GBA shield cover

Eliminate High-Frequency Leakage with GBA's Zero-Gap Shielding

Modern, high-speed microprocessors generate high-frequency waves, making traditional shielding covers prone to electromagnetic leakage—particularly at the four corners.
GBA's innovative Drawn Shielding Cover is engineered with a zero-gap corner design to completely close these common leak points, delivering unparalleled shielding performance.

Product Highlights:

- Ultimate Shielding: The zero-gap design ensures complete electromagnetic wave containment.
- Versatile Sizing: Covers range from 5mm to 50mm in length/width, with a maximum height of 6mm.
- Material Choice: Select from premium materials like Cu-Ni Alloy, stainless steel, cold rolled steel, or brass.
- Production Ready: Choose between standard PVC trays or Tape & Reel (T&R) packaging for seamless integration into high-volume manufacturing lines.
- Integrated Solutions: Optimize for both thermal and EMI challenges by applying thermal/EMI hybrid absorbers.

GBA is ready to deliver customized designs tailored to your precise application requirements.

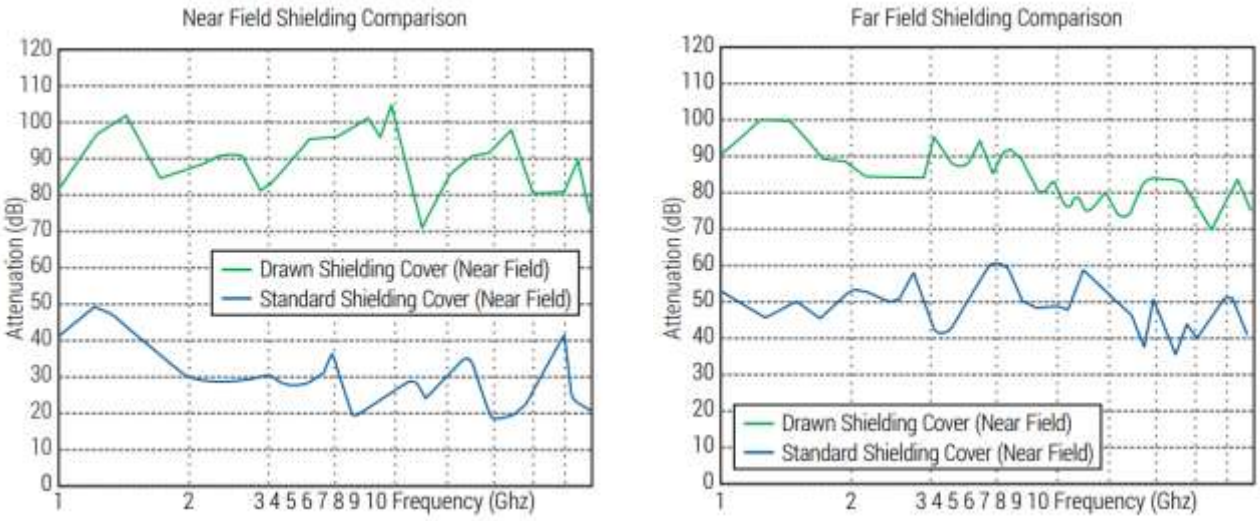

Diagram 1: GBA shields' frequency response curve in the near field and far field

Shield Covers: Descriptions, Explanations and Considerations

Brief Concept

Electromagnetic Interference (EMI) shielding is the practice of isolating two areas to control the radiation of electric and magnetic fields. Shielding components are applied around either interference sources (like components, circuits, or cables) to stop the spread of energy, or around sensitive equipment to protect it from outside signals.

Basic Mechanism

A shielding component reduces interference through: absorbing energy (eddy current loss), reflecting waves (at the shield's surface), and counteracting the energy with reverse electromagnetic fields.

The Making of a Good shield for Your Electronics

Shielding Material Choices by Frequency

The ideal shielding material depends on the interference frequency:

- For **high-frequency interference**, **low-resistivity metal materials** are utilized. The eddy currents they generate counteract external electromagnetic waves.
- For **low-frequency interference**, **materials with high magnetic permeability** should be used to confine magnetic field lines.
- When strong shielding is required for **both high- and low-frequency fields**, multiple different metal layers are often combined to create a multi-layer shield.

CONSIDERATIONS: HOW TO MAKE AN EFFECTIVE SHIELD COVER

Plating Selection - SMT Requirements

- Pre-tinning material - low cost
- Barrel plating - lower cost
- Rack plating - high cost

Material Selection

- Cu-Ni-Zn Alloy
- Tinplate
- Pre-coated Stainless Steel
- Stainless Steel (Cover only)
- Insulation Paint

Structural Design Consideration

- Snap-on assembly
- Strength
- Heat dissipation
- Shielding effectiveness
- Assembly clearance
- Soldering area
- Through-hole mount

Packaging - Automation Requirements

- Tape & Real packaging: automated (suitable for mass production)
- PVC tray: suitable for small order and with requirements for keep leveling
- PE bag: suitable for small order Reflow Soldering Test Requirements
- Peak temperature: 255°C
- Test time: 2-5 minutes

Tool Process Consideration

- Drawn process: no gaps around the four corners, higher shielding performance.
- Multi-step drawn process: fit different structural designs.
- Removable shielding cover: fit different structural designs.

APPLICATION

- All board level components requiring shielding protection
- Reliable cover design that can withstand vibration and impact

FEATURES & BENEFITS

- T&R packaging to meet automated assembly requirement.
- Strip or roll packaging to fit automatic adhesive assembly.
- Customizable according to design requirements. Ÿ Automatic strip-printing insulating paint process
- Rapid prototyping.

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COMMON SHIELDING COVER MATERIAL & PROCESS OPTIONS

Material Type	Thickness (mm)	Heat Treatment	Surface Treatment	Plating	Remarks
Cold Rolled Plate	0.2~2.0	No Heat Treatment	Bright, Matte	Zn, Ni, Sn	Post Electroplating
SECC	0.3~2.0	-	-	Zn	Pre Galvanizing
STEP	0.15~0.5	-	-	Sn	Pre Tin-plating
Beryllium Copper Alloy C17200	0.05~2.0	Tempering	Bright, Matte	Au, Ag, Ni, Sn	Post Electroplating
Copper-Nickel-Zinc Alloy C7701 C7521	0.1~0.5	No Heat Treatment	Bright	N/A	Fully Weldable
Brass	0.15~2.0	No Heat Treatment	Bright, Matte	Au, Ag, Ni, Sn	Post Electroplating
Bronze	0.1~2.0	No Heat Treatment	Bright, Matte	Au, Ag, Ni, Sn	Post Electroplating
High-carbon Steel/Spring Steel	0.2~2.0	Hot Dipping	Bright, Matte	Ni, Sn, Zn, Surface blackening	Post Electroplating
Stainless Steel	0.05~2.0	No Heat Treatment	Bright	N/A	N/A
Post Electroplating	Any Requested Thickness	N/A	Diversify	Au, Ag, Ni, Sn, Zn, Surface blackening	N/A

Special Composite Shield: Metal Shield integrated with Silicone rubber RF Absorber

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Composite PN: SMR01

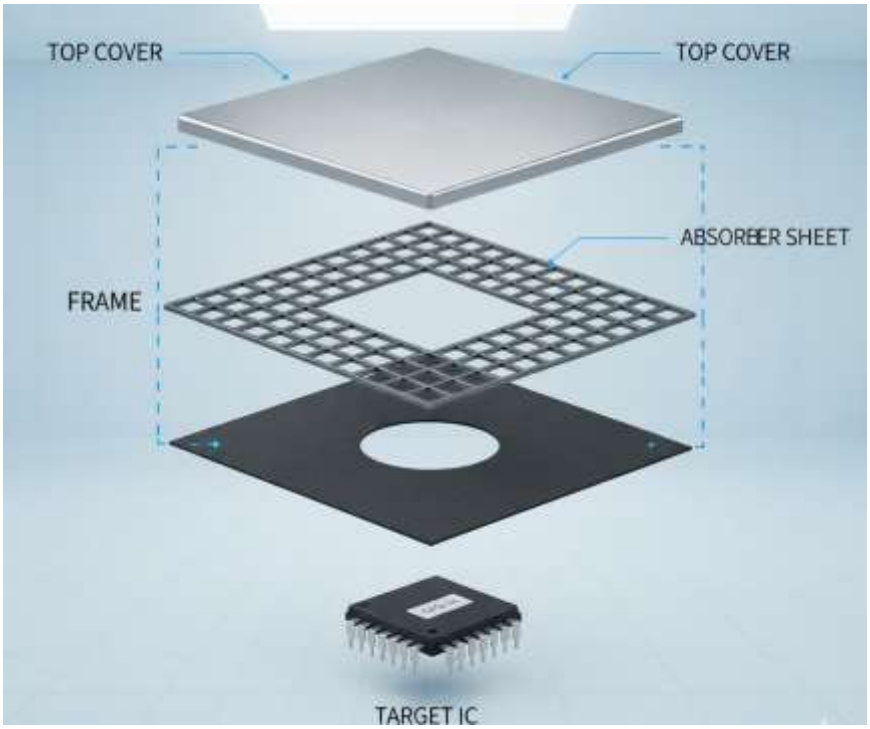

Diagram:
layers in GBA composite metal-rubber shield

Product Descriptions

The GBA **CompositeShielding** line features a "metal-rubber integration" design, pairing a metal shielding cover with an effective absorber for exceptional electromagnetic shielding. This product incorporates the SW series absorber, an in-house developed, lightweight, thin, and non-conductive silicone rubber filled with special magnetic particles. The material targets high-incidence surface waves for reflection attenuation within the 2 to 40 GHz range, achieving 10 dB attenuation at 40 GHz. The formulation uses high-temperature resistant silicone with added oil and fire retardants. Its magnetic filler ensures outstanding performance with incident angles above 65degree, meeting the GJB2038A-2011 reflective attenuation standard. Customization is available

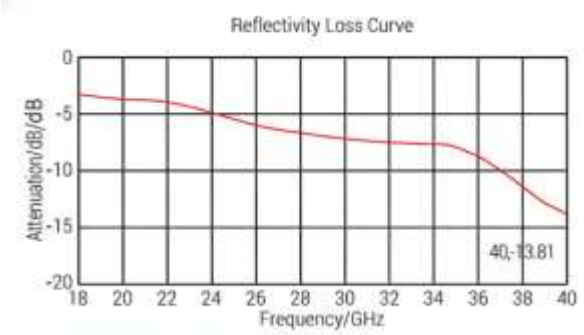

Diagram 2:
SMR01 Frequency Response Curve

Special Composite Shield: Metal Cover integrated with Silicone Thermal Pad

Composite PN: SMR02 *(continued from previous page)*

Product Descriptions

GBA's shielding cover+thermal pad series combines metal shielding cover and ultra-high thermal conductivity in its unique design. A TFP8025 ultra-high thermal pad is applied between the gap of shielding cover and heat generating component. The high performance thermal pad has good compressibility and conformability which makes it fill-up void on the components and lower the thermal impedance. The thermal pad thickness can be customized according to the design.

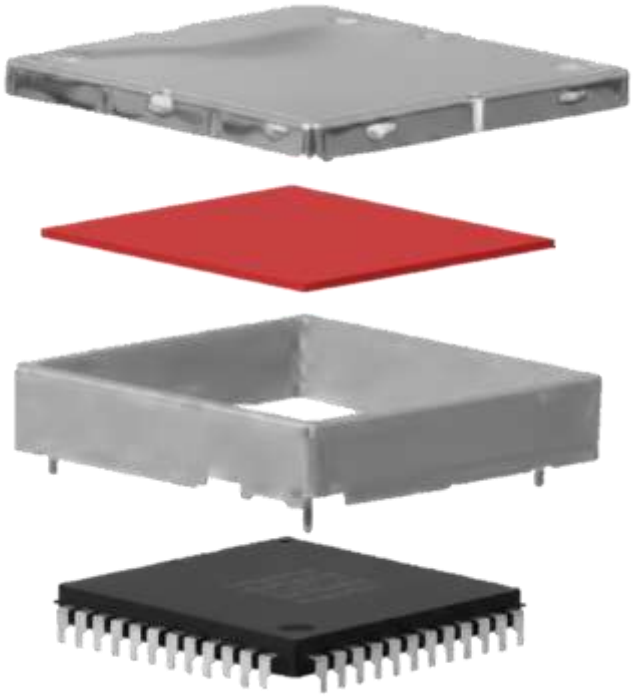

Diagram: GBA Composite Shield Metal with rubber thermal pad

Special Composite Shield: Metal Cover integrated with Silicone Thermal Pad

Composite PN: SMR02

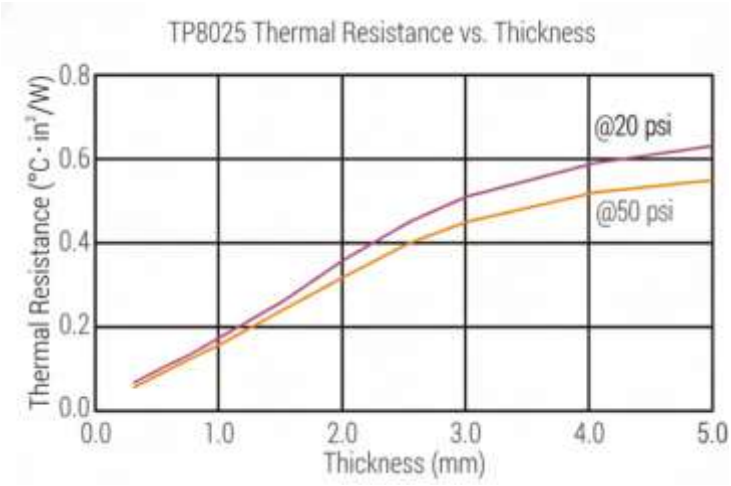

Diagram 3: SMR02 Thermal Rating Curve

SMR02 Specifications Performance Data

Property	Unit	TP8025	Test Method
Color	-	Light Grey	Visual
Thickness	mm	0.3~10	ASTM D374
Thermal Conductivity	W/mK	8	ASTM D5470
Thermal Resistance (1mm@20psi)	°C·in2/W	0.16	ASTM D5470
	°C·cm2/W	1.03	ASTM D5470
Hardness	Shore OO	25	ASTM D2240
Flammability	-	94 V-O	U.L.
Volume Resistivity	Ω·cm	≥1.0X10^{11}	ASTM D257
Density	g/cm3	3.25	ASTM D792
Tensile Strength	psi	25	ASTM D412
Elongation	%	40	ASTM D412
Compression Set (%, specified pressure)	@10 psi	15	ASTM D575
	@50 psi	35	ASTM D575
Dielectric Strength	psi	100	ASTM D150
Working Temperature	°C	-60 to 200	GBA
RoHS Compliance	-	Yes	GBA

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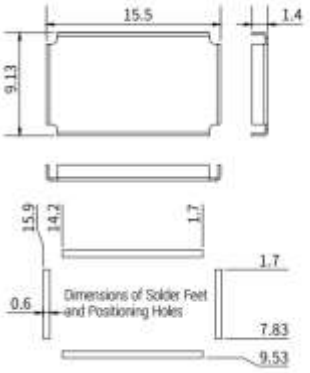
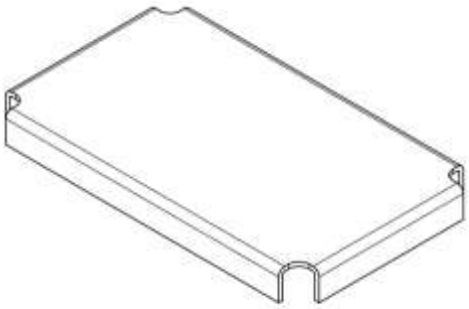
List of GBA available shield covers

ONE-PIECE SHIELDING COVER AL-0001 SPECIFICATION

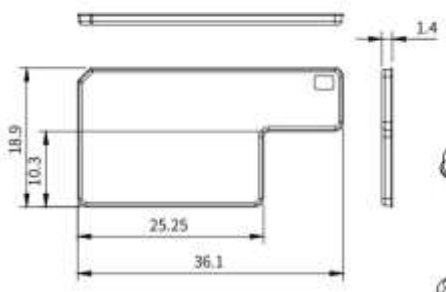
Field	Value
Part #	AL-0001
Surface Area	378.68 mm^2
Maximum Dimension	1.4x 9.1x15.5mm
Maximum Height	1.40mm
Material	C7701

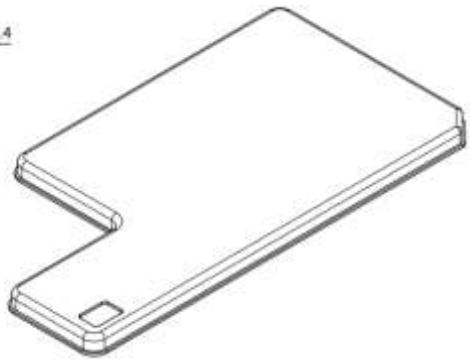




ONE-PIECE SHIELDING COVER AL-0002 SPECIFICATION

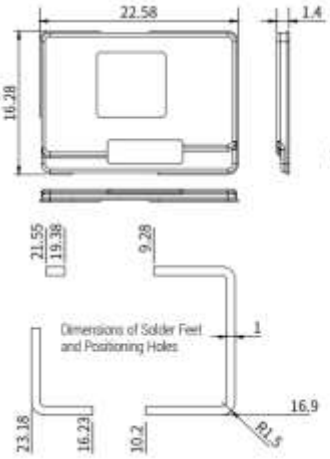
Field	Value
Part #	AL-0003
Surface Area	716.11mm2
Maximum Dimension	1.4 x16.28x22.58mm
Maximum Height	1.40mm
Material	C7701 Inside Cavity with Insulating Paint

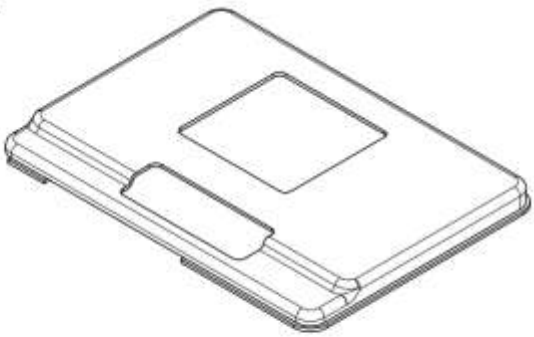




ONE-PIECE SHIELDING COVER AL-0003 SPECIFICATION

Field	Value
Part #	AL-0003
Surface Area	716.11mm^2
Maximum Dimension	1.4 x16.28x22.58mm
Maximum Height	1.40mm
Material	C7701 Inside Cavity with Insulating Paint





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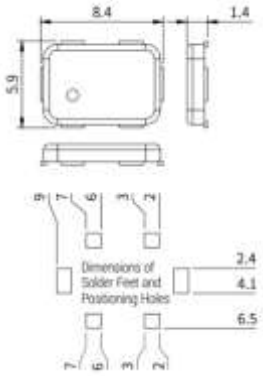
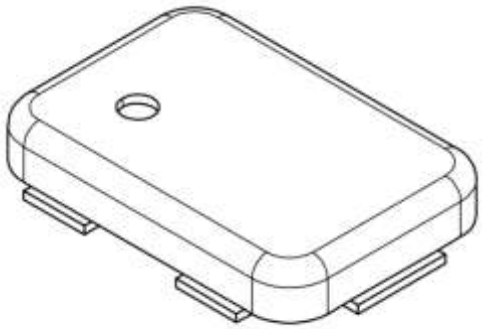
List of GBA available shield covers

ONE-PIECE SHIELDING COVER AL-0004 SPECIFICATION

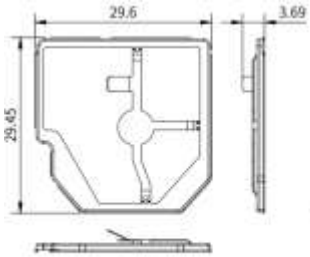
Field	Value
Part #	AL-0004
Surface Area	850.45mm^2
Maximum Dimension	3.69×29.45×29.6mm
Maximum Height	3.69 mm
Material	C7701 Inside Cavity with Insulating Paint

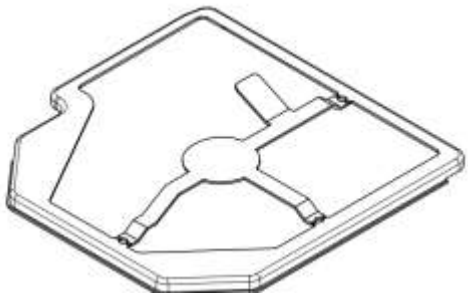




ONE-PIECE SHIELDING COVER AL-0005 SPECIFICATION

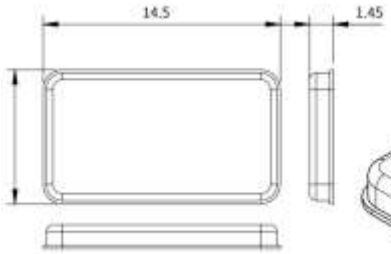
Field	Value
Part #	AL-0005
Surface Area	143.41mm^2
Maximum Dimension	1.4×5.9×8.4mm
Maximum Height	1.40mm
Material	C7701 Inside Cavity with Insulating Paint





ONE-PIECE SHIELDING COVER AL-0006 SPECIFICATION

Field	Value
Part #	AL-0006
Surface Area	336.85 mm^2
Maximum Dimension	1.45x8.2x14.5 mm
Maximum Height	1.5mm
Material	C7701 Inside Cavity with Insulating Paint



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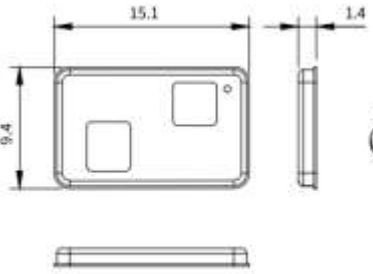
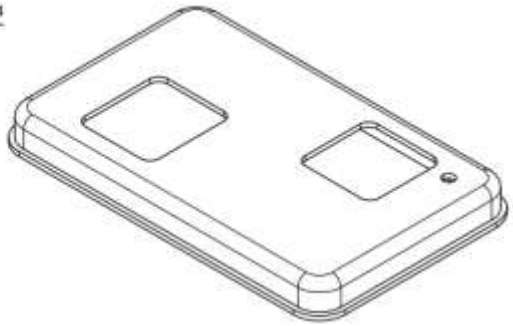
ONE-PIECE SHIELDING COVER AL-0007 SPECIFICATION

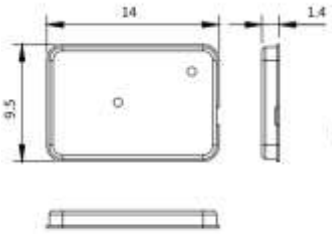
Field	Value
Part #	AL-0007
Surface Area	344.09 mm^2
Maximum Dimension	1.xx9.41x15.1
Maximum Height	1.40 mm
Material	C7701 Inside Cavity with Insulating Paint

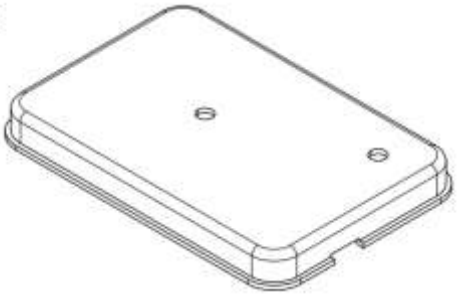




ONE-PIECE SHIELDING COVER AL-0008 SPECIFICATION

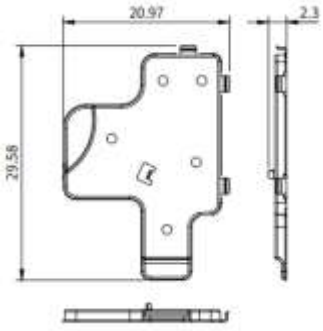
Field	Value
Part #	AL-0008
Surface Area	362.15 mm^2
Maximum Dimension	1.4×9.5×14.0 mm
Maximum Height	1.40mm
Material	C7701 Inside Cavity with Insulating Paint

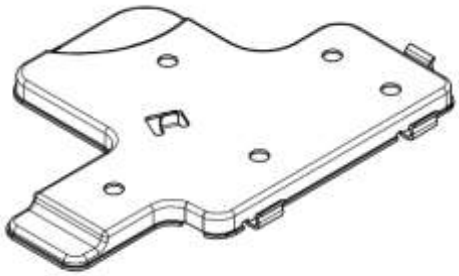




ONE-PIECE SHIELDING COVER AL-0009 SPECIFICATION

Field	Value
Part #	AL-0009
Surface Area	974.80 mm^2
Maximum Dimension	2.3x20.97x29.58 mm
Maximum Height	2.30 mm
Material	C7701 Inside Cavity with Insulating Paint





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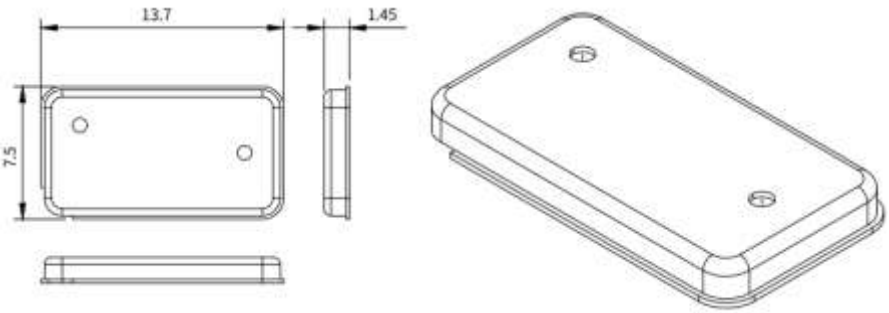
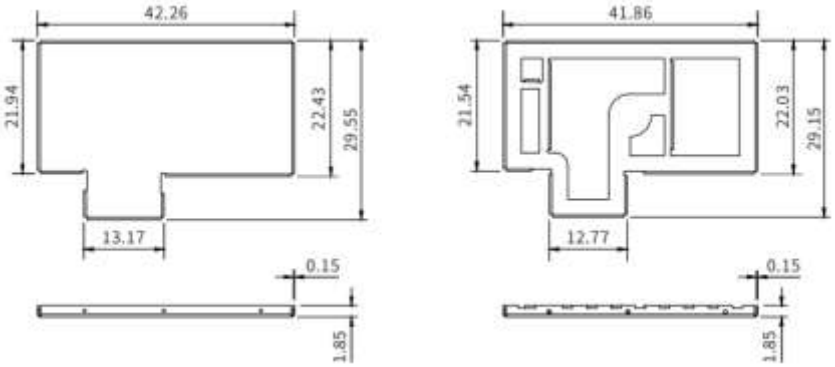
ONE-PIECE SHIELDING COVER AL-0010 SPECIFICATION

Field	Value
Part #	AL-00010
Surface Area	294.06 mm^2
Maximum Dimension	1.45x7.5x13.7 mm
Maximum Height	1.45 mm
Material	C7701 Inside Cavity with Insulating Paint



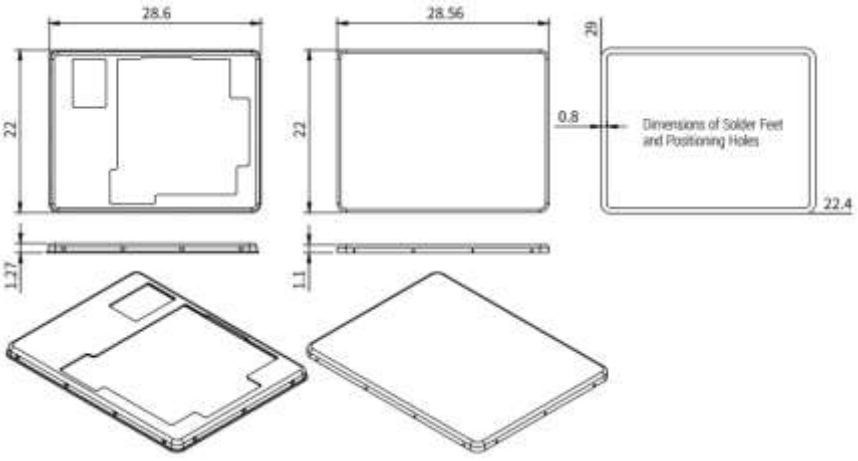
ONE-PIECE SHIELDING COVER AL-0012 SPECIFICATION

Field	Value
Part #	AL-00012
Surface Area	2588.66 mm^2
Maximum Dimension	2.05x29.55x42.26 mm
Maximum Height	2.05 mm
Cover Material	SUS301 Inside Cavity with Insulating Paint
Material	C7701 Inside Cavity with Insulating Paint



ONE-PIECE SHIELDING COVER AL-0013 SPECIFICATION

Field	Value
Part #	AL-00013
Surface Area	1427.52 mm^2
Maximum Dimension	1.1x21.95x28.56 mm
Maximum Height	1.42 mm
Cover Material	SUS301 Inside Cavity with Insulating Paint
Material	C7701 Inside Cavity with Insulating Paint



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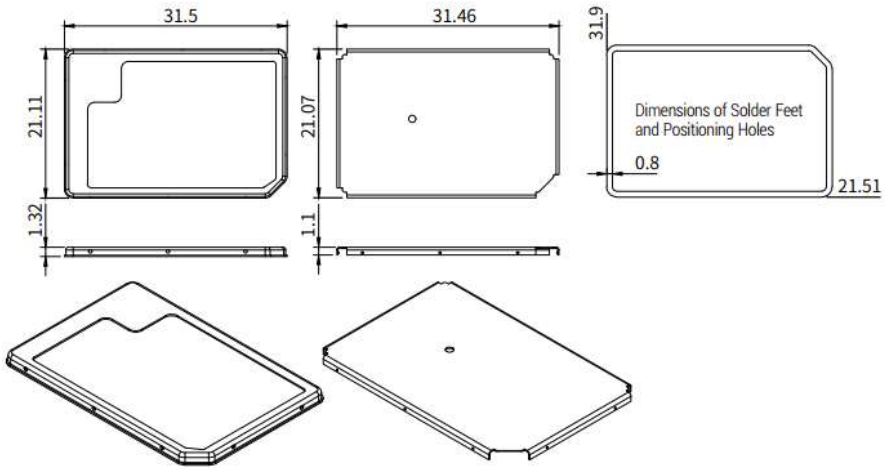
ONE-PIECE SHIELDING COVER AL-0014 SPECIFICATION

Field	Value
Part #	AL-00014
Surface Area	1465.16 mm^2
Maximum Dimension	1.47x21.07x31.46mm
Maximum Height	1.47 mm
Cover Material	SUS301
Frame Material	C7701 Inside Cavity with Insulating Paint



ONE-PIECE SHIELDING COVER AL-0015 SPECIFICATION

Field	Value
Part #	AL-00015
Surface Area	2471.06 mm^2
Maximum Dimension	1.6x34.17x36.16 mm
Maximum Height	1.60 mm
Cover Material	SUS301
Frame Material	C7701 Inside Cavity with Insulating Paint