

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

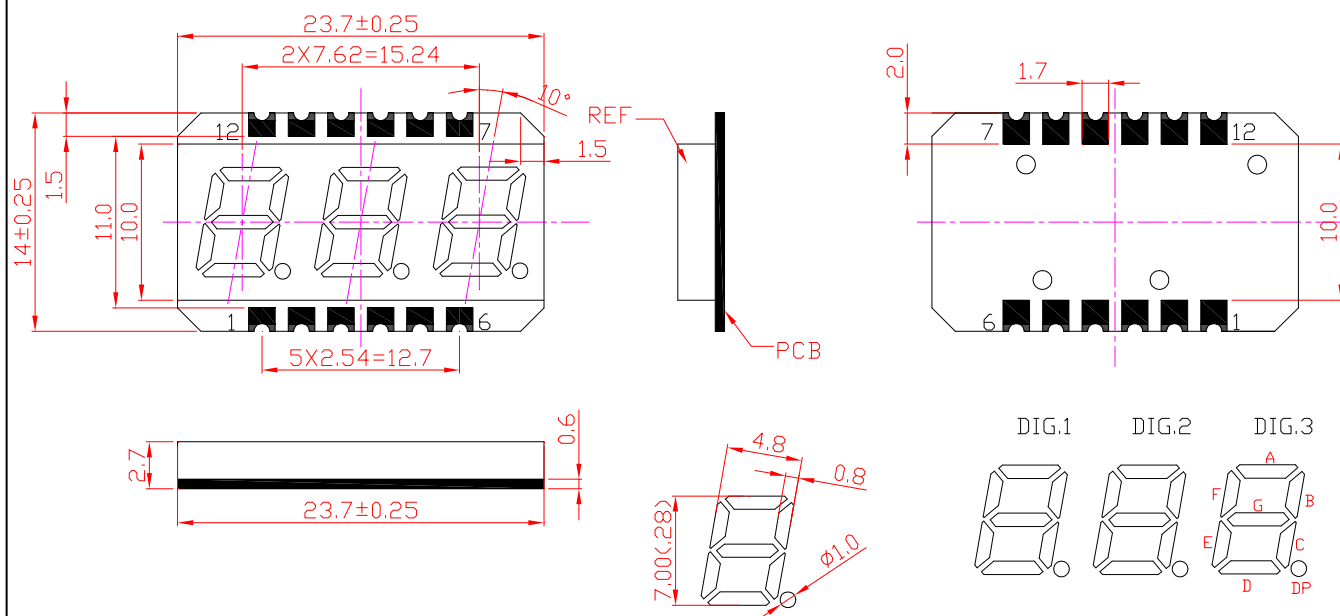
## DESCRIPTION

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	Common Anode
LTC-2687CKS-P	

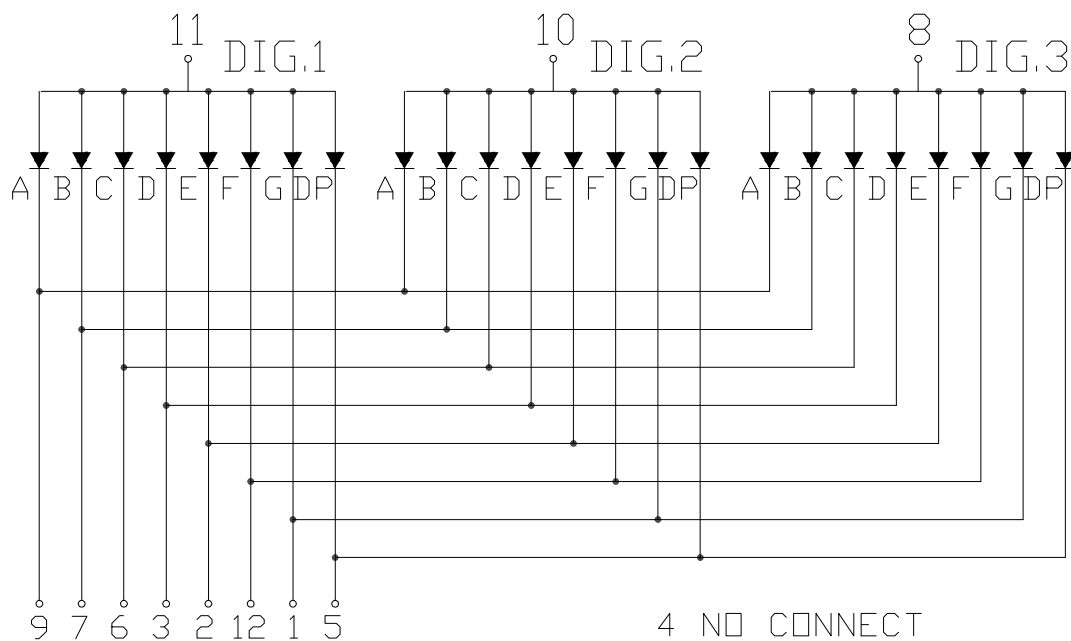
## PACKAGE DIMENSIONS



NOTES: All dimensions are in millimeters. Tolerances are  $\pm 0.1$  mm unless otherwise noted.

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

## 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

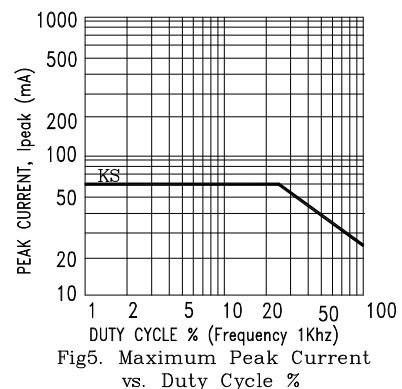
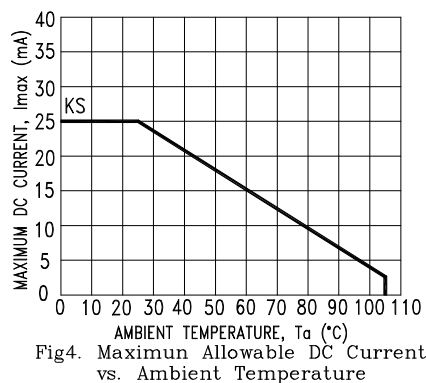
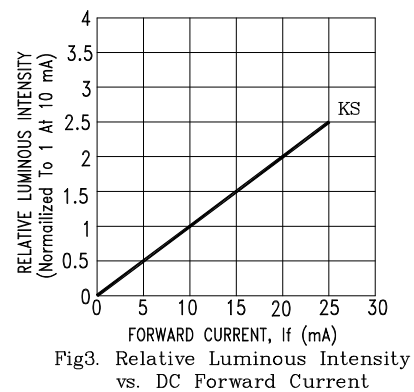
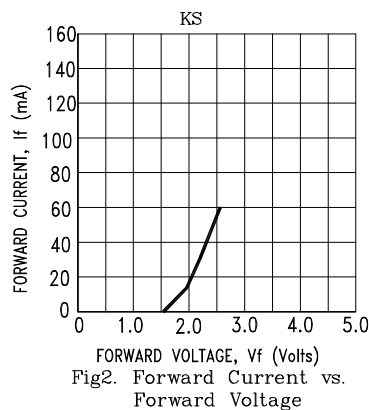
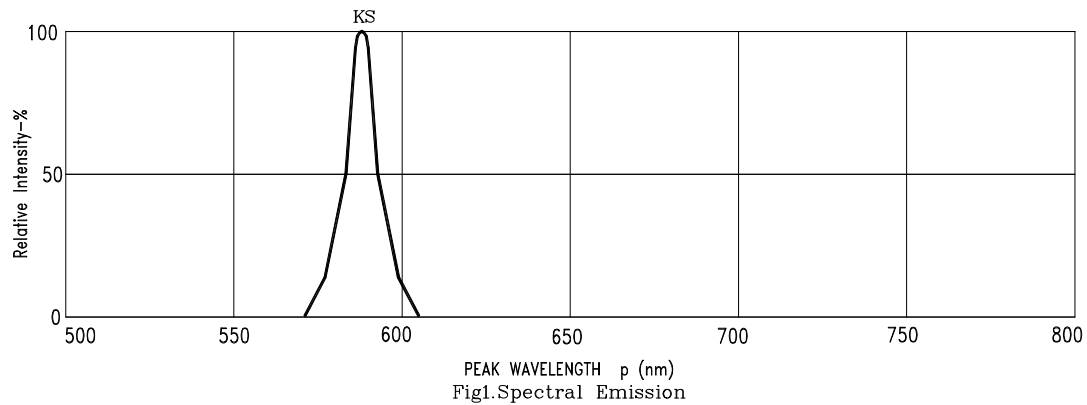
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	126	400		μcd	IF=1mA
			2750			IF=10mA
Peak Emission Wavelength	λp		588		nm	IF=20mA
Spectral Line Half-Width	Δλ		15		nm	IF=20mA
Dominant Wavelength	λd		587		nm	IF=20mA
Forward Voltage Per Segment	VF		2.05	2.6	V	IF=20mA
Reverse Current Per Segment <sup>(2)</sup>	IR			100	μA	VR=5V
Luminous Intensity Matching Ratio	Iv-m			2:1		IF=1mA

Note:

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

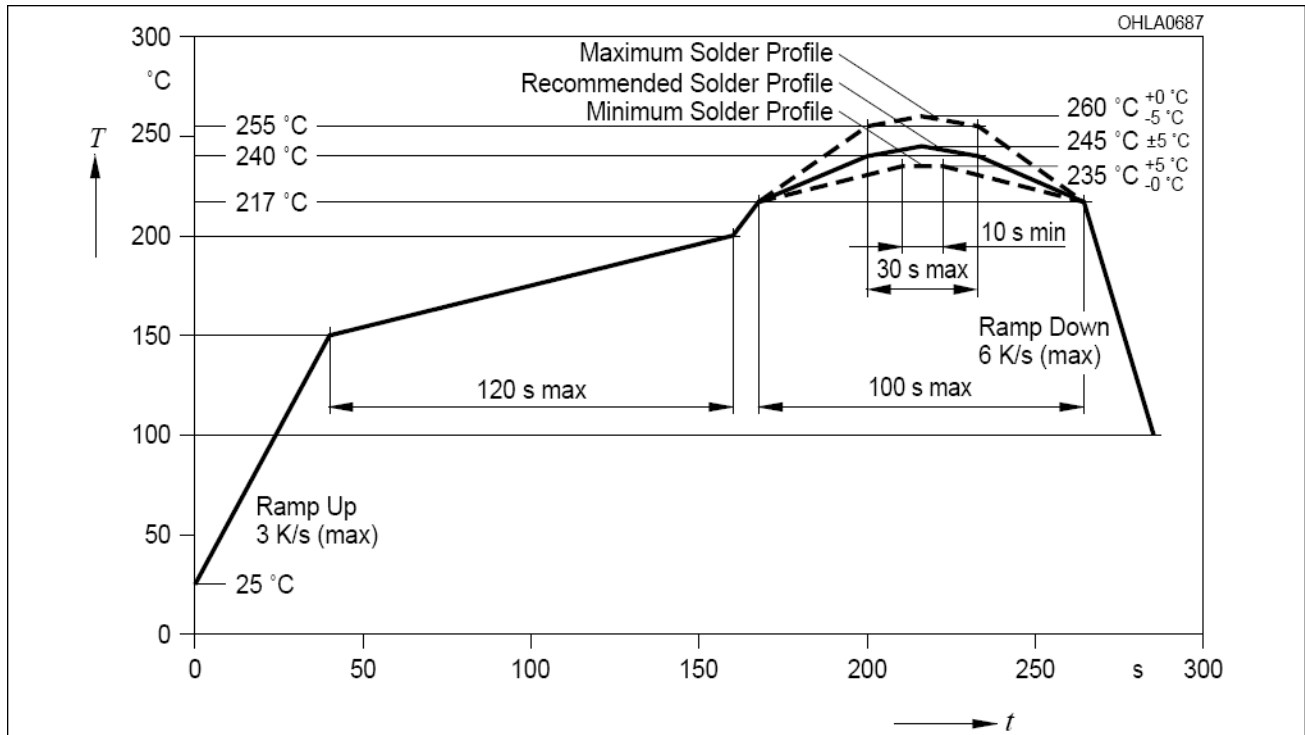
**TYPICAL ELECTRICAL / OPTICAL CHARACTERISTIC CURVES**

(25°C Ambient Temperature Unless Otherwise Noted)



NOTE : KS=AlInGaP YELLOW

**SMT SOLDERING INSTRUCTION**



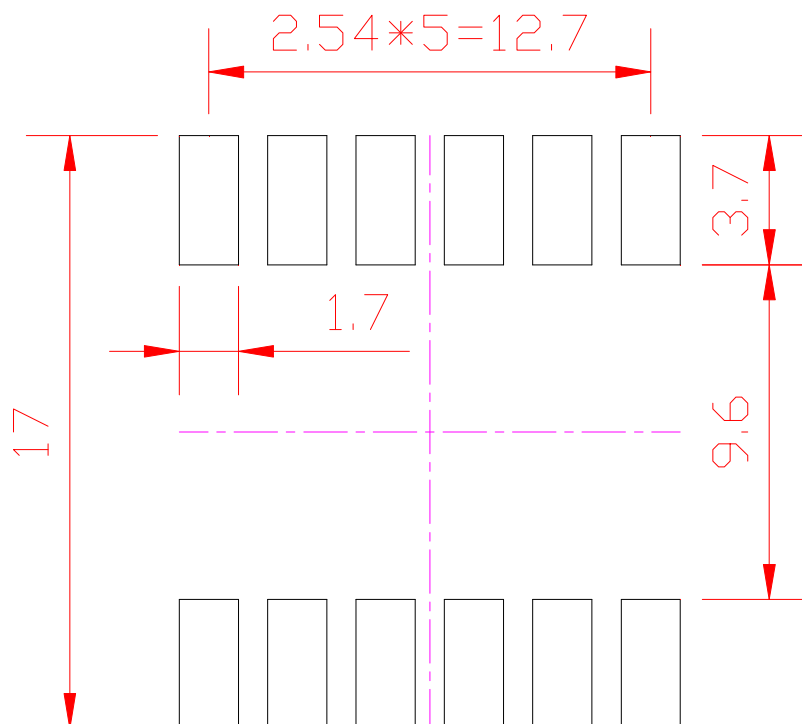
Note:

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.		

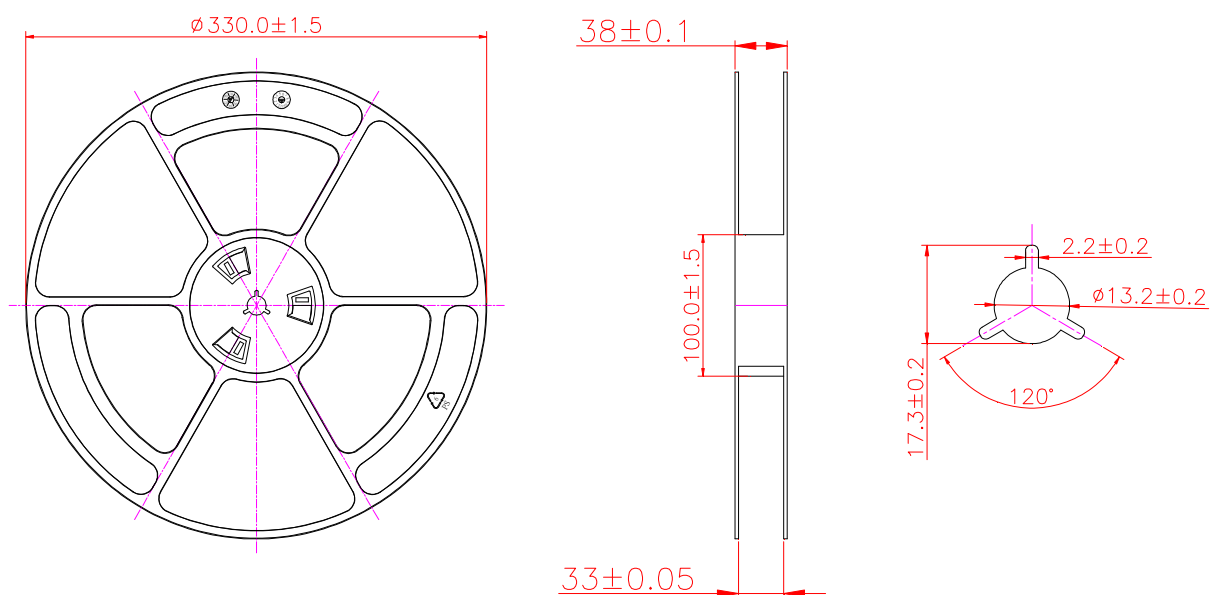
2. Number of reflow process shall be less than 2 times, and cooling process to normal temperature is required between the first and the second soldering process.

**RECOMMENDED SOLDERING PATTERN (UNIT: MM)**



Note: All dimensions are in millimeters.

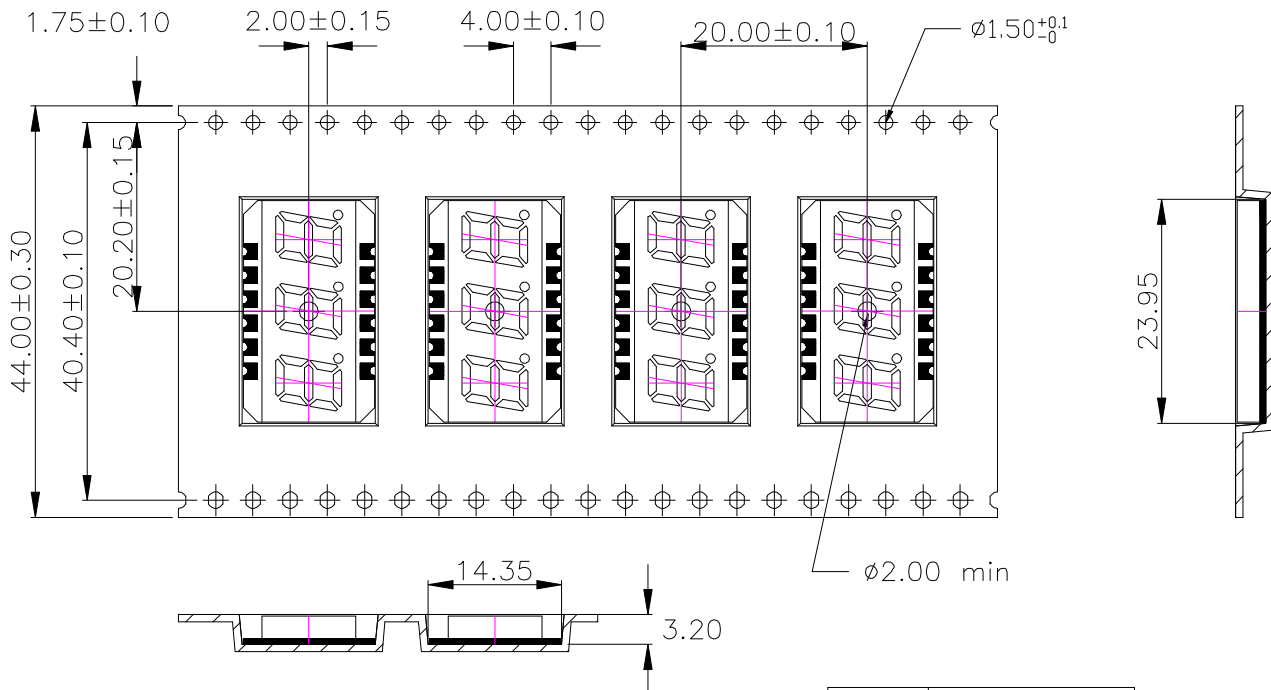
**PACKING REEL DIMENSIONS**





## PACKING CARRIER DIMENSIONS

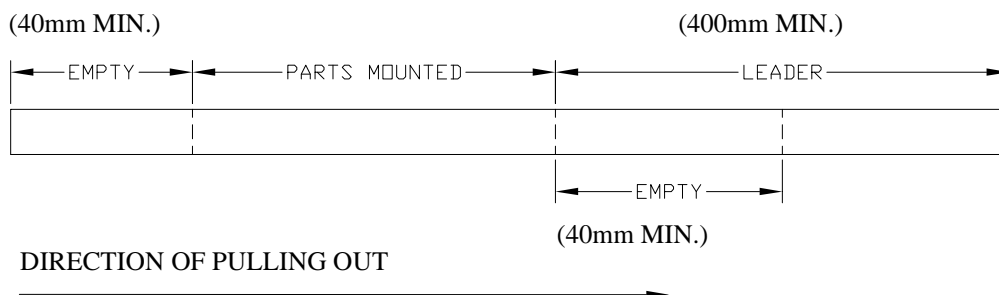
### 1. Taping parts:



1. 10 sprocket hole pitch cumulative tolerance  $\pm 0.20$ .
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 :  $0.40 \pm 0.05$ mm.
6. Packing length per 22" reel : 64.5 Meters.(1:3)
7. Component load per 13" reel : 600 pcs.

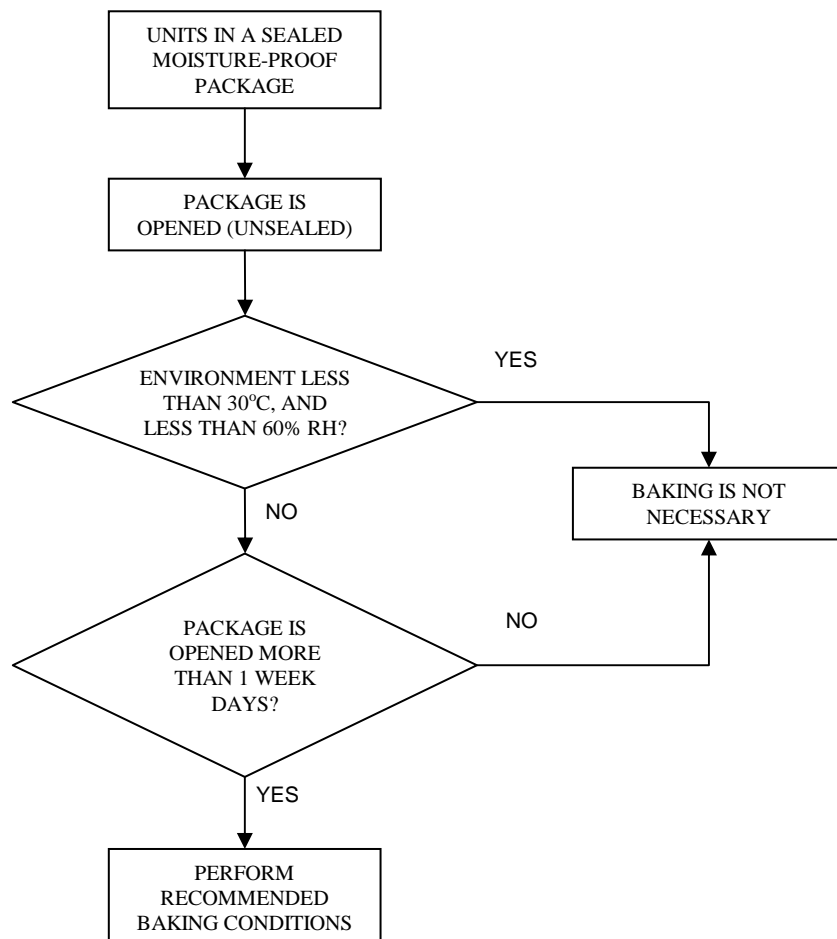
W	$44.00 \pm 0.30$
A0	$14.35 \pm 0.10$
B0	$23.95 \pm 0.10$
K0	$3.20 \pm 0.10$

### 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.**