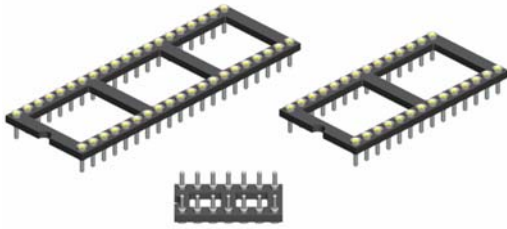


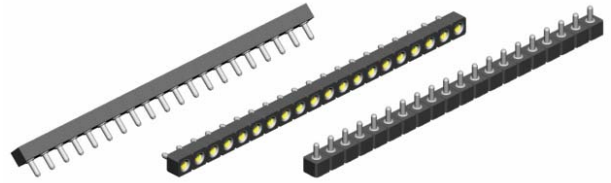
**Low profile DIP sockets LOP Series**

height above PCB 2.41mm / .095"

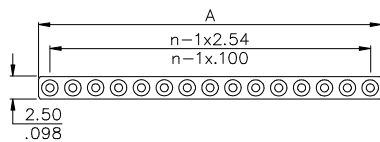
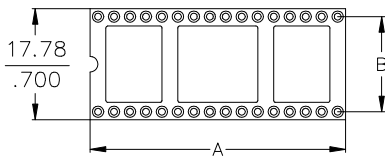
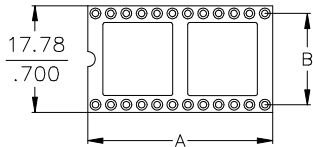
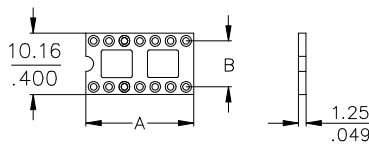


**Low profile strips SLP Series**

height above PCB 2.41mm / .095"



**Insulator**



Pin	Dimensions mm/inch		Ordering Code
	"A"	"B"	
14	17,78/.700	7,62 .300	<b>LOP - 314 - S083 - 95</b>
16	20,32/.800		<b>LOP - 316 - S083 - 95</b>
18	22,86/.900		<b>LOP - 318 - S083 - 95</b>
20	25,40/1.000		<b>LOP - 320 - S083 - 95</b>
24	30,48/1.200		<b>LOP - 324 - S083 - 95</b>
		15,24 .600	
24	30,48/1.200		<b>LOP - 624 - S083 - 95</b>
28	35,56/1.400	<b>LOP - 628 - S083 - 95</b>	
		15,24 .600	
32	40,64/1.600		<b>LOP - 632 - S083 - 95</b>
40	50,80/2.000	<b>LOP - 640 - S083 - 95</b>	
10	25,40/1.000		<b>SLP - 110 - S083 - 95</b>
14	35,56/1.400		<b>SLP - 114 - S083 - 95</b>

**Other sizes and flush head version on request**

**Pin-outs**

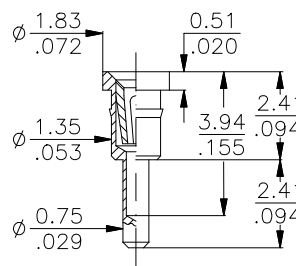
*Other pin-outs available on request.*

Despite the very low profile of these sockets the IC legs can be inserted completely.

**Recommended PCB Layout**

*Recommended drilling hole dia Ø 0,8mm/.031"*

**Low Profile Terminal**



**083** 2.41mm / .095" over PCB

**Plating**

**Standard:**

- **95** = tin/gold  
*(tin leadfree)*

**Alternative**

- **55** = gold/gold  
- **99** = tin/ tin  
*(leadfree)*

**Specifications**

**Mechanical data**

Insertion force 1,80 N (avg)  
Extraction force 0,90 N (avg)  
Contact life > 100 cycles  
Solderability as per IEC 60068-2-58  
Contact security:  
-Vibration as per EN60352-4  
-Shock as per EN60352-4

**Material**

Insulator *(RoHS compliant)* PBT UL 94 V-0  
Terminal *(RoHS compliant)* CuZn  
Contact *(RoHS compliant)* BeCu

**Electrical data**

Contact resistance at 1A 4,3 mΩ typ.  
Current rating 1A max., 100V  
Contact capacitance at 1MHz 2 pF max.  
Insulation resistance at 500V DC 5 × 10<sup>9</sup> Ω min.  
Breakdown voltage at 60 Hz 500 V AC  
Contact resistance ≤ 7 mΩ

**Operating temperature**

-55° C to +125° C

**Pitch**

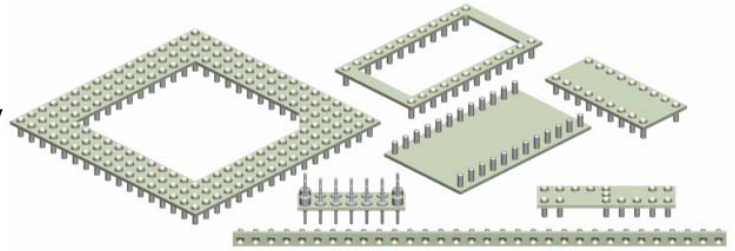
2,54 mm (.100")

**More information, for example about testresult please ref. to page 49 or contact E-tec.**

E-tec's super low profile sockets and adapters are designed for use in applications where height above board is most critical.

The sockets have a profile of 0,60mm above board and they can be combined with the adapters to achieve a board to board interconnection height of 2,20mm max.

Also available in this socket range are the ultra low profile SMT sockets with a height above board of only 3,45mm.



Super Low Profile Sockets						Super Low Profile Adapters	
SMT use			through hole use				
<b>Terminal style</b>	DIM "A"	DIM "B"	DIM "C"	DIM "D"	DIM "E"	<b>Style 377</b>	
<b>144</b>	3,45/.136	3,05/.120	0,94/.037	0,45/.018	1,15/.045		

Specifications			
<b>Mechanical data</b>		<b>Electrical data</b>	
Force per contact (avg)	0,70N insertion / 0,25N extraction	Breakdown voltage at 60 Hz	500 V AC
Contact life	>50 cycles min.	Contact resistance at 1A	4,3 mΩ typ
Solderability	as per IEC 60068-2-58	Insulation resistance	5 × 10 <sup>9</sup> Ω min.
<b>Material</b>		Current rating	1A max., 100V
Terminal (RoHS compliant)	BeCu	Capacitance	2 pF max.
Insulator (RoHS compliant)	Glass Epoxy FR4	<b>Operating temperature</b>	-55 °C to +125 °C

### How to order

XXX - x x x - E x x x ( - x x X ) - x x ( / x )

Series	DIP spacing	Nbr of contacts	Terminal styles	Plating	Pitch
<b>LSP</b> = DIP sockets <b>SSP</b> = SIP sockets <b>DSP</b> = 2-row SIP's <b>PGS</b> = PGA sockets <b>ZZS</b> = Zig-Zag sockets	see pages for LSP series: POS for SSP series: SIB/SIS for DSP series: DIS for ZZS series: ZZP for PGS series: PGA only nbr of contacts	See drawings above for 2,54mm and 2,00mm pitch. For 1,27mm pitch please contact nearest sales office.	- <b>95</b> = tin/gold (tin leadfree) (not available for adapter terminals) - <b>55</b> = gold/gold - <b>99</b> = tin/tin (leadfree)	Complete with <b>1</b> = 1,27mm <b>2</b> = 2,00mm 2.54mm pitch is standard. Others available on request	

### Grid size & Configuration code only for PGA sockets

Please refer to PGA socket pages 29 to 31

## General Specifications for Precision Pin Sockets

### Mechanical data

Average forces for available clip types:	
Standard type	1.80N insertion / 0.90N extraction
Low force type	0.70N insertion / 0.25N extraction
Super low force type	0.40N insertion / 0.15N extraction
High force type	4.00N insertion / 2.50N extraction
„Jumbo“ contact	1.40N insertion / 0.25N extraction
<i>Other clips and forces available on request</i>	
Contact life	min. 100 cycles
Vibration as per EN60352-4	sinusoidal, 10 to 500 Hz, 10g, 1 octave/min, 10 cycles for each axis
Shock as per EN60352-4	half sine, 50g, 11ms, 3 shocks in 3 axes
Thermal shock as per IEC 60068-2-14	-55°C/+125°C, 5 cycles, 30 minutes
Solderability as per IEC 60068-2-58	245°C to 255°C 5 sec; Sn97Ag3 solder alloy
Dry heat steady state as per IEC 60068-2-2	260°C for 20 sec.
Cold steady state as per IEC 60068-2-1	-55°C, 2h
Damp heat cyclic as per IEC 60068-2-30	55°C, 90-100%rH, 24h
Moisture sensitivity Level (JEDEC J-STD-020C)	2 for PBT & Nylon 1 for all other materials
PCB holes for 2.54mm pitch standard connectors	1.00mm diameter
Coplanarity thru-hole	0.30mm
General tolerances	+/- 0.10mm

### Operating temperature (standard)

-55°C to +125°C

### Processing temperature

injection molded insulator (high temp)	+250°C +0/-5°C for 20~40 sec. (reflow solder)
injection molded insulator (PBT)	+250°C +0/-5°C for 10 sec. (wave solder only)
Epoxy FR4 (Standard)	+220°C min. for 10 sec.
Epoxy FR4 (hi temp)	+260°C min. for 60 sec.

### Electrical data

Contact resistance at 1A	4,3 mΩ typ.
Current rating (except „Jumbo“ contact)	1A max.
„Jumbo“ contact	3A max.
Contact capacitance at 1MHz	2pF max.
Insulation resistance at 500V DC for std & hi-temp	5 × 10 <sup>9</sup> Ω min.
Insulation resistance at 500V DC for FR4 Epoxy	> 10 <sup>4</sup> MΩ
Breakdown voltage at 60 Hz	500 V AC min.
Contact resistance after 1000 ins./ext. cycles	≤ 7 mΩ

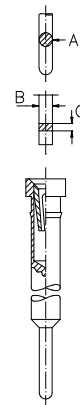
### Material (RoHS compliant)

Standard temperature plastic: PBT UL 94 V-0	14, 15, 16, 23, 17, 19, 20, 24 25, 26, 27, 29
High-temp plastic: Nylon, PCT, SPS, PPS, LCP UL 94 V-0	5, 6, 7, 8, 9, 10, 11, 12, 13, 14 15, 16, 21, 22, 20, 25, 26, 27 28, 33, 34, 35, 36, 37, 38, 39 40, 41, 42, 43
Epoxy FR4: UL 94 V-0 & UL 94 V-1	32, 5, 6, 7, 18, 22, 24, 29
PBT, Nylon, PCT, SPS, PPS, LCP & Epoxy FR4	If necessary pls. contact E-tec for Material specification.
Terminal: CuZn	
Contact: BeCu	

### Male pin dimensions for standard clip (except „Jumbo Contact“)

(DIN 41 870, IEC 191 for square IC-legs)

DIM	min.	max.
„A“ ∅	<u>0.42</u> .016"	<u>0.56</u> .022"
„B“ □	<u>0.36</u> .014"	<u>0.55</u> .023"
„C“ □	<u>0.20</u> .008"	<u>0.30</u> .014"



## General information concerning the E-tec interconnect products

### Plating:

- Standard tin plating:  
min. 2.50µm Sn (*leadfree*) over Ni
- Standard gold plating:  
flash, max. 0,10µm Au over Ni
- Higher gold platings are offered on request

### Specifications:

The data contained in this catalog is of general nature and refers to standard products. For example a „Current rating“ at an ambient temperature of 25° C reflects the value per individual contact. Should you require any further data or test reports, you can obtain this information from your nearest E-tec sales office.

The E-tec connectors conform with signal integrity requirements at high data and frequency rates. However we cannot offer a general information about the max. frequency or data transmission rate. For such a statement, it would require more information about the chosen configuration and pin-out, the length of the cable and/or any other specific requirements regarding the application itself and its related signal integrity.

E-tec SMT connectors, male or female, are offered with a coplanarity of max. 0,10mm. They are adapted to all modern SMT soldering processes and they can be handled easily with all currently existing placing techniques. Customers may choose between various packaging options, such as tray, tube and tape & reel.

## GENERAL POLICY

All information contained in this catalog, including illustrations, specifications and dimensions are accurate to the best of our knowledge, and reflect the status as at the date of publication. Due to technical progress, it is subject to change without notice. Application information is informational in nature and shall not be construed to warrant suitability of products for any particular purpose as performance may vary depending on the conditions to which a product is subjected. Unless otherwise confirmed at the time of order, all E-tec products are non cancellable and non returnable items (NCNR). E-tec products are warranted for 30 days and the warranty is limited strictly to replacement of products. This warranty does not cover any claims for natural wear and tear, nor for any compensations, such as loss of production, loss of use, loss of orders, loss of profit, nor any other direct or indirect damages.