

# EPA-M0 导热型铝基覆铜板

## 特点:

- 符合 ROHS 要求，不含 REACH 法规中的高关注物质。
- 具有比普通型铝基覆铜板导热率高，有效地增加电子产品的使用寿命。
- 无玻纤。
- 有良好的机械加工性。
- 优良的尺寸稳定性。
- 电磁波屏蔽性及优良的性价比。

## 应用领域:

- LED 照明、LED 舞台灯饰照明。

## 规格

铝基材层: 0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.5mm; 2.0mm; 3.0mm.

铜 箔: 1OZ; 2OZ; 3OZ; 4OZ.

供应尺寸: 500×600mm; 600×1000; 500×1200mm。

## 产品性能

| 项目          | 实验方法                | 单位               | 典型值                  |                      |
|-------------|---------------------|------------------|----------------------|----------------------|
| 介质层厚度       | IPC-TM-650 2.2.18.1 | μm               | 100                  | 150                  |
| 热应力         | IPC-TM-650 2.4.13.1 | S                | 288℃≥120S            | 288℃≥120S            |
| 剥离强度        | IPC-TM-650 2.4.8.1  | N/mm             | 1.5                  | 1.5                  |
| 全面耐电压       | DC                  | KV               | 1.5                  | 2.0                  |
| 击穿电压        | AC                  | KV               | 3                    | 4                    |
| CTI         | GB/T 4207           | V                | 575                  | 575                  |
| TG (DSC)    | IPC-TM-650 2.4.25   | ℃                | 130                  | 130                  |
| 热膨胀系数(TMA)  | IPC-TM-650 2.4.24   | %<br>(50 ~ 260℃) | 0.5                  | 0.5                  |
| 表面电阻        | IPC-TM-650 2.5.17.1 | MΩ               | 4.18×10 <sup>3</sup> | 4.18×10 <sup>3</sup> |
| 体积电阻率       | IPC-TM-650 2.5.17.1 | MΩ·cm            | 3.27×10 <sup>7</sup> | 3.27×10 <sup>7</sup> |
| 介电常数 1MHZ   | IPC-TM-650 2.5.5.9  | /                | /                    | /                    |
| 介质损耗因数 1MHZ | IPC-TM-650 2.5.5.9  | /                | /                    | /                    |
| 吸水率         | IPC-TM-650 2.6.2.1  | %                | < 0.5                | < 0.5                |
| 导热率         | ASTM E1461          | W/m·k            | 1.3                  | 1.3                  |
| 热阻          | /                   | ℃/W              | 0.7 ~ 0.9            | 0.7 ~ 0.9            |
| 燃烧性         | UL94 垂直法            | S                | t1: 0,t2: 0          | t1: 0,t2: 0          |

◆ 以上测试数据是依测试当时条件所制定，若有变更，恕不另行通知。



# EPA-M0 Conductivity thermal Aluminum based CCL

## Features:

- Complied with ROHS requirements and complied with REACH legislation requirements.
- High thermal conductivity aluminum copper clad laminate thus effectively increasing the life of electronic products.
- No fiberglass contents.
- Good mechanical adaptions.
- Excellent dimensional stability.
- Electromagnetic shielding.

## Application areas:

- Indoor/Outdoor lighting, LED stage lights .

## Specification

**AL Substrate Layer:** 0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.5mm; 2.0mm; 3.0mm.

**Copper Foil:** 1OZ; 2OZ; 3OZ; 4OZ.

**Available Size:** 500×600mm; 600×1000; 500×1200mm.

## Performance

| Item                         | Test Method         | Units          | Index                |                      |
|------------------------------|---------------------|----------------|----------------------|----------------------|
| Insulation thickness         | IPC-TM-650 2.2.18.1 | μm             | 100                  | 150                  |
| Thermal Stress               | IPC-TM-650 2.4.13.1 | S              | 288℃≥120S            | 288℃≥120S            |
| Peel Strength                | IPC-TM-650 2.4.8.1  | N/mm           | 1.5                  | 1.5                  |
| Withstand voltage            | DC                  | KV             | 1.5                  | 2                    |
| Break-down Voltage           | AC                  | KV             | 3                    | 4                    |
| CTI                          | GB/T 4207           | V              | 575                  | 575                  |
| Glass Transition Temperature | IPC-TM-650 2.4.25   | ℃              | 130                  | 130                  |
| CTE(TMA)                     | IPC-TM-650 2.4.24   | %<br>(50~260℃) | 0.5                  | 0.5                  |
| Surface Resistance           | IPC-TM-650 2.5.17.1 | MΩ             | 4.18×10 <sup>3</sup> | 4.18×10 <sup>3</sup> |
| Volume Resistivity           | IPC-TM-650 2.5.17.1 | MΩ·cm          | 3.27×10 <sup>7</sup> | 3.27×10 <sup>7</sup> |
| Dielectric Constant 1MHZ     | IPC-TM-650 2.5.5.9  | /              | /                    | /                    |
| Dissipation Factor 1MHZ      | IPC-TM-650 2.5.5.9  | /              | /                    | /                    |
| Water Absorption             | IPC-TM-650 2.6.2.1  | %              | <0.5                 | <0.5                 |
| Thermal Conductivity         | ASTM E 1461         | W/m·k          | 1.3                  | 1.3                  |
| Heat Resistance              | /                   | ℃/W            | 0.7~0.9              | 0.7~0.9              |
| Flammability                 | UL94 Vertical Law   | S              | t1: 0,t2: 0          | t1: 0,t2: 0          |

☆ All data are subject to change without notice



# EPA-M1 导热型铝基覆铜板

## 特点:

- 符合 ROHS 要求，不含 REACH 法规中的高关注物质。
- 具有比普通型铝基覆铜板导热率高，有效地增加电子产品的使用寿命。
- 无玻纤。
- 有良好的机械加工性。
- 优良的尺寸稳定性。
- 电磁波屏蔽性及优良的性价比。

## 应用领域:

- LED 背光灯条、LED 照明、LED 路灯、LED 舞台灯饰照明。

## 规格

铝基材层: 0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.5mm; 2.0mm; 3.0mm.

铜箔: 1OZ; 2OZ; 3OZ; 4OZ.

供应尺寸: 500×600mm; 600×1000mm; 500×1200mm。

## 产品性能

| 项目          | 实验方法                | 单位                | 典型值                   |                       |
|-------------|---------------------|-------------------|-----------------------|-----------------------|
| 介质层厚度       | IPC-TM-650 2.2.18.1 | μm                | 100                   | 150                   |
| 热应力         | IPC-TM-650 2.4.13.1 | S                 | 288°C > 120S          | 288°C > 120S          |
| 剥离强度        | IPC-TM-650 2.4.8.1  | N/mm              | 1.5                   | 1.5                   |
| 全面耐电压       | DC                  | KV                | 3.0                   | 4.0                   |
| 击穿电压        | AC                  | KV                | 3.5                   | 6.0                   |
| CTI         | GB/T 4207           | V                 | >600                  | >600                  |
| TG (DSC)    | IPC-TM-650 2.4.25   | °C                | 130                   | 130                   |
| 热膨胀系数(TMA)  | IPC-TM-650 2.4.24   | %<br>(50 ~ 260°C) | 0.5                   | 0.5                   |
| 表面电阻        | IPC-TM-650 2.5.17.1 | MΩ                | 6.50×10 <sup>4</sup>  | 6.50×10 <sup>4</sup>  |
| 体积电阻率       | IPC-TM-650 2.5.17.1 | MΩ·cm             | 2.04×10 <sup>6</sup>  | 2.04×10 <sup>6</sup>  |
| 绝缘阻抗        | JIS6481-1996        | Ω                 | 4.38×10 <sup>10</sup> | 4.38×10 <sup>10</sup> |
| 介电常数 1MHZ   | IPC-TM-650 2.5.5.9  | /                 | 5.2                   | 5.2                   |
| 介质损耗因数 1MHZ | IPC-TM-650 2.5.5.9  | /                 | 0.033                 | 0.033                 |
| 吸水率         | IPC-TM-650 2.6.2.1  | %                 | < 0.5                 | < 0.5                 |
| 导热率         | ASTM E1461          | W/m·k             | 1.6                   | 1.6                   |
| 热阻          | /                   | °C/W              | 0.6 ~ 0.8             | 0.6 ~ 0.8             |
| 燃烧性         | UL94 垂直法            | S                 | t1: 0,t2: 0           | t1: 0,t2: 0           |

◆ 以上测试数据是依测试当时条件所制定，若有变更，恕不另行通知。



# EPA-M1 Conductivity thermal Aluminum based CCL

## Features:

- Complied with ROHS requirements and complied with REACH legislation requirements.
- High thermal conductivity aluminum copper clad laminate thus effectively increasing the life of electronic products.
- No fiberglass contents.
- Good mechanical adaptions.
- Excellent dimensional stability.
- Electromagnetic shielding.

## Application areas:

- Article Backlight, Indoor/Outdoor lighting, Street LED lamp, LED stage lights .

## Specification

**AL Substrate Layer:** 0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.5mm; 2.0mm; 3.0mm.

**Copper Foil:** 1OZ; 2OZ; 3OZ; 4OZ.

**Available Size:** 500×600mm; 600×1000mm; 500×1200mm.

## Performance

| Item                         | Test Method         | Units           | Index                 |                       |
|------------------------------|---------------------|-----------------|-----------------------|-----------------------|
| Insulation thickness         | IPC-TM-650 2.2.18.1 | μm              | 100                   | 150                   |
| Thermal Stress               | IPC-TM-650 2.4.13.1 | S               | 288°C > 120S          | 288°C > 120S          |
| Peel Strength                | IPC-TM-650 2.4.8.1  | N/mm            | 1.5                   | 1.5                   |
| Withstand voltage            | DC                  | KV              | 3.0                   | 4.0                   |
| Break-down Voltage           | AC                  | KV              | 3.5                   | 6.0                   |
| CTI                          | GB/T 4207           | V               | >600                  | >600                  |
| Glass Transition Temperature | IPC-TM-650 2.4.25   | °C              | 130                   | 130                   |
| CTE(TMA)                     | IPC-TM-650 2.4.24   | %<br>(50~260°C) | 0.5                   | 0.5                   |
| Surface Resistance           | IPC-TM-650 2.5.17.1 | MΩ              | 6.50×10 <sup>4</sup>  | 6.50×10 <sup>4</sup>  |
| Volume Resistivity           | IPC-TM-650 2.5.17.1 | MΩ·cm           | 2.04×10 <sup>6</sup>  | 2.04×10 <sup>6</sup>  |
| Insulation Resistance        | JIS6481-1996        | Ω               | 4.38×10 <sup>10</sup> | 4.38×10 <sup>10</sup> |
| Dielectric Constant 1MHZ     | IPC-TM-650 2.5.5.9  | /               | 5.2                   | 5.2                   |
| Dissipation Factor 1MHZ      | IPC-TM-650 2.5.5.9  | /               | 0.033                 | 0.033                 |
| Water Absorption             | IPC-TM-650 2.6.2.1  | %               | <0.5                  | <0.5                  |
| Thermal Conductivity         | ASTM E 1461         | W/m·k           | 1.6                   | 1.6                   |
| Heat Resistance              | /                   | °C/W            | 0.6~0.8               | 0.6~0.8               |
| Flammability                 | UL94 Vertical Law   | S               | t1: 0,t2: 0           | t1: 0,t2: 0           |

✧ All datas are subject to change without notice.



# EPA-M2 导热型铝基覆铜板

## 特点:

- 无卤型，符合 ROHS 要求，不含 REACH 法规中的高关注物质。
- 具有比普通型铝基覆铜板导热率高，有效地增加电子产品的使用寿命。
- 无玻纤。
- 有良好的机械加工性。
- 优良尺寸稳定性。
- 电磁波屏蔽性及优良的性价比。

## 应用领域:

- 电动车基板、LED 背光板、室内及户外 LED 照明、LED 路灯、LED 舞台灯饰照明。
- 变频器。
- 其它：IC 芯片载体。

## 规格

铝基材层：0.6mm；0.8mm；1.0mm；1.2mm；1.5mm；2.0mm；3.0mm.

铜箔：1OZ；2OZ；3OZ；4OZ.

供应尺寸：500×600mm；600×1000mm；500×1200mm，可客订尺寸。

## 产品性能

| 项目          | 实验方法                | 单位            | 典型值                   |                       |
|-------------|---------------------|---------------|-----------------------|-----------------------|
| 介质层厚度       | IPC-TM-650 2.2.18.1 | μm            | 100                   | 150                   |
| 热应力         | IPC-TM-650 2.4.13.1 | S             | 288℃ > 120S           | 288℃ > 120S           |
| 剥离强度        | IPC-TM-650 2.4.8.1  | N/mm          | 1.2                   | 1.2                   |
| 全面耐电压       | DC                  | KV            | 3.0                   | 5.0                   |
| 击穿电压        | AC                  | KV            | 4.0                   | 6.0                   |
| CTI         | GB/T 4207           | V             | > 550                 | > 550                 |
| TG          | IPC-TM-650 2.4.25   | ℃             | 140                   | 140                   |
| 热膨胀系数(TMA)  | IPC-TM-650 2.4.24   | % (50 ~ 260℃) | 0.50                  | 0.50                  |
| 表面电阻        | IPC-TM-650 2.5.17.1 | Ω             | 3.96×10 <sup>9</sup>  | 3.96×10 <sup>9</sup>  |
| 体积电阻率       | IPC-TM-650 2.5.17.1 | Ω·cm          | 1.68×10 <sup>11</sup> | 1.68×10 <sup>11</sup> |
| 绝缘抵抗        | JIS6481-1996        | Ω             | 1.46×10 <sup>11</sup> | 1.46×10 <sup>11</sup> |
| 介电常数 1MHZ   | IPC-TM-650 2.5.5.9  | /             | ≤5.6                  | ≤5.6                  |
| 介质损耗因数 1MHZ | IPC-TM-650 2.5.5.9  | /             | ≤0.034                | ≤0.034                |
| 吸水率         | IPC-TM-650 2.6.2.1  | %             | < 0.5                 | < 0.5                 |
| 导热率         | ASTM E1461          | W/m·k         | 2.0                   | 2.0                   |
| 热阻          | /                   | ℃/W           | 0.5 ~ 0.7             | 0.5 ~ 0.7             |
| 燃烧性         | UL94                | /             | V-0                   | V-0                   |

◆ 以上测试数据是依测试当时条件所制定，若有变更，恕不另行通知。



# EPA-M2 Conductivity thermal Aluminum based CCL

## Features:

- Halogen-free type, complied with ROHS requirements and complied with REACH legislation requirements.
- High thermal conductivity aluminum copper clad laminate thus effectively increasing the life of electronic products.
- No fiberglass contents.
- Good mechanical adaptations.
- Excellent dimensional stability.
- Electromagnetic shielding.

## Application areas:

- Substrate electric car, LED Back light, Indoor/Outdoor lighting, Street LED lamp, LED stage lights .
- Inverter/converter
- Other: IC chip substrates.

## Specification

**AL Substrate Layer:** 0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.5mm; 2.0mm; 3.0mm.

**Copper Foil:** 1OZ; 2OZ; 3OZ; 4OZ.

**Available Size:** 500×600mm; 600×1000mm; 500×1200mm. Customer tailor sizes are available.

## Performance

| Item                         | Test Method         | Units       | Index                 |                       |
|------------------------------|---------------------|-------------|-----------------------|-----------------------|
| Insulation thickness         | IPC-TM-650 2.2.18.1 | μm          | 100                   | 150                   |
| Thermal Stress               | IPC-TM-650 2.4.13.1 | S           | 288℃ > 120S           | 288℃ > 120S           |
| Peel Strength                | IPC-TM-650 2.4.8.1  | N/mm        | 1.2                   | 1.2                   |
| Withstand Voltage            | DC                  | KV          | 3.0                   | 5.0                   |
| Break-down Voltage           | AC                  | KV          | 4.0                   | 6.0                   |
| CTI                          | GB/T 4207           | V           | > 550                 | > 550                 |
| Glass Transition Temperature | IPC-TM-650 2.4.25   | ℃           | 140                   | 140                   |
| CTE(TMA)                     | IPC-TM-650 2.4.24   | % (50~260℃) | 0.50                  | 0.50                  |
| Surface Resistance           | IPC-TM-650 2.5.17.1 | Ω           | 3.96×10 <sup>9</sup>  | 3.96×10 <sup>9</sup>  |
| Volume Resistivity           | IPC-TM-650 2.5.17.1 | Ω·cm        | 1.68×10 <sup>11</sup> | 1.68×10 <sup>11</sup> |
| Insulation Resistance        | JIS6481-1996        | Ω           | 1.46×10 <sup>11</sup> | 1.46×10 <sup>11</sup> |
| Dielectric Constant 1MHZ     | IPC-TM-650 2.5.5.9  | /           | ≤5.6                  | ≤5.6                  |
| Dissipation Factor 1MHZ      | IPC-TM-650 2.5.5.9  | /           | ≤0.034                | ≤0.034                |
| Water Absorption             | IPC-TM-650 2.6.2.1  | %           | <0.5                  | <0.5                  |
| Thermal Conductivity         | ASTM E1461          | W/m·k       | 2.0                   | 2.0                   |
| Heat Resistance              | /                   | ℃/W         | 0.5~0.7               | 0.5~0.7               |
| Flammability                 | UL94                | /           | V-0                   | V-0                   |

✧ All datas are subject to change without notice



# EPA-M2CTI 导热型铝基覆铜板

## 特点:

- 无卤型,符合 ROHS要求,不含 REACH 法规中的高关注物质。
- 具有比普通型铝基覆铜板导热率高,有效地增加电子产品的使用寿命。
- 无玻纤。
- 有良好的机械加工性。
- 优良的尺寸稳定性。
- 电磁波屏蔽性及优良的性价比。

## 应用领域:

- 电动车基板、LED 背光板、室内及户外 LED 照明、LED 路灯、LED 舞台灯饰照明。
- 变频器。
- 其它: IC 芯片载体。

## 规格

铝基材层: 0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.5mm; 2.0mm; 3.0mm.

铜箔: 1OZ; 2OZ; 3OZ; 4OZ.

供应尺寸: 500×600mm; 600×1000mm; 500×1200mm, 可客订尺寸。

## 产品性能

| 项目          | 实验方法                | 单位            | 典型值                   |                       |
|-------------|---------------------|---------------|-----------------------|-----------------------|
| 介质层厚度       | IPC-TM-650 2.2.18.1 | μm            | 100                   | 150                   |
| 热应力         | IPC-TM-650 2.4.13.1 | S             | 288℃ > 120S           | 288℃ > 120S           |
| 剥离强度        | IPC-TM-650 2.4.8.1  | N/mm          | 1.2                   | 1.2                   |
| 全面耐电压       | DC                  | KV            | 3.0                   | 5.0                   |
| 击穿电压        | AC                  | KV            | 4.0                   | 6.0                   |
| CTI         | GB/T 4207           | V             | > 600                 | > 600                 |
| TG          | IPC-TM-650 2.4.25   | ℃             | 140                   | 140                   |
| 热膨胀系数(TMA)  | IPC-TM-650 2.4.24   | % (50 ~ 260℃) | 0.50                  | 0.50                  |
| 表面电阻        | IPC-TM-650 2.5.17.1 | Ω             | 3.96×10 <sup>9</sup>  | 3.96×10 <sup>9</sup>  |
| 体积电阻率       | IPC-TM-650 2.5.17.1 | Ω·cm          | 1.68×10 <sup>11</sup> | 1.68×10 <sup>11</sup> |
| 绝缘抵抗        | JIS6481-1996        | Ω             | 1.46×10 <sup>11</sup> | 1.46×10 <sup>11</sup> |
| 介电常数 1MHZ   | IPC-TM-650 2.5.5.9  | /             | ≤5.6                  | ≤5.6                  |
| 介质损耗因数 1MHZ | IPC-TM-650 2.5.5.9  | /             | ≤0.034                | ≤0.034                |
| 吸水率         | IPC-TM-650 2.6.2.1  | %             | < 0.5                 | < 0.5                 |
| 导热率         | ASTM E1461          | W/m·k         | 2.0                   | 2.0                   |
| 热阻          | /                   | ℃/W           | 0.5 ~ 0.7             | 0.5 ~ 0.7             |
| 燃烧性         | UL94                | /             | V-0                   | V-0                   |

◆ 以上测试数据是依测试当时条件所制定,若有变更,恕不另行通知。



# EPA-M2CTI Conductivity thermal Aluminum based CCL

## Features:

- Halogen-free type, complied with ROHS requirements and complied with REACH legislation requirements.
- High thermal conductivity aluminum copper clad laminate thus effectively increasing the life of electronic products.
- No fiberglass contents.
- Good mechanical adaptations.
- Excellent dimensional stability.
- Electromagnetic shielding.

## Application areas:

- Substrate electric car, LED Back light, Indoor/Outdoor lighting, Street LED lamp, LED stage lights .
- Inverter/converter
- Other: IC chip substrates.

## Specification

**AL Substrate Layer:** 0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.5mm; 2.0mm; 3.0mm.

**Copper Foil:** 1OZ; 2OZ; 3OZ; 4OZ.

**Available Size:** 500×600mm; 600×1000mm; 500×1200mm. Customer tailor sizes are available.

## Performance

| Item                         | Test Method         | Units       | Index                 |                       |
|------------------------------|---------------------|-------------|-----------------------|-----------------------|
| Insulation thickness         | IPC-TM-650 2.2.18.1 | μm          | 100                   | 150                   |
| Thermal Stress               | IPC-TM-650 2.4.13.1 | S           | 288℃ > 120S           | 288℃ > 120S           |
| Peel Strength                | IPC-TM-650 2.4.8.1  | N/mm        | 1.2                   | 1.2                   |
| Withstand Voltage            | DC                  | KV          | 3.0                   | 5.0                   |
| Break-down Voltage           | AC                  | KV          | 4.0                   | 6.0                   |
| CTI                          | GB/T 4207           | V           | >600                  | >600                  |
| Glass Transition Temperature | IPC-TM-650 2.4.25   | ℃           | 140                   | 140                   |
| CTE(TMA)                     | IPC-TM-650 2.4.24   | % (50~260℃) | 0.50                  | 0.50                  |
| Surface Resistance           | IPC-TM-650 2.5.17.1 | Ω           | 3.96×10 <sup>9</sup>  | 3.96×10 <sup>9</sup>  |
| Volume Resistivity           | IPC-TM-650 2.5.17.1 | Ω·cm        | 1.68×10 <sup>11</sup> | 1.68×10 <sup>11</sup> |
| Insulation Resistance        | JIS6481-1996        | Ω           | 1.46×10 <sup>11</sup> | 1.46×10 <sup>11</sup> |
| Dielectric Constant 1MHZ     | IPC-TM-650 2.5.5.9  | /           | ≤5.6                  | ≤5.6                  |
| Dissipation Factor 1MHZ      | IPC-TM-650 2.5.5.9  | /           | ≤0.034                | ≤0.034                |
| Water Absorption             | IPC-TM-650 2.6.2.1  | %           | <0.5                  | <0.5                  |
| Thermal Conductivity         | ASTM E1461          | W/m·k       | 2.0                   | 2.0                   |
| Heat Resistance              | /                   | ℃/W         | 0.5~0.7               | 0.5~0.7               |
| Flammability                 | UL94                | /           | V-0                   | V-0                   |

✧ All datas are subject to change without notice



# EPA-M3 高导热型铝基覆铜板

## 特点:

- 符合 ROHS 要求、无铅工艺，通过 SGS 测试。
- 具有优异的热导率。
- 优秀绝缘性能。
- 卓越的可靠性。
- 无玻纤。
- 有良好的机械加工性。
- 优良尺寸稳定性。
- 电磁波屏蔽性。

## 应用领域:

- 高亮度 LED 照明/背光模组
- 高功率电子元件(高功率电晶体、整流器)
- 汽车应用 (整流器、电源模组)
- 音频 (均衡器, 放大器)

## 规格

铝基材层: 0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.5mm; 2.0mm; 3.0mm.

铜箔: 1OZ; 2OZ; 3OZ; 4OZ.

供应尺寸: 500×600mm, 600×1000mm, 500×1200mm. 可客订尺寸。

## 产品性能

| 项目             | 实验条件            | 单位    | 典型值                   |                       |
|----------------|-----------------|-------|-----------------------|-----------------------|
| 介质层厚度          | /               | μm    | 100                   | 150                   |
| 热应力            | 288℃<br>不分层、不起泡 | Min   | 5                     | 5                     |
| 剥离强度           | C-96/25/65      | N/mm  | 1.6                   | 1.6                   |
| 全面耐电压          | DC              | KV    | 3.5                   | 5                     |
| 击穿电压           | AC              | KV    | 4.5                   | 7                     |
| CTI            | IEC60112        | V     | ≥600                  | ≥600                  |
| TG             | DSC             | ℃     | ≥120                  | ≥120                  |
| 热膨胀系数          | TMA 50~260℃     | %     | 0.4                   | 0.4                   |
| 表面电阻           | C-96/25/65      | Ω     | 1.92×10 <sup>12</sup> | 1.92×10 <sup>12</sup> |
| 体积电阻率          | C-96/25/65      | Ω·cm  | 1.37×10 <sup>12</sup> | 1.37×10 <sup>12</sup> |
| 介电常数 1MHZ      | C-96/25/65      | /     | 6.01                  | 6.01                  |
| 介质损耗因数<br>1MHZ | C-96/25/65      | /     | 0.0114                | 0.0114                |
| 吸水率            | D-24/23         | %     | < 0.5                 | < 0.5                 |
| 导热率            | ASTM D5470      | W/m·k | 3.2                   | 3.2                   |
| 热阻             | /               | ℃/W   | 0.13                  | 0.15                  |
| 燃烧性            | A               | S     | 0                     | 0                     |

◆ 以上测试数据是依测试当时条件所制定，若有变更，恕不另行通知。



# EPA-M3 High-Conductivity thermal Aluminum based CCL

## Features:

- Complied with ROHS requirements, lead-free processes and past the SGS tests.
- Excellent thermal conductivity.
- Excellent insulation properties
- Excellent reliability.
- No Fiberglass contents.
- Good mechanical adaptations.
- Excellent dimensional stability.
- Good electromagnetic wave shielding.

## Application areas:

- High-Leung LED lighting / backlight module.
- High power electronic components (high power transistors, the entire flow device).
- Automotive (regulator, Power Supply Module).
- Audio (equalizer, amplifier).

## Specification

**AL Substrate Layer:** 0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.5mm; 2.0mm; 3.0mm.

**Copper Foil:** 1OZ; 2OZ; 3OZ; 4OZ.

**Available Size:** 500×600mm, 600×1000mm, 500×1200mm. Customer tailor sizes are available

## Performance

| Item                         | Test condition                            | Units | Index                 |                       |
|------------------------------|---|-------|-----------------------|-----------------------|
| Insulation thickness         | /   | μm    | 100                   | 150                   |
| Thermal Stress               | 288℃<br>No blistering,<br>No Delamination | Min   | 5                     | 5                     |
| Peel Strength                | C-96/25/65                                | N/mm  | 1.6                   | 1.6                   |
| Withstand voltage            | DC  | KV    | 3.5                   | 5                     |
| Break-down Voltage           | AC  | KV    | 4.5                   | 7                     |
| CTI                          | IEC60112                                  | V     | ≥600                  | ≥600                  |
| Glass Transition Temperature | DSC                                       | ℃     | ≥120                  | ≥120                  |
| Thermal Expansion CTE        | TMA 50~260℃                               | %     | 0.4                   | 0.4                   |
| Surface Resistance           | C-96/25/65                                | Ω     | 1.92×10 <sup>12</sup> | 1.92×10 <sup>12</sup> |
| Volume Resistivity           | C-96/25/65                                | Ω·cm  | 1.37×10 <sup>12</sup> | 1.37×10 <sup>12</sup> |
| Dielectric Constant 1MHZ     | C-96/25/65                                | /     | 6.01                  | 6.01                  |
| Dissipation Factor 1MHZ      | C-96/25/65                                | /     | 0.0114                | 0.0114                |
| Water Absorption             | D-24/23                                   | %     | <0.5                  | <0.5                  |
| Thermal Conductivity         | ASTM E 1461                               | W/m·k | 3.2                   | 3.2                   |
| Heat Resistance              | ASTM E 1461                               | ℃/W   | 0.13                  | 0.15                  |
| Flammability                 | A   | S     | 0                     | 0                     |

✧ All datas are subject to change without notice

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# TCP-2AL 高导热型铝基覆铜板

## 特点:

- 无毒、无卤型，符合 ROHS 要求、无铅工艺，通过 SGS 测试。
- 具有高导热率，有效地增加电子产品的使用寿命。
- 安全性：防火、防电击。
- 无玻纤。
- 有良好的机械加工性。
- 优良的尺寸稳定性。
- 电磁波屏蔽性及优良的性价比。

## 应用领域:

- LED 模块、TV 背光源、电动车基板
- 电力电子（变频器，晶体管，直流/直流转换器，稳压器）
- 汽车（调节，功率模块）
- 音频（均衡器，放大器）

## 规格

铝基材层：0.6mm；0.8mm；1.0mm；1.2mm；1.5mm；2.0mm；3.0mm.

铜箔：1OZ；2OZ；3OZ；4OZ.

供应尺寸：500×600mm,500×1200mm.可客订尺寸。

## 产品性能

| 项目             | 实验条件            | 单位    | 典型值               |                   |                   |
|----------------|-----------------|-------|-------------------|-------------------|-------------------|
| 介质层厚度          | /               | μm    | 80                | 100               | 150               |
| 热应力            | 260℃<br>不分层、不起泡 | Min   | 60                | 60                | 60                |
| 剥离强度           | C-96/25/65      | N/mm  | 1.6               | 1.6               | 1.6               |
| 击穿电压           | AC              | KV    | 3                 | 3                 | 5                 |
| CTI            | IEC60112        | V     | ≥600              | ≥600              | ≥600              |
| TG             | DSC             | ℃     | ≥130              | ≥130              | ≥130              |
| 热膨胀系数          | TMA 50~260℃     | %     | 0.54              | 0.54              | 0.54              |
| 表面电阻           | C-96/25/65      | Ω     | >10 <sup>15</sup> | >10 <sup>15</sup> | >10 <sup>15</sup> |
| 体积电阻率          | C-96/25/65      | Ω·cm  | >10 <sup>13</sup> | >10 <sup>13</sup> | >10 <sup>13</sup> |
| 介电常数 1MHZ      | C-96/25/65      | /     | 4.8               | 4.8               | 4.8               |
| 介质损耗因数<br>1MHZ | C-96/25/65      | /     | 0.021             | 0.021             | 0.021             |
| 吸水率            | D-24/23         | %     | <0.5              | <0.5              | <0.5              |
| 导热率            | ASTM D5470      | W/m·k | 2.7               | 2.7               | 2.7               |
| 热阻             | /               | ℃/W   | 0.50              | 0.67              | 0.94              |
| 燃烧性            | UL94            | /     | V-0               | V-0               | V-0               |

◆ 以上测试数据是依测试当时条件所制定，若有变更，恕不另行通知。



# TCP-2AL High-Conductivity thermal Aluminum based CCL

## Features:

- Non-toxic, non-halogen type, complied with ROHS requirements, lead-free processes and past the SGS tests.
- High thermal conductivity thus effectively increased the life of electronic products.
- Security: Fire resistant, high electrical breakdown.
- No fiberglass contents.
- Good mechanical adaptations.
- Excellent dimensional stability.
- Good electromagnetic shielding.

## Application areas:

- LED module、LED TV Back light,Substrate electric car.
- Power electronics (inverter, transistor, DC/DC converter, regulator).
- Automotive (regulator, power module).
- Audio (equalizer, amplifier).

## Specification

**AL Substrate Layer:** 0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.5mm; 2.0mm; 3.0mm.

**Copper Foil:** 1OZ; 2OZ; 3OZ; 4OZ.

**Available Size:** 500×600mm,500×1200mm.customer tailor sizes are available.

## Performance

| Item                         | Test condition                            | Units | Index             |                   |                   |
|------------------------------|---|-------|-------------------|-------------------|-------------------|
| Insulation thickness         | /   | μm    | 80                | 100               | 150               |
| Thermal Stress               | 260℃<br>No blistering,<br>No Delamination | Min   | 60                | 60                | 60                |
| Peel Strength                | C-96/25/65                                | N/mm  | 1.6               | 1.6               | 1.6               |
| Break-down Voltage           | AC  | KV    | 3                 | 3                 | 5                 |
| CTI                          | IEC60112                                  | V     | ≥600              | ≥600              | ≥600              |
| Glass Transition Temperature | DSC                                       | ℃     | ≥130              | ≥130              | ≥130              |
| Thermal Expansion CTE        | TMA 50~260℃                               | %     | 0.54              | 0.54              | 0.54              |
| Surface Resistance           | C-96/25/65                                | Ω     | >10 <sup>15</sup> | >10 <sup>15</sup> | >10 <sup>15</sup> |
| Volume Resistivity           | C-96/25/65                                | Ω·cm  | >10 <sup>13</sup> | >10 <sup>13</sup> | >10 <sup>13</sup> |
| Dielectric Constant 1MHZ     | C-96/25/65                                | /     | 4.8               | 4.8               | 4.8               |
| Dissipation Factor 1MHZ      | C-96/25/65                                | /     | 0.021             | 0.021             | 0.021             |
| Water Absorption             | D-24/23                                   | %     | <0.5              | <0.5              | <0.5              |
| Thermal Conductivity         | A   | W/m·k | 2.7               | 2.7               | 2.7               |
| Heat Resistance              | /   | ℃/W   | 0.50              | 0.67              | 0.94              |
| Flammability                 | UL94                                      | /     | V-0               | V-0               | V-0               |

✧ All datas are subject to change without notice.



# EPA-LSAE081040 导热型铝基覆铜板

## 特点:

- 无卤环保产品;
- 低热阻;
- 具韧性, 不脆;
- 高耐电特性&板边均匀耐电。

## 应用领域:

- LED 照明高耐电应用;
- 投影机
- 电源转换器
- 汽车的应用
- 电源设备
- 光伏

## 规格

铝基材层:0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.5mm; 2.0mm; 3.0mm.

铜箔:1OZ; 2OZ.

供应尺寸 :500×600mm; 500×1200mm。

## 产品性能

| 项目             | 实验条件               | 单位                    | 典型值                              |
|----------------|--------------------|-----------------------|----------------------------------|
| 介质层厚度          | ASTM D 1005        | μm                    | 60                               |
| 热应力            | IPC-TM-650 2.4.13  | S                     | 288°C > 120S                     |
| 剥离强度           | IPC-TM-650 2.4.9   | Kg/cm                 | 1.3                              |
| 击穿电压           | IPC-TM-650 2.5.6   | KV(AC)                | > 4                              |
| 耐电压            | IPC-TM-650 2.5.6   | KV(DC)                | > 4                              |
| CTI            | UL-746-E           | Grade                 | 0                                |
| MOT            | UL-746-E           | °C                    | 130                              |
| TG             | DMA Method@1Hz.    | °C                    | PI:300±20<br>Adhesive only:70±20 |
| 热膨胀系数          | IPC-TM-650 2.4.24  | Ppm/°C                | < 100                            |
| 表面电阻           | IPC-TM-650 2.5.17  | Ω                     | > 10 <sup>13</sup>               |
| 体积电阻率          | IPC-TM-650 2.5.17  | Ω·cm                  | > 10 <sup>13</sup>               |
| 绝缘电阻           | IPC-TM-650 2.6.3.2 | Ω                     | > 10 <sup>11</sup>               |
| 介电常数<br>3GHZ   | IPC-TM-650 2.5.5.3 | /                     | 4.7                              |
| 介质损耗因数<br>3GHZ | IPC-TM-650 2.5.5.3 | /                     | 0.03                             |
| 吸湿性            | IPC-TM-650 2.6.2.1 | %                     | < 1                              |
| 导热系数           | ASTM E 1461        | W/m·k                 | 2.0                              |
| 热阻             | ASTM E 1461        | in <sup>2</sup> ×°C/W | 0.08                             |
| 燃烧性            | UL746-E/UL-94      | /                     | V0                               |

◆ 以上测试数据是依测试当时条件所制定, 若有变更, 恕不另行通知。



# EPA-LSAE081040 Conductivity thermal Aluminum based CCL

## Features:

- Halogen-free & environment-friendly
- Low thermal resistance
- Toughness, no brittle.
- Good dielectric properties even CCL edge

## Application areas:

- LED lighting under high voltage
- Projectors
- Power converters
- Vehicle application
- power supply device
- PV

## Specification

**AL Substrate Layer:**0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.5mm; 2.0mm; 3.0mm.

**Copper Fll:**1OZ; 2OZ.

**Available Size :**500×600mm; 500×1200mm。

## Performance

| Properties                  | Test Method        | Unit                  | Spec                             |
|-----------------------------|--------------------|-----------------------|----------------------------------|
| Thickness                   | ASTM D 1005        | μm                    | 60                               |
| Solder Resistance           | IPC-TM-650 2.4.13  | S                     | 288°C > 120S                     |
| Peel strength               | IPC-TM-650 2.4.9   | Kg/cm                 | 1.3                              |
| Breakdown voltage           | IPC-TM-650 2.5.6   | KV(AC)                | >4                               |
| Hi-Pot                      | IPC-TM-650 2.5.6   | KV(DC)                | >4                               |
| CTI                         | UL-746-E           | Grade                 | 0                                |
| MOT                         | UL-746-E           | °C                    | 130                              |
| TG                          | DMA Method@1Hz.    | °C                    | PI:300±20<br>Adhesive only:70±20 |
| CTE                         | IPC-TM-650 2.4.24  | Ppm/°C                | <100                             |
| Surface resistivity         | IPC-TM-650 2.5.17  | Ω                     | >10 <sup>13</sup>                |
| Volume resistivity          | IPC-TM-650 2.5.17  | Ω·cm                  | >10 <sup>13</sup>                |
| Insulation resistance       | IPC-TM-650 2.6.3.2 | Ω                     | >10 <sup>11</sup>                |
| Dielectric Constant<br>3GHZ | IPC-TM-650 2.5.5.3 | /                     | 4.7                              |
| Dissipation Factor 3GHZ     | IPC-TM-650 2.5.5.3 | /                     | 0.03                             |
| Moisture Absorption         | IPC-TM-650 2.6.2.1 | %                     | <1                               |
| Thermal conductivity        | ASTM E 1461        | W/m·k                 | 2.0                              |
| Thermal impendence          | ASTM E 1461        | in <sup>2</sup> ×°C/W | 0.08                             |
| Flammability                | UL746-E/UL-94      | /                     | V0                               |

✧ All datas are subject to change without notice

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