

REV	CHANGE DESCRIPTION	NAME	DATE
A	Release		6-14-04
B	RX Termination Resistors Placement Correction		6-21-04

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DOCUMENT DESCRIPTION
Component Placement Checklist for the LAN91C111, 128-pin QFP Package

 	SMSC 80 Arkay Drive Hauppauge, New York 11788	
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Component Placement Checklist for LAN91C111

Information Particular for the 128-pin QFP Package

1. Place the RJ45 connector, the magnetics and the LAN91C111 QFP as close together as possible.
2. If No. 1 is not possible, keep the RJ45 and the magnetics as close as possible. This will allow remote placement of the LAN91C111 QFP.
3. Select and place the magnetics as to set up the best routing scheme from the LAN91C111 QFP to the magnetics to the RJ45 connector. There are many styles and sizes of magnetics with different pin outs to facilitate this operation.
4. Place the $49.9\ \Omega$ TX termination pull-up (TPO+, pin 16) as close to the magnetics as possible.
5. Place the $49.9\ \Omega$ TX termination pull-up (TPO-, pin 17) as close to the magnetics as possible.
6. Place the (2) $24.9\ \Omega$ RX series resistors as close to the LAN91C111 QFP device as possible.
7. Place the (2) $24.9\ \Omega$ RX termination resistors and the $0.01\ \mu\text{F}$ capacitor (C_{rxterm}) (TPI+, pin 19 & TPI-, pin 20) as close to the LAN91C111 QFP as possible. The combination of the (4) $24.9\ \Omega$ resistors form a 100 ohm termination for the RX channel.
8. Place the $75\ \Omega$ cable side center tap termination resistors and the $1000\ \mu\text{F}$, 2KV capacitor (C_{magterm}) cap as close to the magnetics as possible.
9. Place the Unused Wire Pair termination resistors and the $1000\ \mu\text{F}$, 2KV capacitor (C_{rjterm}) as close to the RJ45 connector as possible.
10. Place the Digital Ground / Chassis Ground shorting resistor near the RJ45 in a logical place to short the two planes.
11. Place the (10) decoupling capacitors for the LAN91C111 QFP as close to each separate power pin as possible. Using an SMD_0603 package will make this task easier.
12. Place the 25 MHz crystal, the series EMI resistor and the associated $10 - 30\ \mu\text{F}$ capacitors as close together as possible and as close to the LAN91C111 QFP (XTAL1, pin 1 & XTAL2, pin 2) as possible.
13. Place the RBIAS resistor as close to pin 14 of the LAN91C111 QFP as possible.
14. Bulk capacitors for each power plane can reside anywhere on the plane.
15. If an MII Physical Device is being incorporated, place the MII device as to allow the best routing possible. If proper PCB design techniques are followed, proximity to the LAN91C111 QFP is not critical. The designer should group the RJ45 connector, the magnetics and the MII Physical Device as close together as possible.