

On-Board EMC Grounding Contacts

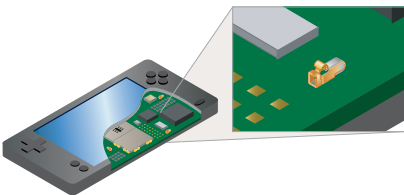
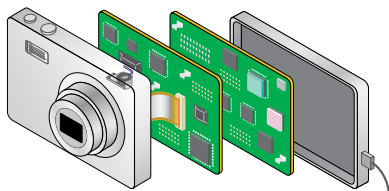


SMT contacts for PCB-level EMC grounding, shielding, and ESD

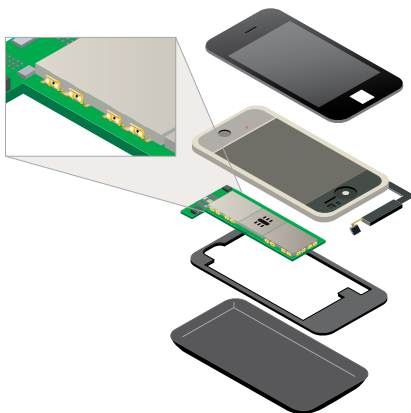
- Effective for suppressing emission and immunity reduction
- All EMC mitigation can be done at the board-level
- Space-saving and robust design
- Easy to incorporate even where screws are included
- Tape-and-reel design (SMT) allows for use with automated pick-and-place machine to increase efficiency and reduce manual labor

Application examples

Grounding between two PCBs or PCB and enclosure



Grounding shielding cans with shield can clips



Look for the icon for automotive-grade parts!

- Automotive-grade means the parts are PPAP-ready (Level 3).
- Double-check the operating temperatures to ensure they meet your requirements.

Test experiment: How to ground effectively

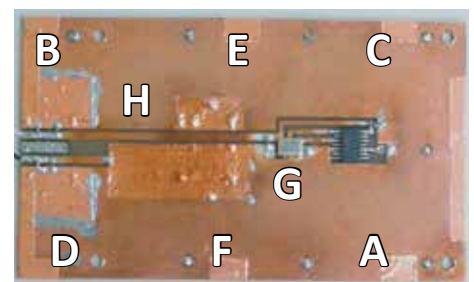
Test PC board condition

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)

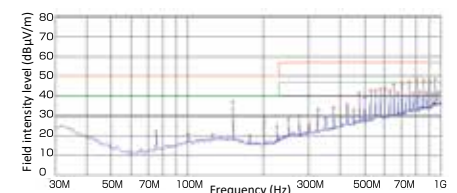
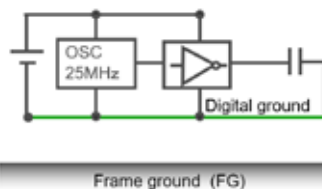


A ~ H indicate grounding points on PCB

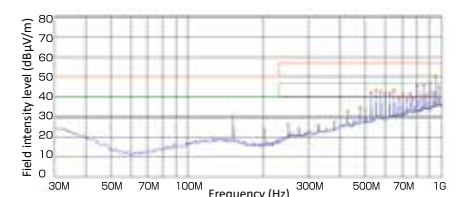
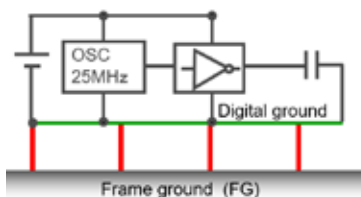


Test results for radiated emissions

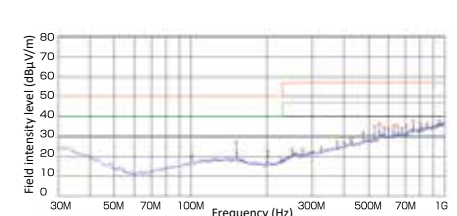
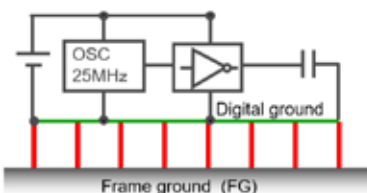
1. PCB with no grounding remains noisy, especially in the higher frequencies



2. With 4 grounding points, noise between 200 ~ 500MHz



3. With 8 grounding points, noise is dramatically reduced across the board.



* Recommended EMC grounding pitch between two points is $\frac{1}{4}$ the wavelength of the problematic frequency.



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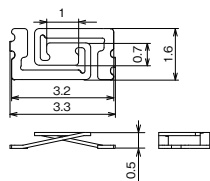
On-Board Grounding Contacts – Rev 13 – 04122023



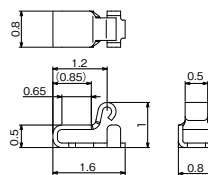
OG Series: spring-loaded grounding contacts for board-to-board or board-to-metal connection

- Box structure designed to prevent damage and deformation of springs
- Can be included during the PCB design process or added afterwards without re-spinning the board
- Wide variety of sizes and heights to fit almost any gap space

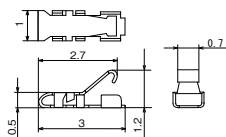
** Parts are listed in increasing order of recommended gap space (gap after compression).*



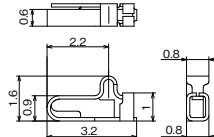
Part Number	OG-321605
Length	3.2mm
Width	1.6mm
Height	0.5mm
Recommended Gap	0.35mm or less
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	4,000 pieces
Operating Temperature	-40 ~ +85°C



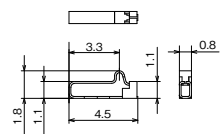
Part Number	OG-160810S
Length	1.6mm
Width	0.8mm
Height	1.0mm
Recommended Gap	0.7 ~ 0.9mm
Base Material	Beryllium copper
Surface Treatment	Partial Au plating
Quantity per Reel	3,500 pieces
Operating Temperature	-40 ~ +125°C
Current Rating	3.0 A



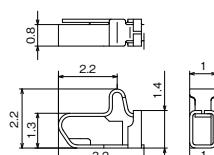
Part Number	OG-301012
Length	3.0mm
Width	1.0mm
Height	1.2mm
Recommended Gap	0.6 ~ 1.1mm
Base Material	Phosphor bronze
Surface Treatment	Partial Au plating
Quantity per Reel	8,000 pieces
Operating Temperature	-40 ~ +85°C



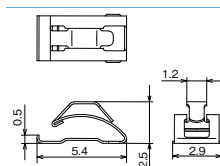
Part Number	OG-320816
Length	3.2mm
Width	0.8mm
Height	1.6mm
Recommended Gap	1.1 ~ 1.4mm
Base Material	Phosphor bronze
Surface Treatment	Partial Au plating
Quantity per Reel	8,000 pieces
Operating Temperature	-40 ~ +85°C



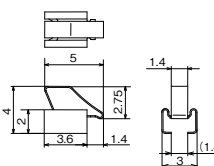
Part Number	OG-450818
Length	4.5mm
Width	0.8mm
Height	1.8mm
Recommended Gap	1.2 ~ 1.6mm
Base Material	Beryllium copper
Surface Treatment	Partial Au plating
Quantity per Reel	8,000 pieces
Operating Temperature	-40 ~ +85°C



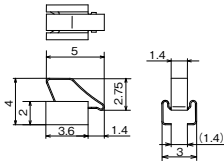
Part Number	OG-321022
Length	3.2mm
Width	1.0mm
Height	2.2mm
Recommended Gap	1.5 ~ 2mm
Base Material	Phosphor bronze
Surface Treatment	Partial Au plating
Quantity per Reel	7,000 pieces
Operating Temperature	-40 ~ +125°C



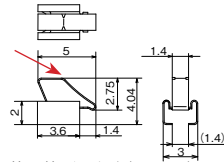
Part Number	OG-542925
Length	5.4mm
Width	2.9mm
Height	2.5mm
Recommended Gap	1.5 ~ 2.3mm
Base Material	Phosphor bronze
Surface Treatment	Partial Au plating
Quantity per Reel	5,000 pieces
Operating Temperature	-40 ~ +125°C



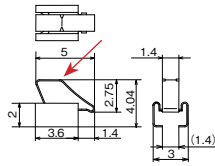
Part Number	OG-363040
Length	3.6mm
Width	3.0mm
Height	4.0mm
Recommended Gap	2.2 ~ 3.4mm
Base Material	Beryllium copper
Surface Treatment	Sn plating
Quantity per Reel	1,000 pieces
Operating Temperature	-40 ~ +125°C



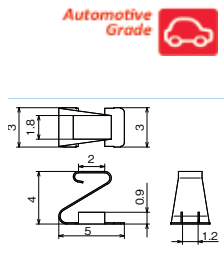
Part Number	OG-363040G
Length	3.6mm
Width	3.0mm
Height	4.0mm
Recommended Gap	2.2 ~ 3.4mm
Base Material	Beryllium copper
Surface Treatment	Partial Au plating
Quantity per Reel	1,000 pieces
Operating Temperature	-40 ~ +85°C



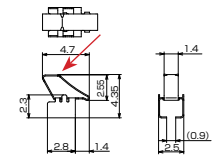
Part Number	OG-363040HD
Length	3.6mm
Width	3.0mm
Height	4.04mm
Recommended Gap	2.2 ~ 3.4mm
Base Material	Beryllium copper
Surface Treatment	Sn plating
Quantity per Reel	2,400 pieces
Operating Temperature	-40 ~ +85°C



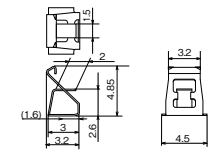
Part Number	OG-363040HDR
Length	3.6mm
Width	3.0mm
Height	4.04mm
Recommended Gap	2.2 ~ 3.4mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	2,400 pieces
Operating Temperature	-40 ~ +85°C



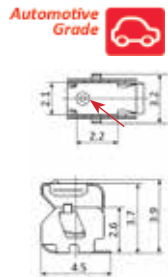
Part Number	OG-503040
Length	5.0mm
Width	3.0mm
Height	4.0mm
Recommended Gap	2.2 ~ 3.6mm
Base Material	Beryllium copper
Surface Treatment	Sn plating
Quantity per Reel	1,000 pieces
Operating Temperature	-40 ~ +125°C



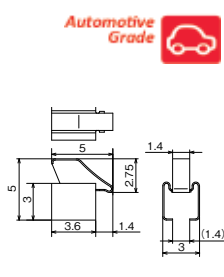
Part Number	OG-282543HDR
Length	2.8mm
Width	2.5mm
Height	4.35mm
Recommended Gap	2.5 ~ 3.9mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	5,000 pieces
Operating Temperature	-40 ~ +105°C



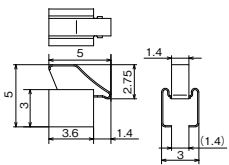
Part Number	OG-453048
Length	3.0mm
Width	4.5mm
Height	4.85mm
Recommended Gap	2.7 ~ 4.4mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	2,000 pieces
Operating Temperature	-40 ~ +125°C



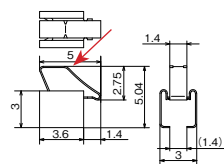
Part Number	OG-453239-A
Length	4.5mm
Width	3.2mm
Height	3.9mm
Recommended Gap	2.8 ~ 3.5mm
Base Material	Beryllium copper
Surface Treatment	Sn plating
Quantity per Reel	2,000 pieces
Operating Temperature	-40 ~ +150°C



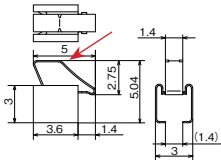
Part Number	OG-363050
Length	3.6mm
Width	3.0mm
Height	5.0mm
Recommended Gap	3.2 ~ 4.4mm
Base Material	Beryllium copper
Surface Treatment	Sn plating
Quantity per Reel	1,000 pieces
Operating Temperature	-40 ~ +125°C



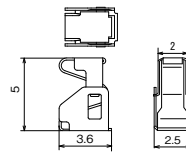
Part Number	OG-363050G
Length	3.6mm
Width	3.0mm
Height	5.0mm
Recommended Gap	3.2 ~ 4.4mm
Base Material	Beryllium copper
Surface Treatment	Partial Au plating
Quantity per Reel	1,000 pieces
Operating Temperature	-40 ~ +85°C



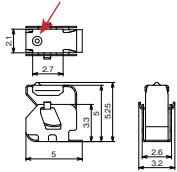
Part Number	OG-363050HD
Length	3.6mm
Width	3.0mm
Height	5.04mm
Recommended Gap	3.2 ~ 4.4mm
Base Material	Beryllium copper
Surface Treatment	Sn plating
Quantity per Reel	2,000 pieces
Operating Temperature	-40 ~ +85°C



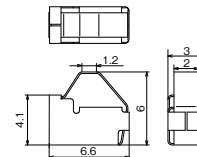
Part Number	OG-363050HDR
Length	3.6mm
Width	3.0mm
Height	5.04mm
Recommended Gap	3.2 ~ 4.4mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	2,000 pieces
Operating Temperature	-40 ~ +85°C



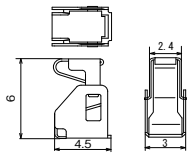
Part Number	OG-362550
Length	3.6mm
Width	2.5mm
Height	5.0mm
Recommended Gap	3.6 ~ 4.5mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	2,000 pieces
Operating Temperature	-40 ~ +125°C



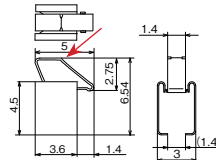
Part Number	OG-503253-A
Length	5.0mm
Width	3.2mm
Height	5.25mm
Recommended Gap	3.5 ~ 4.5mm
Base Material	Beryllium copper
Surface Treatment	Sn plating
Quantity per Reel	2,000 pieces
Operating Temperature	-40 ~ +150°C



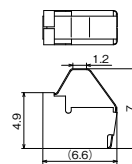
Part Number	OG-603060
Length	6.6mm
Width	3.0mm
Height	6.0mm
Recommended Gap	4.2 ~ 5.5mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	850 pieces
Operating Temperature	-40 ~ +125°C



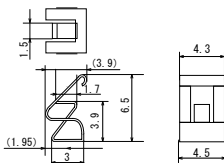
Part Number	OG-453060
Length	4.5mm
Width	3.0mm
Height	6.0mm
Recommended Gap	4.2 ~ 5.5mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	1,500 pieces
Operating Temperature	-40 ~ +125°C



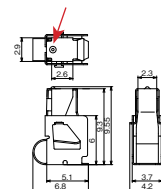
Part Number	OG-363065HD
Length	3.6mm
Width	3.0mm
Height	6.54mm
Recommended Gap	4.7 ~ 5.9mm
Base Material	Beryllium copper
Surface Treatment	Sn plating
Quantity per Reel	1,000 pieces
Operating Temperature	-40 ~ +85°C



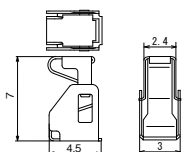
Part Number	OG-603070
Length	6.6mm
Width	3.0mm
Height	7.0mm
Recommended Gap	5 ~ 6.5mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	750 pieces
Operating Temperature	-40 ~ +125°C



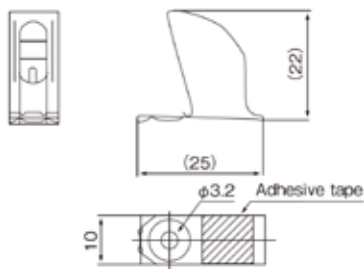
Part Number	OG-453065
Length	3.0mm
Width	4.5mm
Height	6.5mm
Recommended Gap	4.2 ~ 6.0mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	1,500 pieces
Operating Temperature	-40 ~ +125°C



Part Number	OG-684296
Length	6.8mm
Width	4.2mm
Height	9.55mm
Recommended Gap	7.0 ~ 9.0mm
Base Material	Beryllium copper
Surface Treatment	Sn plating
Quantity per Reel	1,000 pieces
Operating Temperature	-40 ~ +150°C



Part Number	OG-453070
Length	4.5mm
Width	3.0mm
Height	7.0mm
Recommended Gap	5.3 ~ 6.5mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	1,500 pieces
Operating Temperature	-40 ~ +125°C

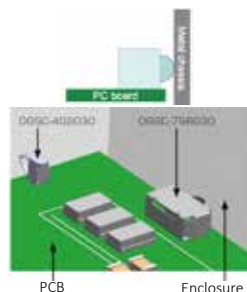


HPC Series: High-point contact for large gaps

- Very tall profile to fit gap spaces from 10~20mm
- Spring design maintains electrical contact after compression

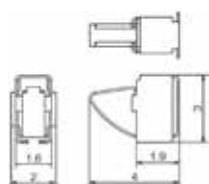
- M3 screw can be used to secure in place
- Tape-mount option available (HPC-10-20T)

Part Number	HPC-10-20
Recommended Gap	10 ~ 20mm
Screw Hole Size	M3
Base Material	Stainless steel
Quantity per Box	100 pieces
Operating Temperature	-40 ~ +85°C

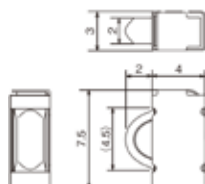


OGSC Series: side spring contacts for perpendicular grounding

- Ideal for applications where EMC grounding to a board or chassis perpendicular to the PCB
- OGSC contacts can be placed on the edge of breakaway boards for ease of use



Part Number	OGSC-402030
Length	4.0mm
Width	2.0mm
Height	3.0mm
Recommended Side Gap	0.4 ~ 1.6mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	5,000 pieces
Operating Temperature	-40 ~ +85°C



Part Number	OGSC-756030
Length	7.5mm
Width	6.0mm
Height	3.0mm
Recommended Side Gap	up to 2mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	2,000 pieces
Operating Temperature	-40 ~ +85°C



Part Number	OGSC-B-302020
Length	2.95mm
Width	2.0mm
Height	2.0mm
Recommended Side Gap	0.3 ~ 1.0mm
Base Material	Corson alloy
Surface Treatment	Sn plating
Quantity per Reel	6,000 pieces
Operating Temperature	-40 ~ +125°C



Part Number	OGSC-T-302020
Length	2.95mm
Width	2.0mm
Height	2.0mm
Recommended Side Gap	0.3 ~ 1.0mm
Base Material	Corson alloy
Surface Treatment	Sn plating
Quantity per Reel	6,000 pieces
Operating Temperature	-40 ~ +125°C

- ◇ OGSC-B-302020
Metal panel inserted (slide up) from the **bottom** of the side contact

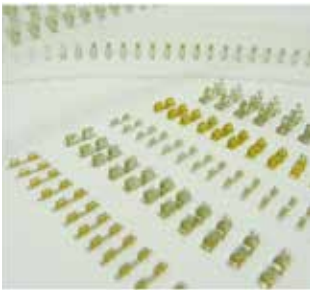


- ◇ OGSC-T-302020
Metal chassis inserted (slide down) from the **top** of the side contact

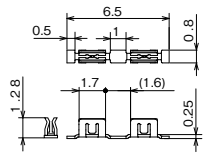


OGCP Series: compact shielding can clips

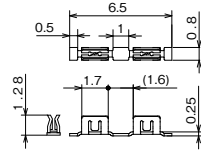
- Allows for easy installation and removal of shield cans - makes inspections and re-work a cinch
- Can maintain similar level of shielding effect as perimeter soldering
- Wide opening helps to align cans into place without crushing the clips



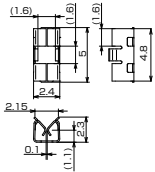
Side view of OGCP shield can clips



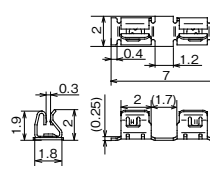
Part Number	OGCP-650813R
Length	6.5mm
Width	0.8mm
Height	1.28mm
Recommended Shield-Can Thickness	0.15 ~ 0.2mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	8,000 pieces
Operating Temperature	-40 ~ +125°C



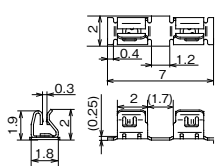
Part Number	OGCP-650813G
Length	6.5mm
Width	0.8mm
Height	1.28mm
Recommended Shield-Can Thickness	0.15 ±0.3mm
Base Material	Titanium copper
Surface Treatment	Partial Au plating
Quantity per Reel	8,000 pieces
Operating Temperature	-40 ~ +85°C



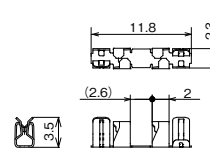
Part Number	OGCP-502423
Length	5.0mm
Width	2.4mm
Height	2.3mm
Recommended Shield-Can Thickness	0.28 ~ 0.56mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	6,000 pieces
Operating Temperature	-40 ~ +125°C



Part Number	OGCP-702020
Length	7.0mm
Width	2.0mm
Height	2.0mm
Recommended Shield-Can Thickness	0.3 ±0.2mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	9,000 pieces
Operating Temperature	-40 ~ +125°C



Part Number	OGCP-702020G
Length	7.0mm
Width	2.0mm
Height	2.0mm
Recommended Shield-Can Thickness	0.3 ±0.2mm
Base Material	Phosphor bronze
Surface Treatment	Partial gold plating
Quantity per Reel	9,000 pieces
Operating Temperature	-40 ~ +125°C

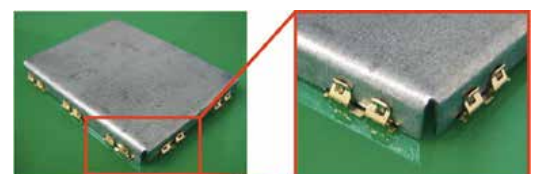
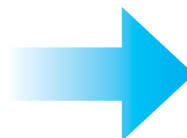


Part Number	OGCP-1182435
Length	11.8mm
Width	2.4mm
Height	3.5mm
Recommended Shield-Can Thickness	0.3 ±0.2mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	3,000 pieces
Operating Temperature	-40 ~ +85°C

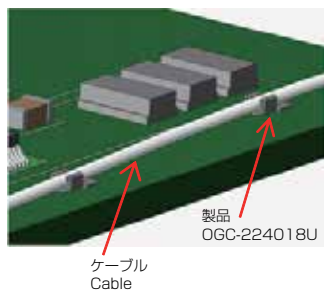
◇ How to use OGCP clips with shield-cans



Shield-can clips reflow soldered onto PCB



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

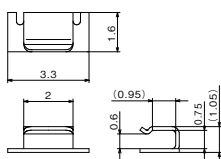


OGC Series: on-board wire management clips

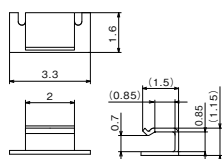
- Designed to manage thin cables on the PC board
- For EMC grounding, a metal ferrule can be used in conjunction with the OGC clamp
- Side or top insertion options



Side-Insertion OGC Clips

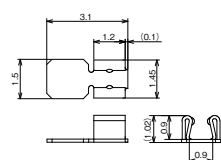


Part Number	OGC-331610
Length	3.3mm
Width	1.6mm
Height	1.0mm
Applicable Wire Diameter	Ø 0.8mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	3,000 pieces
Operating Temperature	-40 ~ +85°C

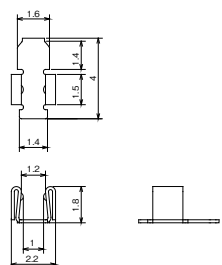


Part Number	OGC-331612
Length	3.3mm
Width	1.6mm
Height	1.2mm
Applicable Wire Diameter	Ø 0.86mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	2,500 pieces
Operating Temperature	-40 ~ +85°C

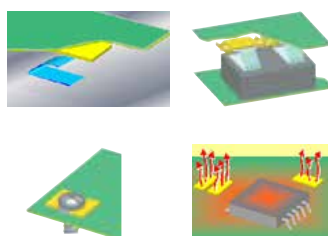
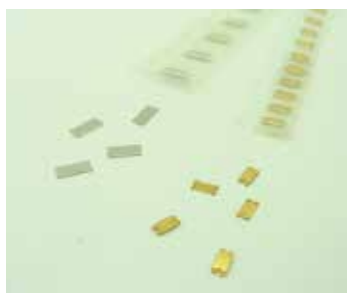
Top-Insertion OGC Clips



Part Number	OGC-311510U
Length	3.1mm
Width	1.5mm
Height	1.0mm
Applicable Wire Diameter	Ø 0.8mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating
Quantity per Reel	3,000 pieces
Operating Temperature	-40 ~ +85°C

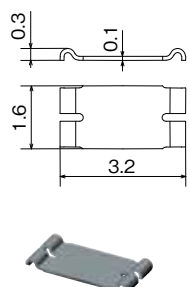


Part Number	OGC-224018U
Length	2.2mm
Width	4.0mm
Height	1.8mm
Applicable Wire Diameter	Ø 1.3~1.4mm
Base Material	Phosphor bronze
Surface Treatment	Sn plating,
Quantity per Reel	7,000 pieces
Operating Temperature	-40 ~ +85°C

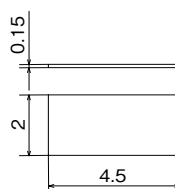


OGP Series: on-board plates for reliable spot grounding

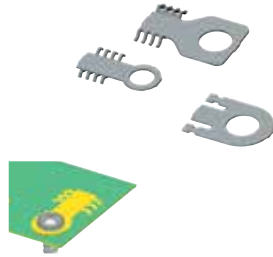
- Eliminates problems due to poor contact from solder flux
- Ensures stable electrical contact and reinforcement for EMC grounding
- Eliminates the need to coat the entire PCB with expensive metals (conductive surface only where necessary)
- If used alone, may act as a small heat spreader or sub as a washer around screws



Part Number	OGP-3216
Length	3.2mm
Width	1.6mm
Height	0.3mm
Thickness	0.1mm
Base Material	Brass
Surface Treatment	Au plating
Quantity per Reel	5,000 pieces
Operating Temperature	-40 ~ +85°C

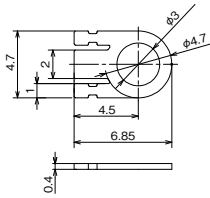


Part Number	OGP-4520
Length	4.5mm
Width	2.0mm
Height	0.15mm
Thickness	0.15mm
Base Material	Brass
Surface Treatment	Sn plating
Quantity per Reel	3,000 pieces
Operating Temperature	-40 ~ +85°C

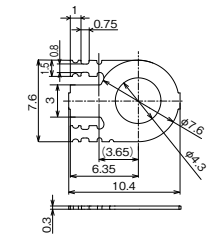


OG-R Series: Lug terminals for grounding around screws

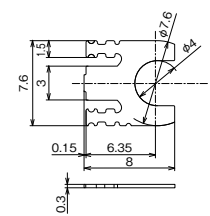
- Specifically designed to use at screw points to stabilize electrical grounding
- Helps to prevent loss of EMC grounding due to loosened screws



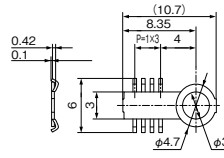
Part Number	OG-RM26
Screw Hole Size	M3
Material Thickness	0.4mm
Base Material	Brass
Surface Treatment	Sn plating
Quantity per Reel	8,000 pieces
Operating Temperature	-40 ~ +85°C



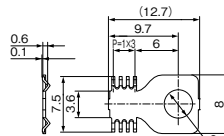
Part Number	OG-RM30F
Screw Hole Size	M4
Material Thickness	0.3mm
Base Material	Tough pitch copper
Surface Treatment	Sn plating
Quantity per Reel	3,000 pieces
Operating Temperature	-40 ~ +85°C



Part Number	OG-RM30HF
Screw Hole Size	M4
Material Thickness	0.3mm
Base Material	Tough pitch copper
Surface Treatment	Sn plating
Quantity per Reel	3,000 pieces
Operating Temperature	-40 ~ +85°C



Part Number	OG-R26 SN
Screw Hole Size	M3
Material Thickness	0.1mm
Base Material	Tough pitch copper
Surface Treatment	Sn plating
Quantity per Reel	2,000 pieces
Operating Temperature	-40 ~ +85°C



Part Number	OG-R30 SN
Screw Hole Size	M4
Material Thickness	0.1mm
Base Material	Tough pitch copper
Surface Treatment	Sn plating
Quantity per Reel	2,000 pieces
Operating Temperature	-40 ~ +85°C

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