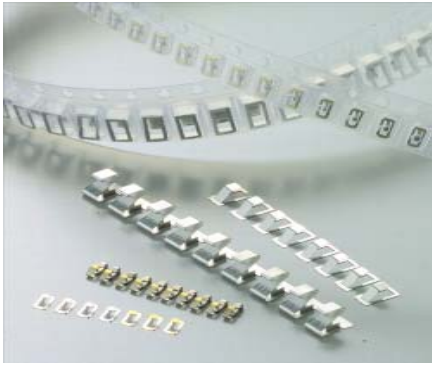


On-Board Contacts (OG)

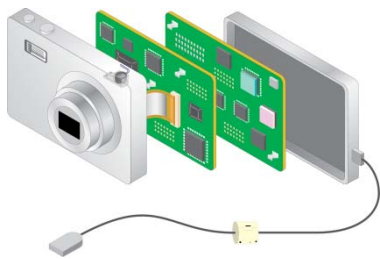


SMT grounding contacts for automated mounting on PC boards

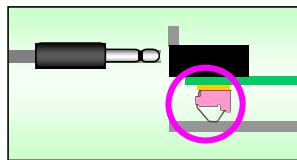
- Space-saving, grounding reinforcement at the design stage
- Effective for emission and ESD immunity reduction
- All EMC solutions can be done at the board-level, including grounding and shielding.
- Specially designed to prevent warping of springs
- Easy to incorporate even where screw holes are included

1. Application examples

Grounding between PCBs



ESD solution at connector



FG reinforcement between PCB and enclosure



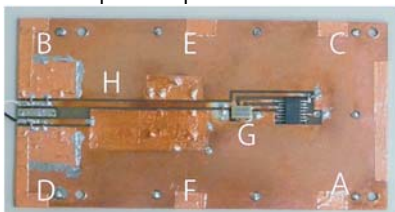
2. Test experiment - How on-board contacts work

Test PC board condition

Radiated emissions test

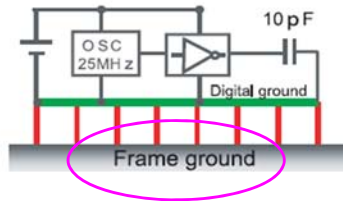
- Test #1: PCB with no FG
- Test #2: PCB + four points FG (at A, B, C, D)
- Test #3: PCB + eight points FG (at A, B, C, D, E, F, G, H)

FG points point on PCB

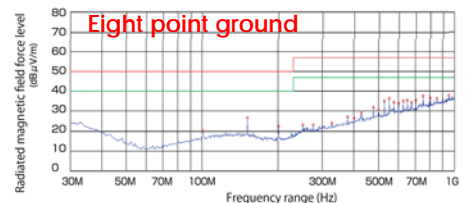
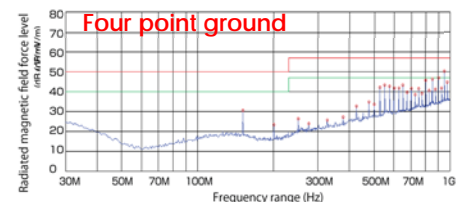
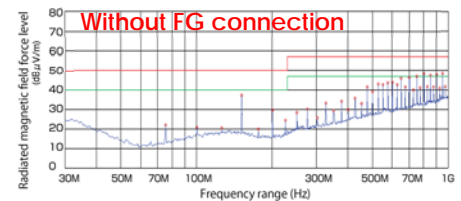


Test result

Multiple grounding points increase noise suppression even for higher frequencies.



Recommended ground pitch is 1/8 the wavelength (or less) of the target frequency.

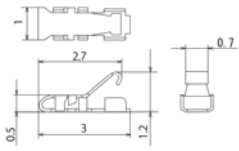


KITAGAWA INDUSTRIES America, Inc.
 2325 Paragon Drive, Suite 10, San Jose, CA 95131
 Tel: (408) 971-2055 Fax: (408) 971-6033
 www.kgs-ind.com

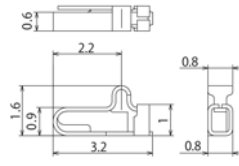
The specifications and properties regarding performance above are not guaranteed, and are subject to change without notice due to product improvement and specification change. While our absorbers are electrically non-conductive, usage directly on the PC Board near the power should be carefully checked. Intermark (USA) Inc. makes no guarantees as to electrical resistivity values and accepts no liability due to short circuits where EMI absorbers are used directly on a PC Board. The products are designed for EMI noise reduction for electronics. This is not recommended to use for applications involving human life or extremely high accuracy. Prior to your usage of the products in production, please verify their performance of EMI noise absorption or adhesive strength of PSA for long term use. Avoid applying any external stress such as bending or high amounts of tension. Note that when the absorber products are cut, bent or pulled, there might be some possibility of creating cracks. For storage of the products keep them in cool and dry rooms at ambient temperature avoiding high temperatures, humidity, and direct sunlight. Keep in a cool, dry, well ventilated place.

All statements, technical information, and recommendations herein are based on tests and are believed to be reliable, but the accuracy and completeness are not guaranteed and are subject to change without notice due to product improvement and specification change. The following is made in lieu of all warranties, expressed or implied, including the implied warranties of marketability and fitness for purpose. Intermark USA's obligation under this warranty shall be limited to replacement of product that proves to be defective. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. Intermark USA shall have no liability for any injury, loss or damage arising out of the use of or the inability to use the products. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.

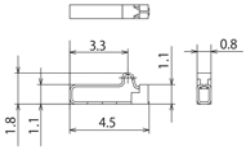
On-board Contacts - Standard Type



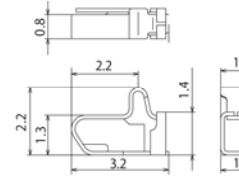
Part No.	OG-301012
A (Length)	3.0 mm
B (Width)	1.0 mm
C (Height)	1.2 mm
Recommended Height	0.6~1.1 mm
Base Material	Phosphor Bronze
Material Thickness	0.08 mm
Surface Treatment	Partial Au plating, Ni undercoat
Qty per Reel	8,000 pcs



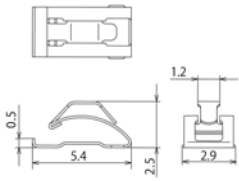
Part No.	OG-320816
A (Length)	3.2 mm
B (Width)	0.8 mm
C (Height)	1.6 mm
Recommended Height	1.1~1.4 mm
Base Material	Phosphor Bronze
Material Thickness	0.12 mm
Surface Treatment	Partial Au plating, Ni undercoat
Qty per Reel	8,000 pcs



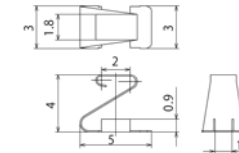
Part No.	OG-450818
A (Length)	4.5 mm
B (Width)	0.8 mm
C (Height)	1.8 mm
Recommended Height	1.2~1.6 mm
Base Material	Beryllium Copper
Material Thickness	0.12 mm
Surface Treatment	Partial Au plating, Ni undercoat
Qty per Reel	8,000 pcs



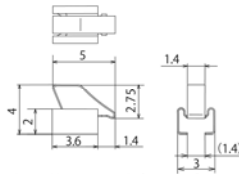
Part No.	OG-321022
A (Length)	3.2 mm
B (Width)	1.0 mm
C (Height)	2.2 mm
Recommended Height	1.5~2 mm
Base Material	Phosphor Bronze
Material Thickness	0.12 mm
Surface Treatment	Partial Au plating, Ni undercoat
Qty per Reel	7,000 pcs



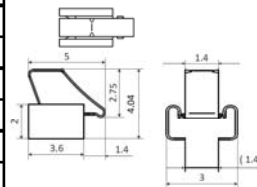
Part No.	OG-542925
A (Length)	5.4 mm
B (Width)	2.9 mm
C (Height)	2.5 mm
Recommended Height	1.5~2.3 mm
Base Material	Phosphor Bronze
Material Thickness	0.12 mm
Surface Treatment	Partial Au plating, Ni undercoat
Qty per Reel	5,000 pcs



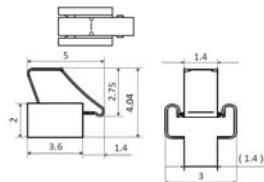
Part No.	OG-503040
A (Length)	5.0 mm
B (Width)	3.0 mm
C (Height)	4.0 mm
Recommended Height	2.2~3.6 mm
Base Material	Beryllium Copper
Material Thickness	0.1 mm
Surface Treatment	Sn plating, Ni undercoat
Qty per Reel	1,000 pcs



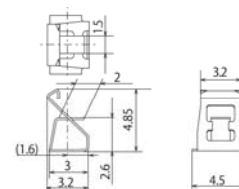
Part No.	OG-363040 OG-363040G
A (Length)	3.6 mm
B (Width)	3.0 mm
C (Height)	4.0 mm
Recommended Height	2.2~3.4 mm
Base Material	Beryllium Copper
Material Thickness	0.1 mm
Surface Treatment	OG-363040: One side Sn plating, Ni undercoat OG-363040G: Partial Au plating, Ni undercoat
Qty per Reel	1,000 pcs



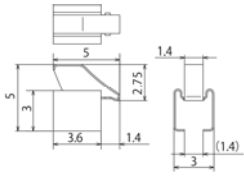
Part No.	OG-363040HD
A (Length)	3.6 mm
B (Width)	3.0 mm
C (Height)	4.04 mm
Recommended Height	2.2~3.4 mm
Base Material	Beryllium Copper
Material Thickness	0.1 mm
Surface Treatment	One side Sn plating, Ni undercoat
Qty per Reel	2,400 pcs



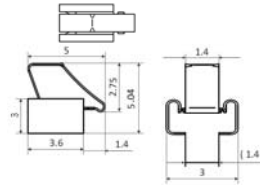
Part No.	OG-363040HDR
A (Length)	3.6 mm
B (Width)	3.0 mm
C (Height)	4.04 mm
Recommended Height	2.2~3.4mm
Base Material	Phosphor Bronze
Material Thickness	0.1 mm
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	2400 pcs



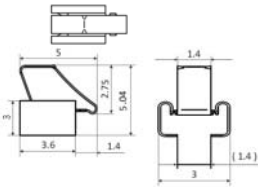
Part No.	OG-453048
A (Length)	3.0 mm
B (Width)	4.5 mm
C (Height)	4.85 mm
Recommended Height	2.7~4.4 mm
Base Material	Phosphor Bronze
Material Thickness	0.1 mm
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	2,000 pcs



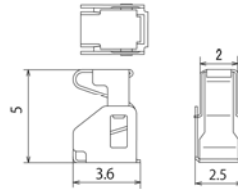
Part No.	OG-363050 OG-363050G	
A (Length)	3.6 mm	
B (Width)	3.0 mm	
C (Height)	5.0 mm	
Recommended Height	3.2~4.4 mm	
Base Material	Beryllium Copper	
Material Thickness	0.1 mm	
Surface Treatment	OG-363050	One side Sn plating, Ni undercoat
	OG-363050G	Partial Au plating, Ni undercoat
Qty per Reel	1,000 pcs	



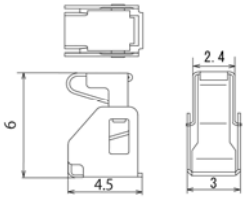
Part No.	OG-363050HD	
A (Length)	3.6 mm	
B (Width)	3.0 mm	
C (Height)	5.04 mm	
Recommended Height	3.2~4.4 mm	
Base Material	Beryllium Copper	
Material Thickness	0.1 mm	
Surface Treatment	One side Sn plating, Ni undercoat	
Qty per Reel	2,000 pcs	



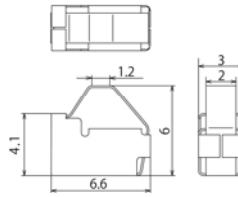
Part No.	OG-363050HDR	
A (Length)	3.6 mm	
B (Width)	3.0 mm	
C (Height)	5.04 mm	
Recommended Height	3.2~4.4 mm	
Base Material	Phosphor Bronze	
Material Thickness	0.1mm	
Surface Treatment	Sn plating, Cu undercoat	
Qty per Reel	2000 pcs	



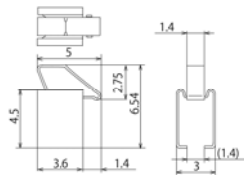
Part No.	OG-362550	
A (Length)	3.6 mm	
B (Width)	2.5 mm	
C (Height)	5.0 mm	
Recommended Height	3.6~4.5 mm	
Base Material	Phosphor Bronze	
Material Thickness	0.15 mm	
Surface Treatment	Sn plating, Cu undercoat	
Qty per Reel	2,000 pcs	



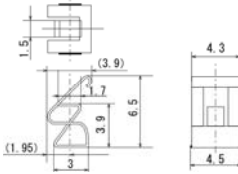
Part No.	OG-453060	
A (Length)	4.5 mm	
B (Width)	3.0 mm	
C (Height)	6.0 mm	
Recommended Height	4.2~5.5 mm	
Base Material	Phosphor Bronze	
Material Thickness	0.2 mm	
Surface Treatment	Sn plating, Cu undercoat	
Qty per Reel	1,500 pcs	



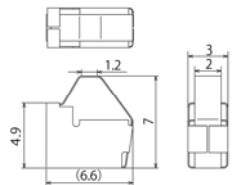
Part No.	OG-603060	
A (Length)	6.6 mm	
B (Width)	3.0 mm	
C (Height)	6.0 mm	
Recommended Height	4.2~5.5 mm	
Base Material	Phosphor Bronze	
Material Thickness	0.12 mm	
Surface Treatment	Sn plating	
Qty per Reel	850 pcs	



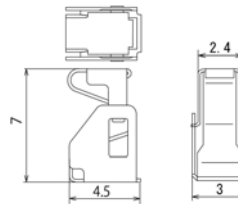
Part No.	OG-363065HD	
A (Length)	3.6 mm	
B (Width)	3.0 mm	
C (Height)	6.54 mm	
Recommended Height	4.7~5.9 mm	
Base Material	Beryllium copper	
Material Thickness	0.1 mm	
Surface Treatment	One side Sn plating, Ni undercoat	
Qty per Reel	1,000 pcs	



Part No.	OG-453065	
A (Length)	3.9 mm	
B (Width)	4.5 mm	
C (Height)	6.5 mm	
Recommended Height	4.2~6.0 mm	
Base Material	Phosphor Bronze	
Material Thickness	0.15 mm	
Surface Treatment	Sn plating, Cu undercoat	
Qty per Reel	1,500 pcs	



Part No.	OG-603070	
A (Length)	6.6 mm	
B (Width)	3.0 mm	
C (Height)	7.0 mm	
Recommended Height	5~6.5 mm	
Base Material	Phosphor Bronze	
Material Thickness	0.08 mm	
Surface Treatment	Sn plating	
Qty per Reel	750 pcs	



Part No.	OG-453070	
A (Length)	4.5 mm	
B (Width)	3.0 mm	
C (Height)	7.0 mm	
Recommended Height	5.3~6.5 mm	
Base Material	Phosphor Bronze	
Material Thickness	0.2 mm	
Surface Treatment	Sn plating, Cu undercoat	
Qty per Reel	1,500 pcs	

On-Board Contact – Special Types

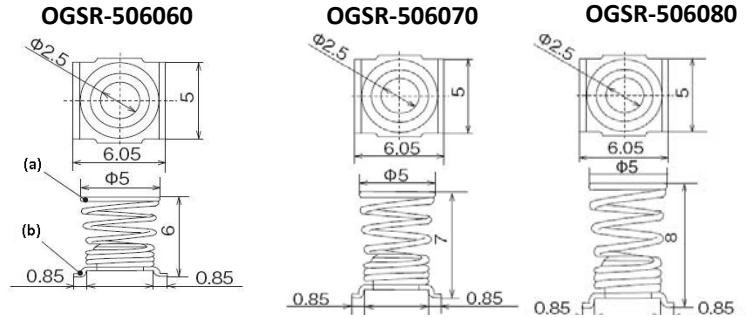
OGSR Series – durable grounding contact resistant to vibrations and repeated compressions

- SMT components for EMC grounding
- Maintains contact after repeated compressions and vibration movements

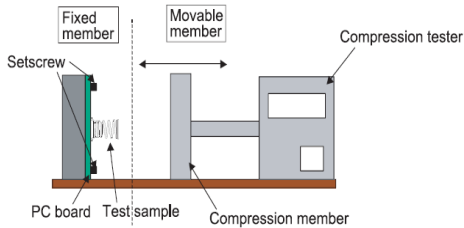


Repeated compression:
100,000 times
(reference only)

OGSR-506080	
	Restoration Rate
Av.(%)	98.7
Max.(%)	99.89
Min.(%)	97.13
Sample.(pcs)	10

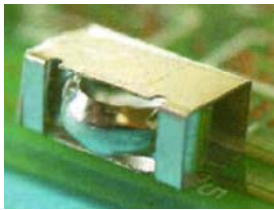


Schematic diagram for compression test



Part No.	OGSR-506060	OGSR-506070	OGSR-506080
Recommended Height	4.5~5.5 mm	4.7~6.5 mm	5.0~7.5 mm
Base Material	(a): Piano wire, (b):Brass		
Material Thickness	(a) Piano wire: 0.45 mm, (b) Brass: 0.3 mm		
Surface Treatment	(a): Partial Au plating, Cu and Ni undercoat (b): Partial Sn plating, Ni undercoat		
Qty per Reel	1,200 pcs	1,000 pcs	900 pcs

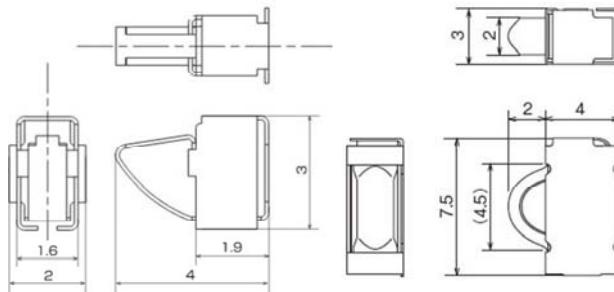
OGSC Series – side contact for perpendicular grounding



- Ideal for applications where standard grounding between parallel boards/chassis is not possible
- Unique design resistant to damage during lateral sliding

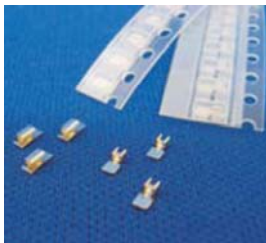
OGSC-402030

OGSC-756030



Part No.	OGSC-402030	OGSC-756030
Base Material	Phosphor Bronze	Phosphor Bronze
Surface Treatment	Sn plating, Cu undercoat	Sn plating
Qty per Reel	5,000 pcs	2,000 pcs

OGC Series – on-board wire management clamp



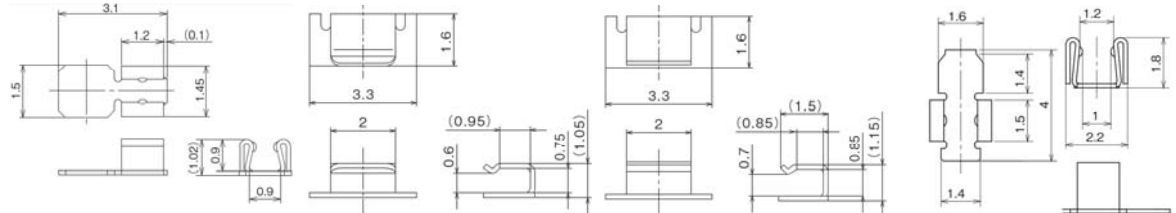
- Designed to manage thin wires at the PCB level
- Available in side or top insertion

OGC-311510U

OGC-331610

OGC-331612

OGC-224018U

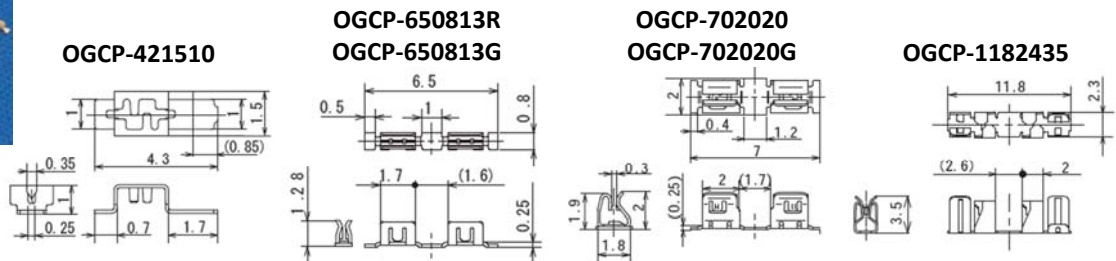


Part No.	OGC-311510U	OGC-331610	OGC-331612	OGC-224018U
Applicable Cable Diameter	0.8 mm	0.8 mm	0.86 mm	1.3~1.4 mm
Base Material	Phosphor Bronze	Phosphor Bronze	Phosphor Bronze	Phosphor Bronze
Surface Treatment	Sn plating	Sn plating	Sn plating	Sn plating, Cu undercoat
Qty per Reel	3,000 pcs	3,000 pcs	2,500 pcs	7000 pcs

OGCP Series – solder-mount, on-board shielding can clips

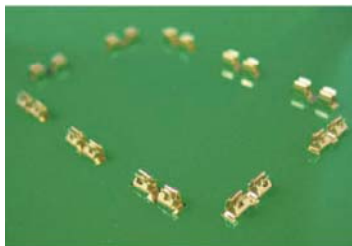


- Allow for easy installation and removal for inspection or re-work
- Better management of PCB space while maintaining the same shielding effectiveness as complete perimeter soldering

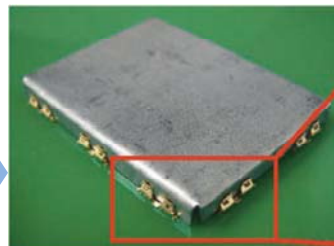


Part No.	OGCP-421510	OGCP-650813R	OGCP-650813G	OGCP-702020	OGCP-702020G	OGCP-1182435
Base Material	Phosphor Bronze	Phosphor Bronze	Titanium Copper	Phosphor Bronze	Phosphor Bronze	Phosphor Bronze
Applicable Shielding Can Wall Thickness	0.15±0.03 mm	0.15~0.2 mm	0.15±0.03 mm	0.3±0.02 mm	0.3±0.02 mm	0.3±0.02 mm
Surface Treatment	Sn plating	Cu undercoat, Sn plating	Ni undercoat, one side Au plating	Cu undercoat, Sn plating	Ni undercoat, Au plating	Cu undercoat, Sn plating
Qty per Reel	15,000 pcs	8,000 pcs	8,000 pcs	9,000 pcs	9,000 pcs	3,000 pcs

Installation Diagram



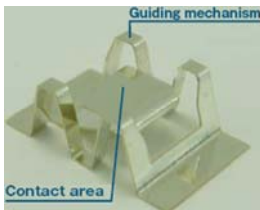
Before shielding can is installed



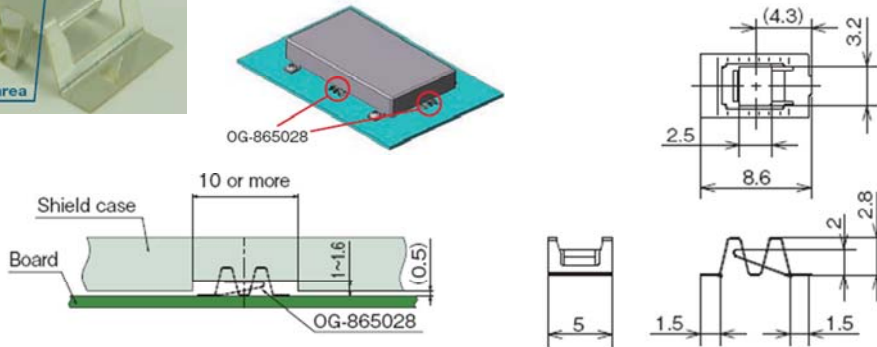
After shielding can is installed



OG-865028 – for precise positioning and improved grounding reliability of shielding cans



- Metal guides for easy shielding-can positioning and installation
- Able to be applied at corners of shielding cans and accommodate thicker shielding cans
- Increases metal-to-metal contact for effective shielding

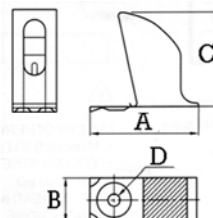


Part No.	OG-865028
Recommended shielding can opening height	1.0~1.6 mm
Recommended shielding can opening length	10mm and up
Maximum shielding can wall thickness	1.9mm or less
Base Material	Phosphor Bronze
Surface Treatment	Sn plating
Qty per Reel	3,000 pcs

HPC Series – High point contact for larger gap spaces



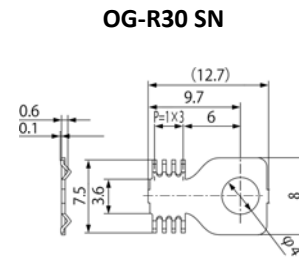
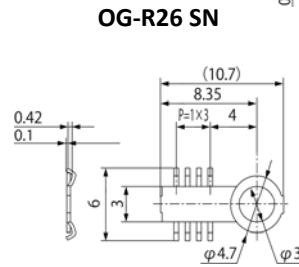
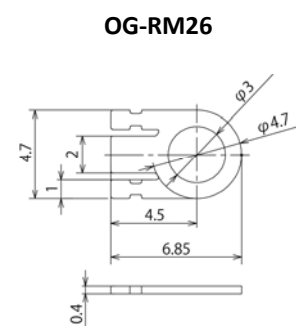
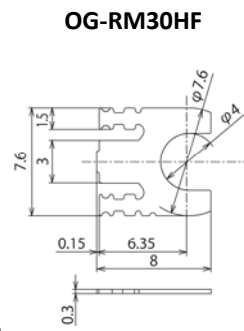
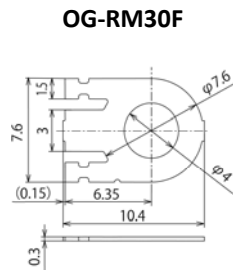
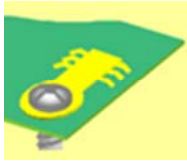
- Special profile fits tall gap spaces from 10~20mm
- Spring maintains contact after compression
- M3 screw hole to secure in place
- Adhesive option available



Part No.	HPC-10-20T (HPC-10-20)
A (Length)	25.0 mm
B (Width)	10.0 mm
C (Height)	22.5 mm
D (Screw Hole)	M3
Base Material	Stainless Steel
Applicable Height	10~20 mm
Qty per Box	100 pcs

OG-R Series – lug terminal SMT to ensure secure contact of screw

- Ensures reliable and stable electrical contact
- Prevents loss of grounding from loosened screws



Part(s) No.	OG-RM30F	OG-RM30HF	OG-RM26	OG-R26 SN	OG-R30 SN
Base Material	Tough Pitch Copper	Tough Pitch Copper	Brass	Tough Pitch Copper	Tough Pitch Copper
Thickness	0.3 mm	0.3 mm	0.4 mm	0.1 mm *	0.1 mm *
Surface Treatment	Ni undercoat, Sn plating	Ni undercoat, Sn plating	Ni undercoat, Sn plating	Cu undercoat, Sn plating	Cu undercoat, Sn plating
Qty per Reel	3,000 pcs	3,000 pcs	8,000 pcs	2,000 pcs	2,000 pcs

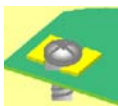
*indicates material thickness

OGP Series – SMT type On board plates that ensures reliable contact

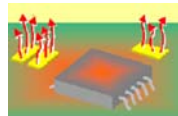
- Eliminates problems with bad contact due to soldering flux
- Ensures reliable and stable electrical contact for effective grounding performance



FG Reinforcement

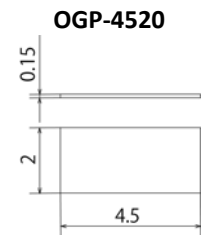
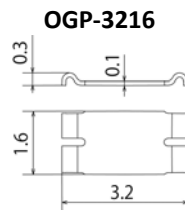


Contact Reinforcement



Improve PCB cooling

Substitute for washer
and lug terminal



Part No.	OGP-3216	OGP-4520
Base Material	Brass	Brass
Thickness	0.1 mm	0.15 mm
Surface Treatment	Ni undercoat, Au plating	Cu undercoat, Sn plating
Qty per Reel	5,000 pcs	3,000 pcs

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