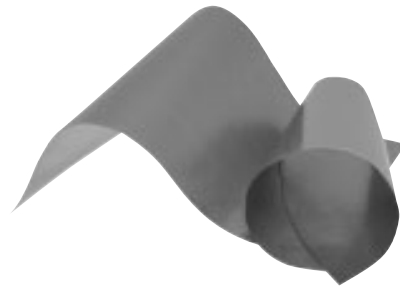


“PGS” Graphite Sheets

Type: **EYG**

PGS (Pyrolytic Graphite Sheet) is a thermal interface material which is very thin, synthetically made, has high thermal conductivity, and is made from a highly oriented graphite polymer film. It is ideal for providing thermal management/heat-sinking in limited spaces or to provide supplemental heat-sinking in addition to conventional means. This material is flexible and can be cut into customizable shapes.



■ Features

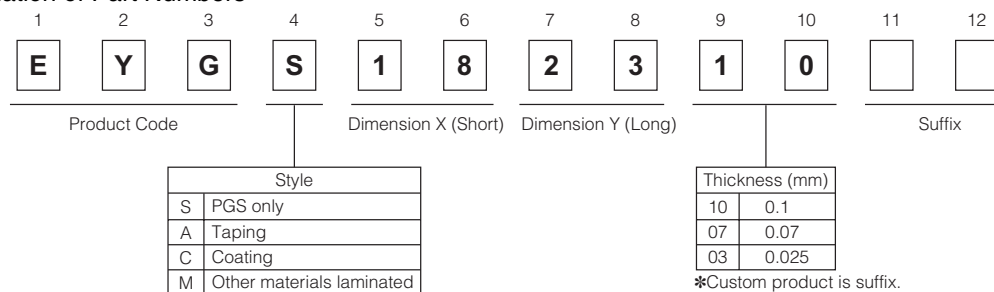
- Excellent thermal conductivity : 700 to 1600 W/(m·K)
(2 to 4 times as high as copper, 3 to 6 time as high as aluminum)
- Lightweight: Specific gravity : 0.85 to 1.9 g/cm³
(1/4 to 1/10 of copper, 1/1.3 to 1/3 of aluminum in density)
- Flexible and easy to be cut or trimmed.
(withstands repeated bending)
- Low thermal resistance

■ Recommended applications

- Cellular phone, DVC, DSC, PC and peripherals, pickup
- Semiconductor manufacturing equipment
(Sputtering, Dry etching, Steppers)
- Optical communications equipment

■ Handling Precautions (Please see Page 380)

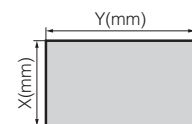
■ Explanation of Part Numbers



■ Dimensions in mm (not to scale)

Dimension of representative

Dimension of Representative				
Part No.		Dimension X (Short)*	Dimension Y (Long)*	Thickness (mm)
EYGS1823	<div><div>10</div><div>07</div></div>	180±5 mm	230±5 mm	0.10±0.03, 0.07±0.015
EYGS1218	<div><div>10</div><div>07</div><div>03</div></div>	115±5 mm	180±5 mm	0.10±0.03, 0.07±0.015, 0.025±0.010
EYGS0912	<div><div>10</div><div>07</div><div>03</div></div>	90±5 mm	115±5 mm	0.10±0.03, 0.07±0.015, 0.025±0.010



*Please contact us for other dimensions other than those above.

■ Characteristics

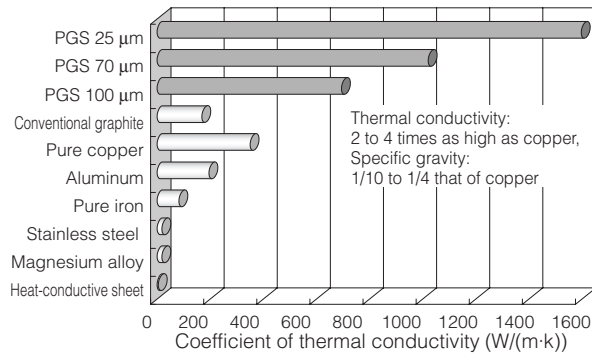
Characteristics	Specification	Specification	Specification
Thickness	0.10 ± 0.03 mm	0.07 ± 0.015 mm	0.025 ± 0.010 mm
Density	0.85 g/cm ³	1.21 g/cm ³	1.90 g/cm ³
Thermal conductivity	a-b plane 700 W/(m·K)	1000 W/(m·K)	1600 W/(m·K)
Electrical conductivity	10000 S/cm	10000 S/cm	20000 S/cm
Extensional strength	19.6 MPa	22.0 MPa	30.0 MPa
Expansion coefficient	a-b plane 9.3 × 10 ⁻⁷ 1/K	9.3 × 10 ⁻⁷ 1/K	9.3 × 10 ⁻⁷ 1/K
	c axis 3.2 × 10 ⁻⁵ 1/K	3.2 × 10 ⁻⁵ 1/K	3.2 × 10 ⁻⁵ 1/K
Heat resistance	400 °C		
Bending(angle 180,R5)	10000 cycles		

*Values are for reference, not guaranteed.

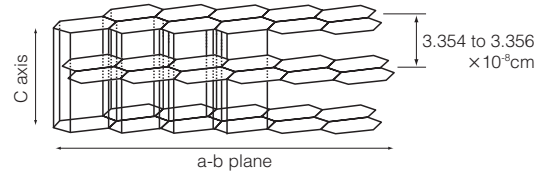
Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.

00 Sep. 2010

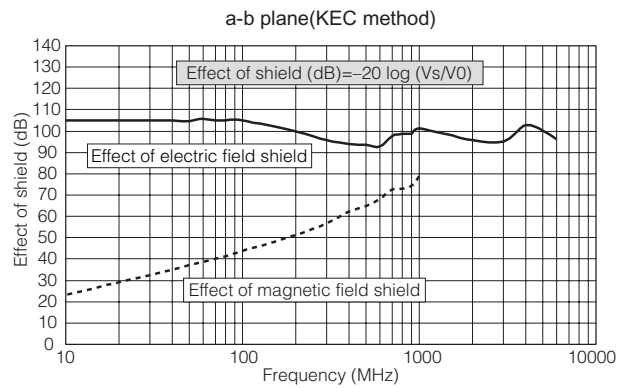
Thermal conductivity of PGS compared to other



Layered structure of PGS



Electric field shield performance



Rating and Characteristics

Standard series (PGS 100, 70, 25 μm)

Type	PGS Only	Adhesive Type		Laminated type (Insulation & Adhesive)		
	S type	A-A type	A-M type	A-PA type	A-PM type	A-SM type
Front face	—	—	—	Polyester tape standard type 30 μm	Polyester tape standard type 30 μm	Polyester tape thin type 10 μm
Rear face	—	Insulative adhesion type 30 μm	Insulative thin adhesion type 10 μm	Insulative adhesion type 30 μm	Insulative thin adhesion type 10 μm	Insulative thin adhesion type 10 μm
Structure	PGS Graphite sheet	PGS Graphite sheet Acrylic Adhesive tape 30 μm Separating paper	PGS Graphite sheet Acrylic Adhesive tape 10 μm Separating paper	PGS Graphite sheet Polyester(PET) tape 30 μm Acrylic Adhesive tape 30 μm Separating paper	PGS Graphite sheet Polyester(PET) tape 30 μm Acrylic Adhesive tape 10 μm Separating paper	PGS Graphite sheet Polyester(PET) tape 10 μm Acrylic Adhesive tape 10 μm Separating paper
Features	· High Thermal Conductivity · High Flexibility · Low Thermal Resistance · Available up to 400 °C · Conductive Material	· With insulation material on one side · With strong adhesive tape for putting chassis · Withstanding Voltage : 2 kV	· With insulation material on one side · Low thermal resistance comparison with A-A type · Withstanding Voltage : 1 kV	· With insulation material on both side · Withstanding Voltage PET tape : 4 kV · Adhesive Tape : 2 kV	· With insulation material on both side · Withstanding Voltage PET tape : 4 kV · Adhesive Tape : 1 kV	· With insulation material on both side · Withstanding Voltage PET tape : 1 kV · Adhesive Tape : 1 kV
Withstand temperature	400 °C	100 °C	100 °C	100 °C	100 °C	100 °C
Standard Size	115 × 180 mm	90 × 115 mm	90 × 115 mm	90 × 115 mm	90 × 115 mm	90 × 115 mm
Maximum size	180 × 230 mm 115 × 180 mm(25 μm)	115 × 180 mm	115 × 180 mm	115 × 180 mm	115 × 180 mm	115 × 180 mm
100 μm	Part No. EYGS121810	—	—	—	—	—
70 μm	Part No. EYGS121807	EYGA091207A	EYGA091207M	EYGA091207PA	EYGA091207PM	EYGA091207SM
25 μm	Part No. EYGS121803	EYGA091203A	EYGA091203M	EYGA091203PA	EYGA091203PM	EYGA091203SM
	Thickness 100 μm	Thickness 100 μm	Thickness 80 μm	Thickness 130 μm	Thickness 110 μm	Thickness 90 μm
	Thickness 70 μm	Thickness 100 μm	Thickness 80 μm	Thickness 130 μm	Thickness 110 μm	Thickness 90 μm
	Thickness 25 μm	Thickness 55 μm	Thickness 35 μm	Thickness 85 μm	Thickness 65 μm	Thickness 45 μm

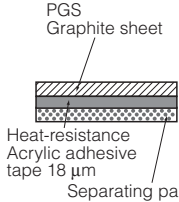
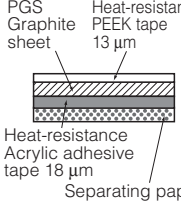
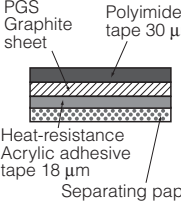
* Please contact our engineering section or factory about to special applications.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

00 Sep. 2010

■ Rating and Characteristics

● High heat resistance series (PGS 70, 25 μm)

Type	high heat resistance type		
	A-V type	A-RV type	A-KV type
Front face	–	high heat resistance and insulation type 13 μm	high heat resistance and insulation type 30 μm
Rear face	High heat resistance and insulation adhesion type 18 μm	High heat resistance and insulation adhesion type 18 μm	High heat resistance and insulation adhesion type 18 μm
Structure			
Features	<ul style="list-style-type: none"> · With high heat resistance and insulation tape on one side · Withstanding Voltage Adhesive tape : 2 kV 	<ul style="list-style-type: none"> · With high heat resistance and insulation tape on both side · Withstanding Voltage PEEK tape : 2 kV · Adhesive tape : 2 kV 	<ul style="list-style-type: none"> · With high heat resistance and more insulated tape on both side · Withstanding Voltage PI tape : 5 kV · Adhesive tape : 2 kV
Withstand temperature	150 °C	150 °C	150 °C (Polyimide : 180 °C)
Standard Size	90 × 115 mm	90 × 115 mm	90 × 115 mm
Maximum size	115 × 180 mm	115 × 180 mm	115 × 180 mm
70 μm	Part No.	EYGA091207V	EYGA091207KV
	Thickness	88 μm	118 μm
25 μm	Part No.	EYGA091203V	EYGA091203KV
	Thickness	43 μm	73 μm

Minimum order				
Item	Part No.	Type	Size	Minimum order
PGS Graphite Sheet Only	S type 100 μm	EYGS091210	90×115 mm	20
		EYGS121810	115×180 mm	10
		EYGS182310	180×230 mm	10
	S type 70 μm	EYGS091207	90×115 mm	20
		EYGS121807	115×180 mm	10
		EYGS182307	180×230 mm	10
	S type 25 μm	EYGS091203	90×115 mm	20
		EYGS121803	115×180 mm	10
PGS 70, 25 μm Adhesive Type [Standard series]	A-A type 70 μm	EYGA091207A	90×115 mm	20
		EYGA121807A	115×180 mm	10
	A-A type 25 μm	EYGA091203A	90×115 mm	20
		EYGA121803A	115×180 mm	10
	A-M type 70 μm	EYGA091207M	90×115 mm	20
		EYGA121807M	115×180 mm	10
	A-MM type 25 μm	EYGA091203M	90×115 mm	20
		EYGA121803M	115×180 mm	10
PGS 70, 25 μm Laminated Type (Insulation & Adhesive) [Standard series]	A-PA type 70 μm	EYGA091207PA	90×115 mm	20
		EYGA121807PA	115×180 mm	10
	A-PA type 25 μm	EYGA091203PA	90×115 mm	20
		EYGA121803PA	115×180 mm	10
	A-PM type 70 μm	EYGA091207PM	90×115 mm	20
		EYGA121807PM	115×180 mm	10
	A-PM type 25 μm	EYGA091203PM	90×115 mm	20
		EYGA121803PM	115×180 mm	10
	A-SM type 70 μm	EYGA091207SM	90×115 mm	20
		EYGA121807SM	115×180 mm	10
	A-SM type 25 μm	EYGA091203SM	90×115 mm	20
		EYGA121803SM	115×180 mm	10
PGS 70, 25 μm [High heat resistance type]	A-V type 70 μm	EYGA091207V	90×115 mm	20
		EYGA121807V	115×180 mm	10
	A-V type 25 μm	EYGA091203V	90×115 mm	20
		EYGA121803V	115×180 mm	10
	A-RV type 70 μm	EYGA091207RV	90×115 mm	20
		EYGA121807RV	115×180 mm	10
	A-RV type 25 μm	EYGA091203RV	90×115 mm	20
		EYGA121803RV	115×180 mm	10
	A-KV type 70 μm	EYGA091207KV	90×115 mm	20
		EYGA121807KV	115×180 mm	10
	A-KV type 25 μm	EYGA091203KV	90×115 mm	20
		EYGA121803KV	115×180 mm	10

** Please consult if the quantity of orders is little.

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

- When using our products, no matter what sort of equipment they might be used for, be sure to make a written agreement on the specifications with us in advance. The design and specifications in this catalog are subject to change without prior notice.
- Do not use the products beyond the specifications described in this catalog.
- This catalog explains the quality and performance of the products as individual components. Before use, check and evaluate their operations when installed in your products.
- Install the following systems for a failsafe design to ensure safety if these products are to be used in equipment where a defect in these products may cause the loss of human life or other significant damage, such as damage to vehicles (automobile, train, vessel), traffic lights, medical equipment, aerospace equipment, electric heating appliances, combustion/gas equipment, rotating equipment, and disaster/crime prevention equipment.
- * Systems equipped with a protection circuit and a protection device
- * Systems equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault

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” found in the Specifications. Please follow the recommendations in “Safety Precautions” and “Application Notes”. Contact our engineering staff or the factory with any questions.

1. ⚠ Safety Precautions

- 1.1 The PGS shall be used within the specified operating temperature range.
- 1.2 The PGS is soft, do not rub or touch it with rough materials to avoid scratching it.
- 1.3 Lines or folds in the PGS may affect thermal conductivity.
- 1.4 The PGS shall not be used with acid.
The PGS shall not be used in contact with a soldering iron at 400 °C or more
- 1.5 The PGS shall not be exposed to salt water or direct sunlight during use. The PGS shall not be used in corrosive gases (hydrogen sulfide, sulfurous acid, chlorine, ammonia etc.).
- 1.6 Our PGS has been developed for general industry applications. Prior to using the PGS for special applications such as medical, work please contact our engineering staff or the factory.
- 1.7 Never touch a PGS during use because it may be extremely hot.

2. Application notes

- 2.1 Use protective materials when handling and/or applying the PGS, do not use items with sharp edges as they might tear or puncture the PGS.
- 2.2 The PGS does not work properly if overheated.
- 2.3 Thermal conductivity is dependant on the way it is used.
Test the adaptability of PGS to your application before use.
- 2.4 The PGS has conductivity.
If 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 near acid.

<Package markings>

Package markings include the product number, quantity, and country of origin.
In principle, the country of origin should be indicated in English.