Using the LM3630 Evaluation Module

User's Guide

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LM3630 EVM User Guide

The LM3630 evaluation kit includes an I²C-compatible program and USB docking board that can help exercise the part in a simple way. Contained in this document is a description of how to use the USB docking board with the evaluation board and interface software.

1 Instructions

The LM3630 evaluation board is connected to the USB docking board labeled USB2ANY with a short cable. The USB docking board provides all of the control signals for the simple interface. Power to the part is supplied externally through the J1 and J2 connectors. A standard USB to mini cable must be connected to the USB2ANY from a PC.

The I²C-compatible interface program provides all of the control that the LM3630 part requires. The USB2ANY will work with Windows 7. The LM3630.exe evaluation program and supporting USB2ANY.dll must be expanded to the same directory from the archive file. To use the evaluation program with Windows XP, this software from Microsoft must be downloaded and installed before connecting the USB2ANY interface to the computer.

Visual C++ 2010 Redistributable Package to operate this GUI with Windows XP: Microsoft C++ Redistributable Package Download

1. Connect the evaluation board to the USB2ANY.
2. Plug the USB2ANY into the PC before the interface program is opened.
3. Apply power to the evaluation board.
4. Open the GUI program, and a basic interface window will open.

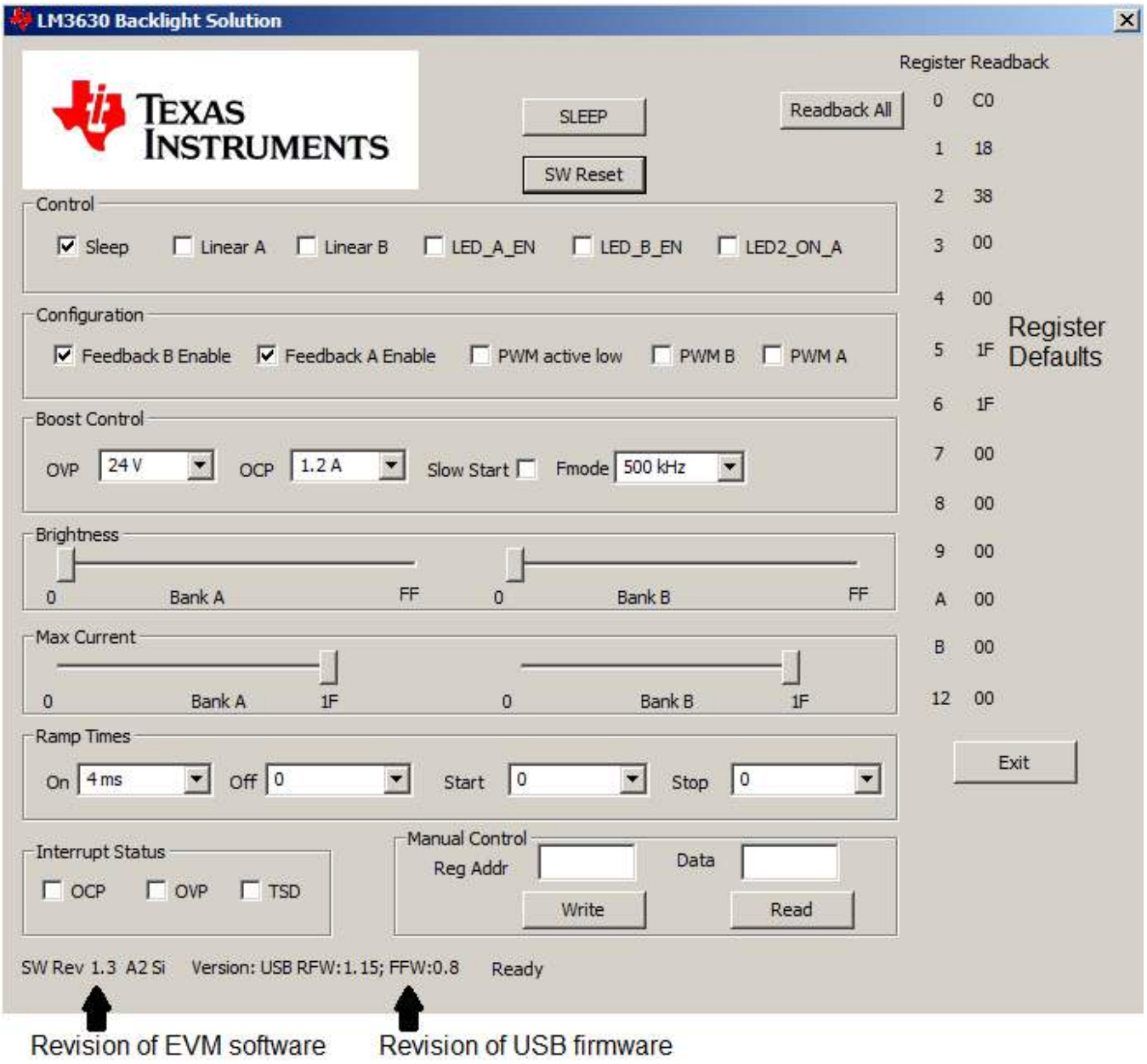


Figure 1. GUI Software Interface

2 Detailed Description

The USB board is recognized as an HID-compliant device in Windows Device Manager. Successful communication with the board by the application is confirmed by the Version: field at the bottom of the application showing the correct USB firmware revision.

The I^2C device address is fixed at 0x36 in this program. The sections on the left side are used to update the registers of the device. The columns of registers on the right are updated by clicking the Readback All button. When the program is first opened, the default values as shown above should be present. This will indicate proper communication with the device.

1. Jumper J7 pins 2 to 3 for HWEN
2. Jumper J9 pins 1 to 2 for I^2C address = 0x36
3. Jumpers on J5, J10, and J11 to complete LED power circuit
4. Arrange jumpers on HL1 and HL2 to select the number of LEDs in series (see Figure 2 below)
5. Connect the LM3630 evaluation board to the USB2ANY interface
6. Connect USB2ANY interface board to computer USB port
7. Connect an external power supply to J1 and J2. 2.3 V < V_{IN} < 5.5 V
8. Run LM3630.exe (Make sure USB2ANY.dll is in the same directory)
9. Check LED_A_EN and LED2_ON_A boxes. This will put both strings on control bank A
10. Uncheck the Sleep box
11. Move the slider under Brightness for Bank A to increase the current provided to the LEDs

The Interrupt Status Register will update every time the Readback All button is pressed. The status register should show no boxes checked indicating normal operation after the steps listed above are performed and the Readback All button is pressed.

Access to any register is available through the Manual Control. Enter the address and data for a write or address only for a read.

See the LM3630 data sheet for detailed descriptions of the registers and their usage.

NOTE: Do not change the configuration of the device while the backlight is enabled. First disable the backlight by making sure LED_EN_A and/or LEN_EN_B is unchecked. Then adjust the configuration and turn on the backlight. Changing the configuration while the backlight is on may produce unexpected results.

NOTE: If the part is enabled to any level of brightness or state and the program is closed, the LM3630 device will remain in the last controlled state.

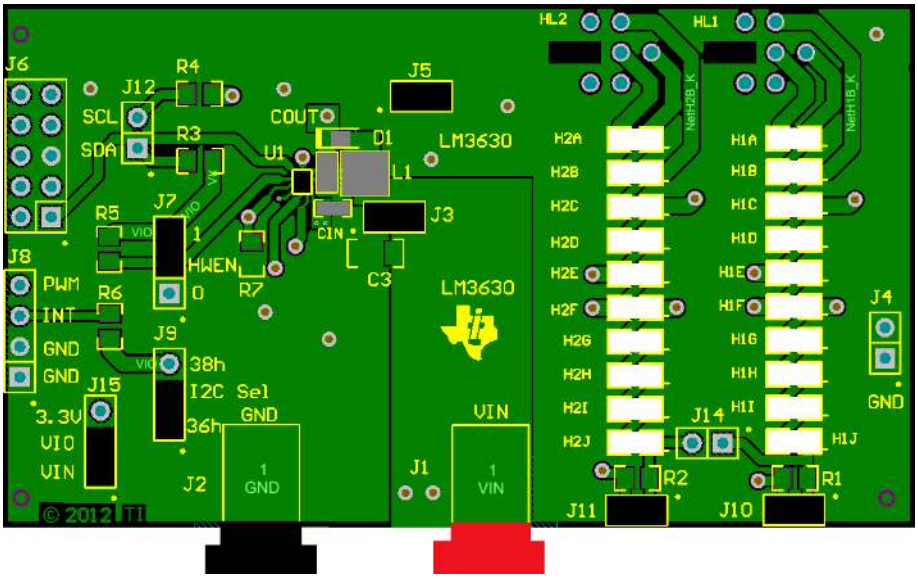


Figure 2. Evaluation Board Description

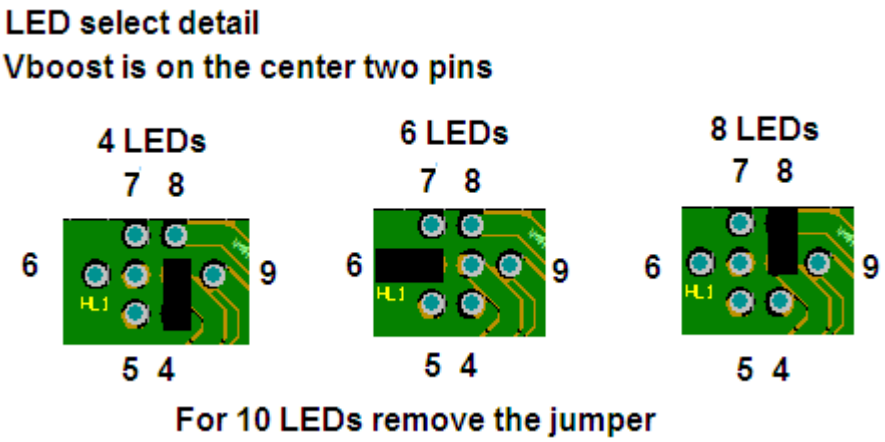


Figure 3. Setting number of LEDs

Software Features

1. Don't forget to un-check the Sleep box to turn the LEDs on.
2. SLEEP button puts device to SLEEP but does not remove device from sleep. Use the Sleep checkbox. SLEEP does not reset the registers. SW Reset resets the registers to default.
3. Checking both LED_A_EN and LED_B_EN will allow the brightness to be controlled by Bank A and Bank B sliders independently.
4. To update the Interrupt Status, click the Readback All button. Any checks indicated a fault. All registers will be updated with the correct values.

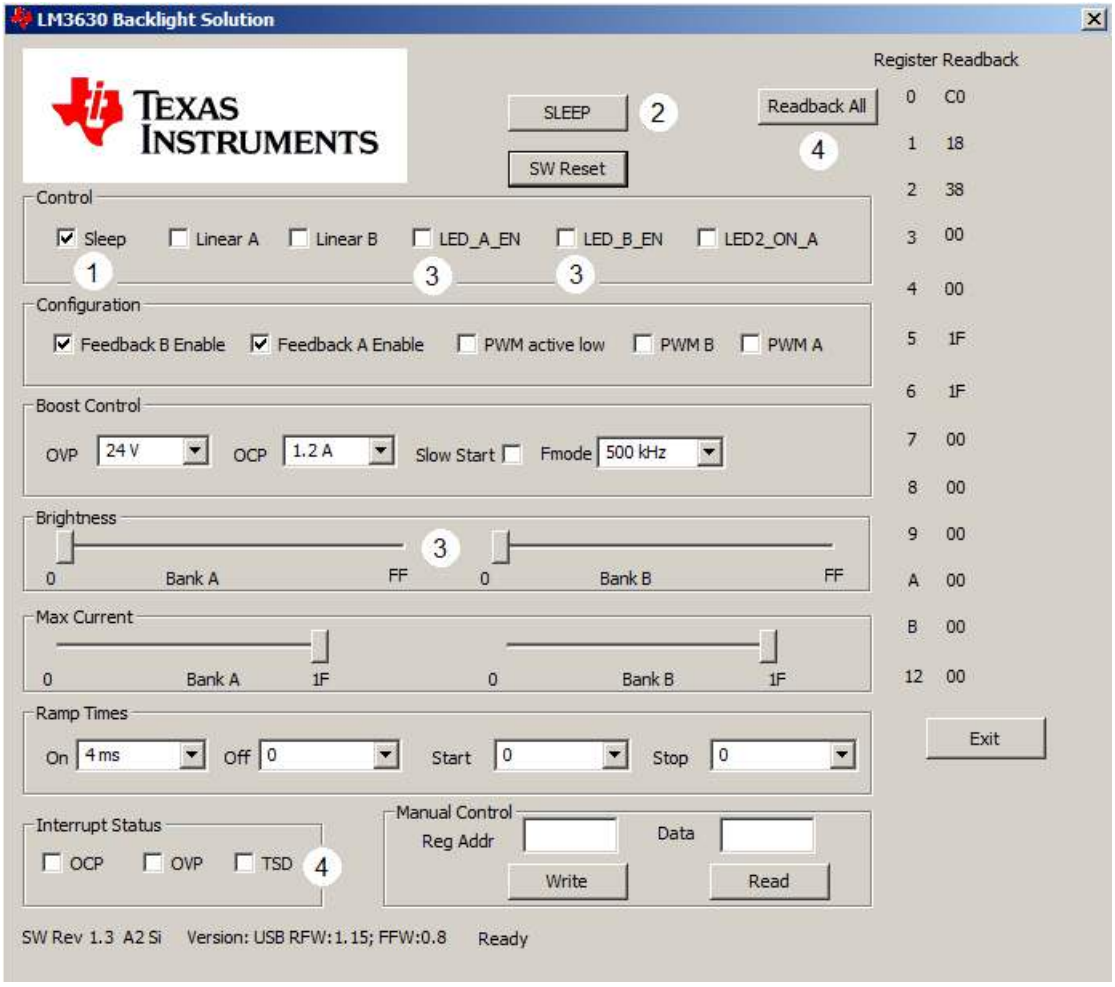


Figure 4. Software Features

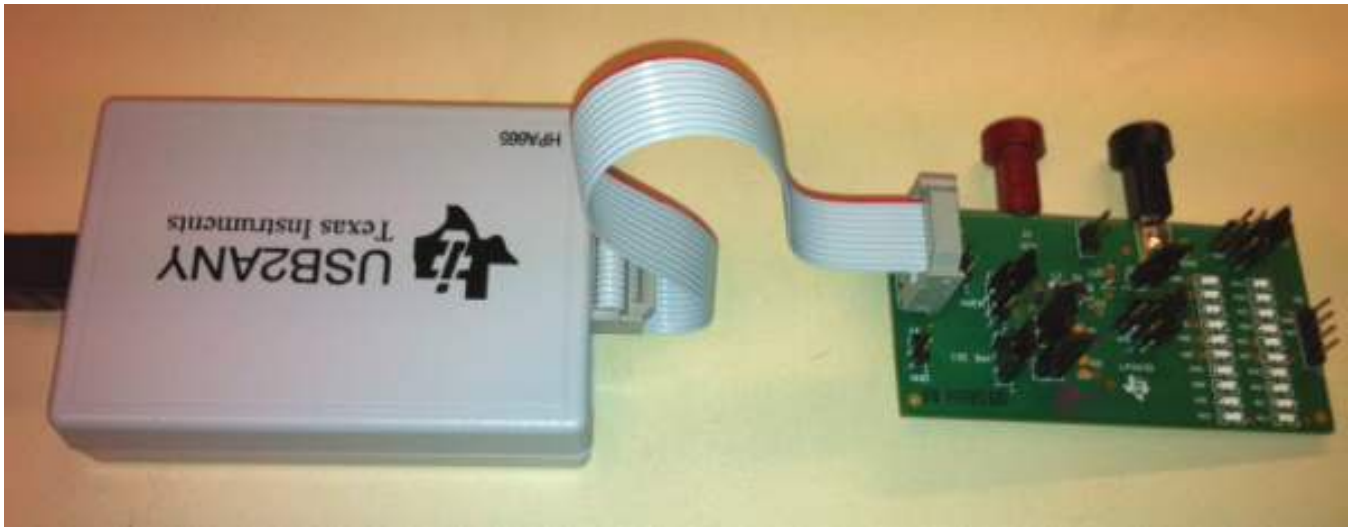
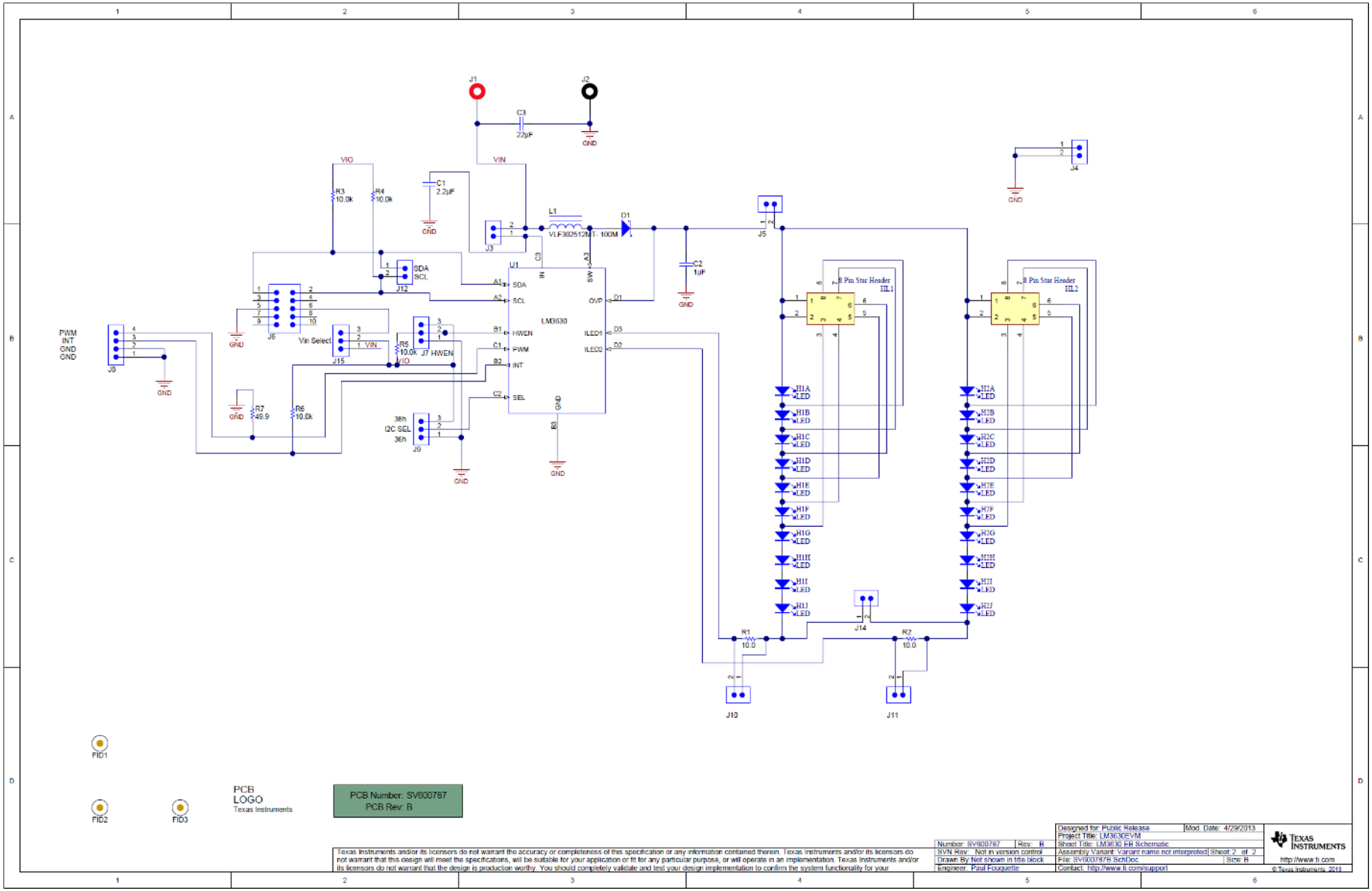


Figure 5. EVM to USB2ANY Connection

3 Bill of Materials

Part Number	Description	Designator	Footprint	Qty.	Vendor
GRM188C70J225KE20D	CAP, CERM, 2.2uF,6.3V, ±10%, X7S,	C1	603	1	Murata
GRM21BR71H105KA12L	CAP, CERM, 1uF, 50V,±10%, X7R,	C2	805	1	Murata
B0540WS	Diode, Schottky, 40V, 0.5A,	D1	SOD-323	1	Diodes Inc
889-SWAA07	White LED	H1A - H1J, H2A- H2J	side led	20	Seoul Semi
8 Pin Star Header	Header, TH, 100mil, 2-4-2, Gold plated, 230 mil	HL1, HL2	8 Pin star	2	Samtec
Standard Banana Jack,	Insulated, Red	J1		1	Emerson
Standard Banana Jack,	Insulated, Black	J2		1	Emerson
TSW-102-07-G-S	Header, TH, 100mil, 2x1, Gold plated, 230 mil	J3, J4, J5, J10, J11, J12		6	Samtec
TSW-105-07-G-D	Header, TH, 100mil, 5x2, Gold plated, 230 mil	J6		1	Samtec
TSW-103-07-G-S	Header, TH, 100mil, 3x1, Gold plated, 230 mil	J7, J9		2	Samtec
TSW-104-07-G-S	Header, TH, 100mil, 4x1, Gold plated, 230 mil	J8		1	Samtec
VLF302512MT-100M	Inductor, Wirewound, Ferrite, 10uH, 0.32A, 0.299Ω	L1	1210	1	TDK
LM3630TMD	Boost LED Controller	U1	TMD12HNA	1	TI
823600787-001A	LM3630 evalution bare PCB	PCB		1	DDI

4 Schematic



Revision History

Changes from A Revision (May 2013) to B Revision	Page
• Added BOM and schematic	8

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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3. Use of EVMs only after user obtains the Technical Regulations Conformity Certification as provided in Radio Law of Japan with respect to EVMs. Also, do not transfer EVMs, unless user gives the same notice above to the transferee. Please note that if user does not follow the instructions above, user will be subject to penalties of Radio Law of Japan.

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