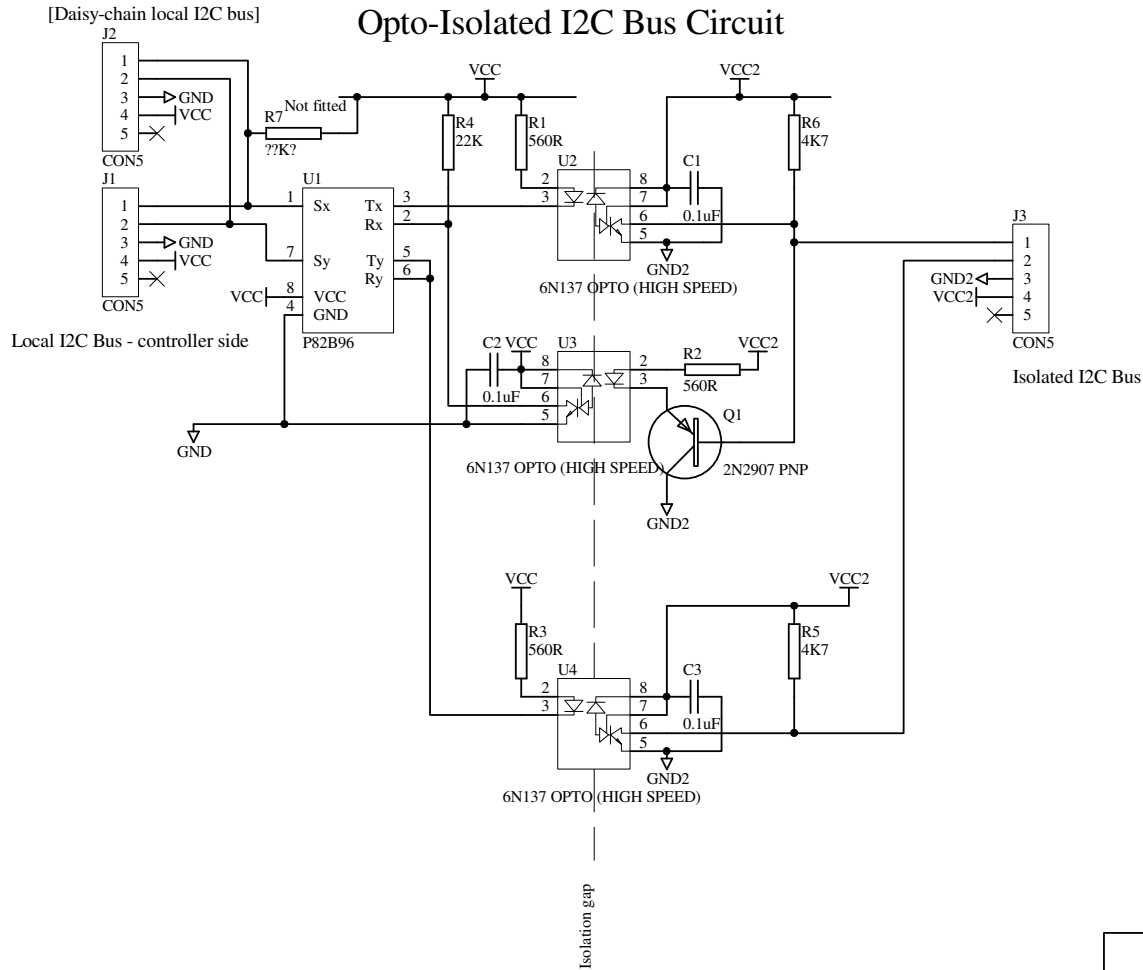


# Opto-Isolated I2C Bus Circuit



The P82B96 has a low-state voltage output ( $V_{ol}$ ) that is typically 0.75V, but only guaranteed to be lower than 1V.

On the Vm-1's I2C busses, the Input low voltages are specified as  
 Bus 1 [SDA is Ch9]  $V_{in-low} = 1.0V$  (Schmidt trigger VT-)  
 Bus 2 [SDA is Ch23]  $V_{in-low} = 0.8V$  (ordinary CMOS input).

Thus there is not a guarantee that the device will work with Bus 2.

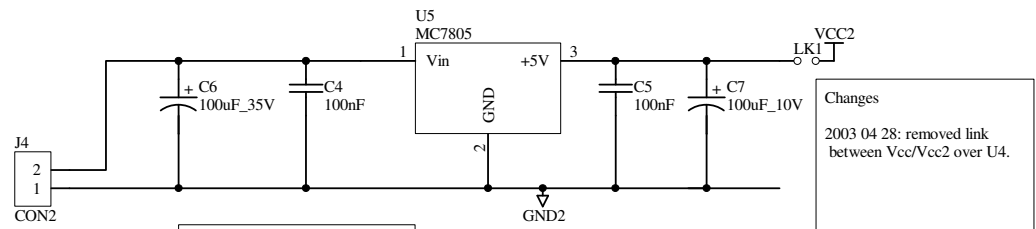
However, measuring the actual input voltage thresholds on two VM-1s [from the same H8S batch] the inputs levels were:

Ch9 :  $V_{t-} = 1.64V$   
 Ch23:  $V_{th} = 1.34V$

These are well above the worst case of 1.0 v generated by the P82B96.

When this circuit is being used with the 5802 Application Board then it's necessary to short out the series resistor on SDA. This is R4 on Bus 1 or R6 on Bus 2.

Note that the two sets of power rails are given different net names - it's easy to get this wrong, especially if the devices have hidden power pins. Always look at the PCB layout on opto-isolated systems to make sure there is no copper bridging the isolation gap.



Power inlet for the remote side of the bus - optional. This should come from a power source that is galvanically isolated from the power supply to the local side of the bus.

Changes  
 2003 04 28: removed link between Vcc/Vcc2 over U4.

<b>D006 Opto-Isolated I2C</b>		Micro-Robotics Ltd. The Old Maltings 135 Ditton Walk Cambridge CB5 8QB Tel. +44 (0) 1223 523100
Revision:	2003 04 28	
Date:	3-Apr-2006 11:48:16	
Sheet 1 of 1		
File: S:\data\Venom SCVM-1 Useful Ccts\D006_opto_isolated_i2c_App_Note.		