



# BGA Global Daisy-Chain Test Kit

## Tin-Lead and Lead-Free Available!

The New PCB012 Global Daisy-Chain test board has 25 different BGA land patterns. Board pads accommodate BGA components ranging from 15mm square to 35mm square. The PCB012 test board has 1.00mm and 1.27mm pitch pads. BGA components placed on this test board range from 156 to 1,156 balls. Daisy-chain patterns on the PCB012 board complement the patterns on the components, allowing continuity to be tested. Each pad on the board has multiple daisy-chain patterns. These multiple

daisy-chained pads allow different ball-count PBGA components to be placed on the same pad. Each pattern has test points to check for continuity. There are ball-count to test-point legends on the board. Standard finish for the PCB012 board is Alpha Level Silver flash. Other finishes are available upon request. Standard board thickness is 0.062". The board is double-sided with different pad sizes on the top and bottom. Customers can mix and match components to suit their requirements.

## PC012 BGA Global Daisy-Chain Test Kit

1.0mm Pitch—Top Side						
Part Number	Part Description		Quantity Per 1 Kit	Quantity Per 5 Kit	Quantity Per 10 Kit	Quantity Per 20 Kit
30000	A-PBGA156-1.0mm-15mm-DC					
31473	A-PBGA156-1.0mm-15mm-DC-LF-305	5 Pads Per Board	5	25	50	100
30456	A-PBGA160-1.0mm-15mm-DC					
31357	A-PBGA160-1.0mm-15mm-DC-LF-305					
30048	A-PBGA256-1.0mm-17mm-DC					
31071	A-PBGA256-1.0mm-17mm-DC-LF-305	5 Pads Per Board	5	25	50	100
30542	A-PBGA208-1.0mm-17mm-DC					
31358	A-PBGA208-1.0mm-17mm-DC-LF-305					
30362	A-PBGA324-1.0mm-23mm-DC					
31359	A-PBGA324-1.0mm-23mm-DC-LF-305	4 Pads Per Board	4	20	40	80
30513	A-PBGA288-1.0mm-23mm-DC					
31352	A-PBGA288-1.0mm-23mm-DC-LF-305					
30385	A-PBGA676-1.0mm-27mm-DC					
31019	A-PBGA676-1.0mm-27mm-DC-LF-305	2 Pads Per Board	2	10	20	40
30604	A-PBGA484-1.0mm-27mm-DC					
31312	A-PBGA484-1.0mm-27mm-DC-LF-305					
31123	A-PBGA1156-1.0mm-35mm-DC					
31306	A-PBGA1156-1.0mm-35mm-DC-LF-305	2 Pads Per Board	2	10	20	40
30343	A-PBGA680-1.0mm-35mm-DC					
31345	A-PBGA680-1.0mm-35mm-DC-LF-305					

1.27mm Pitch—Bottom Side						
Part Number	Part Description		Quantity Per 1 Kit	Quantity Per 5 Kit	Quantity Per 10 Kit	Quantity Per 20 Kit
30543	A-PBGA208-1.27mm-23mm-DC	3 Pads Per Board	3	15	30	60
31432	A-PBGA208-1.27mm-23mm-DC-LF-305					
30047	A-PBGA256-1.27mm-27mm-DC					
31020	A-PBGA256-1.27mm-27mm-DC-LF-305					
30372	A-PBGA272-1.27mm-27mm-DC	3 Pads Per Board	3	15	30	60
31309	A-PBGA272-1.27mm-27mm-DC-LF-305					
30417	A-PBGA356-1.27mm-27mm-DC					
31475	A-PBGA356-1.27mm-27mm-DC-LF-305					
30645	A-PBGA304-1.27mm-31mm-DC					
30832	A-PBGA304-1.27mm-31mm-DC-LF-305	2 Pads Per Board	2	10	20	40
30644	A-PBGA329-1.27mm-31mm-DC					
31476	A-PBGA329-1.27mm-31mm-DC-LF-305					
30065	A-PBGA388-1.27mm-35mm-DC					
31310	A-PBGA388-1.27mm-35mm-DC-LF-305	2 Pads Per Board	2	10	20	40

### Notes

- Kit quantities are subject to change.
- Mix and match components and quantities to create a custom kit. Please contact your sales representative for details.
- Board is double sided (top side for 1.0mm pitch packages / bottom side for 1.27mm pitch package)
- Gerber and X, Y Theta data included at no charge.
- Digitized files provided by Aegis Software included at no charge.
- Kit also available as SAC405 but SAC305 is the preferred Alloy.

Available as a

**Single Pack Kit**

	Description	Part Number
Top	PC012T-0-01	15923
Top Lead Free	PC012T-0-01-LF	19462N
Bottom	PC012B-0-01	15924
Bottom Lead Free	PC012B-0-01-LF	19795
Complete	PC012K-0-01	15848
Complete Lead Free	PC012K-0-01-LF	19742

# Through-Hole Solder Training Kits

## PC013 Kits—Choose from four kits!

The PC013 hand solder practice kit is an effective way to evaluate or train employees and students. This versatile board comes with a variety of through-hole components and each kit is conveniently boxed and the components are individually bagged and labeled for easy

identification. It is available in several different options to meet each company's requirements. Kits come standard with an SO16 resistor network, but can be upgraded to a Flat Pack 16. This kit is ideal for classroom settings.

**Kit is available with Tin-Lead and Lead-Free parts.**

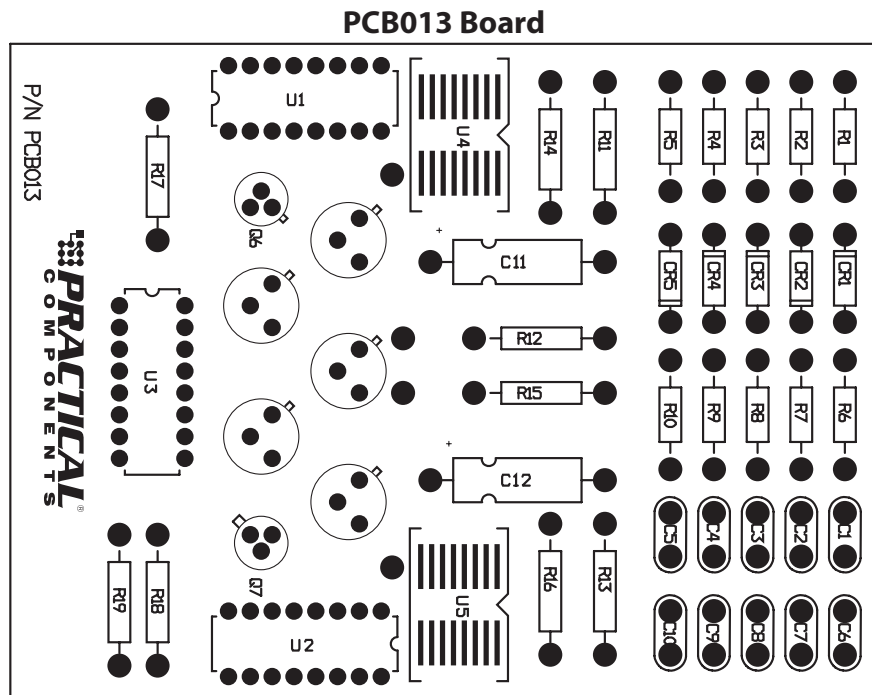


Available as a

**Single Pack Kit**

### Basic Through-Hole Kit

Part Description	Quantity Per Kit
PCB013 (customer to specify finish)	2
DO35	10
AE-5x12	4
CK05	20
CK05 Spacer	20
1/2-W-AR	18
1/4-W-AR	20
DIP16	6
TO5	10
TO18	4
TO5/18 Spacer	14
SO16GT-5.6mm	4
Order Number: (Lead-Free)	PC013-BTK-LF
Order Number: (Tin-Lead)	PC013-BTK



Board size: 3" x 4", IS-410 board material.  
Other board finishes available are: ENIG and HASL.

### Complete Through-Hole Kit

Part Description	Quantity Per Kit
PCB013	2
Turret Terminal	15
Bifurcated Terminal	15
Hook Terminal	15
Pierced Terminal	15
Cup Terminal	15
DO35	10
AE-5x12	4
CK05	20
CK05 Spacer	20
1/4-W-AR	20
1/2-W-AR	18
DIP16	6
TO5	10
TO18	4
TO5/18 Spacer	14
SO16GT-5.6mm	4
20 Gauge Wire	3'
22 Gauge Wire	3'
26 Gauge Wire	3'
Kit Order Number: (Tin-Lead)	PC013-K
Kit Order Number: (Lead-Free)	PC013-K-LF

### Recertification Kit With Wires And Terminals

Part Description	Quantity Per Kit
PCB013	1
Turret Terminal	5
Bifurcated Terminal	5
Hook Terminal	5
Pierced Terminal	5
Cup Terminal	5
DO35	2
AE-5x12	1
CK05	6
CK05 Spacer	6
1/4-W-AR	5
1/2-W-AR	3
DIP16	2
TO5	2
TO18	2
TO5/18 Spacer	4
SO16GT-5.6mm	1
20 Gauge Wire	5'
26 Gauge Wire	5'
Order Number: (Tin-Lead)	PC013-RWTK-1
Order Number: (Lead-Free)	PC013-RWTK-1-LF

### Recertification Kit

Part Description	Quantity Per Kit
PCB013	1
DO35	2
AE-5x12	1
CK05	6
CK05 Spacer	6
1/4-W-AR	5
1/2-W-AR	3
DIP16	2
TO5	2
TO18	2
TO5/18 Spacer	4
SO16GT-5.6mm	1
Order Number: (Tin-Lead)	PC013-RK
Order Number: (Lead-Free)	PC013-RK-LF

#### Note

- SO16GT-5.6mm is not available Lead-Free.

# IPC 9850 Attribute Defect Rate Kit

## IPC 9850 Kit

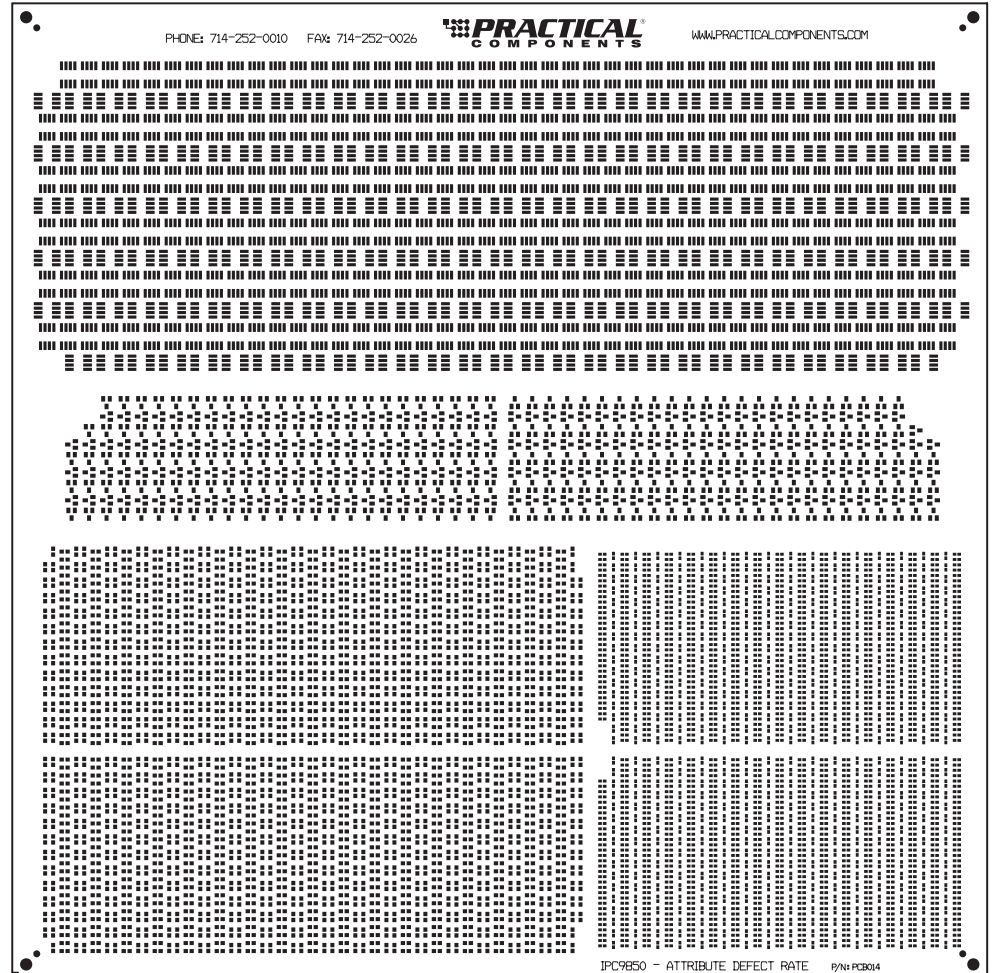
**Attribute Defect Rate Kit checks out pick and place machines.**

IPC-9850 includes test methods for determining various SMT placement equipment attributes, including repeatability, accuracy and attribute defects. Each of these tests requires specific material and this new test board and kit from Practical Components provides the solution for conducting the attribute rate defect testing. The applicable section from IPC-9850 is 4.1, where attribute defects are defined as components placed upside down, tombstoned, on side, missing or extra part, damaged lead(s), damaged part(s), completely off land, or wrong polarity. Testing requires the placement of 88,000 components on 20 boards to attain reasonably accurate test results. Practical Components 9850 Kit will provide you with enough components and boards to meet this guideline. While IPC-9850 requires the placement of components on sticky tape (included), these boards can also be printed with solder paste and reflowed.

Each board contains the lands (multiple orientations) for 4,400 components (440 SOT23s, 440 SO8s, 880 0603SMCs, 880 0603 SMRs, 880 0402SMCs and 880 0402SMRs). Test material is available from Practical as single boards or complete kits with all the necessary dummy components. On request, this board comes with demonstration versions of CircuitCAM and CheckPoint manufacturing software, ready-to-run CircuitCAM Project Files (CPFs) and Gerber and X, Y Theta data at no extra charge.



## PCB014 Board



PC Boards & Kits

Board size: 11" x 11", .062" thick. High Temp 170Tg board material. Standard board finish is HASL.

## PC014 Kit (IPC 9850)

Part Description	Quantity Per 5 Kits	Quantity Per 10 Kits	Quantity Per 20 Kits
SOT23-TR	3,000	6,000	12,000
SO8GTR-3.8mm	2,500	5,000	10,000
0402SMC-PA	10,000	10,000	20,000
0402SMR-PA	10,000	10,000	20,000
0603SMC-PA	8,000	12,000	20,000
0603SMR-PA	5,000	10,000	20,000
Sticky Tape	1 Roll	2 Rolls	3 Rolls
PCB014	5	10	20
Kit Order Number:	PC014-0-05	PC014-0-10	PC014-0-20

### Notes

- Gerber Data and X, Y Theta Data are available, if required, at no charge.
- Digitized files provided by Aegis Software included at no charge.

# Rework Kits

**REVISED** [Rev. A]

## PC015 Rework Kit Conforms to IPC 7711/7721 Standards for reworking.

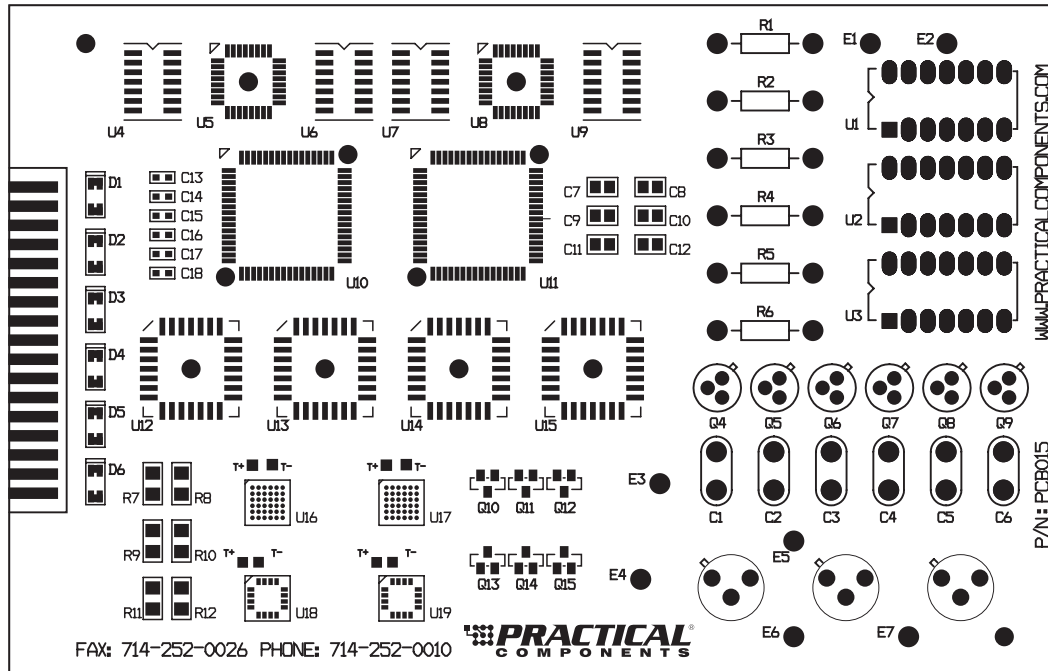
The PC015 Kit is ideal for rework training or evaluating current rework procedures. This kit contains 2 fully populated boards and replacement components to enable removing and replacing 1/2 of the components. Reworked solder joints can then be visually compared to original solder joints (on components not reworked) on the same board. Kit includes 2 boards which allows one to be used practice and one to be used evaluation. This kit conforms to the IPC 7711 and 7721 standards for rework-

## Kit is available with Lead-Free and Tin/Lead components!

ing. It contains a wide range of components from Through-Hole to Chip Scale. Each kit is conveniently boxed with the replacement components individually bagged and labeled for easy identification. Forget looking for scrap boards for training purposes. Tin-Lead and Lead-Free components available.

This kit is perfect for classroom settings and can also be ordered unassembled as a standard hand solder.

### PCB015 Board



**IPC Compliant**  
Available as a  
**Single Pack Kit**



Contains boards populated with components.  
Standard board finish is HASL or Immersion Silver. IS-410 board material

Board size:  
3.5" x 5.5"

### PC015 Rework Kit Assembled

Part Description	Quantity Per Kit
PCB015-Assembled	2
LQFP100-14mm-.8mm-2.0	2
LQFP32-7mm-.8mm-2.0	2
PLCC28T	4
SOT23	6
0603SMR	6
0805SMR	6
1206SMR	6
SOD80	6
SO14GT-3.8mm	4
1/4-W-AR	6
**CK05 w/Standoff	6
DIP14	3
TO5 w/Standoff	3
TO18 w/Standoff	6
*MLF16-5mm-.8mm	2
*A-CABGA36-.8mm-6mm-DC	2
Kit Order Number: (Tin-Lead)	PC015-01
Kit Order Number: (Lead-Free)	PC015-01-LF

### PC015 For Hand Assembly Kit

Part Description	Quantity Per Kit
PCB015-Standard	1
LQFP100-14mm-.8mm-2.0	2
LQFP32-7mm-.8mm-2.0	2
PLCC28	4
SOT23	6
0603SMR	6
0805SMR	6
1206SMR	6
SOD80	6
SO14GT-3.8mm	4
1/4-W-AR	6
**CK05	6
CK05 Spacer	6
DIP14	3
TO5	3
TO18	6
TO5/18 Spacer	9
*MLF16-5mm-.8mm-DC	2
*A-CABGA36-.8mm-6mm-DC	2
Kit Order Number: (Tin-Lead)	PC015-0-01-Std
Kit Order Number: (Lead-Free)	PC015-0-01-Std-LF

### Notes

- \*MLF16/CABGA36 Packages are not included in kit. Either package can be added upon request.
- \*\*CK05 may be substituted with Radial Mono.