



LED Display

Product Data Sheet

LTC-2687CKS-P

Spec No.: DS30-2011-0197

Effective Date: 06/28/2012

Revision: A

LITE-ON DCC

RELEASE

BNS-OD-FC001/A4

LED DISPLAY**LTC-2687CKS-P**
DATA SHEET

<u>Item</u>	<u>Description</u>	<u>By</u>	<u>DATE</u>
1	New Spec.	Reo Lin	2011/03/18
2	Add Luminous Intensity In Page 5	Reo Lin	2011/12/05
3	Revised Packing Spec. In Page 9	Reo Lin	2012/06/26

FEATURES

- * 0.28 inch (7.00mm) 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
- * SMD DISPLAY
- * LEAD FREE PACKAGE (ACCORDING TO ROHS)**

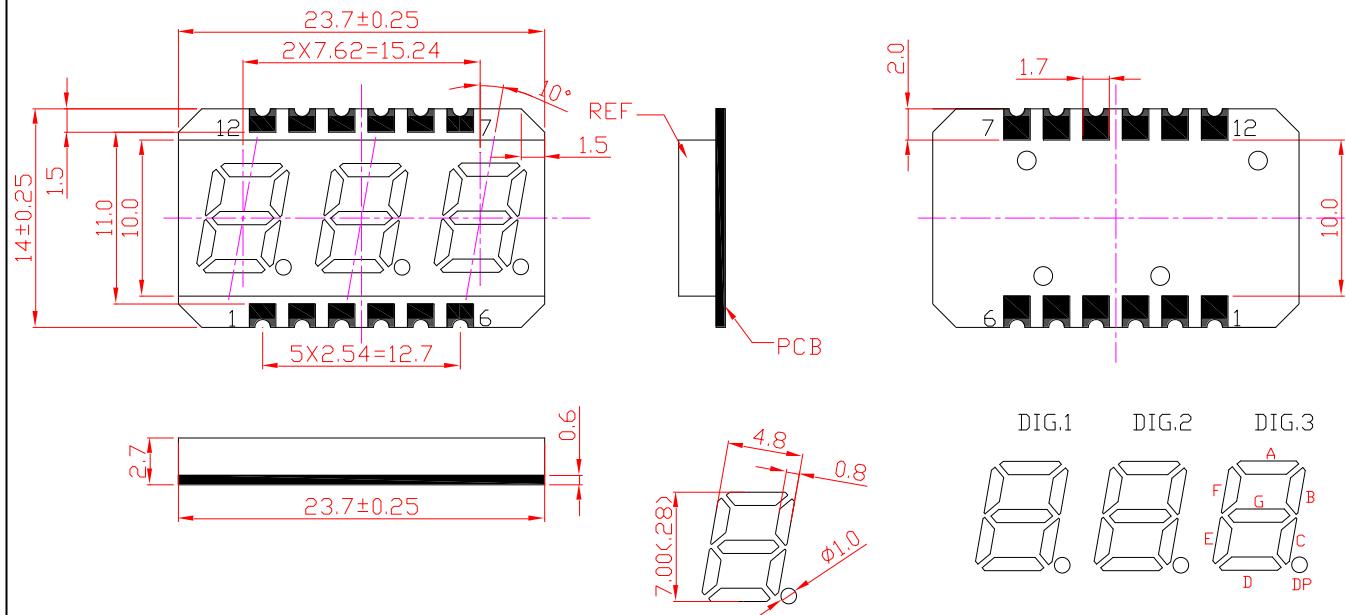
DESCRIPTION

The LTC-268CKS-P is a 0.28 inch (7.00mm) digit height triple digit SMD display. This device uses AlInGaP Yellow LED chips(AlInGaP on a non-transparent substrate). The display has black face and white segments.

DEVICE

PART NO.	DESCRIPTION
AlInGaP Yellow	
LTC-2687CKS-P	Common Anode

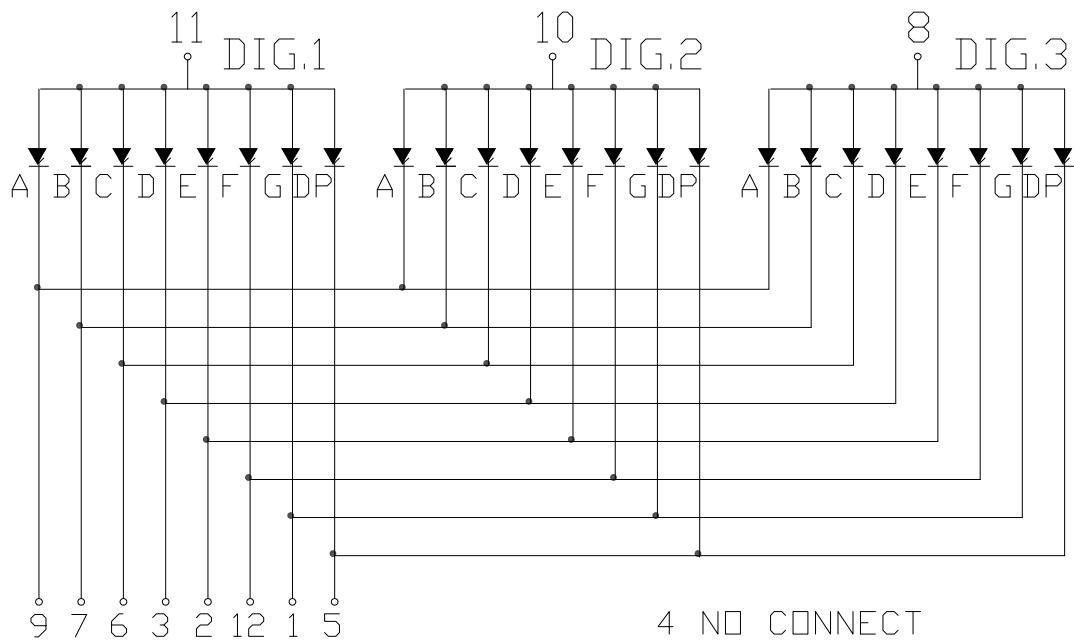
PACKAGE DIMENSIONS



NOTES: All dimensions are in millimeters. Tolerances are ± 0.1 mm unless otherwise noted.

Angle is $\pm 1^\circ$. Warp and Twist < 0.07mm

INTERNAL CIRCUIT DIAGRAM



PIN CONNECTION

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

ABSOLUTE MAXIMUM RATING AT Ta=25°C

PARAMETER	MAXIMUM RATING	UNIT
Power Dissipation Per Segment	70	mW
Peak Forward Current Per Segment (Frequency 1Khz,10% duty cycle)	60	mA
Continuous Forward Current Per Segment	25	mA
Derating Linear From 25 °C	0.28	mA/°C
Operating Temperature Range	-35 °C to +105 °C	
Storage Temperature Range	-55 °C to +105 °C	

*Reverse voltage is only for IR test. It can not continue to operate at this situation.

Iron Soldering Conditions: 1/16 inch Below Seating Plane for 3 Seconds at 260 °C

ELECTRICAL / OPTICAL CHARACTERISTICS AT Ta=25°C

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I _v	126	400	μcd		I _F =1mA
			2750			I _F =10mA
Peak Emission Wavelength	λ _p		588		nm	I _F =20mA
Spectral Line Half-Width	Δλ		15		nm	I _F =20mA
Dominant Wavelength	λ _d		587		nm	I _F =20mA
Forward Voltage Per Segment	V _F		2.05	2.6	V	I _F =20mA
Reverse Current Per Segment ⁽²⁾	I _R			100	μA	V _R =5V
Luminous Intensity Matching Ratio	I _{v-m}			2:1		I _F =1mA

Note:

1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commision Internationale De L'Eclairage) eye-response curve.
2. Reverse voltage is only for IR test. It can not continue to operate at this situation.
3. Cross talk specification \leq 2.5%

TYPICAL ELECTRICAL / OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

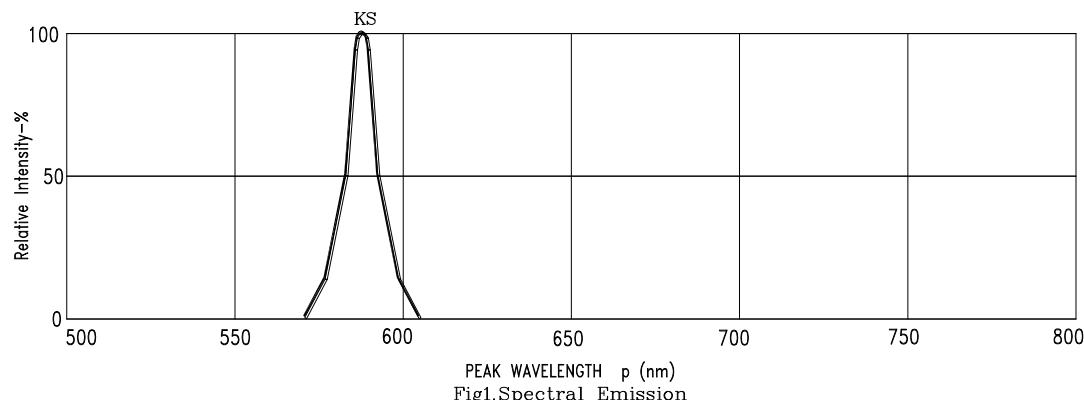


Fig1. Spectral Emission

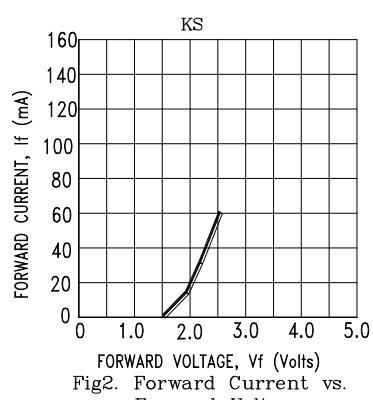


Fig2. Forward Current vs. Forward Voltage

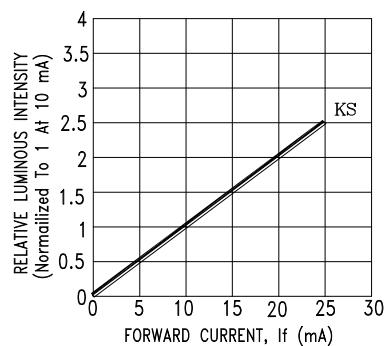


Fig3. Relative Luminous Intensity vs. DC Forward Current

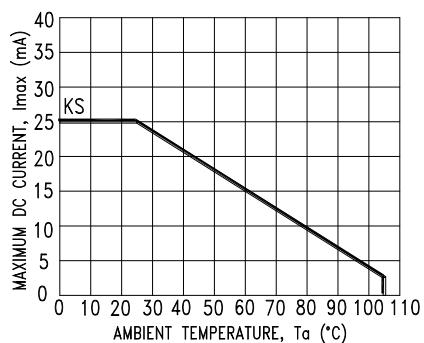


Fig4. Maximum Allowable DC Current vs. Ambient Temperature

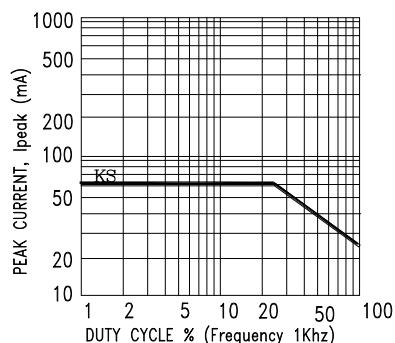
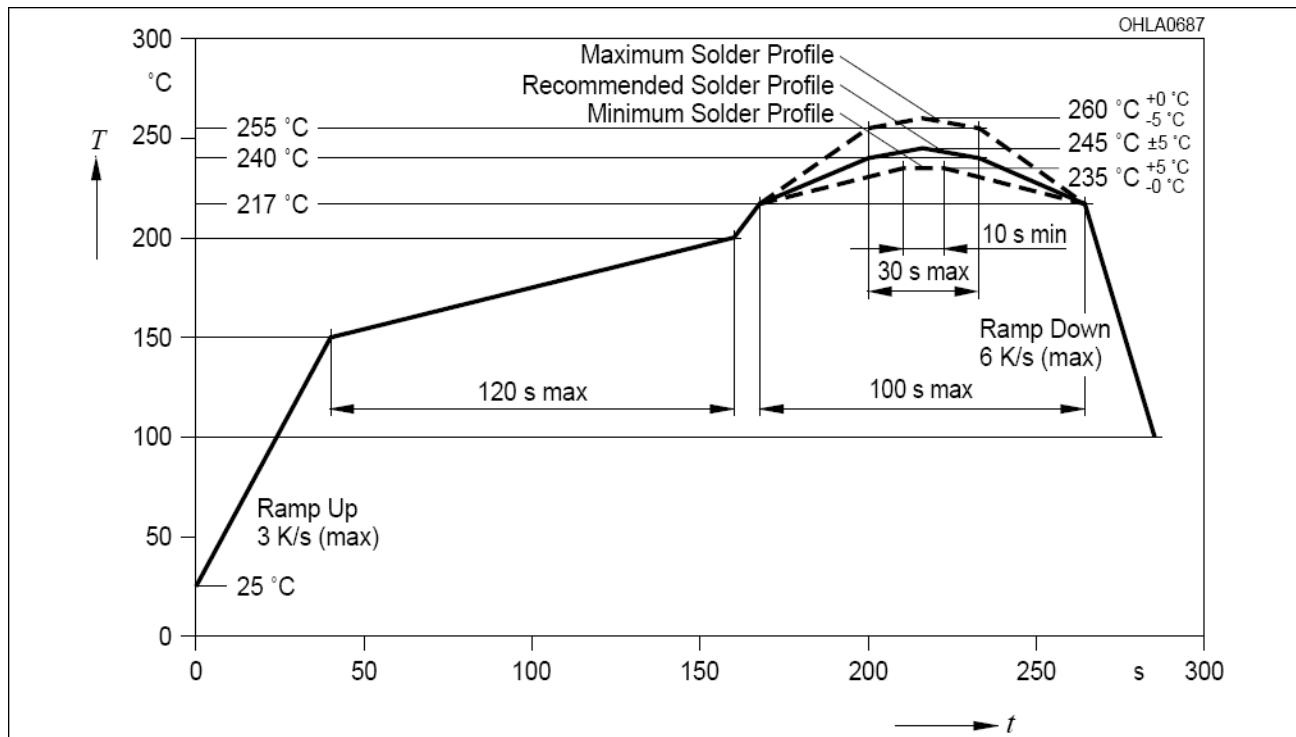


Fig5. Maximum Peak Current vs. Duty Cycle %

NOTE : KS=AlInGaP YELLOW

SMT SOLDERING INSTRUCTION

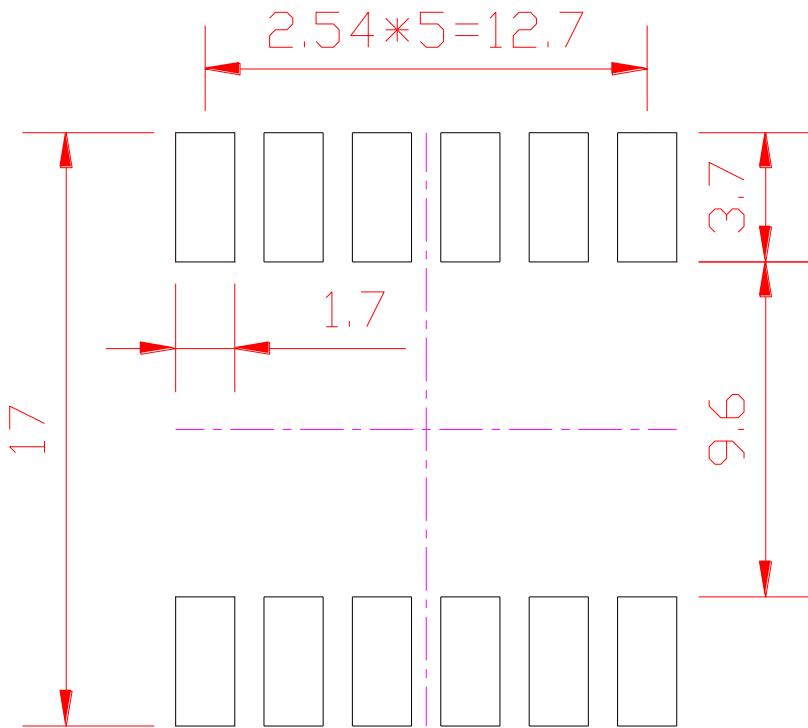


Note:

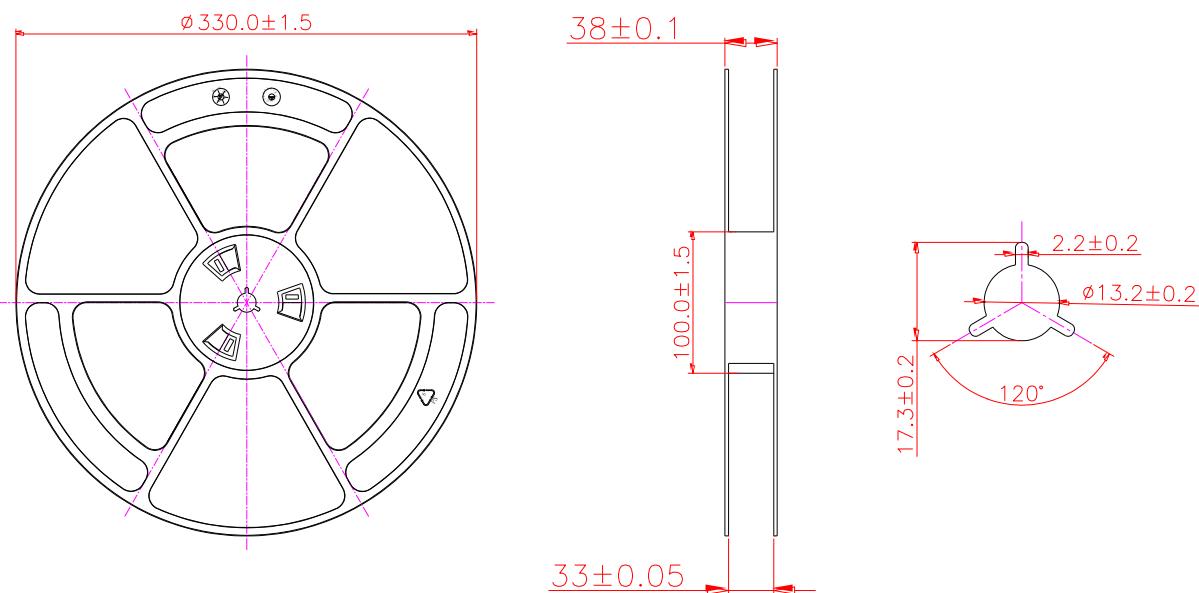
1. Recommended soldering condition:

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 °C 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.

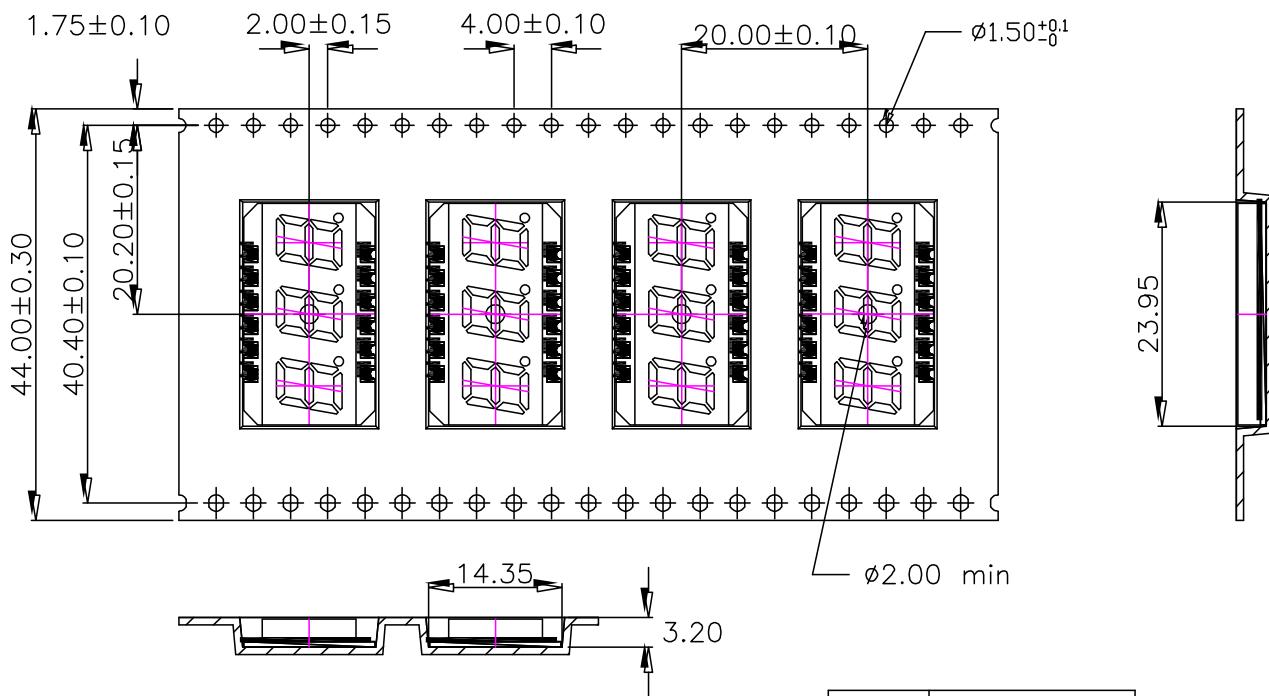
RECOMMENDED SOLDERING PATTERN (UNIT: MM)

Note: All dimensions are in millimeters.

PACKING REEL DIMENSIONS

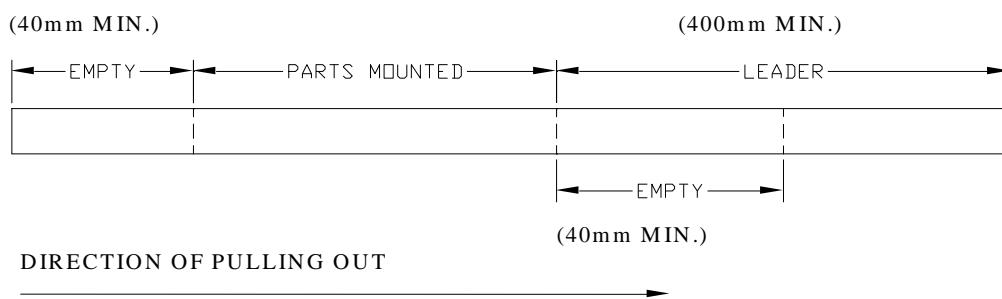
PACKING CARRIER DIMENSIONS

1. Taping parts:



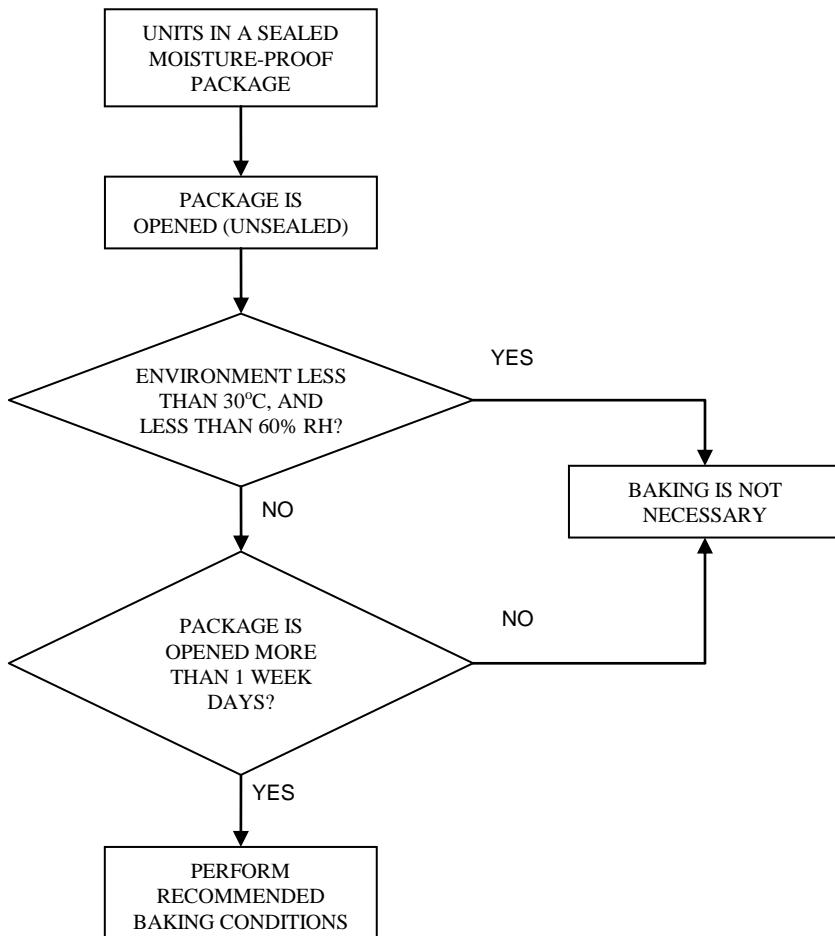
1. 10 sprocket hole pitch cumulative tolerance ± 0.20 .
2. Carrier camber is within 1 mm in 250 mm.
3. Material : Black Conductive Polystyrene Alloy.
4. All dimensions meet EIA-481-C requirements.
5. Thickness : 0.40 ± 0.05 mm.
6. Packing length per 22" reel : 64.5 Meters.(1:3)
7. Component load per 13" reel : 600 pcs.

2. Trailer part/ Leader part:



MOISTURE PROOF PACKAGING

All N/D SMD displays are shipped in moisture proof package. The displays should be stored at 30°C or less and 90% RH or less. Once the package opened, moisture absorption begins.



Baking Conditions

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

Package	Temperature	Time
In Reel	60 °C	≥48hours
In Bulk	100 °C	≥4hours
	125 °C	≥2hours

Baking should only be done once.