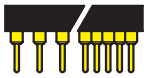
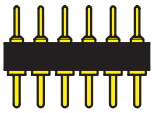
Quick Selector Chart
PGA / BGA / PLCC

		PGA			BGA		PLCC
	Grid	2.54 mm	Interstitial	1.27 mm	1.27 mm	1 mm	
Sockets		See page					
Solder tail		126	131	135			
							143
Surface mount		126	131	135	136	139	
							142
Solderless compliant press-fit		127	131				
Carrier		128	132				
Interconnect pin solder tail		128	132	135	137		
Interconnect pin surface mount					137	139	
BGA pin-adapter					136	139	

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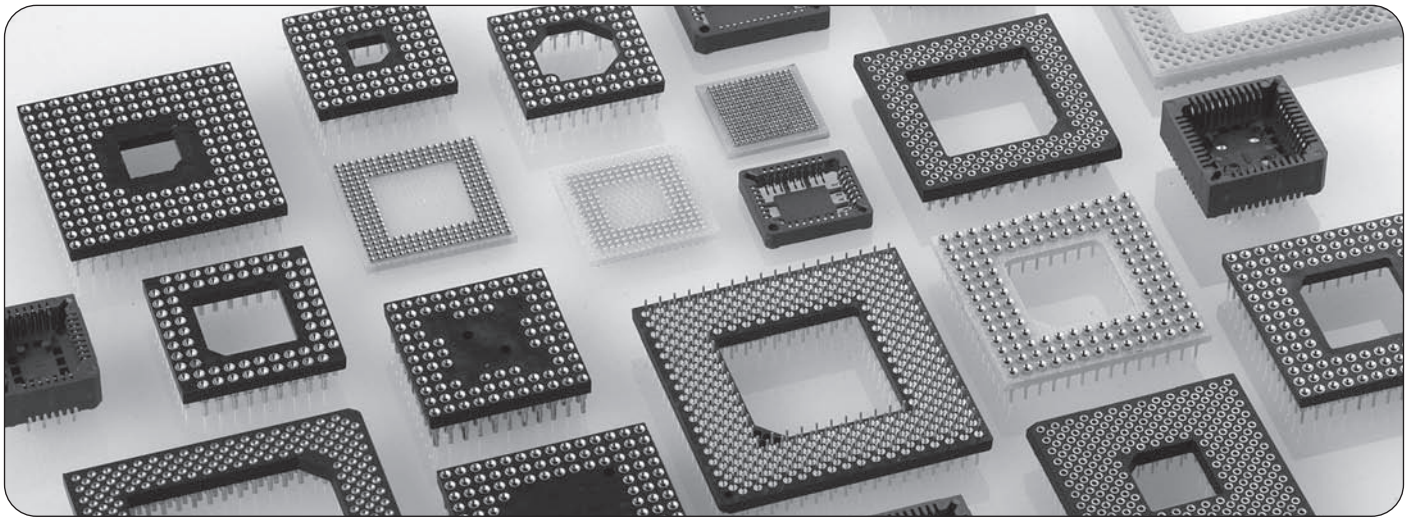
PGA / BGA / PLCC
General specifications



The values listed below are general specs applying for Preci-Dip PGA, BGA and PLCC sockets. Please see individual catalog page for additional and product specific technical data.

- Operating temperature range: -55 ... +125 °C
- Climatic category (IEC): 55/125/21
- Operating humidity range: annual mean 75 %
- Max working voltage: 100 V_{RMS}/150 V_{DC} (2.54 mm grid)

Preci-Dip sockets are recognized by Underwriters Laboratories Inc. and listed under "Connectors for Use in Data, Signal, Control and Power Applications", File Nr E174442.

Mechanical characteristics

- Clip retention: min. 40 N (no displacement under axial force applied)
- Contact retention: min. 3.3 N acc. to MIL-DTL-83734, pt 4.6.4.2

Electrical characteristics

- Insulation resistance between any two adjacent contacts: min 10'000 MΩ at 500 V AC (PLCC min. 5000 MΩ)
- Capacitance between any two adjacent contacts: max 1 pF (PLCC max. 2 pF)
- Self inductance per contact: max. 2 nH

Environmental characteristics

The sockets withstand the following environmental tests without mechanical and electrical defects :
- Dry heat steady state IEC 60512-11-9.11i / 60068-2-2.Bb: 125 °C, 16 h
- Damp heat cyclic IEC 60512-11-12.11m / 60068-2-30.Db: 25/55 °C, 90 – 100 %rH, 1 cycle of 24 h
- Cold steady state IEC 60512-11-10.11j / 60068-2-1.A: -55 °C, 2 h
- Thermal shock IEC 60512-11-4.11d / 60068-2-14.Na: -55/125 °C, 5 cycles 30 min
- Sinusoidal vibrations IEC 60512-6-4.6d / 60068-2-6.Fc: 10 to 500 Hz, 10 g, 1 octave/min, 10 cycles for each axis
- Shock IEC 60512-6-3.6c / 60068-2-27.Ea: 50 g, 11 ms, 3 shocks in three axis

During the above two tests no contact interruption >50 ns does appear.
- Solderability IEC 60068-2-20.Ta: 235 °C, 2 s
- Resistance to soldering heat IEC 60068-2-20.Tb:
  - Through hole mount components: 260 °C, 5 s
  - SMD mount components: 280 °C, 10 s
- Resistance to corrosion:
  1) Salt spray test IEC 60068-2-11.Ka: 48 h
  2) Sulfur dioxide (SO_2) test IEC 60068-2-42 Kc: 96 h at 25 ppm SO_2, 25 °C, 75 %rH
  3) Hydrogen sulfide (H_2S) test IEC 60068-2-43 Kd: 96 h at 12 ppm H_2S, 25 °C, 75 %rH

Solderless compliant Press-Fit sockets

- Press-fit characteristics measured acc. to IEC 60352-5:
  - Press-in force: 90 N max. (at min. hole dia.) / 65 N typ.
  - Push-out force: 30 N min. (at max. hole dia.) / 50 N typ.
  - Push-out 3rd cycle: 20 N min. (at max. hole dia.)
- PCB hole specifications:

Table 1 / 2.54 mm grid PGA

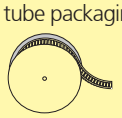
PCB surface finish	Tin	Copper	Gold over Nickel
Finished hole Ø	1 +0.09/-0.06 mm		
Drilled hole Ø	1.15 ± 0.025 mm		
Copper thickness	min. 25 µm		
Tin thickness	5-15 µm	-	-
Nickel thickness	-	-	2.5-5 µm
Gold thickness	-	-	0.05-0.2 µm

Table 2 / Interstitial PGA

PCB surface finish	Tin	Copper	Gold over Nickel
Finished hole Ø	0.7 +0.09/-0.06 mm		
Drilled hole Ø	0.8 ± 0.02 mm		
Copper thickness	min. 25 µm		
Tin thickness	5-15 µm	-	-
Nickel thickness	-	-	2.5-5 µm
Gold thickness	-	-	0.05-0.2 µm

Packaging

- Standard packaging for PGA, BGA and PLCC sockets is tube packaging
- SMD mount sockets available on request with Tape & Reel packaging acc. to EIA Standard 481. These products are marked with the symbol


T & R Packaging

Please consult **www.precidip.com** for availability, size of tape, size of reel, number of components per reel and packing units.

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Pin grid array sockets
Solder tail
Surface mount

Pin grid array sockets, standard solder version and surface mount with floating contacts

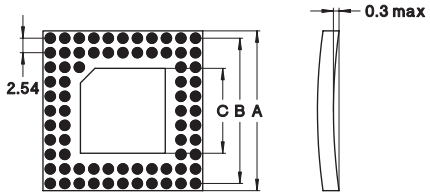
Technical Specs:

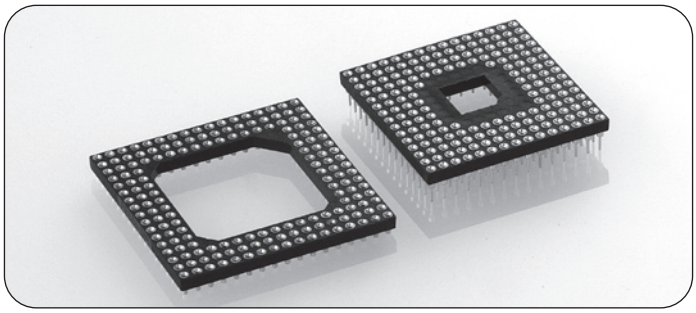
Insulator:	Black glass filled polyester PCT-GF30-FR
Flammability:	UL 94V-O
Sleeve:	Brass CuZn36Pb3 (C36000)
Contact clip (6 finger):	Beryllium copper (C17200)
Accepted pin Ø:	0.40 to 0.56 mm
Forces: – Insertion – Withdrawal	(polished steel gauge Ø 0.46 mm) 0.7 N typ. 0.4 N typ.
Mechanical life:	min 100 cycles
Rated current:	1 A
Contact resistance:	max 10 mΩ
Dielectric strength:	min 1000 V RMS

Dimensions

Calculate with n1 = number of contacts in one line and n2 = characteristic size of the window

A = n1x2.54
B = (n1-1)x2.54
C = (n2x2.54)-0.40





Ordering information

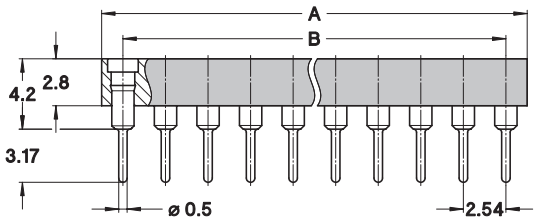
PP Plating code	Sleeve	Clip
97	**Tin**	**Gold flash**
91	Tin	Gold 0.25 µm
93	Tin	Gold 0.75 µm
99	Tin	Tin

Other plating on request see page 146 for plating specs

Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on pages 129 to 130.
For example a 17x17 pin configuration with window and 168 contacts as shown on page 130 becomes 510-91-**168-17-101**101

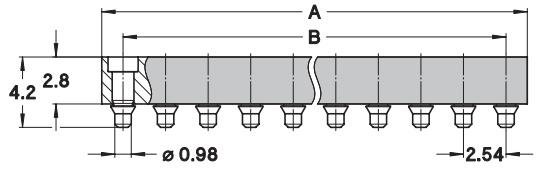
Options: please consult for availability

- PGA sockets with optional standoffs
- PGA sockets with solder tails, length 4.2 mm
- PGA sockets with low profile contacts and solder tails of 2.8 mm length
- PGA interconnect sockets with other contact lengths



510-**PP-NNN-XX-XXX**101

PGA sockets with standard solder tails, length 3.17 mm



514-**PP-NNN-XX-XXX**117

NEW

PGA sockets with self-aligning SMD floating contacts.

Contact diameter of soldering end 0.98 mm, allowing PCB pads as small as 1.1 mm

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Pin grid array sockets
Press-fit terminations

Pin grid array sockets, with compliant press-fit terminations

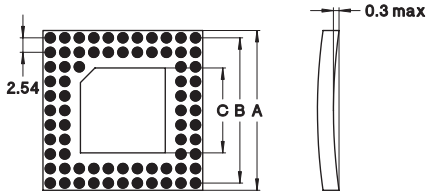
Technical Specs:

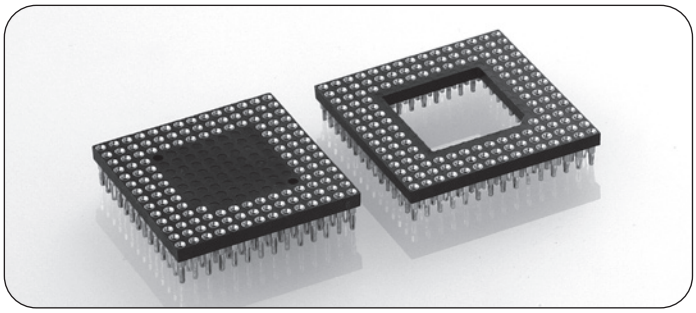
Insulator:	Black glass filled polyester PCT-GF30-FR
Flammability:	UL 94V-O
Sleeve:	Bronze CuSn4Pb4Zn4 (C54400)
Contact clip (6 finger):	Beryllium copper (C17200)
Accepted pin Ø:	0.40 to 0.56 mm
Forces: – Insertion – Withdrawal	(polished steel gauge Ø 0.46 mm) 0.7 N typ. 0.4 N typ.
Mechanical life:	min 100 cycles
Rated current:	1 A
Contact resistance:	max 10 mΩ
Dielectric strength:	min 1000 V RMS

Dimensions

Calculate with n1 = number of contacts in one line and n2 = characteristic size of the window

A = n1x2.54
B = (n1-1)x2.54
C = (n2x2.54)-0.40



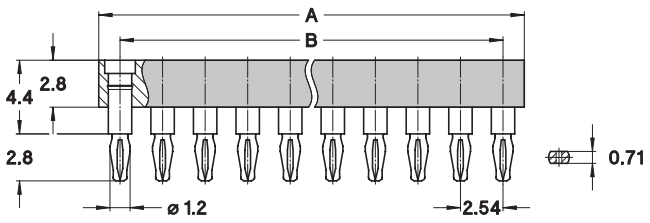


Ordering information

PP Plating code	Sleeve	Clip
97	**Tin**	**Gold flash**
91	Tin	Gold 0.25 µm
93	Tin	Gold 0.75 µm

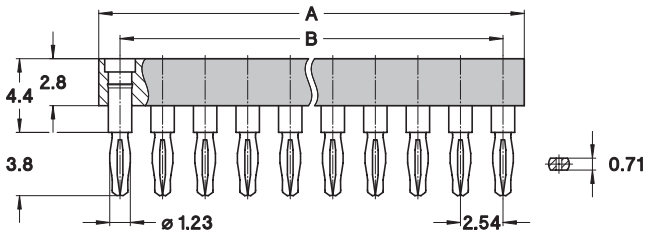
Other plating on request see page 146 for plating specs

Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on pages 129 to 130.
For example a 17x17 pin configuration with window and 168 contacts as shown on page 130 becomes 546-91-**168-17-101**136



546-**PP-NNN-XX-XXX**136

PGA sockets with solderless compliant press-fit terminations for 1.5 to 2.0 mm PCB thickness. Hole diameter 1 (+0.09/-0.06) mm after metallisation (Drill diameter 1.15±0.025 mm)



546-**PP-NNN-XX-XXX**135

PGA sockets with solderless compliant press-fit terminations for 2.1 to 3.2 mm PCB thickness. Hole diameter 1 (+0.09/-0.06) mm after metallisation (Drill diameter 1.15±0.025 mm)

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Pin grin array sockets
Interconnect pin and carriers

Pin grid array sockets, interconnect pin and carriers with disposable plastic body

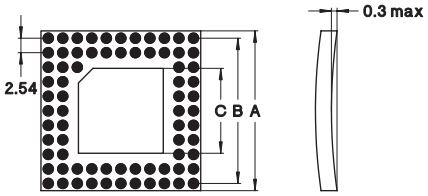
Technical Specs:

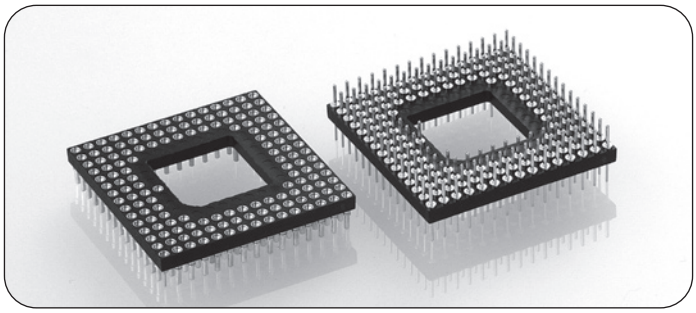
Insulator:	Black glass filled polyester PCT-GF30-FR
Flammability:	UL 94V-O
Sleeve / pin:	Brass CuZn36Pb3 (C36000)
Contact clip (3 finger):	Beryllium copper (C17200)
Accepted pin Ø:	0.40 to 0.56 mm
Forces: – Insertion – Withdrawal	(polished steel gauge Ø 0.46 mm) 0.8 N typ. 0.4 N typ.
Mechanical life:	min 100 cycles
Rated current:	1 A
Contact resistance:	max 10 mΩ
Dielectric strength:	min 1000 V RMS

Dimensions

Calculate with n1 = number of contacts in one line and n2 = characteristic size of the window

A = n1x2.54
B = (n1-1)x2.54
C = (n2x2.54)-0.40





Ordering information

PP Plating code/Series 550	Termination	Connecting pin
10	Gold 0.25 µm	Gold 0.25 µm
90	Tin	Tin

PP Plating code/Series 614	Sleeve	Clip
97	**Tin**	**Gold flash**
91	Tin	Gold 0.25 µm
93	Tin	Gold 0.75 µm

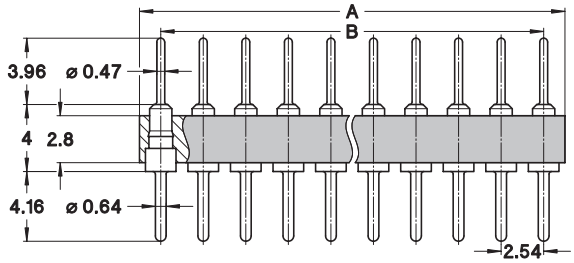
Other plating on request see page 146 for plating specs

Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on pages 129 to 130.
For example a 17x17 pin configuration with window and 168 contacts as shown on page 130 becomes 550-10-**168-17-101**101

Options: please consult for availability

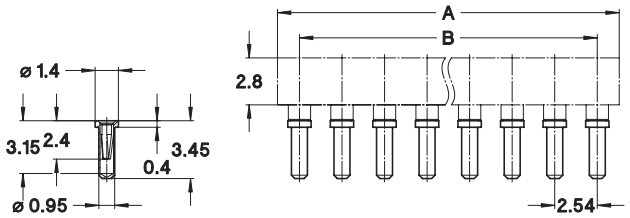
- PGA interconnect sockets with other contact lengths

- PGA carrier sockets with other contacts



550-**PP-NNN-XX-XXX**101

PGA interconnect sockets with through hole solder tails and connecting pin Ø 0.47 mm



614-**PP-NNN-XX-XXX**112

PGA carrier sockets with disposable plastic body.

Low profile ultra thin contacts with solder termination Ø 0.95 mm that requires Ø 1 mm holes in PCB

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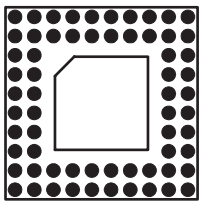
Pin grid array sockets
2.54 mm grid
Footprints
Top view

5x5
…-012-05-001…



10x10
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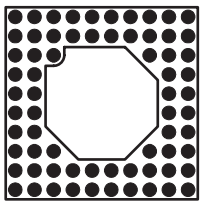

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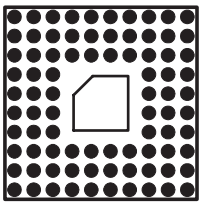

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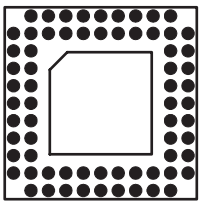
…-084-10-031…



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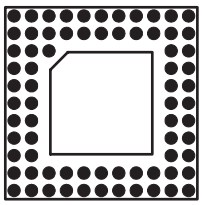

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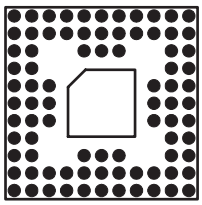
…-073-11-061…



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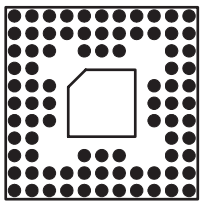

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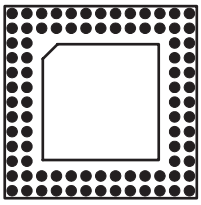

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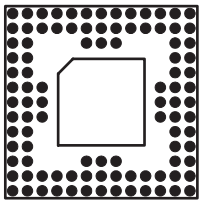

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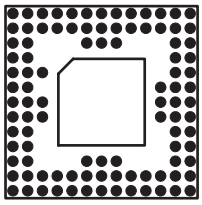

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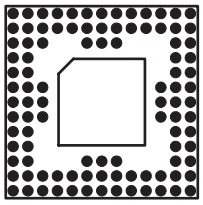

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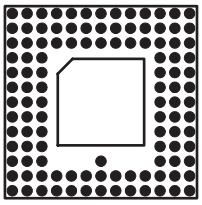

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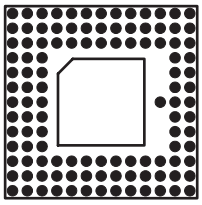

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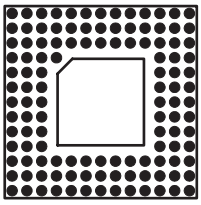

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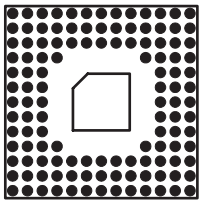

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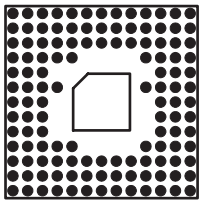

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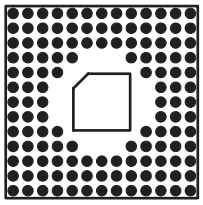

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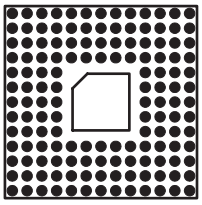

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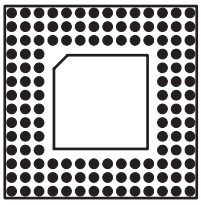
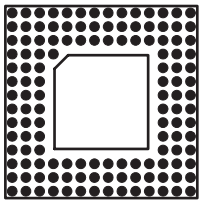


14x14
…-132-14-071…



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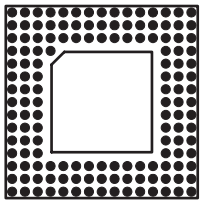

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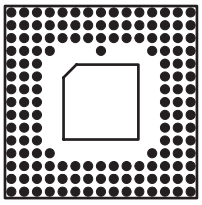

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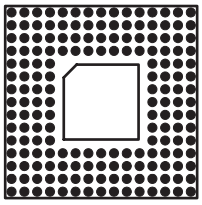

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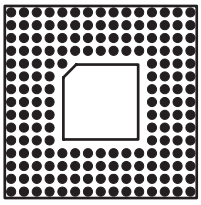

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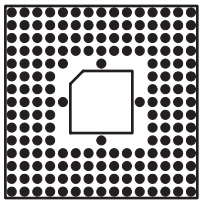
…-177-15-061…



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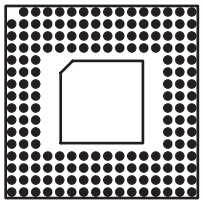

16x16
…-175-16-072…

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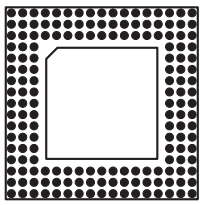
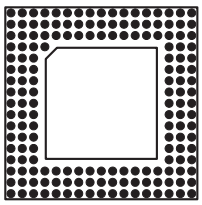
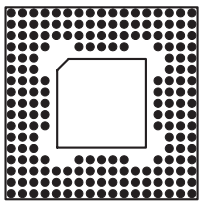
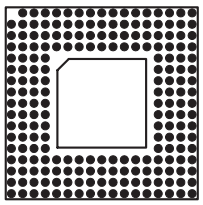
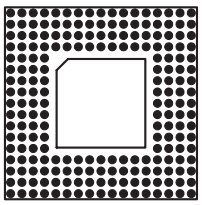
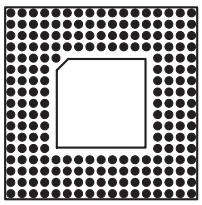
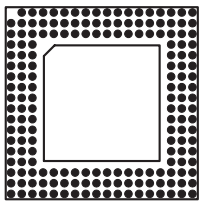
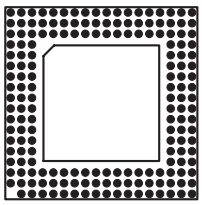
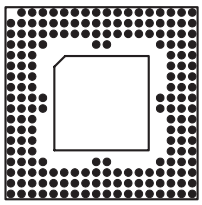
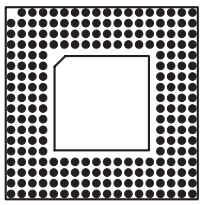
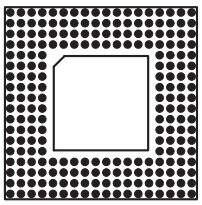
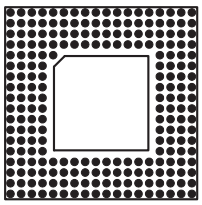
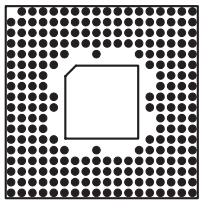
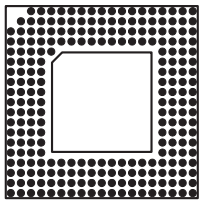
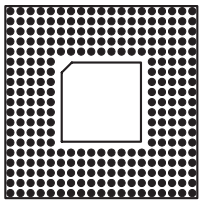
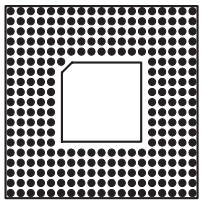
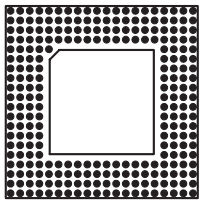
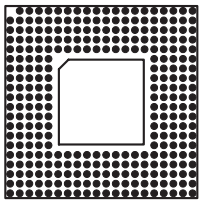
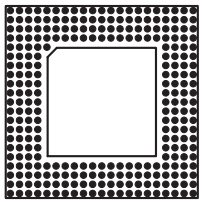
Pin grid array sockets
2.54 mm grid
Footprints
Top view

					
17x17 …-168-17-101…	**17x17** …-169-17-101…	**17x17** …-192-17-081…	**17x17** …-207-17-081…	**17x17** …-208-17-081…	**17x17** …-209-17-081…
					
18x18 …-179-18-111…	**18x18** …-179-18-112…	**18x18** …-191-18-091…	**18x18** …-223-18-091…	**18x18** …-224-18-091…	**18x18** …-225-18-091…
					
18x18 …-241-18-071…					
					
19x19 …-238-19-101…	**19x19** …-280-19-081…	**19x19** …-281-19-081…			
					
20x20 …-257-20-111…	**20x20** …-299-20-091…				
					
21x21 …-273-21-121…					

PGA / BGA / PLCC

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Pin grid array sockets
Interstitial
Solder tail / surface mount
Press-fit terminations

Pin grid array sockets with interstitial contact rows, solder tails, surface mount floating contacts and solderless compliant

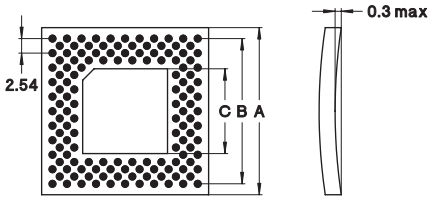
Technical Specs:

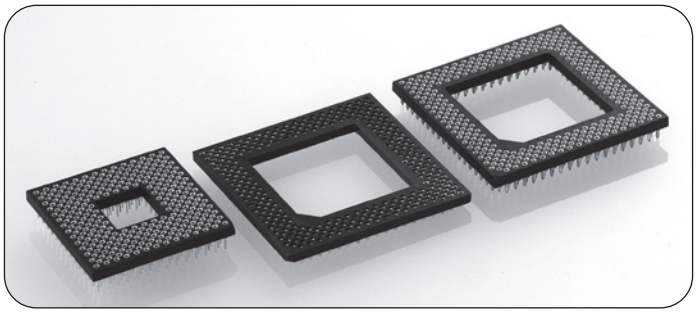
Insulator:	Black glass filled polyester PCT-GF30-FR
Flammability:	UL 94V-O
Sleeve:	Brass CuZn36Pb3 (C36000) (Bronze CuSn4Pb4Zn4 (C54400) for press-fit contacts)
Contact clip (6 finger):	Beryllium copper (C17200)
Accepted pin Ø:	0.40 to 0.56 mm
Forces: – Insertion – Withdrawal	(polished steel gauge Ø 0.46 mm) 0.4 N typ. 0.2 N typ.
Mechanical life:	min 100 cycles
Rated current:	1 A
Contact resistance:	max 10 mΩ
Dielectric strength:	min 700 V RMS

Dimensions

Calculate with n1 = number of contacts on the external row and n2 = characteristic size of the window

A = (n1x2.54)+1.30
B = (n1-1)x2.54
C = (n2x2.54)-0.40





Ordering information

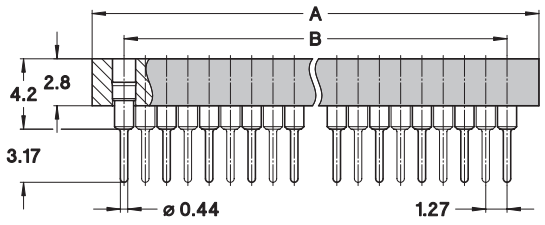
PP Plating code	Sleeve	Clip
97	Tin	Gold flash
91	Tin	Gold 0.25 µm
93	Tin	Gold 0.75 µm

Other plating on request see page 146 for plating specs

Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on pages 133 to 134. For example a 19x19 pin configuration with window and 296 contacts as shown on page 133 becomes 517-91-**296-19-131**111

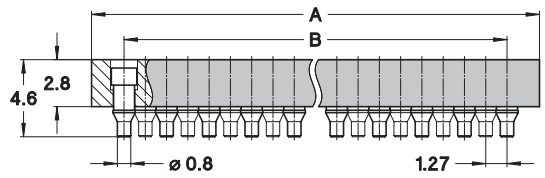
Options: please consult for availability

- PGA sockets with optional standoffs



517-**PP-NNN-XX-XXX**111

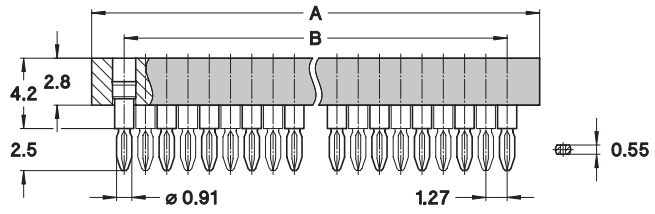
Interstitial PGA sockets with through hole solder tails, length 3.17 mm



514-**PP-NNN-XX-XXX**154

Interstitial PGA sockets with self-aligning SMD floating contacts.

Contact diameter of soldering end 0.8 mm allowing PCB pads with 0.9 mm diameter



546-**PP-NNN-XX-XXX**147

Interstitial PGA sockets with solderless compliant press-fit terminations for 1.2 to 2.5 mm PCB thickness.

Hole diameter 0.7 (+0.07/-0.05) mm after metallisation (Drill diameter 0.85±0.025 mm)

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Pin grid array sockets
Interstitial
Interconnect pin and carrier

Pin grid array sockets with intersitial contact rows, interconnect pin and carriers with disposable plastic body

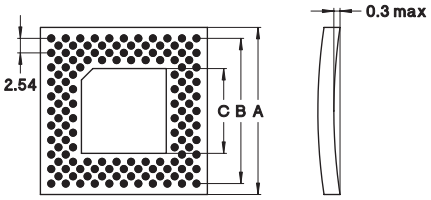
Technical Specs:

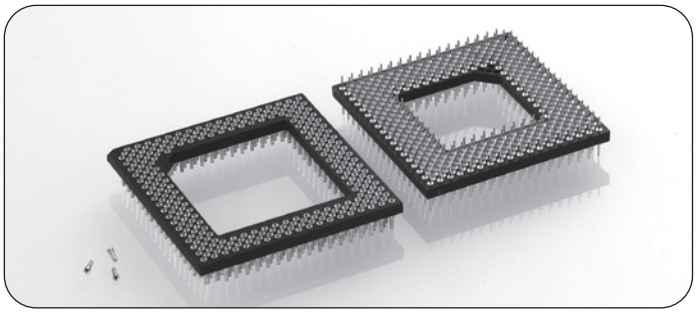
Insulator:	Black glass filled polyester PCT-GF30-FR
Flammability:	UL 94V-O
Sleeve / pin:	Brass CuZn36Pb3 (C36000)
Contact clip (3 finger):	Beryllium copper (C17200)
Accepted pin Ø:	0.40 to 0.56 mm
Forces: – Insertion – Withdrawal	(polished steel gauge Ø 0.46 mm) 0.3 N typ. 0.15 N typ.
Mechanical life:	min 100 cycles
Rated current:	1 A
Contact resistance:	max 10 mΩ
Dielectric strength:	min 700 V RMS

Dimensions

Calculate with n1 = number of contacts on the external row and n2 = characteristic size of the window

A = (n1x2.54)+1.30
B = (n1-1)x2.54
C = (n2x2.54)-0.40





Ordering information

PP Plating code/Series 550	Termination	Connecting pin
10	Gold 0.25 µm	Gold 0.25 µm
90	Tin	Tin

PP Plating code/Series 614	Sleeve	Clip
97	**Tin**	**Gold flash**
91	Tin	Gold 0.25 µm
93	Tin	Gold 0.75 µm

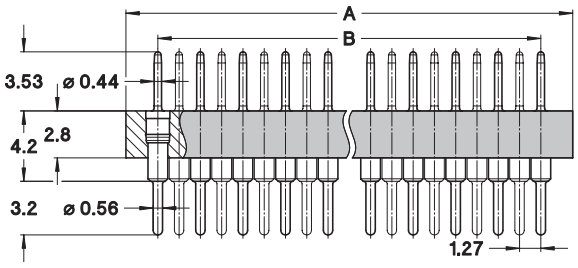
Other plating on request see page 146 for plating specs

Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on pages 133 to 134.
For example a 19x19 pin configuration with window and 296 contacts as shown on page 133 becomes 550-10-**296-19-131**135

Options: please consult for availability

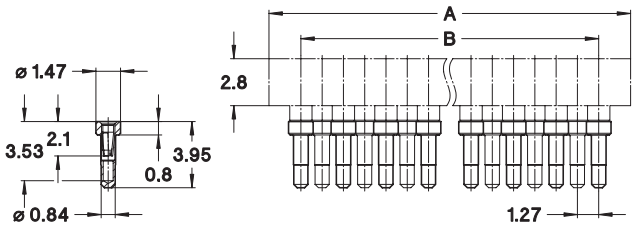
- PGA pin header interconnect sockets with other contact lengths

- PGA carrier sockets with other contacts



550-**PP-NNN-XX-XXX**135 NEW

Interstitial PGA interconnect sockets with through hole solder tails and connecting pin Ø 0.44 mm



614-**PP-NNN-XX-XXX**144

Interstitial PGA carrier sockets with disposable plastic body and low profile, ultra-thin contacts with Ø 0.84 mm that requires Ø min 0.9 mm PCB holes

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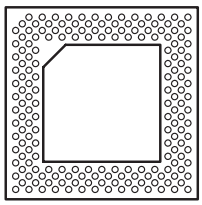
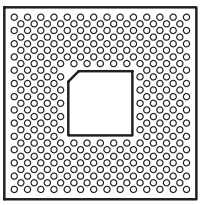
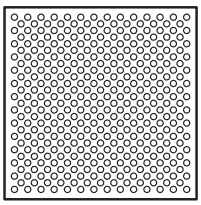
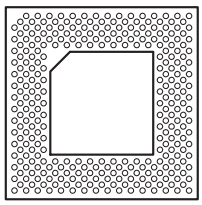
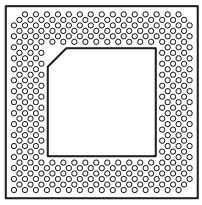
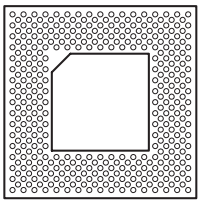
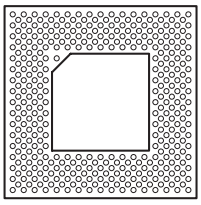
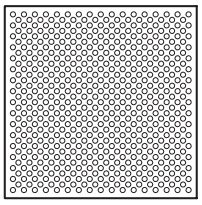
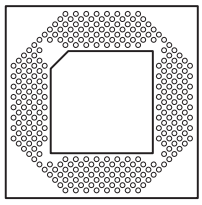
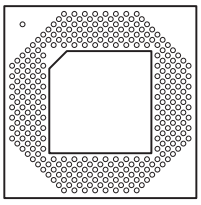
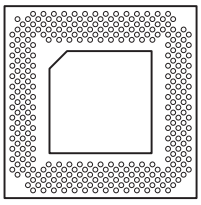
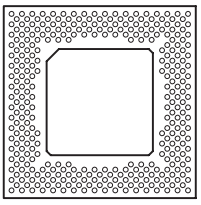
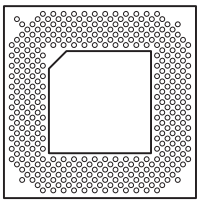
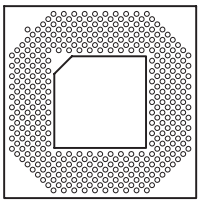
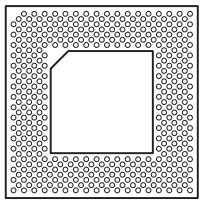
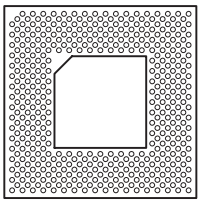
Pin grid array sockets
Interstitial
Footprints
Top view

					
14x14 …-183-14-091…	**14x14** …-304-14-051…	**14x14** …-365-14-000…			
					
16x16 …-299-16-091…					
					
17x17 …-321-17-101…	**17x17** …-364-17-091…	**17x17** …-365-17-091…	**17x17** …-545-17-000…		
					
18x18 …-280-18-101…	**18x18** …-293-18-101…	**18x18** …-305-18-101…	**18x18** …-325-18-111…	**18x18** …-361-18-101…	**18x18** …-369-18-091…
					
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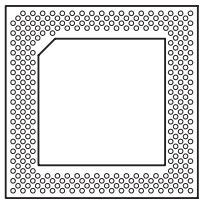	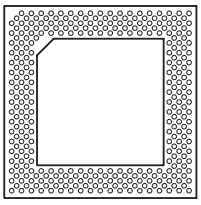	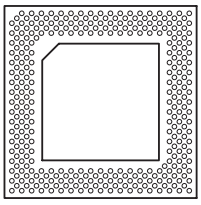	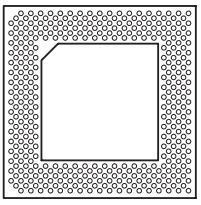	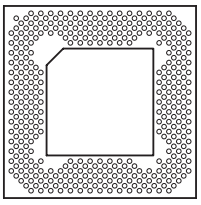	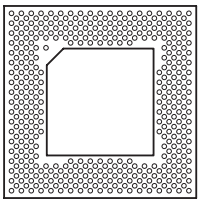
19x19 …-296-19-131…	**19x19** …-320-19-131…	**19x19** …-321-19-121…	**19x19** …-370-19-121…	**19x19** …-372-19-111…	**19x19** …-401-19-111…

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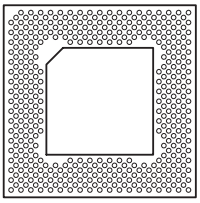
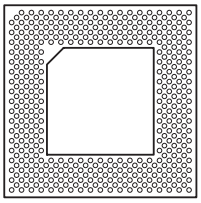
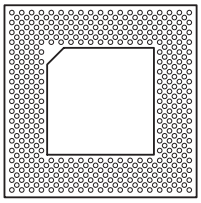
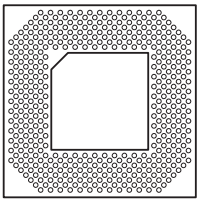
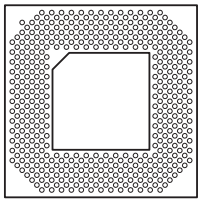
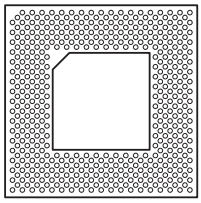
Pin grid array sockets
Interstitial
Footprints
Top view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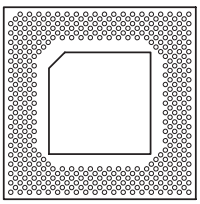	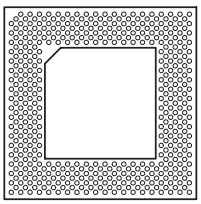	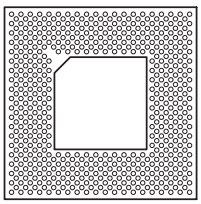	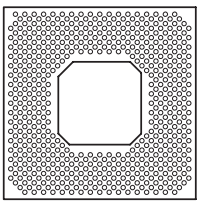		
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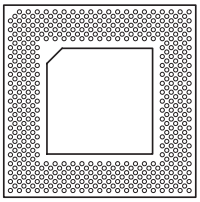
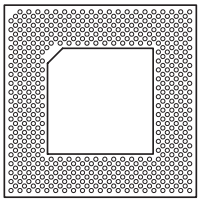
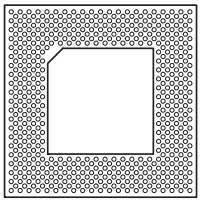
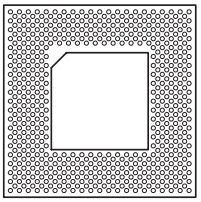
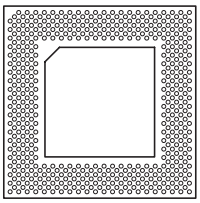
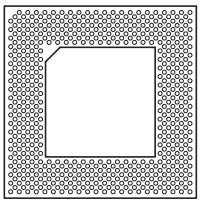
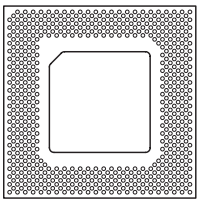
					
21x21 …-475-21-121…	**21x21** …-528-21-121…	**21x21** …-529-21-121…	**21x21** …-565-21-111…		
					
22x22 …-503-22-131…	**22x22** …-559-22-131…				
					
24x24 …-599-54-131…					

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PRECI-DIP DURTAL
CONNECTION TECHNOLOGY

Series
518
558

Micro Pin grid array sockets
1.27 mm grid
Solder tail / surface mount
Interconnect pin

Micro pin grid array sockets (µPGA), with contacts placed on 1.27 mm grid, solder tail, surface mount and interconnect pin

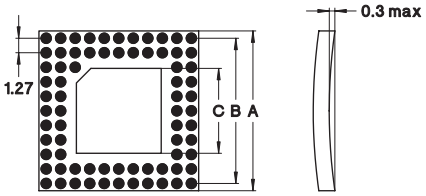
Technical Specs:

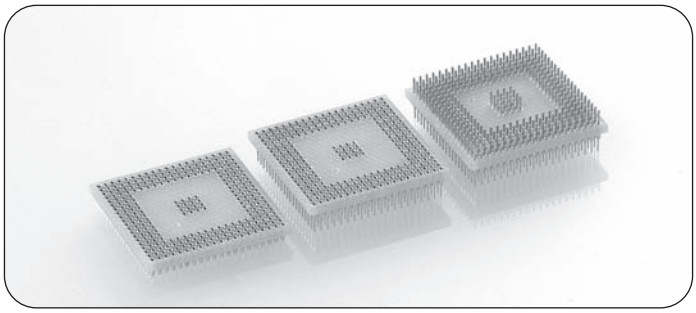
Insulator:	Glass-epoxy laminate FR4
Flammability:	UL 94V-O
Sleeve / pin:	Brass CuZn36Pb3 (C36000)
Contact clip (6 finger):	Beryllium copper (C17200)
Accepted pin Ø:	0.30 to 0.35 mm
Forces: – Insertion – Withdrawal	(polished steel gauge Ø 0.3 mm) 0.2 N typ. 0.15 N typ.
Mechanical life:	min 100 cycles
Rated current:	1 A
Contact resistance:	max 10 mΩ
Dielectric strength:	min 500 V RMS

Dimensions

Calculate with n1 = number of contacts in one line and n2 = characteristic size of the window

A = (n1x1.27)+1.27
B = (n1-1)x1.27
C = (n2x1.27)-0.40





Ordering information

PP Plating code/Series 518	Sleeve	Clip
97	**Tin**	**Gold flash**
91	Tin	Gold 0.25 µm
77	Gold 0.25 µm	Gold 0.25 µm

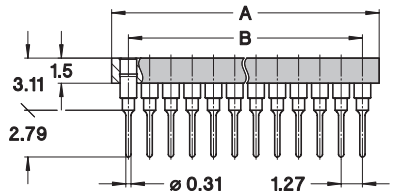
PP Plating code/Series 558	Termination	Connecting pin
10	Gold 0.25 µm	Gold 0.25 µm

Other plating on request see page 146 for plating specs

Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on page 138. For example a 26x26 pin configuration with window and 478 contacts as shown on page 138 becomes 518-77-**478**M**26-131**105

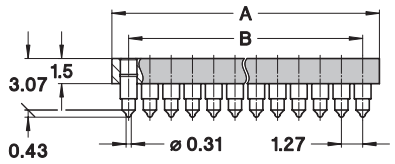
Options: please consult for availability

- µPGA interconnect headers for SMD mount



518-**PP-NNN**M**XX-XXX**105 NEW

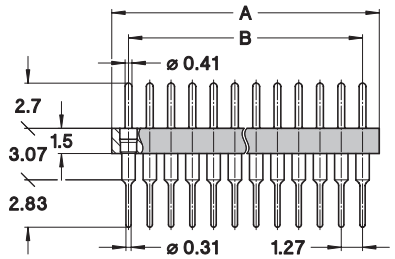
µPGA sockets 1.27 mm grid with through hole solder tails, length 2.79 mm



518-**PP-NNN**M**XX-XXX**106 NEW

µPGA sockets 1.27 mm grid, surface mount.

Contact diameter of soldering end 0.31 mm allowing PCB pads with 0.4 mm diameter



558-**PP-NNN**M**XX-XXX**101 NEW

µPGA 1.27 mm grid, interconnect sockets with through hole solder tail and connecting pin Ø 0.31 mm

PGA / BGA / PLCC

Due to technical progress, all the information provided is subject to change without prior notice

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Ball grid array sockets
1.27 mm grid
Surface mount
Socket and adapter

Ball grid array sockets and adapters, surface mount

Technical Specs:

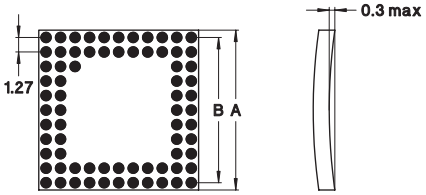
Insulator:	Glass-epoxy laminate FR4
Flammability:	UL 94V-O
Sleeve / pin:	Brass CuZn36Pb3 (C36000)
Contact clip (4 finger):	Beryllium copper (C17200)
Accepted pin Ø:	0.36 to 0.46 mm
Forces: – Insertion – Withdrawal	(polished steel gauge Ø 0.43 mm) 0.3 N typ. 0.15 N typ.
Mechanical life:	min 100 cycles
Rated current:	1 A
Contact resistance:	max 10 mΩ
Dielectric strength:	min 500 V RMS

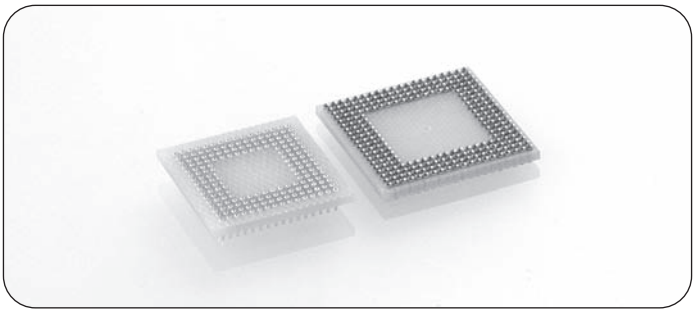
Dimensions

Calculate with n1 = number of contacts in one line

for sockets
A = (n1x1.27)+1.27
B = (n1-1)x1.27

for adapters
A = (n1x1.27)+3.27
B = (n1-1)x1.27





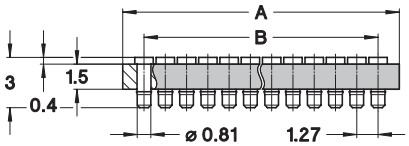
Ordering information

PP Plating code/Series 514	Sleeve	Clip
91	Tin	Gold 0.25 µm
93	Tin	Gold 0.75 µm

PP Plating code/Series 550	Termination	Connecting pin
10	Gold 0.25 µm	Gold 0.25 µm

Other plating on request see page 146 for plating specs

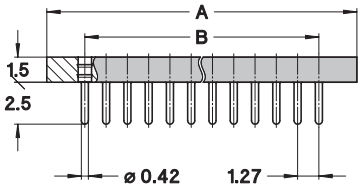
Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on page 138. For example a 20x20 pin configuration with 256 contacts as shown on page 138 becomes 514-91-**256**M**20-001**148



514-**PP-NNN**M**XX-XXX**148

BGA sockets 1.27 mm grid with self-aligning surface mount floating contacts.

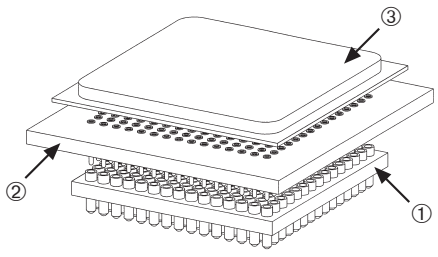
Same foot print as the BGA device, to mate with the corresponding adapter



550-**PP-NNN**M**XX-XXX**166

BGA adapter 1.27 mm grid pluggable into the corresponding socket. Connecting pin Ø 0.42 mm.

BGA device is SMD soldered on the solder pads



BGA socket and adapter systems are the reliable solution to make BGAs pluggable :

- the BGA socket Series 514 ① is soldered to the PCB in place of the BGA device and using the same footprint
- the BGA device ③ is soldered to the adapter Series 550 ②
- the BGA + adapter sub-assembly is plugged into the socket

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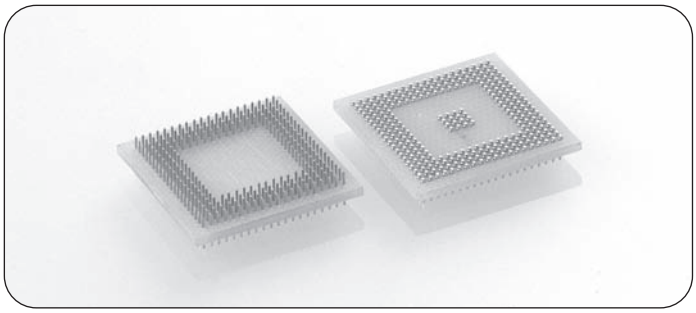
Ball grid array sockets
1.27 mm grid
Interconnect pin
Solder tail / surface mount

Ball grid array interconnect pin, through hole solder tail and surface mount

Technical Specs:

Insulator:	Glass-epoxy laminate FR4
Flammability:	UL 94V-O
Contact:	Brass CuZn36Pb3 (C36000)
Mechanical life:	min 100 cycles
Rated current:	1 A
Contact resistance:	max 10 mΩ
Dielectric strength:	min 500 V RMS



Ordering information

PP Plating code	Termination	Connecting pin
10	Gold 0.25 µm	Gold 0.25 µm

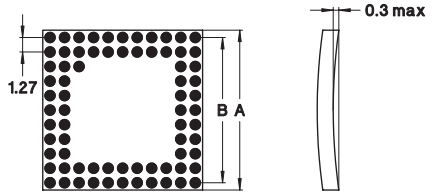
Other plating on request see page 146 for plating specs

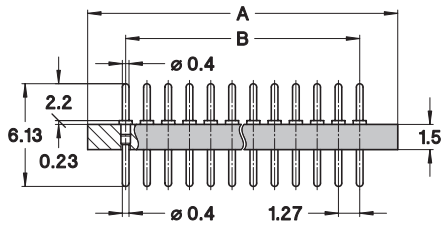
Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on page 138. For example a 20x20 pin configuration with 256 contacts as shown on page 138 becomes 550-10-**256**M**20-001**152

Dimensions

Calculate with n1 = number of contacts in one line

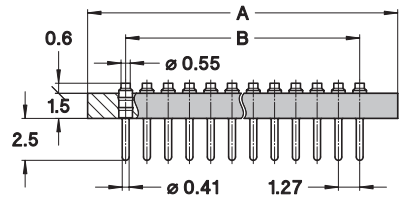
A = (n1x1.27)+3.27
B = (n1-1)x1.27





550-**PP-NNN**M**XX-XXX**152 NEW

BGA interconnect sockets 1.27 mm grid, through hole solder tails and connecting pin Ø 0.40 mm



558-**PP-NNN**M**XX-XXX**104

BGA interconnect sockets 1.27 mm grid, with surface mount terminations and connecting pin Ø 0.41 mm

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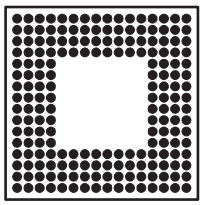
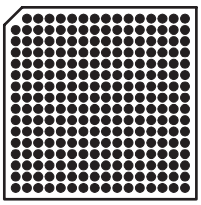
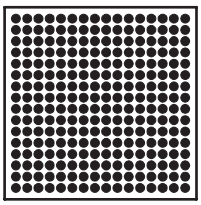
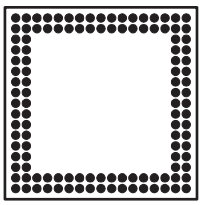
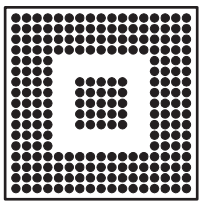
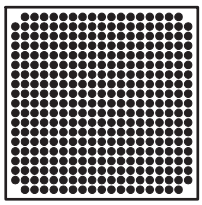
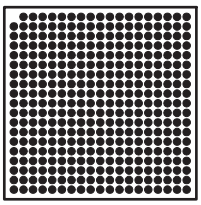
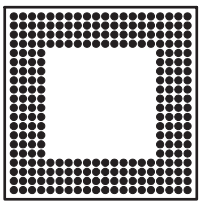
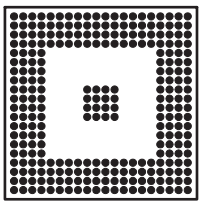
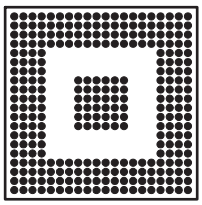
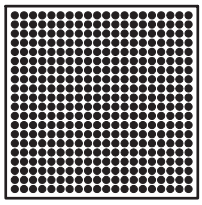
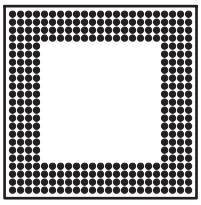
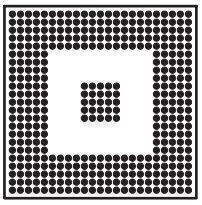
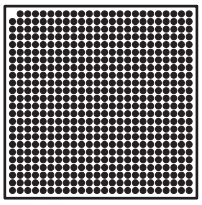
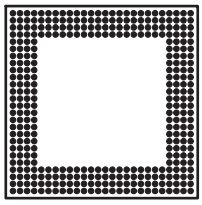
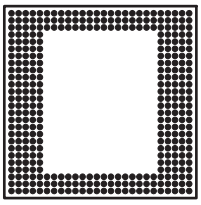
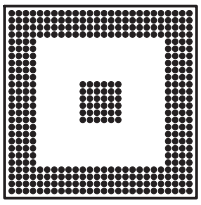
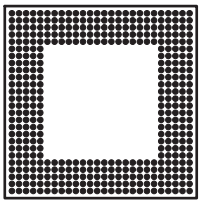
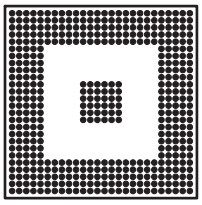
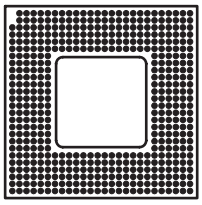
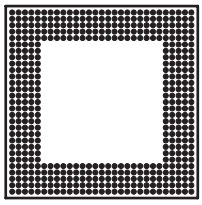
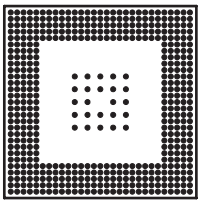
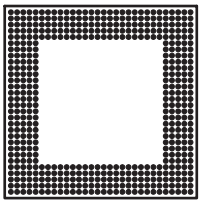
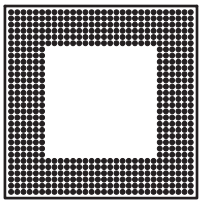
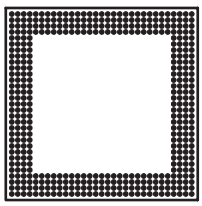
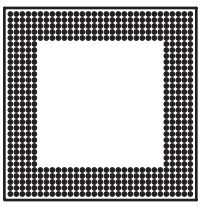
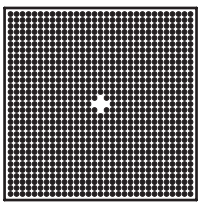
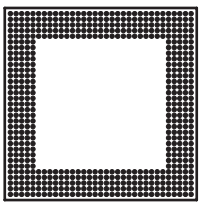
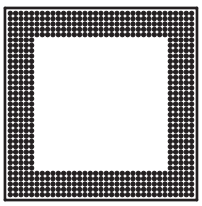
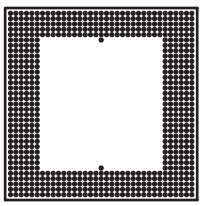
Ball/Pin grid array sockets
1.27 mm grid
Footprints
Top view

					
16x16 …-192M16-001…	**16x16** …-255M16-001…	**16x16** …-256M16-001…		**17x17** …-120M17-001…	**17x17** …-233M17-001…
					
19x19 …-357M19-001…	**19x19** …-360M19-001…		**20x20** …-256M20-001…	**20x20** …-272M20-001…	**20x20** …-292M20-001…
					
20x20 …-400M20-000…		**23x23** …-304M23-001…	**23x23** …-385M23-001…		**24x24** …-575M24-001…
					
26x26 …-352M26-001…	**26x26** …-356M26-001…	**26x26** …-388M26-001…	**26x26** …-420M26-001…	**26x26** …-456M26-001…	**26x26** …-478M26-131…
					
29x29 …-480M29-001…	**29x29** …-504M29-001…		**30x30** …-500M30-001…	**30x30** …-576M30-001…	
					
31x31 …-432M31-001…	**31x31** …-520M31-001…	**31x31** …-956M31-001…	**33x33** …-560M33-001…	**35x35** …-600M35-001…	**35x35** …-652M35-001…

PRECI-DIP DURTAL SA CH-2800 Delémont / Switzerland
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Ball grid array sockets
1 mm grid
Surface mount socket, adapter
Interconnect pin

Ball grid array sockets and adapter surface mount

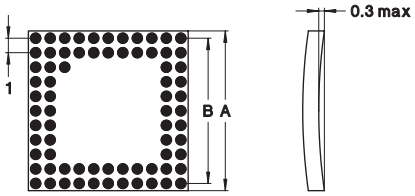
Technical Specs:

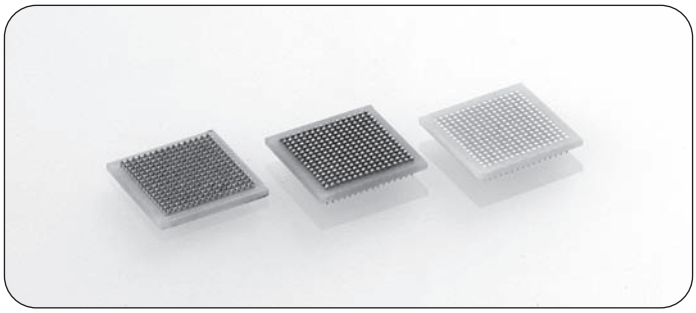
Insulator:	Glass-epoxy laminate FR4
Flammability:	UL 94V-O
Sleeve / pin:	Brass CuZn36Pb3 (C36000)
Contact clip (3 finger):	Beryllium copper (C17200)
Accepted pin Ø:	0.20 to 0.30 mm
Forces: – Insertion – Withdrawal	(polished steel gauge Ø 0.25 mm) 0.4 N typ. 0.2 N typ.
Mechanical life:	min 100 cycles
Rated current:	1 A
Contact resistance:	max 10 mΩ
Dielectric strength:	min 500 V RMS

Dimensions

Calculate with n1 = number of contacts in one line

A = n1+2.81
B = n1-1





Ordering information

PP Plating code/Series 514	Sleeve	Clip
11	Gold 0.25 µm	Gold 0.25 µm

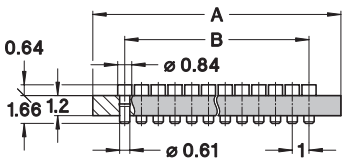
PP Plating code/Series 558	Termination	Connecting pin
10	Gold 0.25 µm	Gold 0.25 µm

Other plating on request see page 146 for plating specs

Please consult for complete part number and available footprints

Options: please consult for availability

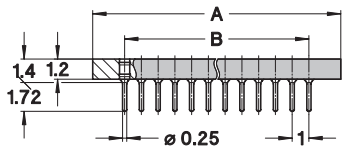
- Through hole adapter



514-**PP-NNN**P**XX-XXX**159 NEW

BGA sockets 1 mm grid surface mount.

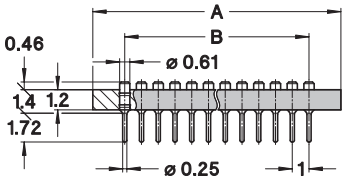
Same foot print as the BGA device to mate with the corresponding adapter



558-**PP-NNN**P**XX-XXX**102 NEW

BGA adapter 1 mm grid pluggable into the corresponding socket. Connecting pin Ø 0.25 mm.

BGA device is SMD soldered on the solder pads



558-**PP-NNN**P**XX-XXX**103 NEW

BGA interconnect sockets 1 mm grid with surface mount terminations and connecting pin Ø 0.25 mm

PGA / BGA / PLCC

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Ball/Pin grid array sockets
Part number identification

Type of socket

Standard PGA, Interstitial PGA and µPGA		Page
510-...01	Solder pin 2.54 mm grid	126
514-...34	SMD 2.54 mm grid	126
514-...54	SMD interstitial	131
517-...11	Solder pin interstitial	131
518-...05	Solder pin 1.27 mm grid	135
518-...06	SMD 1.27 mm grid	135
546-...35	Press-fit 2.54 mm, PCB 2.1-3.2 mm	127
546-...36	Press-fit 2.54 mm, PCB 1.5-2.0 mm	127
546-...47	Press-fit interstitial	131
550-...01	Interconnect, solder pin, 2.54 mm grid	128
550-...35	Interconnect, solder pin, interstitial	132
558-...01	Interconnect, solder pin, 1.27 mm grid	135
614-...12	Carrier 2.54 mm grid	128
614-...44	Carrier interstitial	132
BGA		
514-...48	Socket SMD, 1.27 mm grid	136
514-...59	Socket SMD, 1 mm grid	139
550-...66	Adapter, 1.27 mm grid	136
550-...52	Interconnect, solder pin, 1.27 mm grid	137
558-...02	Adapter, 1 mm grid	139
558-...03	Interconnect SMD, 1 mm grid	139
558-...04	Interconnect SMD, 1.27 mm grid	137

XXX – PP – NNN X XX – XXX 1 XX

Plating code

Plating code	Sleeve	Clip
77	Gold flash	Gold flash
91	Tin	Gold 0.25 µm
93	Tin	Gold 0.75 µm
97	Tin	Gold flash
99	Tin	Tin
	Termination	**Connecting pin**
10	Gold 0.25 µm	Gold 0.25 µm
90	Tin	Tin

Total number of pins

Size of body

Size of window and footprint

Grid:
- **–** 2.54 mm or interstitial
- **M** 1.27 mm grid
- **P** 1 mm grid

See pages 129, 130, 133, 134 and 138 for most popular footprints

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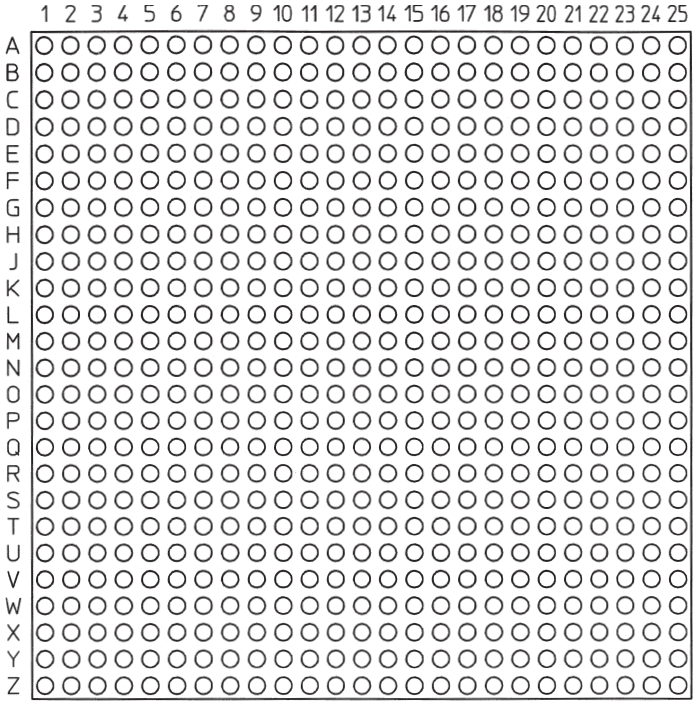
PRECI-DIP DURTAL
CONNECTION TECHNOLOGY

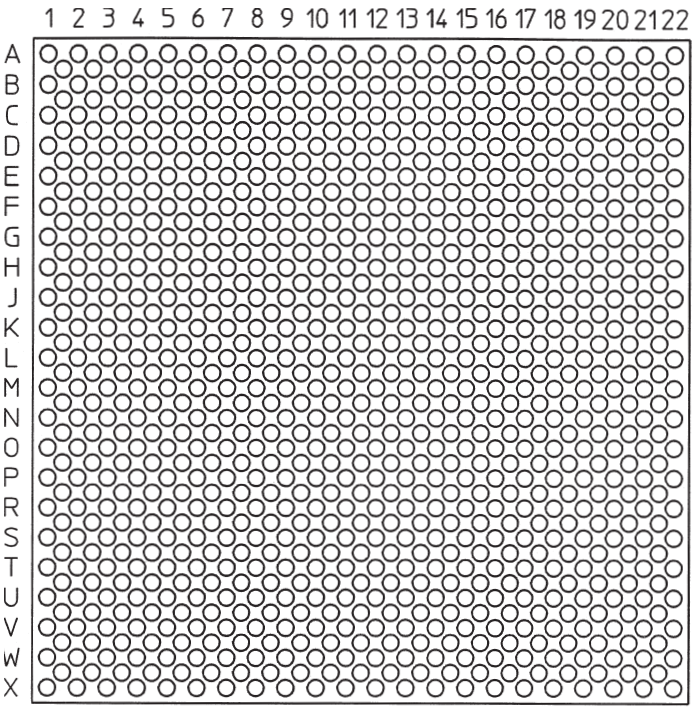
Ball/Pin grid array sockets
Custom grid design

If the desired footprint does not exist in this catalogue, please photocopy this page, complete it and send it to your PRECI-DIP distributor.

Your address



Top view



Ordering information

Type of socket (see opposite page)

Plating code PP (see opposite page)

Grid

- **Standard 2.54 mm**
- **Interstitial**
- **1.27 mm**
- **1 mm**

Size of body

x

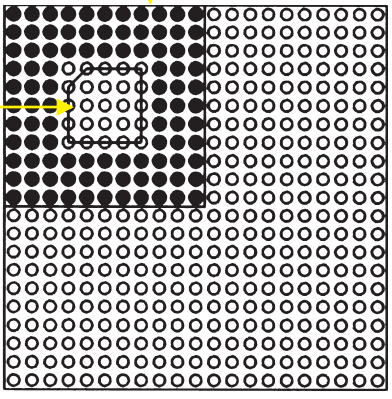
Semiconductor device used

Quantity

Example

Fill in the position of pins

Mark of the window



PGA / BGA / PLCC

Due to technical progress, all the information provided is subject to change without prior notice

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PRECI-DIP DURTAL
CONNECTION TECHNOLOGY

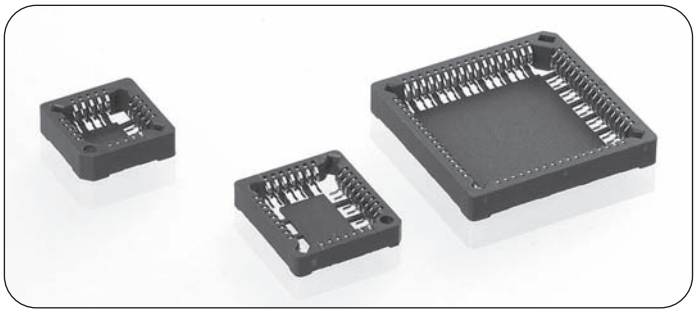
Series 540

Sockets for Plastic Leaded Chip Carriers (PLCC)
SMT terminations

Series 540 PLCC sockets with SMT terminations come with square sizes for IC-packages according to JEDEC MO-047, rectangular size (32) according to JEDEC MO-052 = low profile

Technical Specs:

Insulator:	Glass filled thermoplastic PPS-GF30-FR
Flammability:	UL 94V-O
Contact:	Phosphor bronze
Contact pressure:	min 1.5 N per contact
Mechanical life:	min 50 cycles
Rated current:	1 A
Contact resistance:	max 20 mΩ
Dielectric strength:	min 600 V RMS
Insulation resistance:	min 5000 MΩ
Capacitance:	max 2 pF
Coplanarity SMD terminations:	max 0.1 mm



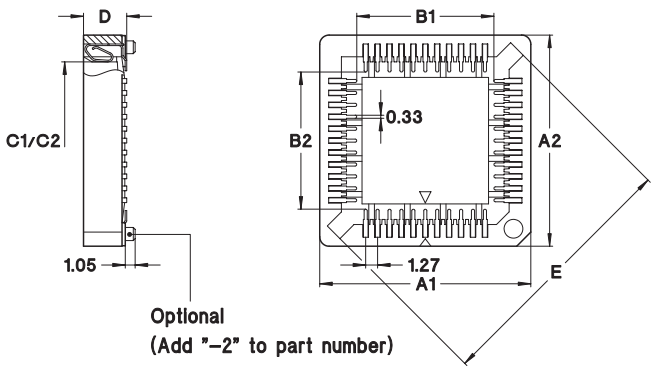
Ordering information

PP Plating code	Termination	Contact
99	Tin	Tin

Option: parts with positioning pegs add suffix **-2** to part number

Tape & Reel packaging:
add suffix **-TR** to part number

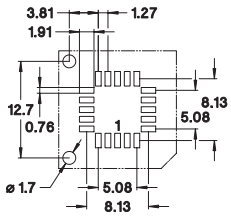
See page 125
T & R Packaging



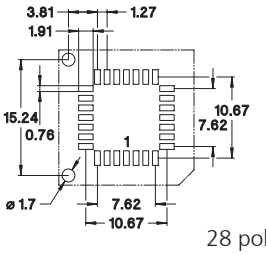
No. of poles	A1/ A2	B1/ B2	C1/ C2	D	E	Order Codes
20	14.86	7.02	9.20	4.60	16.00	540-**PP**-020-17-400
28	17.34	9.50	11.76	4.60	19.70	540-**PP**-028-17-400
32*	16.95/ 19.50	9.40/ 11.90	11.60/ 14.20	3.80	22.00	540-**PP**-032-17-400
44	22.42	14.50	16.70	4.60	27.00	540-**PP**-044-17-400
52	25.40	17.24	19.46	4.60	30.80	540-**PP**-052-17-400
68	30.54	22.26	24.40	4.60	37.65	540-**PP**-068-17-400
84	35.56	27.34	29.58	4.60	45.10	540-**PP**-084-17-400

* rectangular

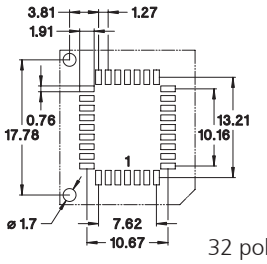
PCB layout Series 540, SMD types



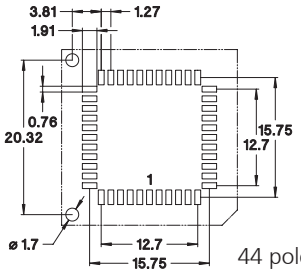
20 poles



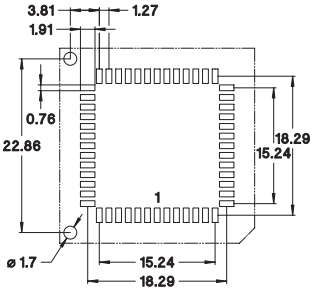
28 poles



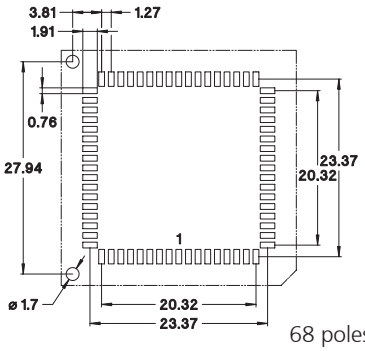
32 poles



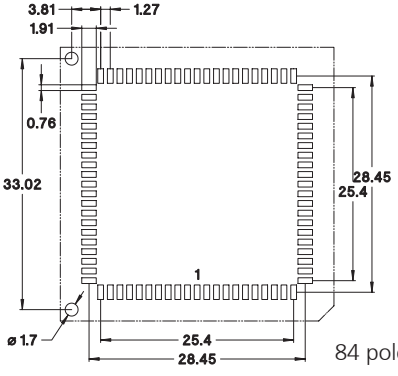
44 poles



52 poles



68 poles



84 poles

PGA / BGA / PLCC

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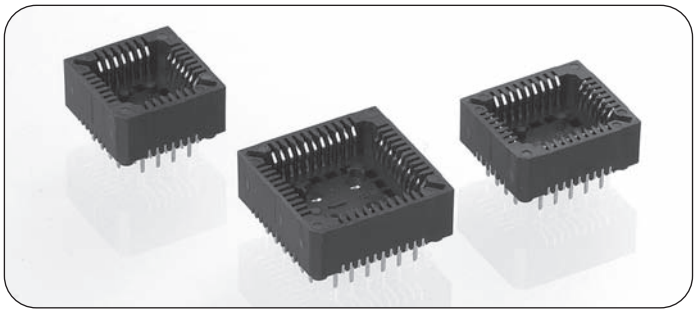
Sockets for Plastic Leaded Chip Carriers (PLCC)

Solder tail

Series 540 PLCC sockets, solder tail, with precision stamped contacts providing component retention thanks to positive spring action

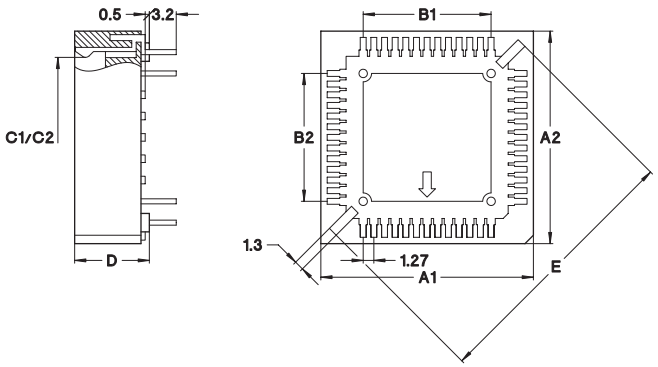
Technical Specs:

Insulator:	Glass filled thermoplastic PPS-GF40-FR
Flammability:	UL 94V-O
Contact:	Phosphor bronze
Contact pressure:	min 1.5 N per contact
Mechanical life:	min 50 cycles
Rated current:	2 A
Contact resistance:	max 20 mΩ
Dielectric strength:	min 600 V RMS
Insulation resistance:	min 5000 MΩ
Capacitance:	max 2 pF



Ordering information

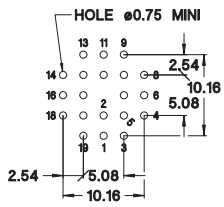
PP Plating code	Termination	Contact
99	Tin	Tin



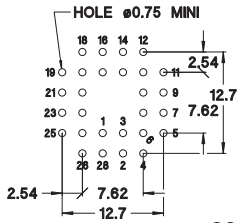
No. of poles	A1/ A2	B1/ B2	C1/ C2	D	E	Order Codes
20	14.98	5.08	9.14	9.10	16.88	540-**PP**-020-24-000-1
28	17.52	7.62	11.78	9.10	20.45	540-**PP**-028-24-000-1
32*	17.42/ 19.98	7.62/ 10.16	11.78/ 14.32	8.40	22.20	540-**PP**-032-24-000-1
44	22.60	12.70	16.76	8.40	27.20	540-**PP**-044-24-000-1
52	25.15	15.24	19.30	8.40	30.80	540-**PP**-052-24-000-1
68	30.22	20.32	24.38	9.10	37.30	540-**PP**-068-24-000-1
84	35.31	25.40	29.46	9.10	44.50	540-**PP**-084-24-000-1

* rectangular

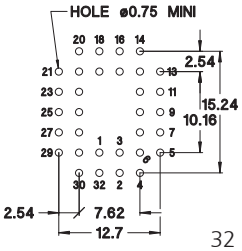
PCB hole patterns Series 540, thru-hole types



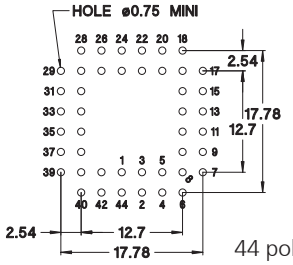
20 poles



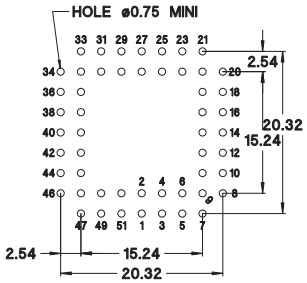
28 poles



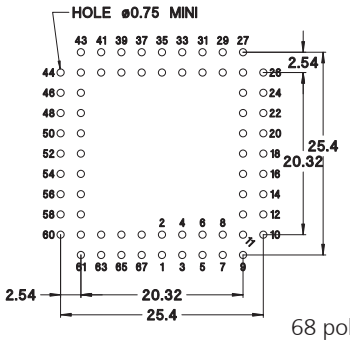
32 poles



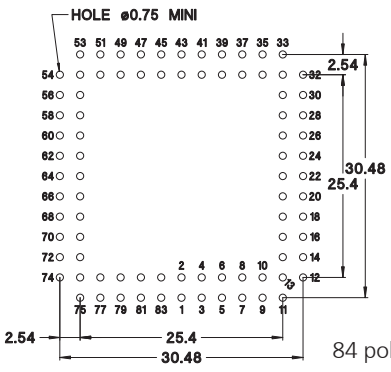
44 poles



52 poles



68 poles



84 poles

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