



# LED Display Product Data Sheet LTC-5685TBZ

Spec No.: DS30-2009-0176

Effective Date: 02/16/2011

Revision: B

**LITE-ON DCC**

**RELEASE**

BNS-OD-FC001/A4

**LED DISPLAY****LTC-5685TBZ**  
**DATA SHEET**

<b><u>Item</u></b>	<b><u>Description</u></b>	<b><u>By</u></b>	<b><u>DATE</u></b>
1	New Spec	Lucas	2009/10/13
2	Revise luminous intensity	Lucas	2009/10/26
3	Change grey face to black face	Lucas	2009/10/27
4	1. Delete reverse Voltage item at absolute maximum rating 2. Add reverse Voltage remark at electrical/optical characteristics	Lucas	2010/07/20

**FEATURES**

- \*0.56 inch (14.22 mm) DIGIT HEIGHT
- \*LOW POWER REQUIREMENT
- \*EXCELLENT CHARACTERS APPEARANCE
- \*HIGH BRIGHTNESS & HIGH CONTRAST
- \*WIDE VIEWING ANGLE
- \*SOLID STATE RELIABILITY
- \*BINNED FOR LUMINOUS INTENSITY
- \***LEAD-FREE PACKAGE**(ACCORDING TO ROHS)

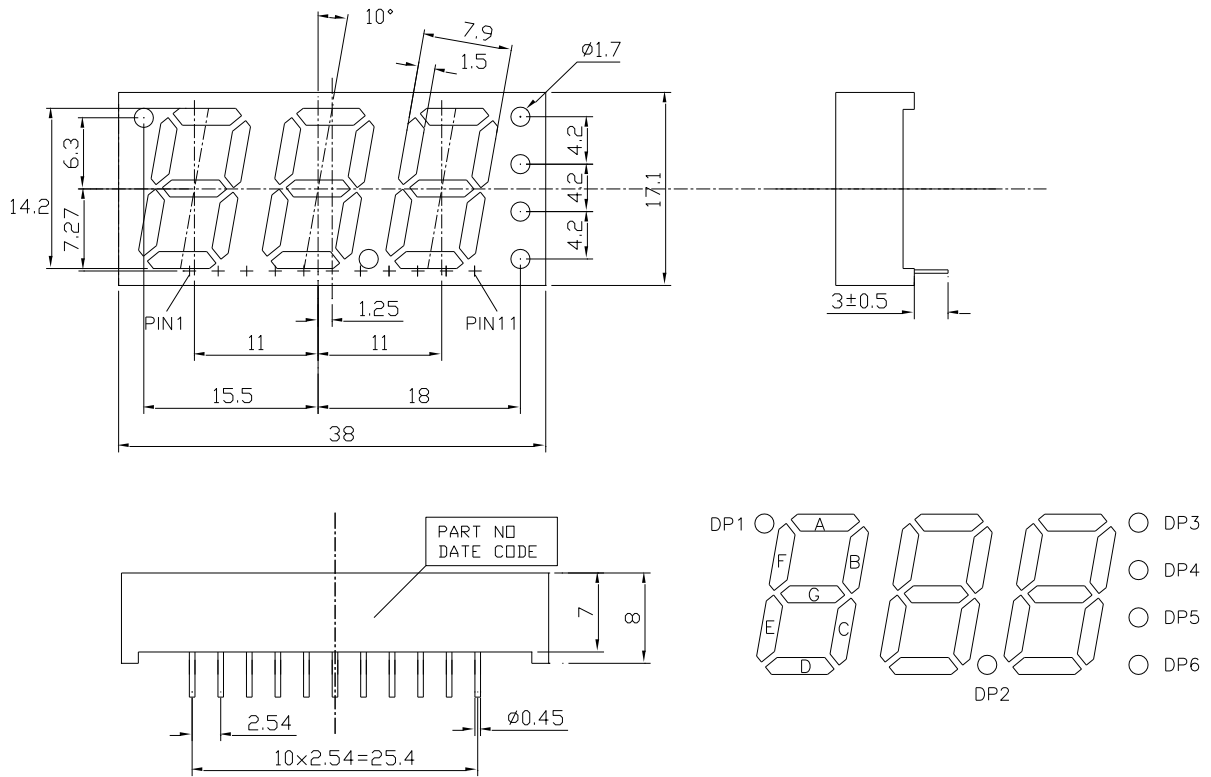
**DESCRIPTION**

The LTC-5685TBZ is a 0.56 inch (14.22 mm) digit height triple digit seven-segment display. This device uses Blue LED chips (InGaN epi on a Sapphire substrate). the display has black face and white segments.

**DEVICE**

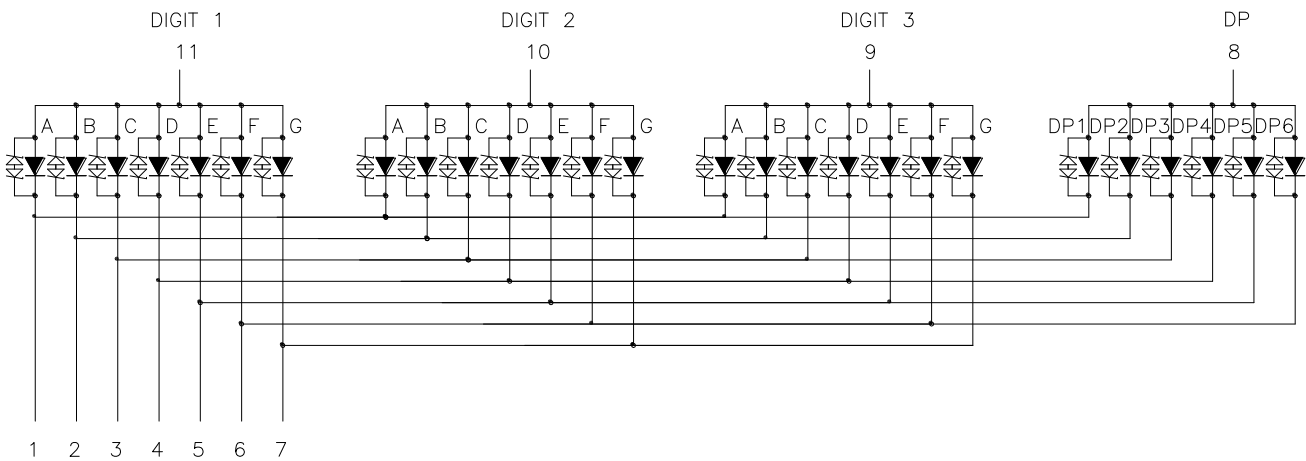
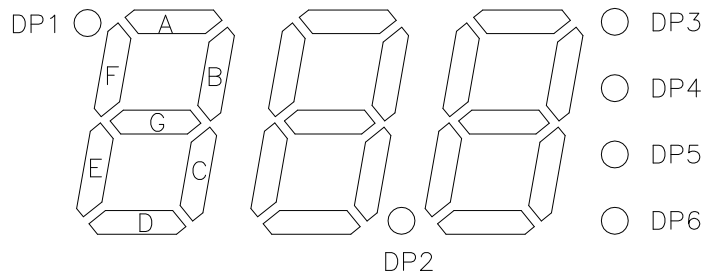
<b>PART NO.</b>	<b>DESCRIPTION</b>
InGaN BLUE	Common Anode
LTC-5685TBZ	Rt.Hand Decimal


## PACKAGE DIMENSIONS



NOTES: 1.All dimensions are in millimeters. Tolerances are  $\pm 0.25$  mm (0.01") unless otherwise noted.  
 2.Pin tip's shift tolerance is  $\pm 0.4$  mm.

## INTERNAL CIRCUIT DIAGRAM



The sign  is stand for zener diode.

The sign  is stand for InGaN blue chip ( $\lambda_d=470\text{nm}$ ).

**PIN CONNECTION**

<b>No.</b>	<b>CONNECTION</b>
1	CATHOD DP1,A
2	CATHOD DP2,B
3	CATHOD DP3,C
4	CATHOD DP4,D
5	CATHOD DP5,E
6	CATHOD DP6,F
7	CATHOD G
8	COMMON ANODE DIGIT4
9	COMMON ANODE DIGIT3
10	COMMON ANODE DIGIT2
11	COMMON ANODE DIGIT1

**LED+ ZENER****ABSOLUTE MAXIMUM RATING**

PARAMETER	MAXIMUM RATING	UNIT
Power Dissipation Per Segment	70	mW
Peak Forward Current Per Segment ( 1/10 Duty Cycle, 0.1ms Pulse Width )	100	mA
Continuous Forward Current Per Segment	20	mA
Derating Linear From 25°C Per Segment	0.21	mA/°C
Electrostatic Discharge Threshold(HBM)Note	8000	V
Operating Temperature Range	-35°C to +85°C	
Storage Temperature Range	-35°C to +85°C	
Solder Conditions: 1/16 inch below seating plane for 3 seconds at 260°C or temperature of unit (during assembly) not over max. temperature rating above.		

**ELECTRICAL/OPTICAL CHARACTERISTICS AT Ta=25°C**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I <sub>v</sub>	5400	9000		μcd	I <sub>F</sub> =10mA
Peak Emission Wavelength	λ <sub>p</sub>		468		nm	I <sub>F</sub> =20mA
Spectral Line Half-Width	Δλ		25		nm	I <sub>F</sub> =20mA
Dominant Wavelength	λ <sub>d</sub>		470	475	nm	I <sub>F</sub> =20mA
Forward Voltage Per Segment	V <sub>F</sub>		3.3	3.6	V	I <sub>F</sub> =20mA
Reverse Current Per Segment	I <sub>R</sub>			100	μA	V <sub>R</sub> =5V
Luminous Intensity Matching Ratio (Similar Light Area)	I <sub>v-m</sub>			2:1		I <sub>F</sub> =10mA

- Note: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission Internationale De L'Eclairage) eye-response curve.  
2. Reverse voltage is only for IR test. It can not continue to operate at this situation.

**TYPICAL ELECTRICAL / OPTICAL CHARACTERISTIC CURVES**

(25°C Ambient Temperature Unless Otherwise Noted)

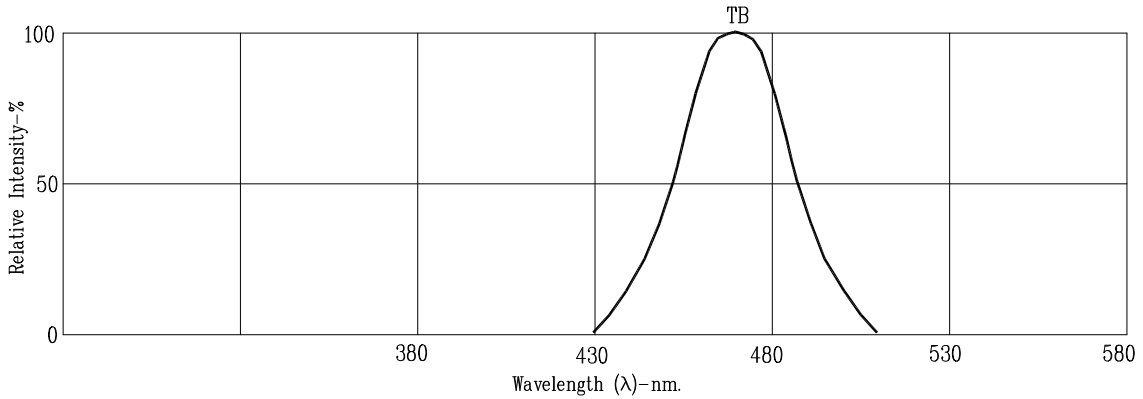


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

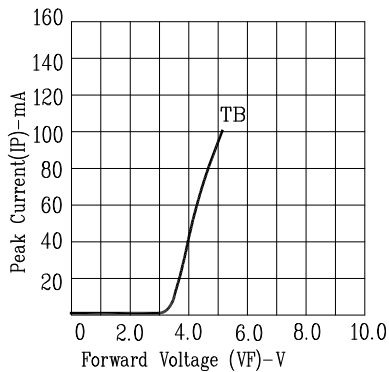


Fig3. FORWARD CURRENT VS. FORWARD VOLTAGE

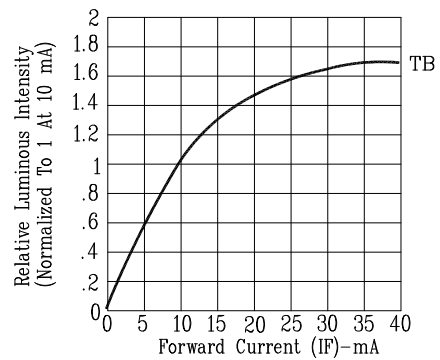


Fig4. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

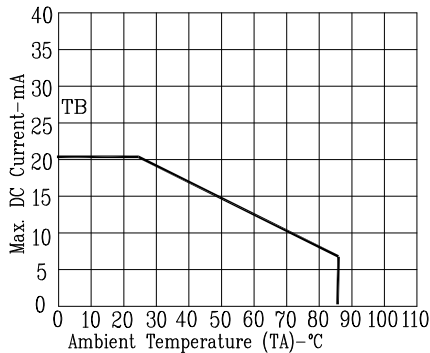


Fig5. MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE.

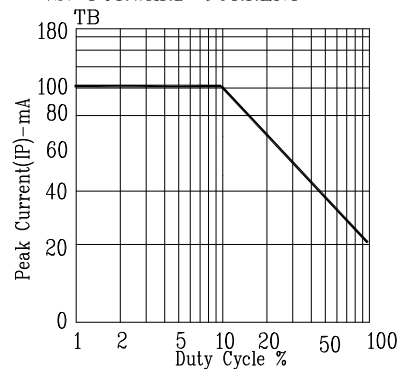


Fig6. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

NOTE: TB=InGaN/sapphire Blue