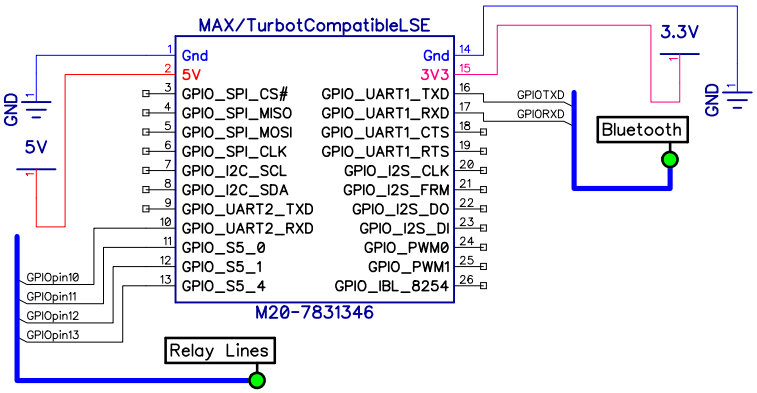
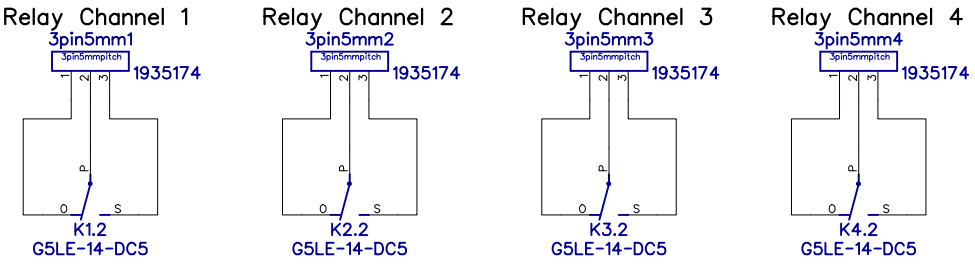
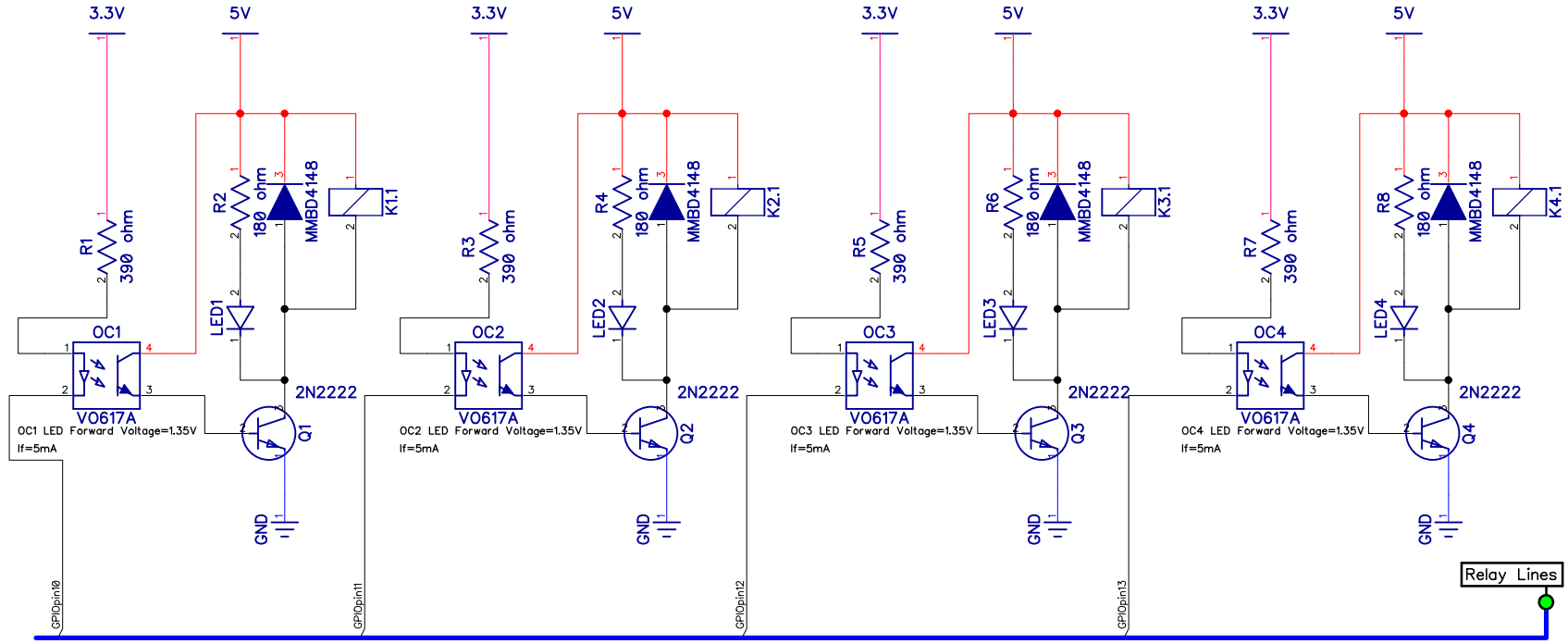


3 position Block Terminals with 5mm pitch

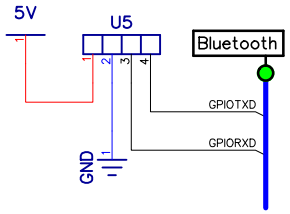




R1, R3, R5 and R7 = (Vs - Vf) / If = (3.3V - 1.35V) / 0.005A = 390Ohms
Optocouplers CTRmin = 50% when If = 5mA
Ic in Optocouplers = CTR * If = 0.5 * 0.005 = 2.5mA
Ic in Q1-Q4 = hfe * Ib = 100 * 0.0025 = 250mA
Relay coil current = 79.4mA @ 5v
LED1-4 Forward Voltage = 2V, If = 20mA
R2,R4,R6 and R8 = (Vs - Vf) / If = (5V - 2V) / 20mA = 150ohms nearest = 180ohms
Total Ic needed from each transistor(Q1-4) = 99.4mA

Title: MinnowBoard MAX/Turbot Relay Lure		
open source hardware	Released under the Creative Commons Attribution Share-Alike 3.0 License https://creativecommons.org/licenses/by-sa/3.0/	Rev 1.0
Date: 2/19/2016		Drawn by: Jose Navarro
MinnowBoard.Relay.Lure.dch		Relay Lure

This section of the design will enable to hook up HC-06 type Blueetoth modules
This will enable to control relays and the MinnowBoard MAX thru another Bluetooth enabled device
HC-06 type modules require 3.6V-6V to work, the logic level on TXD and RXD is 3.3V



Title: MinnowBoard MAX/Turbot Relay Lure		
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Date: 2/19/2016		Drawn by: Jose Navarro
MinnowBoard.Relay.Lure.dch		Bluetooth expansion