

# High efficiency, three-digit numeric displays

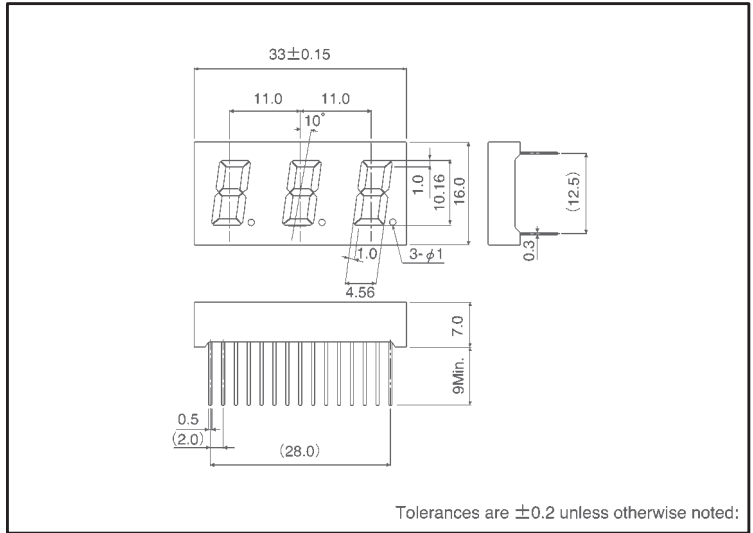
## LB-403 DN Series

The LB-403 DN series were designed to meet the need for multi-digit numeric displays. These LED numeric displays use GaAsP on GaP for the emitting material (with the exception of green) and are housed in an epoxy resin package. They are three-digit displays with a character height of 10.16 mm.

●Features

- 1) Height of character: 10.16 mm.
- 2) Long 9 mm leads (minimum) on bottom of case.
- 3) High efficiency reflectors are used to achieve a bright, clear display.
- 4) The package surface is painted black and the segments are colored the display color.

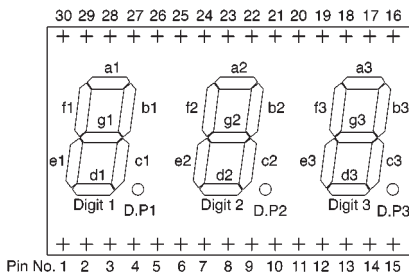
●External dimensions (Units: mm)



●Selection guide

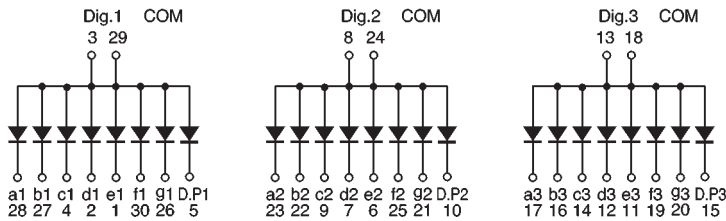
| Emitting color | Red      | Orange   | Yellow   | Green    |
|----------------|----------|----------|----------|----------|
|                | Common   |          |          |          |
| Anode          | LB-403VD | LB-403DD | LB-403YD | LB-403MD |
| Cathode        | LB-403VN | —        | —        | LB-403MN |

●Pin assignments



| Pin No. | Function       | Pin No. | Function       |
|---------|----------------|---------|----------------|
| 1       | Segment "e1"   | 16      | Segment "b3"   |
| 2       | Segment "d1"   | 17      | Segment "a3"   |
| 3       | Digit 1 Common | 18      | Digit 3 Common |
| 4       | Segment "c1"   | 19      | Segment "f3"   |
| 5       | D.P1           | 20      | Segment "g3"   |
| 6       | Segment "e2"   | 21      | Segment "g2"   |
| 7       | Segment "d2"   | 22      | Segment "b2"   |
| 8       | Digit 2 Common | 23      | Segment "a2"   |
| 9       | Segment "c2"   | 24      | Digit 2 Common |
| 10      | D.P2           | 25      | Segment "f2"   |
| 11      | Segment "e3"   | 26      | Segment "g1"   |
| 12      | Segment "d3"   | 27      | Segment "b1"   |
| 13      | Digit 3 Common | 28      | Segment "a1"   |
| 14      | Segment "c3"   | 29      | Digit 1 Common |
| 15      | D.P3           | 30      | Segment "f1"   |

● Internal circuit schematic (example of common anode)



● Absolute maximum ratings ( $T_a = 25^\circ\text{C}$ )

| Parameter             | Symbol             | Red           | Orange   | Yellow   | Green         | Unit             |
|-----------------------|--------------------|---------------|----------|----------|---------------|------------------|
|                       |                    | LB-403VD / VN | LB-403DD | LB-403YD | LB-403MD / MN |                  |
| Power dissipation     | $P_D$              | 1344          | 1344     | 1344     | 1344          | mW               |
| Power dissipation     | $P_D / \text{seg}$ | 56            | 56       | 56       | 56            | mW               |
| Forward current       | $I_F$              | 20            | 20       | 20       | 20            | mA               |
| Peak forward current  | $I_{FP}$           | 60*           | 60*      | 60*      | 60*           | mA               |
| Reverse voltage       | $V_R$              | 5             | 5        | 5        | 5             | V                |
| Operating temperature | $T_{opr}$          | -25 ~ +85     |          |          |               | $^\circ\text{C}$ |
| Storage temperature   | $T_{stg}$          | -30 ~ +100    |          |          |               | $^\circ\text{C}$ |

\* Pulse width 1ms duty 1 / 5

● Electrical and optical characteristics ( $T_a = 25^\circ\text{C}$ )

| Parameter                | Symbol          | Conditions        | Red  |      |      | Orange |      |      | Yellow |      |      | Green |      |      | Unit          |
|--------------------------|-----------------|-------------------|------|------|------|--------|------|------|--------|------|------|-------|------|------|---------------|
|                          |                 |                   | Min. | Typ. | Max. | Min.   | Typ. | Max. | Min.   | Typ. | Max. | Min.  | Typ. | Max. |               |
| Forward voltage          | $V_F$           | $I_F=10\text{mA}$ | —    | 2.0  | 2.8  | —      | 2.0  | 2.8  | —      | 2.1  | 2.8  | —     | 2.1  | 2.8  | V             |
| Reverse current          | $I_R$           | $V_R=3\text{V}$   | —    | —    | 100  | —      | —    | 100  | —      | —    | 100  | —     | —    | 100  | $\mu\text{A}$ |
| Peak wavelength          | $\lambda_P$     | $I_F=10\text{mA}$ | —    | 650  | —    | —      | 610  | —    | —      | 585  | —    | —     | 563  | —    | nm            |
| Spectral line half width | $\Delta\lambda$ | $I_F=10\text{mA}$ | —    | 40   | —    | —      | 40   | —    | —      | 40   | —    | —     | 40   | —    | nm            |

⊙ Not designed for radiation resistance.

● Luminous intensity

| Color  | $\lambda_P$ | Type     | Min. | Typ. | Max. | Unit |
|--------|-------------|----------|------|------|------|------|
| Red    | 650         | LB-403VD | 3.6  | 10   | —    | mcd  |
|        |             | LB-403VN |      |      |      |      |
| Orange | 610         | LB-403DD | 2.2  | 6.3  | —    | mcd  |
| Yellow | 585         | LB-403YD | 3.6  | 10   | —    | mcd  |
| Green  | 563         | LB-403MD | 5.6  | 16   | —    | mcd  |
|        |             | LB-403MN |      |      |      |      |

Note: Measured at  $I_F = 10\text{mA}$