

Issue Date: 08-04-2015

Assembly Quote Number: AT-32609

To: Yiqi Ni@University of Colorado

From: Ben Seaton for Sales Region: 12

PN: MagPCB Rev noRev

Quote Valid for: 30 days from the issue date

Assembly Specs:

Additional Docs Needed:

Yes

If yes, what:

CPL, assembly print

Class 3 Build:

No

JST-001:

No

RONC /REF

ITAR Required:

No

Customer will supply parts:

No

LI	4
SMT	3
FP/ SMT CONN	0
TH	0
BGA/LL	1
SMT Sides	1
Lead Free	yes
MECH	no

Assembly Turn Time (Working Days) Listed Below / Labor Pricing is Per Board

The assembly turn-time is based on working days and does not start until we have received and audited all components (including customer supplied); all required electronic data including Gerber / solder paste & CPL files and manufacturing engineering issues have been resolved.

QTY	Labor Per Board <u>2 DAY</u>	Labor Per Board <u>5 DAY</u>	Labor Per Board <u>10 DAY</u>	Labor Per Board <u>15 DAY</u>	Labor Per Board <u>20 DAY</u>	Material / Components
						<u>Cost Per Board</u>
100	6.50	4.90	3.94	3.71	3.62	3.78

Unit pricing is per release quantity; all prices are in US dollars. Unit price does not include shipping and handling of completed assemblies.

Unlike most of our competitors we have NO Additional NRE or Hidden Charges for setup, engineering, stencils or programming. We invite you to compare the total assembly price when making cost and turn-time comparisons from other manufacturers.

The pricing above does not include the cost of the PCB, tooling or testing; you will have to contact your Advanced Circuits PCB Sales Manager / Associate for pricing of your PCB. We only assemble PCB's manufactured and tested by Advanced Circuits.

Material Notes: (Material availability / stock is not guaranteed upon receipt of order):

Proper SMT machine setup and operation require component overages, all excess / unused material supplied or purchased will be packaged and returned with the completed assemblies.

Production Notes:

All vias under BGA / leadless type devices will need to be plated shut or epoxy filled with overplate to ensure proper solder connection during the reflow / manufacturing process.

Manufacturing Notes: IPC 610 Class II Workmanship Standards unless otherwise stated above

Assembly Liability Wavier – Advanced Circuits assumes no responsibility of functionality or damage of customer specified leaded components, PCB's or assemblies using a lead-free (RoHs) compliant manufacturing process requested by our customers.

PCB Fabrication Notice:

If the board design is less than 2" in any dimension, the individual PCBs must be arrayed / panelized for assembly, all PCB's not meeting this requirement will be subject to additional handling / pricing. For assembly of non-rectangle PCB's we require at least two parallel edges. These can be added as breakoff rails or can be part of the PCB itself. For these boards, tab route is required and AC will not de-panel the boards.

Assembly Build Requirements

Documentation Requirements (electronic):

The following information is **required** for all component purchasing / receiving / verification / inspection / programming the pick & place equipment and assembly work instructions creation.

- **BOM**
 - Component Description
 - Quantity
 - Reference Designator
 - Manufacturer Part Numbers
 - Indicate any "no load / do not install" (DNI) locations.
 - If you are supplying components, please identify as "Customer supplied"
- **CPL**
 - Reference designator
 - X / Y - Centroid location (mils / in)
 - Rotation
 - Layer / Board side / (top / bottom - component mounting not silkscreen)
- **Redline drawing for conformal coating**
- **Gerber files**
- **Assembly Drawings**
 - Component layout (top / bottom), polarity marking, special assembly instructions or any components that require special handling or processing, some examples may include:
 - Non- washable (Moisture sensitive) components - switches, sensors, modules
 - Special prep / specific height / placement requirements
 - Lead length / trim – make sure to include +/- tolerances
 - Rework wires (pin to pin routing)
 - Component mounting (top /bottom – opposite of silkscreen – polarity)
 - Adhesives
 - Labeling / Serialization – (format / location / type)

CAM Specific Requirements:

Please note that we require the following information to complete the assembly process, or your job will be delayed at your expense. (Note 1: Our CAM team must be notified up front that if this information is not received, the job cannot be assigned to the production floor).

- The customer must provide us with PCB Silk Screen polarity mark information on all polarized parts (cathode, anode, pin number and what the dot or plus sign indicate).
- Polarized components are Capacitors, Connectors, Diodes, LED's, IC's, Switches, Antennas, Filters, Modules, Crystals, Oscillators, Battery Clips, and Transformers).
- Polarity marks indicate the following:
 - DOT: A "Dot (0)" on or near a lead does not represent anything unless the meaning of the dot is clarified as being a "Cathode", "Anode" or a "Pin Number Indicator".
 - + (Plus): The (+) Plus symbol on or near a lead does not represent anything unless the meaning of the dot is clarified as being a "Cathode", "Anode" or a "Pin Number Indicator".
 - K: The "K" symbol indicates the "Cathode".
 - A: The "A" symbol indicates the "Anode".
 - Diode Symbol: The Diode symbol (looks like an arrow head hitting a target) should have the Anode near the components anode, and the Cathode near the components cathode.
 - 1: The number (1) indicates the "Pin 1" of the component.
 - Other Symbols: All other symbols on or near a lead must be clarified as to what it represents.
- The Customer must provide us with special assembly instructions when required, such as: Height of components, Adhesive placement, Reflow profile for temperature sensitive components, et.
- The customer must provide us with how they want us to handle polarity issues (DNI, Place as is, Call or Email for instructions). (Note 2: We must make it clear that if we are not provided this information, their job will be delayed or shipped without the parts in question. In doing this, we place the responsibility on the customer when their assembly issues, and any rework will need to be paid for by them. Our sales team, website, or the CAM team can provide customers with the checklist via email when they go over CPL, Files, and Technical Question inquiries).
- The customer must provide the CAM team with all drawings needed to complete the assembly process.

Customer Supplied / Consignment - Component Requirements:

Lead time will be impacted if proper attrition is not supplied. We will always work with our customers when it comes to customer supplied components; the following is our standard guidelines. If you have expensive or a minimum quantity of any component on hand please contact the assembly sales team for details.

- Each component must be individually packaged, labeled with BOM line item number / customer part number and/ or manufacturers' part number.
- The following are acceptable packages of consignment / customer supplied components (**Bulk SMT** not acceptable):
- SMT Reels (full or partial) Cut tape Thru-Hole bulk or tape Tubes / Trays Digi-Key Reels

SMT components, not supplied on reels should be on one continuous strip of tape. Resistors, Capacitors, Diodes (0603, 0805, 1206, 2225, SOT, SOD, MELF - packages) require a minimum of 50 pcs and/or has to exceed the required quantity by 30 pcs. (Example: build req. 40 pcs – we will require 70 pcs – this meets our minimum required 50 pcs plus 30 pcs above build requirement) Resistors, Capacitors, Diodes (0201, 0402, miniflex, miniature packages) require a minimum of 100 pcs and/or has to exceed the required quantity by 50 pcs. (Example: build req. 80 – we will require 130 - this meets our minimum required 100 pcs plus 50 pcs above build requirement)

A small number of excess is requested for all components including: - IC's, BGA's, QFP's, Connectors, this will ensure completed assemblies to be shipped; when in doubt, please send extra components.

A sample board (current revision if available) is a helpful tool for Quotation, Engineering and the assembly process.

Please ship material to the address below; place the Quote Number or Assembly Work Order on all packing slips and on the outside of the box; please email the tracking number to your assembly sales representative.

**Attn: Assembly
Advanced Circuits
21101 E 32nd PKWY
Aurora, CO 80011-8149**

Conformal Coat / Cable & Wire Harness Services:

- Advanced Circuits has outstanding outside suppliers for conformal coating and cable assembly / wire harnesses; detailed drawings / photographs and/or sample boards may be required for quote.

Warranty and Quality Standards:

- Advanced Circuits warrants its manufactured items are free from any defects in workmanship. The warranty period shall be 90 days from the date of shipment. Advanced Circuits sole obligation under its warranty is limited to the repair of the defective item provided it is returned to Advanced Circuits within the warranty period. This warranty will not extend to items subjected to accident, misuse, alterations or repairs not made by Advanced Circuits.

Prior to any product return, please call our Assembly Sales department @ 1-800-979-4722 for a Customer Action System (CAS) Authorization number.