T-Global Technology

20 YEAR ANNIVERSARY

PRODUCT BROCHURE

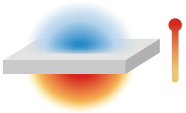
More Innovation
Less Heat

- Thermal Interface Materials
- Heat Sink
- Heat Pipe
- Vapor Chamber
- Thermoelectric Cooling Chip
- Flexible Absorbent Material
- Fan
- Thermal Simulation

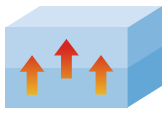
REACH COMPLIANT · RoHS COMPLIANT · UL · ISO 9001 SGS · ISO 14001 SGS · IATF 16949 SGS

Selection Guide

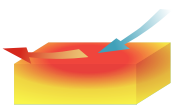
Which Product Will Best Fit Your Needs?



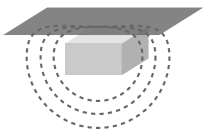
Temperature Control



Heat Conduction



Heat Dissipation



Electro Magnetic Interference

- Temperature Control
  - Thermoelectric Cooling Chip
- Heat Conduction
  - >10W
    - Heat Pipe
    - Vapor Chamber
  - <10W
    - Thermal Interface Material
- Heat Dissipation
  - Passive Component
    - Heat Sink
  - Active Component
    - Fan
- Electro Magnetic Interference
  - Flexible Absorbent Material

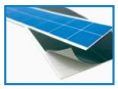
Z Axis
heat conduction

Sheet

High K value
- Thermal Pad

1.5-17.8 W/mk

High viscosity
- Thermal Tape



High Electrical Insulation

Grease

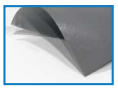
Low thermal resistance
- Thermal Grease

High viscosity
- Thermal Putty

Aging & curing
- Potting Compound

Special shape

Cool down quickly
- Phase Change Maerial



Insulation
- Thermal Insulation Rubber Cap

Often used for products with large temperature changes

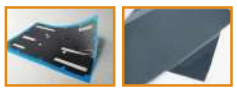
XY Axis
heat conduction

Graphite
- Lightweight
- Copper

Graphite Sheet
High thermal conductivity/EMI reduction

Graphene
Available for unventilated design/No dusting issue

Used for mobile phone



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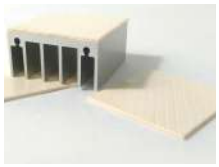
TG-A series
Ultra Soft Thermal Pad

High thermal conductivity. High compressibility and compliancy.
Electrical insulation. Natural tack.




Properties	Unit	TG-A2200	TG-A3500	TG-A4500	TG-A6200	TG-A9000	TG-A1250	TG-A1450	TG-A1660	TG-A1780	TG-AH25	Test Method
Thermal Conductivity	W/mK	2.2	3.5	4.5	6.2	9.0	12.5	14.5	16.6	17.8	25	ASTM D5470
Thickness	mm	0.5~2.0	0.5~8.0	0.5~8.0	0.5~8.0	0.5~8.0	0.5~8.0	0.5~2.0	0.5~2.0	0.5~2.0	0.8~2.0	ASTM D374
Color	-	Gray	Yellow	Purple	Blue	Pink	Green	Pink	Dark Gray	Light Gray	Dark Gray	Colorimeter
Flame Rating	-	V-1	V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0	UL94
Dielectric Breakdown Voltage	KV/mm	≥13	≥13	≥10	≥10	≥8	≥10	≥8	≥7	≥8	≥1	ASTM D149
Weight Loss	%	< 1										ASTM E595
Density	g/cm³	2.7	2.3	3.1	3.1	3.2	3.3	3.6	3.6	3.5	3.3	ASTM D792
Operating Temperature	°C	-40~+180	-50~+180									-
Volume Resistivity	Ohm-m	$3x10^{12}$	$8x10^{12}$	$1x10^{13}$	$1x10^{13}$	$1x10^{12}$	$1x10^{13}$	$7x10^{12}$	$5x10^{12}$	$6x10^{12}$	$1x10^{8}$	ASTM D257
Elongation	%	55	80	50	50	40	40	30	20	20	10 (JSV-H1000)	ASTM D412
Standard Format	-	Sheet										-
Hardness (Silicone Side)	Shore OO	15	35	50	50	50	55	55	65	70	85	ASTM D2240

TG-A series
Fiberglass Mesh Series Thermal Pad

Very good thermal conductivity. Fiberglass on one side.
Non-deforming. Electrical insulation.


Properties	Unit	TG-A3500F	TG-A4500F	TG-A6200F	Test Method
Thermal Conductivity	W/mK	3	4	5	ASTM D5470
Thickness	mm	0.5~8.0			ASTM D374
Color	-	Yellow	Purple	Blue	Colorimeter
Reinforcement Carrier	-	Fiberglass Mesh			-
Flame Rating	-	V-0			UL94
Dielectric Breakdown Voltage	KV/mm	≥18	≥11	≥12	ASTM D149
Weight Loss	%	<1			ASTM E595
Density	g/cm³	2.3	3.1	3.1	ASTM D792
Operating Temperature	°C	-50~+180			-
Volume Resistivity	Ohm-m	$8x10^{12}$	$1x10^{13}$	$1x10^{13}$	ASTM D257
Elongation	%	80	50	50	ASTM D412
Standard Format	-	Sheet			-
Hardness (Silicone Side)	Shore OO	35	50	50	ASTM2240

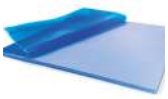
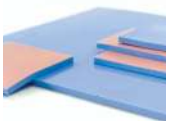
TG-A series
Ultra Thin Thermal Pad

Smooth surface. Usable over a wide temperature range.
Electrical insulation and high breakdown voltage.

Properties	Unit	GT10D	TG-ALC	TG-A6200LC	TG-A1250LC	Test Method
Thermal Conductivity	W/mK	1.5	4.2	5	10	ASTM D5470
Thickness	mm	0.25	0.2/0.3	0.5~2.5	1.0~4.0	ASTM D374
Color	-	Pink	Green	Pad-Blue LC-Green	Pad-Green LC-Green	Colorimeter
Reinforcement Carrier	-	Fiberglass mesh	-	-	-	-
Flame Rating	-	-	V-0			UL94
Dielectric Breakdown Voltage	KV	≥6	≥4	≥6	≥6	ASTM D149
Weight Loss	%	<0.2	<1			ASTM E595
Density	g/cm³	2	2.9	3	3.3	ASTM D792
Operating Temperature	°C	-45~+180	-50~+180			-
Volume Resistivity	Ohm-m	$>10^{12}$	$1X10^{12}$	$1X10^{10}$		ASTM D257
Elongation	%	50	10	50	40	ASTM D412
Tensile Strength	kgf/cm²	150	-	-	-	ASTM D412
Standard Format	-	Sheet				-
Hardness (Silicone Side)	Shore	A 75	A 60	OO 50	OO 60	ASTM D2240

TG-AK series
High Performance Thermal Pad

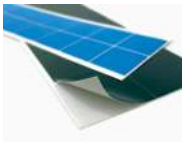
Great thermal conductivity.
Non-deforming.
Easy to assemble.

Properties	Unit	TG-20KX	TG-A38KX	TG-A20KF	TG-A38KF	Test Method
Thermal Conductivity	W/mK	2	3.8	1.8	3.3	ASTM D5470
Thickness	mm	0.3~10.0		0.5~10.0		ASTM D374
Color	-	Dark Gray	Blue	Dark Gray	Blue	Colorimeter
Reinforcement Carrier	-	-		Fiberglass Mesh		-
Flame Rating	-	V-0				UL94
Dielectric Breakdown Voltage	KV/mm	≥12	≥10	≥13	≥10	ASTM D149
Weight Loss	%	<1				ASTM E595
Density	g/cm³	2	3.1	2.1	3.1	ASTM D792
Operating Temperature	°C	-40~+180	-40~+200	-40~+180	-40~+200	-
Volume Resistivity	Ohm-m	$3x10^{12}$				ASTM D257
Elongation (Silicone side)	%	160	110	160	110	ASTM D412
Standard Format	-	Sheet				-
Hardness (Silicone Side)	ShoreOO	55	60	55	60	ASTM2240

※ The thickness is less than 1.0mm, considering that it's too soft to pick up from the bottom paper, therefore, adjusting the hardness to 50~75 for production line.
※ Different tolerances according to the selected thickness.
※ Diecut for different shapes.

TG-T1000 Series
Thermal Tape



Good adhesion (Acrylic PSA). Great reliability. Cost effective with great performance. Easy to assemble. Customization services for different industries.

Properties	Unit	TG-T1000		TG-T1000T	Test Method
Thermal Conductivity	W/mK	1	1	1.3	ASTM D5470
Thickness	mm	0.15	0.25	0.11	ASTM D374
Color	-	White		Gray	Visual
Reinforcement Carrier	-	Fiberglass Mesh		PET	-
Continuous Operating Temperature	°C	-30~+120		-40~+120	-
Short Time Use Temperature (30sec)	°C	180		200	-
Density	g/cm³	1.2		1.5	ASTM D792
Initial Tack	cm	19	11	24	PSTC-6
Holding Power 1000g @25° Cusing 1in²	min	>3000		>1000	PSTC-7
180° Peeling Strength (aluminum)	N/25mm	>14	>16	≥7	PSTC-101
Dielectric Breakdown Voltage (AC)	KV	≥3	≥6	≥4	ASTM D149
Thermal Impedance @10psi	°C-in²/W	0.93	1.26	0.68	ASTM D5470
Thermal Impedance @30psi	°C-in²/W	0.76	1.06	0.66	ASTM D5470
Thermal Impedance @50psi	°C-in²/W	0.61	1.05	0.65	ASTM D5470

Thermal Grease

Good leveling agent. No overflow. Effectively fill the gap of the interface.

Properties	Unit	TG-AS808 / TG-S808	TG-N909	TG-AS606B / S606B	TG-AS606C / S606C	Test Method
Thermal Conductivity	W/mK	8	9	1.9	5.3	ASTM D5470
Color	-	Gray	Gray	White	Gray	Visual
Oil Dispersible	wt%	< 0.1	< 0.1	< 0.2	< 0.05	24hrs@150°C
Weight Loss	wt%	< 0.1	< 0.1	< 0.5	< 0.5	ASTM E595
Density	g/cm³	3.2	2.8	2.3	2.3	ASTM D792
Operating Temperature	°C	-40~+200		-40~+180		-
Viscosity	Pa·s	-	-	30	125	ASTM D2196
Volume Resistivity	Ohm-m	> 10^{13}		> 10^{11}	> 10^{12}	ASTM D257
Standard Package	-	Pot		Tube/Pot		-

Thermal Putty

Low thermal resistance.
Malleable and compresssible.

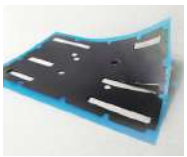
Properties	Unit	TG4040 PUTTY	TG6060 PUTTY	TG-A7000 PUTTY	Test Method
Thermal Conductivity	W/mK	3.2	6.3	7.0	ASTM D5470
Color	-	Blue		Green	Visual
Viscosity	Pa·s	@0.5rpm 3000	@0.5rpm 2,500~3,000	@1rpm/5mins 180~270	Brookfield
Density	g/cm³	3	3.3	3.5	ASTM D792
Volume Resistivity	Ohm-m	10^{13}			ASTM D257
Operating Temperature	°C	-50~+180			-
Standard Package	-	Tube/Pot			-

Potting Compound

High stability. Heat curing.

Properties	Unit	TG-A09AB	Test Method
Thermal Conductivity	W/mK	2.8	ASTM D5470
Color	-	Gray(Mix)	Visual
Dielectic Breakdown Voltage	KV/mm	≥11	ASTM D149
Volume Resistivity	Ohm-m	≥10^{12}	ASTM D257
Density	g/cm³	2.52	ASTM D792
Operating Temperature	°C	-50~+150	-
Tensile Strength @3.0mm	kgf/cm²	230	ASTM D412
Elongation	%	55	ASTM D412
Viscoity @1RPM/5mins	Pa·s	100~250	Brookfield
Weight Loss	%	< 1	ASTM E595
Curing Time @25° C	Hrs	6	-
Curing Time @80° C	Hrs	0.08	-
Standard Package	-	Pot	-
Hardness	Shore OO	90	-
Mixing Ratio	gram	1:1	-

T68
Artificial Graphite Sheet



High thermal conductivity. Low mass.

Properties	Unit	T68	Test Method
Thermal Conductivity (XY axis)	W/mK	1500	AC Calorimeter
Thermal Conductivity (Z axis)	W/mK	5	Laser Flash
Thickness	μm	25	Micrometer
Color	-	Black	Visual
Flame Rating	-	V-0	UL94
Thermal Diffusivity	cm²/s	8.5	AC Calorimeter
Density	g/cm³	2.1	Archimedes Law
Electrical Conductivity	S/cm	>13000	JIS K7194
Bending Test	times	10000	-
Operating Temperature	%	-40~+400	AC Calorimeter
Heat Capacity (SHC)	J/g-K	0.895	-

T62
Natural Graphite Sheet

Low mass saves space, EMI reduction.

Properties	Unit	T62	T62-1	T62-2	Test Method
Thermal Conductivity (XY axis)	W/mK	400			AC Calorimeter
Thermal Conductivity (Z axis)	W/mK	20	15	5	Laser Flash
Thickness	mm	0.13	0.16	0.2	Micrometer
Color	-	Black			Visual
Structure	-	Graphite	Graphite +Adhesive	PET+Graphite +Adhesive	-
Density	g/cm³	1.5	1.5~1.8		ASTM D792
Graphite Contained	%	>98			-
Operating Temperature	°C	-30~+100			-

XL-25
Ceramic Heat Spreader

Open-porous structure increases air contact area.

Properties	Unit	XL-25	Test Method
Thermal Conductivity	W/mK	10	-
Color	-	Gray/Green	Visual
Dielectric Breakdown Voltage	KV/mm	≥0.5	ASTM D149
Bulk Density	g/cm³	1.89	CNS 619
Flexural Strength	kgf/cm²	47.5	CNS 12701
Porosity	%	25	CNS 619
Water Absorption	%	16	CNS 619
Operating Temperature	°C	<500	-
Linear Thermal Expansion Coefficient	10^{-6}	4.13	RT~300°C
Main Composition	-	$SiC/Al_3O_3/SiO_2$	-
Hardness	Moh's	5~6	DIN En101-1992

XL-25 series
Ceramic Heat Spreader

High reliability. Non toxic. High temperature resistance.

Properties	Unit	XL-25W	XL-25D	Test Method
Thermal Conductivity	W/mK	25	190~210	-
Color	-	White	Dark Gray	Visual
Dielectric Breakdown Voltage	KV/mm	≥15	≥18.45	ASTM D149
Bulk Density	g/cm³	≧3.8	3.32	CNS 619
Volume Resistivity	Ohm-m	10^{12}	$1.4x10^{13}$	-
Flexural Strength	kgf/cm²	4078.8	3416	CNS 12701
Linear Thermal Expansion Coefficient	10^{-6}	6.6~8	2.805	RT~300°C
Main Composition	-	Al_2O_3	AlN	-

Vapor Chamber

Horizontal conduction. Passive components. High stability.
Efficiency 10x higher than heat pipes.

Properties	Unit	XVC-A001	XVC-A002	Tolerance
Size	mm	90x60	80x80	±0.3
Thickness	mm	0.4		±0.05
Thermal Resistance	°C/W	<0.02		-
Material	-	Copper Alloy		-
Surface Finishing	-	Anti-oxidation		-
Extra Components	-	-		-
Operation Power (Q_{max})	W	10		-

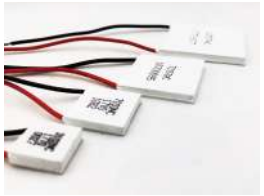
Heat Pipe

Fast heat-balancing.
Passive components. Lightweight.

Diameter(mm)	Thickness(mm)	Width(mm)
Ø4	2	5.65
	2.5	5.55
	3	5.45
Ø5	2	6.91
	2.5	6.59
	3	6.32
	3.5	6.01
	4	5.68
Ø6	2	8.50
	2.5	8.18
	3	7.95
	3.5	7.65
	4	7.39
Ø8	2	11.65
	2.5	11.39
	3	11.15
	3.5	10.83
	4	10.60
	4.5	10.27
	5	10.01
	6	9.36

• Thickness tolerance: +0.05/-0.10mm • Width tolerance: +0.15/-0.20mm

Thermoelectric Cooling Chip

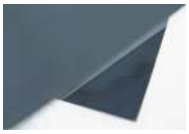


Small bulk. Lightweight. Vibration-free. Noise-free.
Precise temperature control. High strength for rugged environments.

Size(mm)	Height(mm)	Imax(A)	Vmax(V)	Watt(W)	@27° Qmax(W)	@50° Qmax(W)	R(Ω)
15×15	3.1	6.0	3.8	22.8	13	14.3	0.45Ω±10%
	3.4	8.5	2.1	17.9	10.3	11.3	0.20Ω±10%
	3.6	3.9	3.8	14.8	8.6	9.5	0.85Ω±10%
	3.8	3.0	3.8	11.4	7.3	8.0	1.00Ω±10%
	3.9	6.0	2.1	12.6	7.4	8.2	0.30Ω±10%
	4.7	2.0	3.8	7.6	4.4	5.0	1.65Ω±10%
20×20	3.1	6.0	8.8	52.8	29.7	32.7	1.05Ω±10%
	3.4	8.5	3.8	32.3	18.8	20.8	0.35Ω±10%
	3.6	3.9	8.8	34.3	18.7	20.9	1.95Ω±10%
	3.8	3.0	8.8	26.4	16.6	18	2.20Ω±10%
	3.9	6.0	3.8	22.8	13.6	14.9	0.55Ω±10%
	4.7	2.0	8.8	17.6	10.2	11.2	3.70Ω±10%
30×30	3.15	6.0	15.7	94.2	53.1	59.1	1.90Ω±10%
	3.45	8.5	8.8	74.8	43.1	48	0.85Ω±10%
	3.65	3.9	15.7	61.2	35.2	39	3.50Ω±10%
	3.85	3.0	15.7	47.1	29.8	32.5	4.00Ω±10%
	3.95	6.0	8.8	52.8	31.1	34.2	1.25Ω±10%
	3.95	6.0	11.8	70.8	48	52.8	1.65Ω±10%
	4.75	2.0	15.7	31.4	18.2	19.5	6.70Ω±10%
40×40	3.45	8.5	15.7	133.5	77.1	85	1.50Ω±10%
	3.95	6.0	15.7	94.2	55.6	61	2.20Ω±10%

• The above are our standard sizes. For other special sizes, please contact our product consultants.

TG-P100 series
Graphene



Ultra thin, Available for unventilated design,
No dusting issue.

Properties	Unit	TG-P10050	TG-P10090	Test Method
Thermal Conductivity (XY axis)	W/mK	1500~1800		AC Calorimeter
Thermal Conductivity (Z axis)	W/mK	12		Laser Flash
Total Thickness	μm	50	90	Meter
Copper Foil Thickness	μm	35	75	Meter
Coating Thickness	μm	15		Meter
Vertical Resistivity	Ohm-inch²	2.57		QJ1523-1988
Parallel Resistivity	Ohm-inch²	0.66		QJ1523-1988
Cross-Cut Tape Test	-	4B		ASTM D3359B
Pencil Hardness Test	-	2H		ASTM D3363
Solvent Resistance (Alcohol)	-	Pass(5 times)		ASTM D5402
Rubber Abrasive Test	-	Pass(150 times)		ASTM D7835
High Temperature & Humidity Test	-	Pass(500 hrs)		IEC-60068-2-78
Thermal Shock Test@-20~+80°C	-	Pass(500 cycles)		IEC-60068-2-14
Temperature Range of Utility	°C	-20~+120		ISO 16750-4

TG-V series
Phase Change Material

With the good flow ability over phase change temperature,
surface irregularities can be well filled.

Properties	Unit	TG-V833	TG-V838	Test Method
Thermal Conductivity	W/mK	3.3	3.8	ASTM D5470
Thickness	mm	0.13/0.2/0.3		ASTM D374
Color	-	Gray		Visual
Phase Transition Temperature	°C	50		-
Breakdown Voltage (AC)	KV	≥1		ASTM D149
Density	g/cm³	3.4	2.5	ASTM D792
Operating Temperature	°C	-40~+125		-
Volume Resistivity	Ohm-m	$3x10^{11}$	$3x10^{10}$	ASTM D257
Thermal Impedance @10psi	°C-in²/W	0.126	0.165	ASTM D5470
Thermal Impedance @30psi	°C-in²/W	0.105	0.137	ASTM D5470
Thermal Impedance @50psi	°C-in²/W	0.097	0.121	ASTM D5470
Dielectric Constant @1KHz	-	13.3		ASTM D150

TG-FAM series
Flexible Absorbent Material

Provide effective EMI suppression in a wide frequency range.

Properties	Unit	TG-FAM1	TG-FAM3	TG-FAM6	TG-FAM7
Frequency	GHz	0.001-18.0		0.001-9.0	0.001-3.0
Thickness	mm	0.12-2.50	0.25/0.50/0.75	0.05/0.1/0.2/0.3/0.5	0.08/0.12/0.22
Maximum Size	mm	400 x 400		210 x 297(A4 Size)	130 x 130
Material	-	Magnetic Particles+Rubber			Sintering Iron-core
Magnetic Inductivity (μ'@1MHz)	-	25	50	170	140
Halogen	-	Halogen Contained		Halogen Free	
Operating Temperature	°C	-40~+85		-40~+155	-30~+120
Density	g/cm³	3.6	4.8	4.4	3.8
Surface Resistivity	Ohm	10^6		10^5	10^9

CP series
Thermal Insulation Rubber Cap

Low thermal contact resistance. Electrically isolating. Easy to assemble.

Properties	Unit	CP22/CP23/CP33	Test Method
Thermal Conductivity	W/mK	2	ASTM D5470
Thickness	mm	0.3/0.45	ASTM D374
Color	-	Gray	Visual
Operating Temperature	°C	-45~+180	-
Density	g/cm³	2.55	ASTM D792
Dielectric Breakdown Voltage (AC)	KV	≥4.1/6.1	ASTM D149
Dielectric Breakdown Voltage (DC)	KV	≥6.1/8.1	ASTM D149
Dielectric Constant	1000 Hz	5.8	ASTM D150
Thermal Impedance @10psi	°C-in²/w	1.13	ASTM D5470
Thermal Impedance @20psi	°C-in²/w	1.07	ASTM D5470
Thermal Impedance @50psi	°C-in²/w	0.97	ASTM D5470
Hardness	Shore A	65	ASTM D2240