



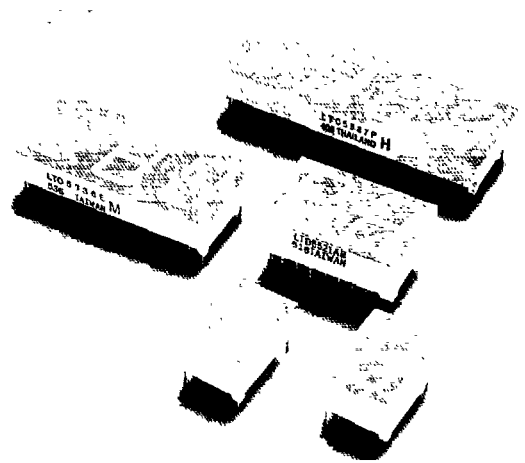
LTS-540A LTD-5200 LTC-5300/5800

SERIES

0.52" SEVEN-SEGMENT NUMERIC LED DISPLAYS

FEATURES

- 0.52 INCH (13.2mm) DIGIT HEIGHT
- CONTINUOUS UNIFORM SEGMENTS
- CHOICE OF SIX BRIGHT COLORS-RED/BRIGHT RED/GREEN/YELLOW/ORANGE/HIGH EFFICIENCY RED.
- LOW POWER REQUIREMENT
- EXCELLENT CHARACTERS APPEARANCE
- HIGH BRIGHTNESS
- WIDE VIEWING ANGLE
- SOLID STATE RELIABILITY
- CATEGORIZED FOR LUMINOUS INTENSITY
- I.C. COMPATIBLE
- EASY MOUNTING ON P.C. BOARD OR SOCKET



SEVEN-SEGMENT
LED DISPLAYS

DESCRIPTION

The LTS-540A LTD-5000 LTC-5000 series are 0.52 inch (13.2mm) height 7-segment displays

The red series devices utilize LED chips which are made from GaAsP on a GaAs substrate. The bright red and green series devices utilize LED chips which are made from GaP on a transparent GaP substrate. The yellow, orange and high efficiency red series devices are utilize LED chips which are made from GaAsP on a transparent GaP substrate. Red, bright red, yellow and orange displays have gray face and white segment color. Green displays have gray face and green segment color. High efficiency red displays have red face and red segment color.

DEVICES

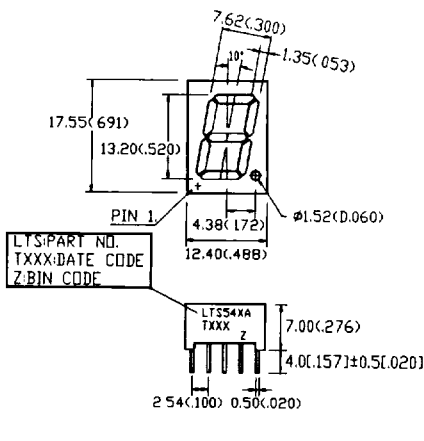
PART NO. LTS—						DESCRIPTION	PACKAGE DIMENSION	INTERNAL CIRCUIT DIAGRAM
RED	BRIGHT RED	GREEN	YELLOW	ORANGE	HI.-EFF. RED			
546AR	546AP	546AG	546AY	546AE	546AHR	Common Anode, Rt. Hand Decimal	A	A
547AR	547AP	547AG	547AY	547AE	547AHR	Common Cathode, Rt. Hand Decimal	A	B
548AR	548AP	548AG	548AY	548AE	548AHR	Common Anode, Rt. Hand Decimal	B	C
549AR	549AP	549AG	549AY	549AE	549AHR	Common Cathode, Rt. Hand Decimal	B	D

PART NO. LTD--						DESCRIPTION	PACKAGE DIMENSION	INTERNAL CIRCUIT DIAGRAM
RED	BRIGHT RED	GREEN	YELLOW	ORANGE	HI.-EFF. RED			
5250R	5250P	5250G	5250Y	5250E	5250HR	Common Anode, Rt Hand Decimal	C	E
5260R	5260P	5260G	5260Y	5260E	5260HR	Common Cathode, Rt Hand Decimal	C	F

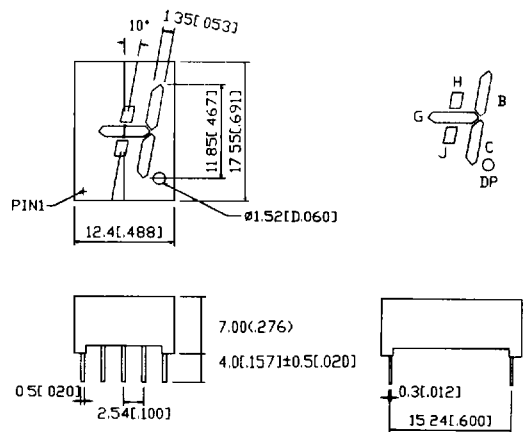
PART NO. LTC--						DESCRIPTION	PACKAGE DIMENSION	INTERNAL CIRCUIT DIAGRAM
RED	BRIGHT RED	GREEN	YELLOW	ORANGE	HI.-EFF. RED			
5336R	5336P	5336G	5336Y	5336E	5336HR	Common Cathode, Rt Hand Decimal	D	G
5836R	5836P	5836G	5836Y	5836E	5836HR	Common Anode, Rt Hand Decimal	D	H
5337R	5337P	5337G	5337Y	5337E	5337HR	Common Cathode, Rt Hand Decimal	E	I
5837R	5837P	5837G	5837Y	5837E	5837HR	Common Anode, Rt Hand Decimal	E	J

PACKAGE DIMENSIONS

A. LTS-546A/547A

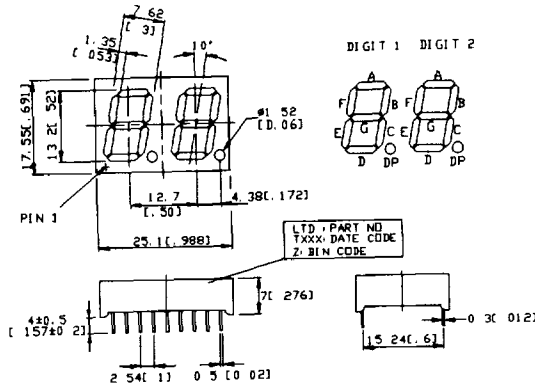


B. LTS-548A/549A



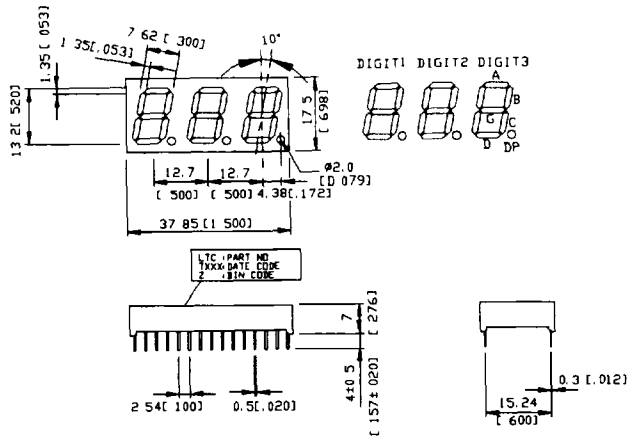
NOTES. All dimensions are in millimeters (inchs.) tolerance are :
 $\pm 0.25\text{mm} (0.010)$ unless otherwise noted.

C. LTD-5250/5260

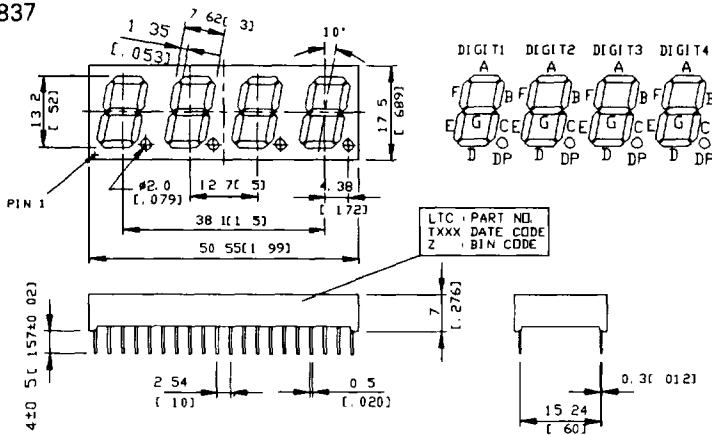


SEVEN-SEGMENT LED DISPLAYS

D. LTC-5336/5836



E. LTC-5337/5837



NOTES: All dimensions are in millimeters (inches) tolerance are: ±0.25mm(0.010) unless otherwise noted.

PIN CONNECTION

PIN NO.	CONNECTION			
	A. LTS-546A	B. LTS-547A	C. LTS-548A	D. LTS-549A
1	Cathode E	Anode E	Cathode J	Anode J
2	Cathode D	Anode D	No Connection	No Connection
3	Common Anode*	Common Cathode*	Common Anode*	Common Cathode*
4	Cathode C	Anode C	Cathode C	Anode C
5	Cathode D.P.	Anode D.P.	Cathode D.P.	Anode D.P.
6	Cathode B	Anode B	Cathode B	Anode B
7	Cathode A	Anode A	No Connection	No Connection
8	Common Anode*	Common Cathode*	Common Anode*	Common Cathode*
9	Cathode F	Anode F	Cathode H	Anode H
10	Cathode G	Anode G	Cathode G	Anode G

NOTES 1 Pin 3 & 8 are internally connected

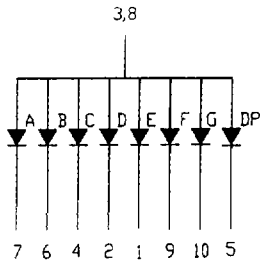
PIN NO.	CONNECTION	
	LTC-5250	LTC-5260
1	Cathode E (Digit 1)	Anode E (Digit 1)
2	Cathode D (Digit 1)	Anode D (Digit 1)
3	Cathode C (Digit 1)	Anode C (Digit 1)
4	Cathode D.P. (Digit 1)	Anode D.P. (Digit 1)
5	Cathode E (Digit 2)	Anode E (Digit 2)
6	Cathode D (Digit 2)	Anode D (Digit 2)
7	Cathode G (Digit 2)	Anode G (Digit 2)
8	Cathode C (Digit 2)	Anode C (Digit 2)
9	Cathode D.P. (Digit 2)	Anode D.P. (Digit 2)
10	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	Common Anode (Digit 2)	Common Cathode (Digit 2)
14	Common 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)

PIN NO.	CONNECTION			
	LTC-5336	LTC-5836	LTC-5337	LTC-5837
1	Anode E (Digit 1)	Cathode E (Digit 1)	Anode E (Digit 1)	Cathode E (Digit 1)
2	Anode D (Digit 1)	Cathode D (Digit 1)	Anode D (Digit 1)	Cathode D (Digit 1)
3	Common Cathode (Digit 1)	Common Anode (Digit 1)	Common Cathode (Digit 1)	Common Anode (Digit 1)
4	Anode C (Digit 1)	Cathode C (Digit 1)	Anode C (Digit 1)	Cathode C (Digit 1)
5	Anode D.P. (Digit 1)	Cathode D.P. (Digit 1)	Anode D P. (Digit 1)	Cathode D P (Digit 1)
6	Anode E (Digit 2)	Cathode E (Digit 2)	Anode E (Digit 2)	Cathode E (Digit 2)
7	Anode D (Digit 2)	Cathode D (Digit 2)	Anode D (Digit 2)	Cathode D (Digit 2)
8	Common Cathode (Digit 2)	Common Anode (Digit 2)	Common Cathode (Digit 2)	Common Anode (Digit 2)
9	Anode C (Digit 2)	Cathode C (Digit 2)	Anode C (Digit 2)	Cathode C (Digit 2)
10	Anode D.P (Digit 2)	Cathode D P. (Digit 2)	Anode D P (Digit 2)	Cathode D P (Digit 2)
11	Anode E (Digit 3)	Cathode E (Digit 3)	Anode E (Digit 3)	Cathode E (Digit 3)
12	Anode D (Digit 3)	Cathode D (Digit 3)	Anode D (Digit 3)	Cathode D (Digit 3)
13	Common Cathode (Digit 3)	Common Anode (Digit 3)	Common Cathode (Digit 3)	Common Anode (Digit 3)
14	Anode C (Digit 3)	Cathode C (Digit 3)	Anode C (Digit 3)	Cathode C (Digit 3)
15	Anode D P (Digit 3)	Cathode D P. (Digit 3)	Anode D P (Digit 3)	Cathode D P (Digit 3)
16	Anode B (Digit 3)	Cathode B (Digit 3)	Anode E (Digit 4)	Cathode E (Digit 4)
17	Anode A (Digit 3)	Cathode A (Digit 3)	Anode D (Digit 4)	Cathode D (Digit 4)
18	Common Cathode (Digit 3)	Common Anode (Digit 3)	Common Cathode (Digit 4)	Common Anode (Digit 4)
19	Anode F (Digit 3)	Cathode F (Digit 3)	Anode C (Digit 4)	Cathode C (Digit 4)
20	Anode G (Digit 3)	Cathode G (Digit 3)	Anode D P (Digit 4)	Cathode D P (Digit 4)
21	Anode B (Digit 2)	Cathode B (Digit 2)	Anode B (Digit 4)	Cathode B (Digit 4)
22	Anode A (Digit 2)	Cathode A (Digit 2)	Anode A (Digit 4)	Cathode A (Digit 4)
23	Common Cathode (Digit 2)	Common Anode (Digit 2)	Common Cathode (Digit 4)	Common Anode (Digit 4)
24	Anode F (Digit 2)	Cathode F (Digit 2)	Anode F (Digit 4)	Cathode F (Digit 4)
25	Anode G (Digit 2)	Cathode G (Digit 2)	Anode G (Digit 4)	Cathode G (Digit 4)
26	Anode B (Digit 1)	Cathode B (Digit 1)	Anode B (Digit 3)	Cathode B (Digit 3)
27	Anode A (Digit 1)	Cathode A (Digit 1)	Anode A (Digit 3)	Cathode A (Digit 3)
28	Common Cathode (Digit 1)	Common Anode (Digit 1)	Common Cathode (Digit 3)	Common Anode (Digit 3)
29	Anode F (Digit 1)	Cathode F (Digit 1)	Anode F (Digit 3)	Cathode F (Digit 3)
30	Anode G (Digit 1)	Cathode G (Digit 1)	Anode G (Digit 3)	Cathode G (Digit 3)
31	---	---	Anode B (Digit 2)	Cathode B (Digit 2)
32	---	---	Anode A (Digit 2)	Cathode A (Digit 2)
33	---	---	Common Cathode (Digit 2)	Common Anode (Digit 2)
34	---	---	Anode F (Digit 2)	Cathode F (Digit 2)
35	---	---	Anode G (Digit 2)	Cathode G (Digit 2)
36	---	---	Anode B (Digit 1)	Cathode B (Digit 1)
37	---	---	Anode A (Digit 1)	Cathode A (Digit 1)
38	---	---	Common Cathode (Digit 1)	Common Anode (Digit 1)
39	---	---	Anode F (Digit 1)	Cathode F (Digit 1)
40	---	---	Anode G (Digit 1)	Cathode G (Digit 1)

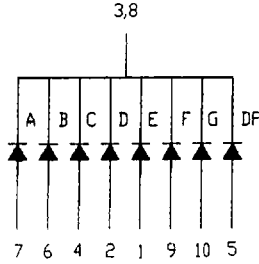
SEVEN-SEGMENT LED DISPLAYS

INTERNAL CIRCUIT DIAGRAM

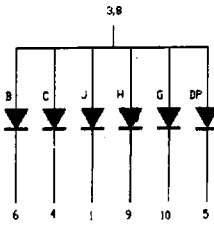
A. LTS-546A



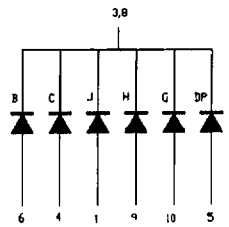
B. LTS-547A



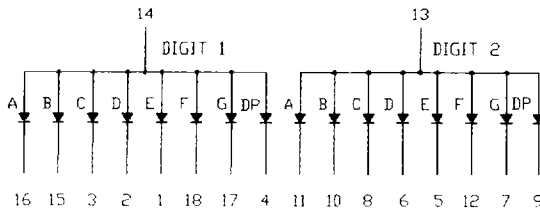
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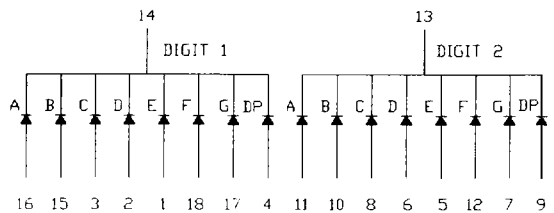
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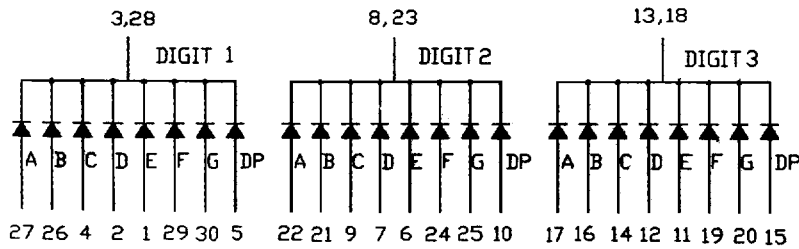
E. LTD-5250



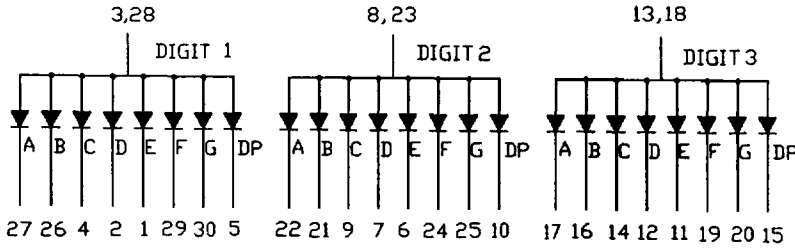
F. LTD-5260



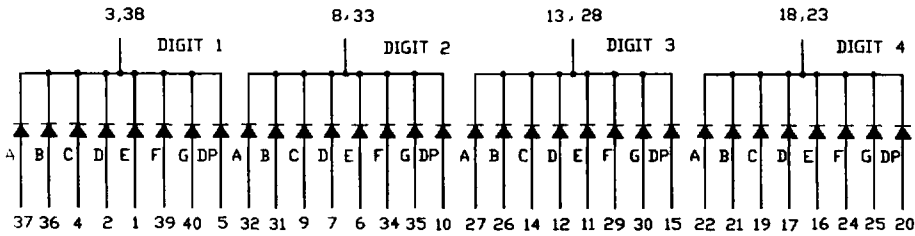
G. LTC-5336



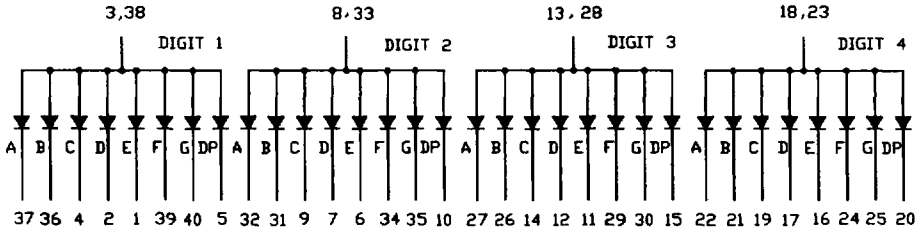
H. LTC-5836



I. LTC-5337



J. LTC-5837



SEVEN-SEGMENT LED DISPLAYS

ABSOLUTE MAXIMUM RATINGS AT T_A = 25 °C

PARAMETER	RED	BRIGHT RED	GREEN	YELLOW	ORANGE	HI-EFF. RED	UNIT
Power Dissipation Per Segment	55	40	75	60	75	75	mW
Peak Forward Current Per Segment (1/10 Duty Cycle, 0.1ms Pulse Width)	150	60	100	80	100	100	mA
Continuous Forward Current Per Segment Derating Linear From 25 °C Per Segment	25 0.33	15 0.20	25 0.33	20 0.27	25 0.33	25 0.33	mA 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 CHARACTERISTICS AT T_A=25 °C

LTS-546AR/547AR/549AR/LTD-5250R/5260R/LTC-5336R/5836R/5337R/5837R

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I _v	200	500		μ cd	I _f = 10mA
Peak Emission Wavelength	λ _p		655		nm	I _f = 20mA
Spectral Line Half-Width	Δ λ		24		nm	I _f = 20mA
Dominant Wavelength	λ _d		651		nm	I _f = 20mA
Forward Voltage, any Segment	V _f		1.7	2.0	V	I _f = 20mA
Reverse Current, any Segment	I _r			100	μ A	V _R = 5V
Luminous Intensity Matching Ratio	I _v -m			2:1		I _f = 10mA

LTS-546AP/547AP/549AP/LTD-5250P/5260P/LTC-5336P/5836P/5337P/5837P

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I _v	320	800		μ cd	I _f = 10mA
Peak Emission Wavelength	λ _p		697		nm	I _f = 20mA
Spectral Line Half-Width	Δ λ		90		nm	I _f = 20mA
Dominant Wavelength	λ _d		638		nm	I _f = 20mA
Forward Voltage, any Segment	V _f		2.1	2.8	V	I _f = 20mA
Reverse Current, any Segment	I _r			100	μ A	V _R = 5V
Luminous Intensity Matching Ratio	I _v -m			2:1		I _f = 10mA

LTS-546AG/547AG/549AG/LTD-5250G/5260G/LTC-5336G/5836G/5337G/5837G

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I _v	800	2200		μ cd	I _f = 10mA
Peak Emission Wavelength	λ _p		565		nm	I _f = 20mA
Spectral Line Half-Width	Δ λ		30		nm	I _f = 20mA
Dominant Wavelength	λ _d		569		nm	I _f = 20mA
Forward Voltage, any Segment	V _f		2.1	2.8	V	I _f = 20mA
Reverse Current, any Segment	I _r			100	μ A	V _R = 5V
Luminous Intensity Matching Ratio	I _v -m			2:1		I _f = 10mA

LTS-546AY/547AY/548AY/549AY
 LTD-5250Y/5260Y
 LTC-5336Y/5836Y/5337Y/5837Y

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_v	800	2200		μ cd	$I_f = 10\text{mA}$
Peak Emission Wavelength	λ_p		585		nm	$I_f = 20\text{mA}$
Spectral Line Half-Width	$\Delta \lambda$		35		nm	$I_f = 20\text{mA}$
Dominant Wavelength	λ_d		588		nm	$I_f = 20\text{mA}$
Forward Voltage, any Segment	V_f		2.1	2.8	V	$I_f = 20\text{mA}$
Reverse Current, any Segment	I_r			100	μ A	$V_R = 5\text{V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_f = 10\text{mA}$

LTS-546AE/547E/548AE/549AE/LTD-5250E/5260E/
 LTC-5336E/5836E/5337E/5837E

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_v	800	2200		μ cd	$I_f = 10\text{mA}$
Peak Emission Wavelength	λ_p		630		nm	$I_f = 20\text{mA}$
Spectral Line Half-Width	$\Delta \lambda$		40		nm	$I_f = 20\text{mA}$
Dominant Wavelength	λ_d		621		nm	$I_f = 20\text{mA}$
Forward Voltage any Segment or D.P.	V_f		2.0	2.8	V	$I_f = 20\text{mA}$
Reverse Current any Segment or D.P.	I_r			100	μ A	$V_R = 5\text{V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_f = 10\text{mA}$

LTS-546AHR/547AHR/548AHR/549AHR/
 LTD-5250AHR/5260AHR/LTC-5336AHR/5836AHR/5337AHR/5837AHR

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_v	800	2200		μ cd	$I_f = 10\text{mA}$
Peak Emission Wavelength	λ_p		635		nm	$I_f = 20\text{mA}$
Spectral Line Half-Width	$\Delta \lambda$		40		nm	$I_f = 20\text{mA}$
Dominant Wavelength	λ_d		621		nm	$I_f = 20\text{mA}$
Forward Voltage, any Segment	V_f		2.1	2.8	V	$I_f = 20\text{mA}$
Reverse Current, any Segment	I_r			100	μ A	$V_R = 5\text{V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_f = 10\text{mA}$

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES (25 °C Ambient Temperature Unless Otherwise Noted)

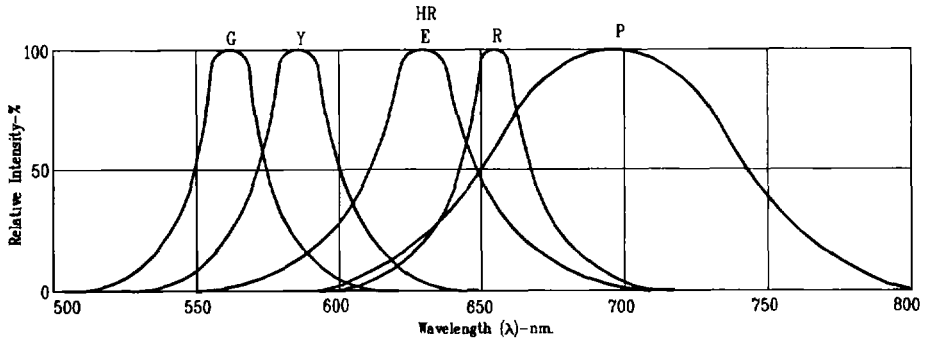


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

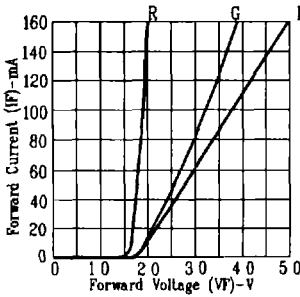


Fig2 FORWARD CURRENT VS FORWARD VOLTAGE

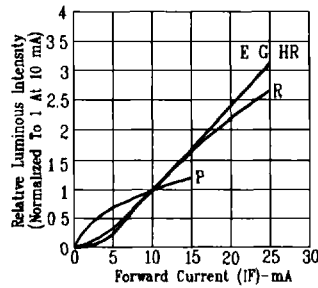


Fig3 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

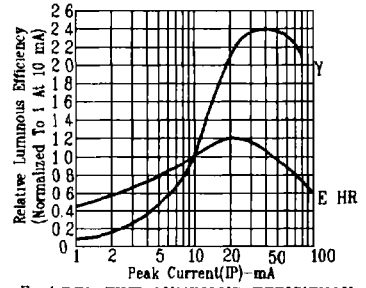


Fig4 RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS PEAK CURRENT

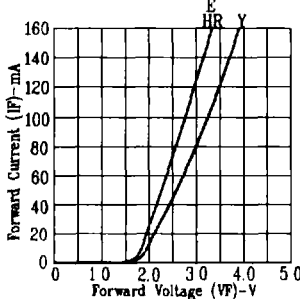


Fig5 FORWARD CURRENT VS FORWARD VOLTAGE

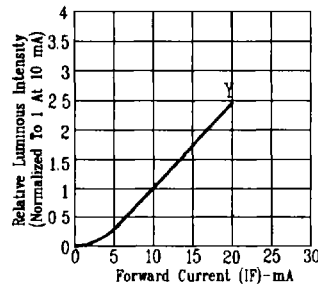


Fig6 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT

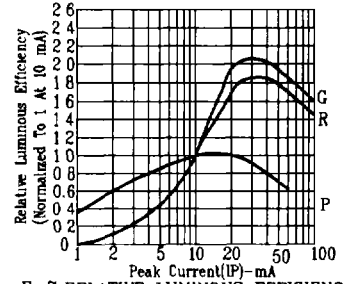


Fig7 RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS PEAK CURRENT

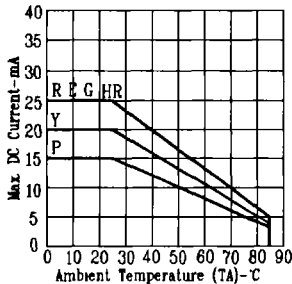


Fig8 MAX ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

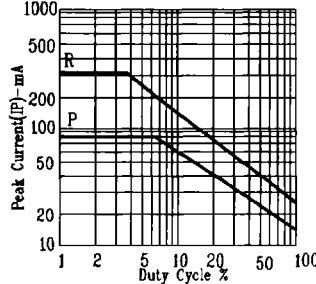


Fig9 MAX PEAK CURRENT VS DUTY CYCLE % (REFRESH RATE 1KHz)

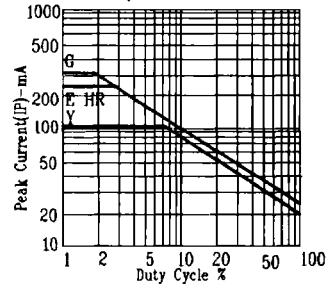


Fig10 MAX PEAK CURRENT VS DUTY CYCLE % (REFRESH RATE 1KHz)

NOTE R-RED P-BRIGHT RED G-GREEN Y-YELLOW E-ORANGE HR-HI-EFF RED (REFRESH RATE 1KHZ)