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SINGLE DIGIT LED DISPLAY (1.5 Inch)



Lead-Free Parts

**LSD1505/65F-XX-PF**

**DATA SHEET**

DOC. NO : QW0905- LSD1505/65F-XX-PF

REV. : C

DATE : 11 - Jul. - 2008



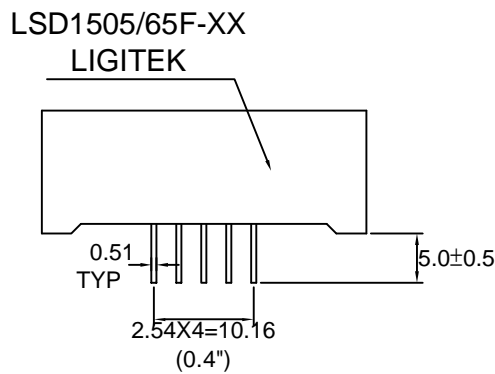
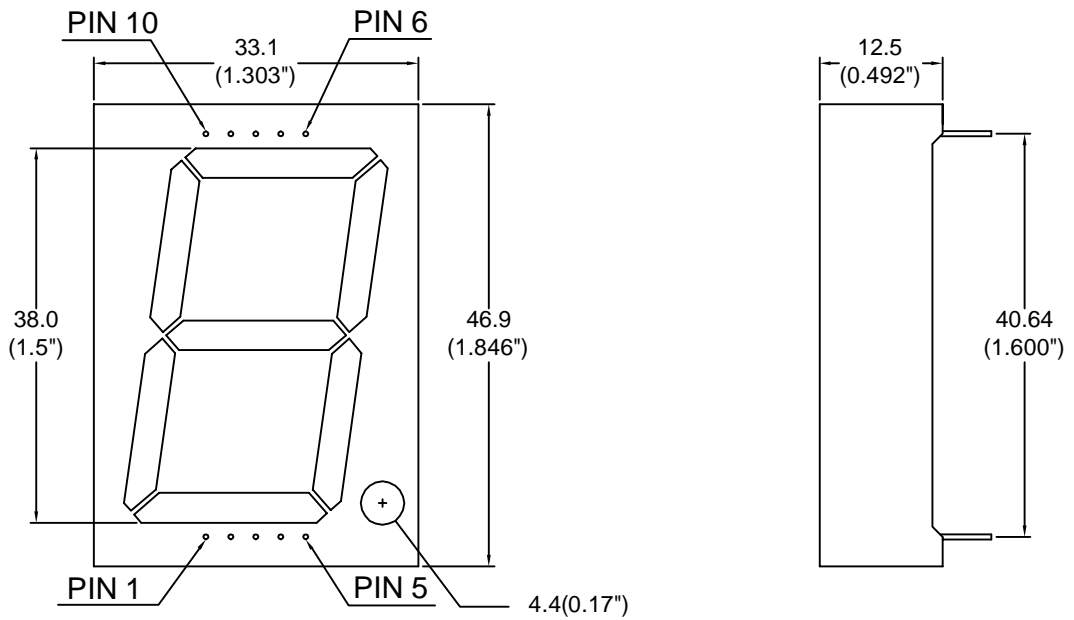
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PART NO. LSD1505/65F-XX-PF

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### Package Dimensions

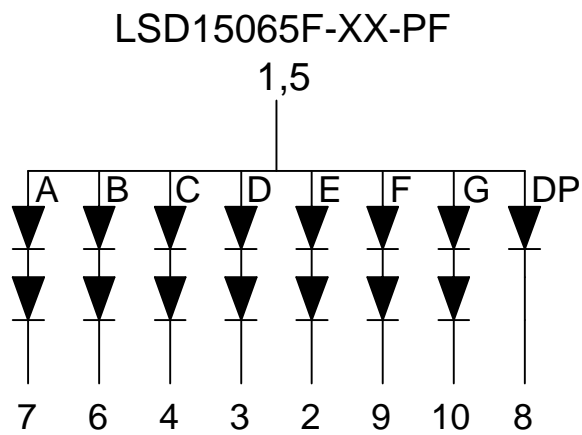
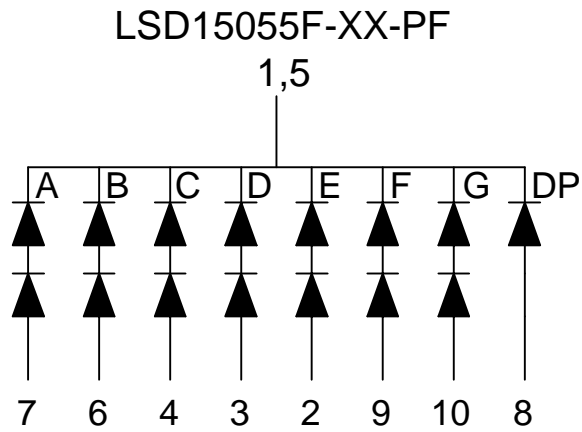


PIN NO.1 —

Note : 1.All dimension are in millimeters and (Inch) tolerance is  $\pm 0.25\text{mm}$  unless otherwise noted.  
2.Specifications are subject to change without notice.



Internal Circuit Diagram





Electrical Connection

| PIN NO. | LSD15055F-XX-PF | PIN NO. | LSD15065F-XX-PF |
|---------|-----------------|---------|-----------------|
| 1.      | Common Cathode  | 1.      | Common Anode    |
| 2.      | Anode E         | 2.      | Cathode E       |
| 3.      | Anode D         | 3.      | Cathode D       |
| 4.      | Anode C         | 4.      | Cathode C       |
| 5.      | Common Cathode  | 5.      | Common Anode    |
| 6.      | Anode B         | 6.      | Cathode B       |
| 7.      | Anode A         | 7.      | Cathode A       |
| 8.      | Anode DP        | 8.      | Cathode DP      |
| 9.      | Anode F         | 9.      | Cathode F       |
| 10.     | Anode G         | 10.     | Cathode G       |



Absolute Maximum Ratings at Ta=25 °C

| Parameter                                                   | Symbol | Ratings   | UNIT |
|-------------------------------------------------------------|--------|-----------|------|
|                                                             |        | SRF       |      |
| Forward Current Per Chip                                    | IF     | 30        | mA   |
| Peak Forward Current Per Chip (Duty 1/10,0.1ms Pulse Width) | IFP    | 90        | mA   |
| Power Dissipation Per Chip                                  | PD     | 75        | mW   |
| Reverse Current Per Any Chip                                | Ir     | 10        | μA   |
| Electrostatic Discharge( * )                                | ESD    | 2000      | V    |
| Operating Temperature                                       | Topr   | -25 ~ +85 | °C   |
| Storage Temperature                                         | Tstg   | -25 ~ +85 | °C   |

\* Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing these LED. All devices, equipment and machinery must be properly grounded.

Part Selection And Application Information(Ratings at 25°C)

| PART NO         | CHIP     |         | common cathode or anode | λ D (nm) | Δ λ (nm) | Electrical |      |      |         |      | IV-M |
|-----------------|----------|---------|-------------------------|----------|----------|------------|------|------|---------|------|------|
|                 | Material | Emitted |                         |          |          | Vf(v)      |      |      | Iv(mcd) |      |      |
|                 |          |         |                         |          |          | Min.       | Typ. | Max. | Min.    | Typ. |      |
| LSD15055F-XX-PF | AlGaInP  | Red     | Common Cathode          | 630      | 20       | 1.5        | 1.8  | 2.4  | 31      | 50   | 2:1  |
| LSD15065F-XX-PF |          |         | Common Anode            |          |          |            |      |      |         |      |      |

Note : 1.The forward voltage data did not including ±0.1V testing tolerance.  
2. The luminous intensity data did not including ±15% testing tolerance.

**Test Condition For Each Parameter**

| Parameter                         | Symbol           | Unit    | Test Condition       |
|-----------------------------------|------------------|---------|----------------------|
| Forward Voltage Per Chip          | V <sub>f</sub>   | volt    | I <sub>f</sub> =20mA |
| Luminous Intensity Per Chip       | I <sub>v</sub>   | mcd     | I <sub>f</sub> =10mA |
| Dominant Wavelength               | $\lambda$ D      | nm      | I <sub>f</sub> =20mA |
| Spectral Line Half-Width          | $\Delta \lambda$ | nm      | I <sub>f</sub> =20mA |
| Reverse Current Any Chip          | I <sub>r</sub>   | $\mu$ A | V <sub>r</sub> =5V   |
| Luminous Intensity Matching Ratio | IV-M             |         |                      |



### Typical Electro-Optical Characteristics Curve

#### SRF CHIP

Fig.1 Forward current vs. Forward Voltage

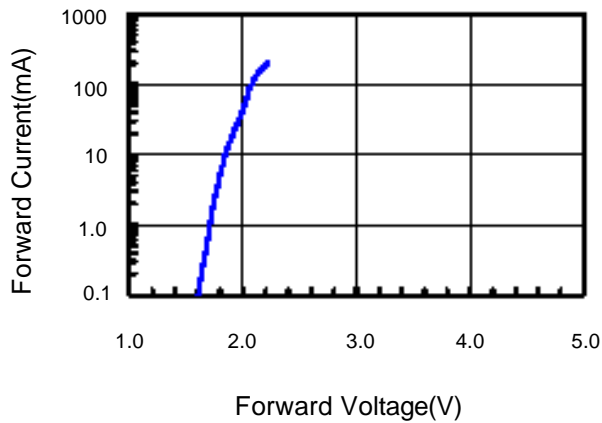


Fig.2 Relative Intensity vs. Forward Current

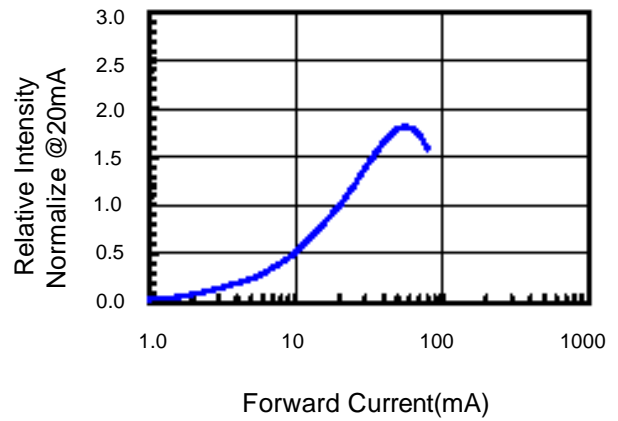


Fig.3 Forward Voltage vs. Temperature

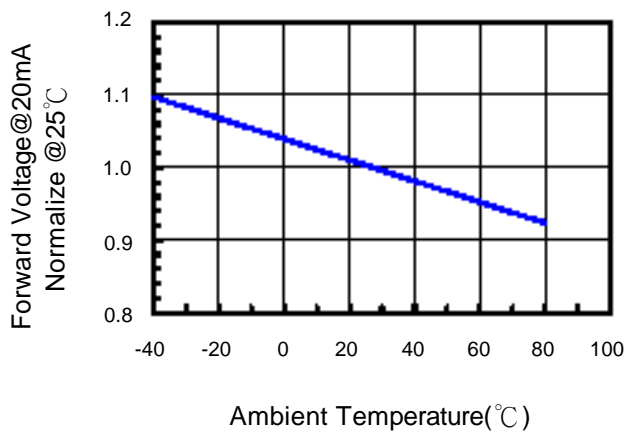


Fig.4 Relative Intensity vs. Temperature

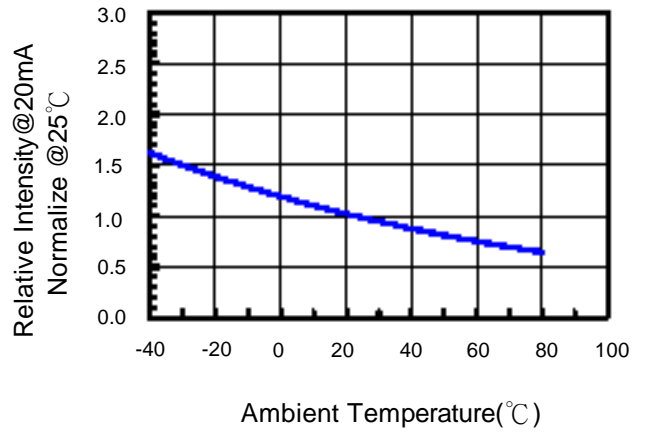
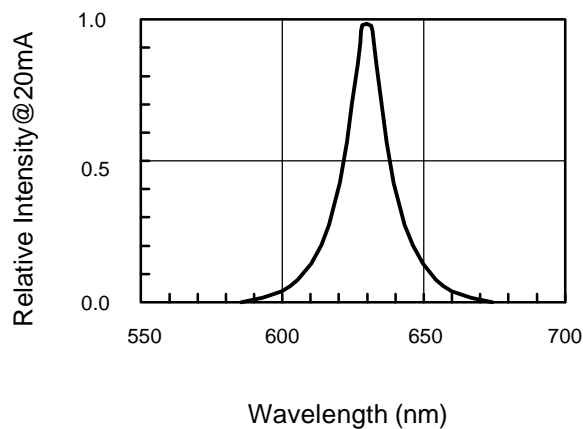


Fig.5 Relative Intensity vs. Wavelength





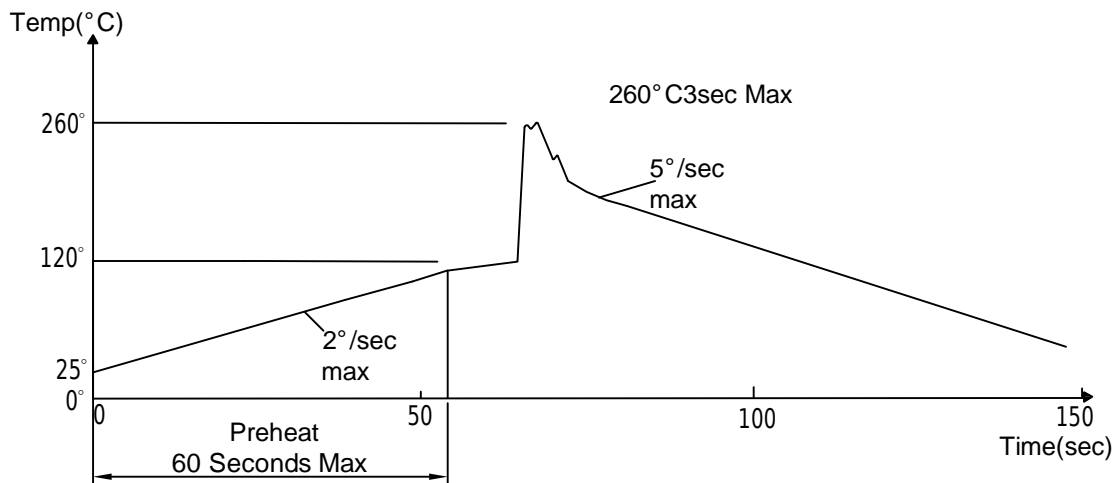
### Soldering Condition(Pb-Free)

#### 1.Iron:

Soldering Iron:30W Max  
Temperature 350 ° C Max  
Soldering Time:3 Seconds Max(One time only)  
Distance:Solder Temperature 1/16 Inch Below Seating  
Plane For 3 Seconds At 260 ° C

#### 2.Wave Soldering Profile

Dip Soldering  
Preheat: 120° C Max  
Preheat time: 60seconds Max  
Ramp-up  
2° C/sec(max)  
Ramp-Down:-5° C/sec(max)  
Solder Bath:260° C Max  
Dipping Time:3 seconds Max  
Distance:Solder Temperature 1/16 Inch Below Seating  
Plane For 3 Seconds At 260° C



Note: 1.Wave solder should not be made more than one time.  
2.You can just only select one of the soldering conditions as above.



**Reliability Test:**

| Test Item                           | Test Condition                                                         | Description                                                                                                                                                             | Reference Standard                                                             |
|-------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Operating Life Test                 | 1.Under Room Temperature<br>2.If=10mA<br>3.t=1000 hrs (-24hrs, +72hrs) | This test is conducted for the purpose of determining the resistance of a part in electrical and thermal stressed.                                                      | MIL-STD-750: 1026<br>MIL-STD-883: 1005<br>JIS C 7021: B-1                      |
| High Temperature Storage Test       | 1.Ta=105 °C±5°C<br>2.t=1000 hrs (-24hrs, +72hrs)                       | The purpose of this is the resistance of the device which is laid under condition of high temperature for hours.                                                        | MIL-STD-883:1008<br>JIS C 7021: B-10                                           |
| Low Temperature Storage Test        | 1.Ta=-40 °C±5°C<br>2.t=1000 hrs (-24hrs, +72hrs)                       | The purpose of this is the resistance of the device which is laid under condition of low temperature for hours.                                                         | JIS C 7021: B-12                                                               |
| High Temperature High Humidity Test | 1.Ta=65 °C±5°C<br>2.RH=90 %~95%<br>3.t=240hrs ±2hrs                    | The purpose of this test is the resistance of the device under tropical for hours.                                                                                      | MIL-STD-202:103B<br>JIS C 7021: B-11                                           |
| Thermal Shock Test                  | 1.Ta=105 °C±5°C & -40 °C±5°C (10min) (10min)<br>2.total 10 cycles      | The purpose of this is the resistance of the device to sudden extreme changes in high and low temperature.                                                              | MIL-STD-202: 107D<br>MIL-STD-750: 1051<br>MIL-STD-883: 1011                    |
| Solder Resistance Test              | 1.T.Sol=260 °C±5°C<br>2.Dwell time= 10 ±1sec.                          | This test intended to determine the thermal characteristic resistance of the device to sudden exposures at extreme changes in temperature when soldering the lead wire. | MIL-STD-202: 210A<br>MIL-STD-750: 2031<br>JIS C 7021: A-1                      |
| Solderability Test                  | 1.T.Sol=230 °C±5°C<br>2.Dwell time=5 ±1sec                             | This test intended to see soldering well performed or not.                                                                                                              | MIL-STD-202: 208D<br>MIL-STD-750: 2026<br>MIL-STD-883: 2003<br>JIS C 7021: A-2 |