



**Pb-free  
HEAT**



## **NORG161 Series**

Numeric Display/  
Bi-Color Type/Case Size 12.5 x 19.0 mm

### Features

Case Size	12.5 x 19.0 mm (W x H)
Product features	<ul style="list-style-type: none"> <li>▪ Bi-Color</li> <li>▪ Each color has anode common and cathode common respectively.</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	15.2 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

## Emitted Color

Part No.		Material	Emitted Color	Chip/ Segment
Anode Common	Cathode Common			
Case Color Black	Case Color Black			
NARG161	NKRG161	GaP	Green	1
		GaAsP	Red	1

## Absolute Maximum Ratings

(Ta=25 )

Item	Symbol	Absolute Maximum Ratings		Unit
		Green	Red	
Power Dissipation <sup>※1</sup>	Pd	36	36	mW/seg
Forward Current <sup>※1</sup>	I <sub>F</sub>	15	15	mA/seg
Pulse Forward Current <sup>※1,※2</sup>	I <sub>FRM</sub>	70	70	mA/seg
Derating (Ta=25°C or higher)	ΔI <sub>F</sub>	0.22	0.22	mA/°C
	ΔI <sub>FRM</sub>	1.00	1.00	mA/°C
Reverse Voltage	V <sub>R</sub>	4	4	V
Operating Temperature	T <sub>opr</sub>	-30~+70	-30~+70	°C
Storage Temperature	T <sub>stg</sub>	-30~+80	-30~+80	°C

 ※1 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.

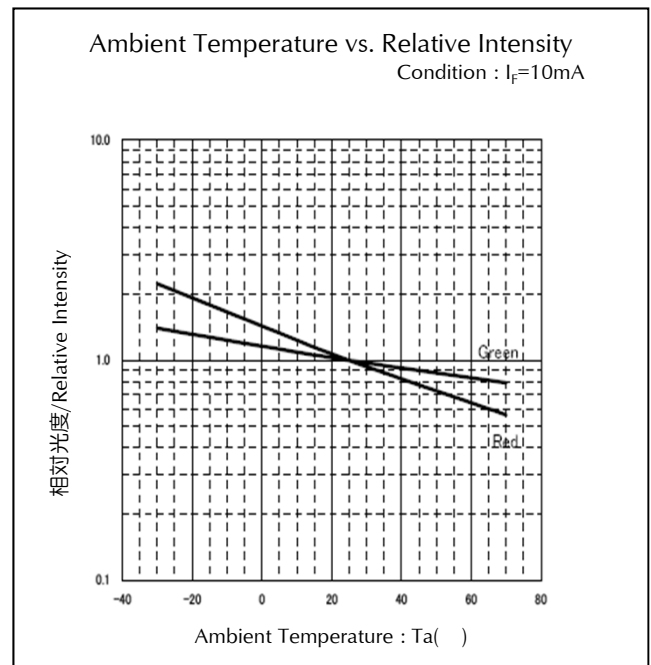
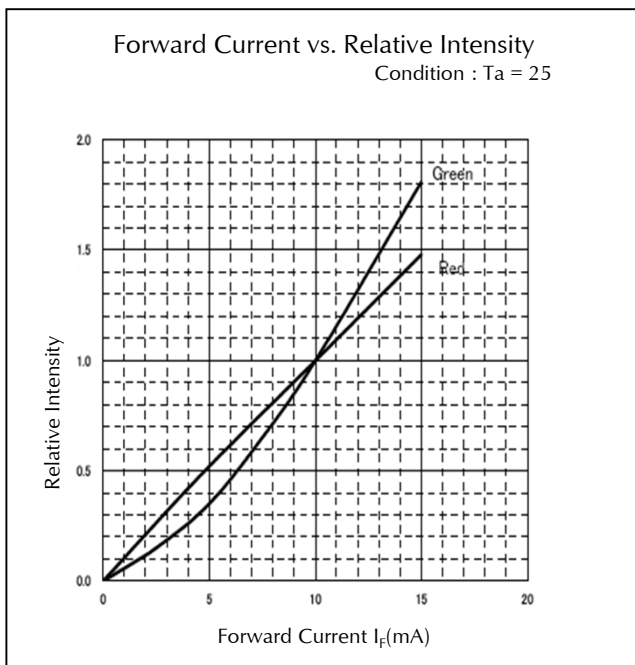
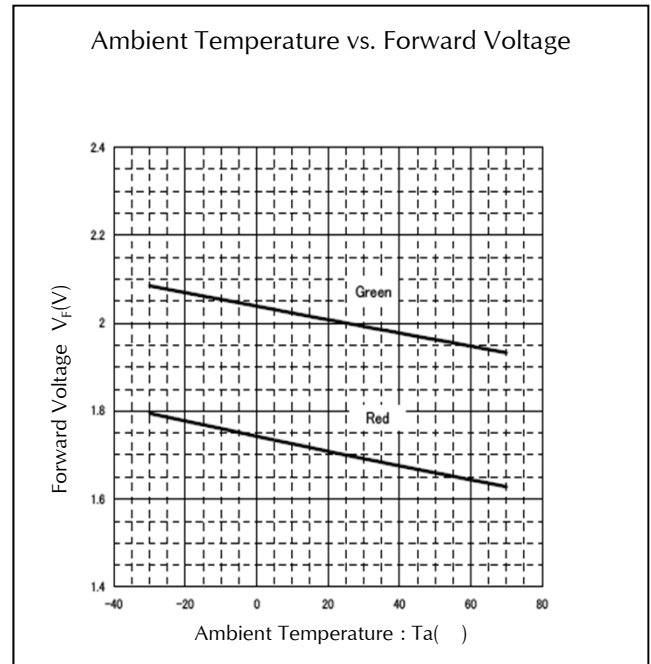
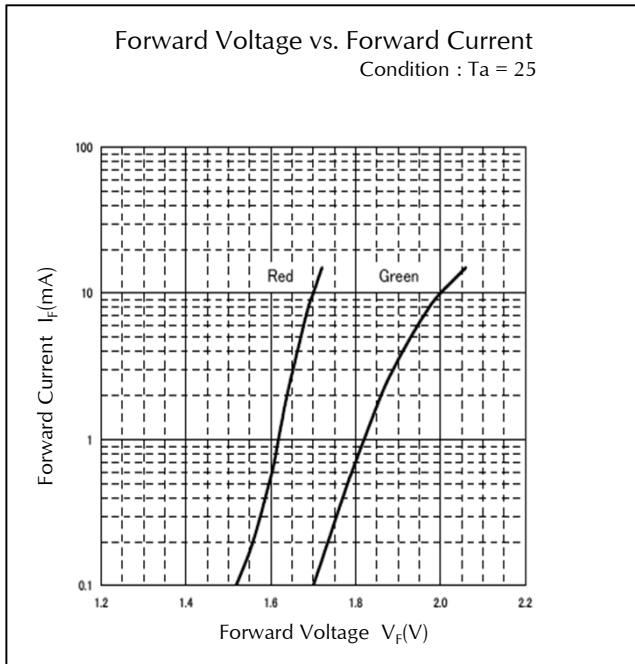
 ※2 I<sub>FRM</sub> Measurement condition : Duty 1/5, f = 1kHz

## Electro-Optical Characteristics

(Ta=25 )

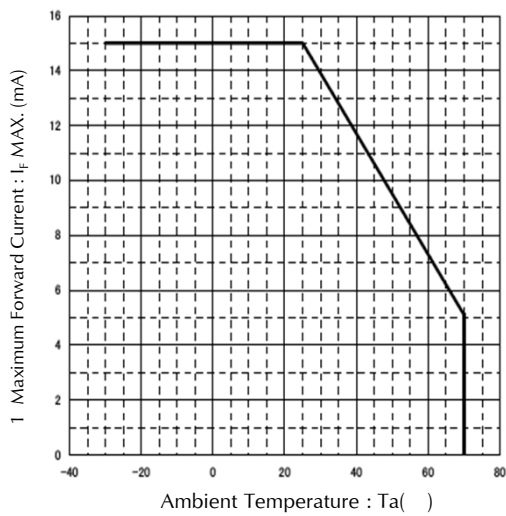
Item	Conditions	Symbol	Characteristics		Unit	
			Green	Red		
Luminous Intensity	I <sub>F</sub> =10mA	I <sub>v</sub>	MIN.	1.2	1.2	mcd/seg
			TYP.	2.4	2.4	
Forward Voltage	I <sub>F</sub> =10mA	V <sub>F</sub>	TYP.	2.0	1.7	V/seg
			MAX.	2.4	2.0	
Reverse Current	V <sub>R</sub> =4V	I <sub>R</sub>	MAX.	20	20	μA/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	Δλ	TYP.	30	30	nm

## Technical Data

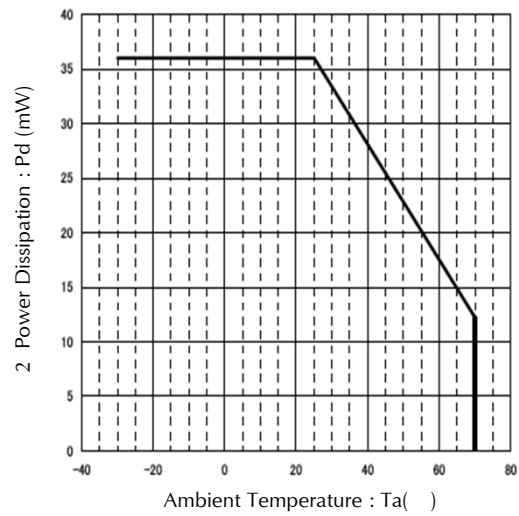


## Technical Data

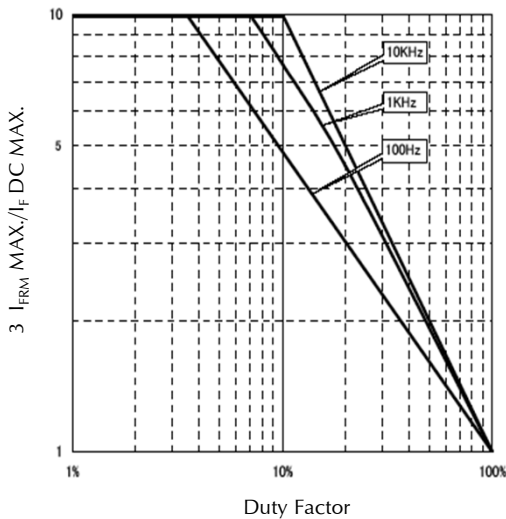
Ambient Temperature vs. Maximum Forward Current



Ambient Temperature vs. Power Dissipation



Duty Factor vs. Maximum Tolerable Pulse Forward Current  
Condition : Ta = 25

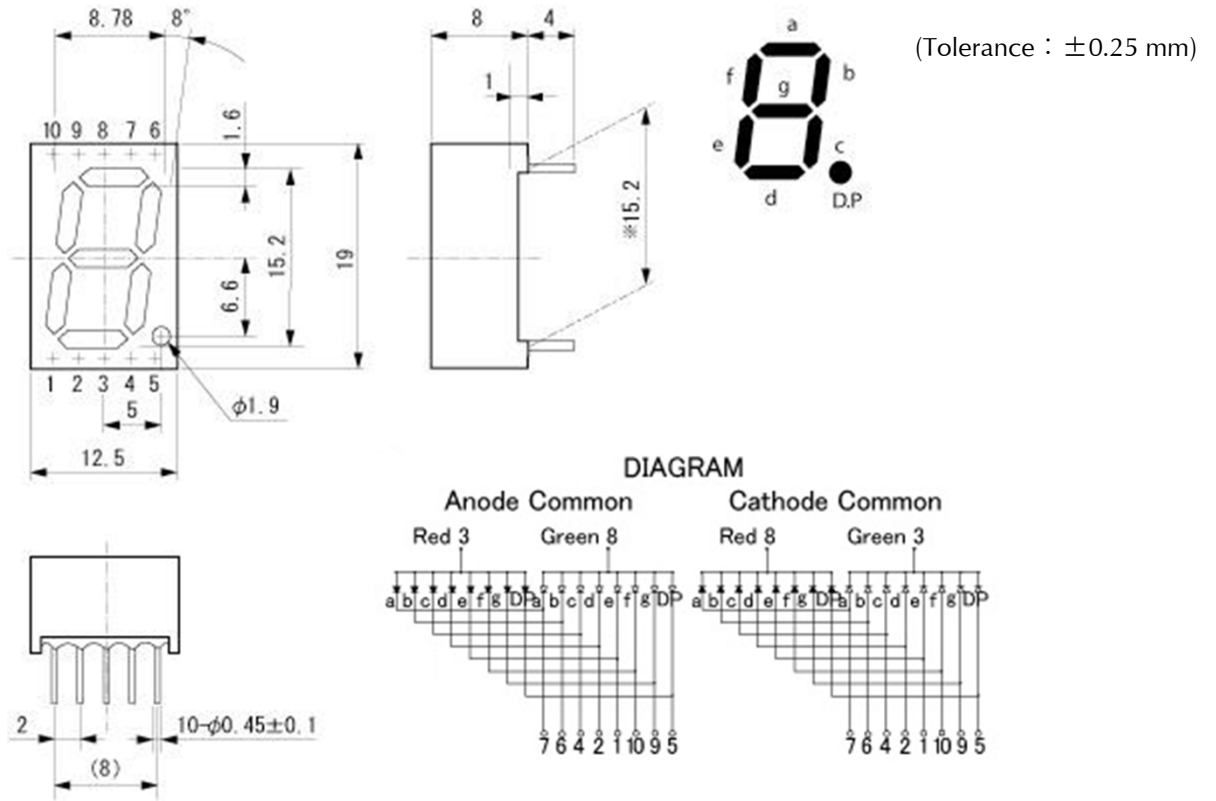


### Notes

1, 2, 3  
When bi-color LEDs are driven simultaneously, the ratings of these description graphs is the total of I<sub>F</sub> Max., Pd and I<sub>FRM</sub> Max./I<sub>F</sub> DC MAX. values.

Package Dimensions

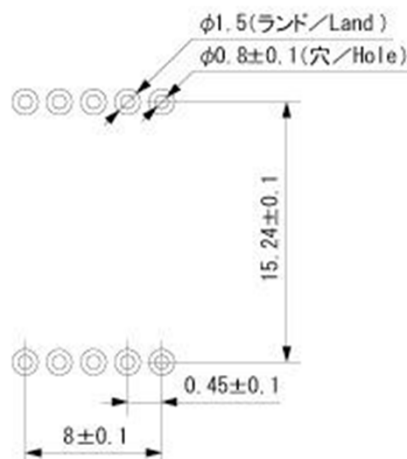
(Unit: mm)



The length of lead base.

Recommended Soldering Pattern

(Unit: mm)



## TTW (Through The Wave) soldering Conditions

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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

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Iron tip temp.	360	(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	EIAJ ED-4701/100(101)	Ta = 25°C, If = Maximum Rated Current/seg	1,000 h	0/10
Resistance to Soldering Heat	EIAJ ED-4701/300(302)	260±5°C, 3mm from package base	10s	0/10
Temperature Cycling	EIAJ ED-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	EIAJ ED-4701/100(103)	Ta = 60±2°C, RH = 90±5%	1,000 h	0/10
High Temp. Storage Life	EIAJ ED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/10
Low Temp. Storage Life	EIAJ ED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/10
Lead Tension	EIAJ ED-4701/400(401)	5N, 1time	10s	0/10
Vibration, Variable Frequency	EIAJ ED-4701/400(403)	98.1m/s <sup>2</sup> (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction	2 h	0/10
Lead Bend	EIAJ ED-4701/400(401)	2.5N, 0° ↔ 90°	Twice	0/10
Shock	JIS C 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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