



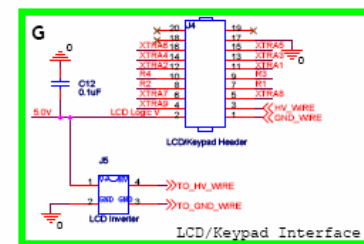
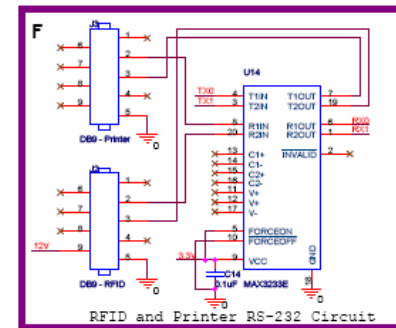
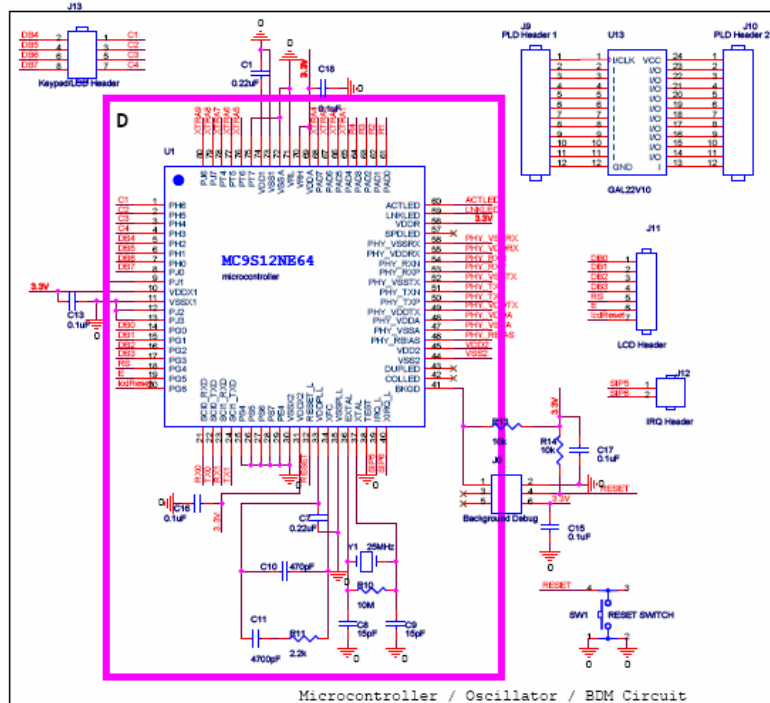
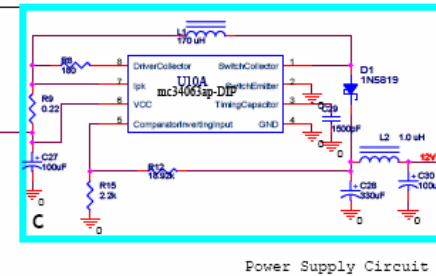
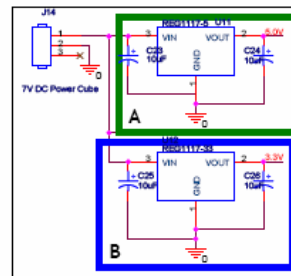
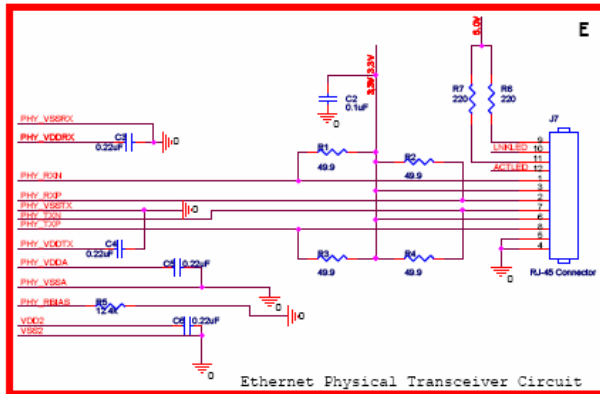
FMECA chart

April 12, 2006

The J Team

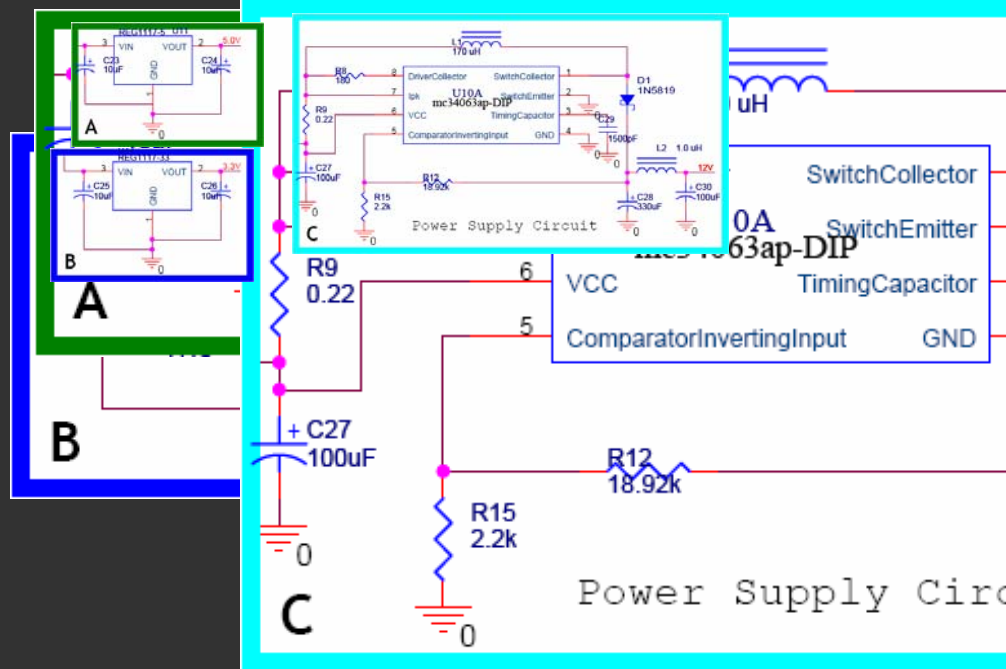
Jennifer Tietz Jared Suttles
Joshua Chapman Jonathan Chen

Schematic



| | | | |
|-----|-------------------------------|-----|-----|
| T50 | RFID Xpress Schematic, J-Team | Rev | 3.6 |
| Doc | Document Number | | |

Schematic

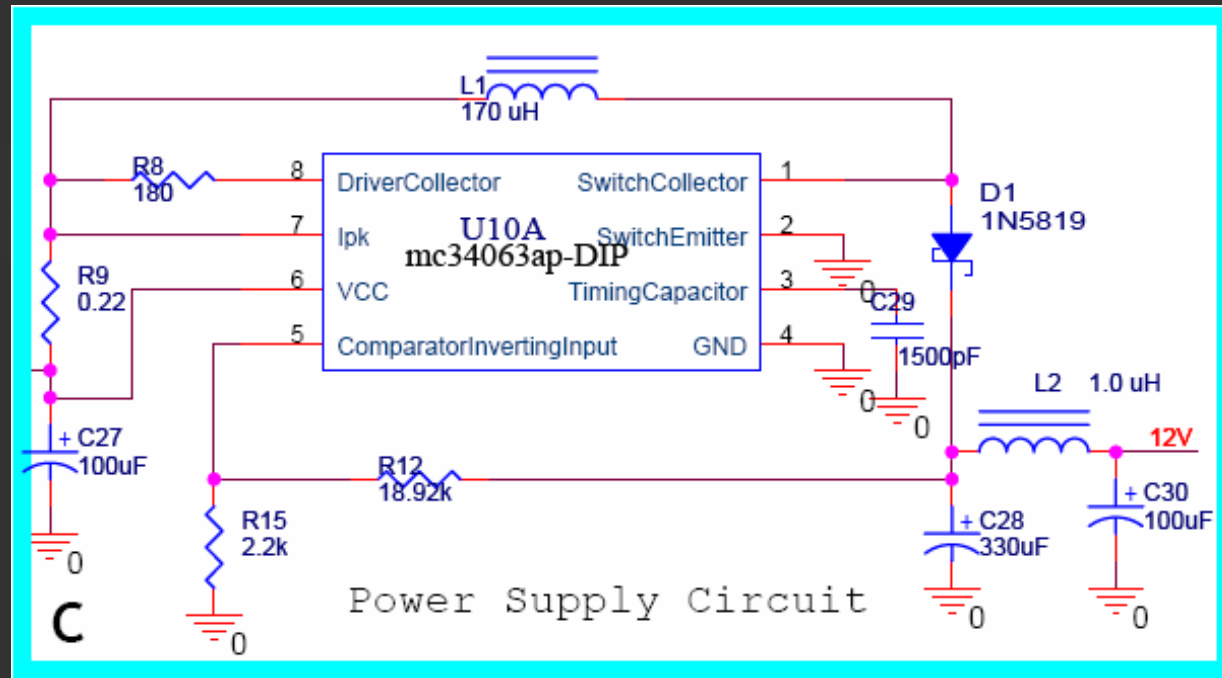
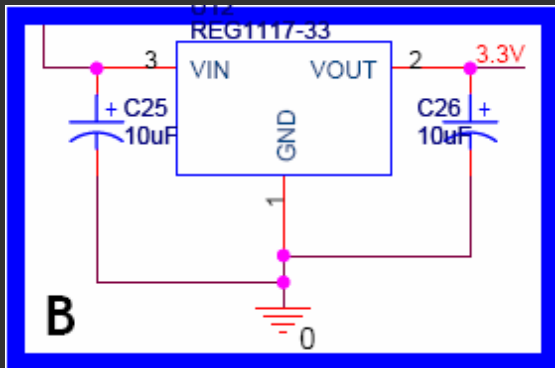
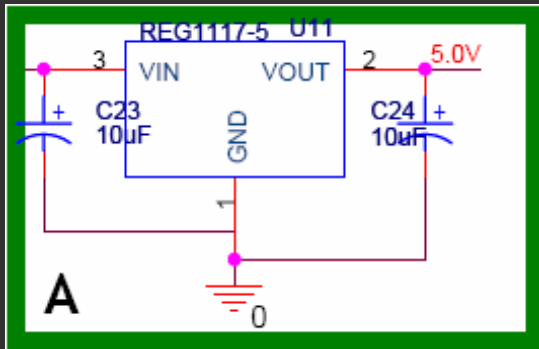


FMECA Table



| Failure No. | Failure Mode | Possible Causes | Failure Effects | Method of Detection | Criticality | Remarks |
|-------------|-------------------------|--|---|---------------------|-------------|---|
| A1 | Output = 0 V | Failure of any component in A or an external short to ground | LCD ceases to function | Observation | Low | |
| A2 | Output > 5.0 V | Failure of U11 | Potential damage to LCD | Observation | Low | Regulator should have automatic shutdown if voltage or current get too high |
| A3 | Output out of tolerance | Failure of C23, C24, U11 | Out-of-spec operating voltage; unpredictable | Observation | Low | |
| B1 | Output = 0 V | Failure of any component in B or an external short to ground | Microcontroller and RS232 line driver cease to function | Observation | Low | |
| B2 | Output > 3.3 V | Failure of U12 | Potential damage to uC and/or RS232 line driver | Observation | Low | Regulator should have automatic shutdown if voltage or current get too high |

Schematic

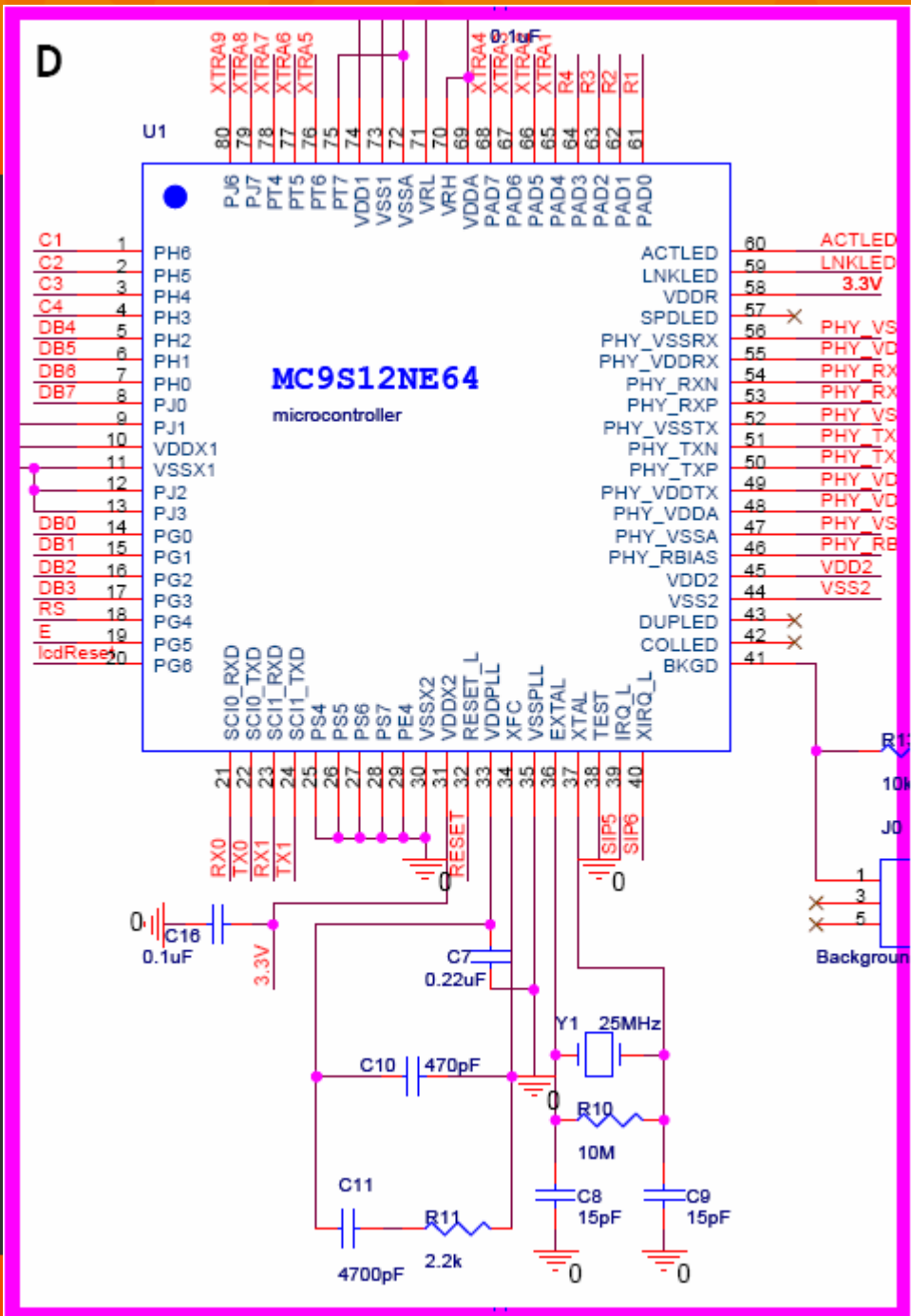


FMECA Table

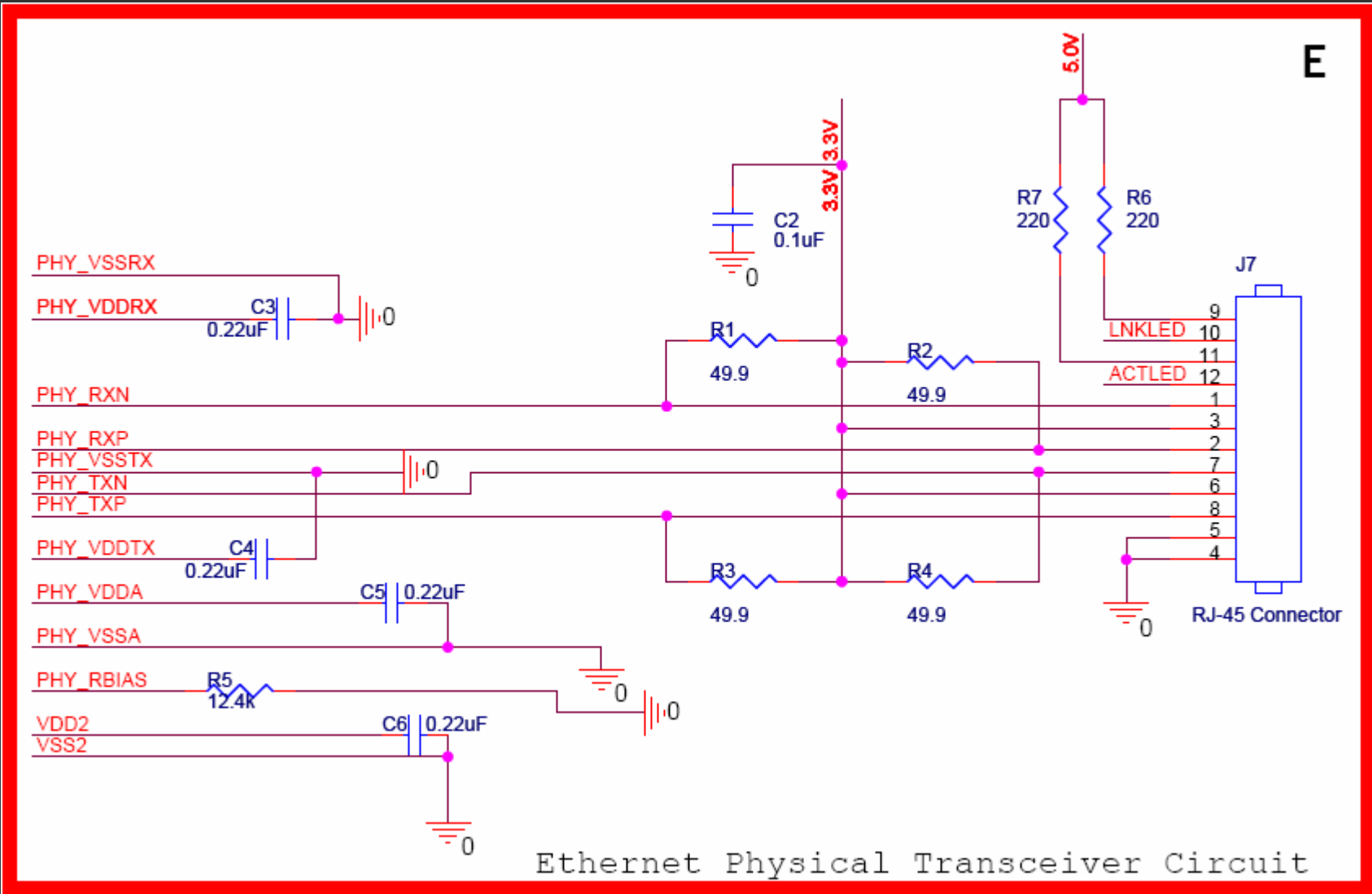


| Failure No. | Failure Mode | Possible Causes | Failure Effects | Method of Detection | Criticality | Remarks |
|-------------|-------------------------|--|--|---------------------|-------------|---|
| B3 | Output out of tolerance | Failure of C25, C26, U12 | Out-of-spec operating voltage; unpredictable | Observation | Low | |
| C1 | Output = 0 V | Failure of any component in C or an external short to ground | RFID reader would cease to function | Observation | Low | |
| C2 | Output > 12 V | Failure of U10 | Potential damage to RFID reader | Observation | Low | Regulator should have automatic shutdown if voltage or current get too high |
| C3 | Output out of tolerance | Failure of L1, L2, D1, R8, R9, R12, R15, C27, C28, C29, C30, U10 | Out-of-spec operating voltage; unpredictable | Observation | Low | |

Schematic



Schematic



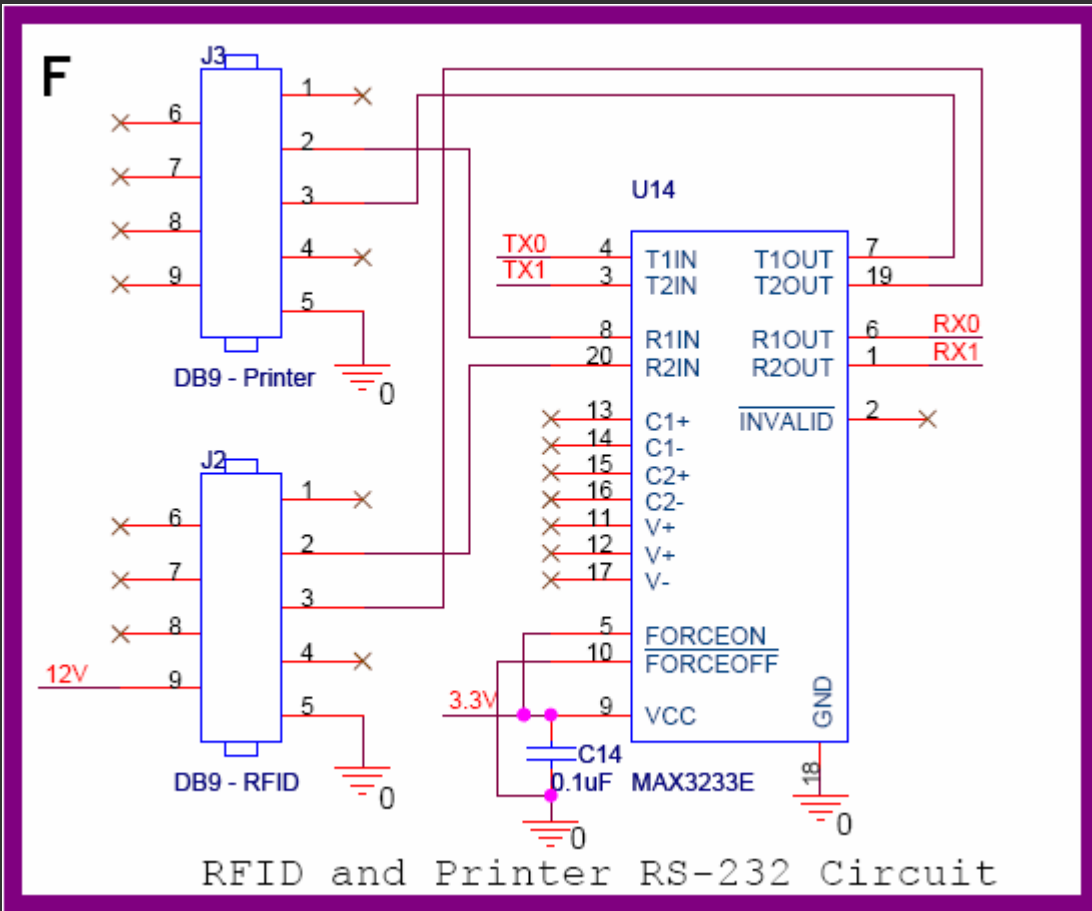
Ethernet Physical Transceiver Circuit

FMECA Table

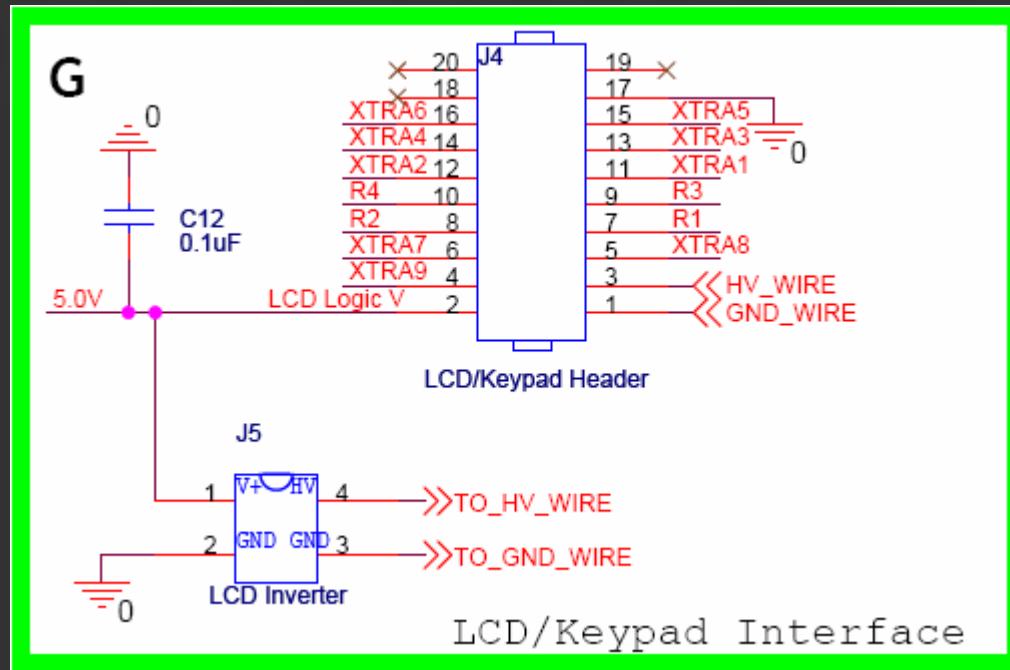


| Failure No. | Failure Mode | Possible Causes | Failure Effects | Method of Detection | Criticality | Remarks |
|-------------|--|--|---|---------------------|-------------|---|
| D1 | Output continuously 0 | U1, Y1, C1, C7, C8, C9, C10, C11, C13, C16, C17, C18, R10, R13, R14, reset circuitry, software | LCD, keypad, Ethernet, and/or printer may not function properly | Observation | Low | |
| D2 | Output continuously 1 | U1, Y1, C1, C7, C8, C9, C10, C11, C13, C16, C17, C18, R10, R13, R14, software | LCD, keypad, Ethernet and/or printer may not function properly | Observation | Low | |
| D3 | User information not validated correctly | Failure of U1, software | Incorrect PIN accepted, wrong user authenticated | Observation | High | Could compromise user's identity, allow purchases on others' accounts |
| E1 | Ethernet doesn't work | Failure of any component in E, U1, software | Email, database lookups, time synchronization unsuccessful | Observation | Low | ACTLED and LNKLED provide Ethernet status notification |

Schematic



Schematic



FMECA Table



| Failure No. | Failure Mode | Possible Causes | Failure Effects | Method of Detection | Criticality | Remarks |
|-------------|------------------------------------|----------------------------------|--|---------------------|-------------|---|
| F1 | Receipt fails to print | Failure of U14, J3, U1, software | Receipt printing unsuccessful | Observation | Low | Could also be caused by failure of printer itself |
| F2 | RFID reader fails to detect tags | Failure of U14, J2, U1, software | RFID tag not acknowledged | Observation | Low | Could also be caused by failure of RFID reader itself |
| G1 | LCD display functioning improperly | Failure of U1, J5, C12, software | LCD displays incorrect or no information | Observation | Low | Could also be caused by failure of LCD module itself |
| G2 | Keypad entries not detected | Failure of U1 | Key presses not recognized | Observation | Low | Could also be caused by failure of keypad itself |