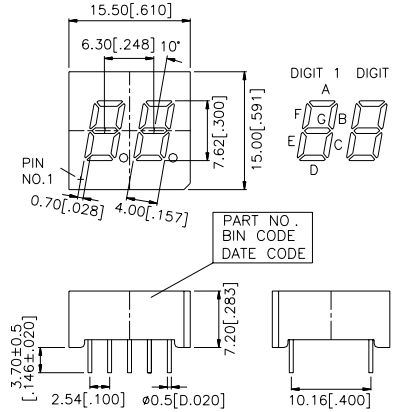
0.3" Dual Digit Numeric LED Displays

LTD-322 Series
LTD-323

Features

- 0.3 inch (7.62mm) digit height
- Continuous uniform segments.
- Choices of five bright colors-AlGaAs red/bright red/ green/yellow/red orange.
- Low power requirement.
- Excellent characters appearance.
- High contrast.
- High brightness.
- Wide viewing angle.
- Solid state reliability.
- Common anode or Common cathode modles.
- Two digit package simplifies alignments & assembly.
- Leads on 0.1" (2.54mm) centers.
- Categorized for luminous intensity.
- I.C. compatiable.
- Easy mounting on P.C. board.

Package Dimensions



Notes:All dimensions are in millimeters (inches).
Tolerance:±0.25mm (0.01") unless otherwise noted.

Description

The LTD-322/323 series are 0.3 inch (7.62mm) height dual digit displays. All device displays have black face and white segments.

The AlGaAs red seven segment displays are designed for appleications requiring low power consumption. They are tested and selected for the excellent low current characteristics to ensure that the segments are matched at low current. Drive current as low as 1 mA per segment is available.

The AlGaAs red series device utilize LED chips which are made from AlGaAs on a non-transparent GaAs substrate. The bright red and green series devices utilize LED chips which are made from GaP on a transparent GaP substrate. The yellow, red orange series devices utilize LED chips which are made from GaAsP on a transparent GaP substrate.

Devices

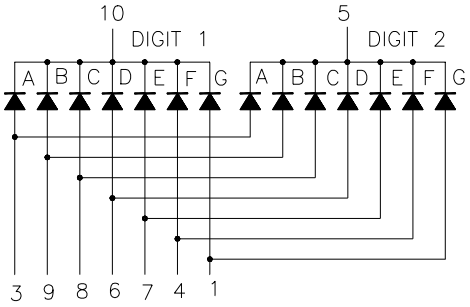
Part No. LTD-					Description	Internal Circuit Diagram
AlGaAs Red	Bright Red	Green	Yellow	Red Orange		
322WC	322P	322G	322Y	322E	Dualplex Common Cathode, Rt. Hand Decimal	A
323WC	323P	323G	323Y	323E	Dualplex Common Anode, Rt. Hand Decimal	B

Pin Connection

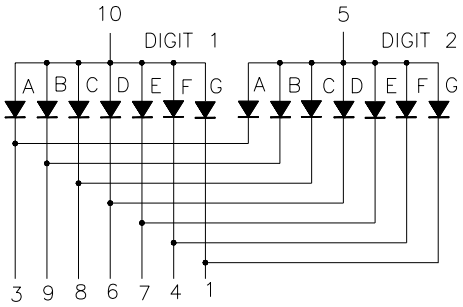
Pin No.	Connection	
	A.LTD-322	B.LTD-323
1.	Anode G	Cathode G
2.	No Pin	No Pin
3.	Anode A	Cathode A
4.	Anode F	Cathode F
5.	Common Cathode (Digit 2)	Common Anode (Digit 2)
6.	Anode D	Cathode D
7.	Anode E	Cathode E
8.	Anode C	Cathode C
9.	Anode B	Cathode B
10.	Common Cathode (Digit 1)	Common Anode (Digit 1)

Internal Circuit Diagrams

A.LTD-322



B.LTD-323



DISPLAYS

Absolute Maximum Rating at Ta=25℃

Parameter	AlGaAs Red	Bright Red	Green	Yellow	Red Orange	Unit
Power Dissipation Per Segment	75	40	75	60	75	mW
Peak Forward Current Per Segment (1/10 Duty Cycle, 0.1ms Pulse Width)	125	60	100	80	100	mA
Continuous Forward Current Per Segment Derating Linear from 25℃ Per Segment	30 0.4	15 0.2	25 0.33	20 0.27	25 0.33	mA mA/℃
Reverse Voltage Per Segment	5	5	5	5	5	V
Operating Temperature Range	-35℃ to +85℃					
Stroage Temperature Range	-35℃ to +85℃					
Solder Temperature 1/16 Inch Below Seating Plane for 3 Seconds at 260℃						

Electrical/Optical Characteristics at Ta=25℃

LTD-322WC/323WC

Parameter	Symbol	Min.	Typ.	Max.	Unit	Tset Condition
Average Luminous Intensity	I_V	200	600		μcd	I_F=1mA
			3100			I_F=5mA
Peak Emission Wavelength	λP		660		nm	I_F=20mA
Spectral Line Half-Width	Δλ		35		nm	I_F=20mA
Dominant Wavelength	λd		638		nm	I_F=20mA
Forward Voltage, Per Segment	V_F		1.6			I_F=1mA
			1.7	2.4	V	I_F=5mA
			1.8			I_F=20mA
Reverse Current, Per Segment	I_R			100	μA	V_R=5V
Luminous Intensity Matching Ratio	I_V-m			2:1		I_F=10mA

LTD-322P/323P

Parameter	Symbol	Min.	Typ.	Max.	Unit	Tset Condition
Average Luminous Intensity	I_V	210	650		μcd	I_F=10mA
Peak Emission Wavelength	λP		697		nm	I_F=20mA
Spectral Line Half-Width	Δλ		90		nm	I_F=20mA
Dominant Wavelength	λd		657		nm	I_F=20mA
Forward Voltage, Per Segment	V_F		2.1	2.6	V	I_F=20mA
Reverse Current, Per Segment	I_R			100	μA	V_R=5V
Luminous Intensity Matching Ratio	I_V-m			2:1		I_F=10mA

LTD-322G/323G

Parameter	Symbol	Min.	Typ.	Max.	Unit	Tset Condition
Average Luminous Intensity	I_V	540	1600		μcd	I_F=10mA
Peak Emission Wavelength	λ P		565		nm	I_F=20mA
Spectral Line Half-Width	$\Delta\lambda$		30		nm	I_F=20mA
Dominant Wavelength	λ d		569		nm	I_F=20mA
Forward Voltage, Per Segment	V_F		2.1	2.6	V	I_F=20mA
Reverse Current, Per Segment	I_R			100	μA	V_R=5V
Luminous Intensity Matching Ratio	I_V-m			2:1		I_F=10mA

LTD-322Y/323Y

Parameter	Symbol	Min.	Typ.	Max.	Unit	Tset Condition
Average Luminous Intensity	I_V	500	2000		μcd	I_F=10mA
Peak Emission Wavelength	λ P		585		nm	I_F=20mA
Spectral Line Half-Width	$\Delta\lambda$		35		nm	I_F=20mA
Dominant Wavelength	λ d		588		nm	I_F=20mA
Forward Voltage, Per Segment	V_F		2.1	2.6	V	I_F=20mA
Reverse Current, Per Segment	I_R			100	μA	V_R=5V
Luminous Intensity Matching Ratio	I_V-m			2:1		I_F=10mA

LTD-322E/323E

Parameter	Symbol	Min.	Typ.	Max.	Unit	Tset Condition
Average Luminous Intensity	I_V	500	2000		μcd	I_F=10mA
Peak Emission Wavelength	λ P		630		nm	I_F=20mA
Spectral Line Half-Width	$\Delta\lambda$		40		nm	I_F=20mA
Dominant Wavelength	λ d		621		nm	I_F=20mA
Forward Voltage, Per Segment	V_F		2.0	2.6	V	I_F=20mA
Reverse Current, Per Segment	I_R			100	μA	V_R=5V
Luminous Intensity Matching Ratio	I_V-m			2:1		I_F=10mA

Note: Luminous intensity is measured with a light sensor and filter combiuation that approximates the CIE (Commision Internationale De L'Eclairage) eye-response curve.

Typical Electrical/Optical Characteristic Curves
(25℃ Ambient Temperature Unless Otherwise Noted)

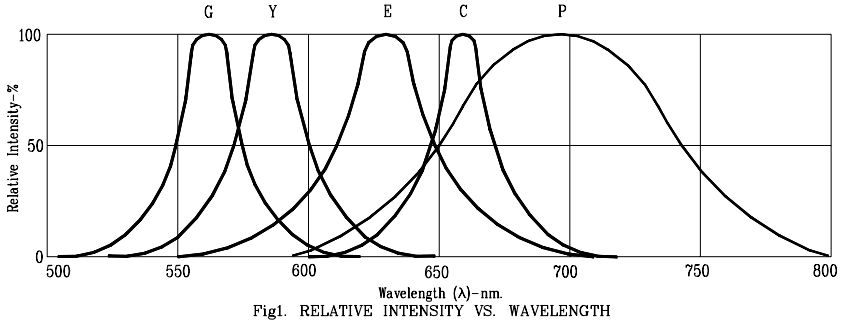


Fig1. RELATIVE INTENTSITY VS. WAVELENGTH

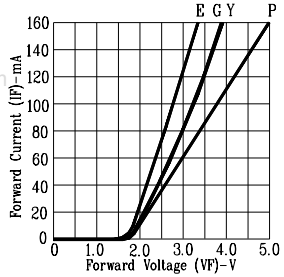


Fig2. FORWARD CURRENT VS. FORWARD VOLTAGE

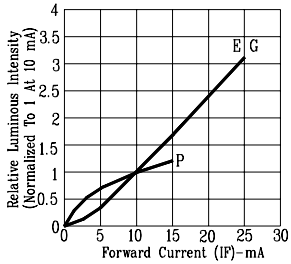


Fig3. RELATIVE LUMINOUS INTENTSITY VS. FORWARD CURRENT

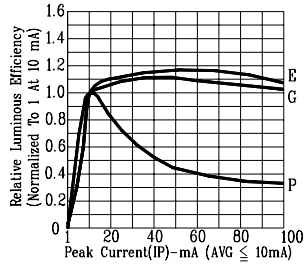


Fig4. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT

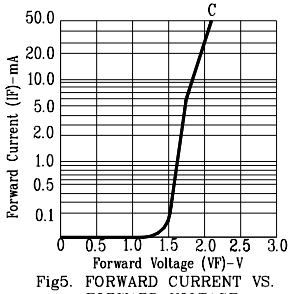


Fig5. FORWARD CURRENT VS. FORWARD VOLTAGE

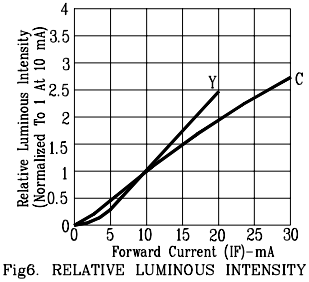


Fig6. RELATIVE LUMINOUS INTENTSITY VS. FORWARD CURRENT

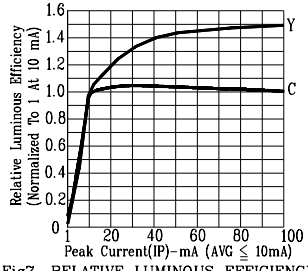


Fig7. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT

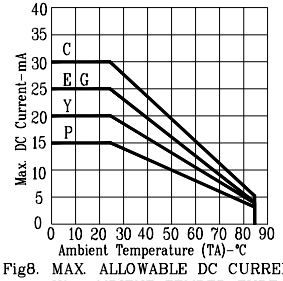


Fig8. MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE.

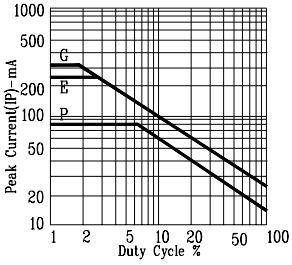


Fig9. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

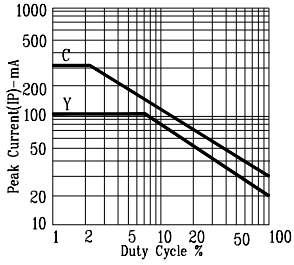


Fig10. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

NOTE: C=AlGaAs RED P=BRIGHT RED G=GREEN E=RED ORANGE Y=YELLOW (REFRESH RATE 1KHz)