OPTOELECTRONICS

LED Display
Product Data Sheet
LTS-5325CTB-P

Spec No. :DS30-2011-0134
Effective Date: 12/24/2019
Revision: C

LITE-ON DCC

RELEASE

LED DISPLAY

LTS-5325CTB-P

Rev	Description	By	Date
01	Preliminary Spec.	Reo Lin	04/18/2011
02	Update Luminous Intensity	Reo Lin	04/29/2011
03	Change PCB thickness from 0.8 mm to 0.6 mm	Reo Lin	05/09/2011
04	Add Packing spec.	Reo Lin	07/27/2011
Above data for PD and Customer tracking only			
-	NPPR Received and Upload on System	Reo Lin	08/09/2011
A	Update system data	Reo Lin	02/21/2012
B	Update Packing spec. in page 10	Reo Lin	12/02/2019
C	Update Packing spec. in page 10	Reo Lin	12/20/2019

1. Description

The LTS-5325CTB-P is a 0.56 inch (14.22 mm) digit height single digit SMD display. This device uses InGaN blue LED chips (InGaN epi on Sapphire substrate). The display has gray face and white segments.

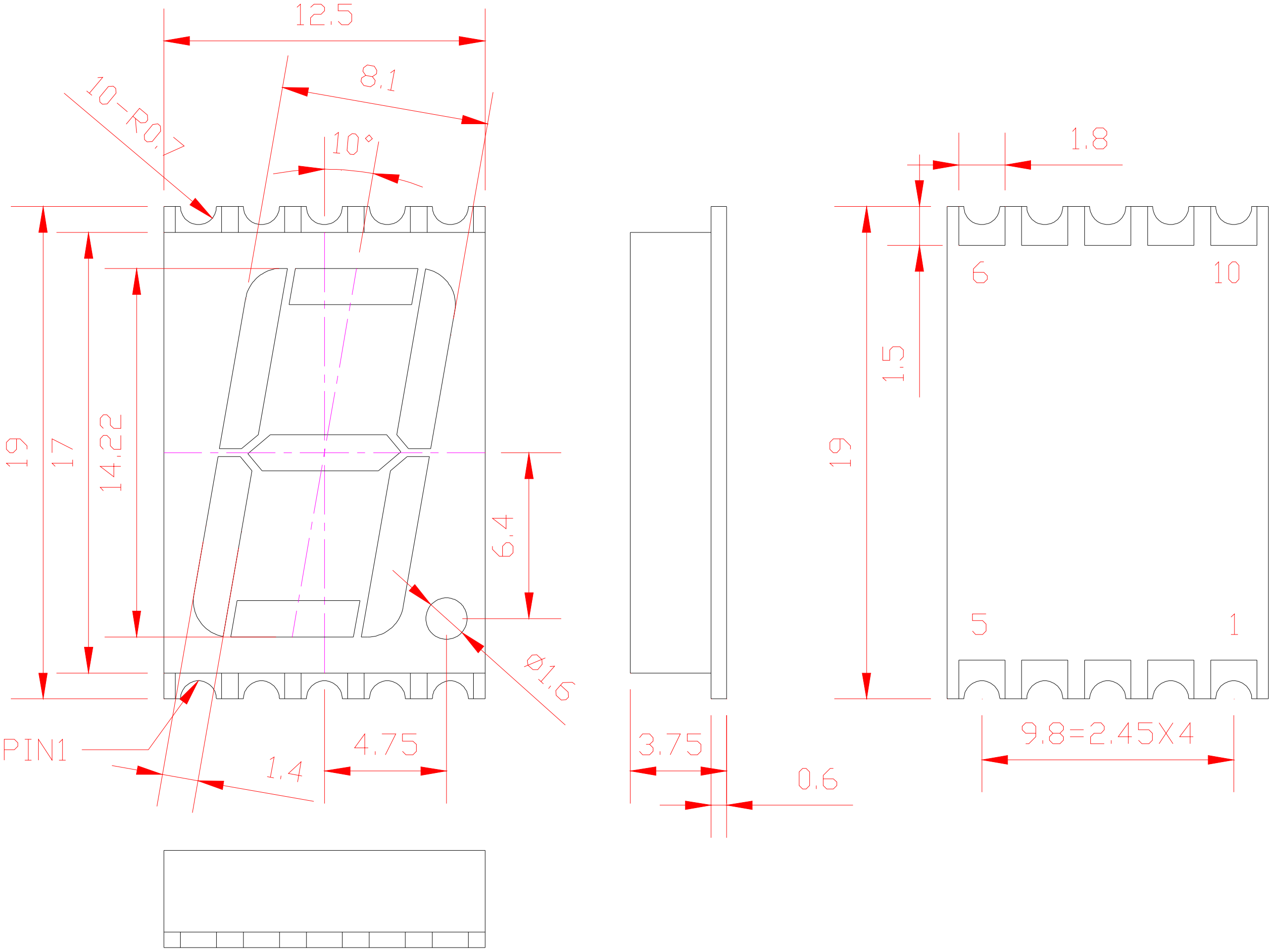
1.1 Features

- 0.56 inch (14.22 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)

1.2 Device

Part No	Description
InGaN Blue	Common Cathode
LTS-5325CTB-P	Rt. Hand Decimal

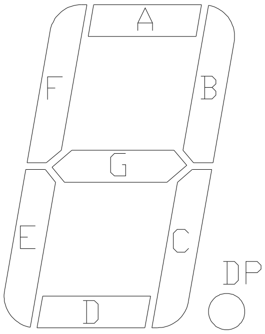
2. Package Dimensions

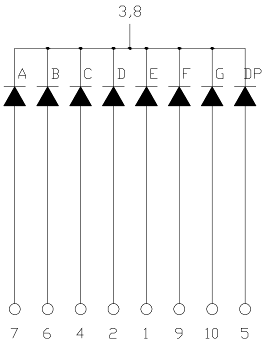


Notes :

1. All dimensions are in millimeters. Tolerances are ±0.25 mm (0.01“) unless otherwise noted
2. Foreign material on segment ≦10mil
3. Ink contamination (surface) ≦20mils
4. Bubble in segment ≦10mil
5. Bending ≦ 1% of reflector length
6. Plastic pin’s burr max is 0.14 mm

3. Internal Circuit Diagram





4. Pin Connection

No	Connection
1	ANODE E
2	ANODE D
3	COMMON CATHODE
4	ANODE C
5	ANODE DP
6	ANODE B
7	ANODE A
8	COMMON CATHODE
9	ANODE F
10	ANODE G

5. Rating and Characteristics

5.1. Absolute Maximum Rating at Ta=25℃

Parameter	Maximum Rating	Unit
Power Dissipation Per Segment	70	mW
Peak Forward Current Per Segment (1/10 Duty Cycle, 0.1ms Pulse Width)	30	mA
Continuous Forward Current Per Segment Derating Linear From 25℃ Per Segment	25 0.28	mA mA/℃
Operating Temperature Range	-35℃ to +105℃	
Storage Temperature Range	-35℃ to +105℃	
Iron Soldering Conditions: 1/16 inch Below Seating Plane for 3 Seconds at 260°C		

5.2.Electrical / Optical Characteristics at Ta=25℃

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Test Condition
Average Luminous Intensity Per Segment	IV	8600	28500		μcd	IF=10mA
Peak Emission Wavelength	λp		468		nm	IF=20mA
Spectral Line Half-Width	Δλ		25		nm	IF=20mA
Dominant Wavelength	λd		470		nm	IF=20mA
Forward Voltage Per Chip	VF		3.3	3.8	V	IF=5mA
Reverse Current Per Segment(2)	IR			100	μA	VR=5V
Luminous Intensity Matching Ratio (Similar Light Area)	IV-m			2:1		IF=10mA

Notes :

1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission International De L'Eclariage) eye-response curve
2. Reverse voltage is only for IR test. It cannot continue to operate at this situation
3. Cross talk specification ≦ 2.5%

5.3.ESD (Electrostatic Discharge)

Static Electricity or power surge will damage the LED. Suggestions to prevent ESD damage:

- Use of a conductive wrist band or anti-electrostatic glove when handling these LEDs.
- All devices, equipment, and machinery must be properly grounded.
- Work tables, storage racks, etc. should be properly grounded.
- Use ion blower to neutralize the static charge which might have built up on surface of the LED's plastic for N/D as a result of friction between LEDs during storage and handling.

5.4. Typical Electrical / Optical Characteristics Curves

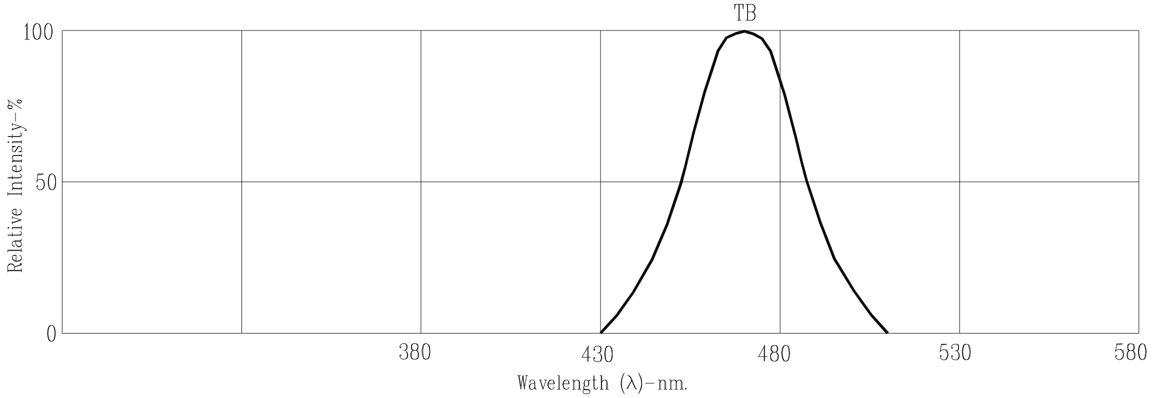


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

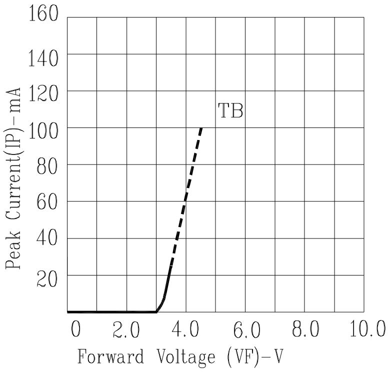


Fig3. FORWARD CURRENT VS. FORWARD VOLTAGE

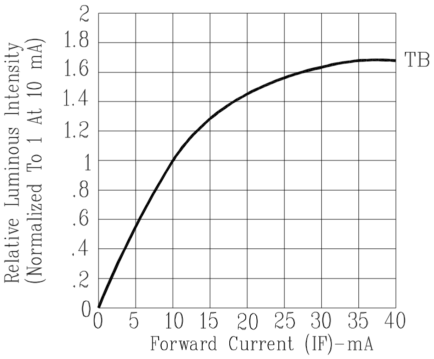


Fig4. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

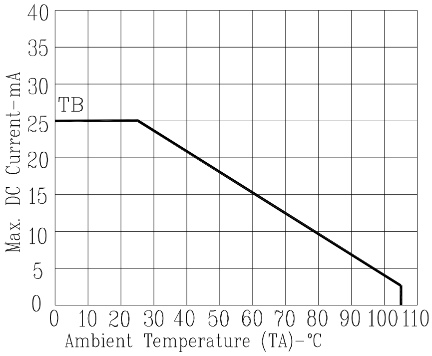


Fig5. MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE.

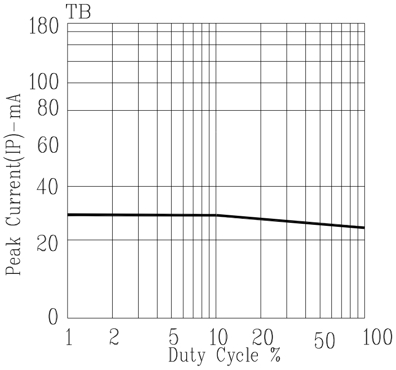
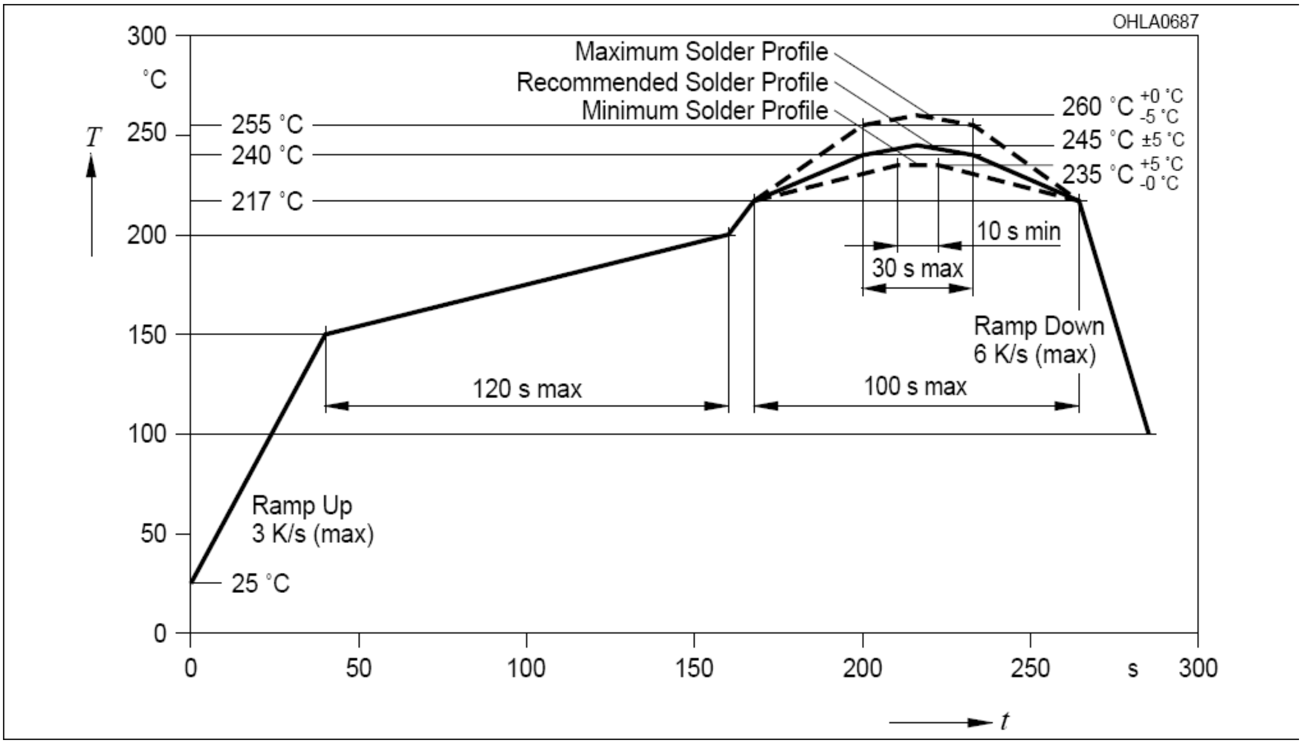


Fig6. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

NOTE: TB=InGaN/sapphire Blue

6. SMT SOLDERING INSTRUCTION

(Number of reflow process shall be less than 2 times, and cooling process to normal temperature is required between the first and the second soldering process)



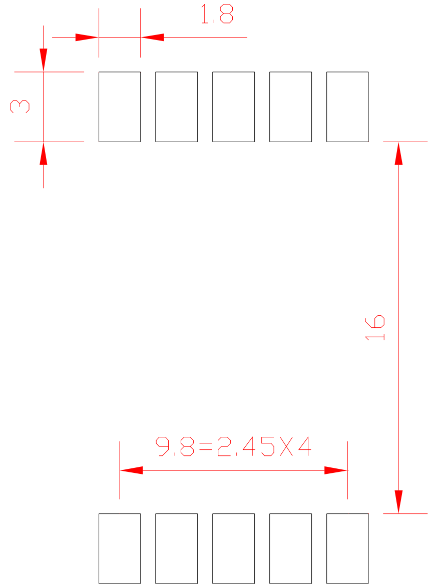
Notes :

1. Recommended soldering condition

Reflow Soldering (Two times only)		Soldering Iron (One time only)	
Pre-heat:	120~150°C.	Temperature	300°C Max.
Pre-heat time:	120sec. Max.	Soldering time	3sec. Max.
Peak temperature:	260℃ Max.		
Soldering time:	5sec. Max.		

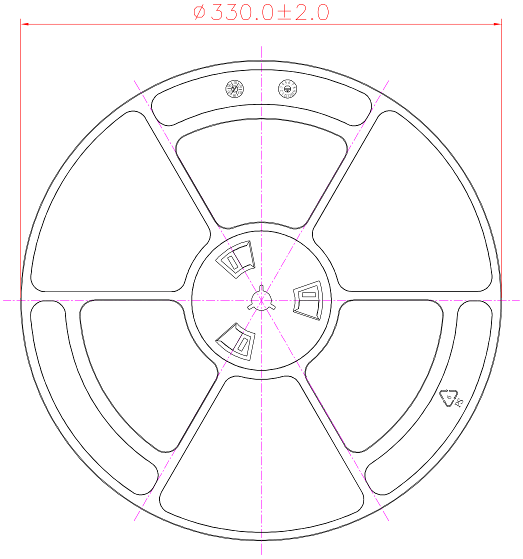
2. Number of reflow process shall be less than 2 times, and cooling process to normal temperature is required between the first and the second soldering process.

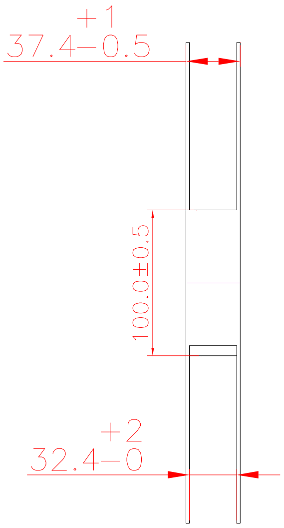
7. Recommended Soldering Pattern

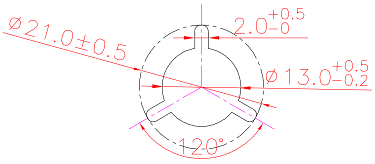


8. Packing Specification

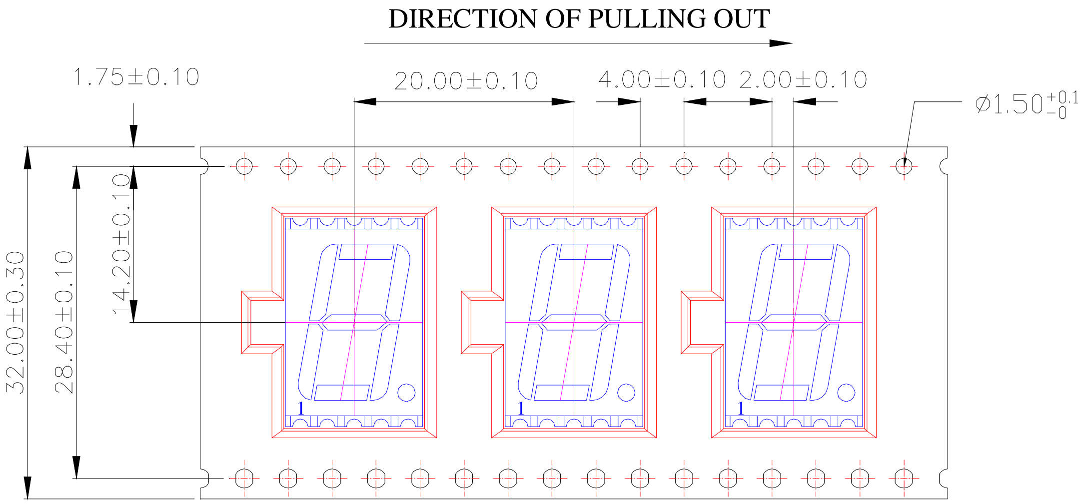
8.1. Packing Reel Dimensions

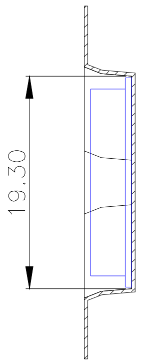


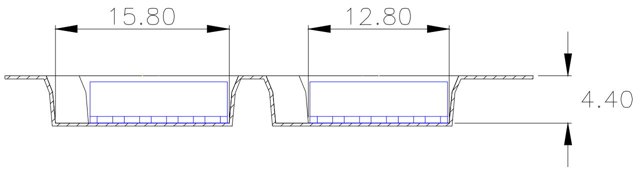




8.2. Packing Carrier Dimensions

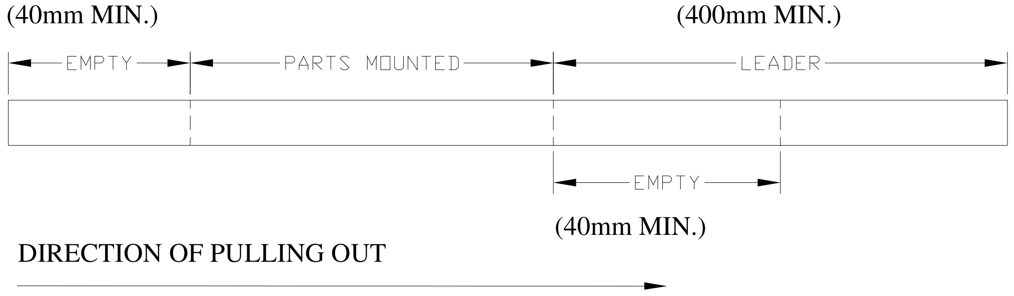






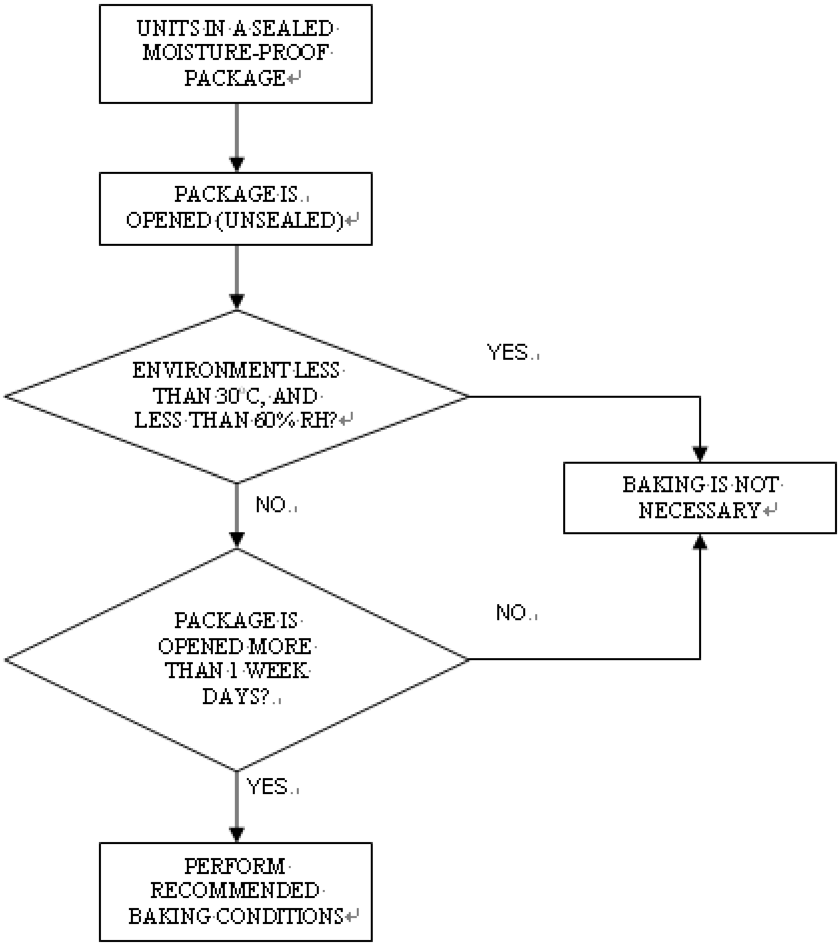
1. 10 sprocket hole pitch cumulative tolerance ±0.20.
2. Carrier camber is within 1 mm in 250 mm.
3. Material : Black Conductive Polystyrene Alloy.
4. All dimensions meet EIA-481-D requirements.
5. Thickness : 0.30±0.05mm.
6. Packing length per 22" reel : 44.5 Meters.(1:3)
7. Component load per 13" reel : 700 pcs.
8. Minimum packing quantity is 200 pcs for remainders

8.3.Trailer part / Leader part



9. Moisture Proof Packing

All N/D SMD displays are shipped in moisture proof package. The displays should be stored at 30℃ or less and 6 0% RH or less. Once the package opened, moisture absorption begins.



If the parts are not stored in dry conditions, they must be baked before reflow to prevent damage to the parts. Baking should only be done once

Package	Temperature	Time
In Reel	60˚C	≧48hours
In Bulk	100˚C	≧4hours
	125˚C	≧2hours