



**LED Display**  
**Product Data Sheet**  
LTC-2687CKS-P

Spec No. :DS30-2011-0197  
Effective Date: 02/04/2020  
Revision: B

**LITE-ON DCC**

**RELEASE**

**BNS-OD-FC001/A4**

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

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LTC-2687CKS-P

<u>Rev</u>	<u>Description</u>	<u>By</u>	<u>Date</u>
01	Preliminary Spec.	Reo Lin	03/18/2011
02	Add Luminous Intensity in page 5	Reo Lin	12/05/2011
<b>Above data for PD and Customer tracking only</b>			
-	NPPR Received and Upload on System	Reo Lin	12/14/2011
A	Revised Packing spec. in page 9	Reo Lin	06/26/2012
B	Update Packing spec. in page 9	Reo Lin	01/22/2020

## LED DISPLAY LTC-2687CKS-P

### 1. Description

The LTC-2687CKS-P is a 0.28 inch (7.0 mm) digit height triple digit SMD display. The devices utilize AllnGaP Yellow LED chips (AllnGaP epi on GaAs substrate). The display has black face and white segments.

#### 1.1 Features

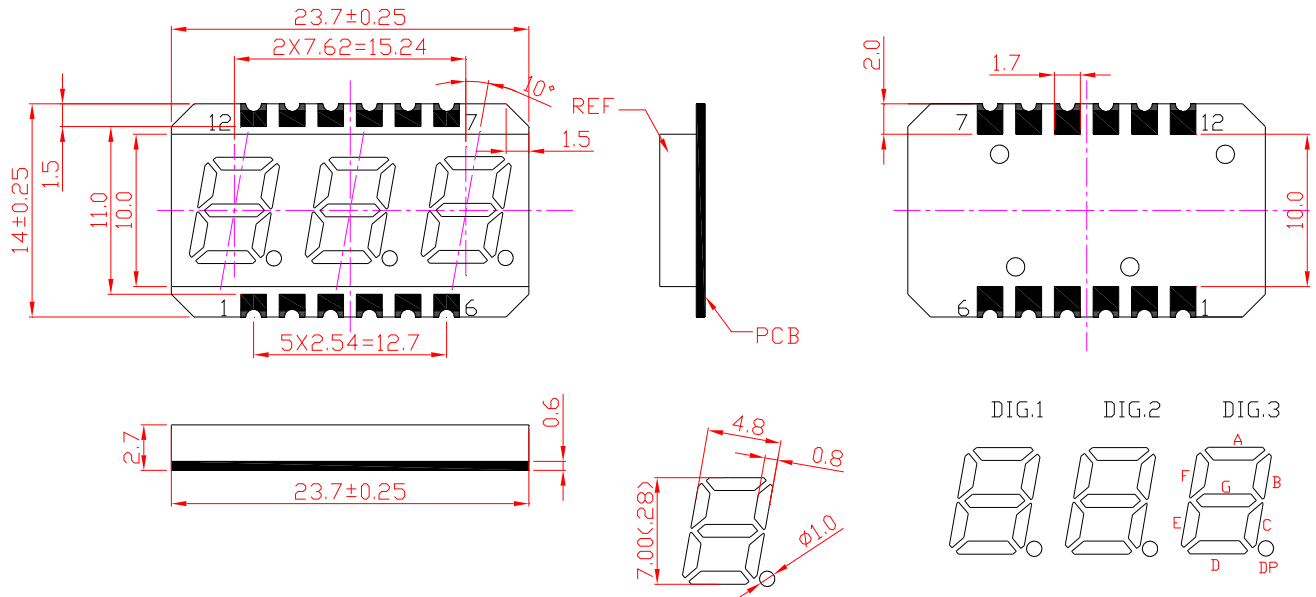
- 0.28 inch (7.0 mm) DIGIT HEIGHT
- CONTINUOUS UNIFORM SEGMENTS
- LOW POWER REQUIREMENT
- EXCELLENT CHARACTERS APPEARANCE
- HIGH BRIGHTNESS & HIGH CONTRAST
- WIDE VIEWING ANGLE
- SOLID STATE RELIABILITY
- CATEGORIZED FOR LUMINOUS INTENSITY.
- LEAD-FREE PACKAGE (ACCORDING TO ROHS)

#### 1.2 Device

Part No	Description
AllnGaP Yellow	Multiplex Common Anode
LTC-2687CKS-P	Rt. Hand Decimal

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### 2. Package Dimensions

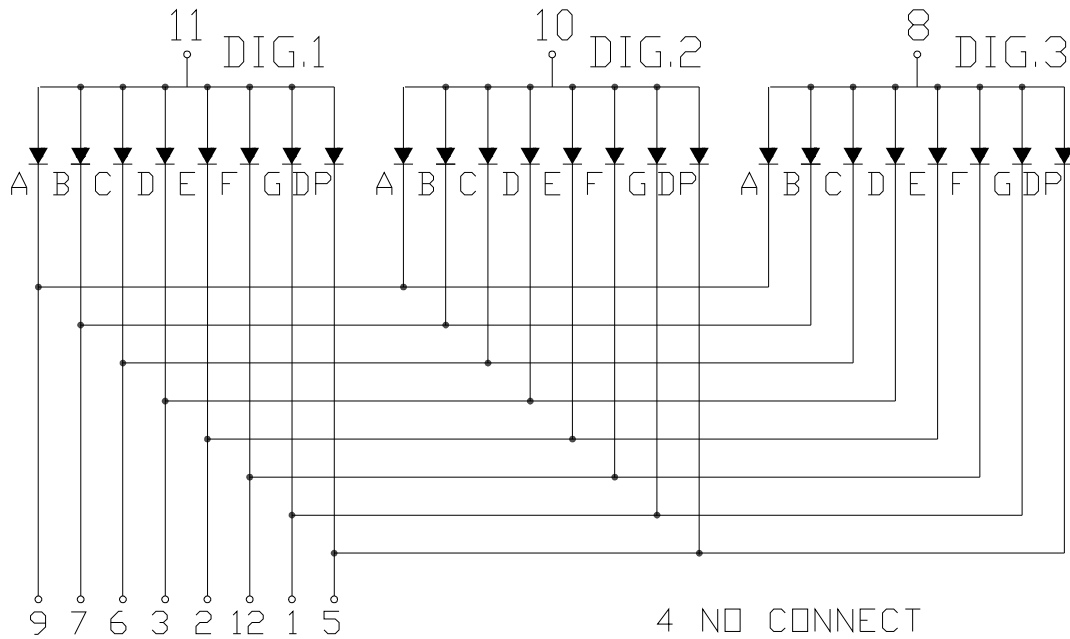


#### Notes :

1. All dimensions are in millimeters. Tolerances are  $\pm 0.25$  mm (0.01") unless otherwise noted
2. Foreign material on segment  $\leq 10$ mil
3. Ink contamination (surface)  $\leq 20$ mils
4. Bubble in segment  $\leq 10$ mil
5. Bending  $\leq 1\%$  of reflector length
6. Plastic pin's burr max is 0.1 mm

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**3. Internal Circuit Diagram**



**4. Pin Connection**

No	Connection
1	CATHODE G
2	CATHODE E
3	CATHODE D
4	NO CONNECT
5	CATHODE DP
6	CATHODE C
7	CATHODE B
8	COMMON ANODE DIG3
9	CATHODE A
10	COMMON ANODE DIG2
11	COMMON ANODE DIG1
12	CATHODE F

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### 5. Rating and Characteristics

#### 5.1. Absolute Maximum Rating at Ta=25°C

Parameter	Maximum Rating	Unit
Power Dissipation Per Segment	70	mW
Peak Forward Current Per Segment ( 1/10 Duty Cycle, 0.1ms Pulse Width )	60	mA
Continuous Forward Current Per Segment Derating Linear From 25°C Per Segment	25 0.28	mA mA/°C
Operating Temperature Range	-35°C to +105°C	
Storage Temperature Range	-35°C to +105°C	
Iron Soldering Conditions: 1/16 inch Below Seating Plane for 3 Seconds at 260°C		

#### 5.2. Electrical / Optical Characteristics at Ta=25°C

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Test Condition
Average Luminous Intensity Per Segment	IV	126	400		μcd	IF=1mA
			2750		μcd	IF=10mA
Peak Emission Wavelength	λp		588		nm	IF=20mA
Spectral Line Half-Width	Δλ		15		nm	IF=20mA
Dominant Wavelength	λd		587		nm	IF=20mA
Forward Voltage Per Chip	VF		2.05	2.6	V	IF=20mA
Reverse Current Per Segment <sup>(2)</sup>	IR			100	μA	VR=5V
Luminous Intensity Matching Ratio (Similar Light Area)	IV-m			2:1		IF=1mA

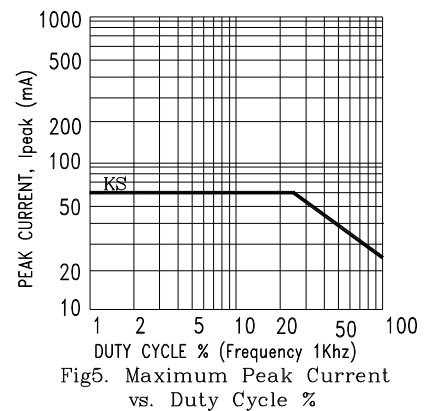
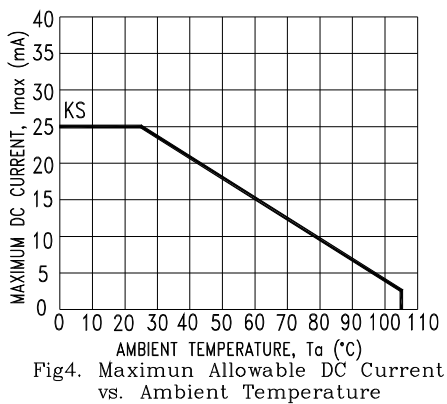
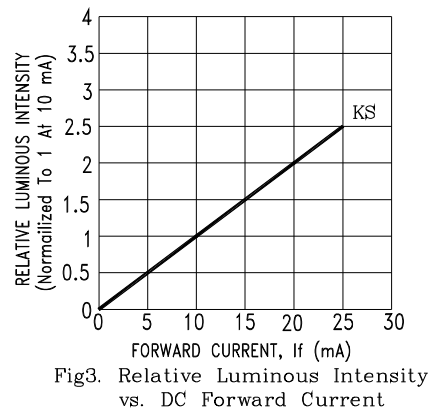
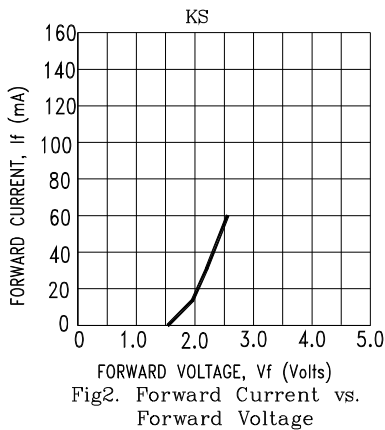
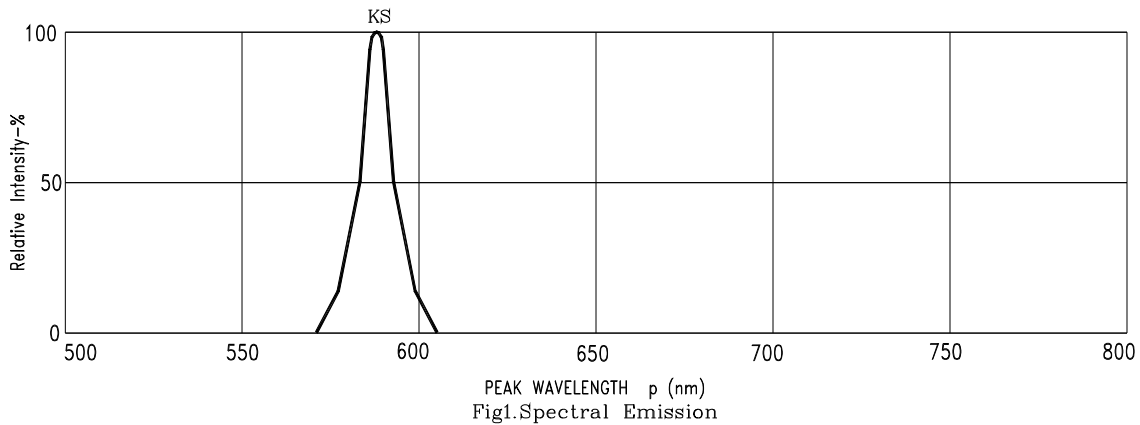
#### Notes :

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

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### 5.3. Typical Electrical / Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

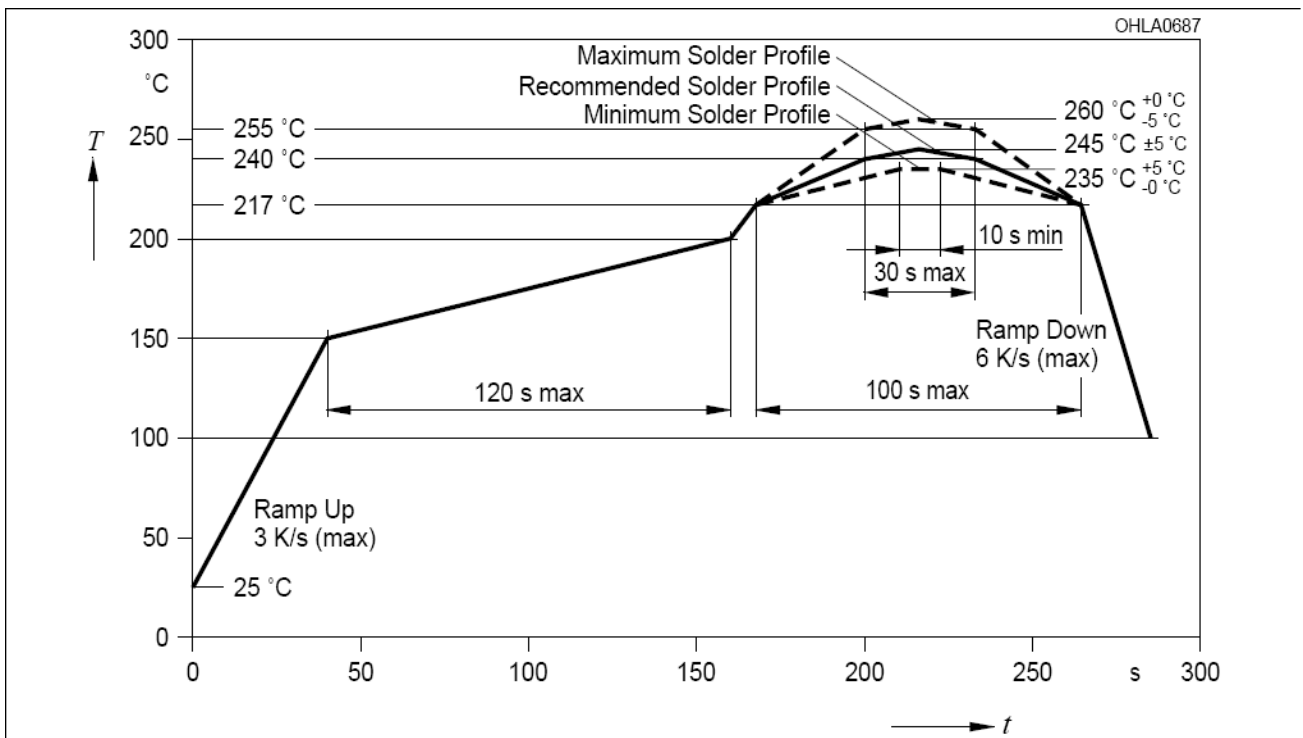


NOTE : KS=AlInGaP YELLOW

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### 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

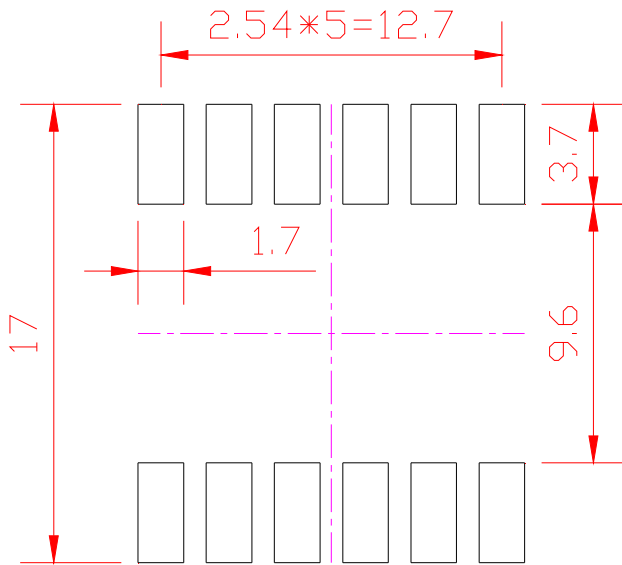
Reflow Soldering (Two times only)		Soldering Iron (One time only)	
Pre-heat:	120~150°C.	Temperature	300°C Max.
Pre-heat time:	120sec. Max.	Soldering time	3sec. Max.
Peak temperature:	260°C Max.		
Soldering time:	5sec. Max.		

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.



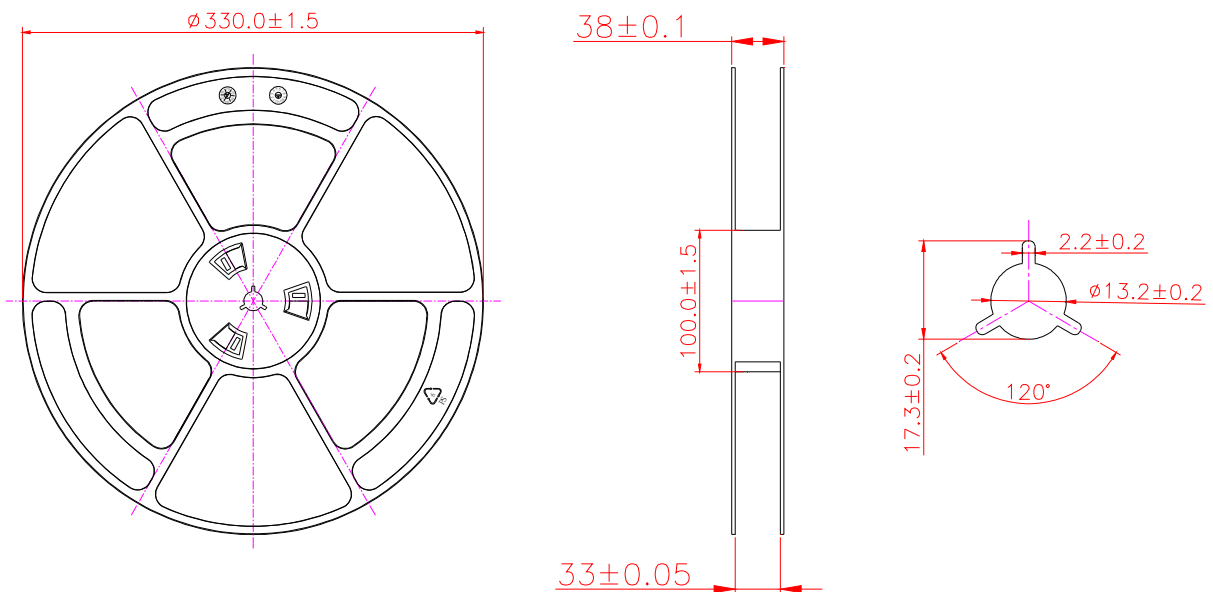
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**7. Recommended Soldering Pattern**



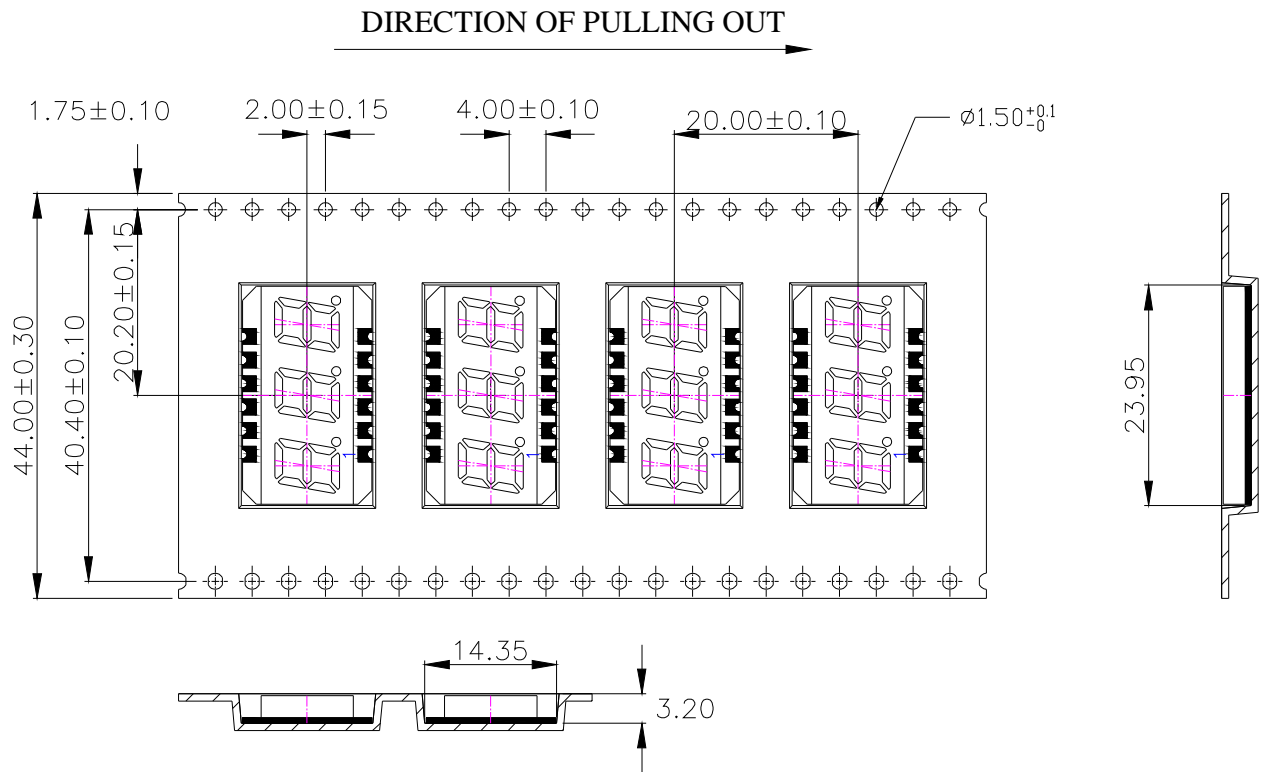
**8. Packing Specification**

**8.1. Packing Reel Dimensions**



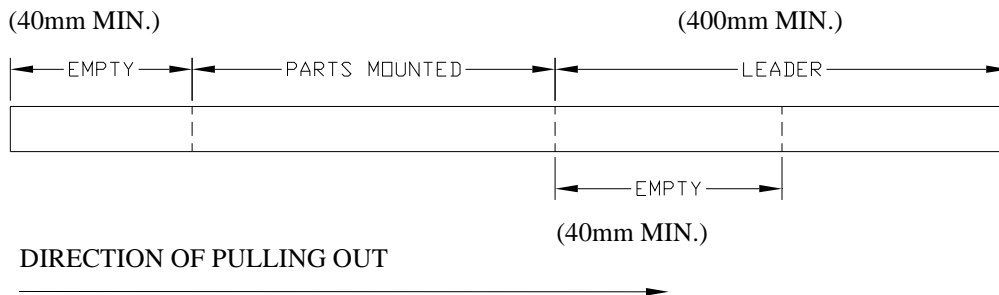
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### 8.2. Packing Carrier Dimensions



1. Component load per 13" reel : 600 pcs.
2. Minimum packing quantity is 200 pcs for remainders

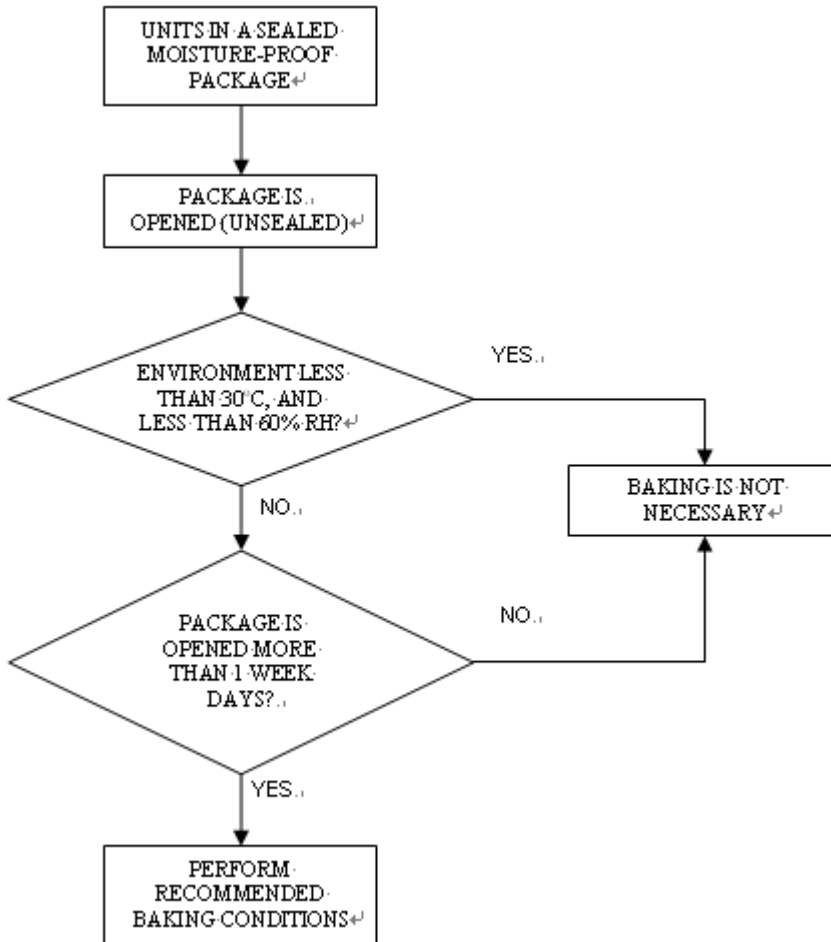
### 8.3. Trailer part / Leader part



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**9. Moisture Proof Packing**

All N/D SMD displays are shipped in moisture proof package. The displays should be stored at 30°C or less and 60 % 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