



## 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"> <li>· Bi-Color</li> <li>· Each color has anode common.</li> <li>· A black case and a gray case are available.</li> <li>· Lead-free soldering compatible</li> <li>· RoHS compliant</li> </ul>
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 <sup>1</sup>
Anode Common				
Case Color Black	Case Color Gray			
NARG105	NARG107	GaP	Green	2
				1
		GaAsP	Red	2
				1

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

### Absolute Maximum Ratings

(Ta=25 °C)

Item	Symbol	Absolute Maximum Ratings				Unit
		Green		Red		
		Chip / Segment				
		2	1	2	1	
Power Dissipation <sup>2</sup>	Pd	96	48	80	40	mW/seg
Forward Current <sup>2</sup>	I <sub>F</sub>	20		20		mA/seg
Pulse Forward Current <sup>2, 3</sup>	I <sub>FRM</sub>	40		40		mA/seg
Derating (Ta=25 or higher)	I <sub>F</sub>	0.33		0.33		mA/
	I <sub>FRM</sub>	0.67		0.67		mA/
Reverse Voltage	V <sub>R</sub>	8	4	8	4	V
Operating Temperature	T <sub>opr</sub>	-30 ~ +70		-30 ~ +70		
Storage Temperature	T <sub>stg</sub>	-30 ~ +80		-30 ~ +80		

- <sup>2</sup> When bi-color LEDs are driven simultaneously, the above ratings is the total of Pd, I<sub>F</sub> and I<sub>FRM</sub> values.  
<sup>3</sup> I<sub>FRM</sub> Measurement condition : Duty 1/2, f = 500Hz

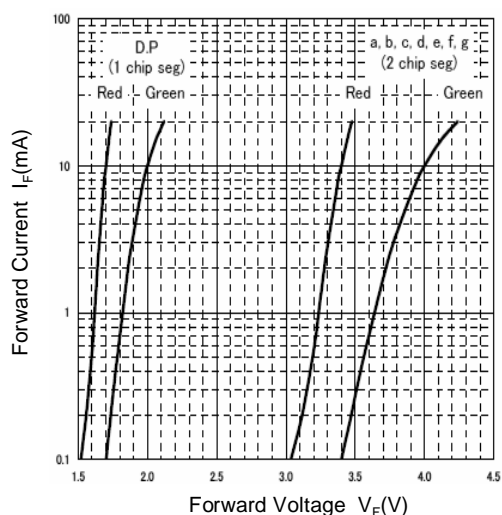
### Electro-Optical Characteristics

(Ta=25 °C)

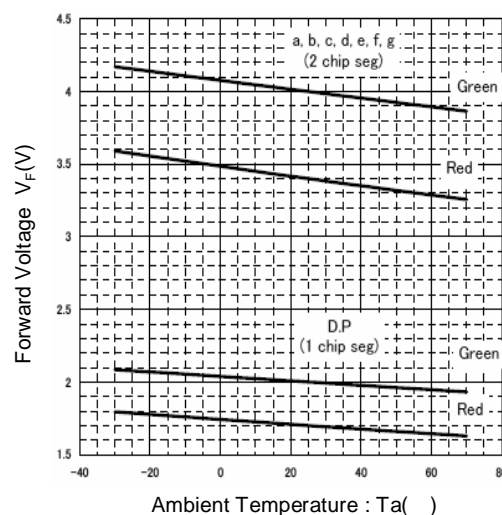
Item	Conditions	Symbol		Characteristics				Unit
				Green		Red		
				Chip / Segment				
				2	1	2	1	
Luminous Intensity	I <sub>F</sub> =10mA	I <sub>V</sub>	MIN.	2.0	1.0	2.0	1.0	mcd/seg
			TYP.	4.0	2.0	4.0	2.0	
Forward Voltage	I <sub>F</sub> =10mA	V <sub>F</sub>	TYP.	4.0	2.0	3.4	1.7	V/seg
			MAX.	4.8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

## Technical Data

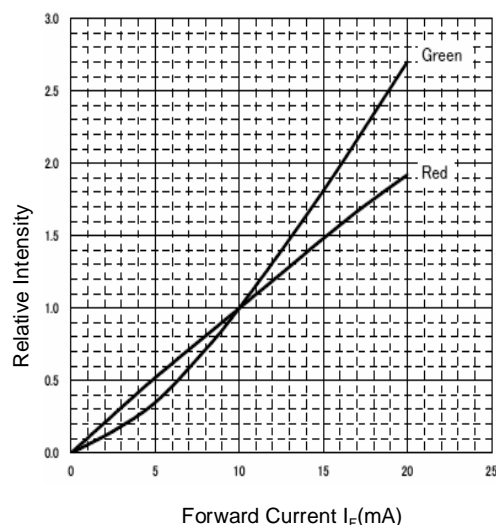
Forward Voltage vs. Forward Current  
Condition :  $T_a = 25$



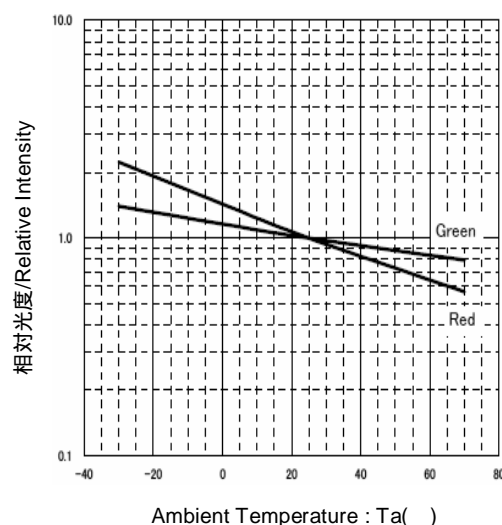
Ambient Temperature vs. Forward Voltage



Forward Current vs. Relative Intensity  
Condition :  $T_a = 25$

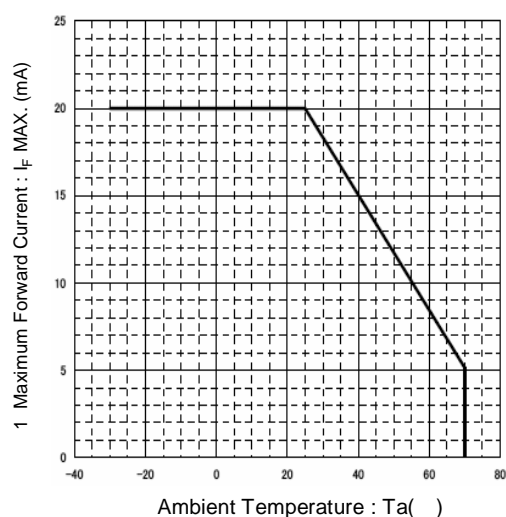


Ambient Temperature vs. Relative Intensity  
Condition :  $I_F = 10\text{mA}$

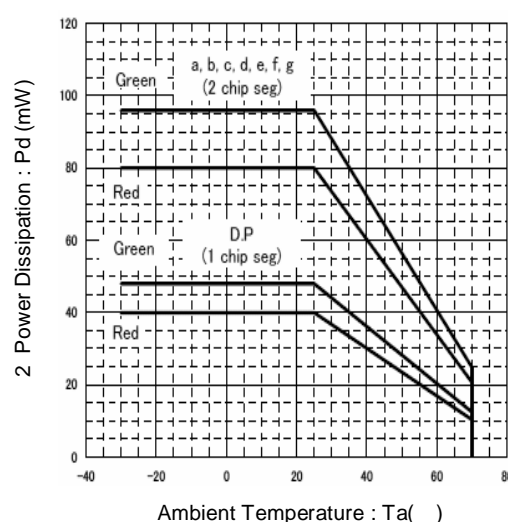


## Technical Data

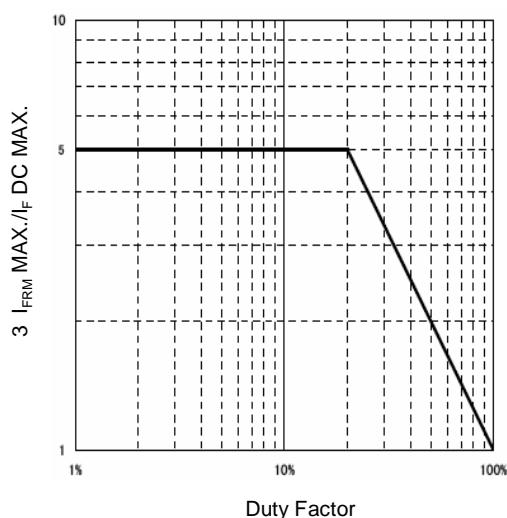
Ambient Temperature vs. Maximum Forward Current



Ambient Temperature vs. Power Dissipation



Duty Factor vs. Maximum Tolerable Pulse Forward Current  
Condition :  $T_a = 25^\circ\text{C}$ ,  $f = 500\text{Hz}$



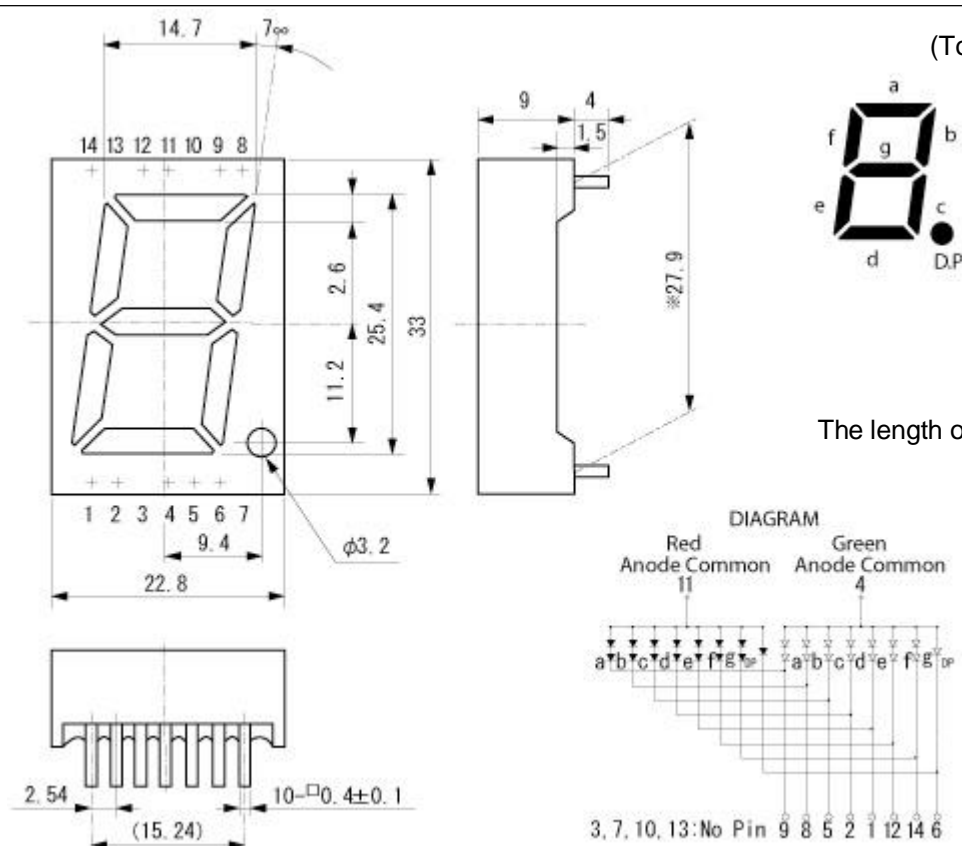
### Notes

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

## Package Dimensions

(Unit: mm)

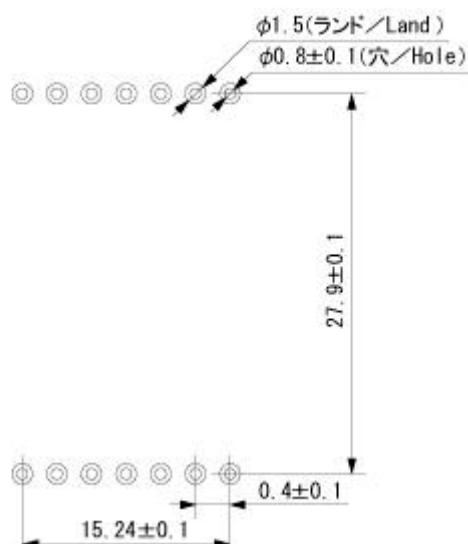
(Tolerance :  $\pm 0.25$  mm)



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	BAJED-4701/100(101)	Ta = 25 , If = Maximum Rated Current/seg	1,000 h	0/10
Resistance to Soldering Heat	BAJED-4701/300(302)	260 ± 5 , 3mm from package base	10s	0/10
Temperature Cycling	BAJED-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	BAJED-4701/100(103)	Ta = 60 ± 2 , RH = 90 ± 5%	1,000 h	0/10
High Temp. Storage Life	BAJED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/10
Low Temp. Storage Life	BAJED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/10
Lead Tension	BAJED-4701/400(401)	5N, 1time	10s	0/10
Vibration, Variable Frequency	BAJED-4701/400(403)	98.1m/s <sup>2</sup> (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction	2 h	0/10
Lead Bend	BAJED-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 <sub>F</sub>	If Value of each product Forward Voltage	Testing Max. Value Spec. Max. Value x 1.2
Reverse Current	I <sub>R</sub>	V <sub>R</sub> = 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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