



Pb-free
HEAT



NARG105/107 Series

Numeric Display/

Bi-Color Type/Case Size 22.8 x 33.0 mm

Features

| | |
|-------------------|---|
| Case Size | 22.8 x 33.0 mm (W x H) |
| Product features | <ul style="list-style-type: none">· Bi-Color· Each color has anode common.· A black case and a gray case are available.· Lead-free soldering compatible· RoHS compliant |
| Peak wavelength | Green : 570nm Red : 660nm |
| Number of Digit | 1 Digit |
| Segment Shape | Arrow Feather Type |
| Character Height | 25.4 mm |
| Die materials | Green : GaP Red : GaAlAs |
| Soldering methods | TTW (Through The Wave) soldering and manual soldering |
| ESD | More than 2kV(HBM) |
| Packing | Tray |

Recommended Applications

Amusement Equipment, Electric Household Appliances, Other General Applications



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Emitted Color

| Part No. | | Material | Emitted Color | Chip/ Segment ¹ |
|---------------------|--------------------|----------|---------------|-------------------------------|
| Anode Common | | | | |
| Case Color Black | Case Color Gray | | | |
| NARG105 | NARG107 | GaP | Green | 2 |
| | | | | 1 |
| | | GaAsP | Red | 2 |
| | | | | 1 |

¹ Segment NO. a, b, c, d, e, f, g : 2 chips / Segment
Segment NO. D.P : 1 chip / Segment

Absolute Maximum Ratings

(Ta=25)

| Item | Symbol | Absolute Maximum Ratings | | | | Unit |
|---------------------------------------|------------------|--------------------------|----|-----------|----|--------|
| | | Green | | Red | | |
| | | Chip / Segment | | | | |
| | | 2 | 1 | 2 | 1 | |
| Power Dissipation ² | Pd | 96 | 48 | 80 | 40 | mW/seg |
| Forward Current ² | I _F | 20 | | 20 | | mA/seg |
| Pulse Forward Current ^{2, 3} | I _{FRM} | 40 | | 40 | | mA/seg |
| Derating (Ta=25 or higher) | I _F | 0.33 | | 0.33 | | mA/ |
| | I _{FRM} | 0.67 | | 0.67 | | mA/ |
| Reverse Voltage | V _R | 8 | 4 | 8 | 4 | V |
| Operating Temperature | T _{opr} | -30 ~ +70 | | -30 ~ +70 | | |
| Storage Temperature | T _{sta} | -30 ~ +80 | | -30 ~ +80 | | |

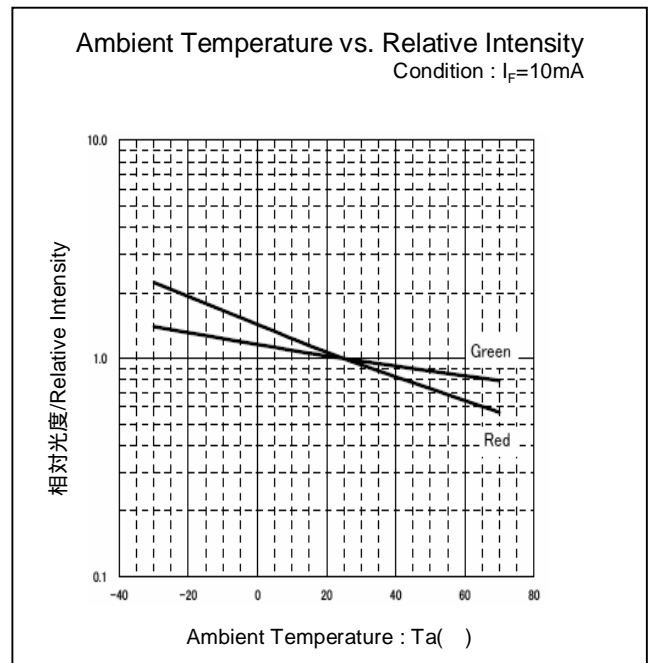
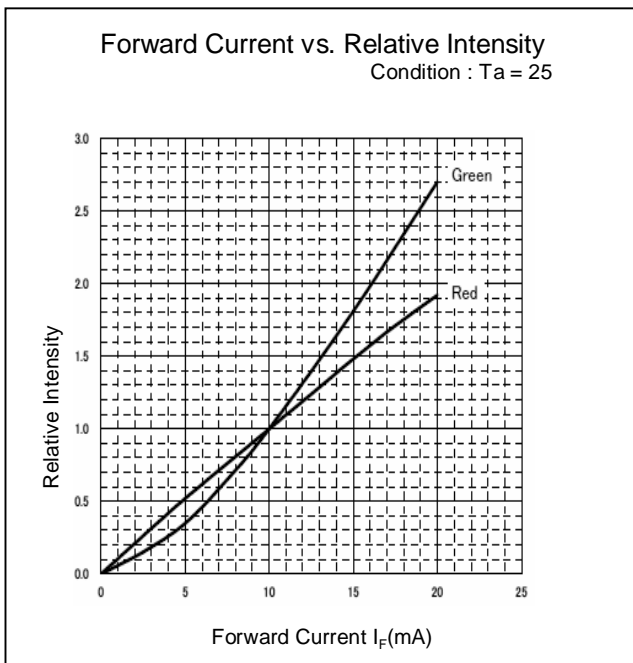
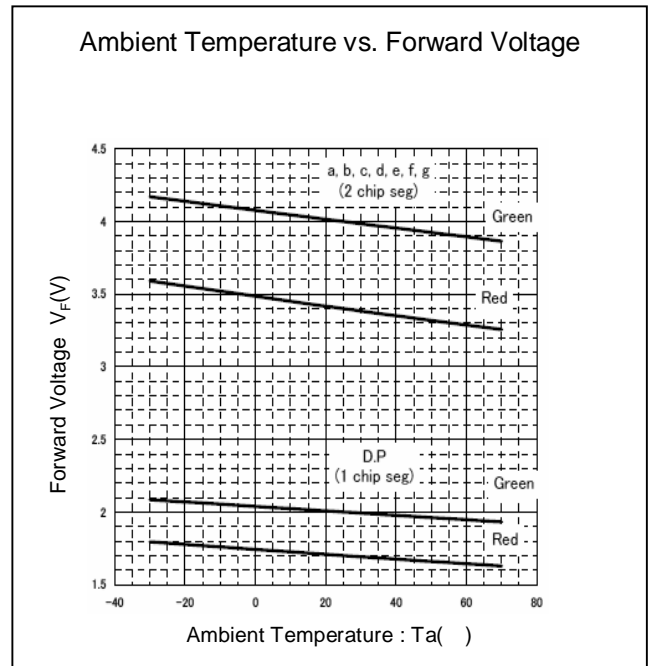
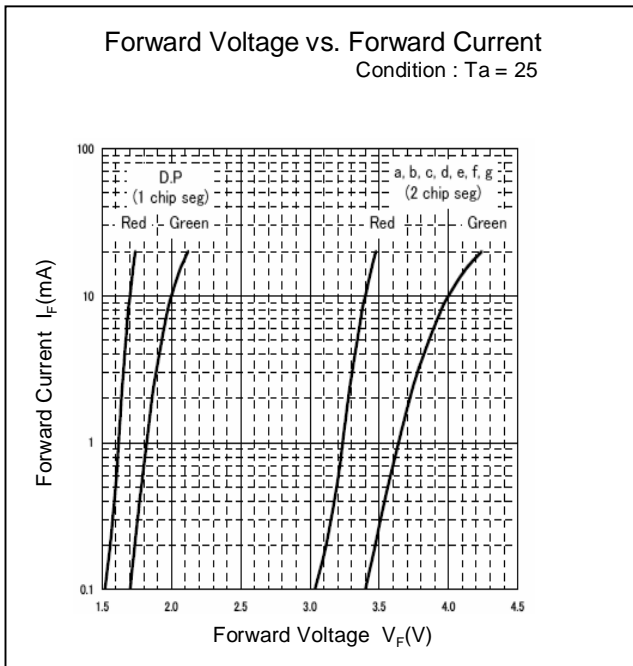
² When bi-color LEDs are driven simultaneously, the above ratings is the total of Pd, I_F and I_{FRM} values.
³ I_{FRM} Measurement condition : Duty 1/2, f = 500Hz

Electro-Optical Characteristics

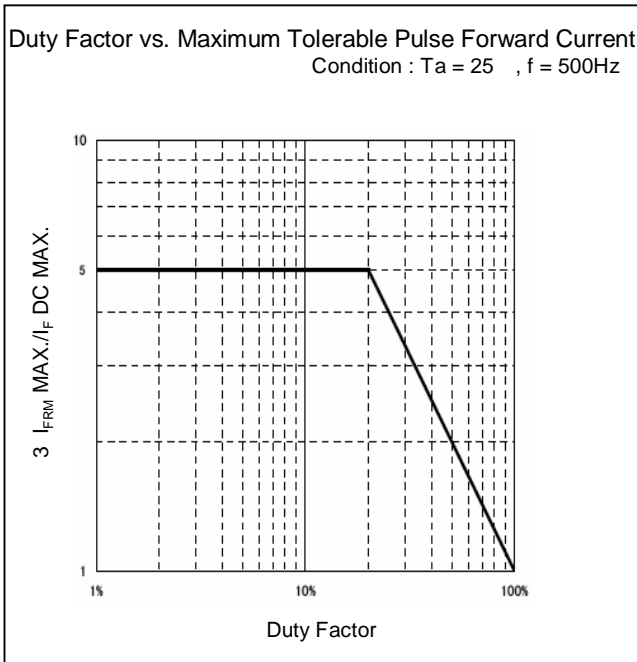
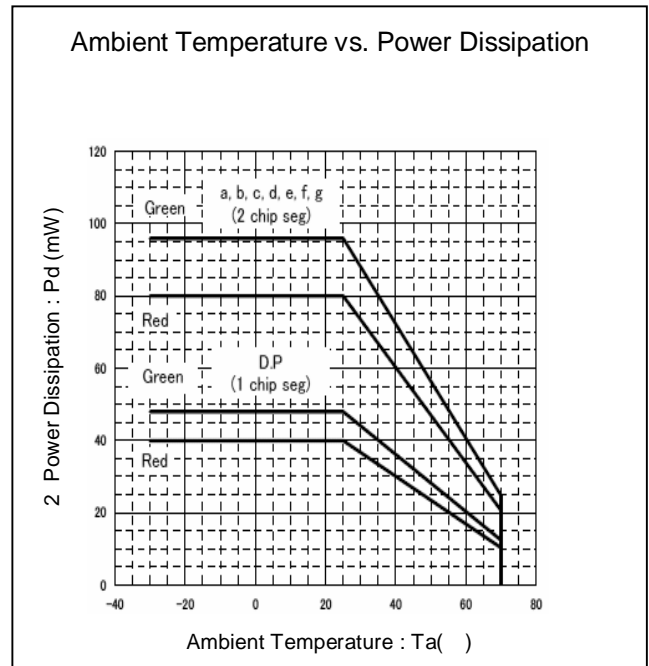
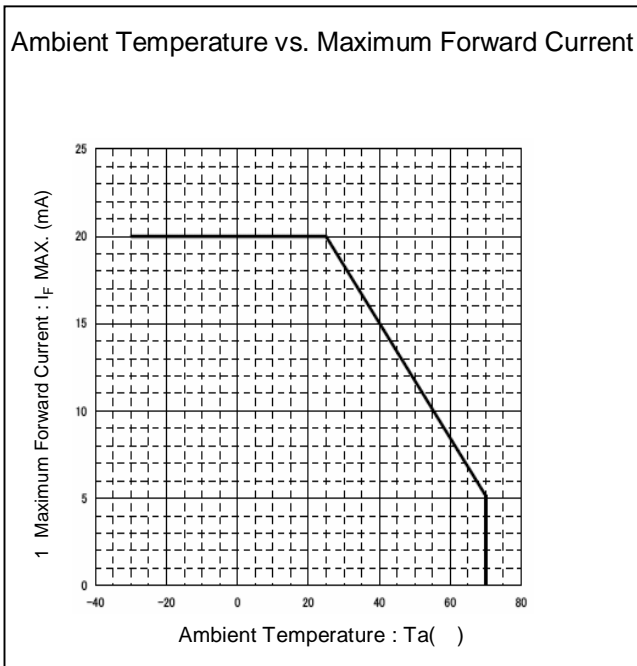
(Ta=25)

| Item | Conditions | Symbol | | Characteristics | | | | Unit |
|--------------------------|----------------------|----------------|------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|---------|
| | | | | Green | | Red | | |
| | | | | Chip / Segment | | | | |
| | | | | 2 | 1 | 2 | 1 | |
| Luminous Intensity | I _F =10mA | I _v | MIN. | 2.0 | 1.0 | 2.0 | 1.0 | mcd/seg |
| | | | TYP. | 4.0 | 2.0 | 4.0 | 2.0 | |
| Forward Voltage | I _F =10mA | V _F | TYP. | 4.0 | 2.0 | 3.4 | 1.7 | V/seg |
| | | | MAX. | 4.8 | 2.4 | 4.0 | 2.0 | |
| Reverse Current | - | I _R | MAX. | 100 (V _R =8V) | 100 (V _R =4V) | 100 (V _R =8V) | 100 (V _R =4V) | μ A/seg |
| Peak Wavelength | I _F =10mA | λ _p | TYP. | 570 | | 660 | | nm |
| Spectral Line Half Width | I _F =10mA | | TYP. | 30 | | 30 | | nm |

Technical Data



Technical Data



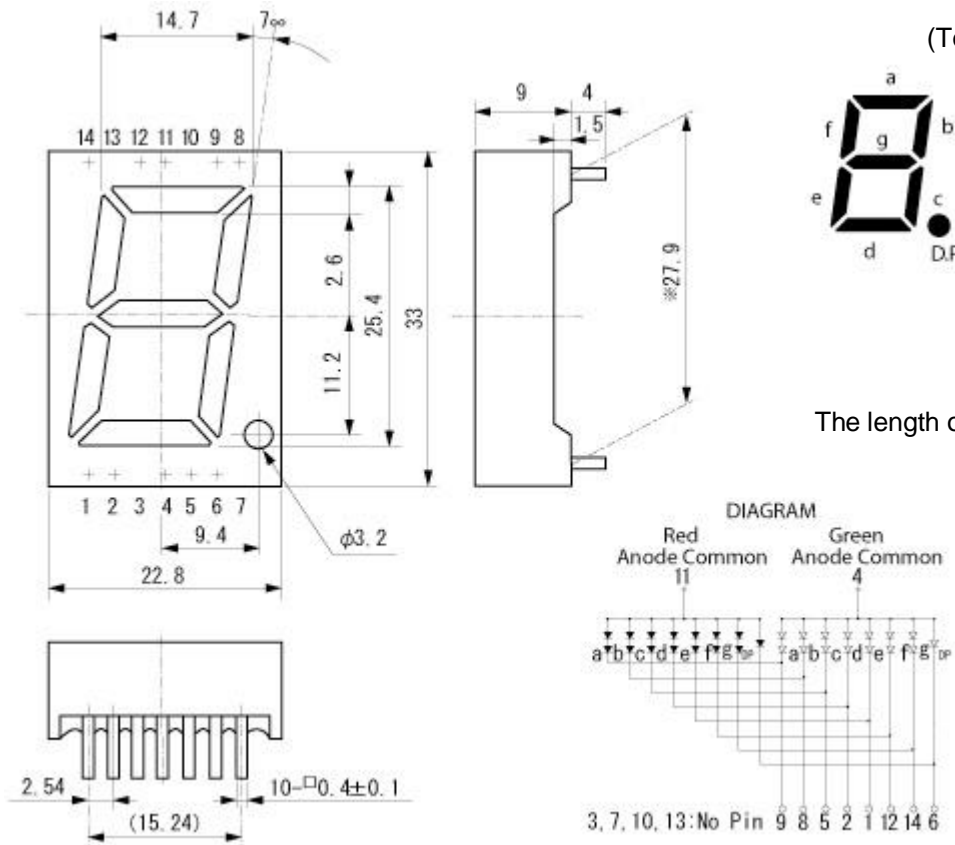
Notes

1, 2, 3
When bi-color LEDs are driven simultaneously, the ratings of these description graphs is the total of $I_F \text{ Max.}$, P_d and $I_{FRM} \text{ Max.} / I_F \text{ DC MAX.}$ values.

Package Dimensions

(Unit: mm)

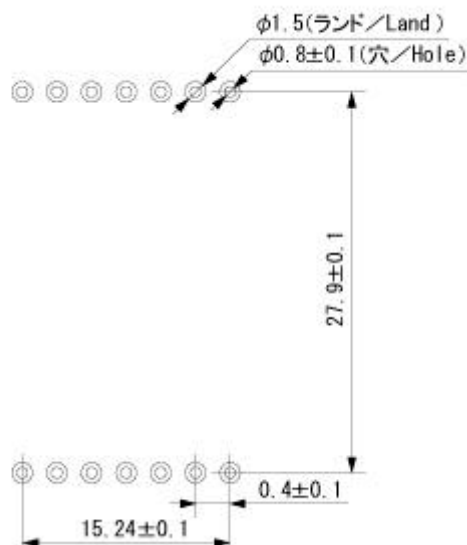
(Tolerance : ± 0.25 mm)



The length of lead base.

Recommended Soldering Pattern

(Unit: mm)



TTW (Through The Wave) soldering Conditions

| | | |
|-------------------|--|--|
| Pre-heating | 100 60 s | (MAX.) Resin surface temperature (MAX.) |
| Solder Bath Temp. | 265 | (MAX.) |
| Dipping Time | 5 s | (MAX.) |
| Position | At least 2.0 mm away from the root of lead | |

- 1) The dip soldering process shall be 2 times maximum.
- 2) The product shall be cooled to normal temperature before the second dipping process.

Manual Soldering Conditions

| | | |
|------------------------------|--|--------------------|
| Iron tip temp. | 400 | (MAX.) (30 W Max.) |
| Soldering time and frequency | 3 s 2 times | (MAX.) (MAX.) |
| Position | At least 2.0 mm away from the root of lead | |



Reliability Testing Result

| Reliability Testing Result | Applicable Standard | Testing Conditions | Duration | Failure |
|-------------------------------|---------------------|--|----------|---------|
| Room Temp. Operating Life | EAJED-4701/100(101) | Ta = 25 , If = Maximum Rated Current/seg | 1,000 h | 0/10 |
| Resistance to Soldering Heat | EAJED-4701/300(302) | 260 ± 5 , 3mm from package base | 10s | 0/10 |
| Temperature Cycling | EAJED-4701/100(105) | Minimum Rated Storage Temperature(30min) ~ Normal Temperature(15min) ~ Maximum Rated Storage Temperature(30min) ~ Normal Temperature(15min) | 5 cycles | 0/10 |
| Wet High Temp. Storage Life | EAJED-4701/100(103) | Ta = 60 ± 2 , RH = 90 ± 5% | 1,000 h | 0/10 |
| High Temp. Storage Life | EAJED-4701/200(201) | Ta = Maximum Rated Storage Temperature | 1,000 h | 0/10 |
| Low Temp. Storage Life | EAJED-4701/200(202) | Ta = Minimum Rated Storage Temperature | 1,000 h | 0/10 |
| Lead Tension | EAJED-4701/400(401) | 5N, 1time | 10s | 0/10 |
| Vibration, Variable Frequency | EAJED-4701/400(403) | 98.1m/s ² (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction | 2 h | 0/10 |
| Lead Bend | EAJED-4701/400(401) | 2.5N, 0 ° 90 ° | Twice | 0/10 |
| Shock | JSC 7201 A-8 | It falls on wood engraving from height of 75cm. | 3 times | 0/10 |

Failure Criteria

| Items | Symbols | Conditions | Failure criteria |
|---------------------|----------------|---|--|
| Luminous Intensity | Iv | If Value of each product Luminous Intensity | Testing Min. Value < Spec. Min. Value x 0.5 |
| Forward Voltage | V _F | If Value of each product Forward Voltage | Testing Max. Value Spec. Max. Value x 1.2 |
| Reverse Current | I _R | V _R = Maximum Rated Reverse Voltage V | Testing Max. Value Spec. Max. Value x 2.5 |
| Cosmetic Appearance | - | - | Occurrence of notable decoloration, deformation and cracking |

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