

DOCUMENTATION REQUIREMENTS

Guideline to Process Request for Quotations and Purchase Orders.

PPI-Time Zero is a Contract Electronics Manufacturing Company/EMS Provider with a corporate goal of providing Best of Class Customer Service and Continuous Improvement.

Manufacturing printed circuit card assemblies, sub-assemblies, cable and harness assemblies, systems integration, burn in boards and precision machined parts is a complex and extremely detail-oriented process, PPI-Time Zero has prepared a general documentation requirement guideline that will enable our company to process request for quotations and purchase orders in an efficient, cost effective and timely manner.

By supplying PPI-Time Zero with all the information required your intervention in the process will be limited and the response received will be complete.

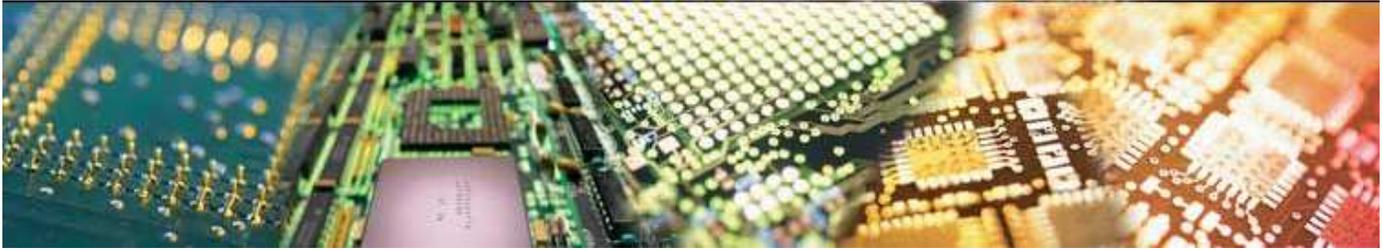
The guideline identifies all of the necessary information we need to complete our respective response. However; if we request information that is not readily available, or you have other preferences, please notify us in the RFQ so we are aware of the possible exceptions/deviations. All request for quotes and orders that are received as a result are the responsibility of a Program Manager that will be assigned to your requirements. Please direct all communications that are involved with your requirements to the Program Manager you are assigned and it will be professionally managed.

Quote Stage

The following documents are needed to ensure a prompt and accurate response to your request for a quote. The preferred method for data exchange is via e-mail however fax or regular mail can be utilized where applicable.

(1) CAD files of the board along with the following files:

- A. Gerber files** for the bare board including artwork files for all of the layers, silkscreen file, solder mask file, drill and fabrication files with **Detailed manufacturing notes** for the board and a “hole chart”
- B. Assembly drawing** with detailed manufacturing notes, including desired manufacturing specification (such as IPC-A-610 B Class II)
- C. Solder paste file in Gerber format** for stencil (required for SMT assembly)
- D. Placement file, pick and place file or CAD file containing CENTROID location** (not the “pin 1”) of all the SMT components (if SMT assembly).



(2) A detailed Bill of Material (BOM) containing:

- A. Top-level assembly number and current revision level
- B. Components reference designator
- C. Manufacturer of the part including ROHS requirements
- D. Manufacturer's part number and
- E. Components detailed description including the package size
i.e. "SMT 1206 or SOIC16").
- F. Quantity per assembly.
- G. Identify components that are subject to ITAR control.
- H. Identify any components that are registered with specific distribution channels enabling preferred pricing arrangements.

A bare board, with its respective revision level, should also be a part of the BOM. Please include any available supplier information (i.e. franchised suppliers, unique agreements, even previous purchasing sources, particularly for legacy products which may be nearing end-of-life).

NOTE 1: If possible, please submit the BOM to PPI-Time Zero as an EXCEL spreadsheet.

NOTE 2: If we use "better than" parts, when available, there will be no additional cost.

Better than – is defined as passive components where the following conditions exist:

A. Resistors– the tolerance range is within the original tolerance range. (i.e. Specification is 20%; we can supply 10%, 5%, 1%, 0.1%)

B. Resistors – the wattage capability is greater than the specified wattage requirement. (i.e. Specification is 1/10 watt, we can supply 1/8 W, 1/4W, 1/2W, etc. as long as the package style is unchanged.

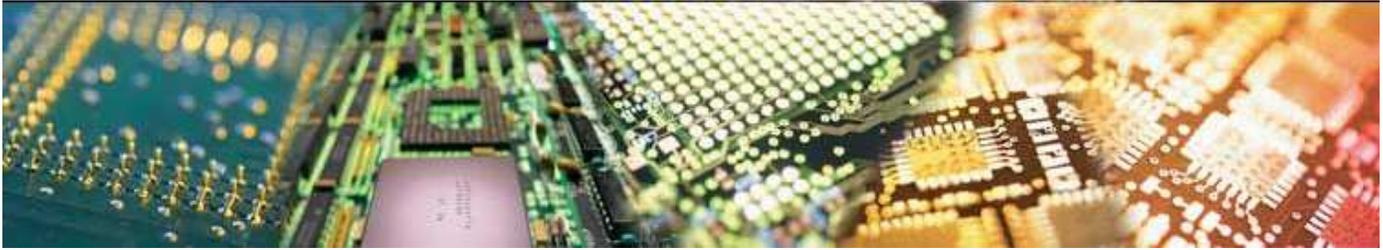
C. Capacitors – the voltage capability is greater than the specified voltage requirement. (i.e. Specification is 16 Volts; we can supply 35 Volt, 50 Volt, etc. as long as the package style is unchanged.

(3) An "xxx.Readme" file where "xxx" is the part number of the board.

The Readme file should contain:

One line explanation of each individual file (i.e. xx.smk is a Solder mask file.)

Name, address and telephone of the customer



E. Any other helpful information regarding the board/RFQ

PPI-Time Zero Test Capabilities Documentation and information required

A. Circuit Card – The following items are needed to define the testability of a board assembly for in-circuit test (ICT).

B. Gerber files, that include:

1. **Assembly drawings** showing the components layout to identify fixture design
2. **PCB drawing** which shows dimensions and hole locations
3. **Bill of Material** with reference designators, values, tolerances, commercial part number for all devices
4. **CAD database files** which contain coordinates and identity of components, pads, pin, vias and signal list (i.e. CAD, .ASC, .MIN) IPC –D-356 file and net list file.
5. **Schematics** to help determine testability of devices, program and debug the fixture
6. **Bare and loaded boards** are requested in the test fixture development stage for verification of the mechanical and program design of the test fixture. A minimum of three (3) known good boards is required

Functional Test: When the board is not designed for In-Circuit Test (ICT), we can perform a functional test per your specifications. Test procedures and functional test fixtures are required.

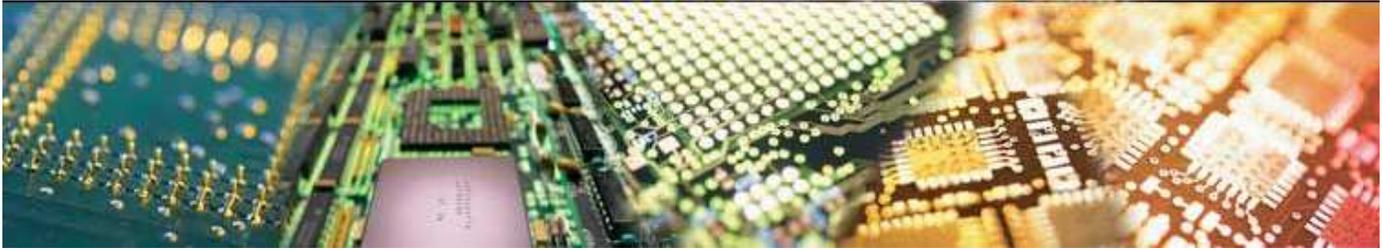
1. **Equipment specifications:** manufacture and model must be specified for quoting rentals
2. **Functional test fixture:** can be built with the following documentation:

Specifications, Schematics, Assembly drawing and BOM

Sub-Assembly – Board can be functional tested after passing In-circuit Test.
The required documentation is:

Assembly drawing, schematics, wiring diagram with connector pin out, functional test specifications, equipment installation procedures, test procedures and functional test verification

System Level Products – At the system level product all of the above requirements must be completed. The final functional test and Burn-In test is the key for products to be ready for use. Here are the requirements:



1. **Product specifications** help us understand the final assembly requirements and debug and problems encountered
2. **Equipment installation and qualification procedures** which show all the test equipment needed.
3. **Equipment installation verification** procedures are needed for **medical products**
4. **Equipment maintenance procedures**
5. **Final functional test procedures**
6. **Final functional test verification for medical products**
7. **Final functional test validation for medical products**
8. **Burn-In procedures** with specification of cycling time
9. **Burn-In Rack** is used to place product to perform Burn-In test
10. **Burn-In installation** and maintenance procedures.

D. Vibration Test – Assembled boards can be put under vibration test.
Submit the following documentation:

Vibration test procedures with specification

Provide fixture or drawing of fixture.

Provide fixture weight and under test fixture weight.

Environmental Temperature Cycling – PPI-Time Zero’s capabilities include air circulated ovens to perform thermal cycling with and without power cycling of unit under test.

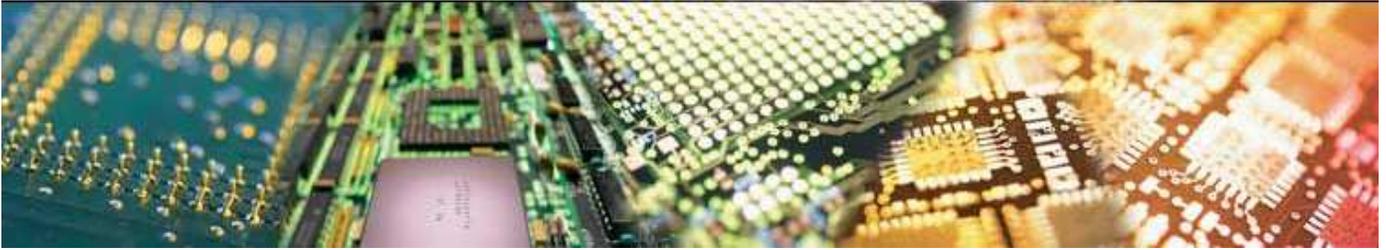
Please submit the following documentation:

1. **Thermal profile specification.**
2. **Cycle time.**
3. **Burn-In procedures**
4. **Fixturing (if required).**
5. **Unit under test powered or un-powered during thermal cycle.**

PPI-Time Zero Kitted Job -Documentation Requirements

When supplying parts for a consigned assembly requirement, please follow the documentation guidelines to assure we have all the required data enabling our company to consistently meet your quality and delivery requirements.

1. Please allow for 3 to 5 percent overage on all components for manufacturing shrinkage. Excess material at the completion of the job will be sent to you with your order.



2. All passive components should be provided on tape and reel to be used in automatic assembly equipment. Minimum should be partial tape with at least 15 inches of leader. Provide all surface mount ICs in tubes or waffle trays. Providing parts in Minimum should be partial tape with at least 15 inches of leader. Provide all surface mount ICs in tubes or waffle trays. Providing parts in this manner will save time and will protect the integrity of the components.
3. Submit a copy of the Bill of Material specifying top level assembly number and its revision level in the parts box.
4. Specify on the Bill of Material the exact quantity of each part number in the kit.
5. If any of the components are short and are due to arrive at PPI-Time Zero at a later date, indicate anticipated date and quantity of part arrival at PPI-Time Zero.
6. If any of the parts listed on the BOM are substituted or changed for any reason, please specify the new part number on the BOM. By doing so, it will be evident to us that you have intentionally substituted a part and that no mistake occurred.
- 7. Each part container (reel, bag or box) should have a label defining the same part number as called out on the BOM and the actual quantity within the container.**
8. Please write a reference designator on the label of each part.

Upon receipt of your kit, PPI-Time Zero will thoroughly audit the kit contents. If we find any shortages or discrepancies you will be notified immediately.

NOTE: PPI-Time Zero will not release an incomplete kit to the manufacturing floor. For this reason, quoted lead-times will not begin until all the discrepancies are resolved and all the shortages are fulfilled and/or discrepancies are resolved.

If the bare boards are part of the kit, please make sure that:

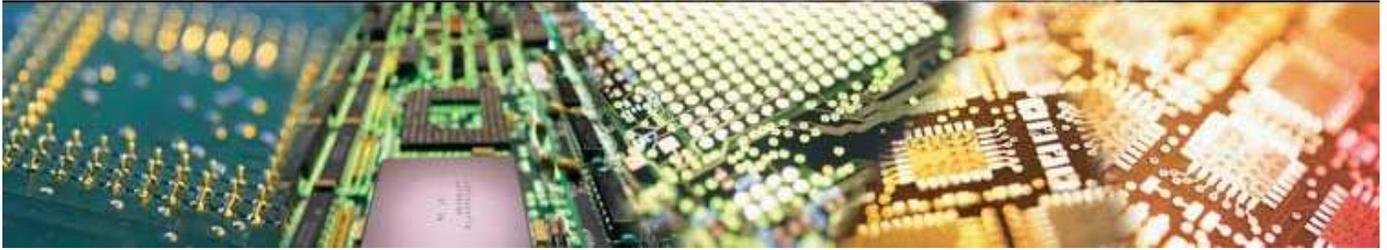
- 1. Boards are panelized** as multiple up on the panel
 2. If possible, **supply the solder paste file** stepped to match the step and repeat of the bare boards. Doing so will eliminate any possibility of miss-aligning different images on the panel.
- Supply the panel with break-away rail** on at least two sides of the panel if possible.

Requirements for Quoting Precision Machined Parts.

Detailed finalized print or drawing in a TIF or PDF format, or a 3D model that will be opened with our software.

Supporting documents associated with the print (i.e... spec sheets or internal documentation).

Any customer preferred vendor list for external processes, plating, and heat treating or special surface finishes.



Order Processing:

PPI-Time Zero Inc. is committed to preparing the best possible response to all customers' request for quotation. With the information requested we will prepare our response to your inquiries in the least amount of time with a competitive offering. We are most hopeful that as a result of our input we will receive the award for your business. When you are ready to place your order we recommend the following procedure. Adhering to this procedure will allow us adequate time to manufacture your requirement on time and to your total specifications. Our preferred method of data exchange for this process is via e-mail. Exception can be accommodated via fax or regular mail however, both of the aforementioned methods are not as efficient or timely.

Note: Our lead time begins upon receipt of a complete documentation package.

1. E-mail a copy of the purchase order with the part number, revision level, quantity, due date, price and if possible the PPI-Time Zero quote number.
2. If it is not possible to download the data files via e-mail please send a disk containing the information via FedEx or UPS so that we receive the data timely and that there is tracking capability. All purchase orders are processed by the Program Manager that is assigned to your account.
3. Note: Please do not send original media.

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