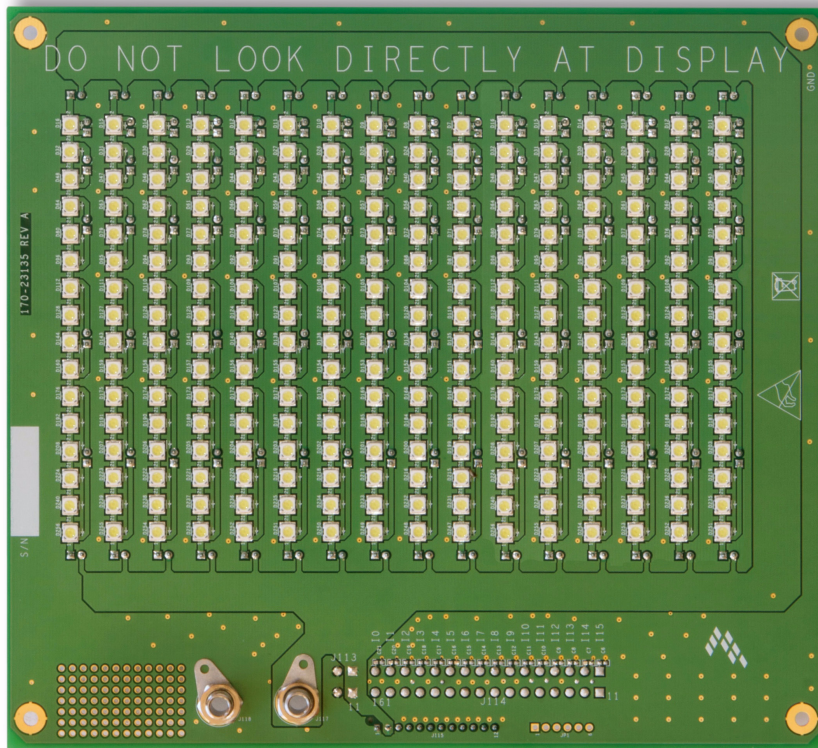


# KITLED BKLT16EVBE Evaluation Board



## Table of Contents

1 Kit Contents / Packing List .....	2
2 Important Notice .....	3
3 Kit Introduction .....	4
4 Required Equipment .....	4
5 EVB Setup Configuration Diagram .....	5
6 EVB Schematic .....	6
7 Using Hardware .....	7
8 Board Layout .....	8
9 Bill of Material .....	13
10 References .....	14
11 Revision History .....	15

# 1 Kit Contents / Packing List

- LED Load Board

## 2 Important Notice

Freescale provides the enclosed product(s) under the following conditions:

This evaluation kit is intended for use of ENGINEERING DEVELOPMENT OR EVALUATION PURPOSES ONLY. It is provided as a sample IC pre-soldered to a printed circuit board to make it easier to access inputs, outputs, and supply terminals. This EVB may be used with any development system or other source of I/O signals by simply connecting it to the host MCU or computer board via off-the-shelf cables. This EVB is not a Reference Design and is not intended to represent a final design recommendation for any particular application. Final device in an application will be heavily dependent on proper printed circuit board layout and heat sinking design as well as attention to supply filtering, transient suppression, and I/O signal quality.

The goods provided may not be complete in terms of required design, marketing, and or manufacturing related protective considerations, including product safety measures typically found in the end product incorporating the goods. Due to the open construction of the product, it is the user's responsibility to take any and all appropriate precautions with regard to electrostatic discharge. In order to minimize risks associated with the customers applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards. For any safety concerns, contact Freescale sales and technical support services.

Should this evaluation kit not meet the specifications indicated in the kit, it may be returned within 30 days from the date of delivery and will be replaced by a new kit.

Freescale reserves the right to make changes without further notice to any products herein. Freescale makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Freescale assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typical", must be validated for each customer application by customer's technical experts.

Freescale does not convey any license under its patent rights nor the rights of others. Freescale products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Freescale product could create a situation where personal injury or death may occur.

Should Buyer purchase or use Freescale products for any such unintended or unauthorized application, Buyer shall indemnify and hold Freescale and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Freescale was negligent regarding the design or manufacture of the part. Freescale™ and the Freescale logo are trademarks of Freescale Semiconductor, Inc. All other product or service names are the property of their respective owners. © Freescale Semiconductor, Inc. 2008

## 3 Kit Introduction

This LED Load Board is designed for use with all Freescale LED driver demo boards that support up to 16 channels. The board contains 256 LEDs arranged in 16 channels of 16 LEDs each. The board is connected to the driver PCB with a cable that connects only the number of channels supported by the driver demo board. For each channel, jumpers enable the number of LEDs per channel which can be configured. These jumpers also enable fault detection and allow performance to be evaluated. Push-pin connectors enable the board to be connected to any driver system.

This KIT is an LED Load Board intended for use with any LED driver.

### 3.1 KITLEDBKLT16EVBE Features

- 16S16P LED Matrix
- Current capability up to 180mA on each channel.
- Typical LED forward voltage equal to 3.5V @ 25°C
- LED shorting jumpers for series and parallel configurations
- Versatile LED channels connections
- 2 Layers Board
- Special connector and cable for KIT34844EPEVME interface (J115)
- Terminal Block for any LED Channels configuration (J114).

## 4 Required Equipment

- Freescale LED driver evaluation board
- LED Load Board - KITLEDBKLT16EVBE

# 5 EVB Setup Configuration Diagram

This configuration Diagram shows an LED Load Board configuration with “KIT34844EPEVME”

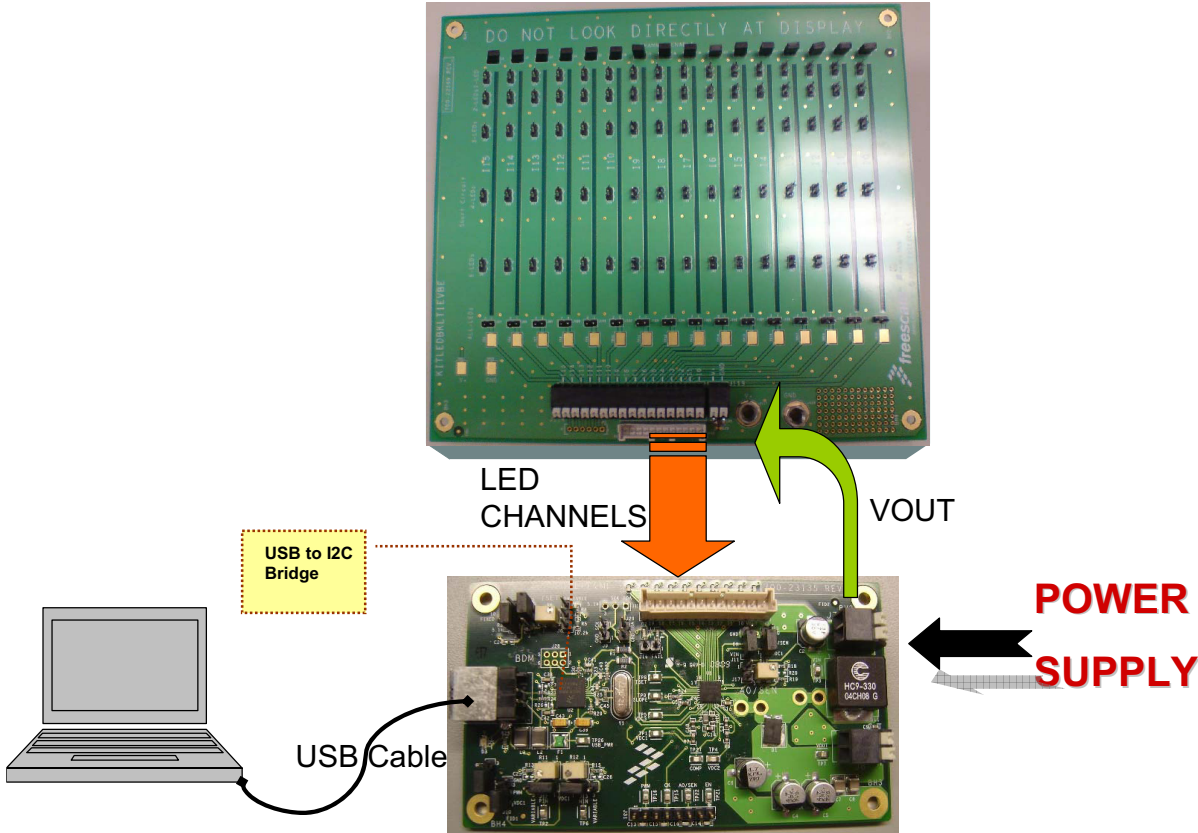


Figure 1. EVB Setup Configuration Diagram

# 6 EVB Schematic

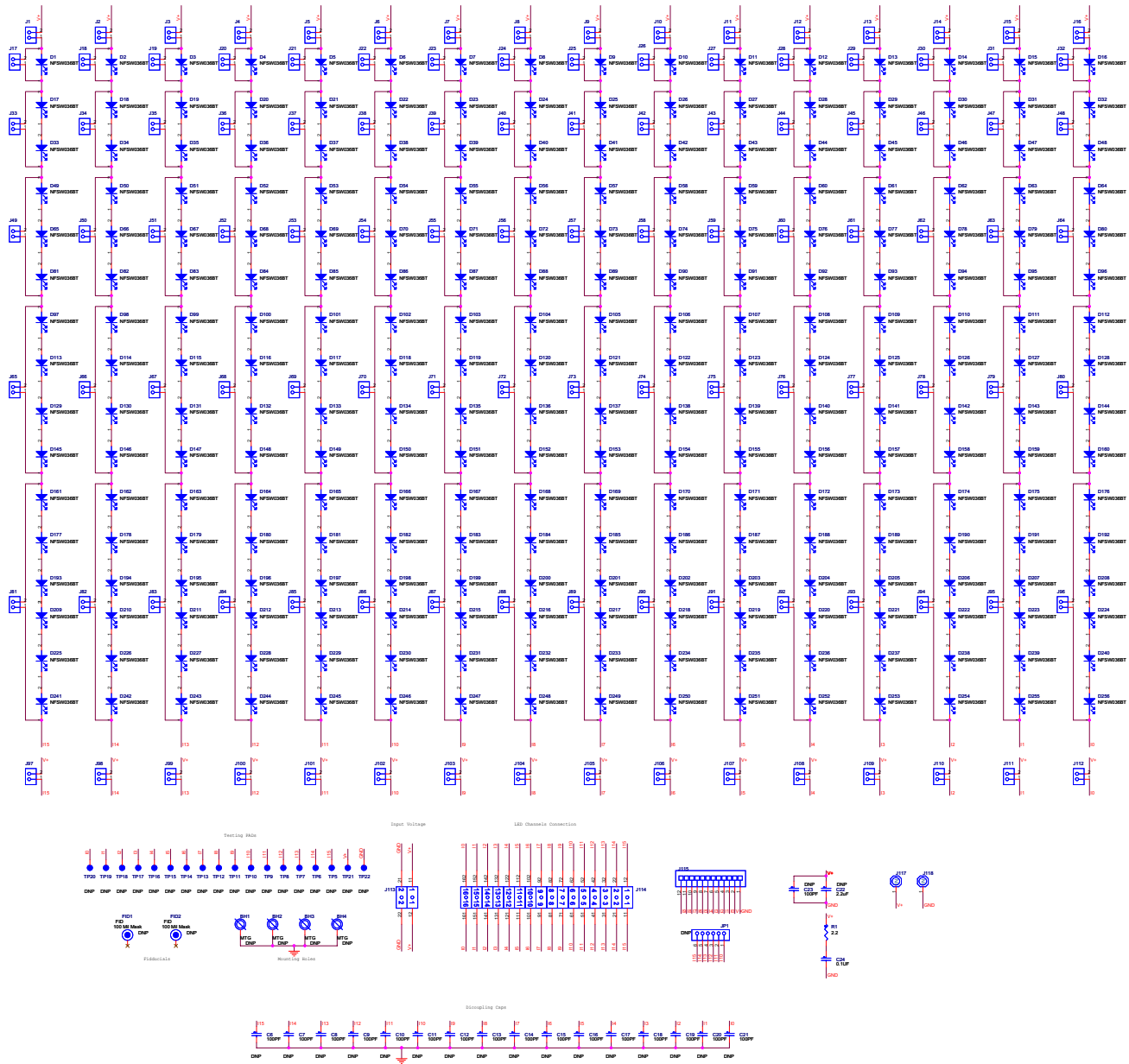


Figure 2. KITLEDBKLT16EVBE Schematic

## 7 Using Hardware

### 7.1 Jumper Connections

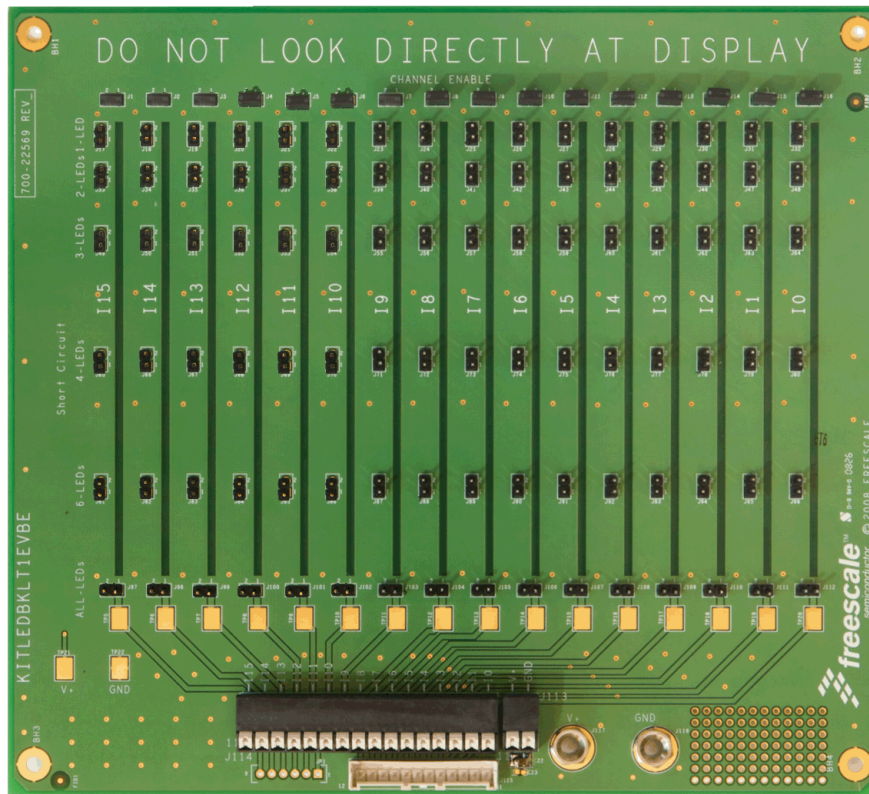


Figure 3. KITLEDBKLT16EVBE Jumpers

LOCATION	REFERENCE DESIGNATOR	DESCRIPTION
Top Horizontal	J1 to J16	LED channel string enable
Bottom Horizontal	J97 to J112	It connects the Bottom of the LED channel to V+
Vertical	J17 to J96	Short Circuit LED

# 8 Board Layout

## 8.1 Assembly Layer Top (x0.75)

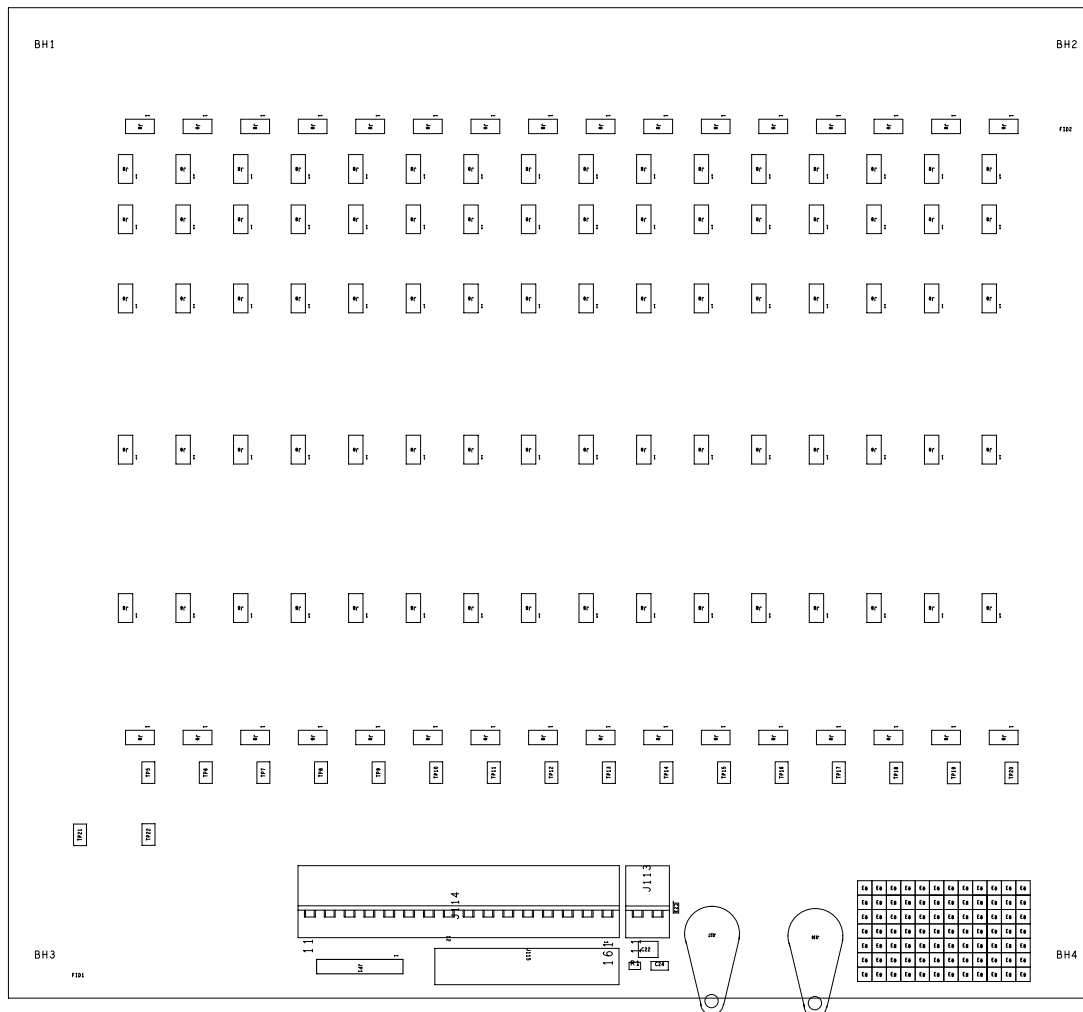


Figure 4. Assembly Layer Top



## 8.2 Assembly Layer Bottom (x0.75)

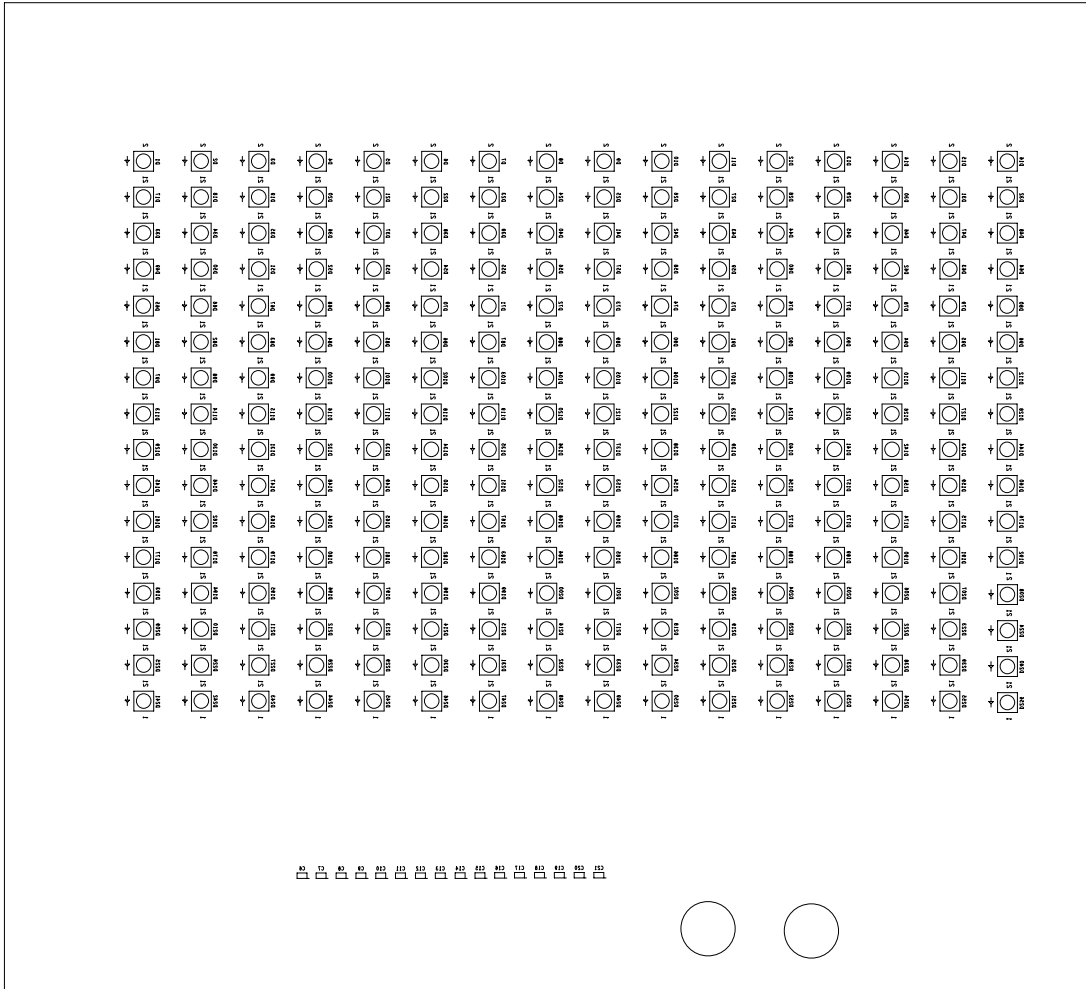


Figure 5. Assembly Layer Bottom

### 8.3 Top Layer Routing (x0.75)

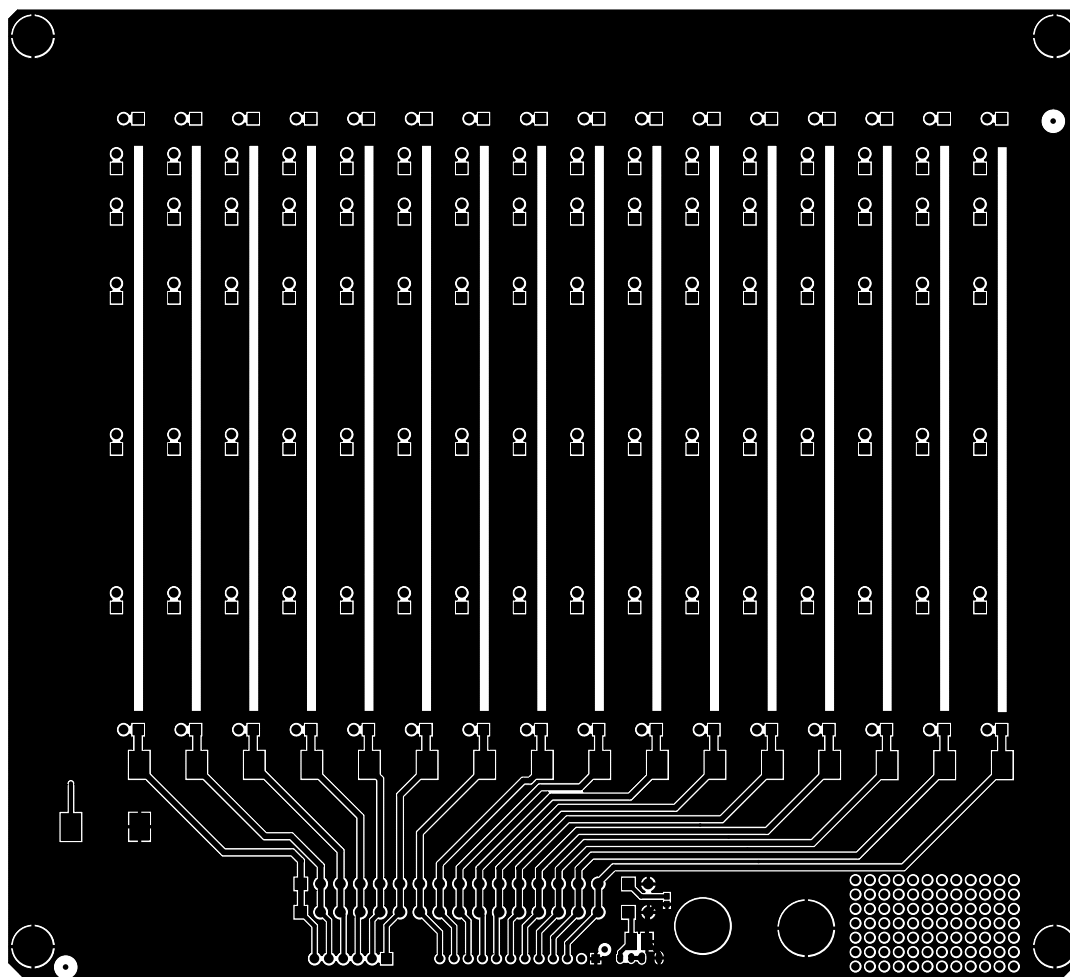


Figure 6. Top Layer Routing

### 8.4 Bottom Layer Routing (x0.75)

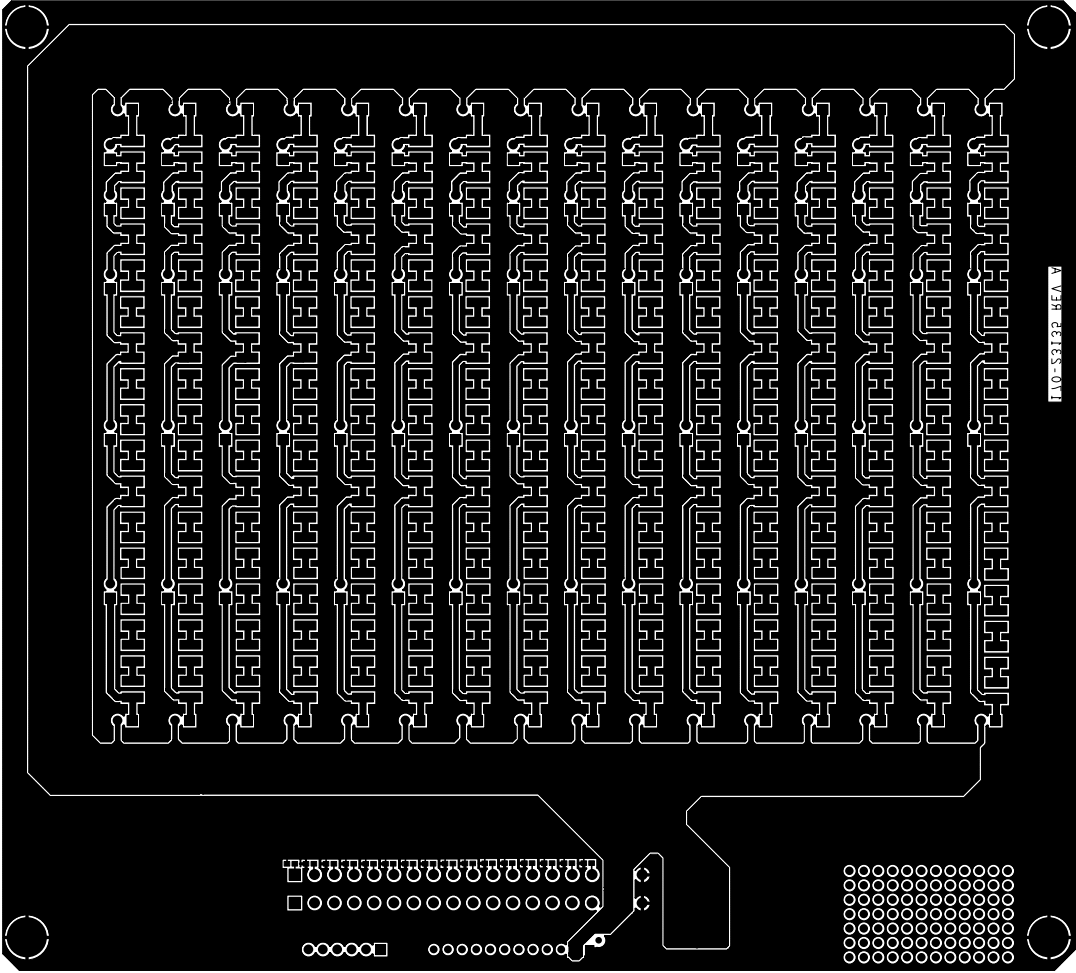
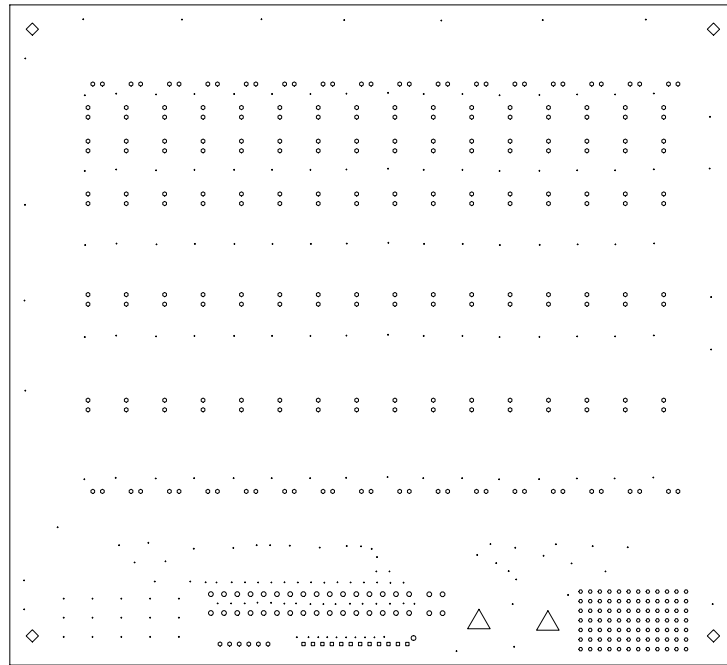


Figure 7. Bottom Layer Routing

## 8.5 Fabrication Drawing



DRILL CHART: TOP to BOTTOM				
ALL UNITS ARE IN MILS				
FIGURE	SIZE	TOLERANCE	PLATED	QTY
.	13.0	+3.0/-3.0	PLATED	190
◦	35.0	+3.0/-3.0	PLATED	12
◦	40.0	+3.0/-3.0	PLATED	84
◦	45.0	+3.0/-3.0	PLATED	230
◦	47.2	+3.0/-3.0	PLATED	36
◇	130.0	+3.0/-3.0	PLATED	4
△	271.65	+3.0/-3.0	PLATED	2
◦	47.0	+3.0/-3.0	NON-PLATED	1

Figure 8. Fabrication Drawing

## 9 Bill of Material

Schematic Designator	Device	Type	Description	Manufacturer PN
<b>Capacitors</b>				
C24	0.1UF	CC1206_OV	CAP CER 0.1UF 100V 5% X7R 1206	C1206C104J1RACTU
<b>Diodes - LED</b>				
D1 - D256	NFSW036BT	LED_3p5X3p5	LED WHITE SGL 180mA 3.5V SMT	NFSW036BT
<b>Header</b>				
J1 - J112	HDR_1X2_M	HDR102_A	HDR 1X2 TH 100MIL SP 408H AU	5-146276-2
<b>Terminal Block</b>				
J113	CON_2_TB	con2x2_tb_3p5_t h	CON 1X2 TB TH 3.5MM SP 508H SN	1885180000
J114	CON_16_TB	con16_tb_3p5_th	CON 1X16 TB TH 3.5MM SP 508H SN	1885320000
<b>Connector</b>				
J115	CON_1X12	hdr_12_xask	CON 1X12 PLUG SHRD TH 2.5MM SP 346MIL SN	B12B-XASK-1N-A
<b>Bannana Jack</b>				
J117 - J118	BANANA	banana_jack_6p9	CON 1 BANANA UNINSULATED TH -- 531H NI	108-0740-001
<b>Resistors</b>				
R1	2.2	RC0805_OV	RES MF 2.20 OHM 1/8W 1% 0805	CRL0805-FW-2R20EL F

## 10 References

Following are URLs where you can obtain information on other Freescale products and application solutions:

Description	URL
Freescale's Web Site	<a href="http://www.freescale.com">www.freescale.com</a>
Freescale's Analog Web Site	<a href="http://www.freescale.com/analog">www.freescale.com/analog</a>
Freescale's Power Management Web Site	<a href="http://www.freescale.com/powermanagement">www.freescale.com/powermanagement</a>
Freescale's LED Drivers	<a href="http://www.freescale.com/webapp/sps/site/taxonomy.jsp?code=LEDBLDRIVER">www.freescale.com/webapp/sps/site/taxonomy.jsp?code=LEDBLDRIVER</a>

## 11 Revision History

REVISION	DATE	DESCRIPTION OF CHANGES
1.0	10/2008	• Initial Release

## **How to Reach Us:**

### **Home Page:**

[www.freescale.com](http://www.freescale.com)

### **Web Support:**

<http://www.freescale.com/support>

### **USA/Europe or Locations Not Listed:**

Freescale Semiconductor, Inc.  
Technical Information Center, EL516  
2100 East Elliot Road  
Tempe, Arizona 85284  
+1-800-521-6274 or +1-480-768-2130  
[www.freescale.com/support](http://www.freescale.com/support)

### **Europe, Middle East, and Africa:**

Freescale Halbleiter Deutschland GmbH  
Technical Information Center  
Schatzbogen 7  
81829 Muenchen, Germany  
+44 1296 380 456 (English)  
+46 8 52200080 (English)  
+49 89 92103 559 (German)  
+33 1 69 35 48 48 (French)  
[www.freescale.com/support](http://www.freescale.com/support)

### **Japan:**

Freescale Semiconductor Japan Ltd.  
Headquarters  
ARCO Tower 15F  
1-8-1, Shimo-Meguro, Meguro-ku,  
Tokyo 153-0064  
Japan  
0120 191014 or +81 3 5437 9125  
[support.japan@freescale.com](mailto:support.japan@freescale.com)

### **Asia/Pacific:**

Freescale Semiconductor China Ltd.  
Exchange Building 23F  
No. 118 Jianguo Road  
Chaoyang District  
Beijing 100022  
China  
+86 10 5879 8000  
[support.asia@freescale.com](mailto:support.asia@freescale.com)

### **For Literature Requests Only:**

Freescale Semiconductor Literature Distribution Center  
P.O. Box 5405  
Denver, Colorado 80217  
1-800-441-2447 or 303-675-2140  
Fax: 303-675-2150  
[LDCForFreescaleSemiconductor@hibbertgroup.com](mailto:LDCForFreescaleSemiconductor@hibbertgroup.com)

Information in this document is provided solely to enable system and software implementers to use Freescale Semiconductor products. There are no express or implied copyright licenses granted hereunder to design or fabricate any integrated circuits or integrated circuits based on the information in this document.

Freescale Semiconductor reserves the right to make changes without further notice to any products herein. Freescale Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Freescale Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters that may be provided in Freescale Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals", must be validated for each customer application by customer's technical experts. Freescale Semiconductor does not convey any license under its patent rights nor the rights of others. Freescale Semiconductor products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Freescale Semiconductor product could create a situation where personal injury or death may occur. Should Buyer purchase or use Freescale Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold Freescale Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Freescale Semiconductor was negligent regarding the design or manufacture of the part.

Freescale™ and the Freescale logo are trademarks of Freescale Semiconductor, Inc. All other product or service names are the property of their respective owners.

© Freescale Semiconductor, Inc., 2008. All rights reserved.