



# LED Display

## Product Data Sheet

### LTS-4812CKR-PM

Spec No.: DS30-2011-0022

Effective Date: 11/12/2013

Revision: -

**LITE-ON DCC**

**RELEASE**

BNS-OD-FC001/A4

**LED DISPLAY****LTS-4812CKR-PM**  
**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	2013/01/28

**FEATURES**

- \* 0.39 inch (10.0 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
- \* SMD DISPLAY
- \* **LEAD FREE PACKAGE (ACCORDING TO ROHS)**

**DESCRIPTION**

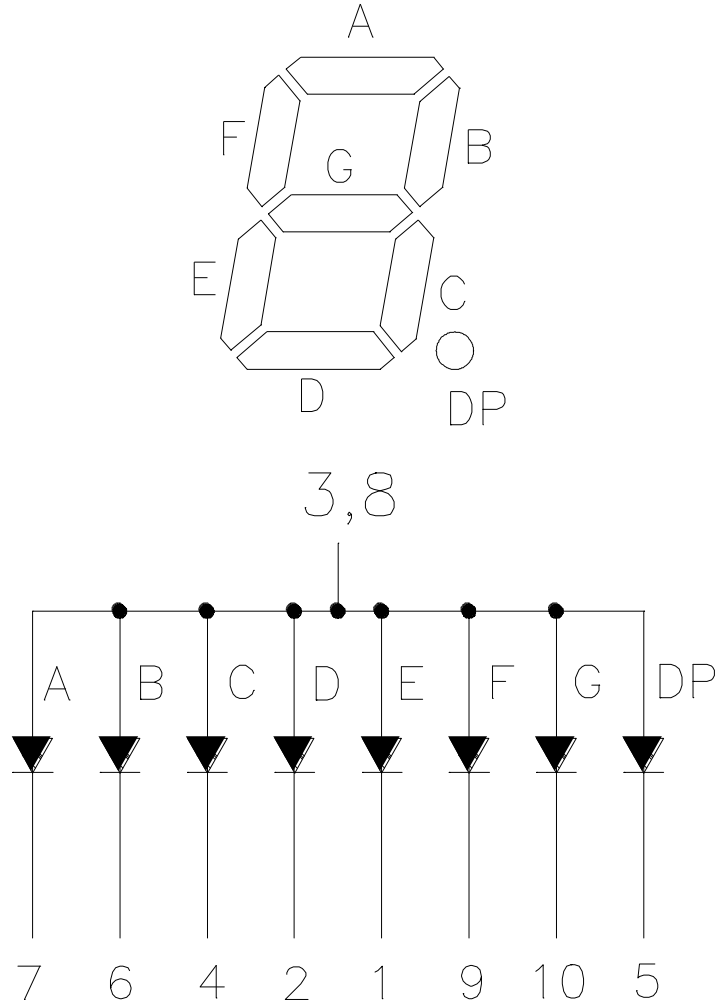
The LTS-4812CKR-PM is a 0.39 inch (10.0 mm) digit height single digit SMD display . This device uses AS-AllnGaP SUPER RED chips (AllnGaP epi on GaAs substrate). The display has gray face and white segments.

**DEVICE**

<b>PART NO.</b>	<b>DESCRIPTION</b>
AllnGaP SUPER RED	Common Anode
LTS-4812CKR-PM	



INTERNAL CIRCUIT DIAGRAM



**PIN CONNECTION**

<b>No.</b>	<b>CONNECTION</b>
1	CATHODE E
2	CATHODE D
3	COMMON ANODE
4	CATHODE C
5	CATHODE D.P.
6	CATHODE B
7	CATHODE A
8	COMMON ANODE
9	CATHODE F
10	CATHODE G

### 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
Forward Current Derating from 25 °C	0.28	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		

### ELECTRICAL / OPTICAL CHARACTERISTICS AT Ta = 25°C

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I <sub>v</sub>	201	650		μ cd	I <sub>F</sub> =1mA
			8250			I <sub>F</sub> =10mA
Peak Emission Wavelength	λ <sub>p</sub>		639		nm	I <sub>F</sub> =20mA
Spectral Line Half-Width	Δλ		20		nm	I <sub>F</sub> =20mA
Dominant Wavelength	λ <sub>d</sub>		631		nm	I <sub>F</sub> =20mA
Forward Voltage Per Segment	V <sub>F</sub>		2.05	2.6	V	I <sub>F</sub> =20mA
Reverse Current Per Segment <sup>(2)</sup>	I <sub>R</sub>			100	uA	V <sub>R</sub> =5V
Luminous Intensity Matching Ratio	I <sub>v</sub> -m			2:1		I <sub>F</sub> =10mA

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 ≤ 2.5%

**LUMINOUS INTENSITY BIN SELECTIONS: IF=1mA (Unit : ucd)****(Only one BIN for each reel)**

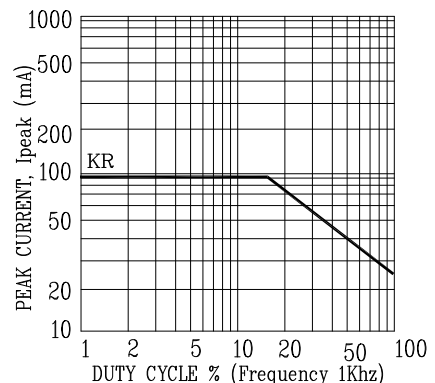
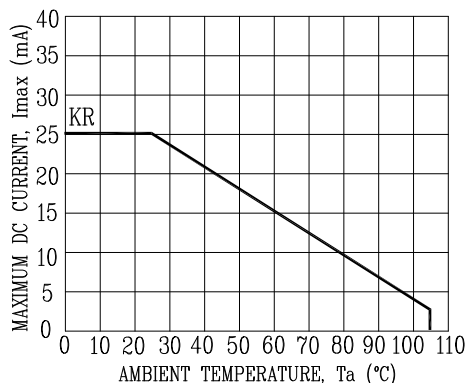
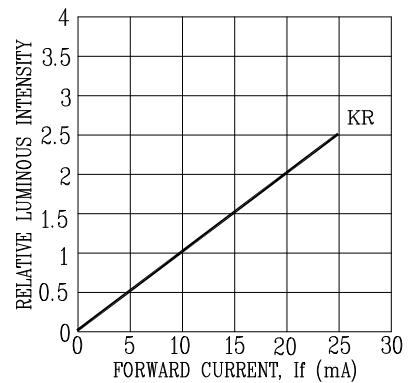
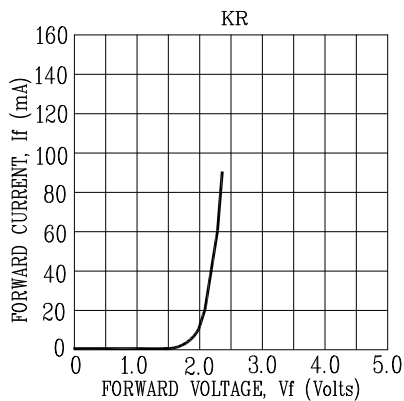
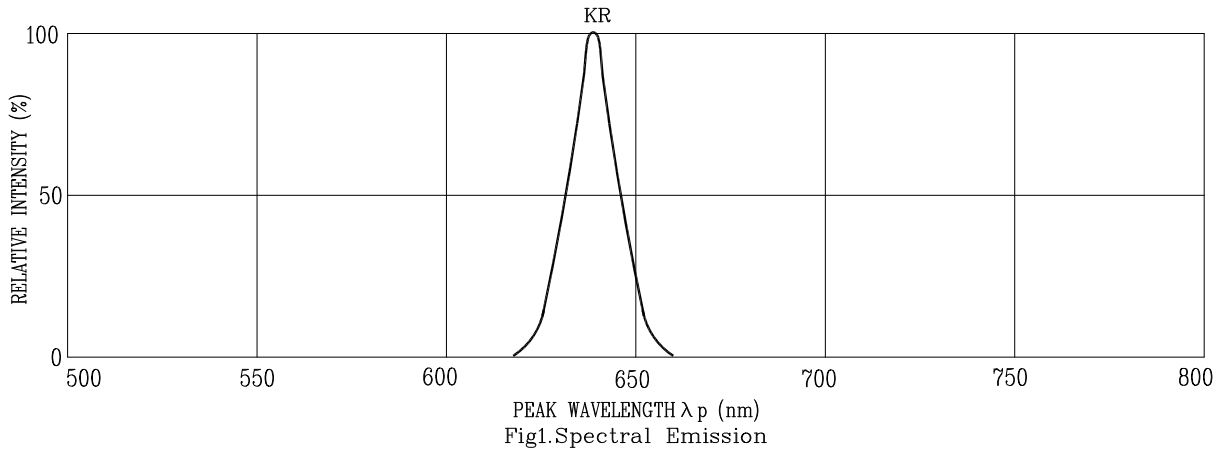
Luminous Intensity		Unit : $\mu$ cd @ 1mA
Rank	Min.	Max.
E	201	320
F	321	500
G	501	800
H	801	1300
J	1301	2100

Tolerance on each Intensity bin is +/-15%



**TYPICAL ELECTRICAL / OPTICAL CHARACTERISTIC CURVES**

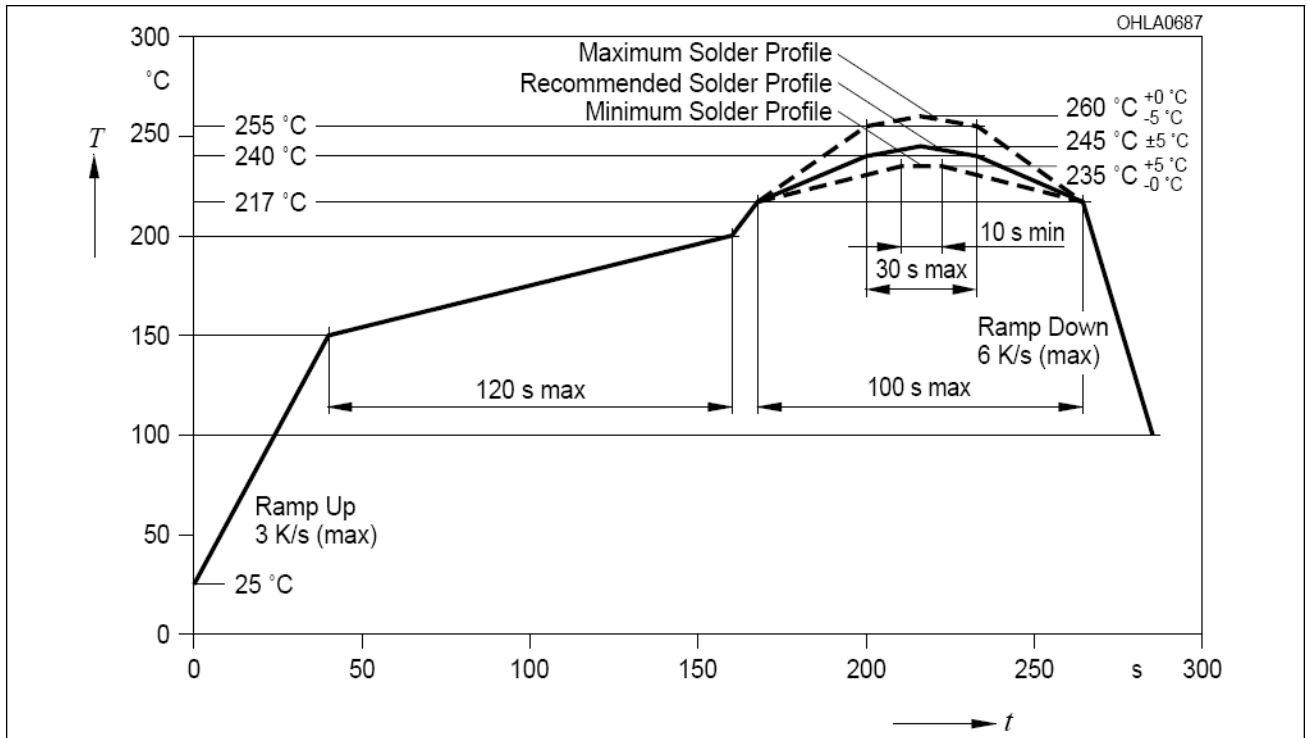
(25°C Ambient Temperature Unless Otherwise Noted)



NOTE : KR=AlInGaP SUPER RED

**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)



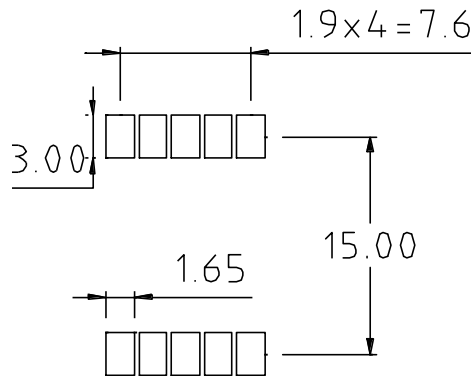
Note:

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.		

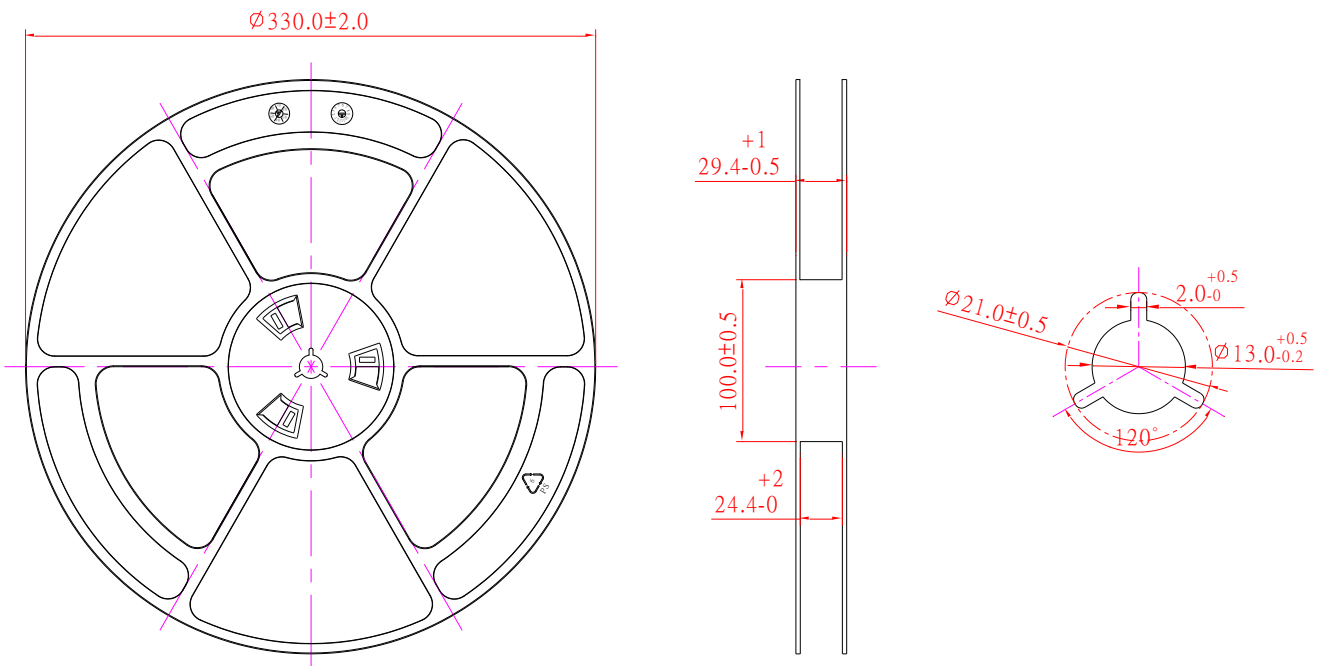
2. Number of reflow process shall be less than 2 times, and cooling process to normal temperature is required between the first and the second soldering process.

**RECOMMENDED SOLDERING PATTERN**



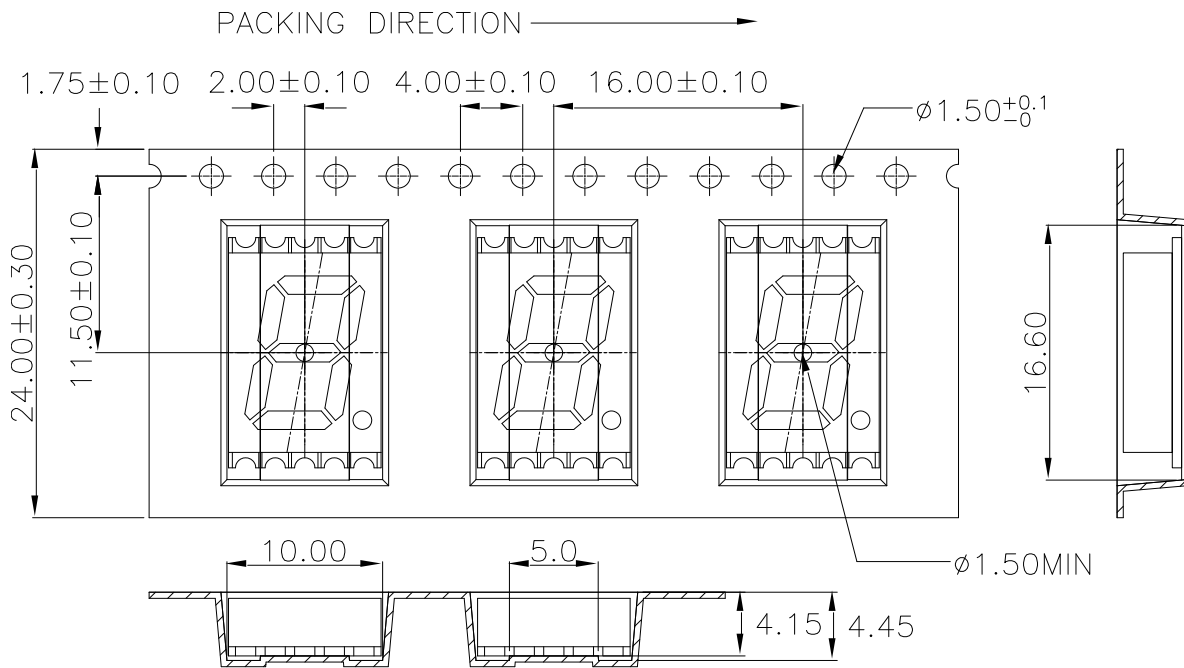
Note: All dimensions are in millimeters.

**PACKING REEL DIMENSIONS**



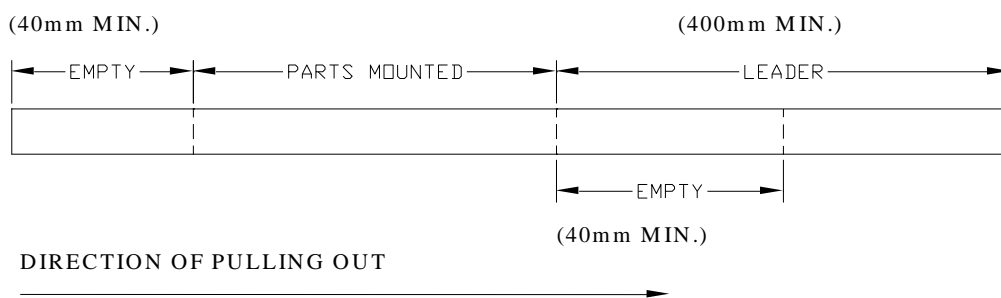
**PACKING CARRIER DIMENSIONS**

1. Taping parts:



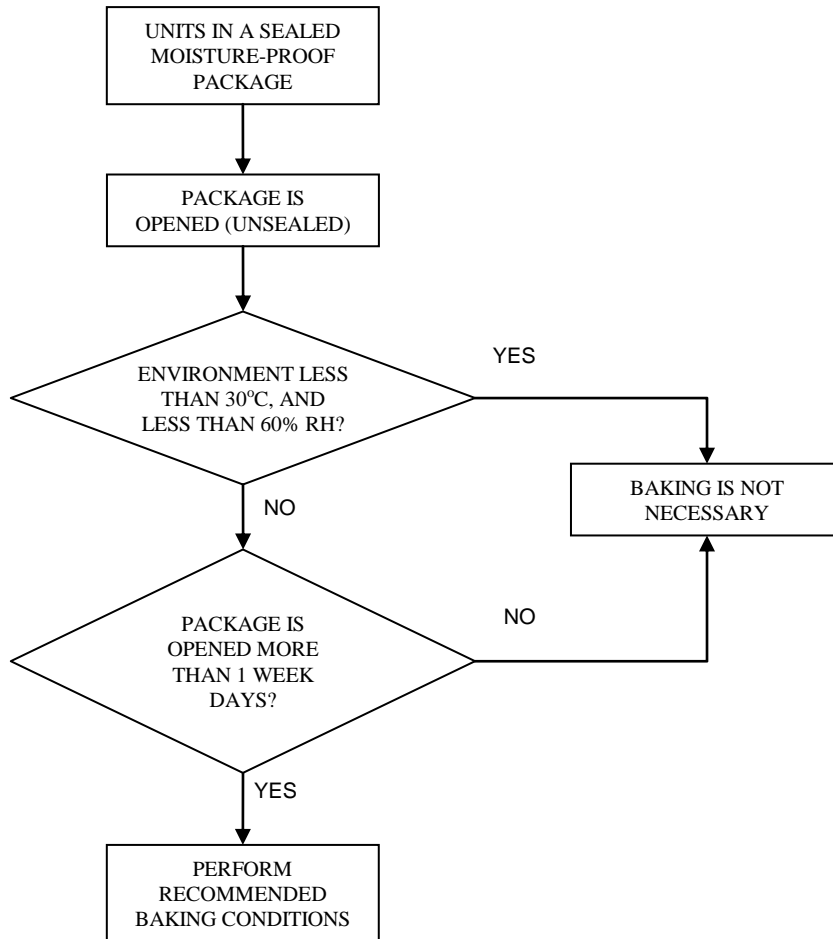
10 sprocket hole pitch cumulative tolerance  $\pm 0.20$ .  
 Carrier camber is within 1 mm in 250 mm.  
 Thickness :  $0.40 \pm 0.05$ mm.  
 All dimensions meet EIA-481-C requirements.

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.**

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