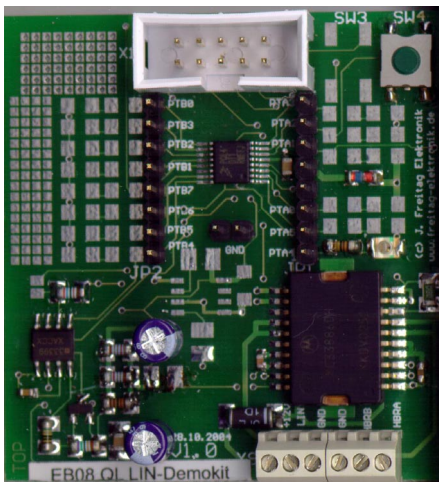
1 General

The EB08_QL LIN Demokit is a starter kit for the new Motorola micro controller 68HC908QL family.
This micro controller features the 8 bit CPU08 core, a slave LIN interface, up to 4 KB of in-system programmable flash memory, 128 Byte RAM and more.
To build a complete system, the starter kit is equipped with

- Voltage regulator
- H-Bridge (Motorola MC33386 or MC33387) for control of DC motors
- Circuits for testing, evaluation and debugging (2 push-buttons, pin headers to give access to all 'QL pins and freely usable pads for own circuits)
- Easy connection of power, LIN bus and H-bridge via screw terminals



2 Evaluation Board EB08 QL

2.1 Dimension

The outer board dimension of the EB08_Ql is 55.9 x 51.3 mm

2.2 Push Buttons

Button	µC Port	Alternative Function
SW3	PA3	reset
SW4	PA2	external interrupt

The switches SW3 and SW4 are low active an can be used as port inputs or for alternative function depending on the controller software. To use the switches the QL internal pull-up-resistor has to be enabled.

2.3 Connectors and Pin Out

2.3.1 X9 Screw Terminal

Pin #	1	2	3	4		6
Connect to	Supply plus 9..12V	LIN	GND	GND	H-Bridge +	H-Bridge -
Label	+ 12V	LIN	GND	GND	HBRA	HBRB

Note: if No H-Bridge is mounted, only pins 1..3 of X9 are available

2.3.2 X1 ISP-10

The EB08-QL is connected to the programmer via a 10 pin ribbon cable.

10 Pin Nr.	Signal
1	PTA1 (MON 7)
2	PTB0 (MON6)
3	HC08_RxD
4	HC08_TxD
5	GND
6	+5V
7	HC08_IRQ
8	HC08_PTA0
9	HC08 Clock
10	HC08 Reset

NC: no connect, do not connect anything here. The Signal names in brackets MON6 and MON7 refer to our MONIF08-E3 Monitor Mode Interface

Layout of corresponding pinheader, view from above

		K		
9	7	5	3	1
10	8	6	4	2

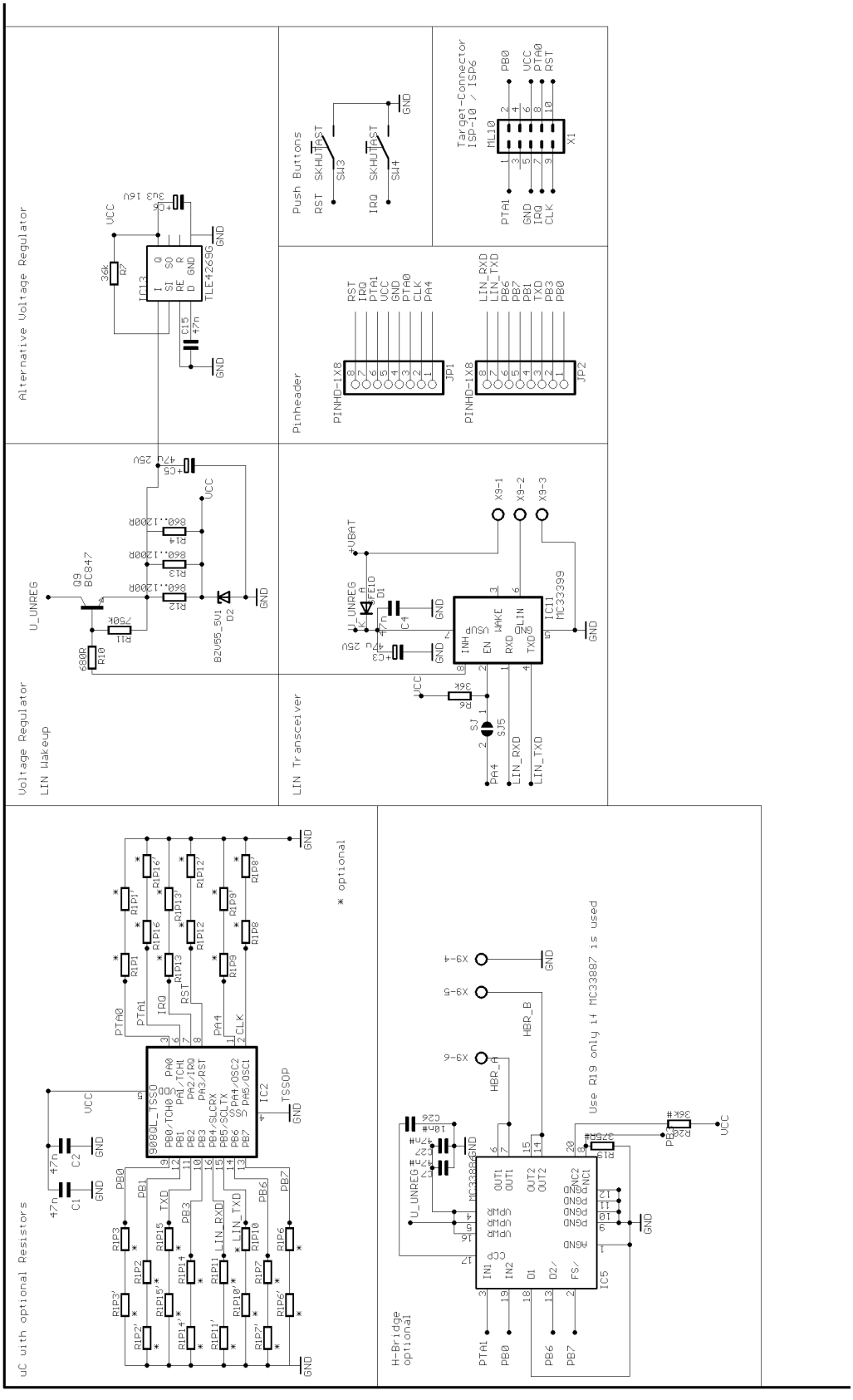
K: Coding interleave
Pin 1 is marked with an arrow

2.4 Setup and Configuration

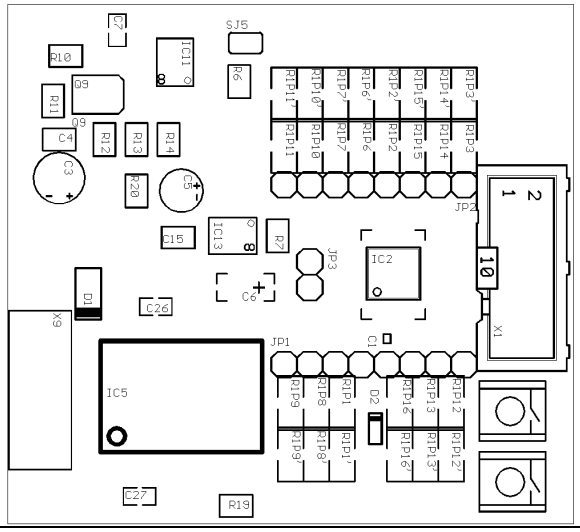
2.4.1 Enable LIN Sleep Mode

Solder Jumper SJ5	connected	LIN Transceiver can be controlled by port A4 of the µC
Solder Jumper SJ5	disconnected	LIN Transceiver always activated

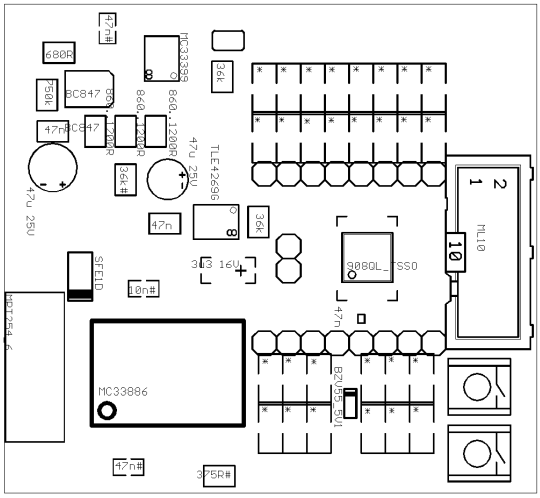
2.5 Circuit Diagram



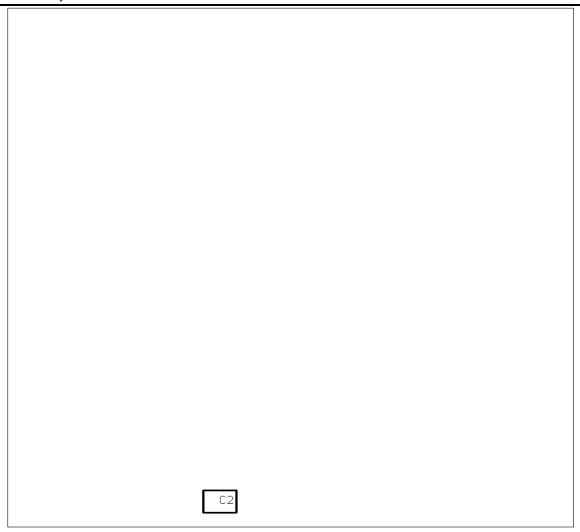
2.6 Placement Plan



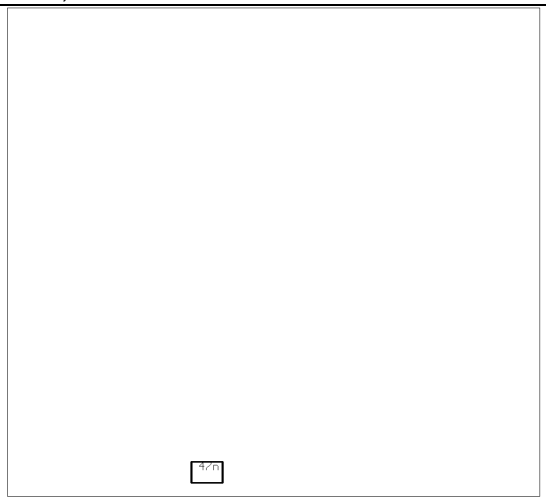
Top Side, Ref #



Top Side, Values



Bottom Side, Ref #



Bottom Side, Values

2.7 Optional Assembly

2.7.1 Voltage Regulator

The voltage regulator can be equipped in two different ways:

1. D2, R12, R13,R14 as a simple z-diode voltage regulator
2. IC13, C15, C6, R7 with an Infineon low-drop voltage regulator TLE4296

The voltage regulator is controlled by the LIN-transceiver. If you want to disable this function, you have to connect the collector of Q9 with the emitter of Q9.

2.7.2 H-Bridge

The board can be equipped with two different Freescale H-Bridge Circuits:

1. IC5 is MC33886, then R19 is not soldered
2. IC5 is MC33887, then R19 (current sense) is to be soldered. Then the bridge current can be monitored by the AD5 input of the µC

If no H-Bridge is used R19, R20 C7, 26, C27 are not mounted

2.7.3 Port Resistors or LEDs

For own experimental circuits you can use the resistors named R1Px an R1Px'. The R1Px' are connected to Ground an can be used e.g. as Pull Down Resistor.
You could also mount e.g. SMD LED's on this pads. This pads are suitable for SMD packages from 0603 up to 1210.
There are also some unconnected Pads for own circuits on the board.

