# LITEON

# 0.56" Seven-Segment Numeric LED Display

LTS-5x01A/5x03A LTD-5x21A/5x23A Series LTC-5653x-01/5753x-01

## **Features**

- · 0.56 inch (14.22mm) 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.
- · I.C. compatiable.
- · Easy mounting on P.C. board or socket.

# **Description**

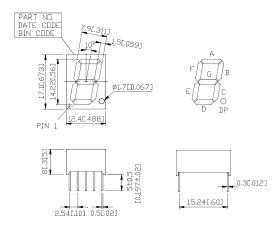
The LTS-5000A/LTD-5000A/LTC-5x53x-01 is a 0.56 inch (14.22mm) height 7-Segment single, dual and quadruple displays. AlGaAs red displays have gray face and white segments. The LTS-5000A/LTD-5000A bright red, yellow and red orange displays have gray face and white segments, and green displays have gray face and green segments. The LTC-5x53x-01 displays have gray face and white segments.

The AlGaAs red 7-seven segment displys are designed for applications 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.

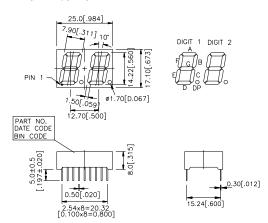
The AlGaAs red series devices utilize LED chips which are made from AlGaAs on a non-transparent GaAs substrate. The bright red and green series devices utilize LED chips which are made from GaP on a transparent GaPsubstrate. The yellow and red orange series devices utilize LED chips which are made from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

# **Package Dimensions**

A.LTS-5X01A/5X03A

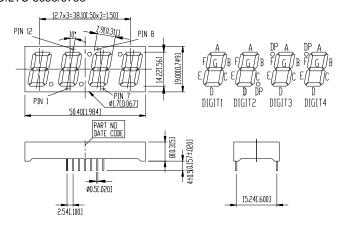


### B.LTD-5X21A/5X23A



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### C.LTC-5653/5753



Notes:All dimensions are in millimeters (inches).

Tolerance:  $\pm$  0.25mm (0.01") unless otherwise noted.

# **Devices**

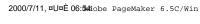
	Pa	rt No.			Description	Package	Internal Circuit	
AlGaAs Red	Bright Red	Green	Yellow	Red Orange	Description	Dimension	Diagram	
LTS-5001AWC	5301AP	5601AG	5701AY	5501AE	Common Anode,	Α	Α	
L13-5001AWC	5301AP	560 IAG	5/UIA1	SSUTAE	Rt. Hand Decimal	A	A	
LTS-5003AWC	5303AP	5603AG	5703AY	5503AE	Common Cathode,	A	В	
L13-3003AVVC	5505AF	3603AG	3703A1	3303AE	Rt. Hand Decimal	A	Ь	
LTD-5021AWC	5321AP	5621AG	5721AY	5521AE	Common Anode,	В	С	
LID-502 IAWC	532 IAP	5621AG	5/21A1	3321AE	Rt. Hand Decimal	B		
LTD FORMANIC	E222AD	ECO2AC	EZO2AV	FFOOAF	Common Cathode,	В	_	
LTD-5023AWC	5323AP	3623AG	5623AG   5723AY   5523AE		Rt. Hand Decimal	B	D	

Part No. LTC-					Description	Package	Internal Circuit	
AlGaAs Red	Bright Red	Green	Yellow	Red Orange	Description	Dimension	Diagram	
LTC-5653WC-01	5653P-01	5653G-01	5653Y-01	5653E-01	Common Anode Multiplex	С	E	
LTC-5753WC-01	5753P-01	5753G-01	5753Y-01	5753E-01	Common Cathode Multiplex	С	F	

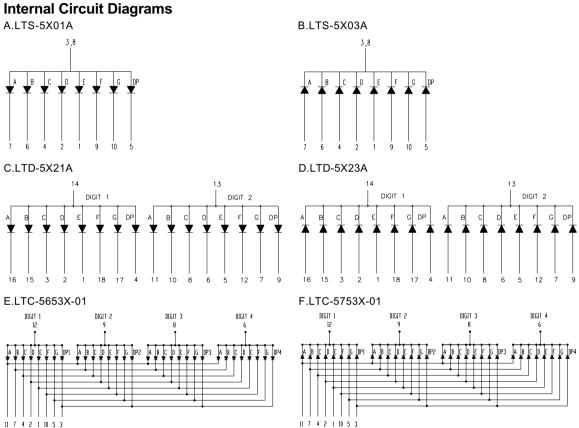
# **Pin Connection**

Pin No.	Connection								
PIN NO.	A.LTS-5X01A	B.LTS-5X03A	C.LTD-5X21A	D.LTD-5X23A					
1.	Cathode E	Anode E	Cathode E (Digit 1)	Anode E (Digit 1)					
2.	Cathode D	Anode D	Cathode D (Digit 1)	Anode D (Digit 1)					
3.	Common Anode *1	Common Cathode *1	Cathode C (Digit 1)	Anode C (Digit 1)					
4.	Cathode C	Anode C	Cathode D.P. (Digit 1)	Anode D.P. (Digit 1)					
5.	Cathode D.P.	Anode D.P.	Cathode E (Digit 2)	Anode E (Digit 2)					
6.	Cathode B	Anode B	Cathode D (Digit 2)	Anode D (Digit 2)					
7.	Cathode A	Anode A	Cathode G (Digit 2)	Anode G (Digit 2)					
8.	Common Anode *1	Common Cathode *1	Cathode C (Digit 2)	Anode C (Digit 2)					
9.	Cathode F	Anode F	Cathode D.P. (Digit 2)	Anode D.P. (Digit 2)					
10.	Cathode G	Anode G	Cathode B (Digit 2)	Anode B (Digit 2)					
11.	=	-	Cathode A (Digit 2)	Anode A (Digit 2)					
12.	=	-	Cathode F (Digit 2)	Anode F (Digit 2)					
13.	=	-	Cathode Anode (Digit 2)	Common Cathode (Digit 2)					
14.	=	-	Cathode Anode (Digit 1)	Common Cathode (Digit 1)					
15.	-	-	Cathode B (Digit 1)	Anode B (Digit 1)					
16.	-	-	Cathode A (Digit 1)	Anode A (Digit 1)					
17.	-	-	Cathode G (Digit 1)	Anode G (Digit 1)					
18.	-	-	Cathode F (Digit 1)	Anode F (Digit 1)					

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Pin No.	Connection					
PIII NO.	E.LTC-5653X-01	F.LTC-5753X-01				
1.	Cathode E	Anode E				
2.	Cathode D	Anode D				
3.	Cathode D.P.	Anode D.P.				
4.	Cathode C	Anode C				
5.	Cathode G	Anode G				
6.	Common Anode (Digit 4)	Common Cathode (Digit 4)				
7.	Cathode B	Anode B				
8.	Common Anode (Digit 3)	Common Cathode (Digit 3)				
9.	Common Anode (Digit 2)	Common Cathode (Digit 2)				
10.	Cathode F	Anode F				
11.	Cathode A	Anode A				
12.	Common Anode (Digit 1)	Common Cathode (Digit 1)				



# 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	30	15	25	20	25	mA			
Derating Linear from 25 <sup>°</sup> C Per Segment	0.4	0.2	0.33	0.27	0.33	mA/℃			
Reverse Voltage Per Segment	5	5	5	5	5	V			
Operating Temperature Range -35°C to +85°C									
Stroage Temperature Range -35°C to +85°C									
Solder Temperature 1/16 Inch Below Seating	Solder Temperature 1/16 Inch Below Seating Plane for 3 Seconds at 260°C								

# **Electrical/Optical Characteristics at Ta=25**°C LTS-5001AWC/5003AWC/LTD-5021AWC/5023AWC/LTC-5653AWC/5753AWC

Parameter	Symbol	Min.	Тур.	Max.	Unit	Tset Condition
		320	700			IF=1mA
Average Luminous Intensity	Iv		3750		$\mu$ cd	IF=5mA
Peak Emission Wavelength	λР		660		nm	Ir=20mA
Spectral Line Half-Width	Δλ		35		nm	Ir=20mA
Dominant Wavelength	λd		638		nm	Ir=20mA
			1.6			IF=1mA
Forward Voltage, Per Segment	VF		1.7	2.4	V	IF=5mA
3 / 3			1.8			Ir=20mA
Reverse Current, Per Segment	IR			100	μΑ	V <sub>R</sub> =5V
Luminous Intensity Matching Ratio	Iv-m			2:1		I==1mA

### LTS-5301AP/5303AP/LTD-5321AP/5323AP/LTC-5653P-01/5753P-01

Parameter	Symbol	Min.	Тур.	Max.	Unit	Tset Condition
Average Luminous Intensity	Iv	320	950		μ cd	Ir=10mA
Peak Emission Wavelength	λР		697		nm	Ir=20mA
Spectral Line Half-Width	Δλ		90		nm	Ir=20mA
Dominant Wavelength	λd		657		nm	Ir=20mA
Forward Voltage, Per Segment or D.P.	VF		2.1	2.6	V	Ir=20mA
Reverse Current, Per Segment or D.P.	IR			100	μΑ	VR=5V
Luminous Intensity Matching Ratio	Iv-m			2:1		I==10mA

## LTS-5601AG/5603AG/LTD-5621AG/5623AG/LTC-5653G-01/5753G-01

Parameter	Symbol	Min.	Тур.	Max.	Unit	Tset Condition
Average Luminous Intensity	Ιν	800	2400		μ cd	Ir=10mA
Peak Emission Wavelength	λР		565		nm	Ir=20mA
Spectral Line Half-Width	Δλ		30		nm	Ir=20mA
Dominant Wavelength	λd		569		nm	Ir=20mA
Forward Voltage, Per Segment or D.P.	VF		2.1	2.6	V	Ir=20mA
Reverse Current, Per Segment or D.P.	IR			100	μΑ	VR=5V
Luminous Intensity Matching Ratio	l∨-m			2:1		Ir=10mA

### LTS-5501AE/5503AE/LTD-5521AE/5523AE/LTC-5653E-01/5753E-01

Parameter	Symbol	Min.	Тур.	Max.	Unit	Tset Condition
Average Luminous Intensity	Iv	800	2400		μ cd	Ir=10mA
Peak Emission Wavelength	λР		630		nm	Ir=20mA
Spectral Line Half-Width	Δλ		40		nm	Ir=20mA
Dominant Wavelength	λd		621		nm	Ir=20mA
Forward Voltage, Per Segment or D.P.	VF		2.0	2.6	V	Ir=20mA
Reverse Current, Per Segment or D.P.	IR			100	μΑ	Vr=5V
Luminous Intensity Matching Ratio	l∨-m			2:1		Ir=10mA

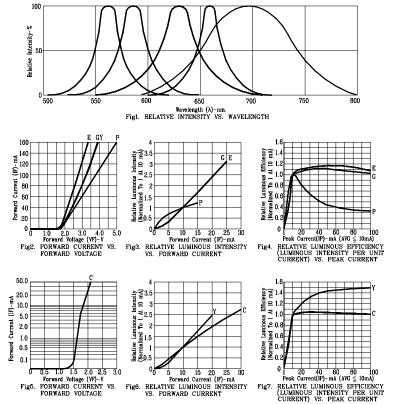
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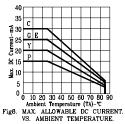
### LTS-5701AY/5703AY/LTD-5721AY/5723AY/LTC-5653Y-01/5753Y-01

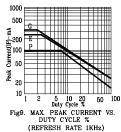
Parameter	Symbol	Min.	Тур.	Max.	Unit	Tset Condition
Average Luminous Intensity	Iv	800	2400		μ cd	Ir=10mA
Peak Emission Wavelength	λР		585		nm	Ir=20mA
Spectral Line Half-Width	Δλ		35		nm	Ir=20mA
Dominant Wavelength	λd		588		nm	Ir=20mA
Forward Voltage, Per Segment or D.P.	VF		2.1	2.6	V	Ir=20mA
Reverse Current, Per Segment or D.P.	lr			100	μΑ	VR=5V
Luminous Intensity Matching Ratio	I∨-m			2:1		Ir=10mA

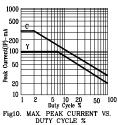
Note: Luminous intensity is measured with a light sensor and filter combination that appoximates the CIE (Commision Internationale De L'Eclairage)eye-response curve.

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









(REFRESH RATE 1KHz)

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

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