

# Ball / Land Grid Array Sockets

## TwistLock Type

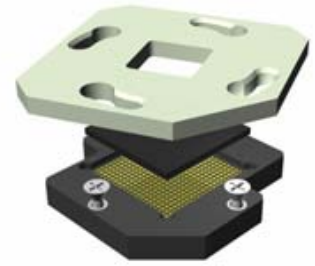


**E-tec is now the leading BGA socket manufacturer.**

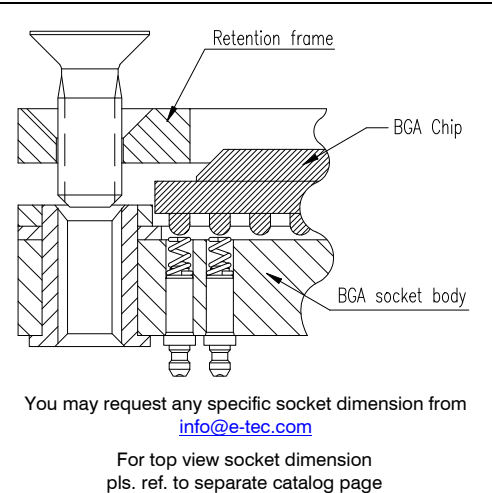
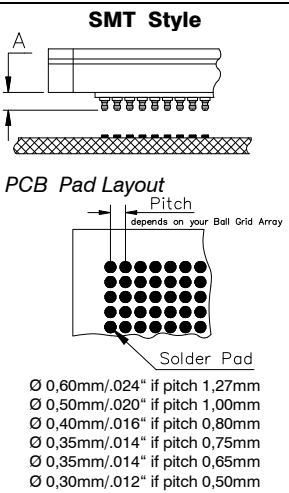
EP patents 0829188, 0897655 US patents 6190181, 6249440 Patented in other countries.

TwistLock sockets are generally chosen when relatively low insertion / extraction cycles are required and when the cost of the socket is a predominant factor. The TwistLock socket extends by around 6.00mm beyond the outer ball row and special clearances can be offered on request.

We aim to solve your requirements - many different terminals and configurations are available.  
Your custom sets our standards!



**Please note, we will always request the chip data to ensure we offer a compatible socket.**



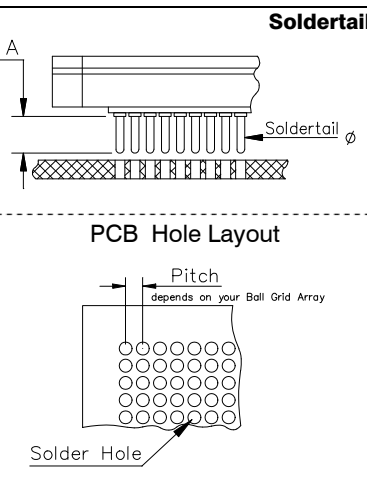
**Important Note:**  
Please check the ball diameters & heights of your chip prior to ordering the standard E-tec BGA (BPW, BCW) sockets. Any deviation has to be communicated to E-tec in order to check compatibility with the standard socket design and if necessary to obtain a special order code adapted to your chip dimensions.  
The standard solderball diameters & heights are the following:

Pitch	ball diameters min/max	ball height min/max
0.50mm	0.25mm / 0.35mm	0.15mm / 0.30mm
0.65mm	0.25mm / 0.45mm	0.15mm / 0.30mm
0.75mm	0.25mm / 0.45mm	0.15mm / 0.40mm
0.80mm	0.40mm / 0.55mm	0.25mm / 0.45mm
1.00mm	0.50mm / 0.70mm	0.30mm / 0.50mm

**1.27mm & 1.50mm**

a) plastic chips (BPW)	0.60mm / 1.00mm	0.50mm / 0.70mm
b) ceramic chips (BCW)	0.60mm / 1.00mm	0.80mm / 1.00mm

**If the minimum ball diameter of a given chip falls below the above indications, then a BUW socket will generally be proposed.**



**Solder-tail:**

- Ø 0,42mm/.016" if pitch 1,27mm
- Ø 0,29mm/.011" if pitch 1,00mm
- Ø 0,29mm/.011" if pitch 0,80mm
- Ø 0,27mm/.010" if pitch 0,75mm
- Ø 0,27mm/.010" if pitch 0,65mm
- Ø 0,27mm/.010" if pitch 0,50mm
- Ø 0,17mm/.007" if pitch 0,40mm

**PCB solder hole:**

- Ø 0,60mm/.024" if pitch 1,27mm
- Ø 0,50mm/.020" if pitch 1,00mm
- Ø 0,40mm/.016" if pitch 0,80mm
- Ø 0,35mm/.014" if pitch 0,75mm
- Ø 0,35mm/.014" if pitch 0,65mm
- Ø 0,35mm/.014" if pitch 0,50mm
- Ø 0,25mm/.010" if pitch 0,40mm

**Mechanical data**

- Contact life: 10.000 cycles min.
- Retention System life: 1.000 cycles min.
- Solderability: as per IEC 60068-2-58
- Individual contact force: 40 grams max.
- Max. torque for retention screws: up to 800 pins = 7cNm or 10 oz-inch; as of 800 pins = 7cNm to 10cNm or 10 oz-inch to 14 oz-inch

**Material**

- Insulator (RoHS compliant): High temp plastic or epoxy FR4
- Terminal (RoHS compliant): Brass
- Contact (RoHS compliant): BeCu

**Electrical data**

- Contact resistance: < 100 mΩ
- Current rating: 500 mA max.
- Insulation resistance at 500V DC: 100 MΩ if 0.50mm to 0.80mm pitch; 500 MΩ 1.00mm pitch upwards
- Breakdown voltage at 60 Hz: 500V min.
- Capacitance: < 1 pF
- Inductance: < 2 nH

**Operating temperature**

- 55°C to +125°C ; 260°C for 60 sec.

**Recommendations:**

Solder paste – Please use a solder paste w/o any silver!  
E-tec solderless sockets are adapted to a standard PCB thickness of 1.60mm. For a different PCB thickness, please inform E-tec first!

Solder profile – Please refer to our website [www.e-tec.com](http://www.e-tec.com)

For high pincount SMT sockets, E-tec recommends the use of a pluggable thru-hole socket mounted into a MiniGrid Adapter (see also page 15, 16 & 16a for more details)

For SMT sockets in general, E-tec recommends the use of locating pegs which can be soldered to the PCB for added mechanical strength.

### How to order

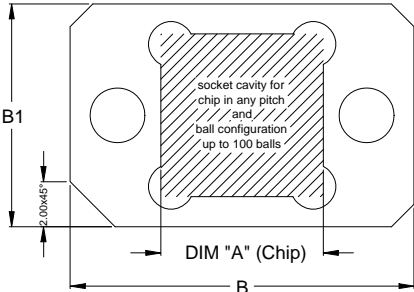

**X X W x x x x - x x x x - x x X X 95 L** ← optional for locating pegs

<p><b>Device Type</b></p> <ul style="list-style-type: none"> <li><b>B</b> = Ball Grid</li> <li><b>L</b> = Land Grid</li> <li><b>C</b> = Column Grid</li> </ul>	<p><b>Device Material</b></p> <ul style="list-style-type: none"> <li><b>C</b> = std. socket for ceramic device</li> <li><b>P</b> = std. socket for plastic device</li> <li><b>U</b> = socket adapted to small diameter solderballs</li> </ul>	<p><b>Pitch</b></p> <table border="1"> <tbody> <tr> <td><b>04</b> = 0,40mm</td> <td><b>10</b> = 1,00mm</td> </tr> <tr> <td><b>05</b> = 0,50mm</td> <td><b>12</b> = 1,27mm</td> </tr> <tr> <td><b>06</b> = 0,65mm</td> <td><b>15</b> = 1,50mm</td> </tr> <tr> <td><b>07</b> = 0,75mm</td> <td><i>others on request</i></td> </tr> <tr> <td><b>08</b> = 0,80mm</td> <td></td> </tr> </tbody> </table>	<b>04</b> = 0,40mm	<b>10</b> = 1,00mm	<b>05</b> = 0,50mm	<b>12</b> = 1,27mm	<b>06</b> = 0,65mm	<b>15</b> = 1,50mm	<b>07</b> = 0,75mm	<i>others on request</i>	<b>08</b> = 0,80mm		<p><b>Grid Code</b>   <b>Config Code</b></p> <p><i>will be given by the factory after receipt of the chip datasheet</i></p>	<p><b>Plating</b></p> <p><b>95</b> = tin/gold (tin leadfree)</p>
<b>04</b> = 0,40mm	<b>10</b> = 1,00mm													
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<b>07</b> = 0,75mm	<i>others on request</i>													
<b>08</b> = 0,80mm														
<p><b>Nbr of contacts</b></p> <p><i>depends on ballcount of chip</i></p>	<p><b>Contact Type</b></p> <ul style="list-style-type: none"> <li><b>30</b> = standard SMT... („A“ = 1,20mm if 1,27mm pitch; 0,80mm if 1,00mm pitch, 0,60 if 0,80mm pitch; 0,40mm if &lt;0.80mm pitch)</li> <li><b>29</b> = raised SMT.. („A“ = 5,00mm if 1,27mm pitch; 3,20mm if 1,00mm pitch; 2,80mm if 0,80mm pitch, 2,30mm if &lt;0.80mm pitch)</li> <li><b>28</b> = special raised SMT - only for 1.00 &amp; 0.80mm pitch..... („A“ = 4,50mm)</li> <li><b>70</b> = standard solder tail..... („A“ = 3.30 if 1.27mm pitch, 2.80 if 1.00mm or 0.80mm pitch, 2,30mm if &lt;0.80mm pitch)</li> <li><b>90</b> = solderless Compression Type (see page 13 for more details)</li> </ul>													

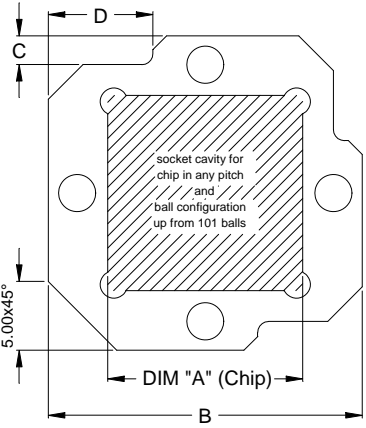
# Ball / Land Grid Array Sockets

Top View for "TwistLock sockets" (through-hole & SMT style only)

## Socket outline for small sized chips (up to 100 balls)

<p>Note: TwistLock sockets up to 100 pins are produced with 2 screws.</p> 	DIM "A" Chip (sq.)	DIM "B" Socket	DIM "B1" Socket	 up to 100 pins
		6.00mm / .236"	13.97mm / .550"	
	7.00mm / .276"	15.24mm / .600"	11.14mm / .439"	
	8.00mm / .315"	16.51mm / .650"	12.41mm / .489"	
	9.00mm / .354"	17.78mm / .700"	13.68mm / .539"	
	10.00mm / .394"	19.05mm / .750"	14.95mm / .589"	
	11.00mm / .433"	19.05mm / .750"	14.95mm / .589"	
	12.00mm / .472"	20.32mm / .800"	16.22mm / .639"	
	13.00mm / .512"	21.59mm / .850"	17.49mm / .689"	
	14.00mm / .551"	22.86mm / .900"	18.76mm / .739"	
	15.00mm / .591"	24.13mm / .950"	20.03mm / .789"	
	16.00mm / .630"	25.40mm / 1.000"	21.30mm / .839"	
	17.00mm / .669"	25.40mm / 1.000"	21.30mm / .839"	
	18.00mm / .709"	26.67mm / 1.050"	22.57mm / .889"	
	19.00mm / .748"	26.67mm / 1.050"	22.57mm / .889"	as of 101 pins

## Socket outline for standard chips (as of 101 balls)

<p>Note: TwistLock sockets from 101 to 600 pins are produced with 4 screws.</p> 	DIM "A" Chip (sq.)	DIM "B" Socket (sq.)	DIM "C" Socket	DIM "D" Socket
		13.00mm / .512"	21.59mm / .850"	2.51mm / .099"
	14.00mm / .551"	22.86mm / .900"	2.09mm / .082"	7.62mm / .312"
	15.00mm / .591"	24.13mm / .950"	2.81mm / .111"	8.89mm / .350"
	16.00mm / .630"	24.13mm / .950"	2.81mm / .111"	8.89mm / .350"
	17.00mm / .669"	25.40mm / 1.000"	2.84mm / .112"	8.89mm / .350"
	18.00mm / .709"	26.67mm / 1.050"	2.99mm / .118"	8.89mm / .350"
	19.00mm / .748"	27.94mm / 1.100"	2.71mm / .107"	8.91mm / .351"
	20.00mm / .787"	29.21mm / 1.150"	2.70mm / .106"	8.89mm / .350"
	21.00mm / .827"	29.21mm / 1.150"	2.70mm / .106"	8.89mm / .350"
	22.00mm / .866"	30.48mm / 1.200"	2.60mm / .102"	8.89mm / .350"
	23.00mm / .905"	31.75mm / 1.250"	2.88mm / .113"	9.53mm / .375"
	24.00mm / .945"	33.02mm / 1.300"	2.39mm / .094"	8.89mm / .350"
	25.00mm / .984"	33.02mm / 1.300"	2.39mm / .094"	8.89mm / .350"
	26.00mm / 1.024"	34.29mm / 1.350"	2.74mm / .108"	8.89mm / .350"
	27.00mm / 1.063"	35.56mm / 1.400"	2.53mm / .099"	9.53mm / .375"
	28.00mm / 1.102"	36.83mm / 1.450"	2.50mm / .098"	9.53mm / .375"
	29.00mm / 1.142"	38.10mm / 1.500"	2.81mm / .111"	9.53mm / .375"
	30.00mm / 1.181"	38.10mm / 1.500"	2.81mm / .111"	9.53mm / .375"
	31.00mm / 1.220"	39.37mm / 1.550"	2.54mm / .100"	9.53mm / .375"
	32.00mm / 1.260"	40.64mm / 1.600"	2.88mm / .113"	9.53mm / .375"
	32.50mm / 1.279"	40.64mm / 1.600"	2.88mm / .113"	9.53mm / .375"
	33.00mm / 1.299"	41.91mm / 1.650"	2.80mm / .110"	9.53mm / .375"
	34.00mm / 1.339"	43.18mm / 1.700"	2.05mm / .081"	9.53mm / .375"
	34.50mm / 1.358"	43.18mm / 1.700"	2.05mm / .081"	9.53mm / .375"
	35.00mm / 1.378"	43.18mm / 1.700"	2.05mm / .081"	9.53mm / .375"
	36.00mm / 1.358"	44.45mm / 1.750"	3.00mm / .118"	9.53mm / .375"
	37.00mm / 1.457"	45.72mm / 1.800"	2.10mm / .083"	8.26mm / .325"
	37.50mm / 1.476"	45.72mm / 1.800"	2.10mm / .083"	8.26mm / .325"
	38.00mm / 1.496"	46.99mm / 1.850"	3.15mm / .124"	9.53mm / .375"
	39.00mm / 1.535"	48.26mm / 1.900"	2.24mm / .088"	9.53mm / .375"
	40.00mm / 1.575"	48.26mm / 1.900"	2.24mm / .088"	9.53mm / .375"
	41.00mm / 1.641"	49.53mm / 1.950"	3.00mm / .118"	9.53mm / .375"
	42.00mm / 1.653"	50.80mm / 2.000"	2.32mm / .091"	9.53mm / .375"
	42.50mm / 1.673"	50.80mm / 2.000"	2.32mm / .091"	9.53mm / .375"
	43.00mm / 1.693"	52.07mm / 2.050"	2.78mm / .109"	9.53mm / .375"
	44.00mm / 1.732"	52.07mm / 2.050"	2.78mm / .109"	9.53mm / .375"
	45.00mm / 1.772"	53.34mm / 2.100"	2.41mm / .095"	9.53mm / .375"
	46.00mm / 1.811"	54.61mm / 2.150"	3.16mm / .124"	9.53mm / .375"
	47.00mm / 1.850"	55.88mm / 2.200"	3.30mm / .130"	9.53mm / .375"
	48.00mm / 1.890"	57.15mm / 2.250"	2.54mm / .100"	9.53mm / .375"
	49.00mm / 1.929"	57.15mm / 2.250"	2.54mm / .100"	9.53mm / .375"
	50.00mm / 1.868"	58.42mm / 2.300"	2.54mm / .100"	9.53mm / .375"

**For Solderless, FastLock, KnobLock, LeverLock, QuickLock, ClamShell & other locking systems, please contact your E-tec sales office for dimensional drawings.**