COM6L TO BEAGLEBOARD ADAPTER

User Guide

Last updated

August 30th, 2012

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1 Introduction

1.1 Purpose & Scope

The purpose of this document is to provide details regarding the setup and use of the COM6L to BeagleBoard Adapter. This document covers a description of the COM6L to BeagleBoard Adapter board and its features.

1.2 Applicable Documents

- *330-0096 (User Guide, COM6L-BLE)*
- *330-0097 (User Guide, COM6L-T5)*
- *BeagleBoard -xM Users Guide*
- *BeagleBoard Users Guide*

1.3 Revision History

Date	Change Description	Revision
8-30-2012	Initial release	1.0

Table 1 Revision History

2 COM6L to BeagleBoard Adapter Description

COM6L to BeagleBoard Adapter allows interfacing various COM6L modules to the 28 pin expansion header on the BeagleBoard and BeagleBoard-xM platforms. In addition, the COM6L to BeagleBoard Adapter provides an on board regulator, 32 KHz slow clock crystal oscillator, LED indicators, serial EEPROM and various debugging headers.

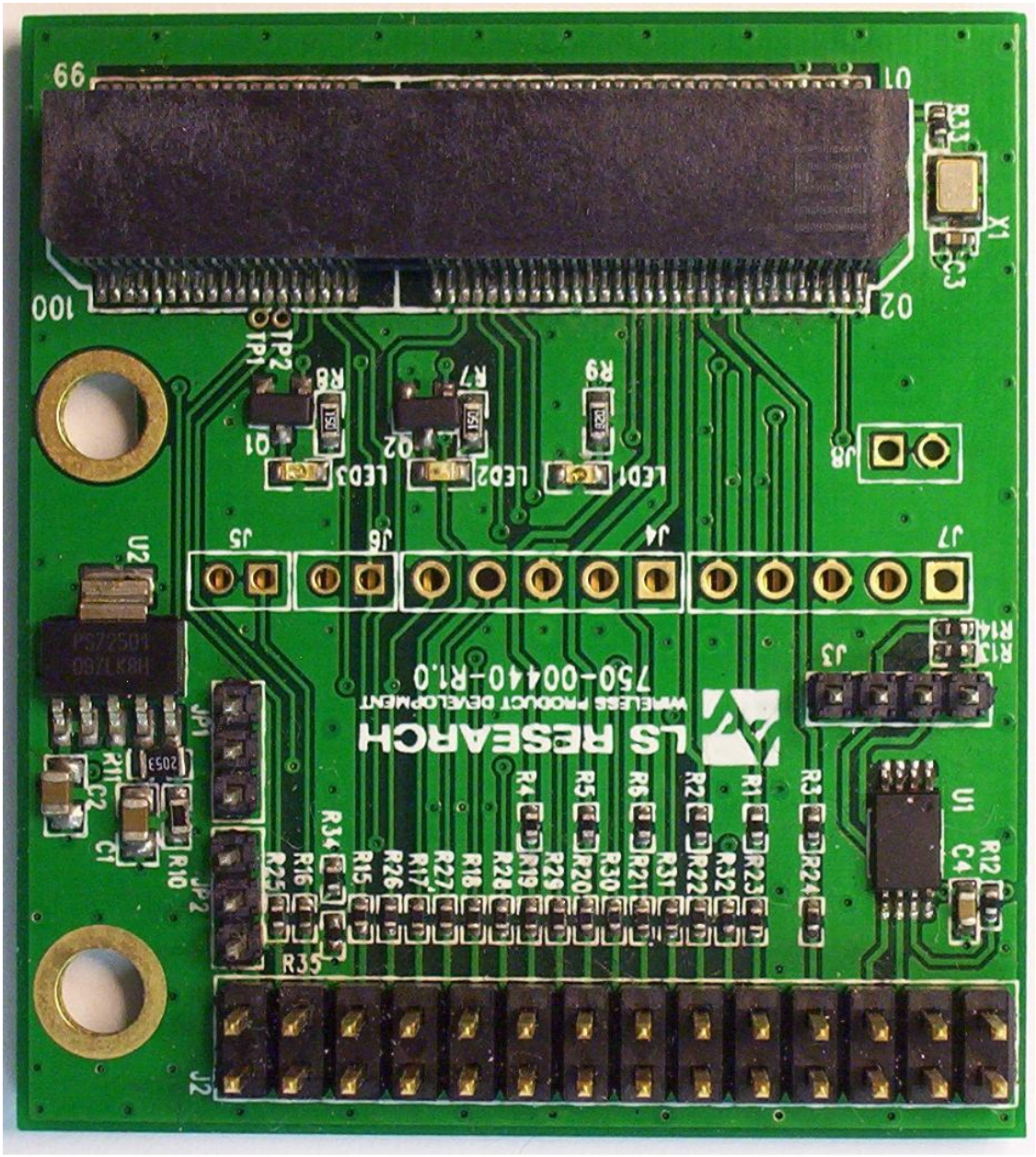

Figure 1 COM6L to BeagleBoard Adapter (Top View)

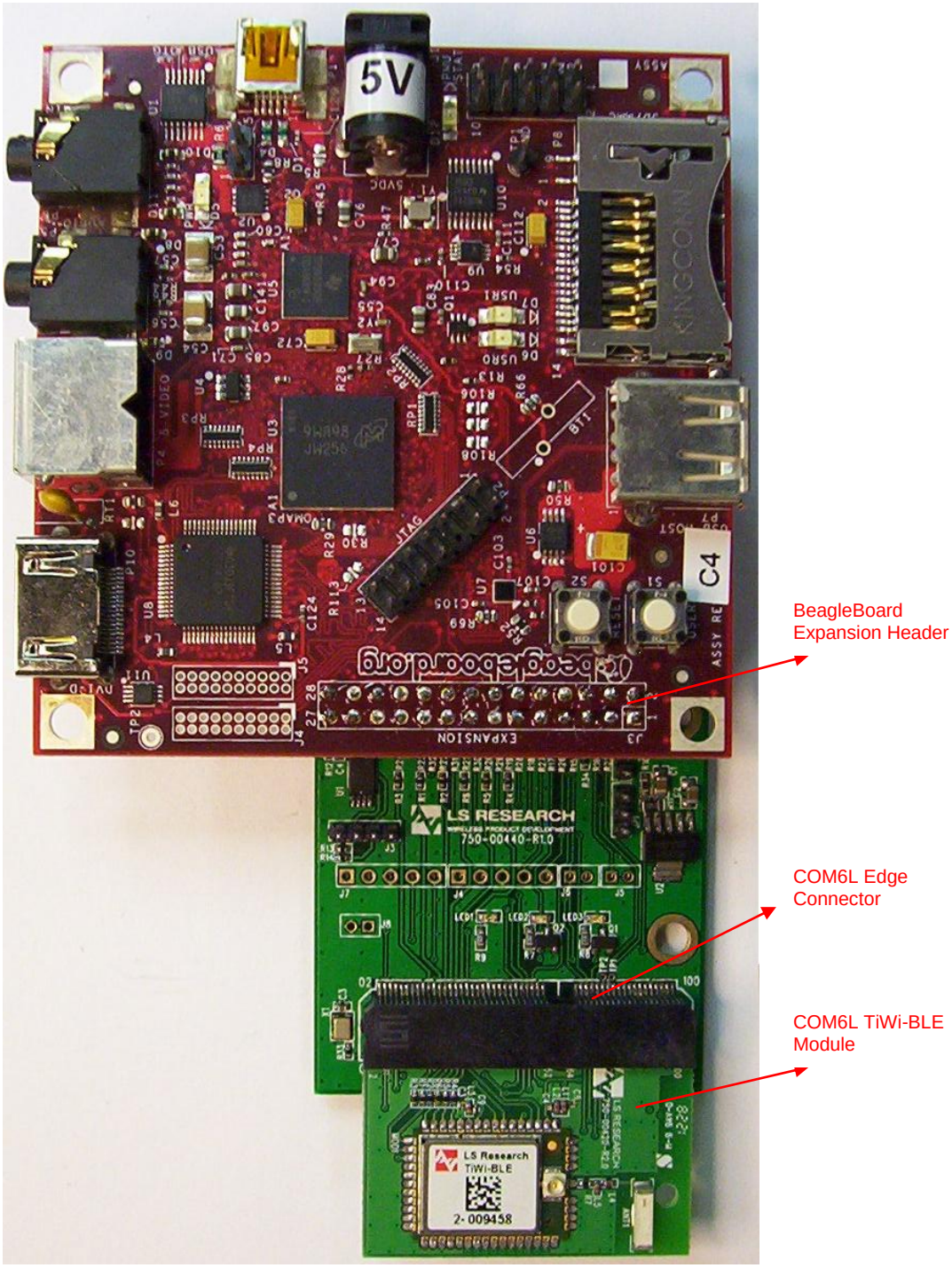

Figure 2 COM6L to BeagleBoard Adapter with BeagleBoard and COM6L-TiWi-BLE Module

3 Connectors

The primary connectors on the COM6L to BeagleBoard Adapter are the 28 pin BeagleBoard expansion header J2 and the COM6L edge connector J1. The mating connector on the BeagleBoard is by default not populated and is not included with the purchase of a BeagleBoard. A mating connector, such as a *Sullins PPPC142LFBN-RC*, or similar needs to be purchased to connect the COM6L adapter board to the BeagleBoard.

Figure 3 BeagleBoard Mating Connector

3.1 BeagleBoard Expansion Header

Connector Pin	Name	Description
1	5V	5V D/C FROM BEAGLEBOARD
2	1V8	POWER FOR 1.8 VDC DIGITAL DOMAIN
3	WL_EN	WLAN ENABLE
4	HCI_RTS	BLUETOOTH HCI RTS
5	BT_EN	BLUETOOTH ENABLE
6	HCI_RX	BLUETOOTH HCI RECEIVE
7	WLAN_IRQ	WLAN INTERRUPT
8	HCI_TX	BLUETOOTH HCI TRANSMIT
9	BT_WAKE_UP	BLUETOOTH WAKE UP
10	HCI_CTS	BLUETOOTH HCI CTS
11	SDIO_D3	SDIO INTERFACE, HOST PULL UP REQUIRED
12	AUD_IN	PCM I/F or FM I2S
13	SDIO_D2	SDIO INTERFACE, HOST PULL UP REQUIRED
14	AUD_CLK	PCM I/F or FM I2S CLK
15	SDIO_D1	SDIO INTERFACE, HOST PULL UP REQUIRED
16	AUD_FSYNC	PCM I/F or FM_I2S_FSYNC
17	SDIO_D0	SDIO INTERFACE, HOST PULL UP REQUIRED
18	AUD_OUT	NO CONNECT
19	SDIO_CMD	SDIO INTERFACE, HOST PULL UP REQUIRED
20	NC	SDIO_CLK HOST PULL UP REQUIRED
21	SDIO_CLK	SDIO INTERFACE, HOST PULL UP REQUIRED
22	NC	NO CONNECT
23	I2C_SDA	I2C INTERFACE TO 128 BIT EEPROM
24	I2C_SCL	I2C INTERFACE TO 128 BIT EEPROM
25	NC	NO CONNECT
26	NC	NO CONNECT
27	GND	GROUND
28	GND	GROUND

Table 2 BeagleBoard Expansion Header

3.2 COM6L Edge Connector

Not all pins on the 100 Pin COM6L edge connector are used. The table below outlines the active pins. All pins not specifically listed in the table are left unconnected.

Connector Pin	Name	Description
1	SLOW_CLK	SLEEP CLOCK (32 kHz), 1.8 VDC DIGITAL DOMAIN
2	GND	Ground
3	GND	Ground
4	WLAN_EN	WLAN Enable
5	3V6	3.6 VDC Nominal (3.0-4.8 VDC)
6	GND	Ground
7	3V6	3.6 VDC Nominal (3.0-4.8 VDC)
8	1V8	POWER SUPPLY FOR 1.8 VDC DIGITAL DOMAIN
9	GND	Ground
11	WL_RS232_TX	WLAN TEST UART TX (*)
13	WL_RS232_RX	WLAN TEST UART RX (*)
15	WL_UART_DGB	WL_UART_DBG
18	GND	Ground
19	GND	Ground
20	SDIO_CLK	SDIO_CLK HOST PULL UP REQUIRED
22	GND	Ground
24	SDIO_CMD	SDIO_CMD HOST PULL UP REQUIRED
26	SDIO_D0	SDIO INTERFACE, HOST PULL UP REQUIRED
28	SDIO_D1	SDIO INTERFACE, HOST PULL UP REQUIRED
30	SDIO_D2	SDIO INTERFACE, HOST PULL UP REQUIRED
32	SDIO_D3	SDIO INTERFACE, HOST PULL UP REQUIRED
34	WLAN_IRQ	WLAN Interrupt Request
37	GND	Ground
42	GND	Ground
47	GND	Ground
52	AUD_CLK	PCM I/F or FM_I2S_CLK (*)
54	AUD_FSYNC	PCM I/F or FM_I2S_FSYNC
56	AUD_IN	PCM I/F or FM_I2S_DI (*)
58	AUD_OUT	PCM I/F or FM_I2S_DO (*)
60	GND	Ground
63	GND	Ground
64	GND	Ground
66	HCI_TX	Bluetooth UART TX
68	HCI_RX	Bluetooth UART RX
70	HCI_CTS	Bluetooth UART CTS
72	HCI_RTS	Bluetooth UART RTS
74	HOST_WU	Host Wake Up
76	BT_UART_DBG	Bluetooth UARTD (DEBUG) (*)
87	GND	Ground
89	BT_EN	Bluetooth Enable
93	BT_WAKE_UP	Bluetooth Wake Up/ DC2DC mode (*)
95	GND	Ground
97	GND	Ground

Table 3 COM6L Edge Connector

3.3 EEPROM Programming Header J3

Expansion EEPROM
All expansion cards designed for use with the BeagleBoard are required to have a EEPROM located on the board. This is to allow for the identification of the card by the Software in order to set the pin muxing on the BeagleBoard expansion connector to be compatible with the expansion card. J3 is the interface to the EEPROM.

Connector Pin	Name	Description
1	GND	GROUND
2	I2C_SDA	POWER FOR 1.8 VDC DIGITAL DOMAIN
3	I2C_SSDA	WLAN ENABLE
4	1V8	1.8V DC

Table 4 J3 EEPROM Programming Header

3.4 External Bluetooth UART Interface Header J4

Used when interfacing to the COM6L module without a BeagleBoard.

Connector Pin	Name	Description
1	1V8	1.8V DC
2	NC	NO CONNECT
3	GND	GROUND
4	HCI_TX	HCI TRANSMIT
5	HCI_RX	HCI RECEIVE

Table 5 J4 External Bluetooth UART Interface

3.5 External WLAN Enable Header J5

Connector Pin	Name	Description
1	WL_EN	EXTERNAL WLAN ENABLE
2	1V8	1.8V DC

Table 6 J5 External WLAN Enable Header

3.6 External Bluetooth Enable Header J6

Connector Pin	Name	Description
1	BT_EN	EXTERNAL BLUETOOTH ENABLE
2	1V8	1.8V DC

Table 7 J6 External Bluetooth Enable Header

3.7 WLAN UART Interface Header J7

Used when interfacing to the COM6L module without a BeagleBoard.

Connector Pin	Name	Description
1	1V8	1.8V DC
2	NC	NO CONNECT
3	GND	GROUND
4	WLAN_TX	WLAN TRANSMIT
5	WLAN_RX	WLAN RECEIVE

Table 8 J7 WLAN UART Interface Header

3.8 WLAN UART Debug Header J8

Connector Pin	Name	Description
1	WL_UART_DBG	WLAN UART DEBUG
2	GND	GROUND

Table 9 J7 WLAN UART Interface Header

3.9 External 3.6V JMP1

Used if external 3.6V to the COM6L module is desired. Note for normal operation jumper pins 2-3.

Connector Pin	Name	Description
1	GND	GROUND
2	3.6V SOURCE	3.6V SOURCE TO COM6 MODULE
3	3.6V REGULATOR	3.6V FROM ONBOARD REGULATOR

Table 10 JMP1 EXTERNAL 3.6V JUMPER/HEADER

3.10 External 1.8V JMP2

Used if external 3.6V to the COM6L module is desired. Note for normal operation jumper pins 2-3.

Connector Pin	Name	Description
1	GND	GROUND
2	1V8 SOURCE	1.8V SOURCE TO COM6 MODULE
3	1.8V BEAGLEBOARD	1.8V FROM BEAGLEBOARD

Table 11 JMP2 EXTERNAL 1.8V JUMPER/HEADER

4 COM6L to BeagleBoard Adapter Schematic

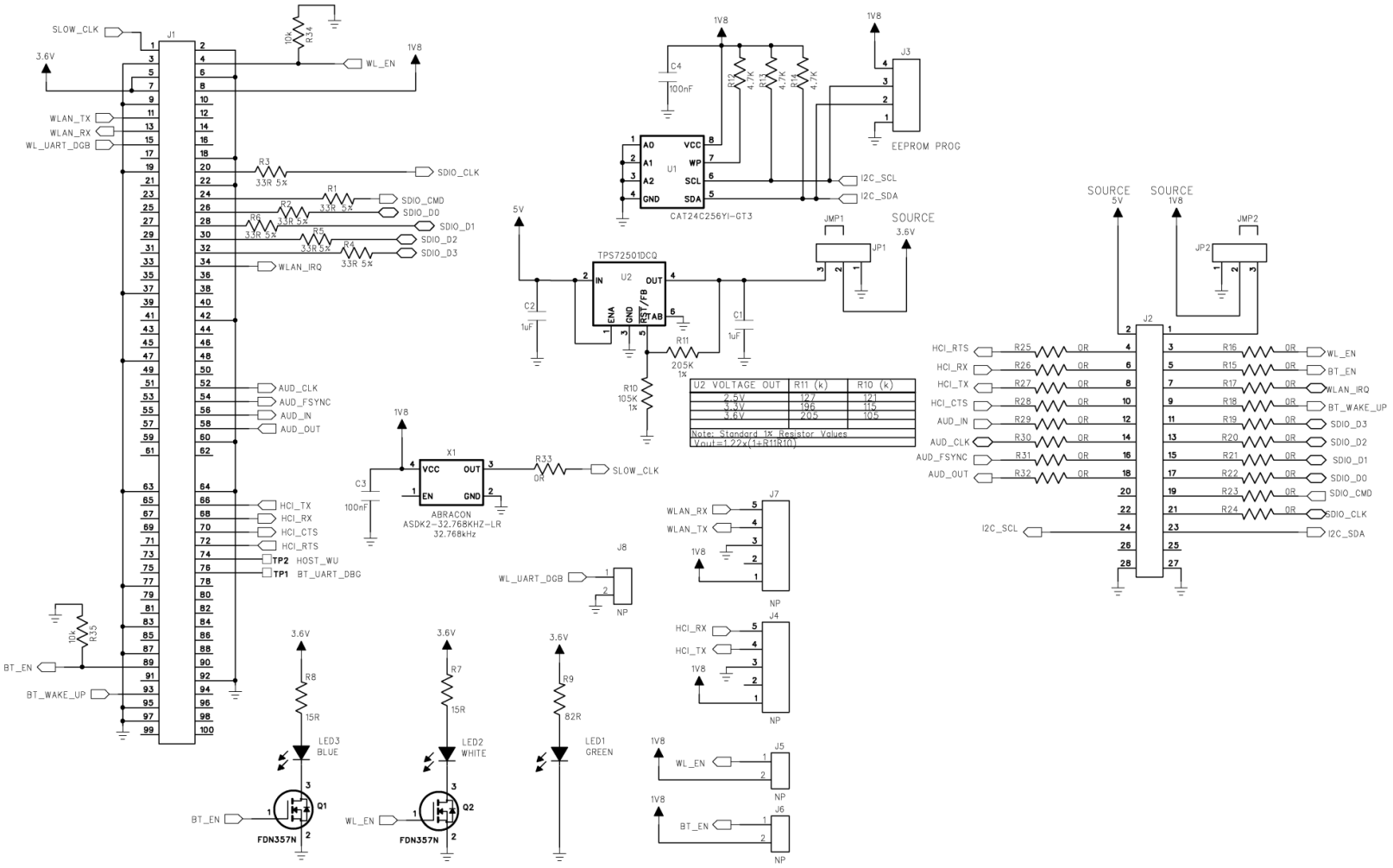

Figure 4 COM6L to BeagleBoard Adapter Schematics

4.1 Bill Of Material (BOM)

Reference Designator	Description
C1 C2	CAP CER 1.0UF 16V 20% X7R 0805
C3	0402 SIZE SMT CERAMIC CAPACITOR
C4	0603 SIZE SMT CERAMIC CAPACITOR
J1	50X2 0.025" PITCH EDGE CONNECTOR
J2	14X2 PIN 0.1" HEADER CONNECTOR
J3	4 PIN 2MM HEADER
J4 J7	5 PIN 0.1" HEADER
J5 J6 J8	2 PIN 2MM HEADER
JMP1 JMP2	2.0 mm SHUNT JUMPER
JP1 JP2	3 PIN 2MM HEADER
LED1	LIGHT EMITTING DIODE, 0603 SMT
LED2	LIGHT EMITTING DIODE, 0603 SMT
LED3	LIGHT EMITTING DIODE, 0603 SMT
PCB1	BARE PRINTED CIRCUIT BOARD
Q1 Q2	N-CHANNEL LOGIC LEVEL ENHANCEMENT MODE FET
R1 R2 R3 R4 R5 R6	THICK FILM 0402 SMT RESISTOR
R7 R8	THICK FILM 0603 SMT RESISTOR
R9	THICK FILM 0603 SMT RESISTOR
R10	THICK FILM 0603 SMT RESISTOR
R11	THICK FILM 0603 SMT RESISTOR
R12 R13 R14	THICK FILM 0402 SMT RESISTOR
R15 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25 R26 R27 R28 R29 R30 R31 R32	0402 SURFACE MOUNT RESISTOR
R33	THICK FILM 0402 SMT RESISTOR
R34 R35	THICK FILM 0402 SMT RESISTOR
U1	IC SRL EEPROM 1K 8-SOIC
U2	LOW INPUT VOLTAGE 1A LDO REGULATOR
X1	CRYSTAL CLOCK OSCILLATOR

Table 12 COM6L to BeagleBoard Adapter BOM

5 Contacting LS Research

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