

## “PGS” Graphite Sheets

PGS (Pyrolytic Graphite Sheet) is a heat sink sheet with high thermal conductivity and high flexibility. PGS is made of graphite with a structure that is close to a single crystal. This is achieved by highly oriented polymer film sheet, a process which has never been implemented before.



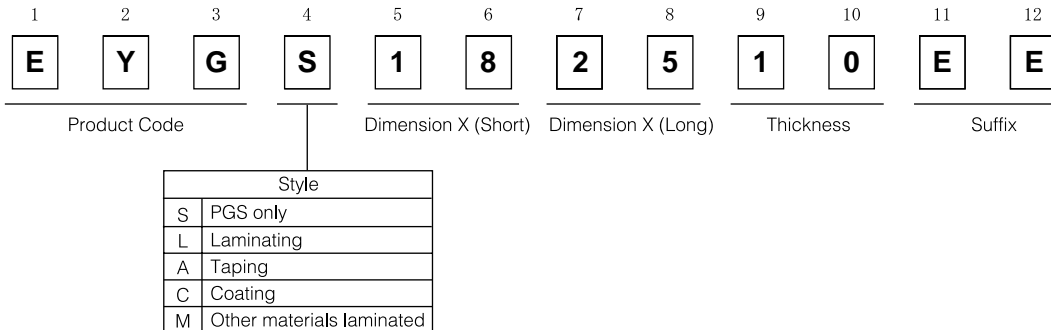
### ■ Features

- Excellent thermal conductivity:600 to 800W/(m · K)  
(Twice as high as copper, three times as high as aluminum)
- Lightweight:Specific gravity:1.0g/cm<sup>3</sup>  
(1/9 that of copper, 1/3 that of aluminum)
- Flexible and easy to be cut or trimmed.  
(withstands repeated bending)
- Low thermal resistance

### ■ Recommended applications

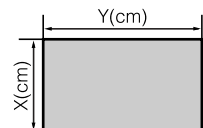
- Notebook personal computers,DVDs,DVCs,mobile phones
- Semiconductor manufacturing equipment  
(Sputtering,Dry etching,Steppers)
- Optical communications'equipment

### ■ Explanation of Part Numbers



### ■ Dimensions in mm

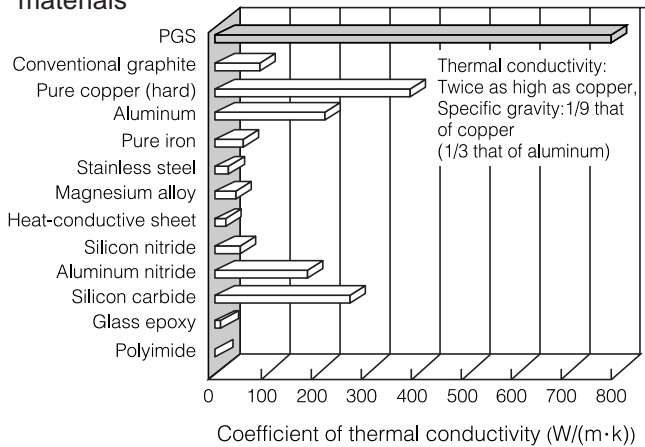
Part No.	Dimension X (Short)	Dimension Y (Long)	Thickness
EYGS182510	18.0±0.5cm	25.0±0.5cm	0.10±0.05mm
EYGS131810	12.5±0.5cm	18.0±0.5cm	0.10±0.05mm
EYGS091310	9.0±0.5cm	12.5±0.5cm	0.10±0.05mm



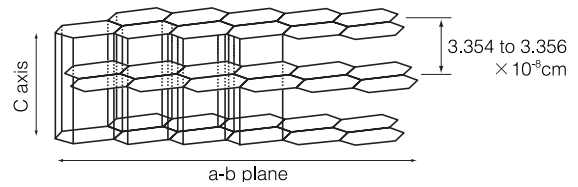
### ■ Characteristics

Characteristics		Specification
Thickness		0.10 ± 0.05 mm
Density		1.0 g/cm <sup>3</sup>
Thermal conductivity	a-b plane	600 to 800 W/(m · K)
Electrical conductivity		10000 S/cm
Extensional strength		19.6 MPa
Expansion coefficient	a-b plane	9.3 × 10 <sup>-7</sup> 1/K
	c axis	3.2 × 10 <sup>-5</sup> 1/K
Heat resistance		400 °C
Bending(angle 180,R5)		10000 cycles

### Thermal conductivity of PGS compared to other materials



### Layered structure of PGS



### Dimensions in mm (not to scale)

Type	EYGS182510	EYGM131810SS	EYGM131810SW	EYGA091310K	EYGA091310A	EYGC091310A	EYGL□□□□□P2	EYGM091310CT
	PGS only	Silicon layered type		Polyimide tape attached	Double-side-adhesive tape attached type	Acrylic adhesive (one side) attached type	PET-covered type	Conductive adhesive tape type
Structure		One-sided type 	Double-sided type 					
Thickness (μm)	100±50	200±50	300±50	130±50	130±50	110±50	150±50 (1 pcs.) 350±50 (3 pcs.)	130±50
Thermal resistance (°C/W)	0.4	1.0	1.4	2.4	1.7	0.8	2.0	1.6
Thermal conductivity (direction of the sheet surface) (W/m·k)	600 to 800	250 to 300	250 to 300	500 to 600	500 to 600	550 to 650	500 to 600	500 to 600
Withstand temperature max. (°C)	400	180	180	180	80	80	105	80
Standard To be separately consulted sample, (± 5 mm)	180×250	125×180	125×180	90×125	90×125	90×125	To be separately consulted	90×125
Features	<ul style="list-style-type: none"> <li>Usable up to 400°C</li> <li>Low thermal resistance</li> <li>Conductivity</li> </ul>	<ul style="list-style-type: none"> <li>Cushioning properties</li> <li>One-side insulation</li> </ul>	<ul style="list-style-type: none"> <li>Cushioning properties</li> <li>Both-side insulation</li> </ul>	<ul style="list-style-type: none"> <li>High insulation</li> <li>High heat resistance</li> </ul>		<ul style="list-style-type: none"> <li>Low thermal resistance</li> </ul>	<ul style="list-style-type: none"> <li>High insulation</li> </ul>	

\*The above values are only for reference. they can be changed without notice.

Part No., quantity and country of origin are designated on outer packages in English.

Design, Specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use. Whenever a doubt about safety arises from this product, please inform us immediately for technical consultation without fail.

**“PGS” (Pyrolytic Graphite Sheet) Heat sink sheet****Precautions for Handling****⚠ Precautions for Safety**

“PGS” (Pyrolytic Graphite Sheet) Heat sink sheet (hereafter referred to as “PGS”) may result in accidents or trouble when subjected to severe conditions of electrical, environmental and /or mechanical stress beyond the specified “Rating” and specified “Conditions” in the Specification. Following “Precautions for Safety” and “Application Notes” shall be taken in your major consideration. If you have a question about the Precautions for Handling, please contact our engineering section or factory.

**1. ⚠ Precautions for safety**

- 1.1 The PGS shall be used within the specified operating temperature range.
- 1.2 Never rub or contact with hard materials to avoid scratches because the PGS is soft.
- 1.3 If the PGS have a line or a fold, that may affect thermal conductivity.
- 1.4 The PGS shall not be used with acid.  
The PGS shall not be used in contact with iron at 400 °C or more
- 1.5 The PGS shall not be exposed to salt water or direct sunlight in use. The PGS shall not be used under corrosive gases (hydrogen sulfide, sulfurous acid, chlorine, ammonia etc.).
- 1.6 Our PGS has been developed for general industry applications. Ask our engineering section or factory prior to special applications such as for medical, for aerospace and aircraft work.
- 1.7 Never touch a using PGS because it may be high temperature.

**2. Application notes**

- 2.1 When the load forcing to separate is added or pointed edge is touched, use the PGS with protective materials because it may be torn or have a through hole.
- 2.2 If overheated, it does not work normally.
- 2.3 thermal conductivity depends on operating methods.  
Test the adaptability of PGS for your application before use.
- 2.4 The PGS has conductivity.  
If insulation is required, the PGS should be provided insulation.
- 2.5 Long term storage
  - The PGS shall not be stored under severe conditions of salt water, direct sunlight or corrosive gases (hydrogen sulfide, sulfurous acid, chlorine, ammonia etc.).
  - The PGS shall not be stored with acid.