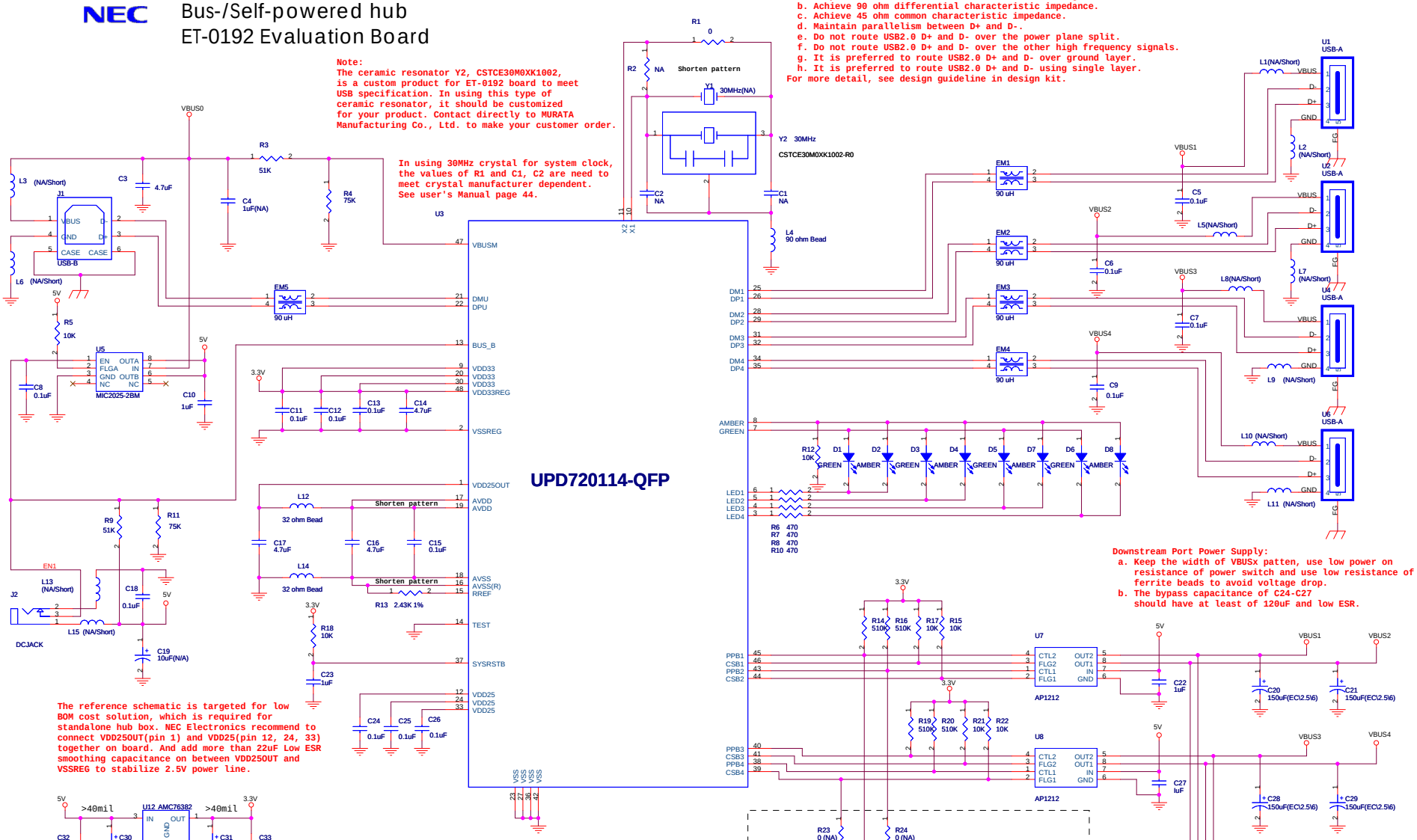
# uPD720114 USB2.0 4port Bus-/Self-powered hub ET-0192 Evaluation Board

NEC

**Note:**
The ceramic resonator Y2, CSTCE30M0XK1002, is a custom product for ET-0192 board to meet USB specification. In using this type of ceramic resonator, it should be customized for your product. Contact directly to MURATA Manufacturing Co., Ltd. to make your customer order.

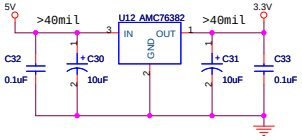
In using 30MHz crystal for system clock, the values of R1 and C1, C2 are need to meet crystal manufacturer dependent. See user's Manual page 44.

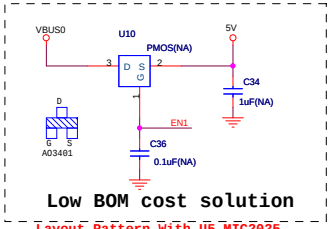
**USB signal line trace:**
a. Keep traces of USB bus D+ and D- in the same length.
b. Achieve 90 ohm differential characteristic impedance.
c. Achieve 45 ohm common characteristic impedance.
d. Maintain parallelism between D+ and D-.
e. Do not route USB2.0 D+ and D- over the power plane split.
f. Do not route USB2.0 D+ and D- over the other high frequency signals.
g. It is preferred to route USB2.0 D+ and D- over ground layer.
h. It is preferred to route USB2.0 D+ and D- using single layer.
For more detail, see design guideline in design kit.




The reference schematic is targeted for low BOM cost solution, which is required for standalone hub box. NEC Electronics recommend to connect VDD25OUT(pin 1) and VDD25(pin 12, 24, 33) together on board. And add more than 22uF Low ESR smoothing capacitance on between VDD25OUT and VSSREG to stabilize 2.5V power line.

**Downstream Port Power Supply:**
a. Keep the width of VBUSx patten, use low power on resistance of power switch and use low resistance of ferrite beads to avoid voltage drop.
b. The bypass capacitance of C24-C27 should have at least of 120uF and low ESR.




**Layout Pattern With U5 MIC2025**

*All resistors are 5% tolerance unless specified otherwise



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