

LITEON

0.5" Alphanumeric LED Displays

LTP-537/587 Series

Features

- 0.5 inch (12.7mm) digit height.
- Choices of six bright colors-AlGaAs red/bright red/green/yellow/red orange/high efficiency red.
- Low power requirements.
- Excellent character appearance.
- Wide viewing angle.
- Solid state reliability.
- Common anode or common cathode models.
- Categorized for luminous intensity.
- Easy mounting on P.C. board.

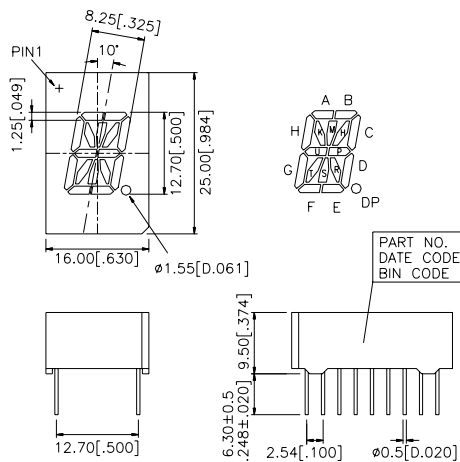
Description

The LTP-537/587 series are 0.5 inch (12.7mm) height 16-segment single digit alphanumeric displays. AlGaAs red, bright red, green, yellow and red orange displays have black face and white segments, The high efficiency red display has red face and red segments.

The AlGaAs red alphanumeric display are designed for applications requiring low power consumption. They are tested and selected for their 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 and high efficiency red series devices utilize LED chips which are made from GaAsP on a transparent GaP substrate.

Package Dimensions



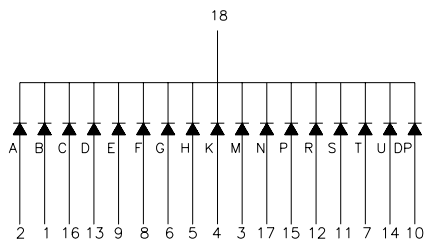
Notes: All dimensions are in millimeters (inches).
Tolerance: $\pm 0.25\text{mm}$ (0.010") unless otherwise noted.

Devices

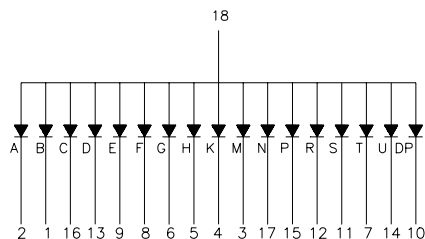
Part No.						Description	Internal Circuit Diagram
AlGaAs Red	Bright Red	Green	Yellow	Red Orange	Hi-Eff. Red		
LTP-537WC	LTP-537P	LTP-537G	LTP-537Y	LTP-537E	LTP-537HR	Common Cathode, Rt. Hand Decimal	A
LTP-587WC	LTP-587P	LTP-587G	LTP-587Y	LTP-587E	LTP-587HR	Common Anode, Rt. Hand Decimal	B

Internal Circuit Diagrams

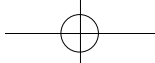
A. LTP-537



B. LTP-587



9-180



Pin Connection

Pin No.	Connection	
	A. LTP-537	B. LTP-587
1	Anode B	Cathode B
2	Anode A	Cathode A
3	Anode M	Cathode M
4	Anode K	Cathode K
5	Anode H	Cathode H
6	Anode G	Cathode G
7	Anode T	Cathode T
8	Anode F	Cathode F
9	Anode E	Cathode E
10	Anode D.P.	Cathode D.P.
11	Anode S	Cathode S
12	Anode R	Cathode R
13	Anode D	Cathode D
14	Anode U	Cathode U
15	Anode P	Cathode P
16	Anode C	Cathode C
17	Anode N	Cathode N
18	Common Cathode	Common Anode

DISPLAYS

Absolute Maximum Rating at Ta=25°C

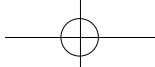
Parameter	AlGaAs Red	Bright Red	Green	Yellow	Red Orange	Hi.-Eff. Red	Unit
Average Power Dissipation Per Segment	75	40	75	60	75	75	mW
Peak Forward Current Per Segment (1/10 Duty Cycle, 0.1 ms Pulse Width)	125	60	100	80	100	100	mA
Average Forward Current Per Segment	30	15	25	20	25	25	mA
Derating Linear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

Electrical / Optical Characteristics at Ta=25°C

LTP-537WC/587WC

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	200	500		μ cd	I _F =1mA
			3750			I _F =5mA
Peak Emission Wavelength	λ _P		660		nm	I _F =20mA
Spectral Line Half-Width	Δλ		35		nm	I _F =20mA
Dominant Wavelength	λ _d		638		nm	I _F =20mA
Forward Voltage, and Segment	V _F		1.6	2.4	V	I _F =1mA
			1.7			I _F =5mA
			1.8			I _F =20mA
Reverse Current, and Segment	I _R			100	μ A	V _R =5V
Luminous Intensity Matching Ratio	I _{v-m}			2:1		I _F =1mA

9-181



LTP-537P/587P

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	320	750		μ cd	I _f =10mA
Peak Emission Wavelength	λ _P		697		nm	I _f =20mA
Spectral Line Half-Width	Δλ		90		nm	I _f =20mA
Dominant Wavelength	λ _d		657		nm	I _f =20mA
Forward Voltage, and Segment or D.P	V _F		2.1	2.6	V	I _f =20mA
Reverse Current, and Segment or D.P	I _R			100	μ A	V _R =5V
Luminous Intensity Matching Ratio	I _v -m			2:1		I _f =10mA

LTP-537G/587G

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	800	2000		μ cd	I _f =10mA
Peak Emission Wavelength	λ _P		565		nm	I _f =20mA
Spectral Line Half-Width	Δλ		30		nm	I _f =20mA
Dominant Wavelength	λ _d		569		nm	I _f =20mA
Forward Voltage, and Segment or D.P	V _F		2.1	2.6	V	I _f =20mA
Reverse Current, and Segment or D.P	I _R			100	μ A	V _R =5V
Luminous Intensity Matching Ratio	I _v -m			2:1		I _f =10mA

LTP-537Y/587Y

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	800	2000		μ cd	I _f =10mA
Peak Emission Wavelength	λ _P		585		nm	I _f =20mA
Spectral Line Half-Width	Δλ		35		nm	I _f =20mA
Dominant Wavelength	λ _d		588		nm	I _f =20mA
Forward Voltage, and Segment or D.P	V _F		2.1	2.6	V	I _f =20mA
Reverse Current, and Segment or D.P	I _R			100	μ A	V _R =5V
Luminous Intensity Matching Ratio	I _v -m			2:1		I _f =10mA

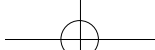
LTP-537E/587E

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	800	2000		μ cd	I _f =10mA
Peak Emission Wavelength	λ _P		630		nm	I _f =20mA
Spectral Line Half-Width	Δλ		40		nm	I _f =20mA
Dominant Wavelength	λ _d		621		nm	I _f =20mA
Forward Voltage, and Segment or D.P	V _F		2.0	2.6	V	I _f =20mA
Reverse Current, and Segment or D.P	I _R			100	μ A	V _R =5V
Luminous Intensity Matching Ratio	I _v -m			2:1		I _f =10mA

LTP-537HR/587HR

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	800	2000		μ cd	I _f =10mA
Peak Emission Wavelength	λ _P		635		nm	I _f =20mA
Spectral Line Half-Width	Δλ		40		nm	I _f =20mA
Dominant Wavelength	λ _d		623		nm	I _f =20mA
Forward Voltage, and Segment or D.P	V _F		2.0	2.6	V	I _f =20mA
Reverse Current, and Segment or D.P	I _R			100	μ A	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 combination that approximates the CIE (Commission Internationale De L'Eclairage) eye-response curve.



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

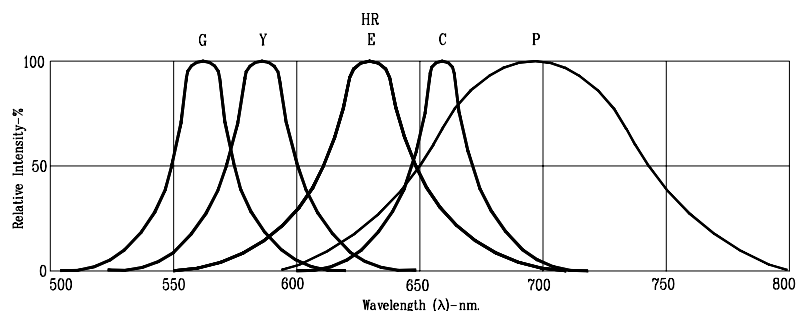


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

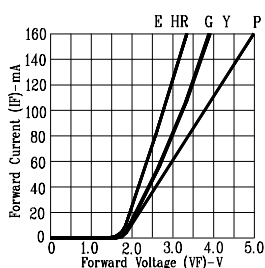


Fig2. FORWARD CURRENT VS. FORWARD VOLTAGE

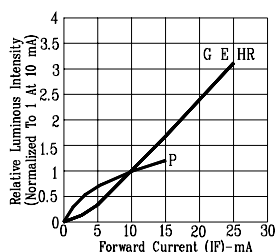


Fig3. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

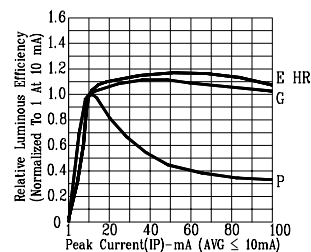


Fig4. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT

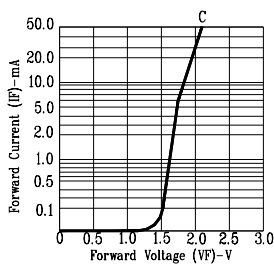


Fig5. FORWARD CURRENT VS. FORWARD VOLTAGE

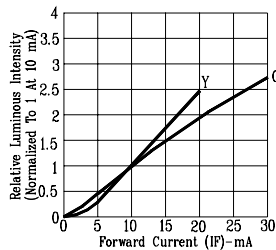


Fig6. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

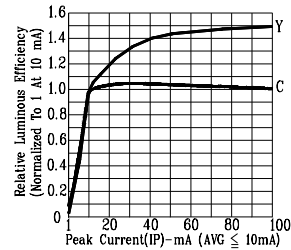


Fig7. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT

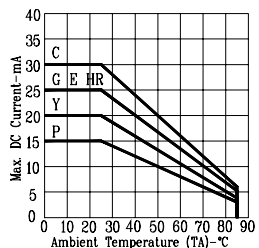


Fig8. MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE.

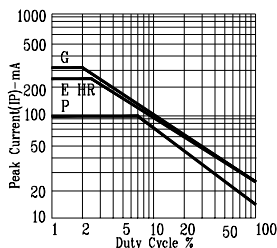


Fig9. MAX. PEAK CURRENT VS. DUTY CYCLE %
(REFRESH RATE 1KHz)

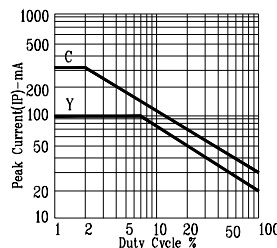


Fig10. MAX. PEAK CURRENT VS. DUTY CYCLE %
(REFRESH RATE 1KHz)

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