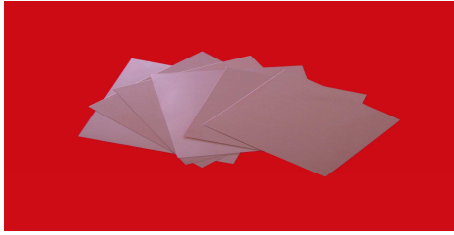


Aluminum PCB Laminates Used by PCBONLINE

Aluminum PCB laminates used by the PCB manufacturer PCBONLINE are:

1. YGA-1 series aluminum-based CCL from Yugu
2. Aluminium-based copper clad laminate from Boyu
3. Aluminium-based copper clad laminates from CSEM
 - 3.1 CS-AL-88 AD3 (3W)
 - 3.2 CS-AL-88/89 AD2 (2W/m°C)
 - 3.3 CS-AL-68 AD2
 - 3.4 Laminate certificate - UL from CSA
 - 3.5 Laminate certificate - UL for Canada
4. Aluminum-based copper clad laminates from Univacco
 - 4.1 ALH-SKG-100615
 - 4.2 ALH-SKG-200610

Note: among the four laminate suppliers for PCBONLINE, Yugu is PCBONLINE's own aluminum laminate factory.



YGA-1 series Aluminum based CCL

Advantage: High Heat dissipation, Electromagnetic Shielding, High Mechanical Strength, Excellent processing performance.

Application:

Hybrid-Power IC

Audio Equipment :Input and output amplifier; A balance amplifier; Audio Amplifier; Preamplifier; Power Amplifier and so on.

Power Supplier :Switch power supplier, DC/DC Converters, SW Regulator and so on

Communication equipments: High-frequency increaser; Filter Circuit and Transmitter Circuit

Office automation Equipment: Motor Driver and so on.

Motor Car: Electronics Regulator; Ignition ; Power controller and so on.

Computer: CPU Board, Floppy disk Driver, Power supplier and so on.

Power Modules: Current Converter, Solid relays ; Power rectifier bridges.

LED Lighting: High-power LED Lights, LED Curtain Wall and So on.

Models: YGA-1-1 (Insulation layer of FR-4 UV)

YGA-1-2 (Insulation layer of FR-4)

YGA-1-3 (Insulation layer of high Tg FR-4)

YGA-1-4 (Insulation layer of PI)

Specification:

Metal Substrate Layer: 0.8mm; 1.0mm; 1.5mm; 2.0mm; 3.0mm

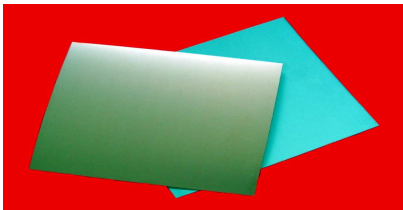
Copper foil: 1oz; 2oz; 3oz; 4oz; 6oz

Size: 1000x600mm; 500x600mm

The Performance Of YGA-1 series Aluminum-based CCL

Item	Condition	Typical Value			
		YGA-1-1	YGA-1-2	YGA-1-3	YGA-1-4
Peel Strength (N/mm)	A	≥2.0	≥2.0	≥1.5	≥1.7
	After Thermal Stress	≥1.8	≥1.8	≥1.5	≥1.7
Surface Resistance (MΩ)	A	≥10 ⁶	≥10 ⁶	≥10 ⁶	≥10 ⁶
	C-96/35/90	≥10 ⁵	≥10 ⁵	≥10 ⁵	≥10 ⁵
Volume Resistivity ((MΩ.cm)	A	≥10 ⁹	≥10 ⁹	≥10 ⁹	≥10 ⁹
	C-96/35/90	≥10 ⁸	≥10 ⁸	≥10 ⁸	≥10 ⁸
Break-down Voltage (KV)	D-48/50+D-0.5/23	≥3.0	≥3.0	≥3.0	≥3.0
Dielectric Constant (1MHZ)	C-96/35/90	≤4.7	≤4.7	≤4.6	≤4.4
Dissipation Factor (1MHZ)	C-96/35/90	≤0.03	≤0.03	≤0.03	≤0.03
Thermal Stress	288℃ 2min	No Blistering, No Delaminating			
Flammability	A	V-0			
CTI (V)	A	400	400	400	400
Heat Resistance (℃/W)	(Internal TO-220 Test)	≤1.5	≤1.5	≤1.4	≤1.3
Thermal conductivity(W/mK)	(ASTM 5470)	0.3	0.3	0.35	0.4
Tg (℃)	(DSC)	130	130	170	250

*Heat resistance of 1.6mm substrate, the thickness of the copper foil under the 1oz measurements.



YGA-2 series Aluminum based CCL

Advantage: More high-conductivity and longer service time which compared to the normal and mainly be used for the high-power circuits which have high requirements of good heat dissipation.

Application:

Hybrid-Power IC

Audio Equipment :Input and output amplifier; A balance amplifier; Audio Amplifier; Preamplifier; Power Amplifier and so on.

Power Supplier: Switch power supplier, DC/DC Converters, SW Regulator and so on

Communication equipments: High-frequency increaser; Filter Circuit and Transmitter Circuit

Office automation Equipment: Motor Driver and so on.

Motor Car: Electronics Regulator; Ignition; Power controller and so on.

Computer: CPU Board, Floppy disk Driver, Power supplier and so on.

Power Modules: Current Converter, Solid relays; Power rectifier bridges.

LED Lighting: High-power LED Lights, LED Curtain Wall and So on.

Models: YGA-2-1 (Insulation layer of high thermal conductivity resin, Thickness $80\pm 10\mu\text{m}$)

YGA-2-2 (Insulation layer of high thermal conductivity resin, Thickness $100\pm 10\mu\text{m}$)

YGA-2-3 (Insulation layer of high thermal conductivity resin, Thickness $120\pm 10\mu\text{m}$)

YGA-2-4 (Insulation layer of high thermal conductivity resin, Thickness $150\pm 10\mu\text{m}$)

YGA-2-5 (Insulation layer of high thermal conductivity resin, Thickness $180\pm 10\mu\text{m}$)

YGA-2-6 (Insulation layer of high thermal conductivity resin, Thickness $210\pm 10\mu\text{m}$)

Specification:

Metal Substrate Layer: 0.8mm; 1.0mm; 1.5mm; 2.0mm; 3.0mm

Copper foil: 1oz; 2oz; 3oz; 4oz; 6oz

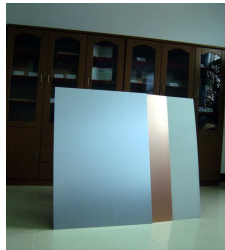
Size: 1000x600mm; 500x600mm

The Performance Of YGA-2 series Aluminum-based CCL

Item	Condition	Typical Value					
		YGA-2-1	YGA-2-2	YGA-2-3	YGA-2-4	YGA-2-5	YGA-2-6
Peel Strength (N/mm)	A	≥ 1.7	≥ 1.7	≥ 1.7	≥ 1.7	≥ 1.7	≥ 1.7
	After Thermal Stress	≥ 1.7	≥ 1.7	≥ 1.7	≥ 1.7	≥ 1.7	≥ 1.7
Surface Resistance (M Ω)	A	$\geq 10^6$	$\geq 10^6$	$\geq 10^6$	$\geq 10^6$	$\geq 10^6$	$\geq 10^6$
	C-96/35/90	$\geq 10^5$	$\geq 10^5$	$\geq 10^5$	$\geq 10^5$	$\geq 10^5$	$\geq 10^5$
Volume Resistivity (M Ω .cm)	A	$\geq 10^9$	$\geq 10^9$	$\geq 10^9$	$\geq 10^9$	$\geq 10^9$	$\geq 10^9$
	C-96-35/90	$\geq 10^8$	$\geq 10^8$	$\geq 10^8$	$\geq 10^8$	$\geq 10^8$	$\geq 10^8$
Break-Down Voltage (KV)	D-48/50+D-0.5	≥ 3	≥ 4	≥ 5	≥ 8	≥ 10	≥ 12

	/23						
Dielectric Constant (1MHz)	C-96/35/90+Recovery	≤6.5	≤6.5	≤6.5	≤6.5	≤6.5	≤6.5
Dissipation Factor(1MHz)	C-96/35/90+Recovery	≤0.03	≤0.03	≤0.03	≤0.03	≤0.03	≤0.03
Thermal Stress	288℃ 2min	No Blistering , No delaminating					
Flammability	A	V-0					
CTI (V)	A	600	600	600	600	600	600
Heat Resistance (℃/W)	(Internal TO-220 Test)	≤0.65	≤0.8	≤0.95	≤1.1	≤1.3	≤1.5
Thermal conductivity(W/mK)	(ASTM 5470)	1.3	1.3	1.3	1.3	1.3	1.3
Tg (℃)	(DSC)	130	130	130	130	130	130

*Heat resistance of 1.6mm substrate, the thickness of the copper foil under the 1oz measurements.



YGA-3 series Aluminum based CCL

Advantage: More high-conductivity and longer service time which compared to the normal and mainly be used for the high-power circuits which have high requirements of good heat dissipation.

Application:

Hybrid-Power IC

Audio Equipment :Input and output amplifier; A balance amplifier; Audio Amplifier; Preamplifier; Power Amplifier and so on.

Power Supplier: Switch power supplier, DC/DC Converters, SW Regulator and so on

Communication equipments: High-frequency increaser; Filter Circuit and Transmitter Circuit

Office automation Equipment: Motor Driver and so on.

Motor Car: Electronics Regulator; Ignition; Power controller and so on.

Computer: CPU Board, Floppy disk Driver, Power supplier and so on.

Power Modules: Current Converter, Solid relays; Power rectifier bridges.

LED Lighting: High-power LED Lights, LED Curtain Wall and So on.

Models: YGA-3-1 (Insulation layer of high thermal conductivity resin, Thickness 80±10um)

YGA-3-2 (Insulation layer of high thermal conductivity resin, Thickness 100±10um)

YGA-3-3 (Insulation layer of high thermal conductivity resin, Thickness 120±10um)

YGA-3-4 (Insulation layer of high thermal conductivity resin, Thickness 150±10um)

YGA-3-5 (Insulation layer of high thermal conductivity resin, Thickness 180±10um)

YGA-3-6 (Insulation layer of high thermal conductivity resin, Thickness 210±10um)

Specification:

Metal Substrate Layer: 0.8mm; 1.0mm; 1.5mm; 2.0mm; 3.0mm

Copper foil: 1oz; 2oz; 3oz; 4oz; 6oz

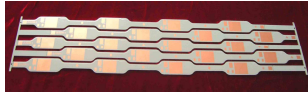
Size: 1000x600mm; 500x600mm

The Performance of YGA-3 series Aluminum-based CCL

Item	Condition	Typical Value					
		YGA-3-1	YGA-3-2	YGA-3-3	YGA-3-4	YGA-3-5	YGA-3-6
Peel Strength (N/mm)	A	≥1.5	≥1.5	≥1.5	≥1.5	≥1.5	≥1.5
	After Thermal Stress	≥1.5	≥1.5	≥1.5	≥1.5	≥1.5	≥1.5
Surface Resistance (MΩ)	A	≥10 ⁶	≥10 ⁶	≥10 ⁶	≥10 ⁶	≥10 ⁶	≥10 ⁶
	C-96/35/90	≥10 ⁵	≥10 ⁵	≥10 ⁵	≥10 ⁵	≥10 ⁵	≥10 ⁵
Volume Resistivity (MΩ.cm)	A	≥10 ⁹	≥10 ⁹	≥10 ⁹	≥10 ⁹	≥10 ⁹	≥10 ⁹
	C-96-35/90	≥10 ⁸	≥10 ⁸	≥10 ⁸	≥10 ⁸	≥10 ⁸	≥10 ⁸
Break-Down Voltage (KV)	D-48/50+D-0.5 /23	≥3	≥4	≥5	≥8	≥10	≥12
Dielectric Constant (1MHz)	C-96/35/90+R ecovery	≤7	≤7	≤7	≤7	≤7	≤7
Dissipation Factor(1MHz)	C-96/35/90+R ecovery	≤0.03	≤0.03	≤0.03	≤0.03	≤0.03	≤0.03
Thermal Stress	288℃ 2min	No Blistering , No delaminating					
Flammability	A	V-0					
CTI (V)	A	600	600	600	600	600	600
Heat Resistance (℃/W)	(Internal TO-220 Test)	≤0.55	≤0.65	≤0.75	≤0.85	≤1.0	≤1.2
Thermal	(ASTM 5470)	1.8	1.8	1.8	1.8	1.8	1.8

conductivity(W/mK)							
Tg (°C)	(DSC)	130	130	130	130	130	130

*Heat resistance of 1.6mm substrate, the thickness of the copper foil under the 1oz measurements.



YGA-4 series Aluminum based CCL

Advantage: More high-conductivity and longer service time which compared to the normal and mainly be used for the high-power circuits which have high requirements of good heat dissipation.

Application:

Hybrid-Power IC

Audio Equipment :Input and output amplifier; A balance amplifier; Audio Amplifier; Preamplifier; Power Amplifier and so on.

Power Supplier: Switch power supplier, DC/DC Converters, SW Regulator and so on

Communication equipments: High-frequency increaser; Filter Circuit and Transmitter Circuit

Office automation Equipment: Motor Driver and so on.

Motor Car: Electronics Regulator; Ignition; Power controller and so on.

Computer: CPU Board, Floppy disk Driver, Power supplier and so on.

Power Modules: Current Converter, Solid relays; Power rectifier bridges.

LED Lighting: High-power LED Lights, LED Curtain Wall and So on.

Models: YGA-4-1

YGA-4-2

YGA-4-3

YGA-4-4

YGA-4-5

YGA-4-6

Specification:**Metal Substrate Layer:** 0.8mm; 1.0mm; 1.5mm; 2.0mm; 3.0mm**Copper foil:** 1oz; 2oz; 3oz; 4oz; 6oz**Size:** 1000x600mm; 500x600mm**The Performance Of YGA-4 series Aluminum-based CCL**

Item	Condition	Typical Value					
		YGA-4-1	YGA-4-2	YGA-4-3	YGA-4-4	YGA-4-5	YGA-4-6
Peel Strength (N/mm)	A	≥1.5	≥1.5	≥1.5	≥1.5	≥1.5	≥1.5
	After Thermal Stress	≥1.5	≥1.5	≥1.5	≥1.5	≥1.5	≥1.5
Surface Resistance (MΩ)	A	≥10 ⁶	≥10 ⁶	≥10 ⁶	≥10 ⁶	≥10 ⁶	≥10 ⁶
	C-96/35/90	≥10 ⁵	≥10 ⁵	≥10 ⁵	≥10 ⁵	≥10 ⁵	≥10 ⁵
Volume Resistivity (MΩ.cm)	A	≥10 ⁹	≥10 ⁹	≥10 ⁹	≥10 ⁹	≥10 ⁹	≥10 ⁹
	C-96-35/90	≥10 ⁸	≥10 ⁸	≥10 ⁸	≥10 ⁸	≥10 ⁸	≥10 ⁸
Break-Down Voltage (KV)	D-48/50+D-0.5 /23	≥3	≥4	≥5	≥8	≥10	≥12
Dielectric Constant (1MHz)	C-96/35/90+R ecovery	≤8	≤8	≤8	≤8	≤8	≤8
Dissipation Factor(1MHz)	C-96/35/90+R ecovery	≤0.03	≤0.03	≤0.03	≤0.03	≤0.03	≤0.03
Thermal Stress	288℃ 2min	No Blistering , No delaminating					
Flammability	A	V-0					
CTI (V)	A	600	600	600	600	600	600
Heat Resistance (℃/W)	(Internal TO-220 Test)	≤0.45	≤0.60	≤0.70	≤0.80	≤0.95	≤1.1
Thermal conductivity(W/mK)	(ASTM 5470)	2.2	2.2	2.2	2.2	2.2	2.2
Tg (℃)	(DSC)	130	130	130	130	130	130

*Heat resistance of 1.6mm substrate, the thickness of the copper foil under the 1oz measurements.

Aluminium Base Copper Clad Performance Tables

Specification

product model	AL-01-B
Product thickness	copper foil: 1--3 oz, metal substrate: 0.6 -- 3.0 mm (tolerance range \pm 0.10mm)
Product specification	1000*1200mm

Performance

Item	experiment condition	Unit	AL-01-B-10	AL-01-B-15	AL-01-B-20	AL-01-B-30
Thermal conductivity	ASTM D5470	W/m. K	1.0W	1.5W	2.0W	3.0W
Thermal resistance	ASTM D5470	°C/W	0.72	0.65	0.55	0.45
Thermal Stress	288°C. solder dipping	Sec	120			
Peel strength	IPC-TM-650 2.4.8	N/mm	1.5			
Volume resistivity	IPC-TM-650 2.5.17	MΩ.cm	10 ⁸			
Surface resistivity	IPC-TM-650 2.5.17	MΩ.cm	10 ⁷			
Dielectric constant	IPC-TM-650 2.5.5.3	1MHz	4.9			
Dissipation Factor	IPC-TM-650 2.5.5.3	1MHz	≤0.02			
Break down Volte	ASTM D149	KV	3KV/DC			
Flameability	UL94	class	V-0			
CTI	IEC60112	V	600			
TG	DSC	°C	130			
Halogen	Cl, Br	ppm	≤900			
	Cl, +Br	ppm	≤1500			

- The power is hybrid IC(HIC)
- Voice frequency equipment:input, output amplifier, compensating capacitor, the voice frequency amplifier, preamplifier, power amplifier etc..
- Power supply equipment:series voltage regulation, switch modulator, and DC-AC transducer...etc..
- Telecommunication electron equipment:high frequency amplifier, filter telephone, send a telegram telephone.
- Office automation:the printer driver, big electronic display substrate and thermal print A class.
- Autocar:the igniter, power supply modulator and swap transform machine, power supply controller, become only system etc..
- Calculator:CPU board, soft pan driver, and power supply device...etc..
- Power mold mass:change to flow a machine, solid relay, commutate bridge etc..
- LED light, heat and water expense:big power LED light, LED wall etc..

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Http://www.hzsby.cn

CS-AL-88/89 AD3 (3 W/m°C)



鋁基板規格

Item	Unit		Specification	Test condition
Insulation thickness	μm	Max Min	200 60	—
Solder resistance (288°C)	Sec.	Min	600	IPC-TM-650 3.10.1.12
Thermal shock	288°C*10"/cycle	Min	6 Times	IPC-TM-650 2.4.13.1
Peel strength (Normal status)	lb/in	Min	9	IPC-TM-650 2.4.8
Breakdown Voltage	V/mil		750	IPC-TM-650 2.5.6
Volume resistivity (Normal status >E+14)	Ω · cm		1.8x10 ¹⁶	IPC-TM-650 2.5.17.1
Surface resistivity (Normal status >E+12)	Ω	—	3.5x10 ¹⁵	IPC-TM-650 2.5.17.1
Dielectric constant				IPC-TM-650
1 MHz Normal status	—		6.1	2.5.5.3
1 GHz Normal status			6.0	2.5.5.5 2.5.5.6
Dissipation Factor				IPC-TM-650
1 MHz Normal status			0.017	2.5.5.3
1 GHz Normal status			0.009	2.5.5.5 2.5.5.9
Water absorption	%		0.2	IPC-TM-650 2.6.2.1
Thermal conductivity (measured on insulation layer only)	W/m°C		3.0	ASTM-E1461
Flammability	94V-0		Pass	IPC-TM-650 2.3.9
Tg	°C		100	IPC-TM-650 2.4.24
Td	°C		420	TBD (5wt% loss)
MOT (RTI)	°C		130	UL 746B
CTI (Comparative Tracking Index)	V		>600 (PLC=0)	UL746E DSR



鋁基板厚度、尺寸

產 品 別	CS-AL-88/89 AD3 (膠厚為2~8mil)				
尺寸 m/m	300~340x500~520 400~410x500~520 600~620x500~520 940x1245 / 1040x1245 1090x1245 / 1000x1200				
常用單面板厚度	2.0 1/0	1.5 1/0	1.0 1/0	0.8 1/0	0.6 1/0
常用雙面板厚度	2.0 1/1	1.5 H/H	1.5 1/1	1.0 1/1	0.8 1/1

- » 以上厚度不含膠厚，且銅箔及與鋁厚可任意組合。
銅箔厚：H oz~5.0 oz，鋁板厚：0.2~5.0 mm。
- » 本材料為無鹵素綠色環保材，符合RoHS、REACH規格。



應用範圍

- » 照 明：LED外牆照明、LED舞台燈飾照明、馬路LED燈飾照明、家用LED照明、辦公室LED照明。
- » 汽車電子設備：點火器、電壓調節器、自動安全控制系統、交流變換器。
- » 計 算 機 設 備：電源裝置、軟盤驅動器、CPU。
- » 電 源：開關調節器、轉換開關、DC-DC轉換器、DC-AC轉換器、大型電源、太陽能電源基板。
- » 通訊電子產品：汽車電話、移動電話高頻增幅器、濾波電路、發報電路。
- » 電 子 控 制：繼電器、晶體管基座、交換機、散熱器、半導體絕緣導熱板、馬達控制器。



CS-AL-88/89 AD2 (2 W/m°C)



鋁基板規格

Item	Unit		Specification	Test condition
Insulation thickness	μm	Max Min	200 60	—
Solder resistance (288°C)	Sec.	Min	600	IPC-TM-650 3.10.1.12
Thermal shock	288°C*10"/cycle	Min	6 Times	IPC-TM-650 2.4.13.1
Peel strength (Normal status)	lb/in	Min	9	IPC-TM-650 2.4.8
Breakdown Voltage	V/mil		750	IPC-TM-650 2.5.6
Volume resistivity (Normal status >E+14)	Ω · cm		1.8x10 ¹⁵	IPC-TM-650 2.5.17.1
Surface resistivity (Normal status >E+12)	Ω	—	3.5x10 ¹⁴	IPC-TM-650 2.5.17.1
Dielectric constant				IPC-TM-650
1 MHz Normal status	—		5.6	2.5.5.3
1 GHz Normal status			5.3	2.5.5.5 2.5.5.6
Dissipation Factor				IPC-TM-650
1 MHz Normal status			0.013	2.5.5.3
1 GHz Normal status			0.010	2.5.5.5 2.5.5.9
Water absorption	%		0.2	IPC-TM-650 2.6.2.1
Thermal conductivity (measured on insulation layer only)	W/m°C		2.0	ASTM-E1461
Flammability	94V-0		Pass	IPC-TM-650 2.3.9
Tg	°C		130	IPC-TM-650 2.4.24
Td	°C		410	TBD (5wt% loss)
MOT (RTI)	°C		130	UL 746B
CTI (Comparative Tracking Index)	V		>600 (PLC=0)	UL746E DSR



鋁基板厚度、尺寸

產 品 別	CS-AL-88/89 AD2 (膠厚為2~8mil)				
尺寸 m/m	300~340x500~520 400~410x500~520 600~620x500~520 940x1245 / 1040x1245 1090x1245 / 1000x1200				
常用單面板厚度	2.0 1/0	1.5 1/0	1.0 1/0	0.8 1/0	0.6 1/0
常用雙面板厚度	2.0 1/1	1.5 H/H	1.5 1/1	1.0 1/1	0.8 1/1

- » 以上厚度不含膠厚，且銅箔及與鋁厚可任意組合。
銅箔厚：H oz~5.0 oz，鋁板厚：0.2~5.0 mm。
- » 本材料為無鹵素綠色環保材，符合RoHS、REACH規格。



應用範圍

- » 照 明：LED外牆照明、LED舞台燈飾照明、馬路LED燈飾照明、家用LED照明、辦公室LED照明。
- » 汽車電子設備：點火器、電壓調節器、自動安全控制系統、交流變換器。
- » 計 算 機 設 備：電源裝置、軟盤驅動器、CPU。
- » 電 源：開關調節器、轉換開關、DC-DC轉換器、DC-AC轉換器、大型電源、太陽能電源基板。
- » 通訊電子產品：汽車電話、移動電話高頻增幅器、濾波電路、發報電路。
- » 電 子 控 制：繼電器、晶體管基座、交換機、散熱器、半導體絕緣導熱板、馬達控制器。





CS-AL-68 AD2



铝基板性能表

Item		Unit		Specification
Insulation thickness		μm	Max Min	150 75
Solder resistance (330 deg. C)		Sec.	Min	180
Thermal shock		330°C*10"/cycle		>6次
Peel strength Normal status		lb/in	Min	9
Breakdown Voltage	>2	kV	Min	4.5
Volume resistivity Normal atatus	>E+14	Ω cm		2.5x10 ¹⁵
Surface resistivity Normal status	>E+12	Ω	—	3.5x10 ¹⁴
Dielectric constant				4.9
1 kHz Normal status		—		4.6
1 MHz Normal status				
Dissipation Factor				0.026
1 kHz Normal status				0.023
1 MHz Normal status				
Water absorption		%		0.05
Thermal conductivity (measured on insulation layer only)		W/m°C		2.0
Flammability		94V0		Pass



铝基板厚度、尺寸

产 品 别	CS-AL-68 AD2 (胶厚为3~6mil)				
尺寸 m/m	300x500~520 400x500~520 600x500~520 1200~1220x500~520				
常用单面板厚度	3.2 1/0	2.0 1/0	1.5 1/0	1.0 1/0	0.8 1/0
常用双面板厚度	3.2 2/0	2.0 2/0	1.5 2/0	1.0 2/0	0.8 2/0

※ 以上的厚度不含胶厚及铜箔厚度，且铜箔厚与铝板厚可任意组合。

铜箔厚：H oz~5.0 oz，铝板厚：0.8、1.0、1.5、2.0、3.2 m/m

※ 本材料为无卤素绿色环保材。



应用范围

※ 汽车电子设备：点火器、电压调节器、自动安全控制系统、交流变换器。

※ 电 源：开关调节器、转换开关、DC-DC转换器、DC-AC转换器、大型电源、太阳能电源基板。

※ 电 子 控 制：继电器、晶体管基座、交换机、散热器、半导体绝缘导热板、马达控制器。



ZPM V8.E253939

Wiring, Printed Certified for Canada - Component

For enhanced search functionality, please visit UL's [iQ™ Family of Databases](#).

Click on a product designation for complete information.

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Wiring, Printed Certified for Canada - Component

[See General Information for Wiring, Printed Certified for Canada - Component](#)

CHIN-SHI ELECTRONIC MATERIALS LTD

E253939


124 Zhonghua Rd

Hsinchu Industrial Park

Hsinchu County, 30352 TAIWAN

Type	Cond Width				Max			Max			
			Min	Cond	SS/	Area	Solder	Oper			
	Min	Edge	Thk	DS/	Diam	Limits	Temp	Flame	UL796		
	m m (in)	m m (in)	m ic(m il)	DS0	m m (in)	C	sec	C	Class	DSR	I
Multilayer printed wiring boards.											
ML	0.09 (0.004)	0.15 (0.006)	17 (0.67) Int:68	DS	76.2 (3.0)	270	10	105	V-0	All	4
Single layer printed wiring boards.											
DS	0.09 (0.004)	0.15 (0.006)	17 (0.67)	DS	76.2 (3.0)	270	10	105	V-0	All	4
Single layer, metal base printed wiring boards.											
AL88	0.12 (0.005)	0.26 (0.010)	35 (1.38)	SS	76.2 (3.0)	288	30	130	V-0	All	0
CS8000	0.075 (0.003)	0.225 (0.009)	34 (1.34)	SS	50.8 (2.0)	288	30	140	V-0	All	2
CS9000	0.090 (0.004)	0.270 (0.011)	34 (1.34)	SS	50.8 (2.0)	288	30	130	V-0	All	3



Marking: Company name or file number and type designation and the Recognized Component Mark for Canada, . May be followed by a suffix to denote factory identification or burning test classification.

[Last Updated](#) on 2015-04-24

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QMTS8.E206580 - POLYMERIC MATERIALS - FILAMENT-WOUND TUBING, INDUSTRIAL LAMINATES, VULCANIZED FIBER, AND MATERIALS FOR USE IN FABRICATING RECOGNIZED PRINTED WIRING BOARDS CERTIFIED FOR CANADA - COMPONENT

Polymeric Materials - Filament-wound Tubing, Industrial Laminates, Vulcanized Fiber, and Materials for Use in Fabricating Recognized Printed Wiring Boards Certified for Canada - Component

See General Information for Polymeric Materials - Filament-wound Tubing, Industrial Laminates, Vulcanized Fiber, and Materials for Use in Fabricating Recognized Printed Wiring Boards Certified for Canada - Component

CHIN-SHI ELECTRONIC MATERIALS LTD

E206580

124 Zhonghua Rd
Hsinchu Industrial Park
Hsinchu County, 30352 TAIWAN
Metal base industrial laminates:

		Metal		Dielectric		R.T.I.			H					
Mtl		Min		Min	Max				H	H	V	C	Meets	Meets
Dsg	Color	Thk		Thk	Thk	Flame	Elec	Mech	W	A	T	T	746E	746E
		(mm)		(mic)	(mic)	Class	(°C)	(°C)	I	I	R	I	Non-HAL	DSR
Aluminum or Copper base with Epoxy (EP) dielectric, industrial laminates, furnished as sheets.														
CS89P, CS89C, CS89TC, CS-AL-89, CS88P, CS88C, CS88TC, CS-AL-88@														
	NC	0.18		60	200	V-0	130	130	4	0	-	0	-	Yes
Aluminum or Copper base with Polyimide (PI) dielectric, industrial laminates, furnished as sheets.														
CS-8000IMC, CS-8000IMA (1)														
	NC	0.034		32	45	V-0	140	140	1	0	-	2	-	Yes
		0.034		150	150	V-0	140	140	4	0	-	2	-	Yes

Metal clad metal base industrial laminates:

Metal Clad Dsg	Lam-inate Dsg	Pre-preg Dsg	Metal	Dielectric		Clad Cond Thk			Max	Max	Solder	Lts
			Min Thk (mm)	Min Thk (mic)	Max Thk (mic)	Min Ext (mic)	Max Ext (mic)	Max Int (mic)	Area Dia (mm)	Flame Class	Oper Temp (°C)	Temp (°C)

Aluminum base with Polyimide (PI) dielectric, Metal clad industrial laminates with copper on one side only, furnished as sheets.														
CS-8000IMA (1)														
	CS-800IMA	-	0.15		32	45	34	102	-	50.8	V-0	140	288	30
			0.15		150	150	34	102	-	50.8	V-0	140	288	30
Aluminum or Copper base with Epoxy (EP) dielectric, Metal clad industrial laminates with copper on one side only, furnished as sheets.														
CS89P, CS89C, CS89TC, CS-AL-89, CS88P, CS88C, CS88TC, CS-AL-88 @														
	CS89P, CS89C, CS-AL-89	-	0.18		60	200	17	102	-	50.8	V-0	130	288	30
Copper base with Polyimide (PI) dielectric, Metal clad industrial laminates with copper on one side only, furnished as sheets.														
CS-8000IMC (1)														
	CS-8000IMC	-	0.034		32	45	34	102	-	50.8	V-0	140	288	30
			0.034		150	150	34	102	-	50.8	V-0	140	288	30

& - Dielectric is 10 - 25 microns polyimide film with 10 microns adhesive, minimum copper metal of 0.034 mm and minimum aluminum metal of 0.15 mm

(1) - Dielectric thickness 0.032~0.045mm: PI thickness 0.012 ~ 0.025 mm with double sided epoxy adhesive thickness 0.010 mm. Dielectric thickness 0.045~0.150mm: PI thickness 0.025 mm with double sided epoxy adhesive thickness 0.010~0.0625 mm.

@ - Grade CS89P, CS88P: B-Stage Dielectric Material Only; CS89C, CS88C: Copper Foil + B-stage Dielectric Material; CS-AL-89, CS-AL-88: Base Metal + Dielectric Material + Copper Foil

Marking: Company name, model designation and the Recognized Component Mark for Canada,



Last Updated on 2018-11-05

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ALH-SKG-100615

一般導熱金屬芯覆銅箔層壓板 (鋁基板)

產品說明：

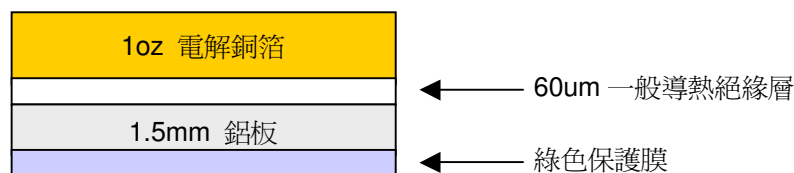
ALH-SKG-100615 係由 1oz 厚度之電解銅箔搭配 1.5mm 厚之 5052 系列鋁板所構成之鋁覆銅箔層壓板，其中由 60um 改良型環氧樹脂一般導熱膠黏著。

產品應用：

ALH 系列特別符合鋁基線路板製成應用，終端應用產品為有散熱需求之電器用品，如高亮度 LED (照明和 LCD 背光模組)，電源供應器，直流變壓器，汽車電器模組等。此產品表現優於一般 FR-4 和 PP 膠系之傳統機板，適合較低成本產品之應用。

產品特性：

測試項目	單位	測試數據	測試規範
厚度	mm	1.6±10%	Univacco 測試
絕緣層厚度	um	60±6	Univacco 測試
拉力	kgf/cm	2.0 ↑	IPC TM-650 2.4.9
耐熱性	300℃	60sec OK	IPC TM-650 2.4.13
耐化性		OK	IPC TM-650 2.3.2
熱傳導率	W/m.K	1.0	ASTM 5470-D (修正)
熱阻抗	℃/W	0.40	ASTM 5470-D
破壞電壓	kV	4 ↑	IPC TM-650 2.5.6
結構圖			



標準尺寸及包裝：

片狀 680mm x 520mm; 600mm x 480mm; 520mm x 340mm; 480mm x 300mm
(每包 20 片裝)

保存期限及條件：

6 個月，原包裝 20℃、60%相對濕度

ALH-SKG-200610

一般導熱金屬芯覆銅箔層壓板 (鋁基板)

產品說明：

ALH-SKG-200610 係由 2oz 厚度之電解銅箔搭配 1.0mm 厚之 5052 系列鋁板所構成之鋁覆銅箔層壓板，其中由 60um 改良型環氧樹脂一般導熱膠黏著。

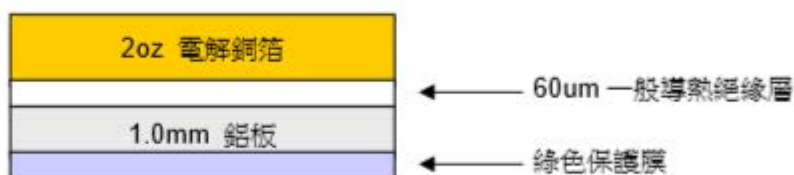
產品應用：

ALH 系列特別符合鋁基線路板製成應用，終端應用產品為有散熱需求之電器用品，如高亮度 LED (照明和 LCD 背光模組)，電源供應器，直流變壓器，汽車電器模組等。此產品表現優於一般 FR-4 和 PP 膠系之傳統機板，適合較低成本產品之應用。

產品特性：

測試項目	單位	測試數據	測試規範
厚度	mm	1.1±10%	Univacco 測試
絕緣層厚度	um	60±6	Univacco 測試
拉力	kgf/cm	2.0 ↑	IPC TM-650 2.4.9
耐熱性	300℃	60sec OK	IPC TM-650 2.4.13
耐化性		OK	IPC TM-650 2.3.2
熱傳導率	W/m.K	0.8	ASTM 5470-D (修正)
熱阻抗	℃/W	0.45	ASTM 5470-D
破壞電壓	kV	4 ↑	IPC TM-650 2.5.6

結構圖



標準尺寸及包裝：

片狀 600mm x 480mm, 520mm x 340mm, 480mm x 300mm (每包 20 片裝)

保存期限及條件：

6 個月，原包裝 20℃、60%相對濕度