Specification of Aluminum Based Copper-clad Laminate

Item	Unit		Specification
Insulation thickness	μm	Max Min	200 60
Solder resistance (288 deg. C)	min.	Min	60
Thermal shock	288˚C*10''/cycle		>6次
Peel strength Normal status	lb/in	Min	9
Breakdown Voltage	V/mil		750
Volume resistivity Normal status >E+14	Ω cm		$1.8x10^{16}$
Surface resistivity Normal status >E+12	Ω	—	$9.3x10^{15}$
Dielectric constant 1 MHz Normal status 1 GHz Normal status	—		6.1 6.0
Dissipation Factor 1 MHz Normal status 1 GHz Normal status			0.017 0.009
Water absorption	%		0.2
Thermal conductivity (measured on insulation layer only)	W/m˚C		3.0
Flammability	94V0		Pass

The thickness and dimension of Aluminum Based Copper-clad Laminate

Product category	CS-AL-88 AD3(The thickness of glue is 2~8mil)				
Dimension m/m	300x500~520 400x500~520 600x500~520 1200~1220x500~520 1200~1220x600~640				
The thickness of Single-Sided PCB with Aluminum Substrate	2.0 1/0	1.5 1/0	1.5 2/0	1.0 1/0	0.8 1/0
The thickness of Double-Sided PCB with Aluminum Substrate	2.0 1/1	1.5 H/H	1.5 1/1	1.0 1/1	0.8 1/1

- The above thicknesses exclude the thickness of glue and copper tinsel, and the thicknesses of copper tinsel and aluminum plate can be combined arbitrarily.
  The thickness of copper foil: H oz~5.0 oz.
  The thickness of aluminum plate: 0.2~5.0 m/m.
- This material is one kind of halogens-free green environmental kindly material.
- Compliance with the specification of RoHS

The scope of application

- Lighting: LED outer-wall lighting, LED stage lighting, road LED lighting, domestic LED lighting.
- Electronic devices in automobile: igniting device, voltage regulator, auto safety control system, AC transformer.
- Power supply: Switch regulator, switch, DC-DC transformer, DC-AC transformer, large power, base board of solar cell.
- Electronic control: Relay, transistor base, switchboard, radiator, insulating heat conductive board in semiconductor, motor control device.
- Computer devices: Power supply device, soft disk driver, CPU.
- Communication electronic products: automobile telephone, high frequency booster of mobile telephone, filter circuit, transmitting circuit.

CS-AL-88 AD5

Specification of Aluminum Based Copper-clad Laminate

Item	Unit		Specification
Insulation thickness	μm	Max Min	200 60
Solder resistance (288 deg. C)	min.	Min	60
Thermal shock	288°C*10''/cycle		>6次
Peel strength Normal status	lb/in	Min	9
Breakdown Voltage	V/mil		750
Volume resistivity Normal status >E+14	Ω cm		$3.5x10^{15}$
Surface resistivity Normal status >E+12	Ω	—	$4.7x10^{16}$
Dielectric constant 1 MHz Normal status 1 GHz Normal status	—		5.8 5.7
Dissipation Factor 1 MHz Normal status 1 GHz Normal status			0.015 0.008
Water absorption	%		0.2
Thermal conductivity (measured on insulation layer only)	W/m°C		5.0
Flammability	94V0		Pass

The thickness and dimension of Aluminum Based Copper-clad Laminate

Product category	CS-AL-88 AD5(The thickness of glue is 2~8mil)				
Dimension m/m	300x500~520 400x500~520 600x500~520 1200~1220x500~520 1200~1220x600~640				
The thickness of Single-Sided PCB with Aluminum Substrate	2.0 1/0	1.5 1/0	1.5 2/0	1.0 1/0	0.8 1/0
The thickness of Double-Sided PCB with Aluminum Substrate	2.0 1/1	1.5 H/H	1.5 1/1	1.0 1/1	0.8 1/1

- The above thicknesses exclude the thickness of glue and copper tinsel, and the thicknesses of copper tinsel and aluminum plate can be combined arbitrarily.
  The thickness of copper foil: H oz~5.0 oz.
  The thickness of aluminum plate: 0.2~5.0 m/m.
- This material is one kind of halogens-free green environmental kindly material.
- Compliance with the specification of RoHS

The scope of application

- Lighting: LED outer-wall lighting, LED stage lighting, road LED lighting, domestic LED lighting.
- Electronic devices in automobile: igniting device, voltage regulator, auto safety control system, AC transformer.
- Power supply: Switch regulator, switch, DC-DC transformer, DC-AC transformer, large power, base board of solar cell.
- Electronic control: Relay, transistor base, switchboard, radiator, insulating heat conductive board in semiconductor, motor control device.
- Computer devices: Power supply device, soft disk driver, CPU.
- Communication electronic products: automobile telephone, high frequency booster of mobile telephone, filter circuit, transmitting circuit.