High efficiency, three-digit LED Numeric Display

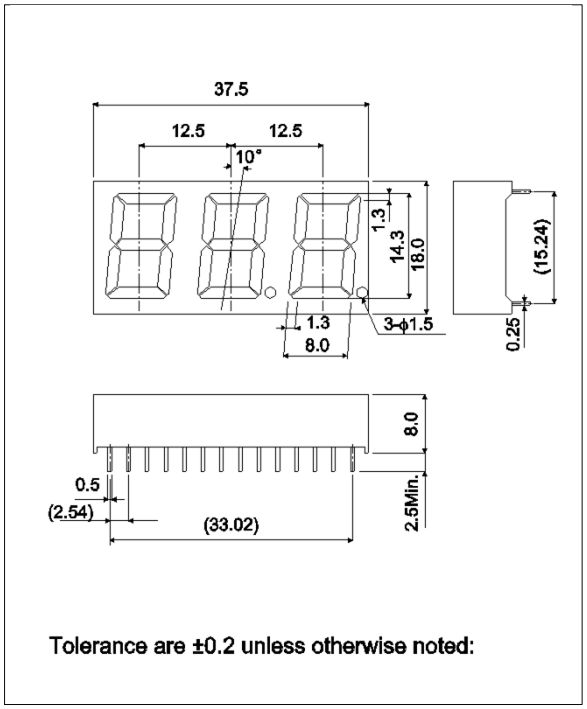
LB-603 FP Series Datasheet

The LB-603 FP series were designed to meet the need for multi-digit numeric displays.
These LED numeric displays use GaAsP on GaP(red), GaP(green) for the emitting material and are housed in an epoxy resin package.
They are three-digit displays with a character height of 14.3mm.

●Features

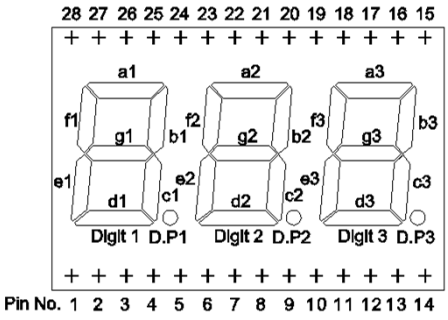
1) Height of character : 14.3mm.
2) The package surface is painted black and the segments are colored the display color.
3) High efficiency reflectors are used to achieve a bright, clear display.

●Dimensions (Unit : mm)



Tolerance are ±0.2 unless otherwise noted:

●Pin assignments

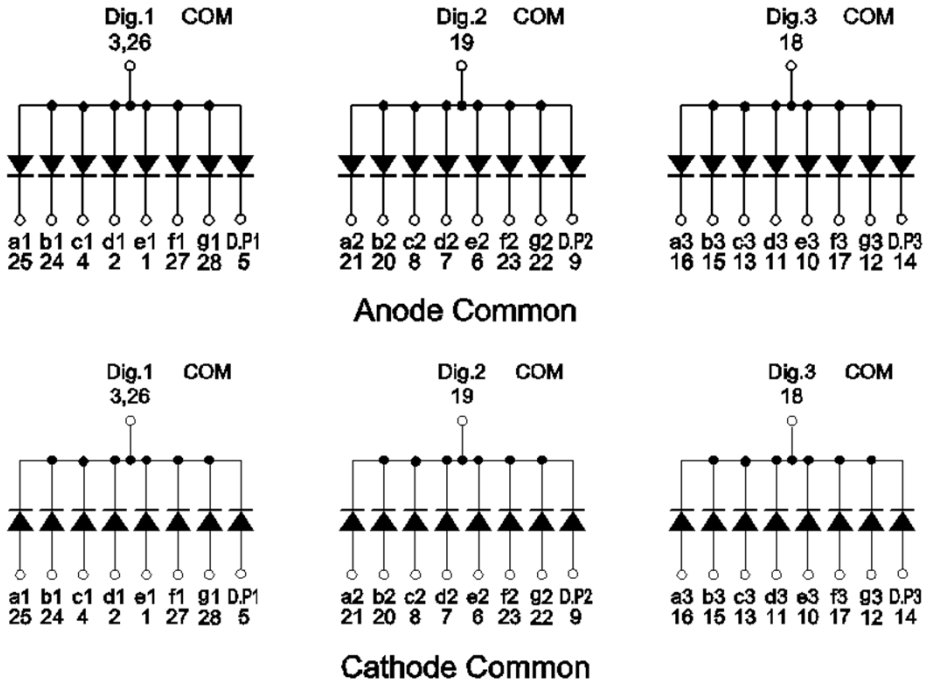


Pin No.	Function
1	Segment "e1"
2	Segment "d1"
3	Digit 1 Common
4	Segment "c1"
5	D.P1
6	Segment "e2"
7	Segment "d2"
8	Segment "c2"
9	D.P2
10	Segment "e3"
11	Segment "d3"
12	Segment "g3"
13	Segment "c3"
14	D.P3
15	Segment "b3"
16	Segment "a3"
17	Segment "f3"
18	Digit 3 Common
19	Digit 2 Common
20	Segment "b2"
21	Segment "a2"
22	Segment "g2"
23	Segment "f2"
24	Segment "b1"
25	Segment "a1"
26	Digit 1 Common
27	Segment "f1"
28	Segment "g1"

●Selection guide

Common \ Emitting color	Red	Green
Anode	LB-603VF	LB-603MF
Cathode	LB-603VP	LB-603MP

●Internal circuit schematic



●Absolute maximum ratings (T_a = 25°C)

Parameter	Symbol	Red	Green	Unit
		LB-603VF / VP	LB-603MF / MP	
Power dissipation	P_D	960	1440	mW
Power dissipation	P_D / seg	40	60	mW
Forward current	I_F	15	20	mA
Peak forward current	I_{FP}	60 *	60 *	mA
Reverse voltage	V_R	5	5	V
Operating temperature	T_{opr}	−25 to +75		°C
Storage temperature	T_{stg}	−30 to +85		°C

* Pulse width 1ms, duty 1 / 5

●Electrical and optical characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Red			Green			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Forward voltage	V_F	I_F =10mA	-	2.0	2.8	-	2.1	2.8	V
Reverse current	I_R	V_R =3V	-	-	100	-	-	100	μA
Peak wavelength	λ_p	I_F=10mA	-	650	-	-	563	-	nm
Spectral line halfwidth	$\Delta\lambda$	I_F=10mA	-	40	-	-	40	-	nm

◎ Not designed for radiation resistance.

●Luminous intensity

Parameter	λ_p	Type	Min.	Typ.	Max.	Unit
Red	650	LB-603VF	5.6	16	-	mcd
		LB-603VP				
Green	563	LB-603MF	9	25	-	mcd
		LB-603MP				

◎ Condition I_F=10mA

●Iv classification

Parameter	Type	Item	Iv classification	Unit
Red	LB-603VF LB-603VP	“ L ”	5.6 to 11	mcd
		“ M ”	9.0 to 18	mcd
		“ N ”	14 to 28	mcd
		“ P ”	22 to 45	mcd
		“ Q ”	36 to (71)	mcd
Green	LB-603MF LB-603MP	“ M ”	9.0 to 18	mcd
		“ N ”	14 to 28	mcd
		“ P ”	22 to 45	mcd
		“ Q ”	36 to 71	mcd
		“ R ”	56 to (110)	mcd

◎ Condition I_F=10mA

●Electrical and optical characteristics curves

Fig.1 Forward Current vs. Forward Voltage

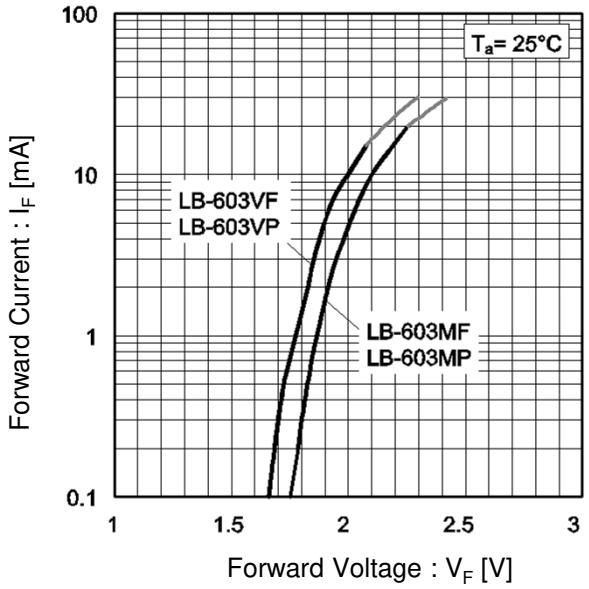


Fig.2 Relative Luminous Intensity vs. Forward Current

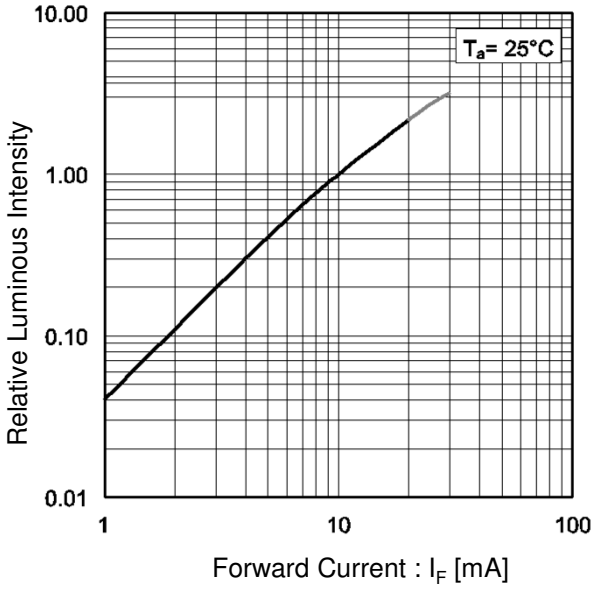


Fig.3 Relative Luminous Intensity vs. Case Temperature

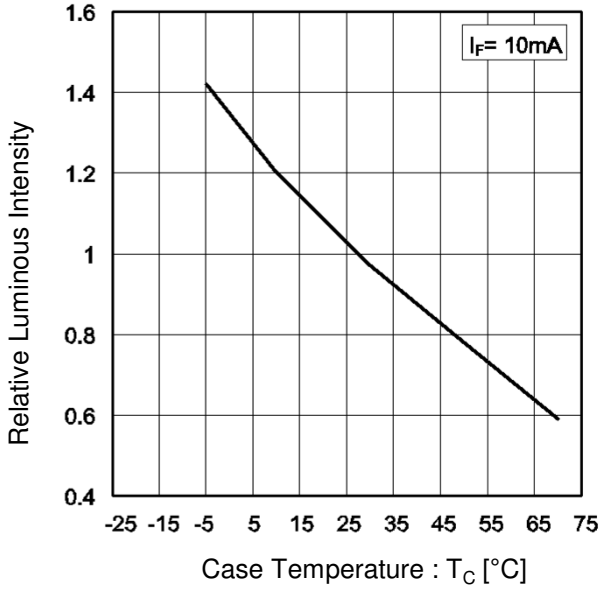
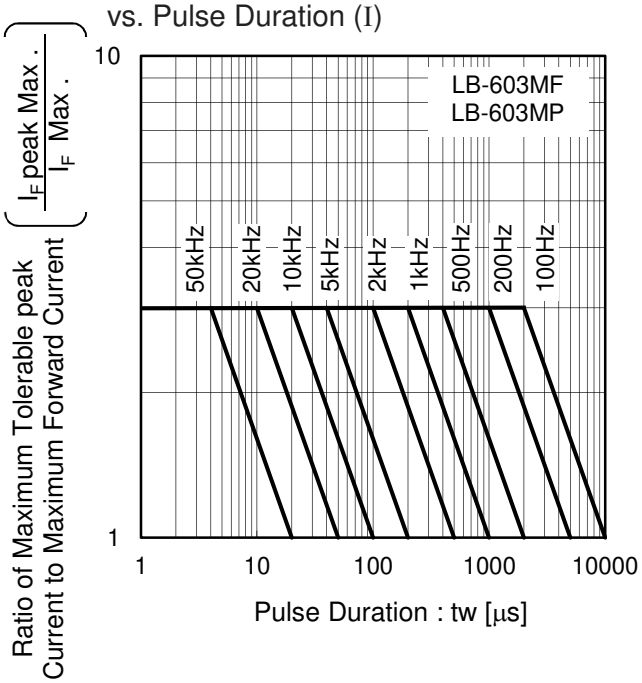


Fig.4 Ratio of Maximum Tolerable Peak Current vs. Pulse Duration (I)



●Electrical and optical characteristics curves

Fig.5 Ratio of Maximum Tolerable Peak Current vs. Pulse Duration (II)

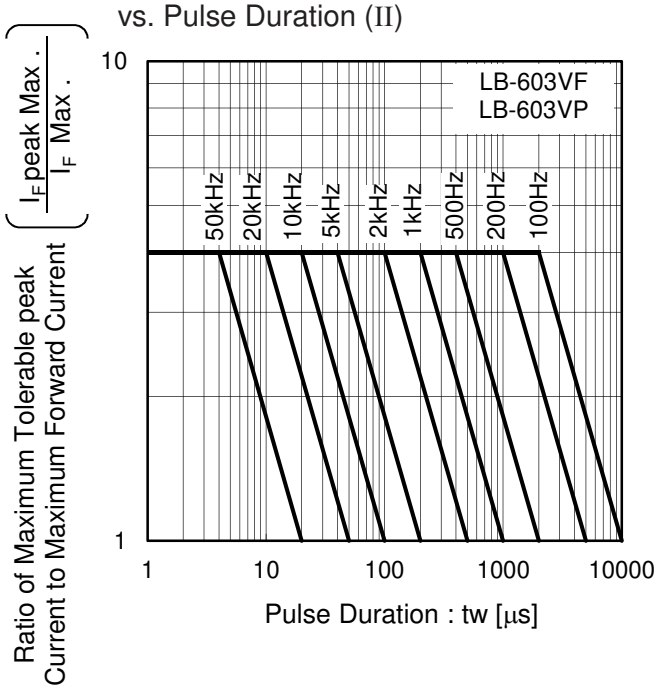
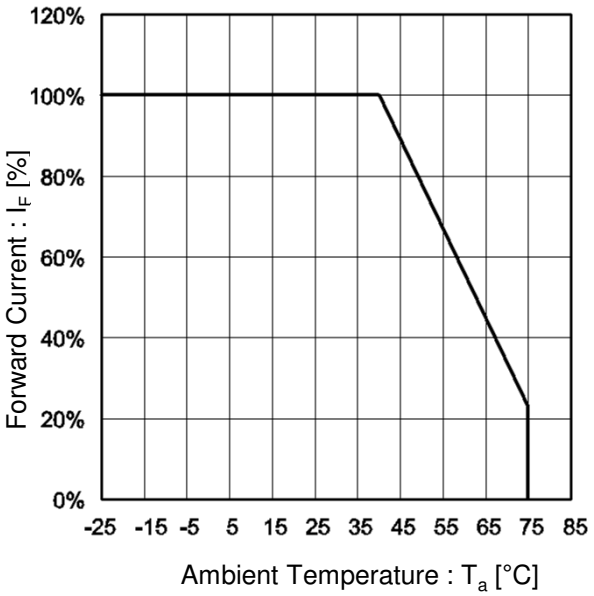


Fig.6 Derating



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