PCB-TRAIN ASSEMBLY GUIDELINES AND POLICIES

Please take some time to read the following guidelines and policies before placing your order . This will ensure the smooth running of the service .

Supply of Documentation –

It is advisable to provide the following documentation with your free-issued kit of components to NEL .

1) A clear and concise component placement diagram for efficient placement of parts presented in either hard copy paper format , or electronic format such as .pdf , .bmp , .jpeg , .tiff etc .
   The above formats are usually easier to print and read than the ident legend contained within the gerber files .
2) A parts list or bill of materials where the different types of components are listed in groups , i.e – all 0805 10nf's sequentially , then 0805 100nf's etc . Please ALWAYS ensure that the values of components are clear , i.e 100R , 100K , 100M etc. , and not just "100" printed as the value .
   See fig 1.

Component Presentation –

Please ensure that when free-issued components are supplied to NEL that the following guidelines are observed .

1) Static sensitive devices are packaged in either "pink" anti-static protective foam , anti-static bags , or black anti-static boxes .
2) Each bag should be clearly marked up with either the parts list item number , quantity supplied , device description / code , and/or location designator . See fig 2 .
3) When supplying QFP's , gull wing devices , or other fine pitched SMT or leaded components , please ensure that they are packaged in a suitable way to prevent damage to the legs . Damaged or bent legs on fine-pitched QFP's in particular can result in costly rework or replacement . We would generally inform you of any damage , and would ask for either a replacement part from you , or authorise us to carry out repair at £30.00 per hour . Wherever possible , the best way to provide QFP's is in the "waffle" tray that the component should have originally been sent in .
4) Another point on QFP's and large multi-leaded SMT components :-
   A large variety of these devices have an "out of bag" shelf life , i.e – the device needs to be soldered on to the PCB within a recommended period of time to prevent the risk of moisture expansion during soldering thus potentially rendering the device useless (which will only become obvious during testing) . The component needs to be supplied to us with the bag unopened , or the component inside due for placement must be within the "out of bag" time .
   If for whatever reason the device in question needs to baked (nominally 24hrs @ 125oC) , NEL will charge the standard device baking fee of £20.00 . This will of course add a further 24 hours to production time unless we can fit other components during this period .

Fig 1 . Example of ideal parts list .

BILL OF MATERIALS			EXAMPLE		
Customer Name :		John Smith Engineering Ltd			
Product No. :		ABC123			
Issue :		1			
Date of issue :		24.03.04			
Item	**Quantity**	**PCB Location**	**Part Description / code**	**Supplier**	**Notes**
1	5	C1	0805 10NF CHIP CAPACITOR 50V (MURATA GRM)	NEWBURY	WHATEVER
		C2	0805 10NF CHIP CAPACITOR 50V (MURATA GRM)		
		C3	0805 10NF CHIP CAPACITOR 50V (MURATA GRM)		
		C4	0805 10NF CHIP CAPACITOR 50V (MURATA GRM)		
		C5	0805 10NF CHIP CAPACITOR 50V (MURATA GRM)		
2	3	C10	0805 100NF CHIP CAPACITOR 50V (MURATA GRM)	NEWBURY	ON BACK OF BOARD
		C11	0805 100NF CHIP CAPACITOR 50V (MURATA GRM)		
		C12	0805 100NF CHIP CAPACITOR 50V (MURATA GRM)		
3	1	U1	74HC74	CUSTOMER	
4	2	U5	XC2S200-5-PQ208C -- XILINX SPATAN 2 FPGA -5 SPEED GRADE	CUSTOMER	SEE DRG FOR PIN 1
		U6	XC2S200-5-PQ208C -- XILINX SPATAN 2 FPGA -5 SPEED GRADE	CUSTOMER	SEE DRG FOR PIN 1

Fig 2 . Example of ideal bag labelling .

Your Company Name .
Item 1
1206 100R 1%
50 off
R1,2,3,4-8,10 etc .

Fig 3 . Example of good legend layout .

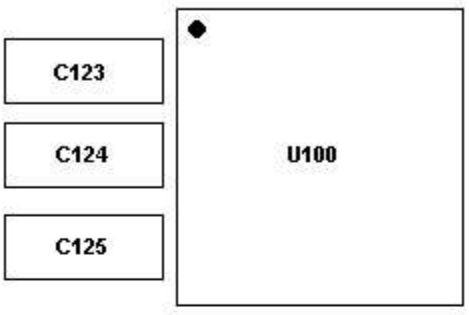
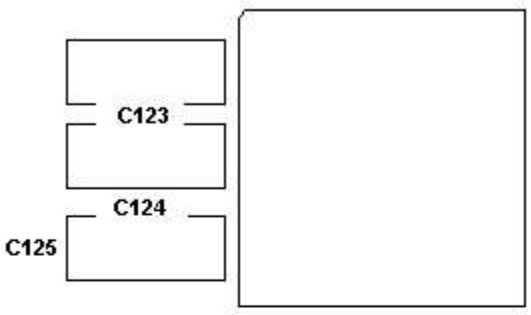


Fig 4 . Example of bad legend layout .
(As seen quite often !!) **



** On Fig 4 , note the omission of the reference designator for the QFP device and the fact that the pin 1 marking is just a shallow chamfer (which will become almost invisible when printed onto a PCB) . Please also note the potential ambiguity that could arise with the capacitor locations if the surrounding areas were laid out in a similar fashion .

To conclude , here is a list of Newbury Electronics general PCB-Train assembly policies .

- As stated on the web-site introduction page for PCB-Train assembly , we will provide the components listed at no extra charge . Where devices are requested that may not be a standard value (i.e 123 ohms) , we will fit the nearest E24 value such as 120 ohms .
- Customer supplied components that do not correctly fit the PCB footprint will either be :-
  a) Modified to fit as long as no significant extra labour time is involved (i.e cutting off plastic lugs from PLCC sockets etc.) , or
  b) Sent back to yourselves in it's original packaging with the assembled PCB(s) (i.e , a narrow 16-pin IC and a wide 16-pin footprint .)
- Bagged but badly labelled or hard to recognise components that cannot be satisfactorily cross-referenced to the parts list will be returned in their original packaging with the assembly .
- We will contact you if any documentation is not legible due to transmission problems . If a drawing and/or placement diagram is supplied that is unclear and it is difficult to differentiate between component locations , we will attempt to contact you and ask you to re-submit the information . If the information is still unclear on re-submission due to drawing layout errors rather than transmission errors , then the component locations in question will be left unpopulated . Please bear in mind that this will add turnaround time to your product .
- Components not supplied but detailed on the parts list as "customer supplied" will be detailed on your advice note .
- Our aim is make PCB-Train Assembly a "Menu-Driven" service where you pay for our operator's labour time and not administrative time , resulting in good quality fast-turnaround assembly constructed from your documentation .
- Please note that PCB-Train Assembly is primarily a prototyping service . Whilst every effort is made to ensure that you receive a fully functional electronic assembly , Newbury Electronics Ltd cannot be held responsible for test faults that were not caused by our processes . If a fault is found that is due to a process error at Newbury Electronics Ltd , then we will of course rework the unit at no cost to you .
- A no-clean 2% silver loaded solder wire will be used for all hand assembly . The colophony-free flux contained within this wire will leave a slight "white-powdery" residue around the solder joints . This is non-corrosive and deemed to be acceptable within most standard commercial applications .
- We will build your Printed Circuit Boards to standard commercial quality (using specification IPC-A-610 Rev C – Class 1 , Acceptability of Electronic Assemblies) as a guideline . If you require a higher level of quality (class 2 , or class 3) for military , medical or other strict prototyping applications then please contact us for a quote .

Thank you for taking the time to read these guidelines and policies . If followed correctly , we can continue to provide you with an outstanding quality service at competitive prices .

The simplicity of PCB-Train Assembly