



深圳市拓普微科技开发有限公司
SHENZHEN TOPWAY TECHNOLOGY CO., LTD.

TCB1042

LCD Module Controller Board User Manual

Prepared by: Yang Date: 2013-02-01	Checked by: Date:	Approved by: Date:
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Rev.	Descriptions	Release Date
0.1	New release	2011-03-23
0.2	Add Package	2013-02-01

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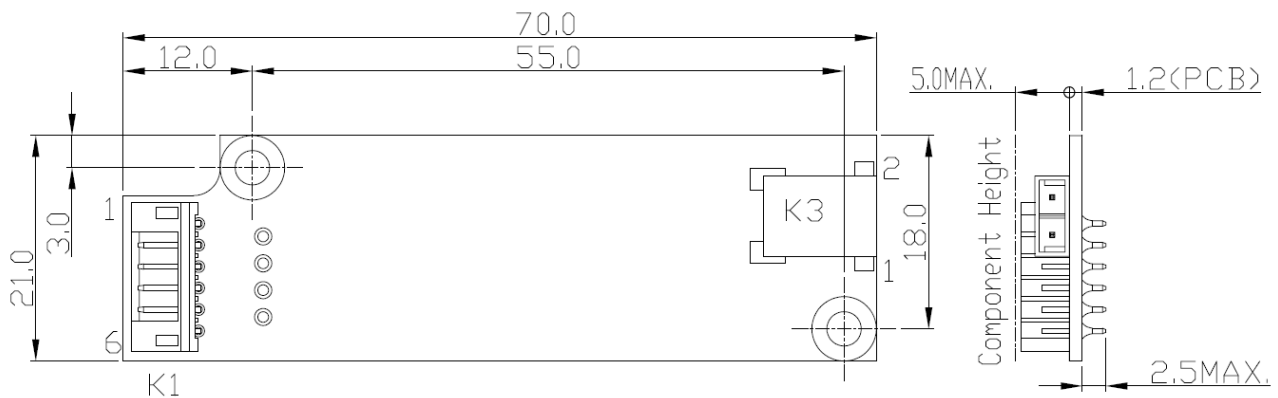
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1. Basic Specifications

1.1 Product Highlight

- 1) TCB1042 is a constant current LED backlight driver board.
- 2) Designed for TOPWAY LMT104SBH01 series backlight
- 3) Single 12V power supply
- 4) Backlight ON/OFF control
- 5) Brightness control by external PWM signal

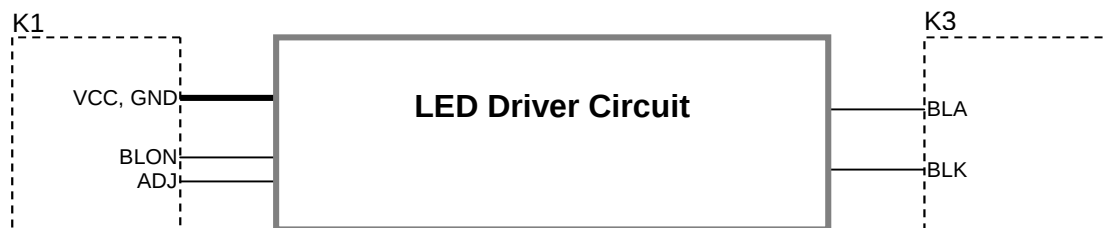
1.2 Mechanical Specifications



K1 : suitable for 6pin (JST PHR-6 or equivalent) connector (P2.0mm)

K3 : suitable for 2pin (JST BHSR-02VS-1 or equivalent) connector (P3.5mm)

1.3 Block Diagram



1.4 Terminal Functions

1.4.1 MCU Terminal (K1)

Pin No.	Pin Name	I/O	Descriptions
1	VCC	Power	Positive Power Supply
2	VCC		
3	BLON	Input	Backlight Driver Control(*1) BLON=Hi, Backlight Driving Booster enable BLON=Lo, Backlight Driving Booster disable
4	ADJ	Input	Backlight dimming control(*1, *2) PWM may be used to adjust the output brightness
5	GND	Power	Power Supply GND (0V)
6	GND		

Note:.

*1. With built in pull up resistor, it could leave open

*2. Recommended PWM Freq. = 3kHz (active high)

1.4.2 MCU Terminal (K3)

Pin No.	Pin Name	I/O	Descriptions
1	BLA	Power output	LED backlight Anode
2	BLK	Power output	LED backlight Cathode

2. Absolute Maximum Ratings

Items	Symbol	Min.	Max.	Unit	Condition
Supply Voltage	V_{CC}	-0.3	13.0	V	GND = 0V
Input Voltage	V_{IN}	-0.3	V_{CC}	V	GND = 0V
Operating Temperature	T_{OP}	-20	70	°C	No Condensation
Storage Temperature	T_{ST}	-30	80	°C	No Condensation

Cautions:

Any Stresses exceeding the Absolute Maximum Ratings may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

3. Electrical Characteristics

3.1 DC Characteristics

GND=0V, V_{CC} =12.0, T_{OP} =25°C

Items	Symbol	MIN.	TYP.	MAX.	Unit	Applicable Pin
Operating Voltage	V_{CC}	11.0	12.0	13.0	V	VCC
Input High Voltage	V_{IH}	3.0	-	V_{CC}	V	BLON, ADJ
Input Low Voltage	V_{IL}	GND	-	0.3	V	BLON, ADJ
Operating Current	I_{CC}	-	222.0	625.0	mA	VCC (*1)
LED backlight driving output Current	I_{BLA}	-	120.0	-	mA	BLA, BLK (*1)
LED backlight driving output Voltage	$V_{BLA}-V_{BLK}$	-	19.2	-	V	BLA, BLK (*1)

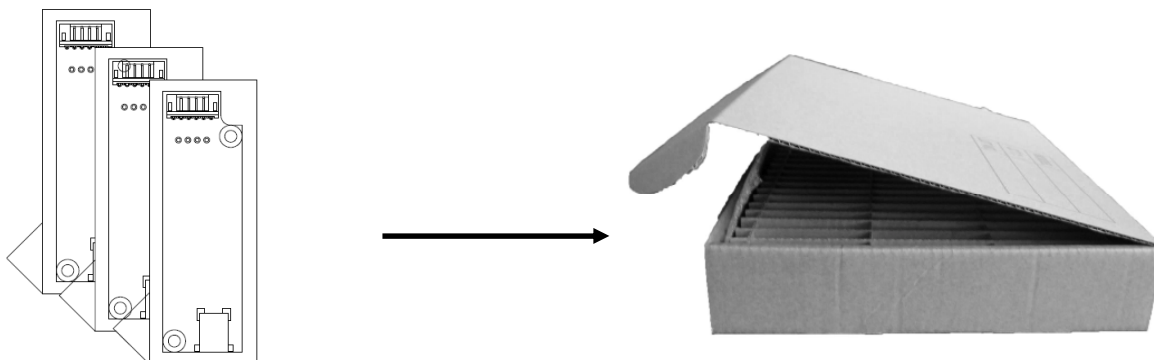
Note:

*1. BLON=Hi, ADJ=Hi, BLA & BLK connected to LMT104SBH01 LED backlight.

4. Packing

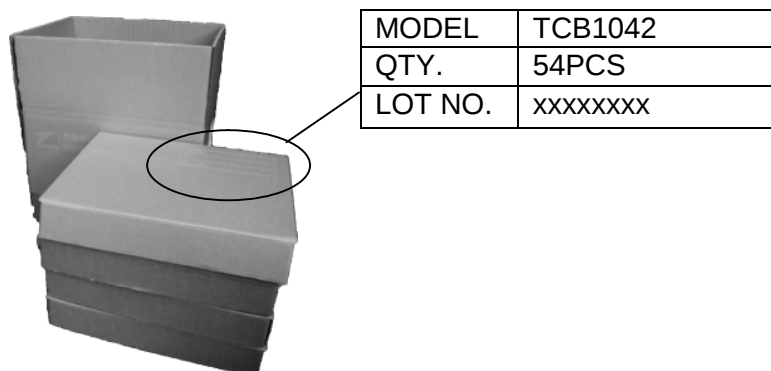
4.1 Inside of Packing

Inside Inner-Packing-box partitions as 18 slot.
Each slot holds 3 PCB unit with anti-static bag.
One In-Packing-box holds up-to 54 PCB units



4.2 Inside of Packing

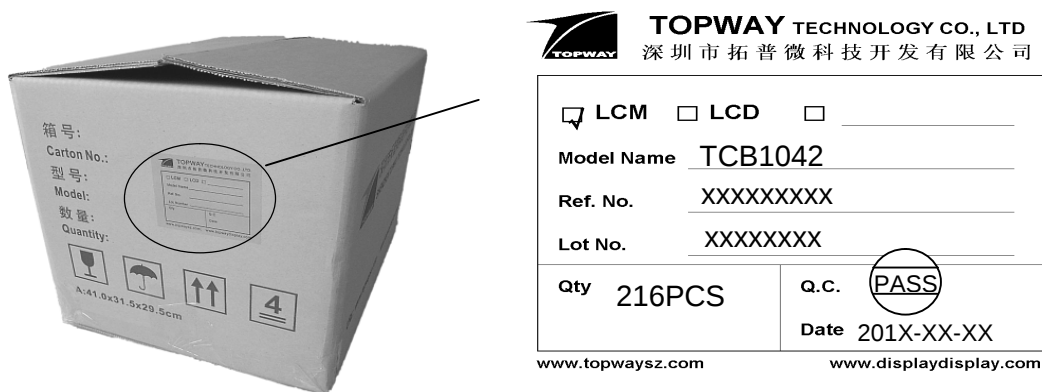
Each Inner-Packing-Box's cover marks the content details.



4.3 Outside of Packing-Box

Outer-Packing-Box contains up-to 4 Inner-Packing-Boxes

A label on the side shows the content details



5. Design and Handling Precaution

1. Any mechanical shock (eg. dropping from high place) will damage the device.
2. Do not add excessive force on the device.
3. Never attempt to disassemble or rework the device.
4. When mounting the device, make sure that it is free from twisting, warping and distortion.
5. Only hold the device by its side.
6. Never add force to component of the device. It may cause invisible damage or degrade of the reliability.
7. This could be easily damaged by static electricity. Be careful to maintain an optimum anti-static work environment to protect it.
8. Take care and prevent get hurt by the device sharp edge.
9. Never operate the device exceed the absolute maximum ratings.
10. Keep the signal line as short as possible to prevent noisy signal applying to the device.
11. Never apply signal to the device without power supply.
12. Device reliability may be reduced by temperature shock.
13. When storing the device, avoid exposure to the direct sunlight, high humidity, high temperature or low temperature.



K1 Terminal	
No.	Pin Name
1	VCC
2	VCC
3	BLON
4	ADJ
5	GND
6	GND

K3 Terminal	
No.	Pin Name
1	BLA
2	BLK

- Note:
- *1. Supply Voltage : 12.0V
 - *2. BL Output : 120mA(19.2V Typ.)
 - *3. K1: 6Pin, P2.0, JST B6B-PH-K-S or equivalent
K3: 2Pin, P3.5, JST SM02B-BHSS-1-TB or equivalent
 - *4. Operating Temperature : -20°C~70°C
 - *5. Storage Temperature : -30°C~80°C

C		
B		
A		
Rev	Note	Date
Dwg Title TCB1042 Outline Dwg		
Dwg No. MK-003550-1-1		Date 2011-02-21
Scale 5/2	Tol. ±0.5	Unit mm
Paper Size A3		Drawn Yang Lin
Approved		Checked

TOPWAY