GCS-070
Graphite heat spreader

GCS Graphite heat spreader is a thermal management material with high thermal conductivity and high flexibility. It is a highly crystallised graphite material made from carbon materials in sheet style by a special process. The material is ideal for providing thermal management solutions in limited spaces and it can be cut into customisable shapes.

Features

- Engineered in-plane thermal conductivity 1000 W/m-K
- EMI shielding and absorbing to protect sensitive electronic parts
- Reliable performance from -40°C to 400°C
- RoHS compliant and UL94V0 flammability rated
- Can be die-cut into customisable shapes
- Can be adhesive-backed for peel and stick attachment
- Can be laminated with plastics, metals or foam to improve performance
- Reduce skin temperature and eliminate ‘hot spots’
- Can replace grease or PCM, eliminating fans and heat pipes

Configurations

<table>
<thead>
<tr>
<th>Part number</th>
<th>Front face</th>
<th>Rear face</th>
<th>Structure</th>
<th>Total thickness</th>
<th>Heat resistance</th>
<th>Features</th>
</tr>
</thead>
</table>
| GCS-070-G   | -          | -         | 1. GCS heat spreader | 70um           | 400°C        | • High thermal conductivity  
              • High flexibility  
              • Low thermal resistance  
              • Available up to 400°C  
              • Conductive material |
| GCS-070-A10 | -          | Insulate  | 1. GCS heat spreader 2. Adhesive tape 10um 3. Release liner | 80um           | 100°C        | • Insulation material on one side  
              • Low thermal resistance  
              • Withstands voltage of 1kV |
| GCS-070-P10A10 | Polyester  | Insulate  | 1. Polyester tape 10um 2. GCS heat spreader 3. Adhesive tape 10um 4. Release liner | 90um           | 100°C        | • Insulation material on both sides  
              • Withstands voltage PET tape: 1.95kV  
              • Low thermal resistance |

Building the part number

Example: GCS - 017 - P10 A10 - XX

1. GCS series
2. Graphite heat spreader thickness
3. PET thickness
4. Adhesive thickness
5. Custom

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Applications

GCS graphite heat spreader has high heat conductivity; it is also very thin which allows for easy attachments a variety of heat sink or component surfaces. Apply to heat sink, position the pad and press in place onto the heat sink. The GCS graphite heat spreaders can be used in many markets, all of which improve thermally conductive performance within a limited space.

Displays, lighting protection

PDP TV, LCD CCFL and LCD LED display backlight, LED signage, projectors and new display technology.

Consumer and industrial electronics

Mobile telephone, communication base station, laptop, notebook, computer servers, handheld gaming devices, memory modules, CPU modules, amplifiers, batteries, and DC to DC covertors power supplies.

Automotive electronics

Engine management, electronic suspension, braking systems, communication and multimedia systems, comfort convenience features, vehicle lighting, vehicle controls, hybrid vehicle battery thermal management, electric vehicle thermal management.

Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Silver grey</td>
</tr>
<tr>
<td>Thickness mm</td>
<td>0.070</td>
</tr>
<tr>
<td>Density g/cm³</td>
<td>1.20</td>
</tr>
<tr>
<td>Typical thermal conductivity (in-plane) W/m-K</td>
<td>1000</td>
</tr>
<tr>
<td>Typical thermal conductivity (through thickness) W/m-K</td>
<td>20</td>
</tr>
<tr>
<td>Thermal diffusivity cm²/s</td>
<td>8~10</td>
</tr>
<tr>
<td>Tensile strength, MPa</td>
<td>20</td>
</tr>
<tr>
<td>Electrical conductivity, S/cm</td>
<td>20000</td>
</tr>
<tr>
<td>CTE (coefficient of thermal expansion) 1/K</td>
<td>9.3 x 10⁻⁷</td>
</tr>
<tr>
<td>Operating temperature °C</td>
<td>-40 ~ +400</td>
</tr>
<tr>
<td>Specific heat @50°C J/kg-°C</td>
<td>850</td>
</tr>
</tbody>
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