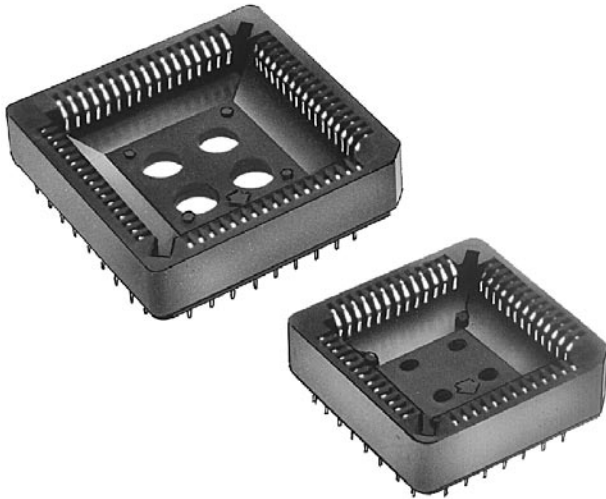


# PLCC Sockets Through Hole - M43 Series



## PART NUMBER LEGEND

### M43X-XX-XX

#### NUMBER OF CONTACTS

20, 28, 32, 44, 52, 68, 84, 100 (-10 Style)  
44, 52, 68, 84 (-11 Style)

#### STYLE

-10 Standard wall thickness, through hole  
-11 Thin wall design, through hole

#### PLATING

E = Tin/Lead  
S = 5 µin gold nominal

## SPECIFICATIONS:

### Material:

Insulator: Polybutylene Terephthalate (PBT), glass reinforced  
UL 94V-0

Insulator color: Black

Contacts: Phosphor Bronze

### Plating:

100 µin bright tin-lead plate all over to MIL-P-81728, Type 1 with  
50 µin copper underplate to MIL-C-14550 or 5 µin gold nom.  
(optional 30 µin) to MIL-G-45204, Type II, Grade C min on contact  
area only.

### Electrical:

Operation voltage: 250 VAC max

Current rating: 1 Amp max

Contact resistance: 20 mΩ max

Insulation resistance: 1000 MΩ min @ 600 VDC between  
adjacent contacts (75°F and 50% R.H.)

Dielectric withstanding voltage: 600 VDC min RMS (sea level)

Capacitance: 1.0 pF max between adjacent contacts

### Mechanical:

Insertion force: with Jedec chip 9 lbs. max

Withdrawal force: with Jedec chip 2 lbs. min

### Environmental:

Operating temperature: -65°C to +105°C (PBT)

## ACCESSORIES:

Extraction tool, P/N CT2101 and CT2102

## PACKAGING:

Anti-Static Plastic Trays, plastic tubes or tape and reel available.

## APPROVALS AND CERTIFICATIONS:



Select parts recognized under the component program of  
Underwriters Laboratories, Inc. No. E167232  
Certified by Canadian Standards Association No. LR75112  
Verband Deutscher Elektrotechniker (VDE) APL42393



#### North and South America:

#### Methode Electronics, Inc. Connector Products

1700 Hicks Road • Rolling Meadows, IL 60008 USA

847-392-3500 • Toll Free: 800-323-6864 • Fax: 847-392-9404

Email: info@methode.com • Web: www.methode.com/connector/index.html

#### Europe:

#### Methode Electronics Ireland, Ltd.

Unit H, Crossagalla Business Park, Ballysimon Rd. • Limerick, Ireland

+353 (0) 61 401222 • Fax: +353 (0) 61 401942

Email: info@methode.ie • Web: ireland.methode.com/main.html

#### Far East:

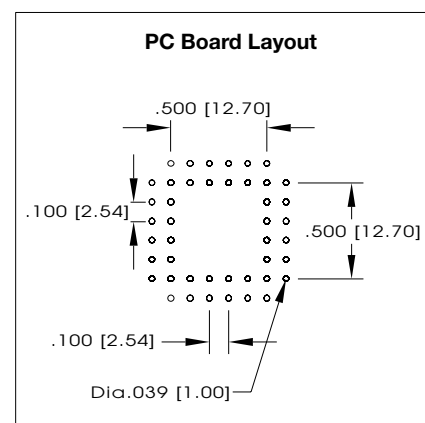
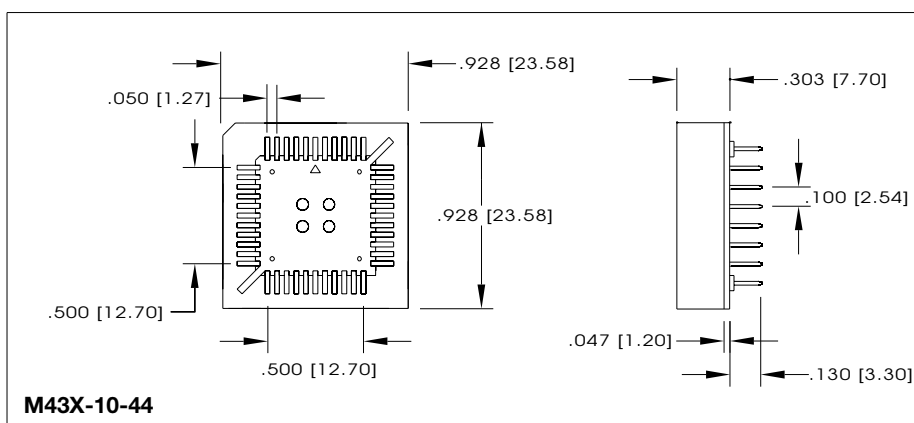
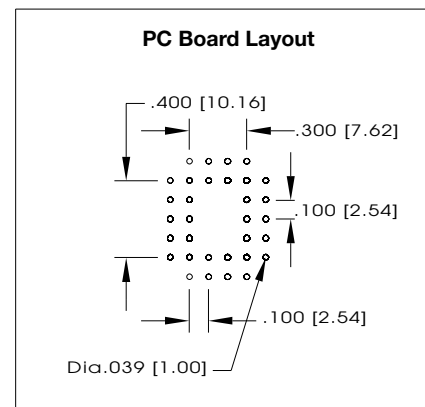
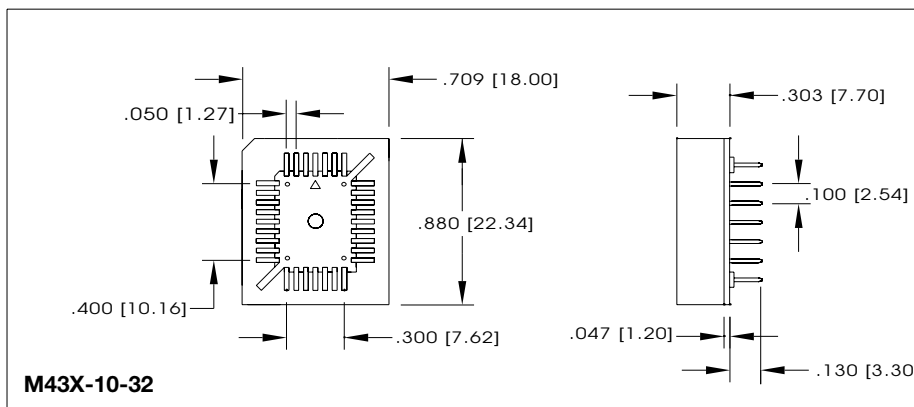
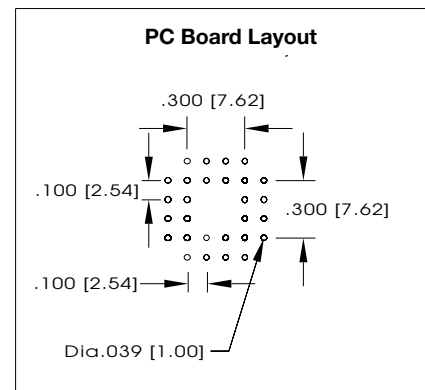
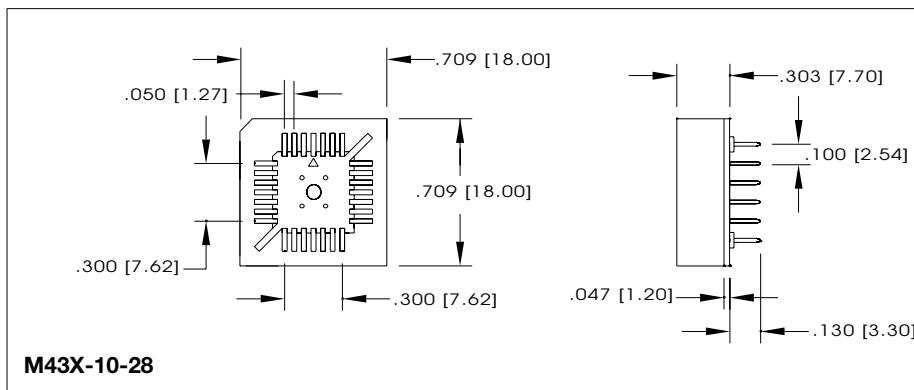
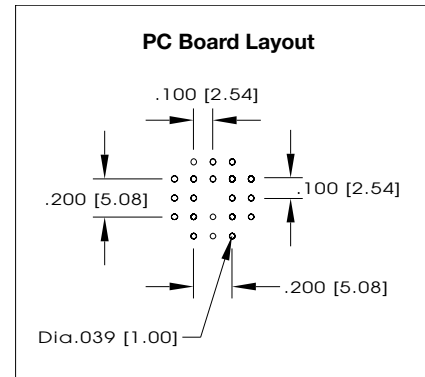
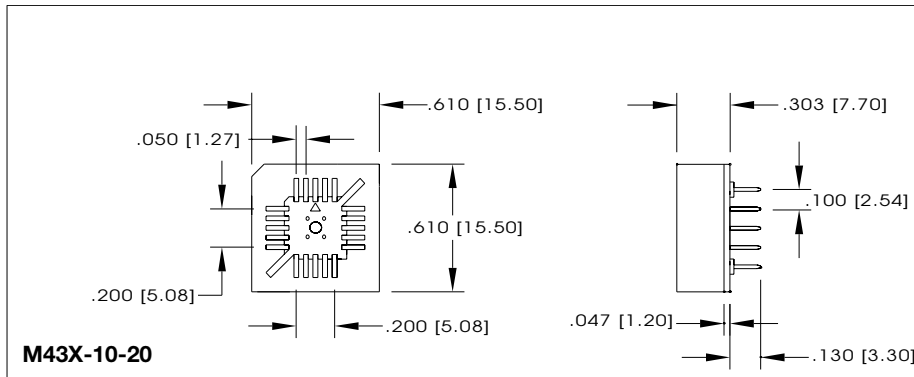
#### Methode Electronics Far East, Pte. Ltd.

1 Tuas Lane, Jurong Town • Singapore 638610

65-68615444 • Fax: 65-68614777

Email: sales@methode.com.sg • Web: www.methode.com/mefe/index.html

# PLCC Sockets Through Hole - M43 Series

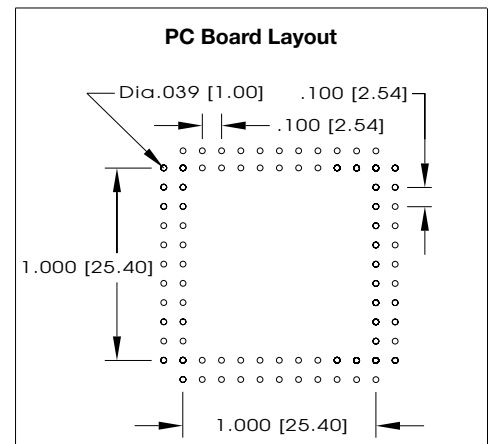
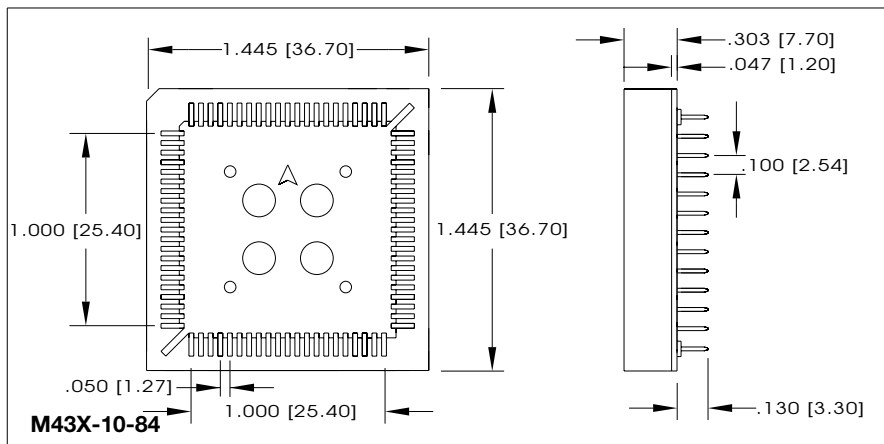
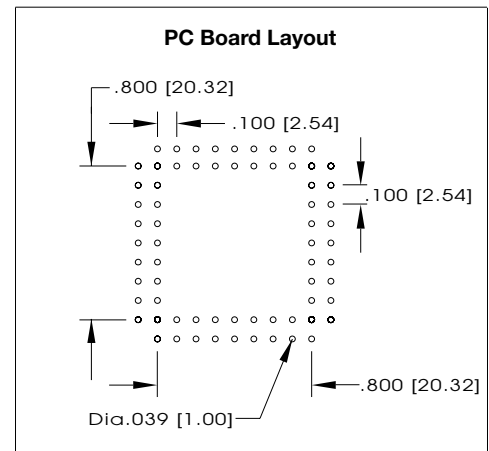
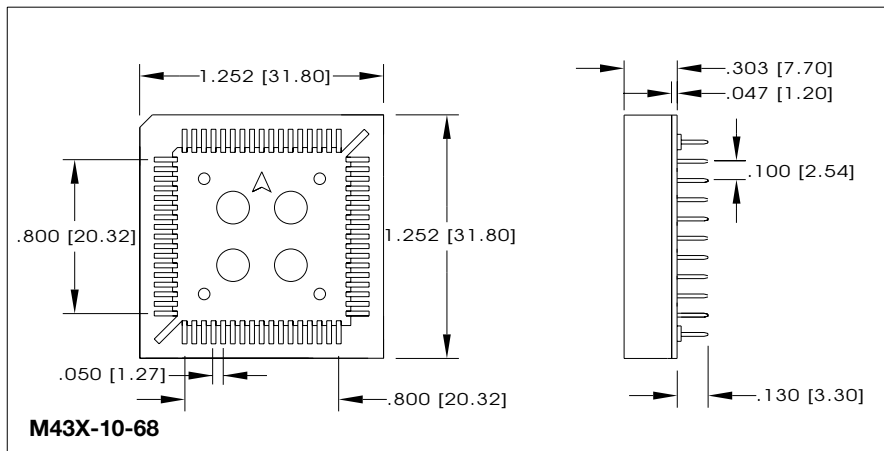
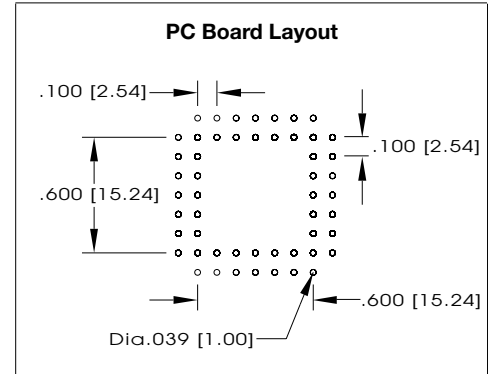
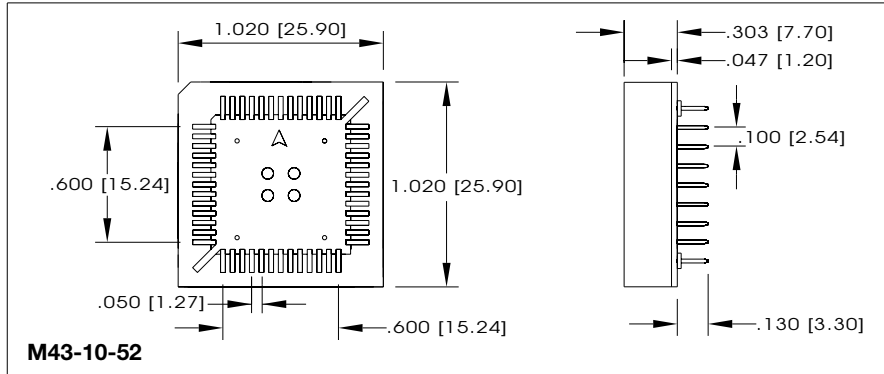


North and South America:  
**Methode Electronics, Inc. Connector Products**  
 1700 Hicks Road • Rolling Meadows, IL 60008 USA  
 847-392-3500 • Toll Free: 800-323-6864 • Fax: 847-392-9404  
 Email: info@methode.com • Web: www.methode.com/connector/index.html

Europe:  
**Methode Electronics Ireland, Ltd.**  
 Unit H, Crossagalla Business Park, Ballysimon Rd. • Limerick, Ireland  
 +353 (0) 61 401222 • Fax: +353 (0) 61 401942  
 Email: info@methode.ie • Web: ireland.methode.com/main.html

Far East:  
**Methode Electronics Far East, Pte. Ltd.**  
 1 Tuas Lane, Jurong Town • Singapore 638610  
 65-68615444 • Fax: 65-68614777  
 Email: sales@methode.com.sg • Web: www.methode.com/mefe/index.html

# PLCC Sockets Through Hole - M43 Series



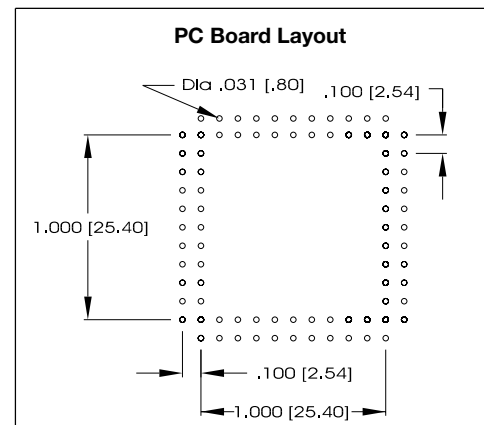
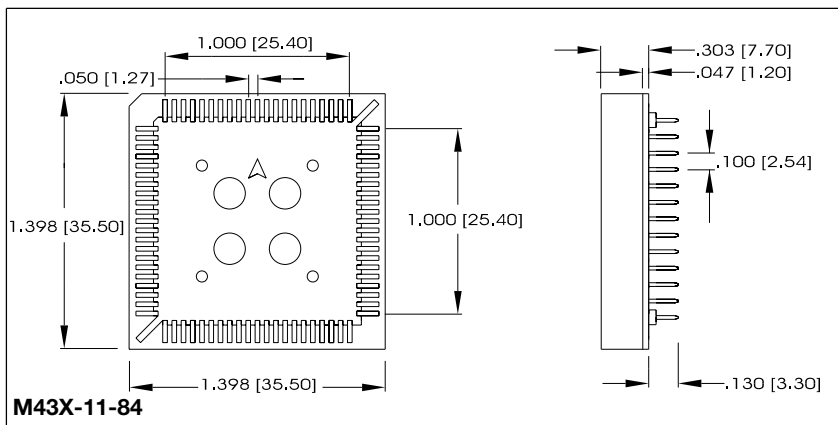
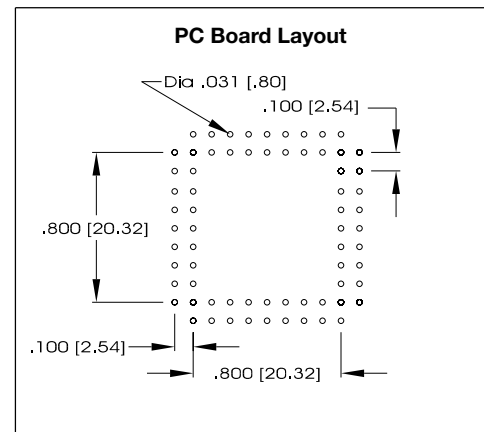
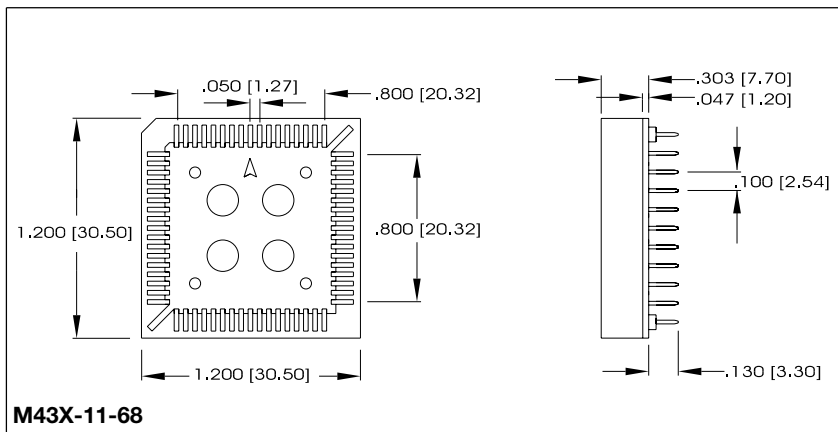
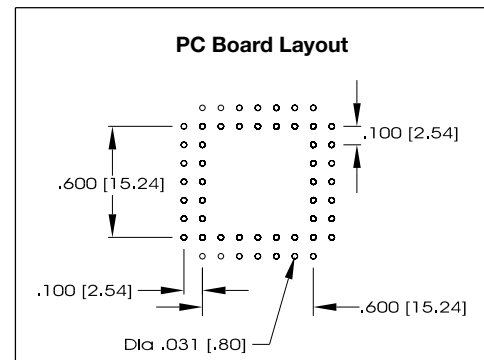
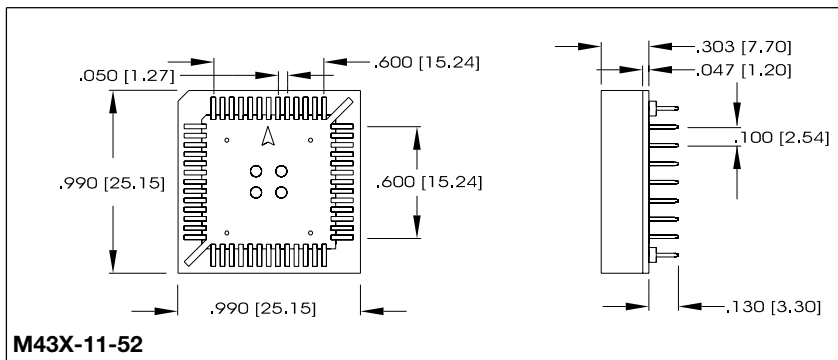
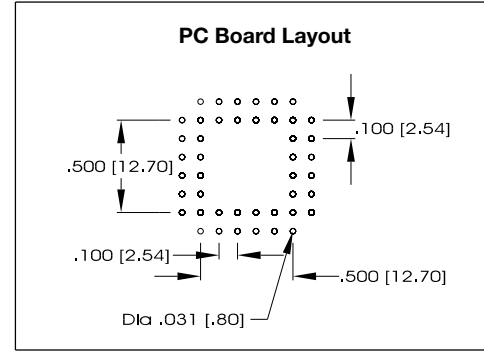
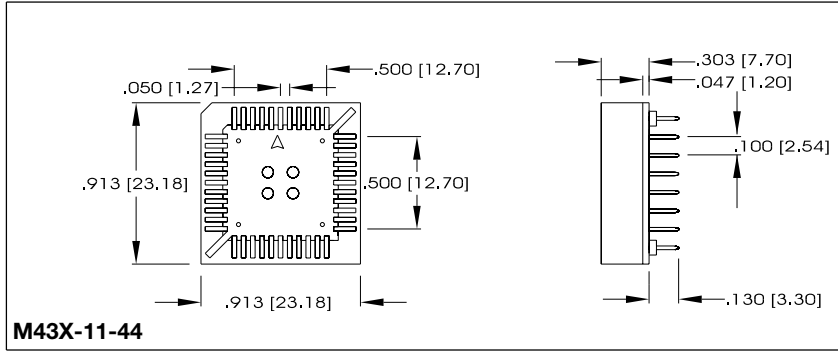
Extraction tool CT-2101  
fits all socket sizes.  
(CT2102 for highly  
populated boards)



(CT2102 for Highly Populated Boards)



# PLCC Sockets Through Hole - M43 Series



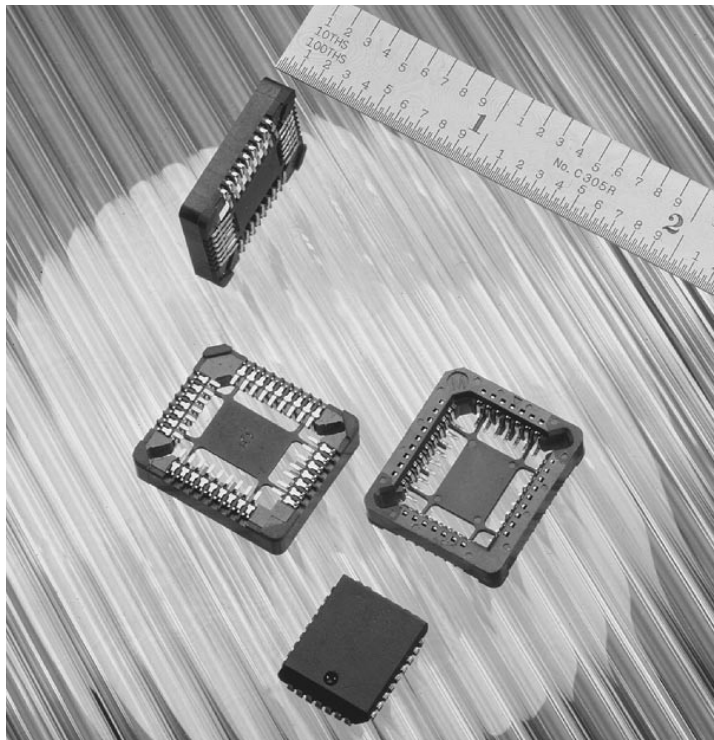
North and South America:  
**Methode Electronics, Inc. Connector Products**  
 1700 Hicks Road • Rolling Meadows, IL 60008 USA  
 847-392-3500 • Toll Free: 800-323-6864 • Fax: 847-392-9404  
 Email: info@methode.com • Web: www.methode.com/connector/index.html

Europe:  
**Methode Electronics Ireland, Ltd.**  
 Unit H, Crossagalla Business Park, Ballysimon Rd. • Limerick, Ireland  
 +353 (0) 61 401222 • Fax: +353 (0) 61 401942  
 Email: info@methode.ie • Web: ireland.methode.com/main.html

Far East:  
**Methode Electronics Far East, Pte. Ltd.**  
 1 Tuas Lane, Jurong Town • Singapore 638610  
 65-68615444 • Fax: 65-68614777  
 Email: sales@methode.com.sg • Web: www.methode.com/mefe/index.html

# Ultra Low Profile/Surface Mount PLCC Socket

Patent No. 4,934,944



PART NO. KEY  
**213 - 032- 70X**

#### CASTING STYLE

- 1 = W/POLARIZING PEGS
- 2 = W/O POLARIZING PEGS

#### PLATING

- 0 = TIN/LEAD OVER NICKEL (STANDARD)
- 3 = TIN OVER NICKEL

## Features

- Patented design allows for inspection and repair of surface mount connections
- .150 (3.81) overall height
- Uses the same mounting pattern as mating chip
- Fully compatible with all surface mount processing
- Exposed solder tails for cleaning and maximum drainage
- Center pad for vacuum pick and place robotic assemble and/or adhesive bonding
- Optional polarizing pegs available
- Visual and mechanical polarization
- Extraction tool slots
- Contact design provides constant downward force on chip to prevent disengagement
- Preloaded contact provides low insertion force while maintaining high normal force
- Available in 32 positions

Methode has designed this PLCC socket to take full advantage of surface mount technology. The exclusive visible internal solder tails along with the use of quality high temperature materials assure compatibility with all common reflow processes. This unique configuration combines the handling and real estate advantages of the J-lead with the processing, inspection and repair advantages of the gull wing. The small overall package dimensions allow the use of sockets with minimum sacrifice in space. A center pad is provided to insure structural integrity and provide a surface for vacuum pick up or adhesive bonding. The socket uses the same board pattern as the standard chip conforming to JEDEC specification MO-052 and the exposed tails insure full cleaning with maximum drainage. The exclusive high pressure contact system eliminates the need for gold plating while assuring a reliable, cost effective way to provide a surface mount socket for

## Specifications

### Materials

**Contact Material:** Beryllium Copper

**Contact Plating:** Tin/Lead over Nickel

**Insulator Material:** Polyphenylene Sulfide, UL 94V-0

**Operating Temperature:** -50°C to +125°C

### Mechanical Performance

**Durability:** Per MIL-STD-1344, method 2016, 100 cycles

**Vibration:** Per MIL-STD-810C, method 514.2, 10-20,000 Hz, 5 Gs

**Shock:** Per MIL-STD-810C, method 513.2, 15 Gs

**Acceleration:** Per MIL-STD-810C, method 513.2, 15 Gs

### Electrical Performance

**Contact Interface Resistance:**

**Initial:** 6.5 milliohms average

**Final:** 15.0 milliohms maximum after testing

**Insulation Resistance:** Greater than 1 x 10<sup>4</sup> megohms

**Dielectric Strength:** 1000 VAC continuous for 1 minute

**Capacitance:** Less than 1.0 pF at 1,000 Hz

**Inductance:**

**Self:** 5.0 nH, maximum at 500 KHz

**Mutual:** 1.0 nH, maximum at 500 KHz

### Environmental Performance

**Thermal Shock:** Per MIL-STD-1344, method 1003, condition A, cycled from -55°C to +85°C no discontinuity or physical damage

**Temperature/Humidity:** Per MIL-STD-1344, method 1002, 85°C/85% relative humidity

### Agency Approvals:

UL Component Recognition File E-48567

 METHODE ELECTRONICS, INC.

North and South America:

Methode Electronics, Inc. Connector Products

1700 Hicks Road • Rolling Meadows, IL 60008 USA

847-392-3500 • Toll Free: 800-323-6864 • Fax: 847-392-9404

Email: info@methode.com • Web: www.methode.com/connector/index.html

Europe:

Methode Electronics Ireland, Ltd.

Unit H, Crossagalla Business Park, Ballysimon Rd. • Limerick, Ireland

+353 (0) 61 401222 • Fax: +353 (0) 61 401942

Email: info@methode.ie • Web: ireland.methode.com/main.html

Far East:

Methode Electronics Far East, Pte. Ltd.

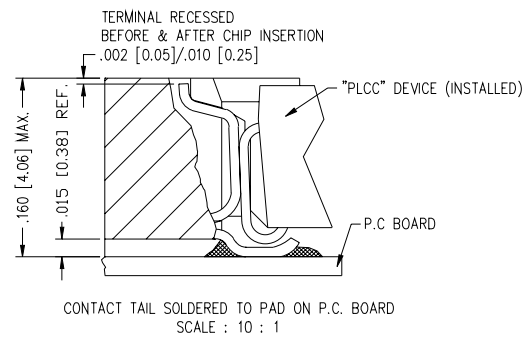
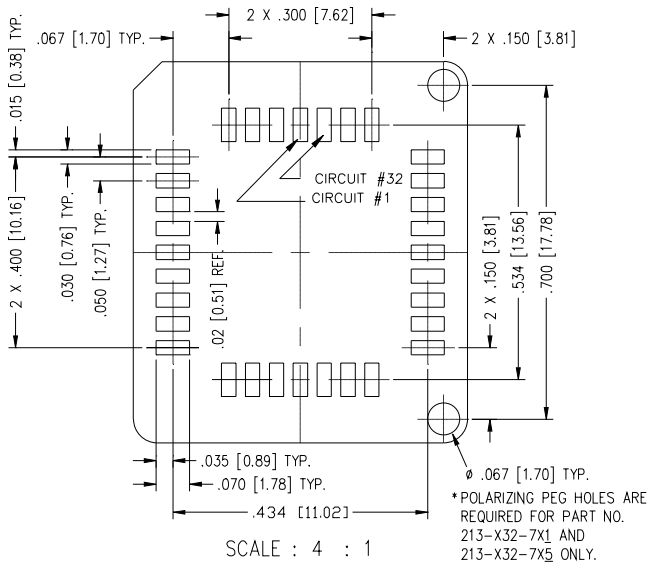
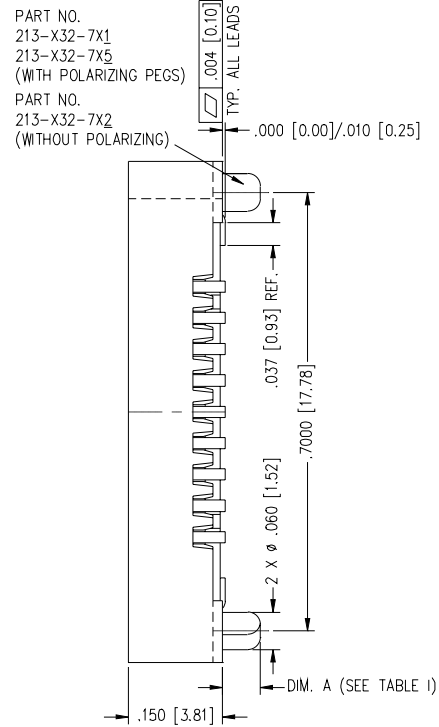
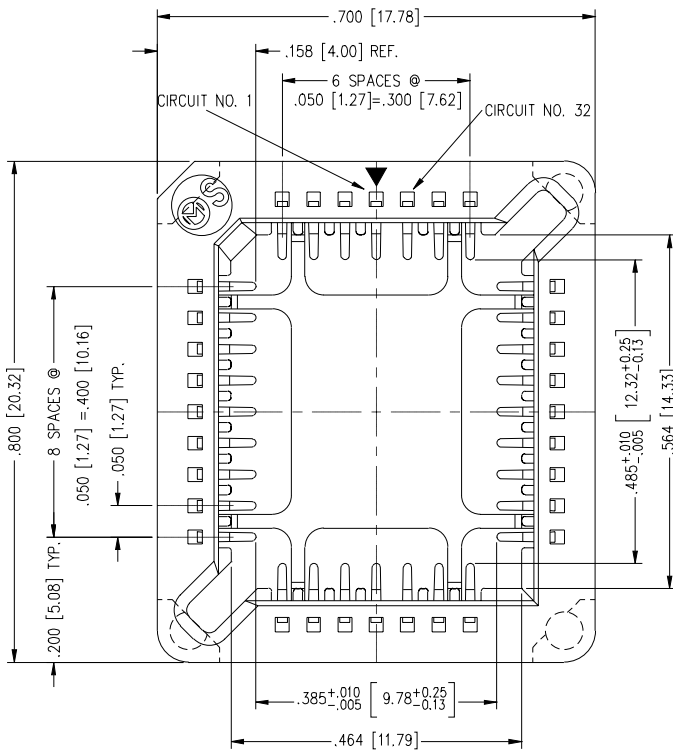
1 Tuas Lane, Jurong Town • Singapore 638610

65-68615444 • Fax: 65-68614777

Email: sales@methode.com.sg • Web: www.methode.com/mefe/index.html

# Ultra Low Profile/Surface Mount PLCC Socket

Patent No. 4,934,944



Extraction tool  
CT-2101 fits all  
socket sizes.



(CT2102 for Highly Populated Boards)



North and South America:  
**Methode Electronics, Inc. Connector Products**  
1700 Hicks Road • Rolling Meadows, IL 60008 USA  
847-392-3500 • Toll Free: 800-323-6864 • Fax: 847-392-9404  
Email: info@methode.com • Web: www.methode.com/connector/index.html

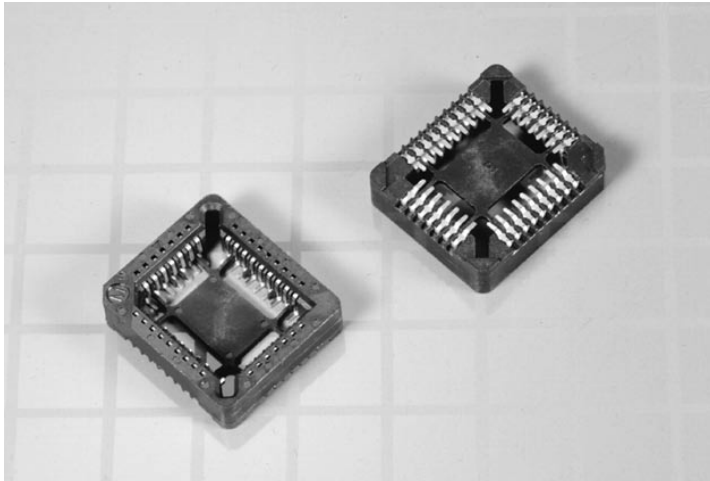
Europe:  
**Methode Electronics Ireland, Ltd.**  
Unit H, Crossagalla Business Park, Ballysimon Rd. • Limerick, Ireland  
+353 (0) 61 401222 • Fax: +353 (0) 61 401942  
Email: info@methode.ie • Web: ireland.methode.com/main.html

Far East:  
**Methode Electronics Far East, Pte. Ltd.**  
1 Tuas Lane, Jurong Town • Singapore 638610  
65-68615444 • Fax: 65-68614777  
Email: sales@methode.com.sg • Web: www.methode.com/mefe/index.html

# Low Profile/Surface Mount PLCC Socket



Patent No. 4,934,944



## PART NO. KEY

213 - XXX - 60X

### CASTING STYLE

- 1 = W/POLARIZING PEGS
- 2 = W/O POLARIZING PEGS

### PLATING

- 0 = TIN OVER NICKEL (STANDARD)

### NUMBER OF POSITIONS

- 020, 028 (SQUARE), 128 (RECTANGULAR), 032, 044, 052, 068, 084

## Specifications

### Materials

**Contact Material:** Beryllium Copper

**Contact Plating:** Tin/Lead over Nickel

**Insulator Material:** Polyphenylene Sulfide, UL 94V-0

**Operating Temperature:** -50°C to +125°C

### Mechanical Performance

**Durability:** Per MIL-STD-1344, method 2016, 100 cycles

**Vibration:** Per MIL-STD-810C, method 514.2, 10-20,000 Hz, 5 Gs

**Shock:** Per MIL-STD-810C, method 516.2, 35 Gs

**Acceleration:** Per MIL-STD-810C, method 513.2, 15 Gs

### Electrical Performance

#### Contact Interface Resistance:

**Initial:** 6.5 mΩ average

**Final:** 15.0 mΩ maximum after testing

**Insulation Resistance:** Greater than  $1 \times 10^4$  megohms

**Dielectric Strength:** 1000 VAC continuous for 1 minute

**Capacitance:** Less than 1.0 pF at 1,000 Hz

#### Inductance:

**Self:** 5.0 nH, maximum at 500 KHz

**Mutual:** 1.0 nH, maximum at 500 KHz

### Environmental Performance

**Thermal Shock:** Per MIL-STD-1344, method 1002, condition A, cycled from -55°C to +85°C no discontinuity or physical damage

**Temperature/Humidity:** Per MIL-STD-1344, method 1002, 85°C/85% relative humidity

### Agency Approvals:

UL Component Recognition File E-48567

Methode has designed this PLCC socket to take full advantage of surface mount technology. The exclusive visible internal solder tails along with the use of quality high temperature materials assure compatibility with all common reflow processes. This unique configuration combines the handling and real estate advantages of the J-lead with the processing, inspection and repair advantages of the gull wing. The small overall package dimensions allow the use of sockets with minimum sacrifice in space. A center pad is provided to insure structural integrity and provide a surface for vacuum pick up or adhesive bonding. The socket uses the same board pattern as the standard JEDEC chip and the exposed tails insure full cleaning with maximum drainage. The exclusive high pressure contact system eliminates the need for gold plating while assuring a reliable, cost effective way to provide a surface mount socket for lead chip carriers.

## Features

- Patented design allows for inspection and repair of surface mount connections
- .200 (5.08) total mated height
- Uses the same mounting pattern as mating chip
- Fully compatible with all surface mount processing
- Exposed solder tails for cleaning and maximum drainage
- Center pad for vacuum pick and place robotic assemble and/or adhesive bonding
- Optional polarizing pegs available
- Visual and mechanical polarization
- Extraction tool slots
- Contact design provides constant downward force on chip to prevent disengagement
- Preloaded contact provides low insertion force while maintaining high normal force
- Available in 20, 28, 32, 44, 52, 68 and 84 positions



North and South America:

Methode Electronics, Inc. Connector Products

1700 Hicks Road • Rolling Meadows, IL 60008 USA

847-392-3500 • Toll Free: 800-323-6864 • Fax: 847-392-9404

Email: info@methode.com • Web: www.methode.com/connector/index.html

Europe:

Methode Electronics Ireland, Ltd.

Unit H, Crossagalla Business Park, Ballysimon Rd. • Limerick, Ireland

+353 (0) 61 401222 • Fax: +353 (0) 61 401942

Email: info@methode.ie • Web: ireland.methode.com/main.html

Far East:

Methode Electronics Far East, Pte. Ltd.

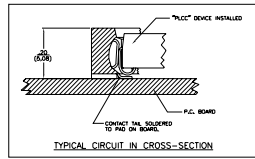
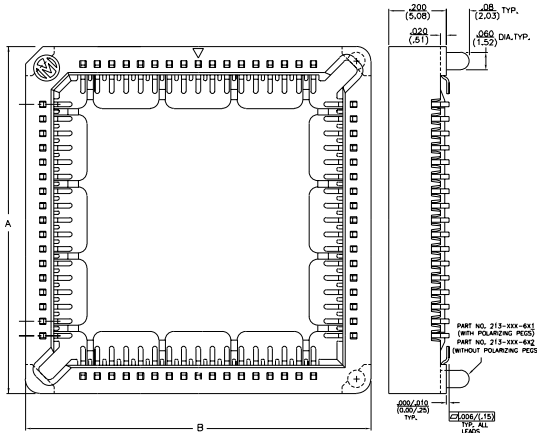
1 Tuas Lane, Jurong Town • Singapore 638610

65-68615444 • Fax: 65-68614777

Email: sales@methode.com.sg • Web: www.methode.com/mefe/index.html

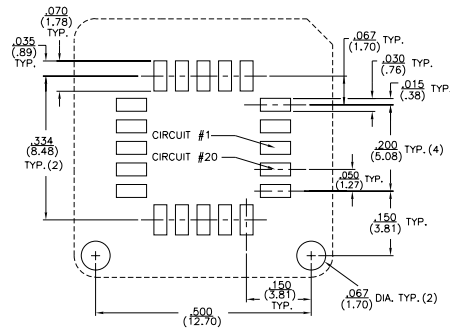
# Low Profile/Surface Mount PLCC Socket

Patent No. 4,934,944

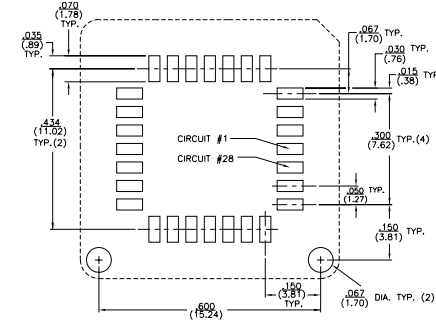


PART NUMBER	NO. OF TERM	A	B
213-020-60X	20	.60 (15.50)	.60 (15.24)
213-028-60X	28	.70 (18.00)	.70 (17.78)
213-128-60X	28	.80 (20.32)	.60 (15.24)
213-032-60X	32	.80 (20.32)	.70 (17.78)
213-044-60X	44	.90 (25.90)	.90 (22.86)
213-052-60X	52	1.00 (31.80)	1.00 (25.40)
213-068-60X	68	1.20 (36.70)	1.20 (30.48)
213-084-60X	84	1.40 (35.56)	1.40 (35.56)

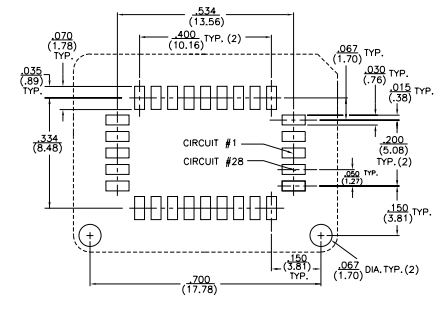
## Recommended P.C. Board Layout - Component Side Shown



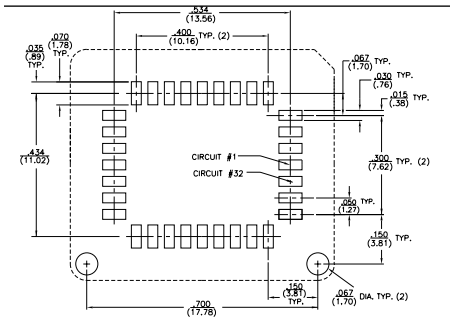
20 POSITION



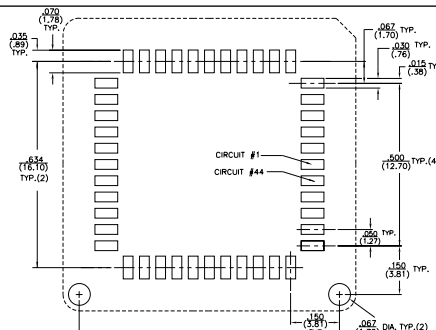
28 POSITION



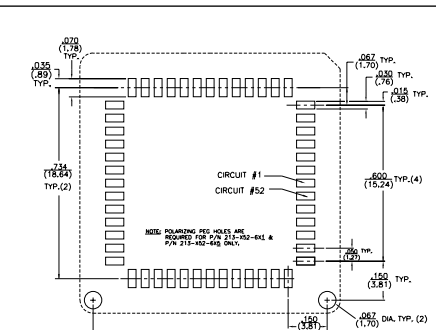
128 POSITION



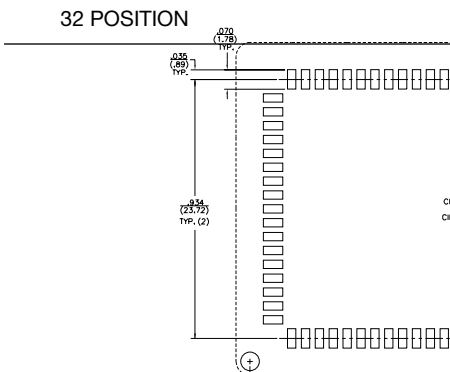
32 POSITION



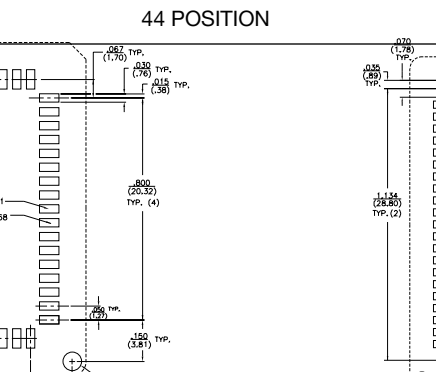
44 POSITION



52 POSITION



68 POSITION



84 POSITION



North and South America:  
**Methode Electronics, Inc. Connector Products**  
 1700 Hicks Road • Rolling Meadows, IL 60008 USA  
 847-392-3500 • Toll Free: 800-323-6864 • Fax: 847-392-9404  
 Email: info@methode.com • Web: www.methode.com/connector/index.html

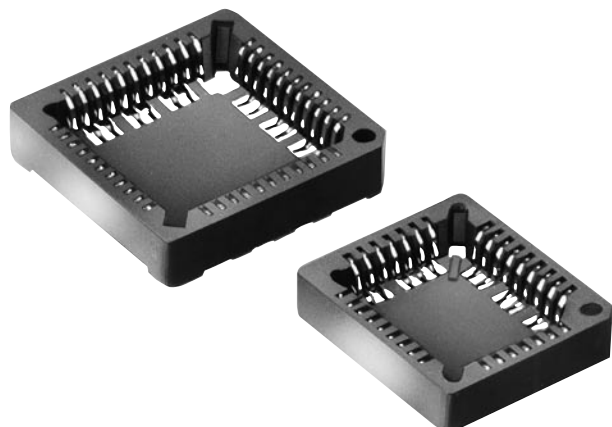
Europe:  
**Methode Electronics Ireland, Ltd.**  
 Unit H, Crossagalla Business Park, Ballysion Rd. • Limerick, Ireland  
 +353 (0) 61 401222 • Fax: +353 (0) 61 401942  
 Email: info@methode.ie • Web: ireland.methode.com/main.html

Far East:  
**Methode Electronics Far East, Pte. Ltd.**  
 1 Tuas Lane, Jurong Town • Singapore 638610  
 65-68615444 • Fax: 65-68614777  
 Email: sales@methode.com.sg • Web: www.methode.com/mefe/index.html



# PLCC Sockets

## Thin Wall Surface Mount - M43 Series



### PART NUMBER LEGEND

#### M43X-XX-XX

#### NUMBER OF POSITIONS

20, 28, 32, 44, 52, 68, 84

#### STYLE

12 Surface mount, no pegs

14 Surface mount, with pegs

#### PLATING

E = Tin/Lead

S = 5 µin gold nominal

### MATING OPTIONS:

Mates with PLCC's conforming to EIA/JEDEC specifications in registration MO-047, AA through AH

### SPECIFICATIONS:

#### Material:

Insulator: High temp Polyphenylene Sulfide (PPS), glass reinforced rated UL 94V-0

Contacts: Phosphor Bronze

#### Plating:

100 µin bright tin plate to MIL-T-10727, Type 1 over  
50 µin copper underplate to MIL-C-14550. Optional 5 µin gold to MIL-G-45204, Type II, Grade C in contact area.

#### Electrical:

Operation voltage: 250 VAC max

Current rating: 1 Amp max

Contact resistance: 20 mΩ max

Insulation resistance: 1000 MΩ min @ 600 VDC between adjacent

contacts (75°F and 50% R.H.)

Dielectric withstanding voltage: 600 VAC min RMS (sea level)

Capacitance: 1.0 pF max between adjacent contacts

#### Mechanical:

Insertion force: 180 gms max per contact

Withdrawal force: 28.35 gms min per contact

#### Environmental:

Operating temperature: -65°C to +105°C (PPS)

### MATING OPTIONS:

Mates with PLCC's conforming to EIA/JEDEC specifications in registration MO-047, AA through AH

### ACCESSORIES:

Methode CT2101 or CT2102 Extraction tool

### PACKAGING:

Plastic tubes, tape and reeled available.

### APPROVALS AND CERTIFICATIONS:

Select parts recognized under the component program of Underwriters Laboratories, Inc. No. E130225  
Certified by Canadian Standards Association No. LR75112



Extraction tool  
CT-2101 fits all  
socket sizes.

(CT2102 for Highly Populated Boards)



North and South America:

Methode Electronics, Inc. Connector Products

1700 Hicks Road • Rolling Meadows, IL 60008 USA

847-392-3500 • Toll Free: 800-323-6864 • Fax: 847-392-9404

Email: info@methode.com • Web: www.methode.com/connector/index.html

Europe:

Methode Electronics Ireland, Ltd.

Unit H, Crossagalla Business Park, Ballysimon Rd. • Limerick, Ireland

+353 (0) 61 401222 • Fax: +353 (0) 61 401942

Email: info@methode.ie • Web: ireland.methode.com/main.html

Far East:

Methode Electronics Far East, Pte. Ltd.

1 Tuas Lane, Jurong Town • Singapore 638610

65-68615444 • Fax: 65-68614777

Email: sales@methode.com.sg • Web: www.methode.com/mefe/index.html

# PLCC Sockets

## Thin Wall / Surface Mount - M43 Series

