

On-Board EMC Grounding Contacts

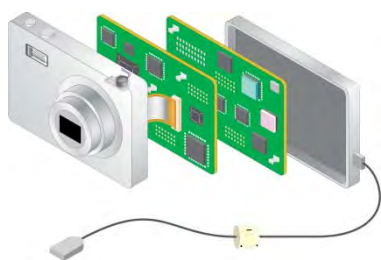


SMT contacts for PCB-level EMC grounding, shielding, and ESD solution

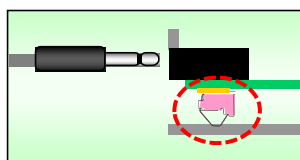
- Effective for emission and ESD immunity reduction
- All EMC mitigation can be done at the board-level
- Specially designed to prevent damage of springs
- Space-saving and robust design, easy to incorporate even where screws are included
- Tape-and-reel design allows for use with automated pick-and-place machine to increase efficiency and reduce manual labor

Application examples

Grounding between two PCBs



ESD solution at connector



Grounding between PCB and enclosure

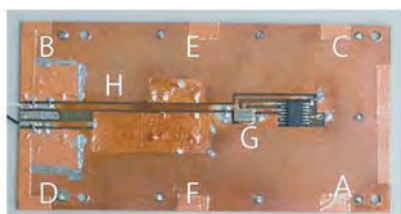


Test experiment – How to ground effectively

Test PC board condition

Radiated emissions test

- 1) PCB with no grounding
- 2) PCB + four points ground (at A, B, C, D)
- 3) PCB + eight points ground (at A, B, C, D, E, F, G, H)

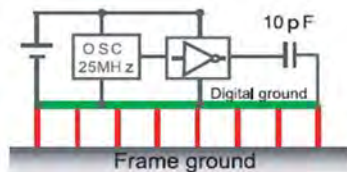


FG points point on PCB

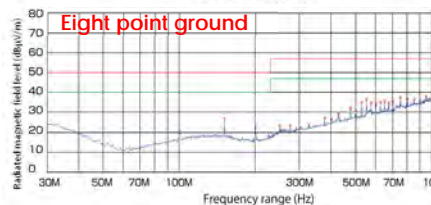
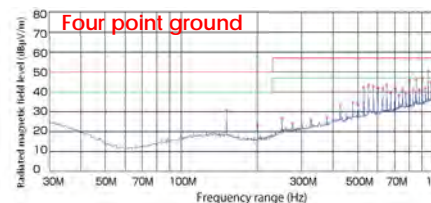
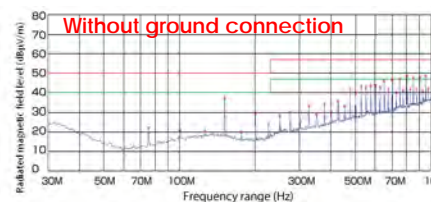


Test result

Multiple grounding points noise suppression better even at higher frequencies.



* Recommended EMC grounding pitch is 1/8 of the wavelength of the target (problem) frequency.



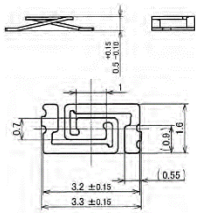
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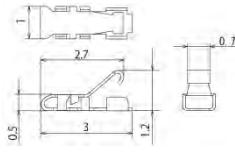
The specifications and properties regarding performance above are not guaranteed, and are subject to change without notice due to product improvement and specification change. While our absorbers are electrically non-conductive, usage directly on the PC Board near the power should be carefully checked. 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.

Standard On-Board Contacts – For parallel EMC grounding

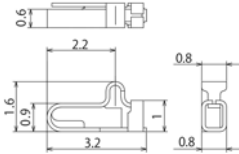
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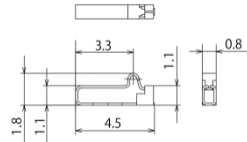
Part Number	OG-321605
Length	3.2 mm
Width	1.6 mm
Height	0.5 mm
Recommended Gap	0.35 mm or less
Base Material	Phosphor Bronze
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	4,000 pcs



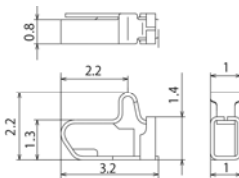
Part Number	OG-301012
Length	3.0 mm
Width	1.0 mm
Height	1.2 mm
Recommended Gap	0.6~1.1 mm
Base Material	Phosphor Bronze
Surface Treatment	Partial Au plating, Ni undercoat
Qty per Reel	8,000 pcs



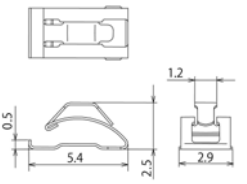
Part Number	OG-320816
Length	3.2 mm
Width	0.8 mm
Height	1.6 mm
Recommended Gap	1.1~1.4 mm
Base Material	Phosphor Bronze
Surface Treatment	Partial Au plating, Ni undercoat
Qty per Reel	8,000 pcs



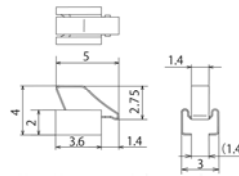
Part Number	OG-450818
Length	4.5 mm
Width	0.8 mm
Height	1.8 mm
Recommended Gap	1.2~1.6 mm
Base Material	Beryllium Copper
Surface Treatment	Partial Au plating, Ni undercoat
Qty per Reel	8,000 pcs



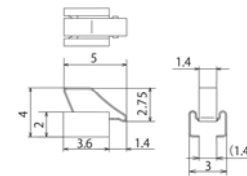
Part Number	OG-321022
Length	3.2 mm
Width	1.0 mm
Height	2.2 mm
Recommended Gap	1.5~2 mm
Base Material	Phosphor Bronze
Surface Treatment	Partial Au plating, Ni undercoat
Qty per Reel	7,000 pcs



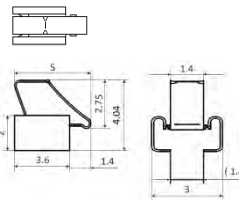
Part Number	OG-542925
Length	5.4 mm
Width	2.9 mm
Height	2.5 mm
Recommended Gap	1.5~2.3 mm
Base Material	Phosphor Bronze
Surface Treatment	Partial Au plating, Ni undercoat
Qty per Reel	5,000 pcs



Part Number	OG-363040
Length	3.6 mm
Width	3.0 mm
Height	4.0 mm
Recommended Gap	2.2~3.4 mm
Base Material	Beryllium Copper
Surface Treatment	One side Sn plating, Ni undercoat
Qty per Reel	1,000 pcs

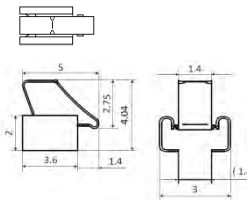


Part Number	OG-363040G
Length	3.6 mm
Width	3.0 mm
Height	4.0 mm
Recommended Gap	2.2~3.4 mm
Base Material	Beryllium Copper
Surface Treatment	Partial Au plating, Ni undercoat
Qty per Reel	1,000 pcs

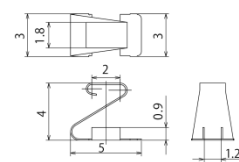


Part Number	OG-363040HD
Length	3.6 mm
Width	3.0 mm
Height	4.04 mm
Recommended Gap	2.2~3.4mm
Base Material	Beryllium Copper
Surface Treatment	One side Sn plating, Ni undercoat
Qty per Reel	2,400 pcs

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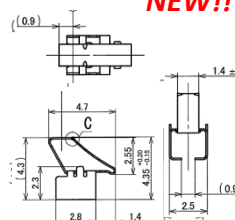


Part Number	OG-363040HDR
Length	3.6 mm
Width	3.0 mm
Height	4.04 mm
Recommended Gap	2.2~3.4mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	2,400 pcs

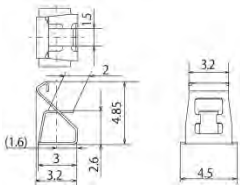


Part Number	OG-503040
Length	5.0 mm
Width	3.0 mm
Height	4.0 mm
Recommended Gap	2.2~3.6 mm
Base Material	Beryllium Copper
Surface Treatment	Sn plating, Ni undercoat
Qty per Reel	1,000 pcs

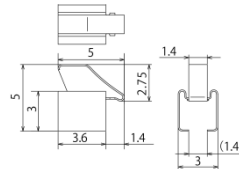
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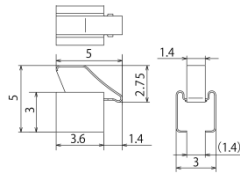
Part Number	OG-282543HDR
Length	2.8 mm
Width	2.5 mm
Height	4.35 mm
Recommended Gap	2.5~3.9 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	5,000 pcs



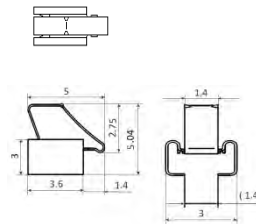
Part Number	OG-453048
Length	3.0 mm
Width	4.5 mm
Height	4.85 mm
Recommended Gap	2.7~4.4 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	2,000 pcs



Part Number	OG-363050
Length	3.6 mm
Width	3.0 mm
Height	5.0 mm
Recommended Gap	3.2~4.4 mm
Base Material	Beryllium Copper
Surface Treatment	One side Sn plating, Ni undercoat
Qty per Reel	1,000 pcs

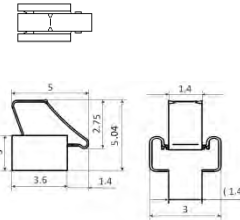


Part Number	OG-363050G
Length	3.6 mm
Width	3.0 mm
Height	5.0 mm
Recommended Gap	3.2~4.4 mm
Base Material	Beryllium Copper
Surface Treatment	Partial Au plating, Ni undercoat
Qty per Reel	1,000 pcs

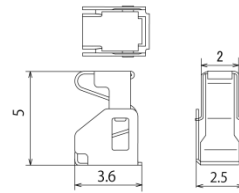


Part Number	OG-363050HD
Length	3.6 mm
Width	3.0 mm
Height	5.04 mm
Recommended Gap	3.2~4.4 mm
Base Material	Beryllium Copper
Surface Treatment	One side Sn plating, Ni undercoat
Qty per Reel	2,000 pcs

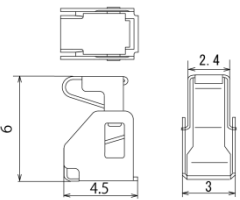
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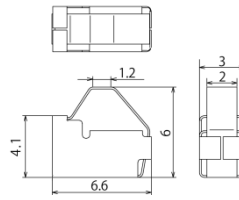
Part Number	OG-363050HDR
Length	3.6 mm
Width	3.0 mm
Height	5.04 mm
Recommended Gap	3.2~4.4 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	2,000 pcs



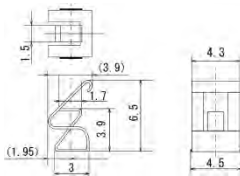
Part Number	OG-362550
Length	3.6 mm
Width	2.5 mm
Height	5.0 mm
Recommended Gap	3.6~4.5 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	2,000 pcs



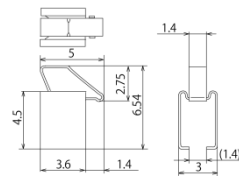
Part Number	OG-453060
Length	4.5 mm
Width	3.0 mm
Height	6.0 mm
Recommended Gap	4.2~5.5 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	1,500 pcs



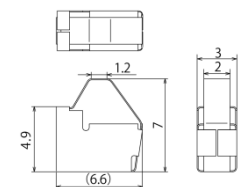
Part Number	OG-603060
Length	6.6 mm
Width	3.0 mm
Height	6.0 mm
Recommended Gap	4.2~5.5 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating
Qty per Reel	850 pcs



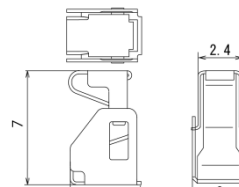
Part Number	OG-453065
Length	3.0 mm
Width	4.5 mm
Height	6.5 mm
Recommended Gap	4.2~6.0 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	1,500 pcs



Part Number	OG-363065HD
Length	3.6 mm
Width	3.0 mm
Height	6.54 mm
Recommended Gap	4.7~5.9 mm
Base Material	Beryllium copper
Surface Treatment	One side Sn plating, Ni undercoat
Qty per Reel	1,000 pcs



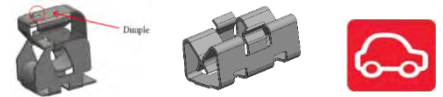
Part Number	OG-603070
Length	6.6 mm
Width	3.0 mm
Height	7.0 mm
Recommended Gap	5~6.5 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating
Qty per Reel	750 pcs



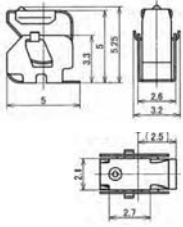
Part Number	OG-453070
Length	4.5 mm
Width	3.0 mm
Height	7.0 mm
Recommended Gap	5.3~6.5 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	1,500 pcs

Automotive-Grade – on-board grounding contact and shield-can clip

- Designed and tested to withstand conditions common in the auto industry



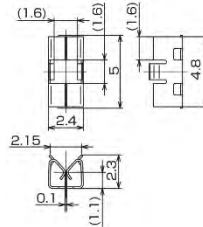
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Part Number	OG-503253-A
Length	5.0 mm
Width	3.2 mm
Height*	5.25 mm
Recommended Gap	3.5~4.5 mm
Base Material	Beryllium Copper
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	2,000 pcs
Operating Temperature	-40~150°C

* Dimple included on the top surface of OG-503253-A to maintain metal-to-metal connection during vibration.

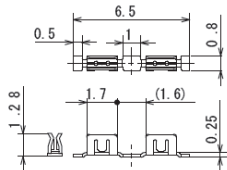
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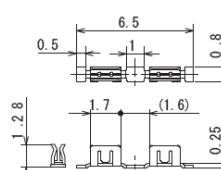
Part Number	OGCP-502423
Length	5.0 mm
Width	2.4 mm
Height	2.3 mm
Base Material	Phosphor Bronze
Recommended Shield-Can Thickness	0.28~0.56 mm
Surface Treatment	Sn plating
Qty per Reel	6,000 pcs
Operating Temperature	-40~125°C

Shielding-can clips: OGCP series

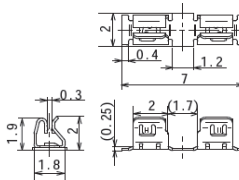
- Allows for easy installation and removal of shield-cans for quick inspections and re-work
- Maintains the same shielding effectiveness as complete perimeter soldering



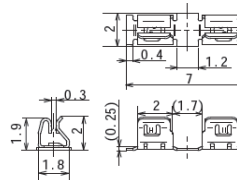
Part Number	OGCP-650813R
Length	6.5 mm
Width	0.8 mm
Height	1.28 mm
Base Material	Phosphor Bronze
Recommended Shield-Can Thickness	0.15~0.2 mm
Surface Treatment	Cu undercoat, Sn plating
Qty per Reel	8,000 pcs



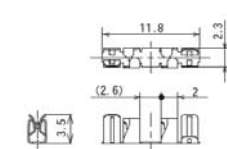
Part Number	OGCP-650813G
Length	6.5 mm
Width	0.8 mm
Height	1.28 mm
Base Material	Titanium Copper
Recommended Shield-Can Thickness	0.15±0.03 mm
Surface Treatment	Ni undercoat, one side Au plating
Qty per Reel	8,000 pcs



Part Number	OGCP-702020
Length	7.0 mm
Width	2.0 mm
Height	2.0 mm
Base Material	Phosphor Bronze
Recommended Shield-Can Thickness	0.3±0.02 mm
Surface Treatment	Cu undercoat, Sn plating
Qty per Reel	9,000 pcs

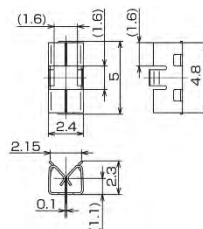


Part Number	OGCP-702020G
Length	7.0 mm
Width	2.0 mm
Height	2.0 mm
Base Material	Phosphor Bronze
Recommended Shield-Can Thickness	0.3±0.02 mm
Surface Treatment	Ni undercoat, Au plating
Qty per Reel	9,000 pcs



Part Number	OGCP-1182435
Length	11.8 mm
Width	2.4 mm
Height	3.5 mm
Base Material	Phosphor Bronze
Recommended Shield-Can Thickness	0.3±0.02 mm
Surface Treatment	Cu undercoat, Sn plating
Qty per Reel	3,000 pcs

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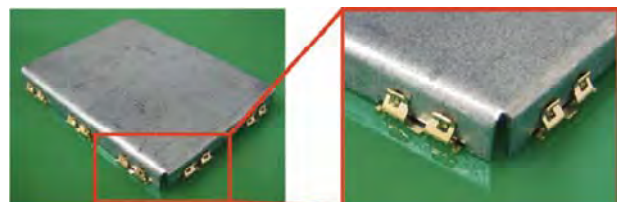
Part Number	OGCP-502423 *
Length	5.0 mm
Width	2.4 mm
Height	2.3 mm
Base Material	Phosphor Bronze
Recommended Shield-Can Thickness	0.28~0.56 mm
Surface Treatment	Sn plating
Qty per Reel	6,000 pcs

* Automotive Grade

How to Use OGCP Clips with Shield-Cans



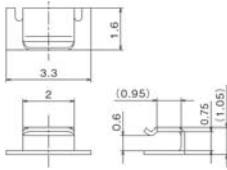
Shield-can clips reflow soldered onto PCB



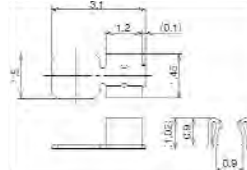
Install shield-cans with a machine or jig to avoid inserting the can on an angle.

Board-level wire management clamps: OGC Series

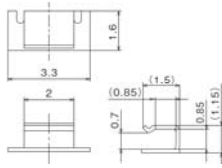
- Designed to manage thin cables on the PC board
- For EMC grounding, a metal ferrule can be used in conjunction with the OGC clamp
- Available in side or top insertion



Part Number	OGC-331610
Length	3.3 mm
Width	1.6 mm
Height	1.0 mm
Recommended Wire Diameter	Ø 0.8 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating
Qty per Reel	3,000 pcs

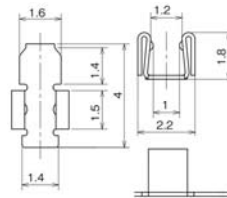


Part Number	OGC-311510U
Length	3.1 mm
Width	1.5 mm
Height	1.0 mm
Recommended Wire Diameter	Ø 0.8 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating
Qty per Reel	3,000 pcs



Part Number	OGC-331612
Length	3.3 mm
Width	1.6 mm
Height	1.2 mm
Recommended Wire Diameter	Ø 0.86 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating
Qty per Reel	2,500 pcs

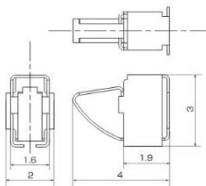
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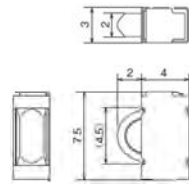
Part Number	OGC-224018U
Length	2.2 mm
Width	4.0 mm
Height	1.8 mm
Recommended Wire Diameter	Ø 1.3~1.4 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	7000 pcs

Side contacts for perpendicular grounding: OGSC Series

- Ideal for applications where EMC grounding between two parallel boards or chassis is not possible but a perpendicular ground is possible
- Unique design allows for lateral sliding without damaging contacts



Part Number	OGSC-402030
Length (with spring)	4.0 mm (total)
Width	2.0 mm
Height	3.0 mm
Recommended Side Gap	0.4~1.6 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating, Cu undercoat
Qty per Reel	5,000 pcs



Part Number	OGSC-756030
Length	7.5 mm
Width (with spring)	6 mm (total)
Height	3.0 mm
Recommended Side Gap	Up to 2 mm
Base Material	Phosphor Bronze
Surface Treatment	Sn plating
Qty per Reel	2,000 pcs

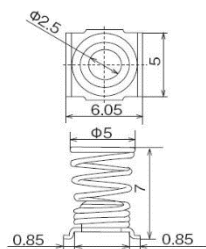
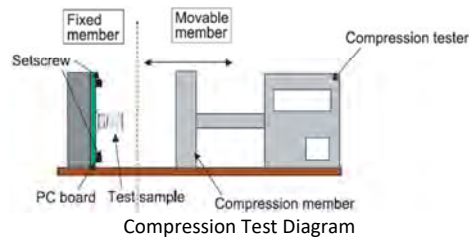
Coil spring on-board contact: OGSR Series

- Vibration-resistant contact maintains good grounding even after repeated compressions.

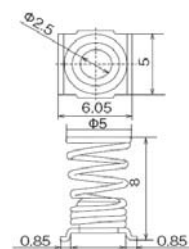


OGSR-506080	
	Restoration Rate
Av.(%)	98.7
Max.(%)	99.89
Min.(%)	97.13
Sample.(pcs)	10

Restoration after 100,000 compressions



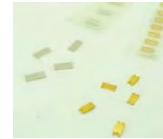
Part Number	OGSR-506070
Recommended Gap	4.7~6.5 mm
Base Material	(a): Piano wire, (b): Brass
Surface Treatment	(a): Partial Au plating, Cu and Ni undercoat (b): Partial Sn plating, Ni undercoat
Qty per Reel	1,000 pcs



Part Number	OGSR-506080
Recommended Gap	5.0~7.5 mm
Base Material	(a): Piano wire, (b): Brass
Surface Treatment	(a): Partial Au plating, Cu and Ni undercoat (b): Partial Sn plating, Ni undercoat
Qty per Reel	900 pcs

On-board plates for reliable grounding contact: OGP Series

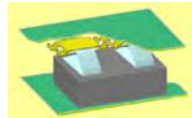
- Eliminates problems with bad contact due to soldering flux
- Ensures reliable, stable electrical contact for EMC grounding



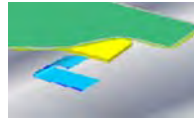
	Part Number	OGP-3216
	Base Material	Brass
	Thickness	0.1 mm
	Surface Treatment	Ni undercoat, Au plating
	Qty per Reel	5,000 pcs

	Part Number	OGP-4520
	Base Material	Brass
	Thickness	0.15 mm
	Surface Treatment	Cu undercoat, Sn plating
	Qty per Reel	3,000 pcs

Recommended Uses of OGP Plates



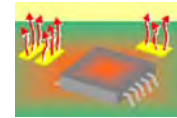
On-board contact reinforcement



Frame-ground reinforcement



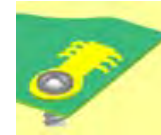
Substitute for washer and lug terminal



PCB cooling

Lug terminals to ensure grounding at screws: OG-R Series

- For reliable and stable electrical grounding when applied at screw holes
- Helps to prevent EMC grounding reduction from loosened screws



	Part Number	OG-RM26
	Base Material	Brass
	Material Thickness	0.4 mm
	Surface Treatment	Ni undercoat, Sn plating
	Applicable Screw Hole	M3
	Qty per Reel	8,000 pcs

	Part Number	OG-R26 SN
	Base Material	Tough Pitch Copper
	Material Thickness	0.1 mm
	Surface Treatment	Cu undercoat, Sn plating
	Applicable Screw Hole	M3
	Qty per Reel	2,000 pcs

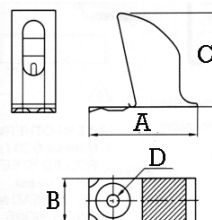
	Part Number	OG-RM30F
	Base Material	Tough Pitch Copper
	Material Thickness	0.3 mm
	Surface Treatment	Ni undercoat, Sn plating
	Applicable Screw Hole	M4
	Qty per Reel	3,000 pcs

	Part Number	OG-R30 SN
	Base Material	Tough Pitch Copper
	Material Thickness	0.1 mm
	Surface Treatment	Cu undercoat, Sn plating
	Applicable Screw Hole	M4
	Qty per Reel	2,000 pcs

	Part Number	OG-RM30HF
	Base Material	Tough Pitch Copper
	Material Thickness	0.3 mm
	Surface Treatment	Ni undercoat, Sn plating
	Applicable Screw Hole	M4
	Qty per Reel	3,000 pcs

High-point contact for large gap spaces: HPC Series

- Tall profile fits gap spaces from 10~20mm
- Spring design maintains electrical contact after compression
- Use a M3 screw to secure in place
- Tape-mount option available



Part Number	HPC-10-20 (HPC-10-20T*)
A (Length)	25.0 mm
B (Width)	10.0 mm
C (Height)	22.5 mm
D (Screw Hole)	M3
Base Material	Stainless Steel
Recommended Gap	10~20 mm
Qty per Box	100 pcs

* HPC-10-20T is the tape-mount version.

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