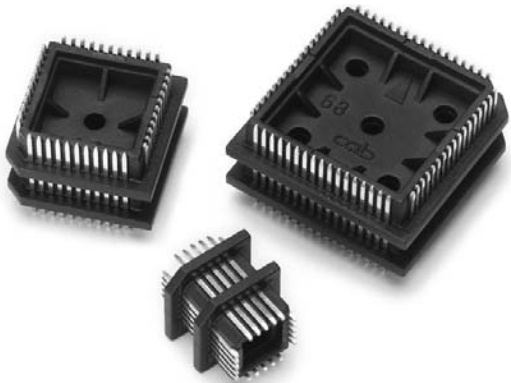
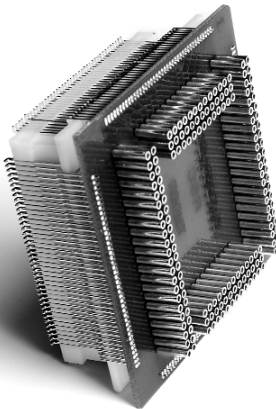


# BOARD TO BOARD INTERCONNECTS

## WHAT ARE BOARD TO BOARD INTERCONNECTS?



ET offers a variety of molded PLCC plugs, designed to provide a connection between your daughterboard and your PLCC production socket or SMT pads.



**PQFP/TQFP SMT BASES** (pg. 26, 27, 28)

## HIGH-SPEED BOARD TO BOARD INTERCONNECT (pg. 28)

Using Ultra Mini Pogo Pins or Solder Balls for applications up to 14.6GHz.

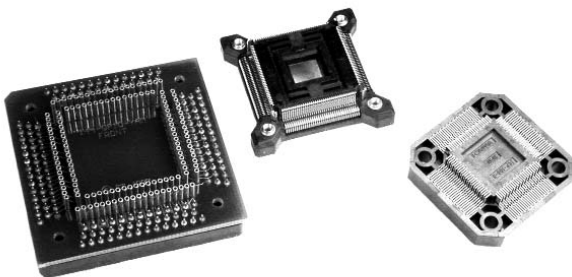


<u>INTERCONNECT</u>	<u>PAGE</u>
Custom Cable Assemblies.....	31
ET Interconnect System.....	30
PLCC Plugs.....	24
Pogo Pin-Based Interconnect.....	28
PQFP/TQFP Bases with Cable for Posts.....	29
PQFP/TQFP Surface Mount Bases.....	26, 27, 28
SMT PQFP Emulator Plugs.....	25

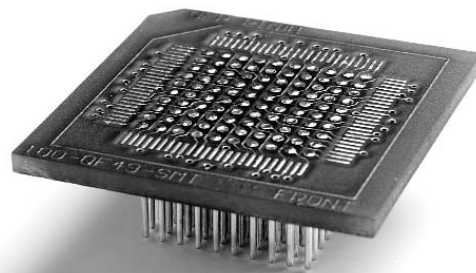
ET provides board to board interconnect solutions for the following package styles:

TQFP • PQFP • SOIC • SSOP •  
TSOP • TSSOP • FLT • BGA • QFN/MLF

## EMULATION INTERCONNECT SYSTEM (pg. 30)



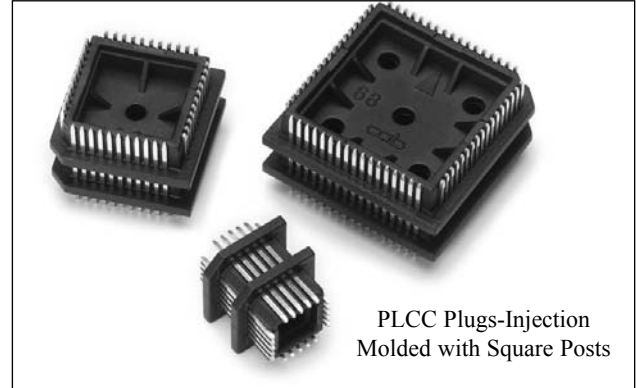
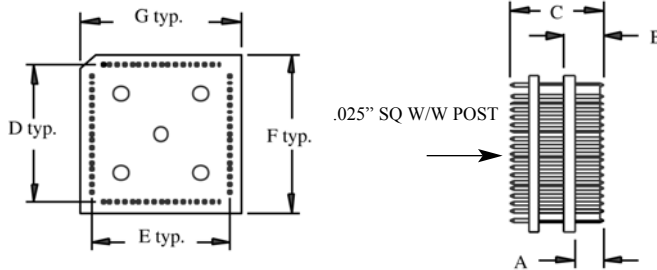
**EMULATOR PLUGS FOR SURFACE MOUNT TQFP/ PQFP PRODUCTION SOCKETS** (pg. 25)



# BOARD TO BOARD INTERCONNECTS - PLCC PLUGS

## FEATURES & BENEFITS

- A variety of high quality, injection molded PLCC plugs, designed to provide a connection between your printed circuit board and your PLCC production socket
- Created for the designer who wishes to mate a daughter board with a motherboard
- ET will design and build to order your daughter card.
- Send us your schematic today



### PLCC Plugs - Male to Through Hole, Square Posts

Pin count	ET Part #	Drawing #
20	BC4-20-SPACER-G	F4030
28	BC4-28-SPACER-G	F4029
32	BC4-32-SPACER-G	F4028
32	BC4-32-SPACER-G-LONG	F6804
44	BC4-44-SPACER-G	F4027
44	BC4-44-SPACER-G-LONG-1	F6699
52	BC4-52-SPACER-G	F4026
68	BC4-68-SPACER-G	F4017
84	BC4-84-SPACER-G	F4025

### PLCC Plugs - Right-Angled Surface Mount End

Pin Count	ET Part #	Drawing #
20	BC4-20-SPACER-L	F6314
28	BC4-28-SPACER-L	F6315
32	BC4-32-SPACER-L	F6316
44	BC4-44-SPACER-L	F6317
52	BC4-52-SPACER-L	F6318
68	BC4-68-SPACER-L	F6319
84	BC4-84-SPACER-L	F6320

### PLCC Plugs - Machined Round Pins End

Pin Count	ET Part #	Drawing #
20	BC4-20-SPACER-R	F6307
28	BC4-28-SPACER-R	F6308
32	BC4-32-SPACER-R	F6309
44	BC4-44-SPACER-R	F6310
52	BC4-52-SPACER-R	F6311
68	BC4-68-SPACER-R	F6312
84	BC4-84-SPACER-R	F6313

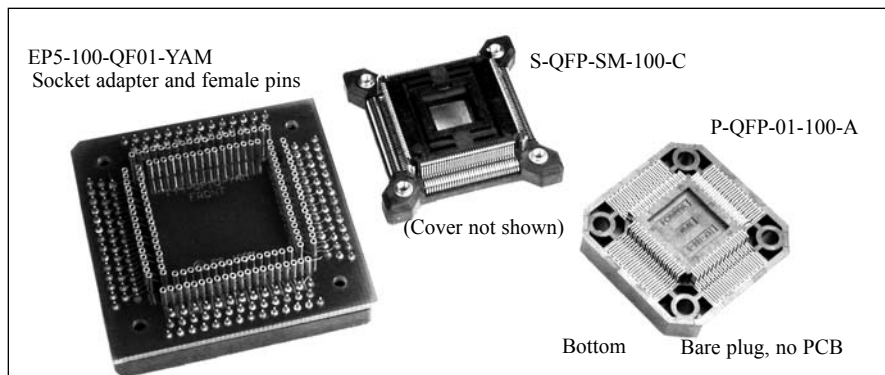
### PLCC Plugs - Male to Male Each End

Pin Count	ET Part #	Drawing #
20	BC4-20-SPACER-M	F6327
28	BC4-28-SPACER-M	F6326
32	BC4-32-SPACER-M	F6325
44	BC4-44-SPACER-M	F6324
52	BC4-52-SPACER-M	F6323
68	BC4-68-SPACER-M	F6322
84	BC4-84-SPACER-M	F6321

### PLCC Plugs - Small Outline Straight Pins for Butt Soldering Ends

Pin Count	ET Part #	Drawing #
20	BC4-20-SPACER-S	F6588
28	BC4-28-SPACER-S	F6588
32	BC4-32-SPACER-S	F6588
44	BC4-44-SPACER-S	F6588
52	BC4-52-SPACER-S	F6588
68	BC4-68-SPACER-S	F6588
84	BC4-84-SPACER-S	F6588

# SMT PQFP/TQFP EMULATOR PLUGS - BOARD TO BOARD INTERCONNECTS



## Ordering Information Example

Product Code \_\_\_\_\_ EP (5)-080-QF14-A YAM — YAM = Yamaichi Socket Mount  
 Male Plug: 5 = Socket Plug \_\_\_\_\_  
 Pin Count \_\_\_\_\_ A = A Socket Version  
 PQFP/TQFP Package Footprint (Footprint Section)

## SMT PQFP/TQFP EMULATOR PLUGS

Footprint Code	ET Part #	Drawing #
XXX-QFXX (Sample)	Surface Mount Production Socket	SKTXXX
	Socket Adapter and Female Pin	FXXXX
	PQFP Plug	SKTXXX
100-QF01	S-QFP-SM-100-C	SKT429
	EP5-100-QF01-YAM	F3783
	P-QFP-01-100-A	SKT548
100-QF06	S-QFP-SM-100-D	SKT503
	EP5-100-QF06-YAM	F2165
	P-QFP-06-100-A	SKT152
160-QF07	S-QFP-SM-160-A	SKT432
	EP5-160-QF07-YAM	F2129
	P-QFP-07-160-A	SKT153
80-QF08-A	S-QFP-SM-080-A	SKT424
	EP5-080-QF08-YAM-A	F2232
	P-QFP-08-080-A	SKT154
80-QF08-B	S-QFP-SM-080-C	SKT426
	EP5-080-QF08-YAM-B	F2233
	P-QFP-08-080-B	SKT155
80-QF14	S-QFP-SM-080-B	SKT425
	EP5-080-QF14-YAM	F2177
	P-QFP-14-080-A	SKT156
64-QF29	S-QFP-SM-064-B	SKT501
	EP5-064-QF29-YAM	SKT1791
	P-QFP-29-064-A	SKT157
100-QF49	S-QFP-SM-100-B	SKT428
	EP5-100-QF49-YAM	F2541
	P-QFP-49-100-A	SKT159
144-QF10	S-QFP-SM-144-B	SKT536
	EP5-144-QF10-YAM	F5015
	P-QFP-07-160-A	SKT153
144-QF63	S-QFP-SM-144-A	SKT535
	EP5-144-QF63-YAM	F5397
	P-QFP-63-144-A	SKT912

## EMULATOR PLUGS FOR SMT PQFP/TQFP PRODUCTION SOCKETS

### FEATURES & BENEFITS

- Perfect for boards designed with Yamaichi Production Sockets or socket footprints!
- Allow access to the lead of a Yamaichi PQFP/TQFP Surface-Mount Production Socket for connecting to:
  - Emulator Pods,
  - Logic Analyzers/Scopes, or
  - Custom pods and cables
- Plug/Adapter/Socket assembly is compact
- Top female pins are compatible with PQFP/TQFP Target Chip Adapters and PQFP/TQFP Emulator Pods
- Socket Adapter, Plug, and Yamaichi Production Socket may each be ordered individually as required

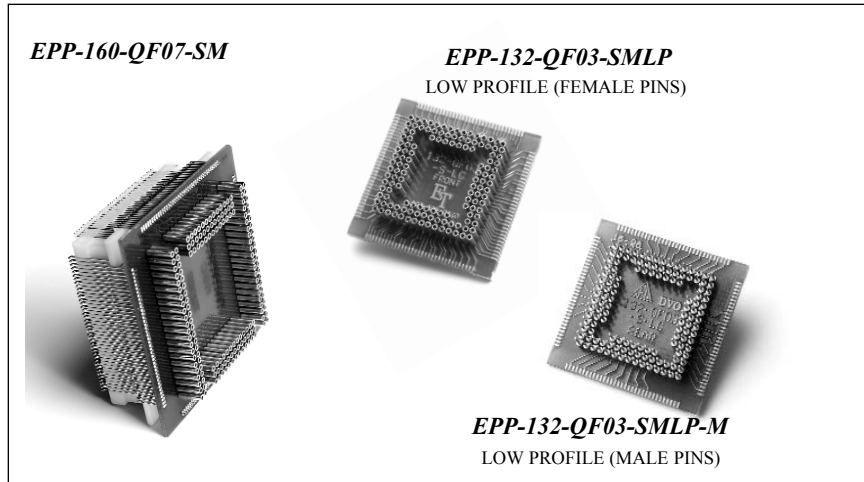
## HOW TO ORDER

- 1) Determine the pin count and footprint of your device (see Footprint Section).
- 2) Select the corresponding Footprint Code in the Yamaichi PQFP/TQFP Plug column of the table.
- 3) Select the corresponding socket, plug base, or plug only that you need.

For a complete list of specifications,

# BOARD TO BOARD INTERCONNECTS - PQFP/TQFP SURFACE MOUNT BASES

BOARD TO BOARD INTERCONNECTS



## HIGH QUALITY TEFLON® & FR4 SURFACE MOUNT BASES

- SMT bases can be made for any SMT leaded package
- These SMT bases are the highest quality in the industry
- The base material used is TEFLON. These units will withstand ALL soldering methods without deforming or melting--including hand soldering
- Precision machining ensures accurate pitch, size, and other physical characteristics. Tolerances: +/- 0.001"
- Sturdy and reusable
- Vertical clearance = 0.5"

### Ordering Information Example

Product Code \_\_\_\_\_ EP P-160-QF07-SM (LP) \_\_\_\_\_ SM = Small Base or  
 Target Surface Mount Pads \_\_\_\_\_ LP = Low Profile  
 Pin Count \_\_\_\_\_ (M) = Male Pins  
 PQFP/TQFP Package Footprint  
 (See Footprint Section)

## LOW PROFILE, HAND SOLDERABLE, REFLOW PROCESS

- Low profile, vertical clearance 0.2", not reusable
- Lead pitch as low as 0.40mm
- Manufacturing tolerances +/- 0.002
- Hand solderable

## HOW TO ORDER

Determine the footprint of your device (see Footprint Section), such as QF14, and find the EPP part with the same footprint.

## PQFP/TQFP SURFACE MOUNT BASES

<u>Pin Count</u>	<u>Lead Pitch (mm)</u>	<u>Tip-to-Tip Dimension (mm)</u>	<u>Adapter Top Pin Type</u>	<u>ET PART #</u>	<u>Drawing #</u>
32	0.80	9.0	Female	EPP-032-QF59D-SM	F5768
44	0.80	12.0	Female	EPP-044-QF16D-SM	F4319
44	0.80	12.0	Male	EPP-044-QF16D-SM-M	F5815
44	0.80	13.2 to 13.9	Female	EPP-044-QF16-SM	F1067
44	0.80	16.7	Female	EPP-044-QF52-SM	F1643
48	0.50	9.0	Female	EPP-048-QF50D-SM	F5807
52	1.00	17.2 to 17.9	Female	EPP-052-QF37-SM	F1642
52	0.65	12.0	Female	EPP-052-QF39D-SM	F4574
52	0.65	13.2 to 13.9	Female	EPP-052-QF39-SM	F1632
64	1.00	23.2 to 23.9	Female	EPP-064-QF09-SM	F1286
64	0.80	17.2	Low Profile Male	EPP-064-QF29B-SMLP-M	F5771
64	0.80	17.2	Low Profile Female	EPP-064-QF29B-SMLP	F5408
64	0.80	22.0	Female	EPP-064-QF29D-SM	F1328
64	0.80	17.2 to 17.9	Female	EPP-064-QF29-SM	F1196
64	0.80	17.2 to 17.9	Male	EPP-064-QF29-SM-M	F5987
64	0.50	15.2 to 15.9	Female	EPP-064-QF64C/D-SM	F1153

# PQFP/TQFP SURFACE MOUNT BASES - BOARD TO BOARD INTERCONNECTS

<b>PQFP/TQFP SURFACE MOUNT BASES (cont.)</b>					
<b>Pin Count</b>	<b>Lead Pitch (mm)</b>	<b>Tip-to-Tip Dimension (mm)</b>	<b>Adapter Top Pin Type</b>	<b>ET PART #</b>	<b>Drawing #</b>
64	0.50	15.2 to 15.9	Male	EPP-064-QF64-SM-M	F5766
80	0.80	23.2 to 23.9	Female	EPP-080-QF08-SM	F1368
80	0.65	17.9	Female	EPP-080-QF14A-SM	F1199
80	0.65	16.0	Female	EPP-080-QF14D-SM	F3886
80	0.65	16.0	Low Profile Female	EPP-080-QF14-SMLP	F4049
80	0.50	15.2 to 15.9	Female	EPP-080-QF47-SM	F2007
100	0.25"	.880"	Female	EPP-100-QF01-SM	F1713
100	0.65	23.2	Female	EPP-100-QF06B-SM	F3856
100	0.65	22.0	Female	EPP-100-QF06D-SM	F6134
100	0.65	23.2 to 23.9	Female	EPP-100-QF06-SM	F4337
100	0.65	23.2 to 23.9	Low Profile Female	EPP-100-QF06-SMLP	F4047
100	0.65	23.2 to 23.9	Low Profile Male	EPP-100-QF06-SMLP-M	F6152
100	0.50	16.0	Low Profile Female	EPP-100-QF49D-SMLP	F5053
100	0.50	16.0	Low Profile Male	EPP-100-QF49D-SMLP-M	F2934
100	0.50	16.0	Female	EPP-100-QF49-SM	F1634
112	0.65	22.0	Female	EPP-112-QF36D-SM	F5755
112	0.65	23.2 to 23.9	Female	EPP-112-QF36-SM	F1639
120	0.80	31.2 to 31.9	Female	EPP-120-QF05-SM	F1307
120	0.40	17.9	Female	EPP-120-QF56-SM	F5482
120	0.50	18.0 to 18.6	Female	EPP-120-QF70-C/D-SM	F4335
128	0.80	31.2 to 31.9	Female	EPP-128-QF13-SM	F1204
128	0.80	31.2 to 31.9	Low Profile Female	EPP-128-QF13-SMLP	F4099
128	0.50	23.9	Female	EPP-128-QF26-SM	F5618
128	0.50	23.9	Female	EPP-128-QF51A-SM	F5411
128	0.50	22.6	Female	EPP-128-QF51-SM	F2216
128	0.50	22.0	Female	EPP-128-QF53-SM	F5616
128	0.40	16.0	Low Profile Female	EPP-128-QF57-SMLP	F6145
132	0.25"	1.080"	Female	EPP-132-QF03-SM	F1640
132	0.25"	1.080"	Low Profile Female	EPP-132-QF03-SMLP	F3959
132	0.25"	1.080"	Low Profile Male	EPP-132-QF03-SMLP-M	F4100
144	0.65	31.2 to 31.9	Female	EPP-144-QF10-SM	F1360
144	0.50	22.6	Female	EPP-144-QF63C-SM	F6042
144	0.50	22.0	Female	EPP-144-QF63-SM	F1631
160	0.65	30.6	Female	EPP-160-QF07C-SM	F5908
160	0.65	31.2 to 31.9	Female	EPP-160-QF07-SM	F1556
160	0.65	31.2 to 31.9	Low Profile Female	EPP-160-QF07-SMLP	F4045
160	0.65	31.2 to 31.9	Low Profile Male	EPP-160-QF07-SMLP-M	F4101
160	0.50	26.0	Female	EPP-160-QF48-SM	F1641
164	0.25"	1.280"	Female	EPP-164-QF04-SM	F3639
172	0.25"	1.150"	Female	EPP-172-QF12-SM	F1362
176	0.50	26.0	Female	EPP-176-QF67-SM	F1109
184	0.65	35.2 to 35.9	Female	EPP-184-QF31-SM	F5658
196	.025"	1.480"	Female	EPP-196-QF15-SM	F4313
196	.025"	1.650"	Female	EPP-196-QF18-SM	F5753

# BOARD TO BOARD INTERCONNECTS - SURFACE MOUNT BASES

BOARD TO BOARD INTERCONNECTS

## PQFP/TQFP SURFACE MOUNT BASES (cont.)

QFP Surface Mount Package Adapter Bases - TOP					
Pin Count	Lead Pitch (mm)	Tip-to-Tip Dimension (mm)	Adapter Top Pin Type	ET PART #	Drawing #
208	0.50	30.0	Female	EPP-208-QF21D-SM	F4580
208	0.50	30.6	Female	EPP-208-QF21-SM	F1225
208	0.50	30.6	Low Profile Female	EPP-208-QF21-SMLP	F4042
240	0.65	34.6	Female	EPP-240-QF62-SM	F1793
240	0.65	34.6	Low Profile Female	EPP-240-QF62-SMLP	F4041
256	0.50	31.5	Female	EPP-256-QF17-SM	F5567
304	0.50	42.6	Female	EPP-304-QF61-SM	F2189
352	0.50	54.6	Low Profile Female	EPP-352-QF71-SMLP	F5421

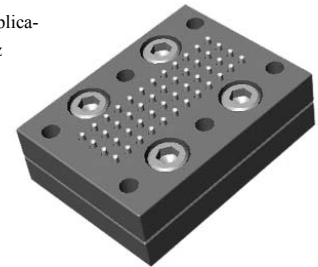
## SOIC, SSOP, TSOP, and TSSOP SURFACE MOUNT BASES

Pin Count	Lead Pitch (mm)	Body Width Dimension (mm)	Adapter Top Pin Top	ET Part #	Drawing #
20	1.27	3.90	Male	EPP-020-SO01-SM-M	F5813
20	1.27	7.50	Male	EPP-020-SO03-SM-M	F6200
28	1.27	7.50	Female	EPP-028-SO03-SM	S1746
44	1.27	13.20	Female	EPP-044-SO09-SM	F1620
48	0.64	7.62	Female	EPP-048-SS06-SM	F5867
48	0.50	6.10	Female	EPP-048-ST15-SM	F5754
48	0.50	18.40	Female	EPP-048-TS01-SM	F5407
56	0.64	7.62	Female	EPP-056-SS06-SM	F5467
56	0.80	13.30	Female	EPP-056-SS09-SM	F4735
56	0.50	6.10	Female	EPP-056-ST15-SM	F4736

For a complete list of specifications, pricing and delivery information for these adapters, please see:  
**Web Link: [www.1800adapter.com/024](http://www.1800adapter.com/024)**

## POGO PIN-BASED BOARD TO BOARD INTERCONNECT STANDARD & BUILT TO ORDER

Built for high speed applications 1GHz to 14.6GHz



### FEATURES & BENEFITS

- Pins can be reconfigured to a new footprint with the same pitch and grid
- Built for high speed applications 1GHz to 14.6GHz
- Long life (500,000 cycles)
- Used with test applications & prototype
- As a custom application, it can interface as a connector on a current board

**Ordering Information Example**

ET CODE: BB-008-2BG004-DB

Grid Size: TP=Thru Hole to Pogo Pin, DB=Double Balled, DP=Double Pogo Pin

BGA Package Footprint: (1=1.5mm, 2=1.27mm, 3=1.0mm, 4=0.75mm, 5=0.50mm, 6=0.80mm, 9=0.65mm)

Pin Count: 8

Pin Count	Lead Pitch (mm)	Footprint Code	ET Part #	Drawing #
8	1.27	2BG004	BB-008-2BG004-DB	F7078
224	0.50	5BG018	BB-224-5BG018-DB	F7079
324	0.80	6BG018	BB-324-6BG018-DB	F7080
324	1.00	3BG018	BB-324-3BG018-DB	F7081
324	1.27	2BG018	BB-324-2BG018-DB	F7082

For a complete list of specifications, pricing and delivery information for the Board to Board Interconnect, please see:  
**Web Link: [www.1800adapter.com/065](http://www.1800adapter.com/065)**



# BOARD TO BOARD INTERCONNECTS - PQFP/TQFP INTERCONNECT SYSTEM

## PQFP/TQFP ADAPTER BASES WITH BLANK HOLES OR WIRE WRAP POSTS (cont.)

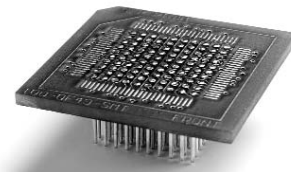
Pin Count	Lead Pitch (mm)	Tip-to-Tip Dimension (mm)	Adapter Top Pin Type	ET PART#	Drawing #
128	0.50mm	23.9mm	Wire Wrap Posts	EPP-128-QF51A-W	F6109
128	0.50mm	22.6mm	Wire Wrap Posts	EPP-128-QF51-W	F6110
128	0.50mm	22.0mm	Wire Wrap Posts	EPP-128-QF53-W	F5566
132	0.25"	1.080"	Blank Holes, No Wire Wrap Posts	EPP-132-QF03-NW	F2677
132	0.25"	1.080"	Wire Wrap Posts	EPP-132-QF03-W	F1288
144	0.65mm	31.9mm	Wire Wrap Posts	EPP-144-QF10-W	F1429
144	0.50mm	22.0mm	Wire Wrap Posts	EPP-144-QF63-W	F1736
160	0.65mm	31.9mm	Blank Holes, No Wire Wrap Posts	EPP-160-QF07-NW	F2566
160	0.65mm	31.9mm	Wire Wrap Posts	EPP-160-QF07-W *	F1575
160	0.50mm	26.0mm	Wire Wrap Posts	EPP-160-QF48-W	F5686
208	0.50mm	30.6mm	Wire Wrap Posts	EPP-208-QF21-W *	F1995
240	0.65mm	34.6mm	Wire Wrap Posts	EPP-240-QF62-W *	F2035
304	0.50mm	42.6mm	Wire Wrap Posts	EPP-304-QF61-W	F4583

\* Surface Mount Footprint Available on Top Board

## PQFP/TQFP INTERCONNECT SYSTEM

Emulation Technology now offers a time-saving Interconnect System for your TQFP/ PQFP packages. This interconnect system is specifically designed for use in the emulation/ debug/ development environment.

Just surface mount the PQFP/TQFP base adapter to your target board. Once the base is in place, you are free to plug in your emulator pod adapter or target chip adapter.



*EPS-100-QF49-SM (Target Chip Adapter)*

ET Part #	Drawing #
<b>(1) Target Chip Adapter</b>	
EPS-080-QF14-SM	F5517
EPS-080-QF47-SM	F4584
EPS-100-QF01-SM	F4585
EPS-100-QF06-SM	F4183
EPS-100-QF49-SM	F3901
EPS-132-QF03-SM	F4307
EPS-144-QF10-SM	F4276
EPS-144-QF63-SM	F5005
EPS-176-QF67-SM	F5568
<b>(2) QFP Base Adapter</b>	
EPP-080-QF14A-SM	F1199
EPP-080-QF47-SM	F2007
EPP-100-QF01-SM	F1713
EPP-100-QF06-SM	F4337
EPP-100-QF49-SM	F1634
EPP-132-QF03-SM	F1640
EPP-144-QF10-SM	F1360
EPP-144-QF63-SM	F1631
EPP-176-QF67-SM	F1109
<b>(3) Emulator Pod Adapter</b>	
AX5-080-QF47/14-18	F7075
AX5-100-QF06-18	F7076
AX5-100-QF49-18	F7077

### Target QFP (Quad Flat Pack) Chip 100 Pin .50mm Lead Pitch Footprint Code: 100-QF49

