LED DISPLAY

LTC-4727KR-01

Rev	Description	By	Date DD/MM/YYYY
01	Preliminary SPEC	Chrisada P.	22/06/2018
Above data for PD and Customer tracking only			

LED DISPLAY
LTC-4727KR-01

1. Description

The LTC-4727KR-01 0.4 inch (10.0 mm) digit height quadruple digit seven-segment display. This device utilizes AlInGaP super red LED chips, which are made from AlInGaP on a non-transparent GaAs substrate, and has a gray face and white segments.

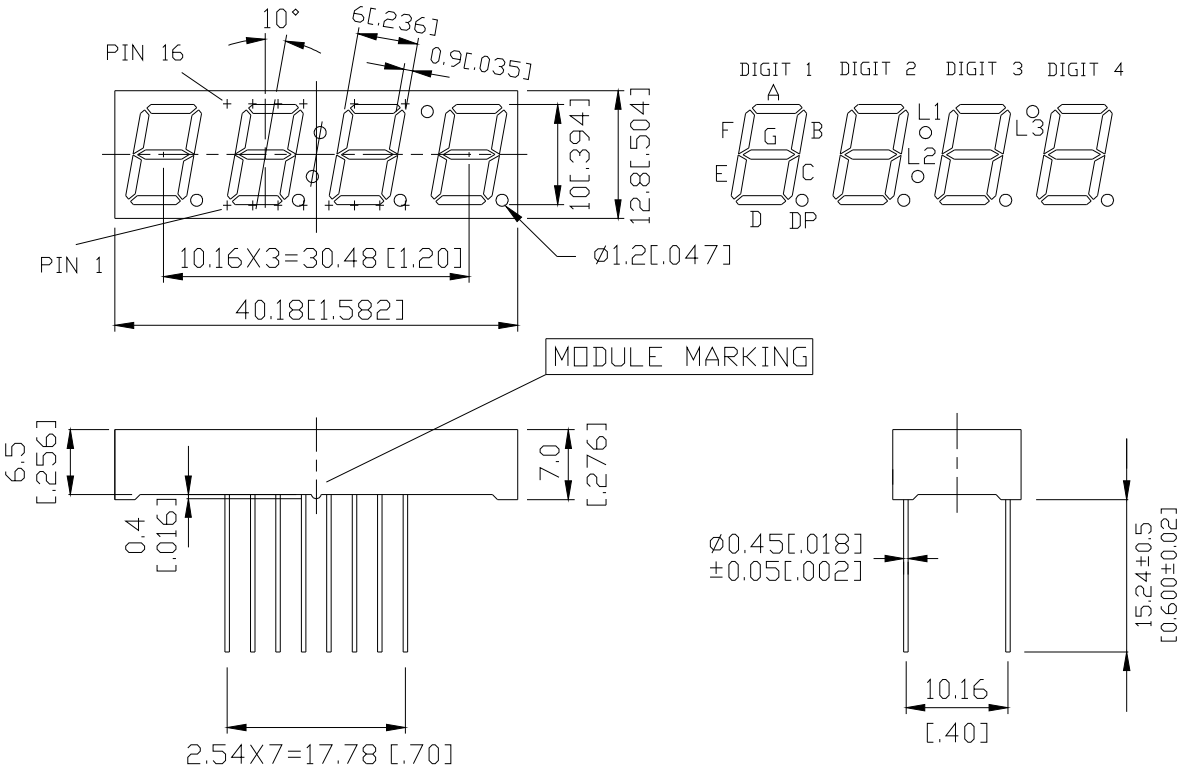
1.1 Features

- 0.4 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
- **LEAD-FREE PACKAGE(ACCORDING TO ROHS)**

1.2 Device

Part No	Description
AlInGaP Super Red	Multiplex Common Cathode
LTC-4727KR-01	Rt. Hand Decimal

2. Package Dimensions

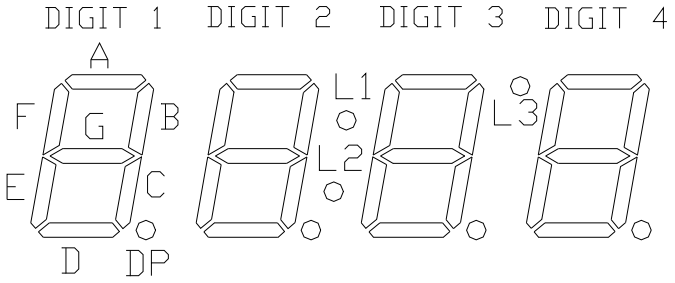


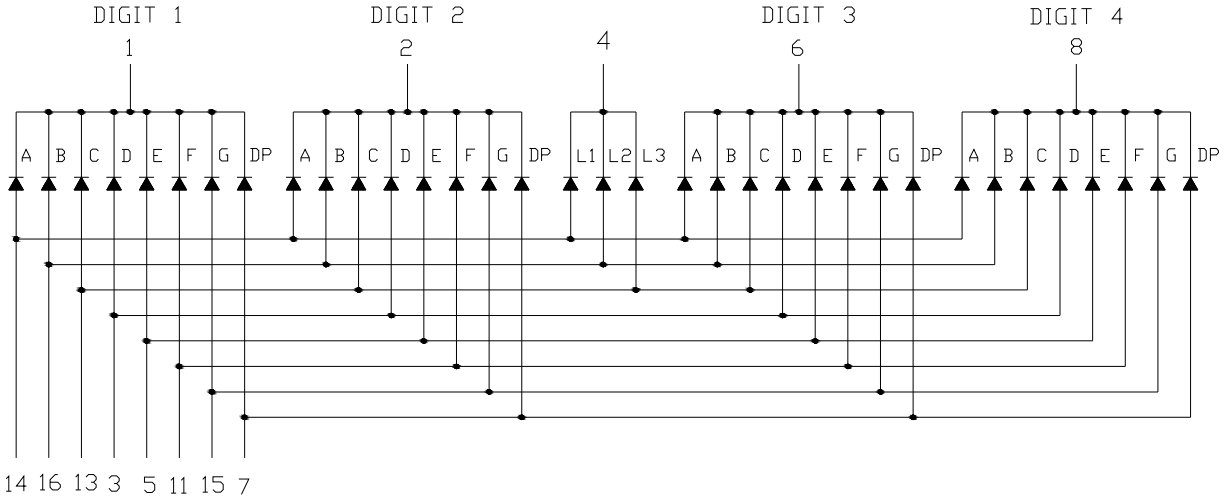
MODULE MARKING:
PART NO.:LTC-4727KR-01
YYWW:DATE CODE MFG:MANUFACTURING COUNTRY Z:BIN CODE

Notes :

1. All dimensions are in millimeters. Tolerances are ± 0.25mm (0.01“) unless otherwise noted.
2. Foreign materials on segment ≦10mils.
3. Bubble in segment ≦10mils.
4. Bending≦1% of reflector length.
5. Ink contamination (surface) ≦20mils.
6. Pin tip’s shift tolerance is ± 0.4 mm.
7. Recommend the best PCB Hole: diameter 1.4 mm.

3. Internal Circuit Diagram





4. Pin Connection

No.	CONNECTION
1	COMMON CATHODE DIGIT 1
2	COMMON CATHODE DIGIT 2
3	ANODE D
4	COMMON CATHODE L1,L2,L3
5	ANODE E
6	COMMON CATHODE DIGIT 3
7	ANODE DP
8	COMMON CATHODE DIGIT 4
9	NO CONNECTION
10	NO PIN
11	ANODE F
12	NO PIN
13	ANODE C,L3
14	ANODE A,L1
15	ANODE G
16	ANODE B,L2

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)	90	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℃	
Solder Conditions: 1/16 inch below seating plane for 3 seconds at 260℃., or temperature of unit (during assembly) not over max. temperature rating above		

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

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Test Condition
Average Luminous Intensity per segment	IV	320	975		ucd	IF=1mA
Average Luminous Intensity per DP;L1;L2;L3		50				
Peak Emission Wavelength	λp		639		nm	IF=20mA
Spectral Line Half-Width	Δλ		20		nm	IF=20mA
Dominant Wavelength	λd		631		nm	IF=20mA
Forward Voltage Per Chip	VF		2.00	2.60	V	IF=20mA
Reverse Current Per Segment(*2)	IR			100	μA	VR=5V
Luminous Intensity Matching Ratio (Similar Light Area)	IV-m			2:1		IF=1mA
Dominant Wavelength Matching Delta (Similar Light Area)	△λd			4	nm	IF=20mA

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 $\leq$ 2.5%.

6. Typical Electrical / Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

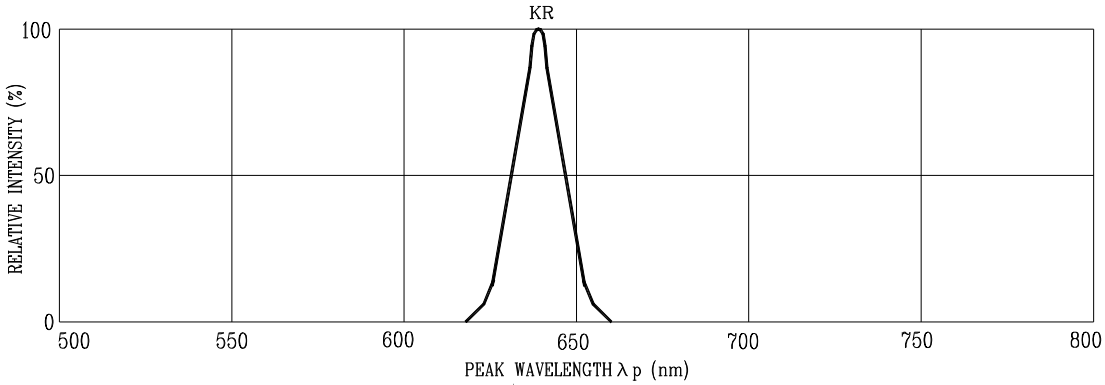


Fig1.Spectral Emission

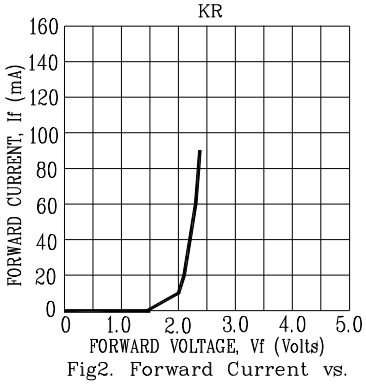


Fig2. Forward Current vs. Forward Voltage

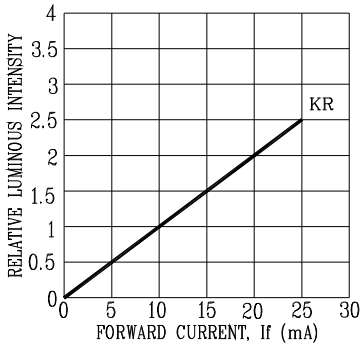


Fig3. Relative Luminous Intensity vs. DC Forward Current

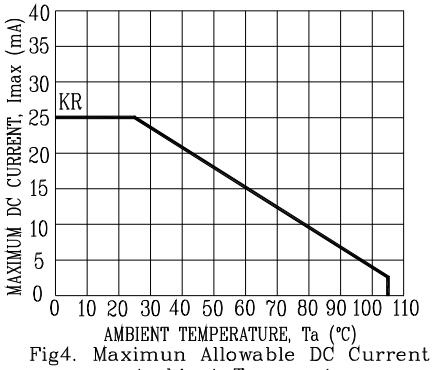


Fig4. Maximun Allowable DC Current vs. Ambient Temperature

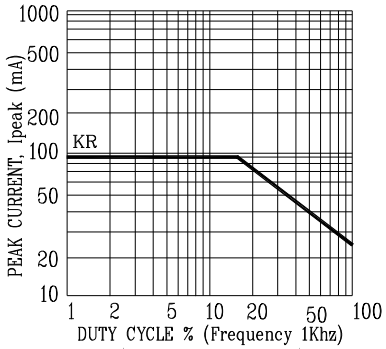


Fig5. Maximum Peak Current vs. Duty Cycle %

NOTE : KR=AlInGaP SUPER RED

7. Reliability Test

Classification	Test Item		Test Condition	Reference Standard
Endurance Test	Operation Life	RTOL	Ta=Under Room Temperature IF=As per data sheet maximum Rating * Test Time= 1000Hrs (-24Hrs, +72Hrs)	MIL-STD-750D:1026 (1995) MIL-STD-883E:1005 (1996) JIS C 7021: B-1 (1982)
	High Temperature High Humidity Storage	THS	Ta= 65±5°C RH=90 ~ 95% Test Time=240Hrs (±2Hrs)	MIL-STD-202G:103B (2002) JIS C 7021: B-11 (1982)
	High Temperature High Humidity Reverse Bias	H3TRB	Ta= 65±5°C RH=90 ~ 95%, VR=5V Test Time=500Hrs (-24Hrs, +48Hrs)	JIS C 7021: B-11 (1982)
	High Temperature Storage	HTS	Ta= 105±5°C Test Time=1000Hrs (-24Hrs, +72Hrs)	MIL-STD-883E:1008 (1996) JIS C 7021: B-10 (1982)
	Low Temperature Storage	LTS	Ta= -35±5°C Test Time=1000Hrs (-24Hrs, +72Hrs)	JIS C 7021: B-12 (1982)
Environmental Test	Temperturre Cycling	TC	105°C ~ 25°C ~ -35°C ~ 25°C 30mins ~ 5mins ~ 30mins ~ 5mins 30 Cycles	MIL-STD-202G:107D (2002) MIL-STD-750D:1051 (1995) MIL-STD-883E:1010 (1996) JIS C 7021: A-4 (1982)
	Thermal Shock	TS	105 ±5°C ~ -35 ±5°C 30mins ~ 30mins 30 Cycles	MIL-STD-202G:107D (2002) MIL-STD-750D:1051 (1995) MIL-STD-883E:1011 (1996)
	Solder Resistance	SR	T.Sol=260 ±5°C Dwell Time= 10 ±1 secs (For solder pin only)	MIL-STD-202G:210A (2002) MIL-STD-750D:2031 (1995) JIS C 7021: A-1 (1982)
	Solderability	SA	T.Sol=245 ±5°C Dwell Time= 5 ±1 secs (For solder pin only)	MIL-STD-202G:208D (2002) MIL-STD-750D:2026 (1995) MIL-STD-883E:2003 (1996) JIS C 7021: A-2 (1982)

* (Check point: 0th, 168th, 500th, 800th, 1000th Hrs)
Follow as : QS-4-00-01 Reliability Test Conditions

8. Soldering Profile

8.1 Auto Soldering

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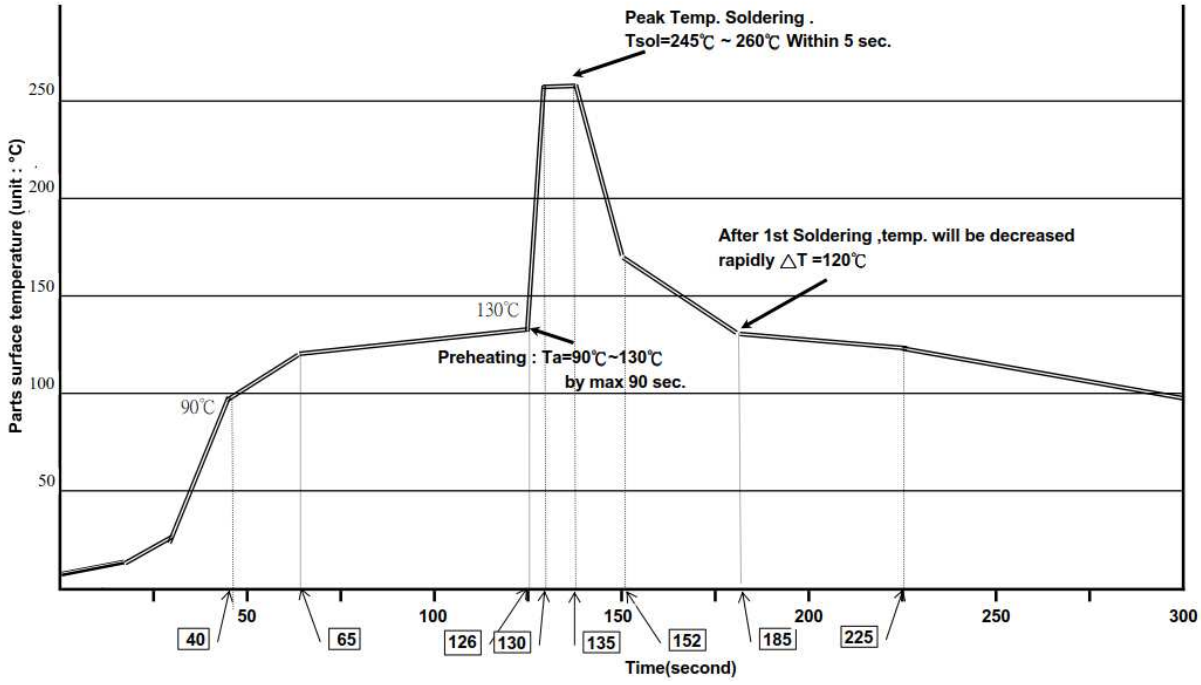
** Flow(=Wave soldering) condition with temperature for Pb free Soldering



8.2 Manual Soldering

Solder Conditions: 1/16 inch below seating plane for 3 seconds at 260℃, or temperature of unit (du ring assembly) not over max. Temperature rating above.