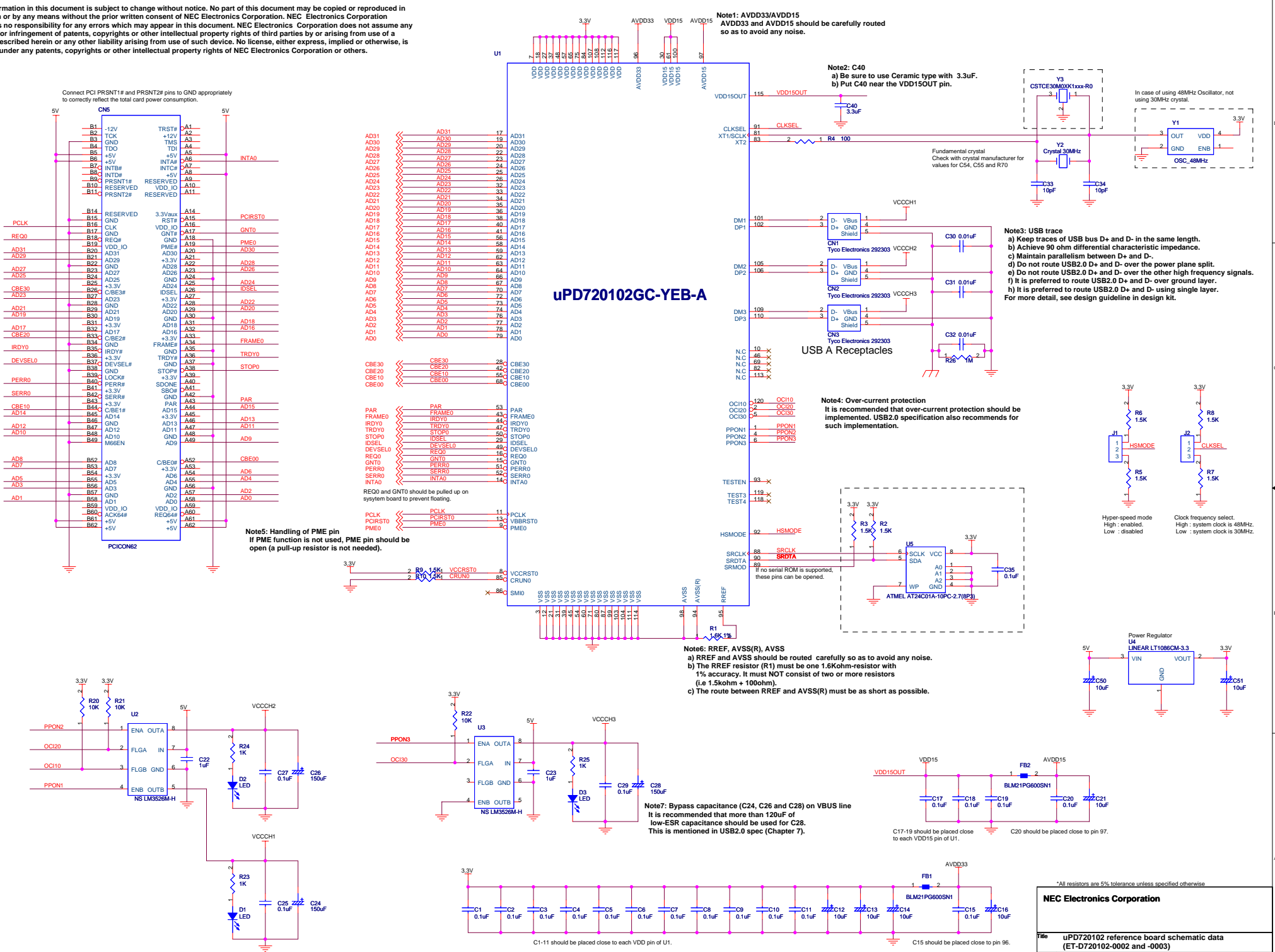


The information in this document is subject to change without notice. No part of this document may be copied or reproduced in any form or by any means without the prior written consent of NEC Electronics Corporation. NEC Electronics Corporation assumes no responsibility for any errors which may appear in this document. NEC Electronics Corporation does not assume any liability for infringement of patents, copyrights or other intellectual property rights of third parties by or arising from use of a device described herein or any other liability arising from use of such device. No license, either express, implied or otherwise, is granted under any patents, copyrights or other intellectual property rights of NEC Electronics Corporation or others.



**Note1: AVDD33/AVDD15**  
AVDD33 and AVDD15 should be carefully routed so as to avoid any noise.

**Note2: C40**  
a) Be sure to use Ceramic type with 3.3uF.  
b) Put C40 near the VDD15OUT pin.

**Note3: USB trace**  
a) Keep traces of USB bus D+ and D- in the same length.  
b) Achieve 90 ohm differential characteristic impedance.  
c) Maintain parallelism between D+ and D-.  
d) Do not route USB2.0 D+ and D- over the power plane split.  
e) Do not route USB2.0 D+ and D- over the other high frequency signals.  
f) It is preferred to route USB2.0 D+ and D- over ground layer.  
g) It is preferred to route USB2.0 D+ and D- using single layer.  
For more detail, see design guideline in design kit.

**Note4: Over-current protection**  
It is recommended that over-current protection should be implemented. USB2.0 specification also recommends for such implementation.

**Note5: Handling of PME pin**  
If PME function is not used, PME pin should be open (a pull-up resistor is not needed).

**Note6: RREF, AVSS(R), AVSS**  
a) RREF and AVSS should be routed carefully so as to avoid any noise.  
b) The RREF resistor (R1) must be one 1.6Kohm-resistor with 1% accuracy. It must NOT consist of two or more resistors (i.e. 1.5kohm + 100ohm).  
c) The route between RREF and AVSS(R) must be as short as possible.

**Note7: Bypass capacitance (C24, C26 and C28) on VBUS line**  
It is recommended that more than 120uF of low-ESR capacitance should be used for C28. This is mentioned in USB2.0 spec (Chapter 7).