



SMT Assembly Prerequisite Requirements Form

The following is a list of electronic data; documentation and material required for the assembly process. Additional information may be required upon request. **Assembly Turn Time** will begin after all information and materials have been verified as complete and correct. Inaccurate / incomplete information and/or unfulfilled requirements may impact cost and/or assembly turn time. We treat all your information confidentially and it will never be handed over to a third party without your permission.

If you have questions or need more details please contact your Sales Team Representative @ 603-624-8311.

1) Turn Key Requirements:

- I. Gerber Files
- II. Bill of Materials
- III. Assembly Drawings
- IV. Pick and Place File
- V. ODB++, PADS, GENCAD, PCB, ACSII data formats
- VI. Additional product specific instructions

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

2) Gerber Files:

- I. The required files in Gerber format are as follows:
 - i. Paste Mask layer(s) (Stencil)
 - ii. Copper layer(s) (Conductors)
 - iii. Silkscreen layer(s) (Markings on the PCB)
 - iv. Drill data (Vias and other holes)
 - v. Solder Mask layer(s) (Solder resist)
- II. All of the files mentioned above should include PCB outlines if possible.
- III. **MUST** be properly labeled using filename convention or file extension convention.
- IV. **MUST** include Solder Paste files for all boards with SMT components.

3) Bill of Material: (BOM) in EXCEL format should contain the following:

- i. Component Description
- ii. Quantity
- iii. Reference Designator
- iv. Manufacturer Part Numbers and/ or Supplier / Distributor Part Numbers
- v. Indicate any "no load / do not install" (DNI) locations.
- vi. If you are supplying components, please identify as "Customer supplied"

Sample BOM File:

<u>Description</u>	<u>QTY</u>	<u>Ref Des</u>	<u>Mfg P/N #</u>	<u>Distributor</u>	<u>Distributor P/N #</u>
CAP CER 10UF 16V 10% X7R 1206	3	C1,C7,C9	ECJ-3YX1C106K	Digi-Key	PCC13491CT-ND
CAP CER 1UF 16V 10% X7R 0603	3	C2,C11,C12	0603YC105KAT2A		
RES 100K X7R 1% 0805	1	R5			DNI
IC REG CTRLR BUCK PWM 8-MSOP	1	U1	LM3485MM/NOPB		CUSTOMER SUPPLIED

4) Assembly Drawings will contain:

- i. Component layout (top / bottom), polarity marking, special assembly instructions or any components that require special handling or processing, some examples may include:
 - (1) Non- washable (Moisture sensitive) components - switches, sensors, modules
 - (2) Special prep / specific height / placement requirements
 - (3) Lead length / trim – make sure to include +/- tolerances
 - (4) Rework wires (pin to pin routing)
 - (5) Component mounting (top /bottom – opposite of silkscreen – polarity)
 - (6) Adhesives
 - (7) Labeling / Serialization – (format / location / type)



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5) (CPL) Component Placement List (CPL) / Pick & Place File (PNP) / (XYRS) required information:

- i. Reference designator
- ii. X / Y - Centroid location (mils / in)
- iii. Rotation
- iv. Layer / Board side / (top / bottom - component mounting not silkscreen)

Sample CPL/PNP File :

<u>Ref Designator</u>	<u>Mid X</u>	<u>Mid Y</u>	<u>Layer</u>	<u>Rotation</u>
R102	315mil	435mil	Top	90
C1	1290mil	1380mil	Bottom	180
U1	3040mil	1505mil	Top	180
J2	2730mil	1490mil	Top	0

6) SMT Data Formats:

- I. Unless otherwise specific on the RFQ/PO(ex: Hand Build Order) these PCB data packages will be needed for SMT assembly. The following are the preferred formats, other formats are allowed, please inquiry before placing PO.
 - i. ODB++, PADS, GENCAD, PCB, and ACSII.

7) Additional Instructions:

- I. Assembly of non-rectangular or circular PCBs requires at least two parallel edges. Breakaway rails are required; V-Scribe scoring is highly suggested to obtain uniform boards as originally designed.
- II. All vias under BGA / leadless type devices will need to be tented or filled (solder mask / plating / epoxy) to ensure there are no solder opens / shorts during the reflow / manufacturing process.

Customer Supplied / Consignment - Component Requirements:

We will always work with our customers when it comes to customer supplied components; the following is our standard guidelines. If you have an expensive or a minimum quantity of any component on hand please contact the sales Team Representative @ 603-624-8311.

- 1) Each component must be individually packaged, labeled with BOM line item number / customer part number and/ or manufacturers' part number.
- 2) The following are acceptable packages of consignment / customer supplied components (**Bulk SMT** may have cost impact):
 - i. SMT Reels (full or partial)
 - ii. Cut tape
 - iii. Thru-Hole bulk or tape
 - iv. Tubes / Trays
 - v. Reels

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.

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, minimelf, 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.