



LED Display Product Data Sheet LTC-5623SW

Spec No.: DS30-2013-0035

Effective Date: 04/11/2013

Revision: -

LITE-ON DCC

RELEASE

BNS-OD-FC001/A4



LITE-ON TECHNOLOGY CORPORATION

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LED DISPLAY

LTC-5623SW DATA SHEET

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>BY</u>	<u>DATE</u>
1.	New Spec.	Reo Lin	2012/11/16
2.	Modify Operating and Storage Temperature Range to 105°C in Page 6	Reo Lin	2013/02/06
3.	3.1 Change Reflector color from gray to black in Page 2 3.2 Revised Typical electrical / Optical characteristic Curves in Page 7	Reo Lin	2013/03/22

FEATURES

- * 0.56 inch (14.2 mm) DIGIT HEIGHT
- * CONTINUOUS UNIFORM SEGMENTS
- * LOW POWER REQUIREMENT
- * EXCELLENT CHARACTERS APPEARANCE
- * HIGH BRIGHTNESS & HIGH CONTRAST
- * WIDE VIEWING ANGLE
- * SOLID STATE RELIABILITY
- * CATEGORIZED FOR LUMINOUS INTENSITY
- * **LEAD-FREE PACKAGE (ACCORDING TO ROHS)**

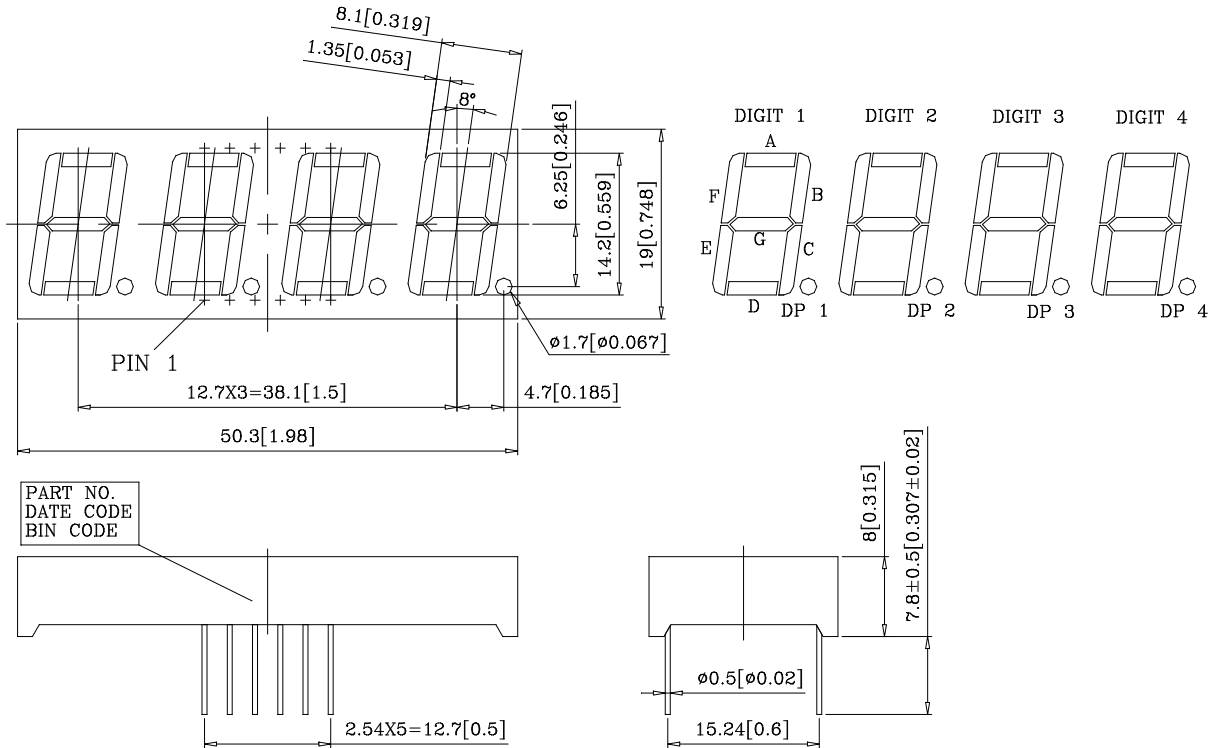
DESCRIPTION

The LTC-5623SW is a 0.56 inch (14.2 mm) digit height quadruple digit seven-segment display. The device uses InGaN white SMD chips (InGaN on Sapphire substrate), and has a black face and white segments.

DEVICE

PART NO.	DESCRIPTION
InGaN WHITE	Multiplex Common Anode
LTC-5623SW	Rt. Hand Decimal

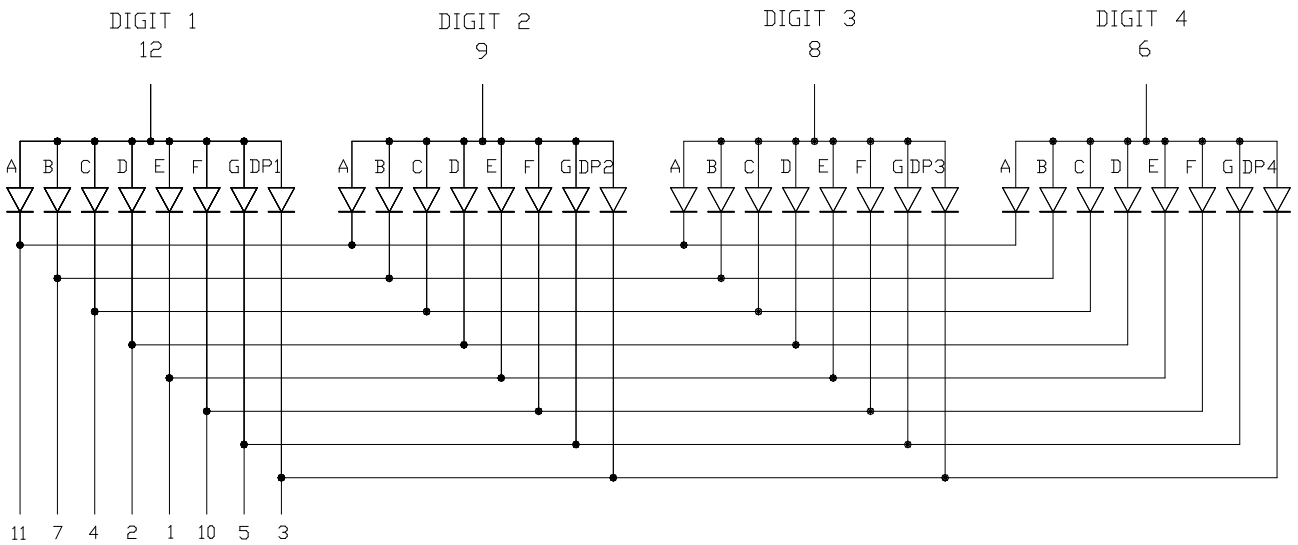
PACKAGE DIMENSIONS



NOTES:

1. All dimensions are in millimeters. Tolerances are ± 0.25 mm unless otherwise noted.
2. Pin tip's shift tolerance is ± 0.4 mm.
3. Recommend the best pcb hole :diameter 1mm.
4. Foreign material on segment ≤ 10 mils
5. Ink contamination (surface) ≤ 20 mils
6. Bending $\leq 1\%$ of reflector length
7. Bubble in segment ≤ 10 mils

INTERNAL CIRCUIT DIAGRAM



PIN CONNECTION

No.	CONNECTION
1	CATHODE E
2	CATHODE D
3	CATHODE D.P.
4	CATHODE C
5	CATHODE G
6	COMMON ANODE DIGIT 4
7	CATHODE B
8	COMMON ANODE DIGIT 3
9	COMMON ANODE DIGIT 2
10	CATHODE F
11	CATHODE A
12	COMMON ANODE DIGIT 1

CHIP LED ABSOLUTE MAXIMUM RATING

PARAMETER	MAXIMUM RATING	UNIT
Power Dissipation Per Segment	35	mW
Peak Forward Current Per Segment (Frequency 1Khz, 10% duty cycle)	50	mA
Continuous Forward Current Per Segment	10	mA
Forward Current Derating from 25 °C	0.22	mA/°C
Operating Temperature Range	-35 °C to + 105 °C	
Storage Temperature Range	-35 °C to + 105 °C	
Soldering Conditions: 1/16 inch below seating plane for 3 seconds at 260 °C.		

CHIP LED ELECTRICAL / OPTICAL CHARACTERISTICS AT Ta=25°C

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	71		165	mcd	IF = 5mA Note 1, 2, 5
Viewing Angle	2 θ 1/2		130		deg	Fig.6
Chromaticity Coordinates	x		0.294			IF = 5mA Note 3, 5 Fig.1
	y		0.286			
Forward Voltage Per Segment	V _F	2.7		3.2	V	IF = 5mA
Reverse Current Per Segment ⁽⁷⁾	I _R			100	μA	VR=5V
Luminous Intensity Matching Ratio (Similar Light Area)	Iv-m			2:1		IF=5mA

Note :

1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
2. Iv classification code is marked on each packing bag.
3. The chromaticity coordinates (x, y) is derived from the 1931 CIE chromaticity diagram.
4. Caution in ESD:
Static Electricity and surge damages the LED. It is recommend to use a wrist band or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.
5. Tester:
CAS140B is for the chromaticity coordinates (x, y) and Iv.
6. The chromaticity coordinates (x, y) guarantee should be added ± 0.01 tolerance
7. 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)

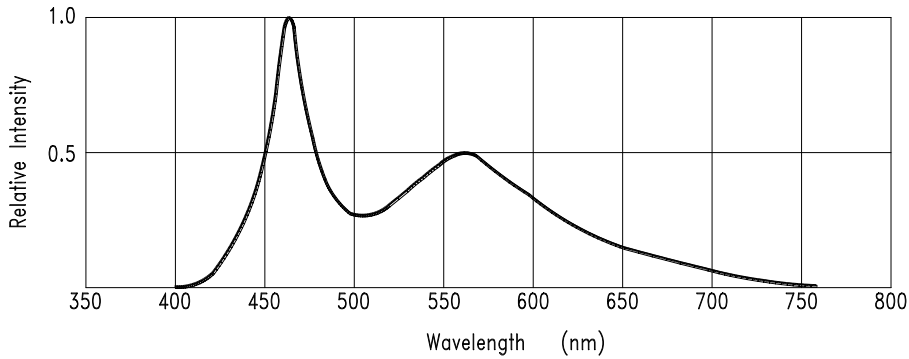


Fig.1 RELATIVE INTENSITY VS. WAVELENGTH

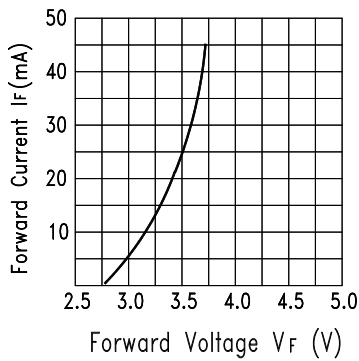


Fig.2 Forward Current vs. Forward Voltage

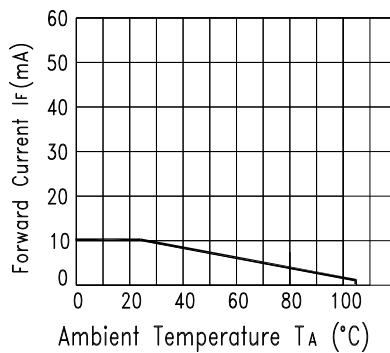


Fig.3 Forward Current Derating Curve

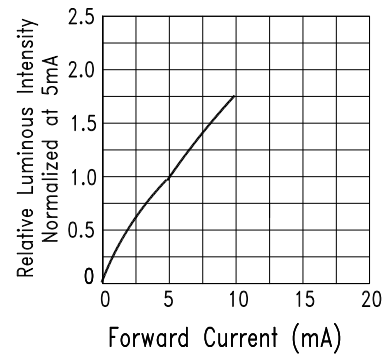


Fig.4 Relative Luminous Intensity vs. Forward Current

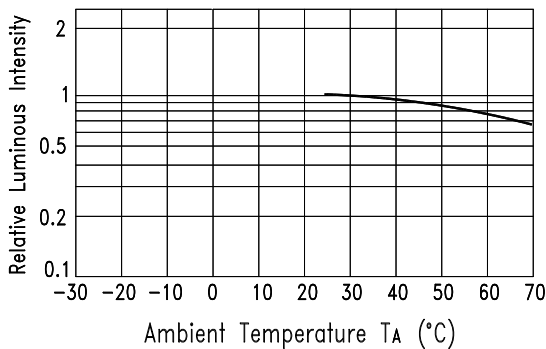


Fig.5 Luminous Intensity vs. Ambient Temperature

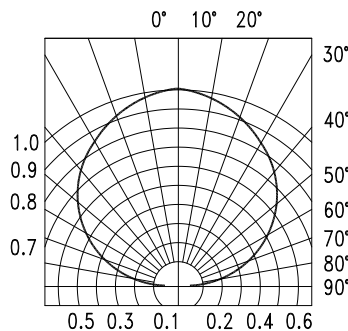


Fig.6 Spatial Distribution

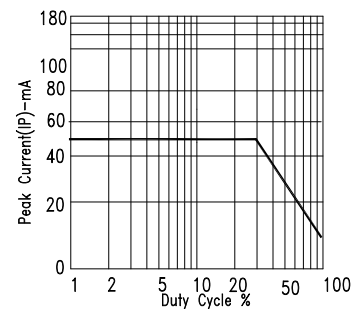


Fig.7 MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

Property of Lite-On Only**Bin Code List**

VF Spec. Table

VF Bin	Forward Voltage (V) at IF = 5mA	
	Min.	Max.
3	2.70	2.80
4	2.80	2.90
5	2.90	3.00
6	3.00	3.10
7	3.10	3.20

Tolerance on each Forward Voltage bin is +/-0.1 volt

IV Spec. Table

IV Bin	Luminous Intensity (mcd) at IF = 5mA	
	Min.	Max.
Q11	71.0	81.0
Q12	81.0	90.0
Q21	90.0	101.0
Q22	101.0	112.0
R11	112.0	129.0
R12	129.0	146.0
R21	146.0	165.0

Tolerance on each Luminous Intensity bin is +/- 15%.

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Hue Spec. Table

Hue Bin	Color bin limits at IF = 5mA				
	CIE 1931 Chromaticity coordinates				
S1-2	x	0.284	0.284	0.294	0.294
	y	0.240	0.272	0.286	0.254
S2-2	x	0.284	0.284	0.294	0.294
	y	0.272	0.305	0.319	0.286
S3-1	x	0.294	0.294	0.304	0.304
	y	0.254	0.286	0.300	0.268
S3-2	x	0.304	0.304	0.314	0.314
	y	0.268	0.300	0.315	0.282
S4-1	x	0.294	0.294	0.304	0.304
	y	0.286	0.319	0.333	0.300
S4-2	x	0.304	0.304	0.314	0.314
	y	0.300	0.333	0.347	0.315
S5-1	x	0.314	0.314	0.324	0.324
	y	0.282	0.315	0.329	0.296
S6-1	x	0.314	0.314	0.324	0.324
	y	0.315	0.347	0.361	0.329

Tolerance on each Hue (x, y) bin is +/- 0.01.

