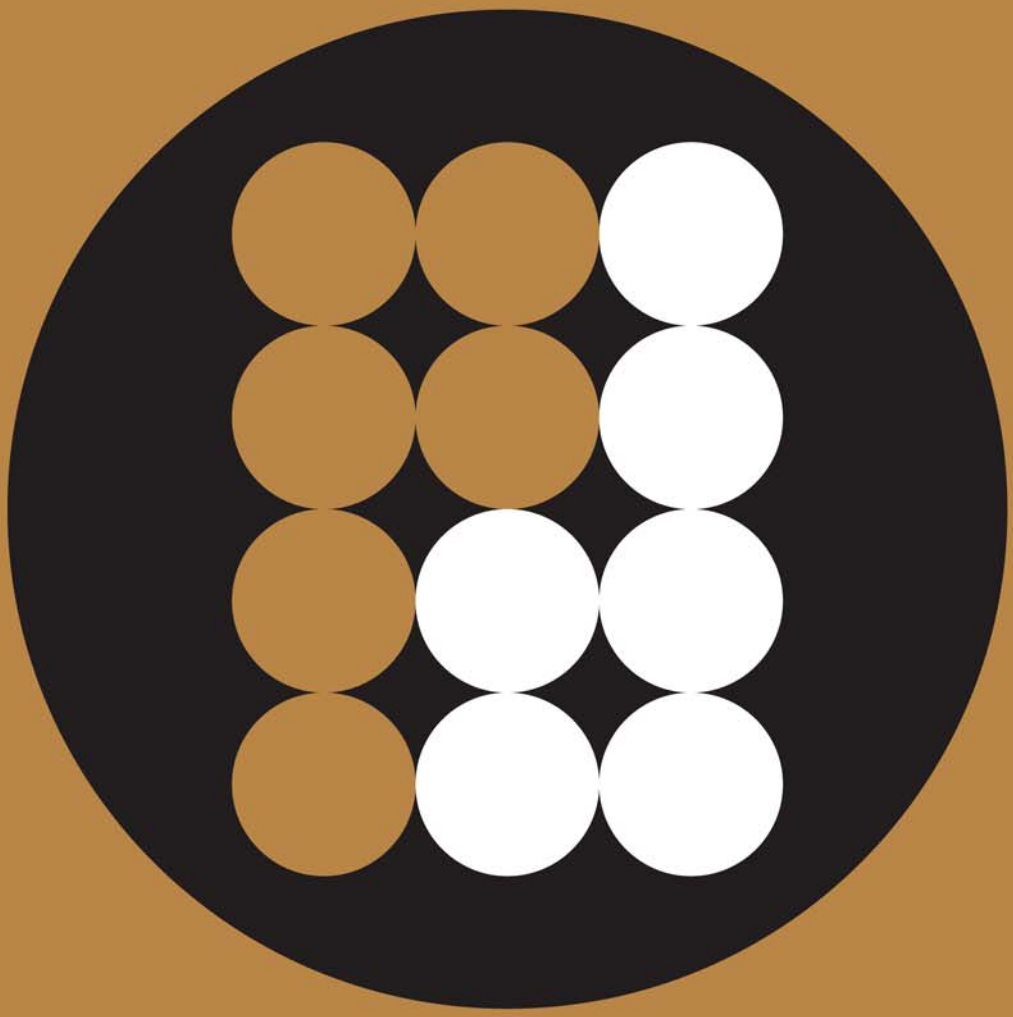
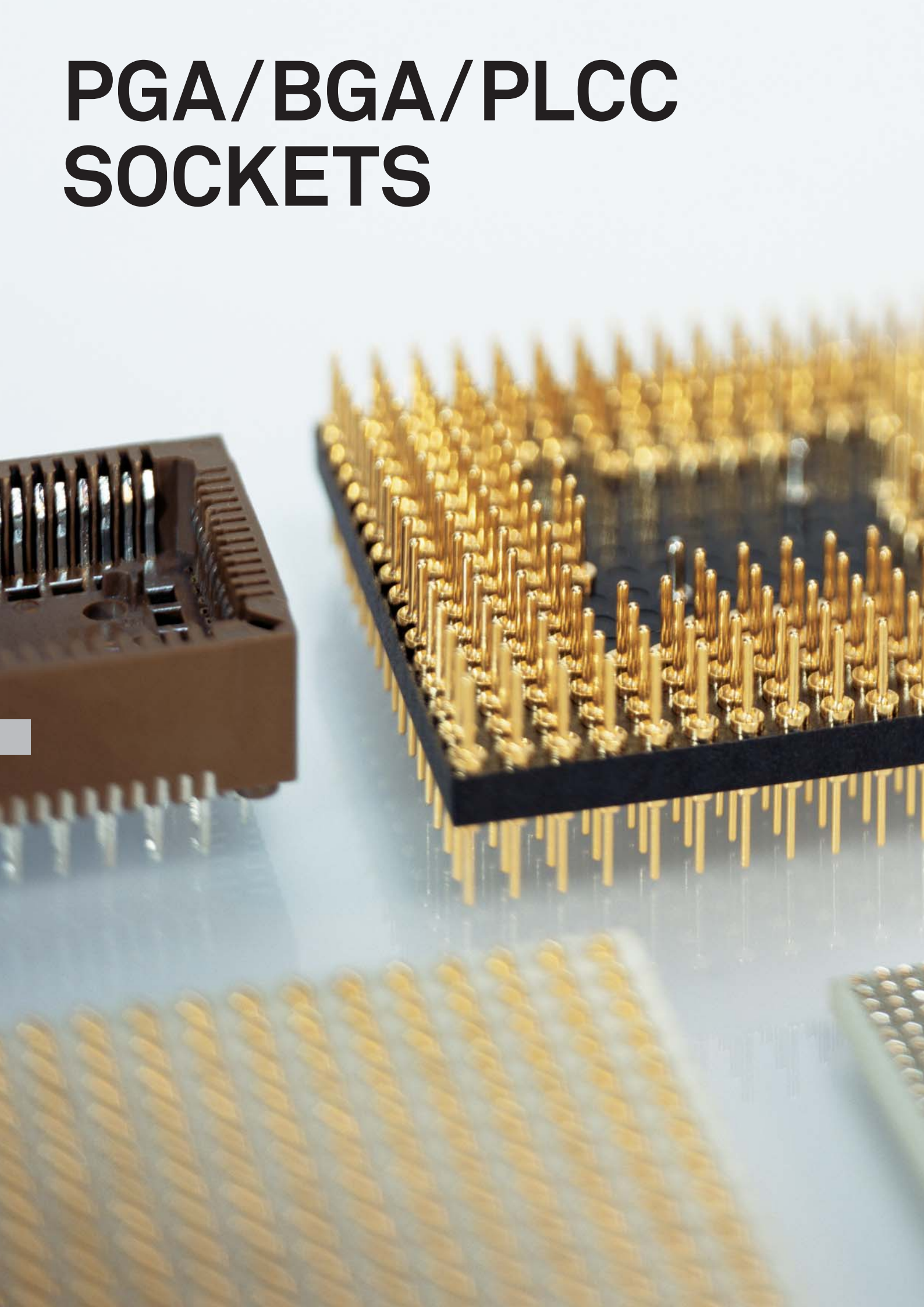
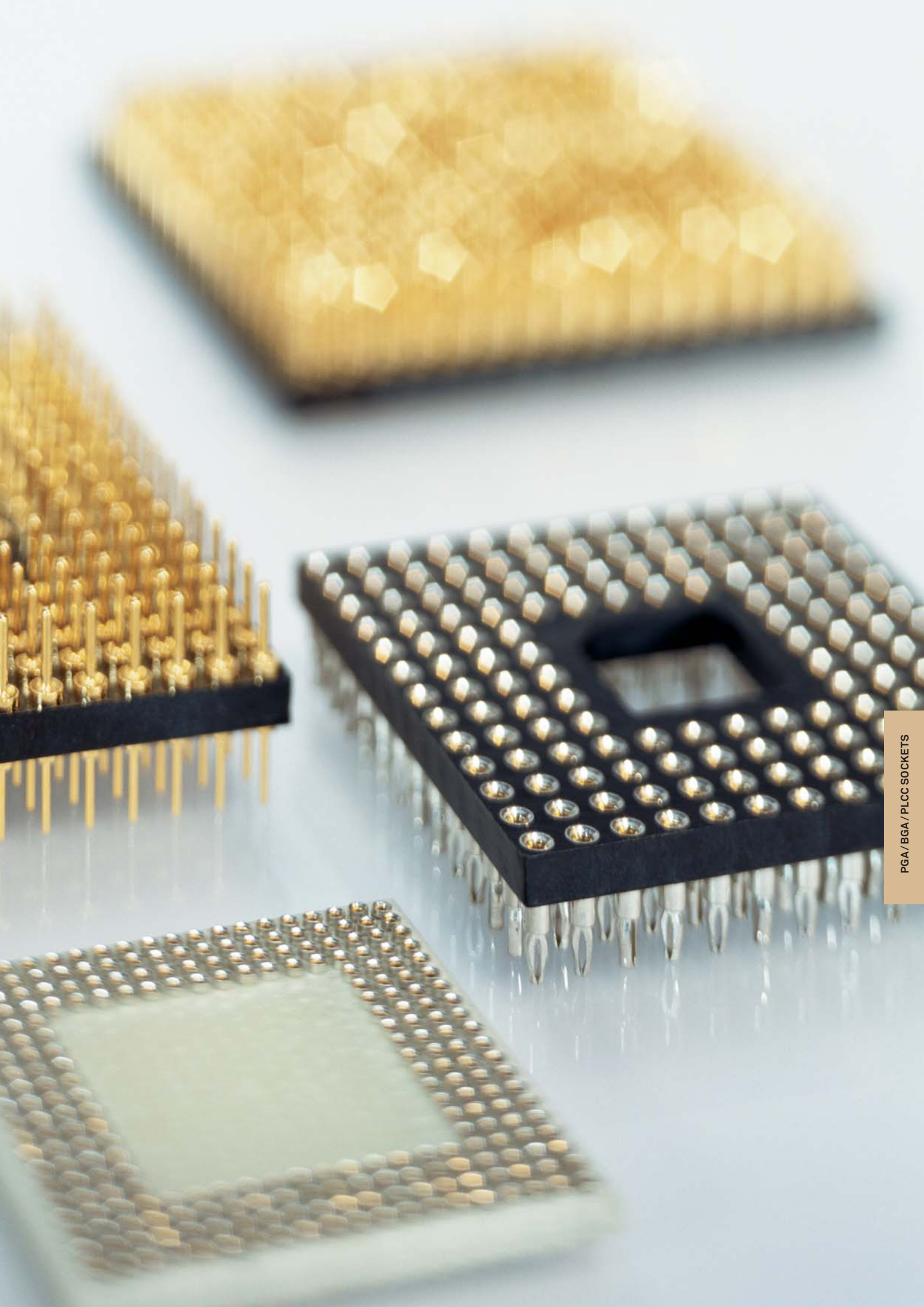


preci-dip

swiss world connects

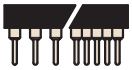
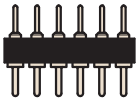
PGA/BGA/PLCC SOCKETS





QUICK SELECTOR CHART

PGA / BGA / PLCC

GRID		PGA			BGA		PLCC
		2.54 mm	INTERSTITIAL	1.27 mm	1.27 mm	1 mm	
SOCKETS		**SEE PAGE**					
Solder tail		156	161	165			
							173
Surface mount		156	161	165	166	169	
							172
Solderless compliant press-fit		157	161				
Carrier		158	162				
Interconnect pin		158	162	165	167		
Interconnect pin surface mount					167	169	
BGA pin-adapter					166	169	

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 VRMS/150 VDC (2.54 mm grid)

PRECI-DIP connectors designated « Series Preci-Dip Connector » are recognized by UL LLC 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 VAC
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 J-STD-002A, Test A, 245 °C, 5 s, solder alloy SnAg3.8Cu0.7
- Resistance to soldering heat J-STD-020C, 260 °C, 20 s
- Moisture sensitivity J-STD-020C level 1
- 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 CHARACTERISTICS

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 DIMENSIONS

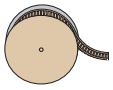
• 2.54 mm grid	Finished hole Ø: 1 + 0.09/-0.06 mm Drilled hole Ø: 1.15 ± 0.025 mm
• Interstitial grid	Finished hole Ø: 0.7 + 0.09/-0.06 mm Drilled hole Ø: 0.8 ± 0.02 mm

PCB HOLE PLATING

PCB surface finish	Hole plating
• Tin	5-15 µm tin over min. 25 µm copper
• Copper	min. 25 µm copper
• Gold over nickel	0.05-0.2 µm gold over 2.5-5 µm nickel over min. 25 µm copper

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, packing units and part numbers.

PIN GRID ARRAY SOCKETS

SOLDER TAIL / SURFACE MOUNT

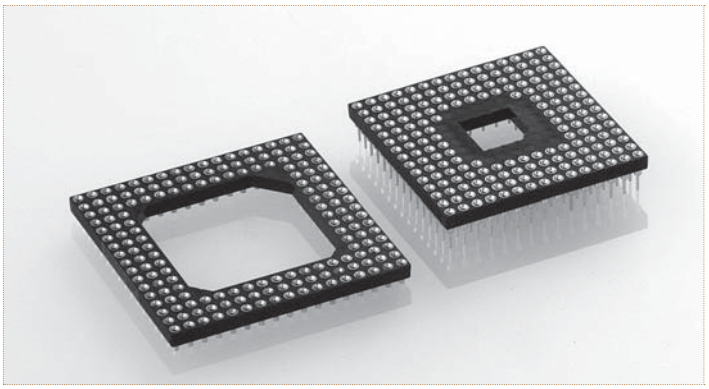
Pin grid array sockets, standard solder version and surface mount with floating contacts.

TECHNICAL SPECIFICATIONS (FOR GENERAL SPECS, SEE PAGE 155)

INSULATOR	Black glass filled polyester PCT-GF30-FR
FLAMMABILITY	UL 94V-0
SLEEVE	Brass CuZn36Pb3 (C36000)
CONTACT CLIP (6 FINGER)	Beryllium copper (C17200)
ACCEPTED PIN Ø	0.40 to 0.56 mm
FORCES	0.7 N typ. insertion 0.4 N typ. withdrawal (polished steel gauge Ø 0.46 mm)
MECHANICAL LIFE	Min. 100 cycles
RATED CURRENT	1 A
CONTACT RESISTANCE	Max. 10 mΩ
DIELECTRIC STRENGTH	Min. 1'000 VRMS

ORDERING INFORMATION ROHS COMPLIANT PARTS

PP PLATING CODE	SLEEVE	CLIP
87	Tin	Flash gold
83	Tin	0.75 µm gold



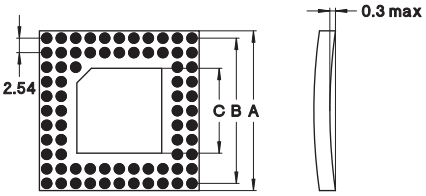
Other plating on request (see page 178 for plating specs).
Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on pages 159 to 160.
For example a 17x17 pin configuration with window and 168 contacts as shown on page 160 becomes 510-83-**168-17-101**101.

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.

DIMENSIONS

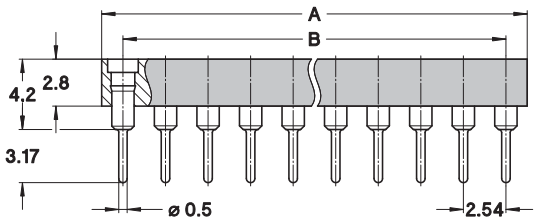
Calculate with n1 = number of contacts in one line and n2 = characteristic size of the window

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



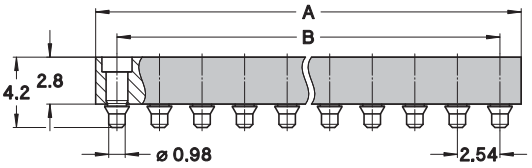
510-**PP**-**NNN**-**XX**-**XXX**101

PGA sockets with standard solder tails, length 3.17 mm.



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

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.



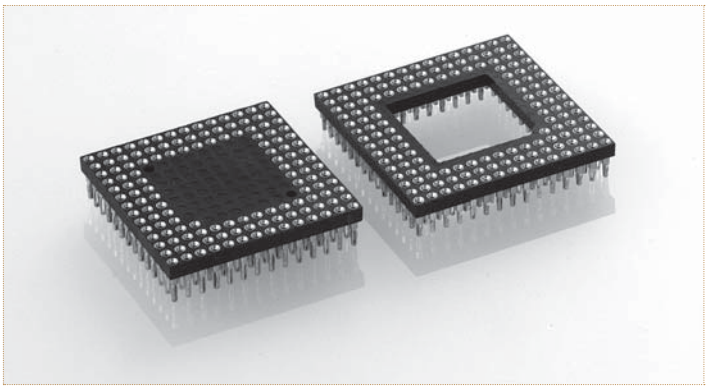
PIN GRID ARRAY SOCKETS

PRESS-FIT TERMINATIONS

Pin grid array sockets with compliant press-fit terminations.

TECHNICAL SPECIFICATIONS (FOR GENERAL SPECS, SEE PAGE 155)

INSULATOR	Black glass filled polyester PCT-GF30-FR
FLAMMABILITY	UL 94V-0
SLEEVE	Bronze CuSn4Pb4Zn4 (C54400)
CONTACT CLIP (6 FINGER)	Beryllium copper (C17200)
ACCEPTED PIN Ø	0.40 to 0.56 mm
FORCES	0.7 N typ. insertion 0.4 N typ. withdrawal (polished steel gauge Ø 0.46 mm)
MECHANICAL LIFE	Min. 100 cycles
RATED CURRENT	1 A
CONTACT RESISTANCE	Max. 10 mΩ
DIELECTRIC STRENGTH	Min. 1'000 VRMS



ORDERING INFORMATION ROHS COMPLIANT PARTS

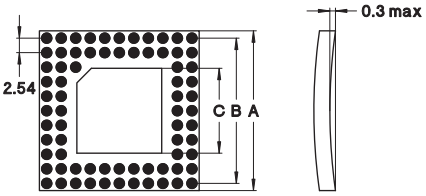
PP PLATING CODE	SLEEVE	CLIP
87	Tin	Flash gold
83	Tin	0.75 µm gold

Other plating on request (see page 178 for plating specs).
Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on pages 159 to 160.
For example a 17x17 pin configuration with window and 168 contacts as shown on page 160 becomes 546-83-**168**-**17**-**101**136.

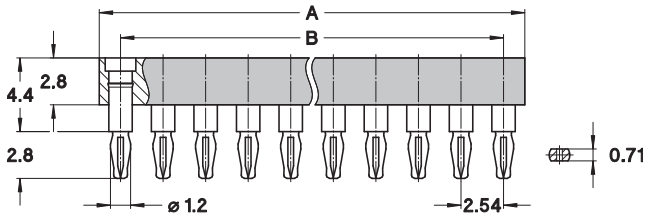
DIMENSIONS

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

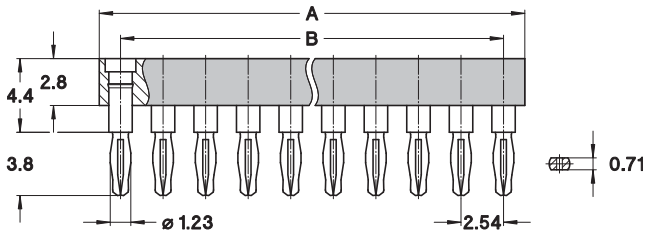
A = n1x2.54
B = (n1-1)x2.54
C = (n2x2.54)-0.40



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 metallization (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 metallization (Drill diameter 1.15±0.025 mm).



PIN GRID ARRAY SOCKETS

INTERCONNECT PIN AND CARRIERS

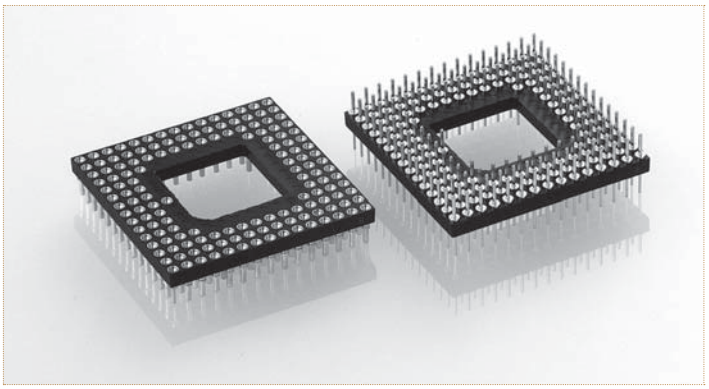
Pin grid array sockets, interconnect pin and carriers with disposable plastic body.

TECHNICAL SPECIFICATIONS (FOR GENERAL SPECS, SEE PAGE 155)

INSULATOR	Black glass filled polyester PCT-GF30-FR
FLAMMABILITY	UL 94V-0
SLEEVE	Brass CuZn36Pb3 (C36000)
CONTACT CLIP (3 FINGER)	Beryllium copper (C17200)
ACCEPTED PIN Ø	0.40 to 0.56 mm
FORCES	0.8 N typ. insertion 0.4 N typ. withdrawal (polished steel gauge Ø 0.46 mm)
MECHANICAL LIFE	Min. 100 cycles
RATED CURRENT	1 A
CONTACT RESISTANCE	Max. 10 mΩ
DIELECTRIC STRENGTH	Min. 1'000 VRMS

ORDERING INFORMATION ROHS COMPLIANT PARTS

PP PLATING CODE	TERMINATION	CONNECTING PIN
10 (Serie 550)	0.25 µm gold	0.25 µm gold
80 (Serie 550)	Tin	Tin
PP PLATING CODE	**SLEEVE**	**CLIP**
87 (Serie 614)	Tin	Flash gold
83 (Serie 614)	Tin	0.75 µm gold



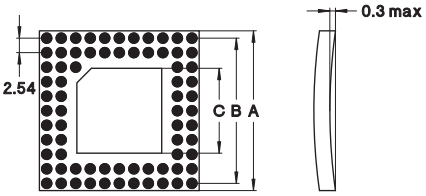
Other plating on request (see page 178 for plating specs).
Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on pages 159 to 160.
For example a 17x17 pin configuration with window and 168 contacts as shown on page 160 becomes 550-10-**168**-**17**-**101**101.

Options: please consult for availability
- PGA interconnect sockets with other contact lengths
- PGA carrier sockets with other contacts.

DIMENSIONS

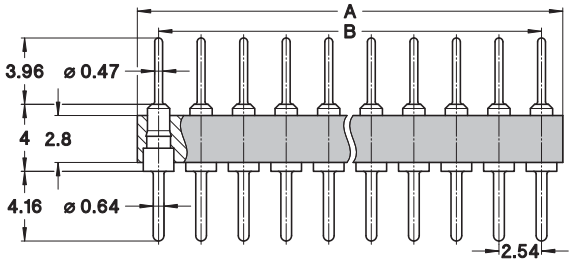
Calculate with n1 = number of contacts in one line and n2 = characteristic size of the window

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



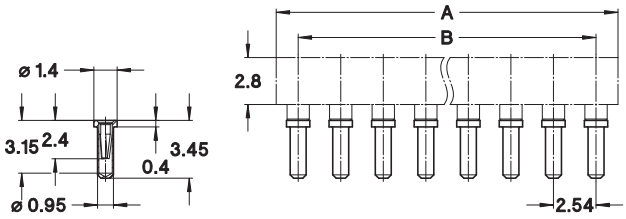
550-**PP**-**NNN**-**XX**-**XXX**101

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



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

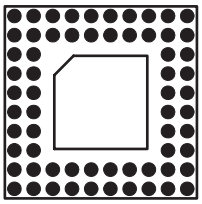
PGA carrier sockets with disposable plastic body.
Low profile ultra thin contacts with solder termination Ø 0.95 mm that requires Ø 1 mm holes in PCB.



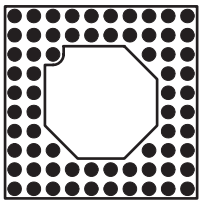
PIN GRID ARRAY SOCKETS

2.54 mm GRID / FOOTPRINTS / TOP VIEW

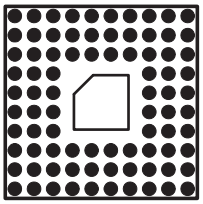
5x5
...-012-05-001...



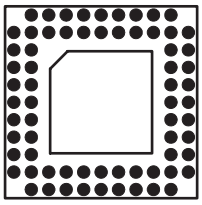
10x10
...-064-10-051...



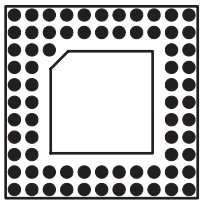
10x10
...-068-10-061...



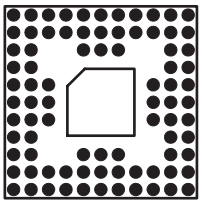
10x10
...-084-10-031...



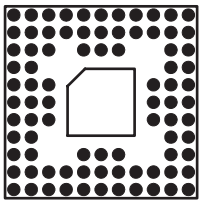
11x11
...-068-11-061...



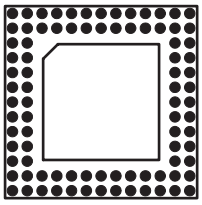
11x11
...-073-11-061...



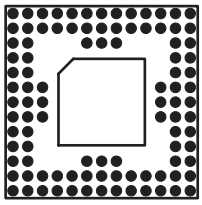
11x11
...-084-11-042...



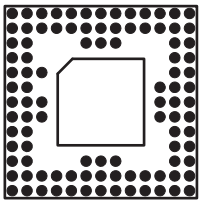
11x11
...-085-11-041...



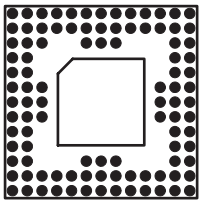
13x13
...-088-13-081...



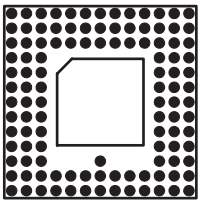
13x13
...-100-13-062...



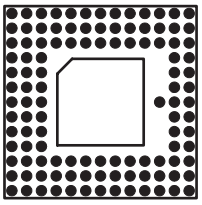
13x13
...-100-13-063...



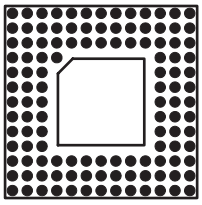
13x13
...-101-13-061...



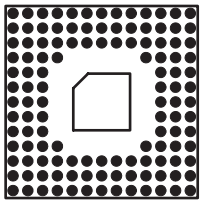
13x13
...-114-13-061...



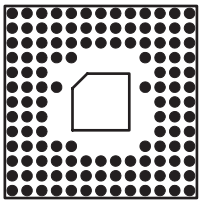
13x13
...-114-13-062...



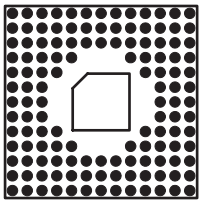
13x13
...-121-13-061...



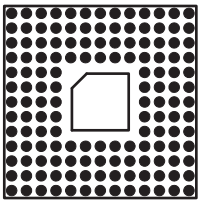
13x13
...-124-13-041...



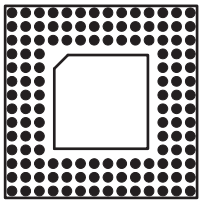
13x13
...-128-13-041...



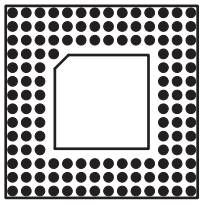
13x13
...-132-13-041...



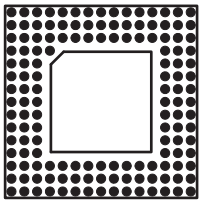
13x13
...-144-13-041...



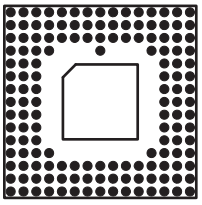
14x14
...-132-14-071...



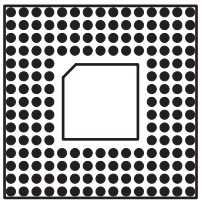
14x14
...-133-14-071...



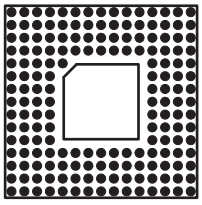
15x15
...-145-15-081...



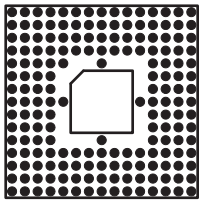
15x15
...-149-15-063...



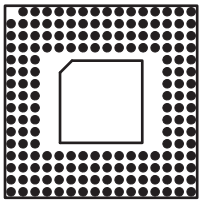
15x15
...-176-15-061...



15x15
...-177-15-061...



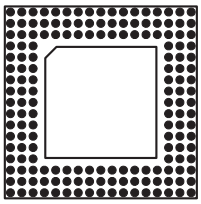
15x15
...-181-15-051...



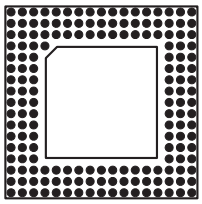
16x16
...-175-16-072...

PIN GRID ARRAY SOCKETS

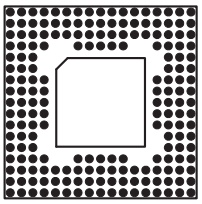
2.54 mm GRID / FOOTPRINTS / TOP VIEW



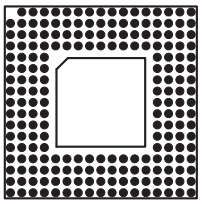
17x17
...-168-17-101...



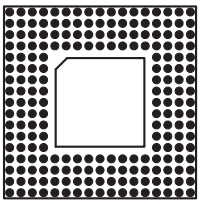
17x17
...-169-17-101...



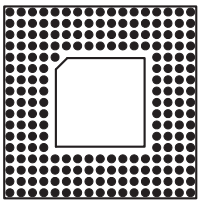
17x17
...-192-17-081...



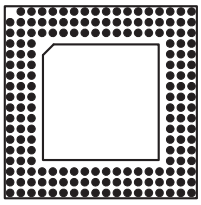
17x17
...-207-17-081...



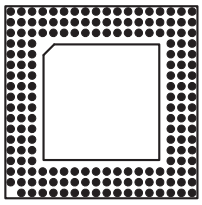
17x17
...-208-17-081...



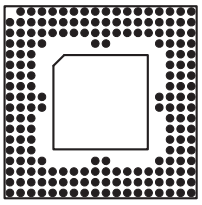
17x17
...-209-17-081...



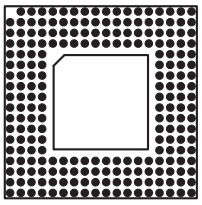
18x18
...-179-18-111...



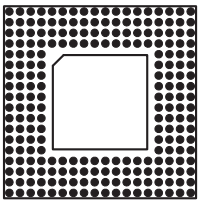
18x18
...-179-18-112...



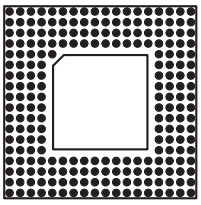
18x18
...-191-18-091...



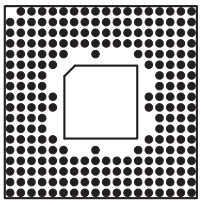
18x18
...-223-18-091...



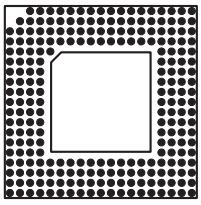
18x18
...-224-18-091...



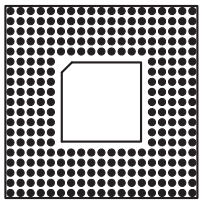
18x18
...-225-18-091...



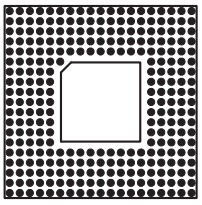
18x18
...-241-18-071...



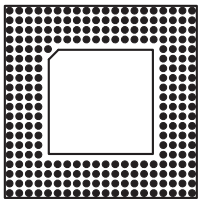
19x19
...-238-19-101...



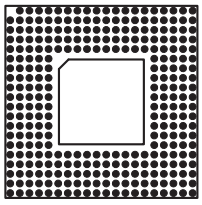
19x19
...-280-19-081...



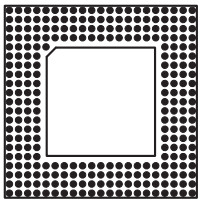
19x19
...-281-19-081...



20x20
...-257-20-111...



20x20
...-299-20-091...



21x21
...-273-21-121...

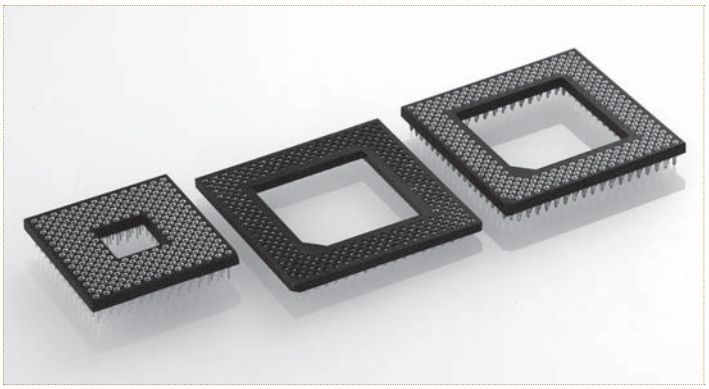
PIN GRID ARRAY SOCKETS

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 SPECIFICATIONS (FOR GENERAL SPECS, SEE PAGE 155)

INSULATOR	Black glass filled polyester PCT-GF30-FR
FLAMMABILITY	UL 94V-0
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	0.4 N typ. insertion 0.2 N typ. withdrawal (polished steel gauge Ø 0.46 mm)
MECHANICAL LIFE	Min. 100 cycles
RATED CURRENT	1 A
CONTACT RESISTANCE	Max. 10 mΩ
DIELECTRIC STRENGTH	Min. 700 VRMS



ORDERING INFORMATION ROHS COMPLIANT PARTS

PP PLATING CODE	SLEEVE	CLIP
87	Tin	Flash gold
83	Tin	0.75 µm gold

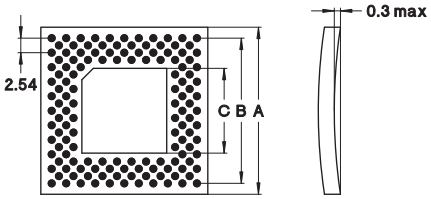
Other plating on request (see page 178 for plating specs).
Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on pages 163 to 164.
For example a 19x19 pin configuration with window and 296 contacts as shown on page 163 becomes 517-83-**296-19-131**111.

Options: please consult for availability
- PGA sockets with optional standoffs.

DIMENSIONS

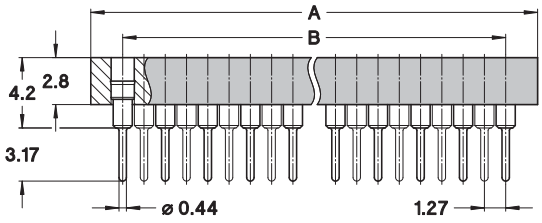
Calculate with n1 = number of contacts on the external row and n2 = characteristic size of the window

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



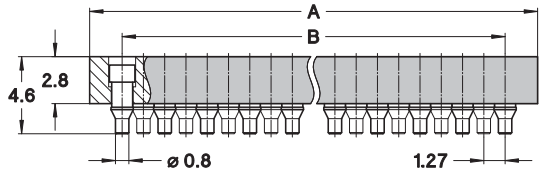
517-PP-NNN-XX-XXX111

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



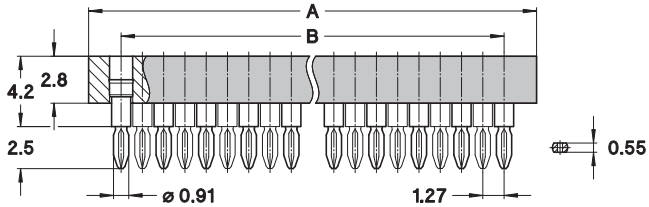
514-PP-NNN-XX-XXX154

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-XXX147

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 metallization (Drill diameter 0.85±0.025 mm).



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 SPECIFICATIONS (FOR GENERAL SPECS, SEE PAGE 155)

INSULATOR	Black glass filled polyester PCT-GF30-FR
FLAMMABILITY	UL 94V-0
SLEEVE / PIN	Brass CuZn36Pb3 (C36000)
CONTACT CLIP (3 FINGER)	Beryllium copper (C17200)
ACCEPTED PIN Ø	0.40 to 0.56 mm
FORCES	0.3 N typ. insertion 0.15 N typ. withdrawal (polished steel gauge Ø 0.46 mm)
MECHANICAL LIFE	Min. 100 cycles
RATED CURRENT	1 A
CONTACT RESISTANCE	Max. 10 mΩ
DIELECTRIC STRENGTH	Min. 700 VRMS

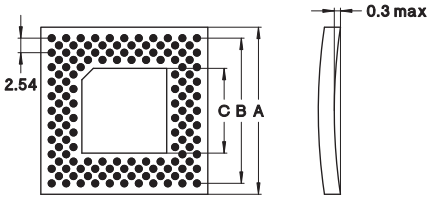
ORDERING INFORMATION ROHS COMPLIANT PARTS

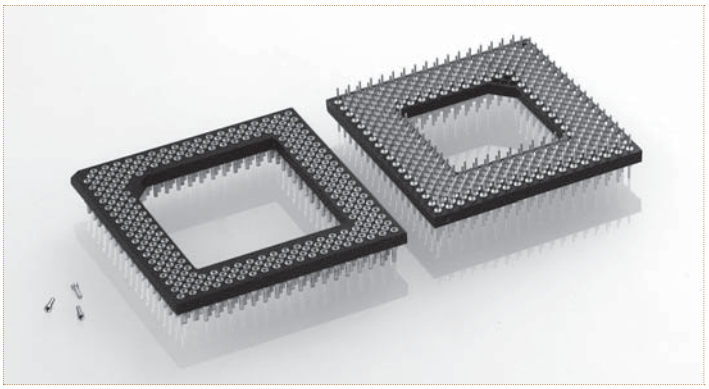
PP PLATING CODE	TERMINATION	CONNECTING PIN
10 (Serie 550)	0.25 µm gold	0.25 µm gold
80 (Serie 550)	Tin	Tin
PP PLATING CODE	**SLEEVE**	**CLIP**
87 (Serie 614)	Tin	Flash gold
83 (Serie 614)	Tin	0.75 µm gold

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



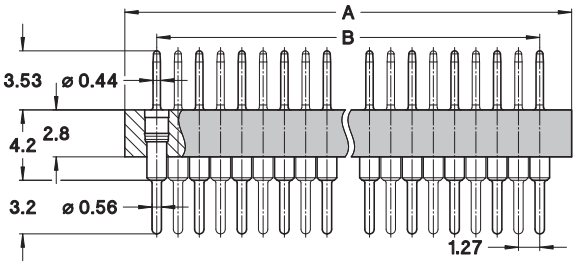


Other plating on request (see page 178 for plating specs).
Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on pages 163 to 164.
For example a 19x19 pin configuration with window and 296 contacts as shown on page 163 becomes 550-10-**296**-**19**-**131**135.

Options: please consult for availability
- PGA pin header interconnect sockets with other contact lengths
- PGA carrier sockets with other contacts.

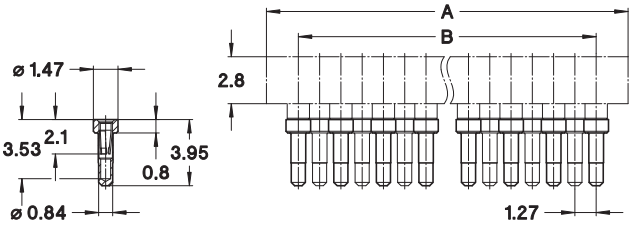
550-**PP**-**NNN**-**XX**-**XXX**135

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



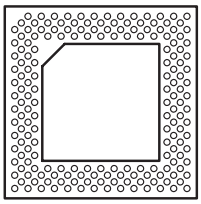
614-**PP**-**NNN**-**XX**-**XXX**144

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.

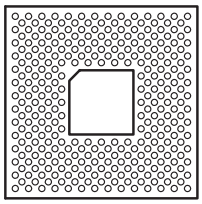


PIN GRID ARRAY SOCKETS

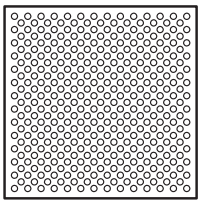
INTERSTITIAL / FOOTPRINTS / TOP VIEW



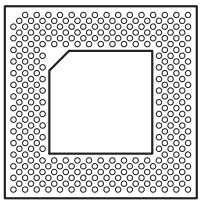
14x14
...-183-14-091...



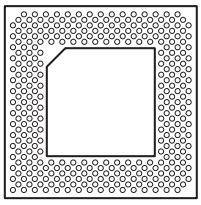
14x14
...-304-14-051...



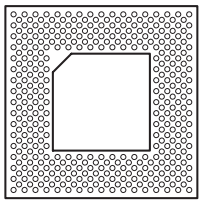
14x14
...-365-14-000...



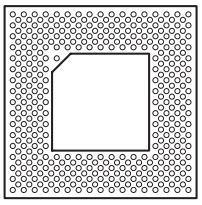
16x16
...-299-16-091...



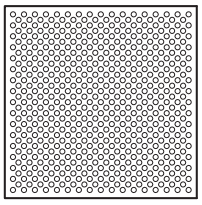
17x17
...-321-17-101...



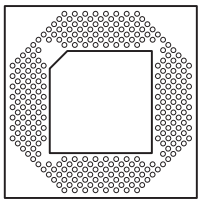
17x17
...-364-17-091...



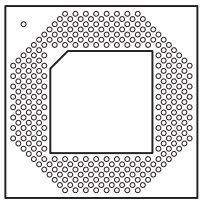
17x17
...-365-17-091...



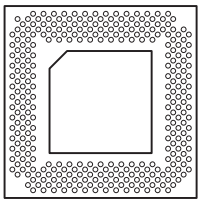
17x17
...-545-17-000...



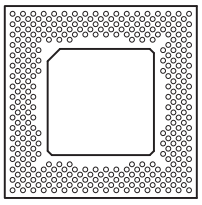
18x18
...-280-18-101...



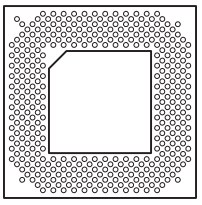
18x18
...-293-18-101...



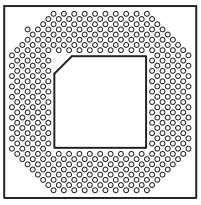
18x18
...-305-18-101...



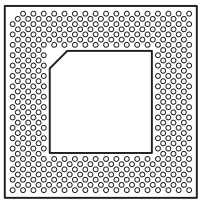
18x18
...-325-18-111...



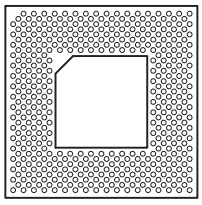
18x18
...-361-18-101...



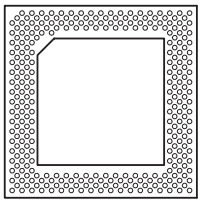
18x18
...-369-18-091...



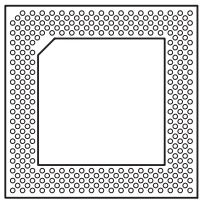
18x18
...-391-18-101...



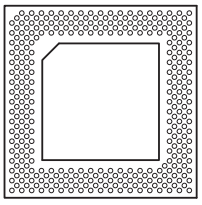
18x18
...-431-18-091...



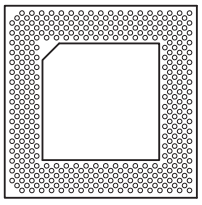
19x19
...-296-19-131...



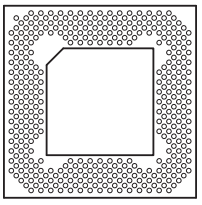
19x19
...-320-19-131...



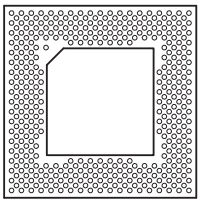
19x19
...-321-19-121...



19x19
...-370-19-121...



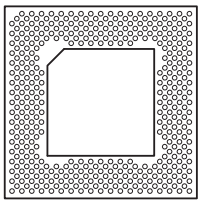
19x19
...-372-19-111...



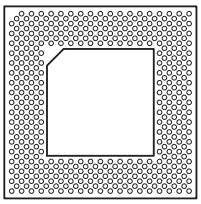
19x19
...-401-19-111...

PIN GRID ARRAY SOCKETS

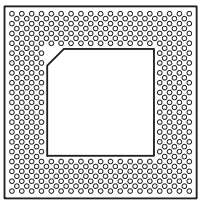
INTERSTITIAL / FOOTPRINTS / TOP VIEW



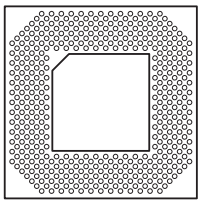
19x19
...-403-19-111...



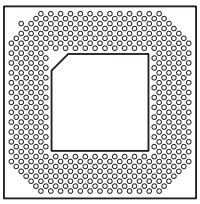
19x19
...-419-19-111...



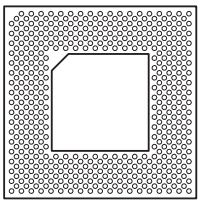
19x19
...-420-19-111...



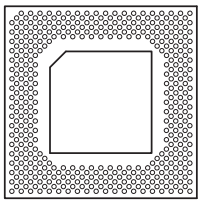
19x19
...-428-19-101...



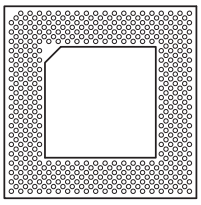
19x19
...-429-19-101...



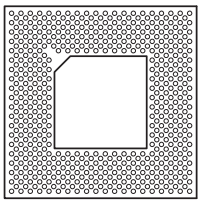
19x19
...-463-19-101...



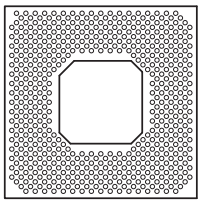
20x20
...-411-20-111...



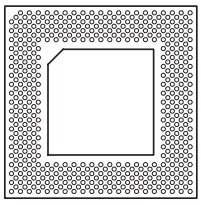
20x20
...-447-20-121...



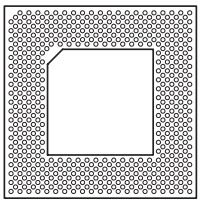
20x20
...-539-20-101...



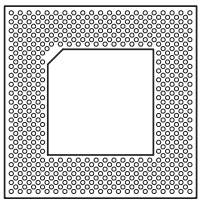
20x20
...-557-20-091...



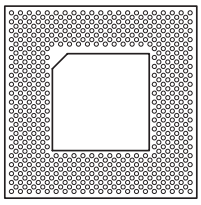
21x21
...-475-21-121...



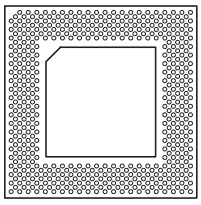
21x21
...-528-21-121...



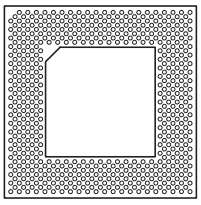
21x21
...-529-21-121...



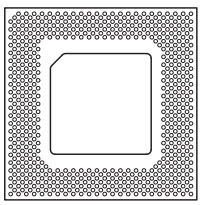
21x21
...-565-21-111...



22x22
...-503-22-131...



22x22
...-559-22-131...



24x24
...-599-54-131...

MICRO PIN GRID ARRAY SOCKETS

1.27 mm GRID / SOLDER TAIL / SURFACE MOUNT / INTERCONNECT PIN

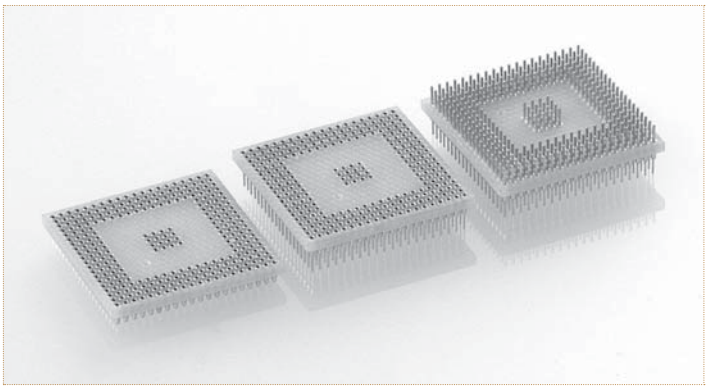
Micro pin grid array sockets (µPGA) with contacts placed on 1.27 mm grid, solder tail, surface mount and interconnect pin.

TECHNICAL SPECIFICATIONS (FOR GENERAL SPECS, SEE PAGE 155)

INSULATOR	Glass-epoxy laminate FR4
FLAMMABILITY	UL 94V-0
SLEEVE / PIN	Brass CuZn36Pb3 (C36000)
CONTACT CLIP (6 FINGER)	Beryllium copper (C17200)
ACCEPTED PIN Ø	0.30 to 0.35 mm
FORCES	0.2 N typ. insertion 0.15 N typ. withdrawal (polished steel gauge Ø 0.3 mm)
MECHANICAL LIFE	Min. 100 cycles
RATED CURRENT	1 A
CONTACT RESISTANCE	Max. 10 mΩ
DIELECTRIC STRENGTH	Min. 500 VRMS

ORDERING INFORMATION ROHS COMPLIANT PARTS

PP PLATING CODE	SLEEVE	CLIP
77 (Serie 518)	Flash gold	Flash gold
PP PLATING CODE	**TERMINATION**	**CONNECTING PIN**
10 (Serie 558)	0.25 µm gold	0.25 µm gold



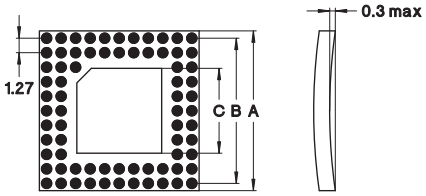
Other plating on request (see page 178 for plating specs).
Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on page 168.
For example a 26x26 pin configuration with window and 478 contacts as shown on page 168 becomes 518-77-**478**M**26**-**131**105.

Options: please consult for availability
- µPGA interconnect headers for SMD mount.

DIMENSIONS

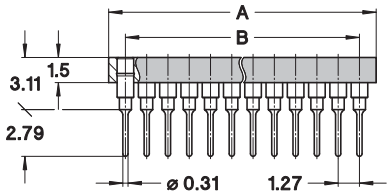
Calculate with n1 = number of contacts in one line and n2 = characteristic size of the window

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



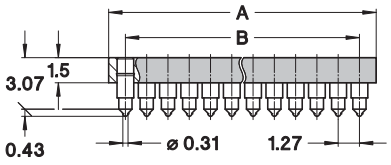
518-77-**NNN**M**XX**-**XXX**105

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



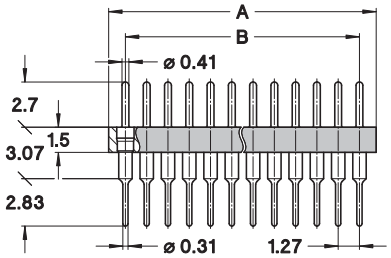
518-77-**NNN**M**XX**-**XXX**106

µPGA sockets 1.27 mm grid, surface mount.
Contact diameter of soldering end 0.31 mm allowing PCB pads with 0.4 mm diameter.



558-10-**NNN**M**XX**-**XXX**101

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



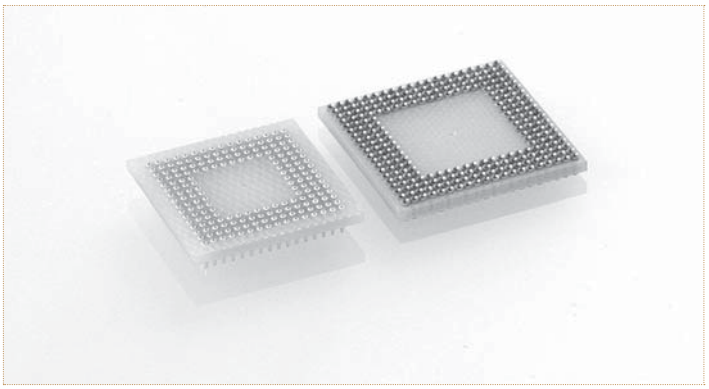
BALL GRID ARRAY SOCKETS

1.27 mm GRID / SURFACE MOUNT / SOCKET AND ADAPTER

Ball grid array sockets and adapters, surface mount.

TECHNICAL SPECIFICATIONS (FOR GENERAL SPECS, SEE PAGE 155)

INSULATOR	Glass-epoxy laminate FR4
FLAMMABILITY	UL 94V-0
SLEEVE / PIN	Brass CuZn36Pb3 (C36000)
CONTACT CLIP (4 FINGER)	Beryllium copper (C17200)
ACCEPTED PIN Ø	0.36 to 0.46 mm
FORCES	0.3 N typ. insertion 0.15 N typ. withdrawal (polished steel gauge Ø 0.43 mm)
MECHANICAL LIFE	Min. 100 cycles
RATED CURRENT	1 A
CONTACT RESISTANCE	Max. 10 mΩ
DIELECTRIC STRENGTH	Min. 500 VRMS



ORDERING INFORMATION ROHS COMPLIANT PARTS

PP PLATING CODE	SLEEVE	CLIP
87 (Serie 514)	Tin	Flash gold
83 (Serie 514)	Tin	0.75 µm gold
PP PLATING CODE	**TERMINATION**	**CONNECTING PIN**
10 (Serie 550)	0.25 µm gold	0.25 µm gold
80 (Serie 550)	Tin	Tin

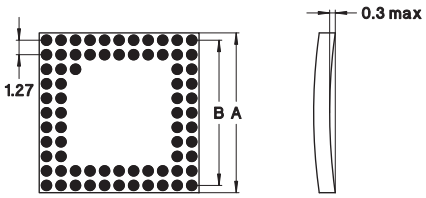
Other plating on request (see page 178 for plating specs).
Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on page 168.
For example a 20x20 pin configuration with 256 contacts as shown on page 168 becomes 514-83-**256**M**20-001**48.

DIMENSIONS

Calculate with n1 = number of contacts in one line

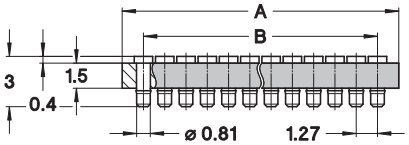
for sockets
A = (n1x1.27)+1.27
B = (n1-1)x1.27

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



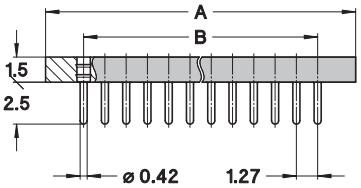
514-**PP**-**NNN**M**XX**-**XXX**148

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.



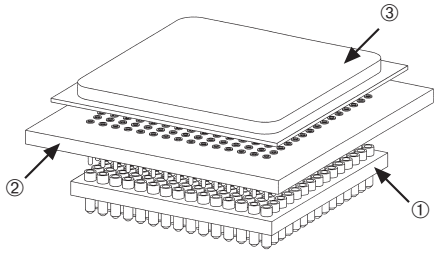
550-10-**NNN**M**XX**-**XXX**166

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



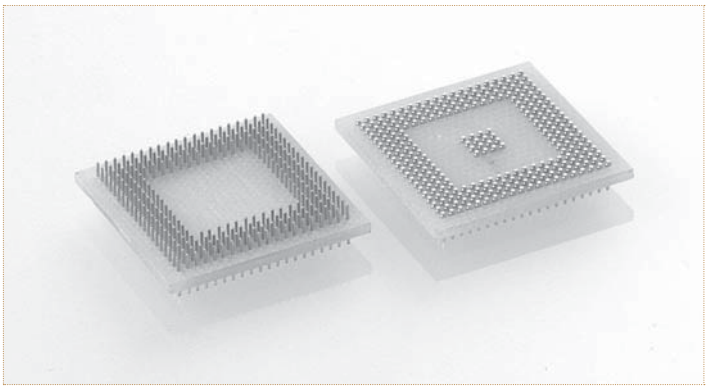
BALL GRID ARRAY SOCKETS

1.27 mm GRID / INTERCONNECT PIN / SOLDER TAIL / SURFACE MOUNT

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

TECHNICAL SPECIFICATIONS (FOR GENERAL SPECS, SEE PAGE 155)

INSULATOR	Glass-epoxy laminate FR4
FLAMMABILITY	UL 94V-0
CONTACT	Brass CuZn36Pb3 (C36000)
MECHANICAL LIFE	Min. 100 cycles
RATED CURRENT	1 A
CONTACT RESISTANCE	Max. 10 mΩ
DIELECTRIC STRENGTH	Min. 500 VRMS



ORDERING INFORMATION ROHS COMPLIANT PARTS

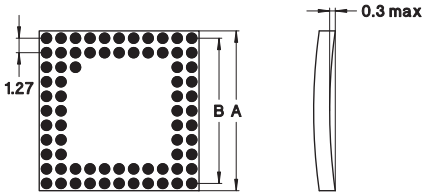
PP PLATING CODE	TERMINATION	CONNECTING PIN
10	0.25 µm gold	0.25 µm gold

Other plating on request (see page 178 for plating specs).
Replace **NNN** with the number of poles and **XX-XXX** with body size and layout numbers as indicated on page 168.
For example a 20x20 pin configuration with 256 contacts as shown on page 168 becomes 550-10-2**56**M**20**-**001**152.

DIMENSIONS

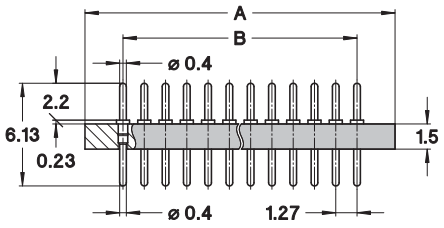
Calculate with n1 = number of contacts in one line

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



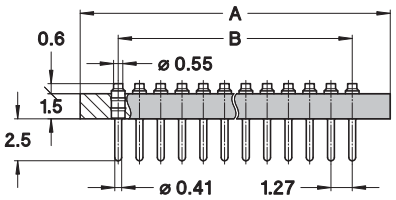
550-10-**NNN**M**XX**-**XXX**152

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



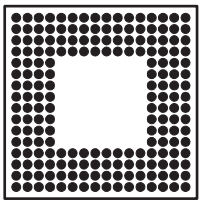
558-10-**NNN**M**XX**-**XXX**104

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

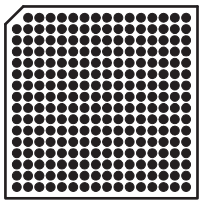


BALL/PIN GRID ARRAY SOCKETS

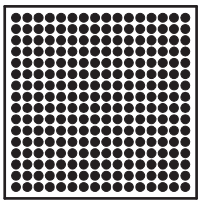
1.27 mm GRID / FOOTPRINTS / TOP VIEW



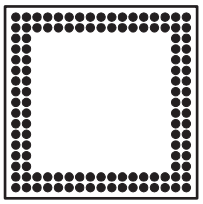
16x16
...-192M16-001...



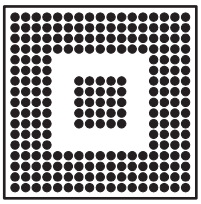
16x16
...-255M16-001...



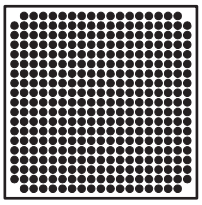
16x16
...-256M16-000...



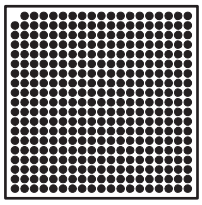
17x17
...-120M17-001...



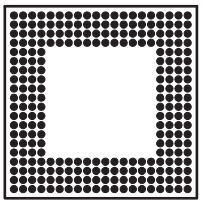
17x17
...-233M17-001...



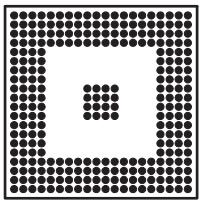
19x19
...-357M19-001...



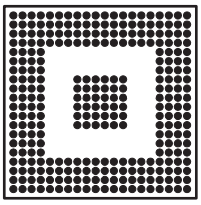
19x19
...-360M19-001...



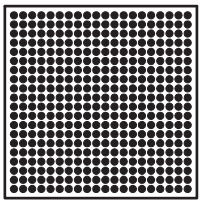
20x20
...-256M20-001...



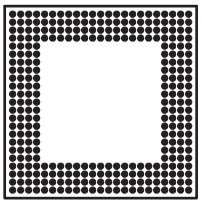
20x20
...-272M20-001...



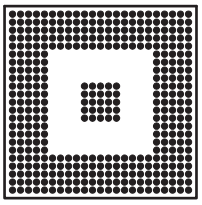
20x20
...-292M20-001...



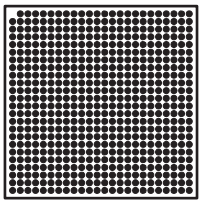
20x20
...-400M20-000...



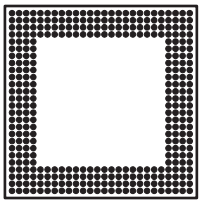
23x23
...-304M23-001...



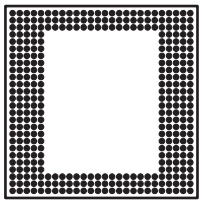
23x23
...-385M23-001...



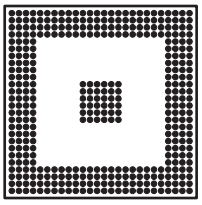
24x24
...-575M24-001...



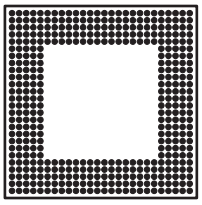
26x26
...-352M26-001...



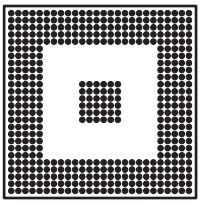
26x26
...-356M26-001...



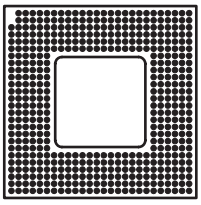
26x26
...-388M26-001...



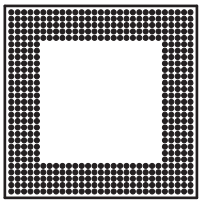
26x26
...-420M26-001...



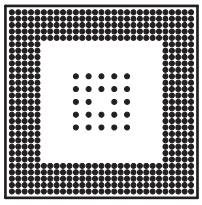
26x26
...-456M26-001...



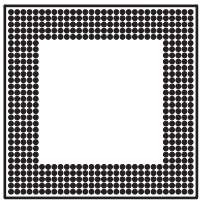
26x26
...-478M26-131...



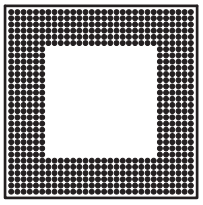
29x29
...-480M29-001...



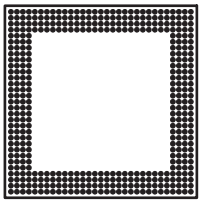
29x29
...-504M29-001...



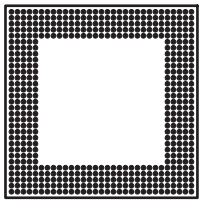
30x30
...-500M30-001...



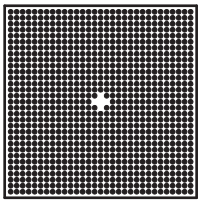
30x30
...-576M30-001...



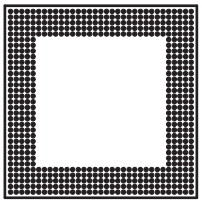
31x31
...-432M31-001...



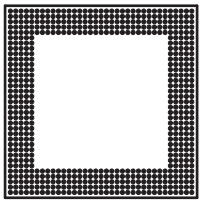
31x31
...-520M31-001...



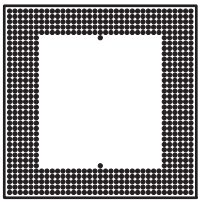
31x31
...-956M31-001...



33x33
...-560M33-001...



35x35
...-600M35-001...



35x35
...-652M35-001...

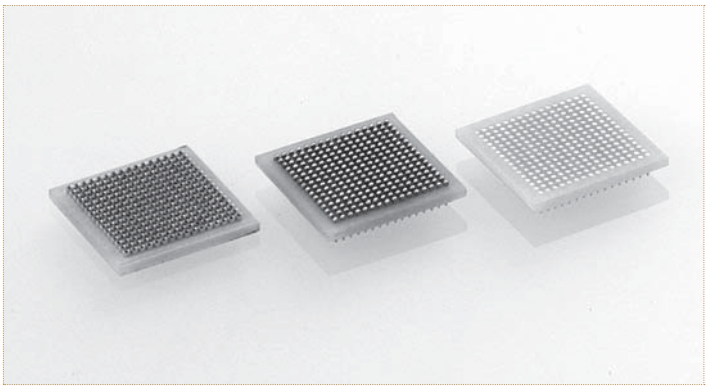
BALL GRID ARRAY SOCKETS

1 mm GRID / SURFACE MOUNT SOCKET, ADAPTER / INTERCONNECT PIN

Ball grid array sockets and adapter surface mount.

TECHNICAL SPECIFICATIONS (FOR GENERAL SPECS, SEE PAGE 155)

INSULATOR	Glass-epoxy laminate FR4
FLAMMABILITY	UL 94V-0
SLEEVE / PIN	Brass CuZn36Pb3 (C36000)
CONTACT CLIP (3 FINGER)	Beryllium copper (C17200)
ACCEPTED PIN Ø	0.20 to 0.30 mm
FORCES	0.4 N typ. insertion 0.2 N typ. withdrawal (polished steel gauge Ø 0.25 mm)
MECHANICAL LIFE	Min. 100 cycles
RATED CURRENT	1 A
CONTACT RESISTANCE	Max. 10 mΩ
DIELECTRIC STRENGTH	Min. 500 VRMS



ORDERING INFORMATION ROHS COMPLIANT PARTS

PP PLATING CODE	SLEEVE	CLIP
11 (Serie 514)	0.25 µm gold	0.25 µm gold
PP PLATING CODE	**TERMINATION**	**CONNECTING PIN**
10 (Serie 558)	0.25 µm gold	0.25 µm gold

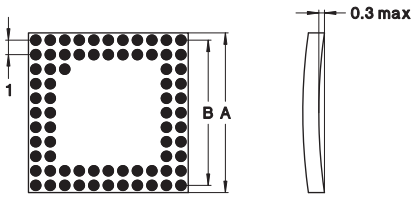
Other plating on request (see page 178 for plating specs).
Please consult for complete part number and available footprints.

Options: please consult for availability
- Through hole adapter.

DIMENSIONS

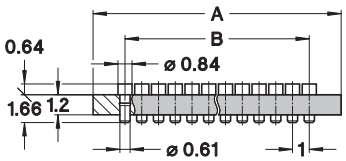
Calculate with n1 = number of contacts in one line

A = n1+2.81
B = n1-1



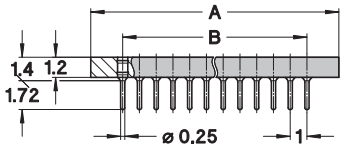
514-11-**NNN**P**XX**-**XXX**159

BGA sockets 1 mm grid, surface mount.
Same foot print as the BGA device to mate with the corresponding adapter.



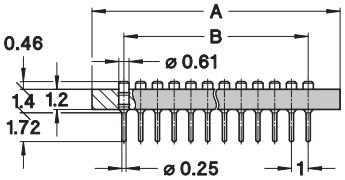
558-10-**NNN**P**XX**-**XXX**102

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.



558-10-**NNN**P**XX**-**XXX**103

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



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	156
514-...34	SMD 2.54 mm grid	156
514-...54	SMD interstitial	161
517-...11	Solder pin interstitial	161
518-...05	Solder pin 1.27 mm grid	165
518-...06	SMD 1.27 mm grid	165
546-...35	Press-fit 2.54 mm, PCB 2.1-3.2 mm	157
546-...36	Press-fit 2.54 mm, PCB 1.5-2.0 mm	157
546-...47	Press-fit interstitial	161
550-...01	Interconnect, solder pin, 2.54 mm grid	158
550-...35	Interconnect, solder pin, interstitial	162
558-...01	Interconnect, solder pin, 1.27 mm grid	165
614-...12	Carrier 2.54 mm grid	158
614-...44	Carrier interstitial	162
BGA		
514-...48	Socket SMD, 1.27 mm grid	166
514-...59	Socket SMD, 1 mm grid	169
550-...66	Adapter, 1.27 mm grid	166
550-...52	Interconnect, solder pin, 1.27 mm grid	167
558-...02	Adapter, 1 mm grid	169
558-...03	Interconnect SMD, 1 mm grid	169
558-...04	Interconnect SMD, 1.27 mm grid	167

XXX – PP – NNN X XX – XXX 1 XX

PLATING CODE ROHS COMPLIANT PARTS

CODE	SLEEVE	CLIP
77	Flash gold	Flash gold
83	Tin	0.75 µm gold
87	Tin	Flash gold

	TERMINATION	CONNECTING PIN
10	0.25 µm gold	0.25 µm gold
80	Tin	Tin

TOTAL NUMBER OF PINS

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

SIZE OF BODY

SIZE OF WINDOW AND FOOTPRINT

See pages 159, 160, 163, 164 and 168 for most popular footprints.

preci-dip

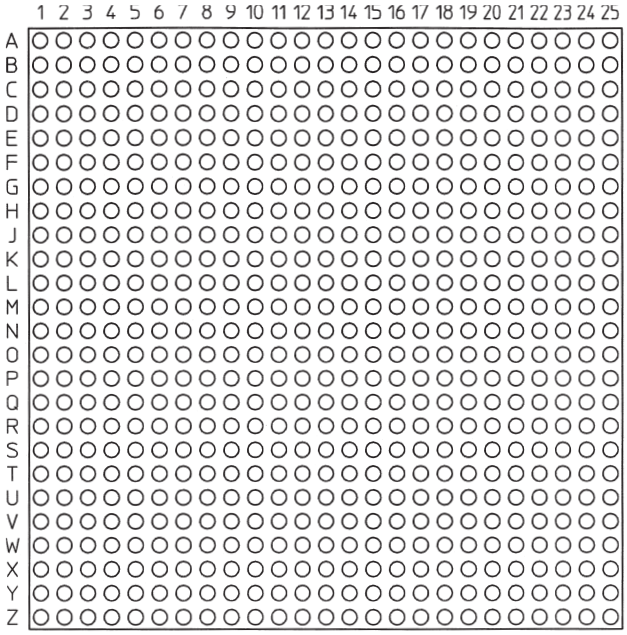
WWW.PRECIDIP.COM TEL +41 32 421 04 00 SALES@PRECIDIP.COM

BALL/PIN GRID ARRAY SOCKETS

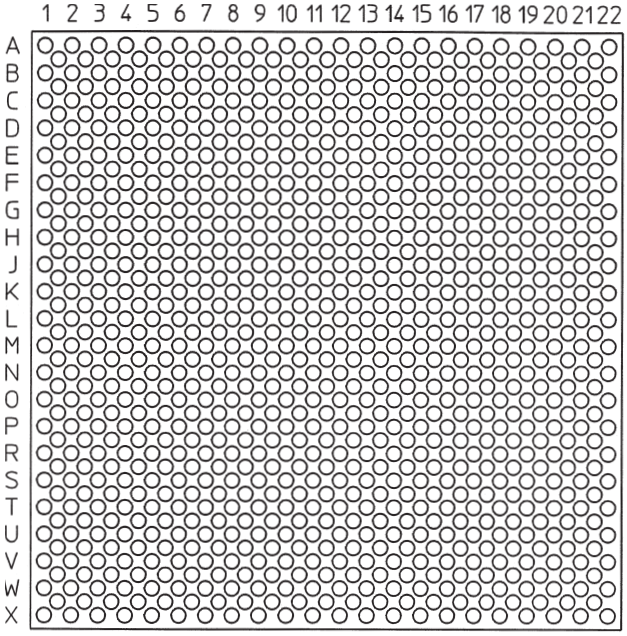
CUSTOM GRID DESIGN

If the desired footprint does not exist in this catalogue, please photocopy this page, complete it and send it to your local 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

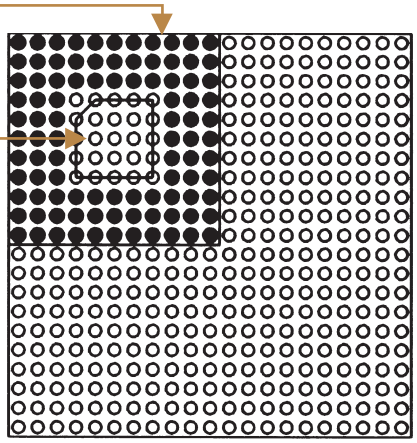
Semiconductor device used

Quantity

EXAMPLE

Fill in the position of pins

Mark of the window



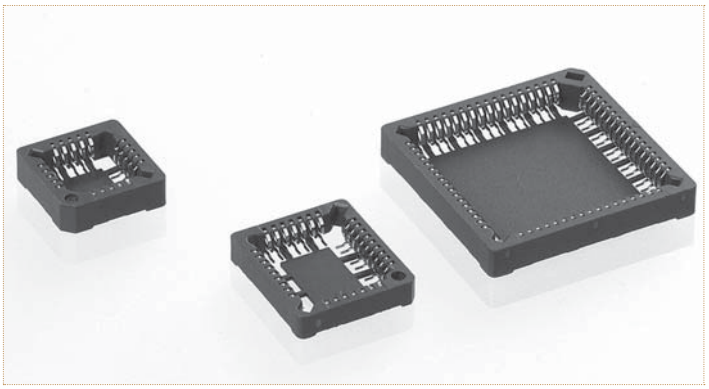
SOCKETS FOR PLASTIC LEADED CHIP CARRIERS (PLCC)

SMT TERMINATIONS

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

TECHNICAL SPECIFICATIONS (FOR GENERAL SPECS, SEE PAGE 155)

INSULATOR	Glass filled thermoplastic PPS-GF30-FR
FLAMMABILITY	UL 94V-0
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 VRMS
INSULATION RESISTANCE	Min. 5'000 MΩ
CAPACITANCE	Max. 2 pF
COPLANARITY SMD TERMINATIONS	Max. 0.1 mm



ORDERING INFORMATION ROHS COMPLIANT PARTS

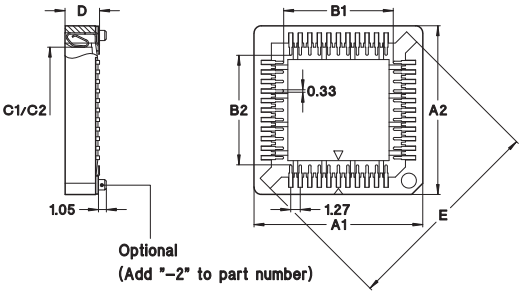
PP PLATING CODE	TERMINATION	CONTACT
88	Tin	Tin

Option: parts with positioning pegs add suffix **-2** to part number (only available for No. of poles 32, 44, 68 and 84).

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

See page 155

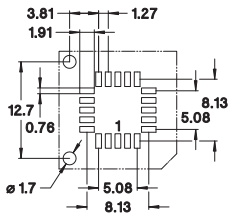
T & R Packaging

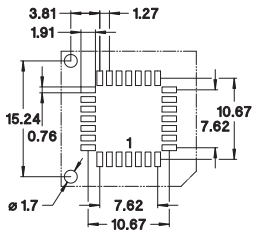


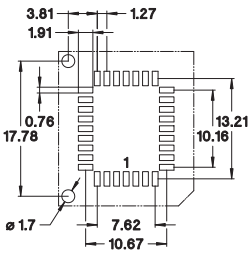
* RECTANGULAR

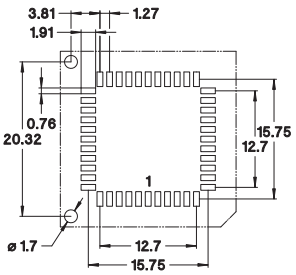
NO. OF POLES	A1/A2	B1/B2	C1/C2	D	E	ORDER CODES
20	14.86	7.02	9.20	4.60	16.00	540-88-020-17-400
28	17.34	9.50	11.76	4.60	19.70	540-88-028-17-400
32*	16.95 / 19.50	9.40 / 11.90	11.60 / 14.20	3.80	22.00	540-88-032-17-400
44	22.42	14.50	16.70	4.60	27.00	540-88-044-17-400
52	25.40	17.24	19.46	4.60	30.80	540-88-052-17-400
68	30.54	22.26	24.40	4.60	37.65	540-88-068-17-400
84	35.56	27.34	29.58	4.60	45.10	540-88-084-17-400

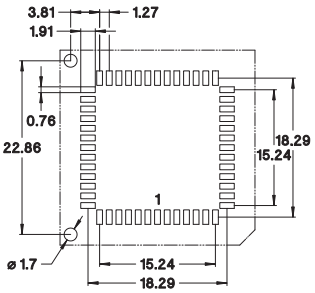
PCB LAYOUT SERIES 540, SMD TYPES

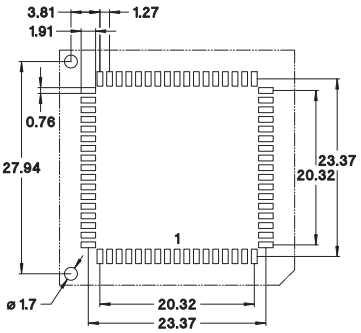


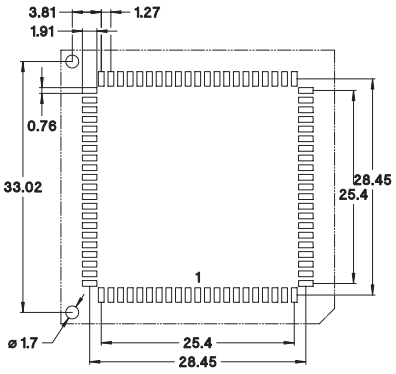












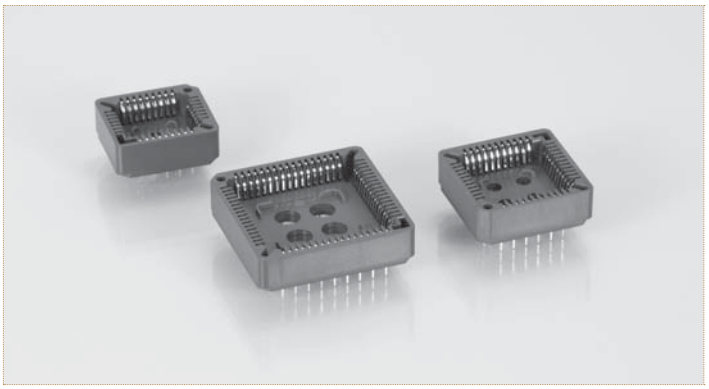
SOCKETS FOR PLASTIC LEADED CHIP CARRIERS (PLCC)

SOLDER TAIL

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

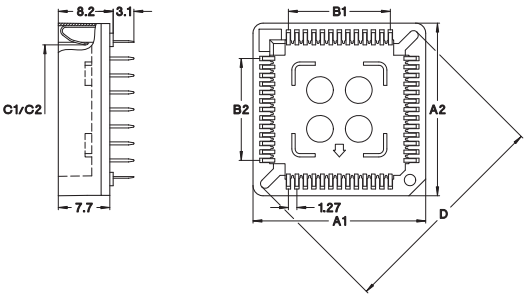
TECHNICAL SPECIFICATIONS (FOR GENERAL SPECS, SEE PAGE 155)

INSULATOR	Glass filled thermoplastic PPS-GF40-FR
FLAMMABILITY	UL 94V-0
CONTACT	Phosphor bronze
MECHANICAL LIFE	Min. 25 cycles
RATED CURRENT	1 A
CONTACT RESISTANCE	Max. 30 mΩ
DIELECTRIC STRENGTH	Min. 500 VRMS
INSULATION RESISTANCE	Min. 1'000 MΩ
CAPACITANCE	Max. 1 pF



ORDERING INFORMATION ROHS COMPLIANT PARTS

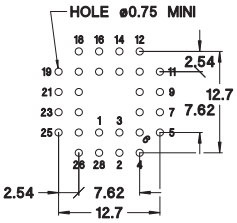
PP PLATING CODE	TERMINATION	CONTACT
88	Tin	Tin

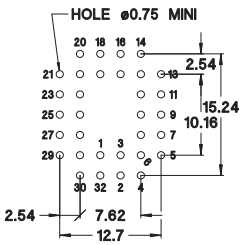


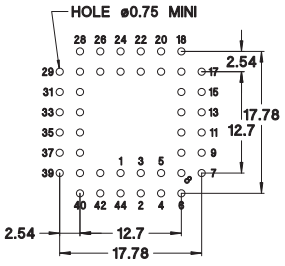
* RECTANGULAR

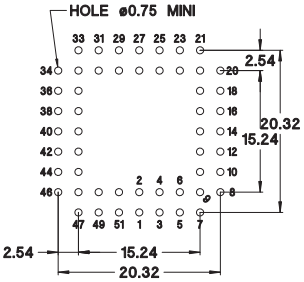
NO. OF POLES	A1	A2	B1	B2	C1	C2	D	ORDER CODES
28	18.09	18.09	7.62	7.62	11.20	11.20	22.12	540-88-028-24-008
32*	18.04	20.60	7.62	10.16	11.20	13.60	23.12	540-88-032-24-008
44	23.10	23.10	12.70	12.70	16.20	16.20	29.12	540-88-044-24-008
52	25.70	25.70	15.24	15.24	18.80	18.80	32.85	540-88-052-24-008
68	30.80	30.80	20.32	20.32	23.70	23.70	39.90	540-88-068-24-008
84	35.95	35.95	25.40	25.40	28.90	28.90	47.40	540-88-084-24-008

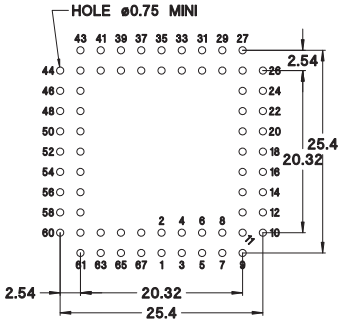
PCB HOLE PATTERNS SERIES 540, THRU-HOLE TYPES

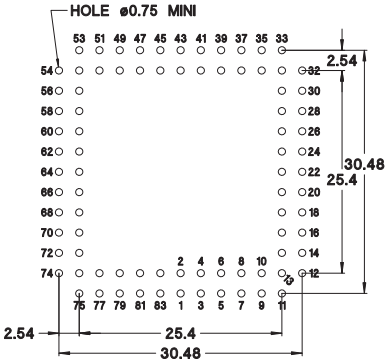












www.preci-dip.com

PRECI-DIP SA Rue Saint-Maurice 34 P.O.Box 341 CH-2800 Delémont / Switzerland
PHONE +41 (0)32 421 04 00 FAX +41 (0)32 421 04 01 E-MAIL sales@precidip.com www.precidip.com