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	・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. Anode Common		Material	Emitted Color	※1 Chip/ Segment
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)	ΔI_F	0.33		0.33		mA/℃
	ΔI_{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_{stg}	-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

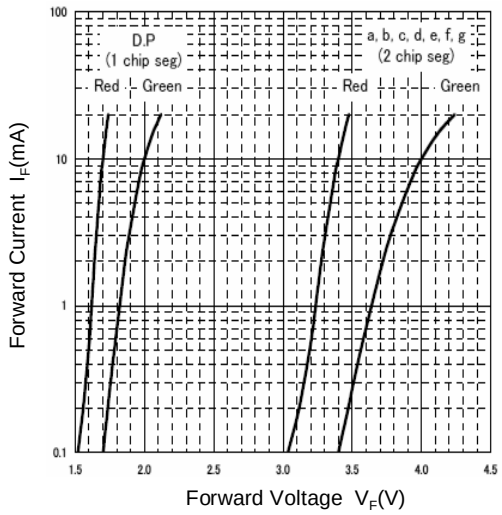
(Ta=25℃)

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)	μA/seg
Peak Wavelength	I_F=10mA	λ_p	TYP.	570		660		nm
Spectral Line Half Width	I_F=10mA	$\Delta\lambda$	TYP.	30		30		nm

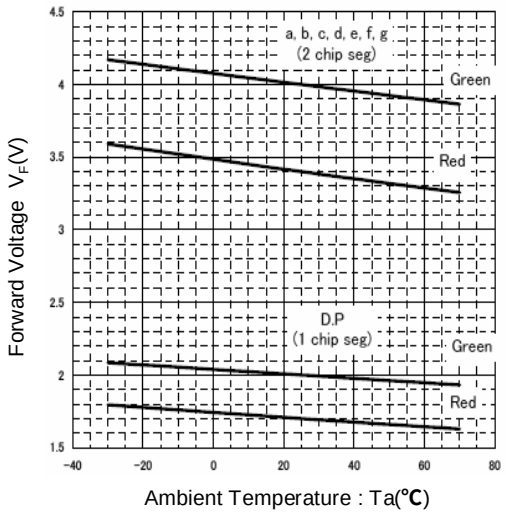
Technical Data

Forward Voltage vs. Forward Current

Condition : Ta = 25℃

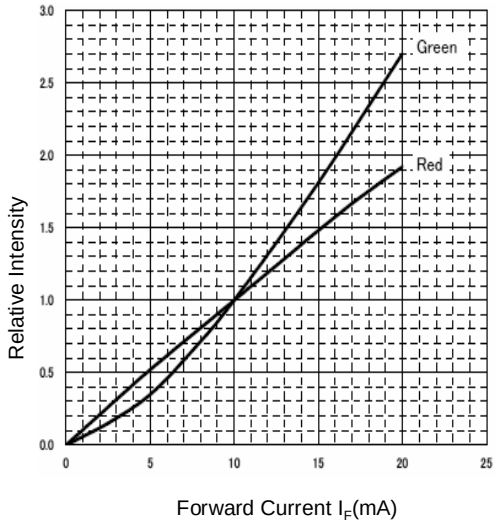


Ambient Temperature vs. Forward Voltage



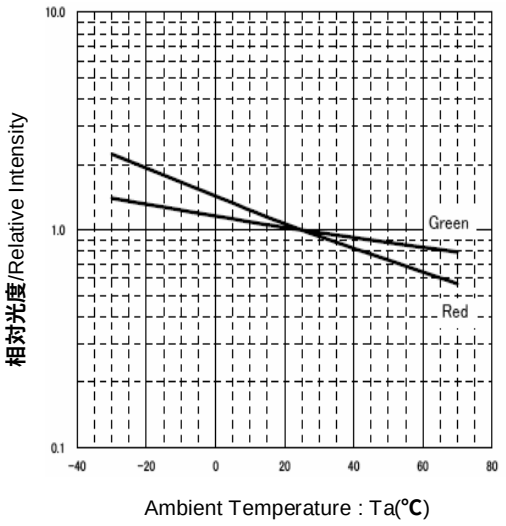
Forward Current vs. Relative Intensity

Condition : Ta = 25℃



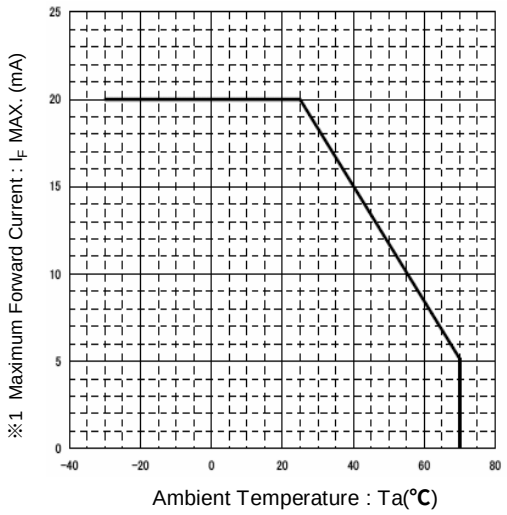
Ambient Temperature vs. Relative Intensity

Condition : I_F=10mA

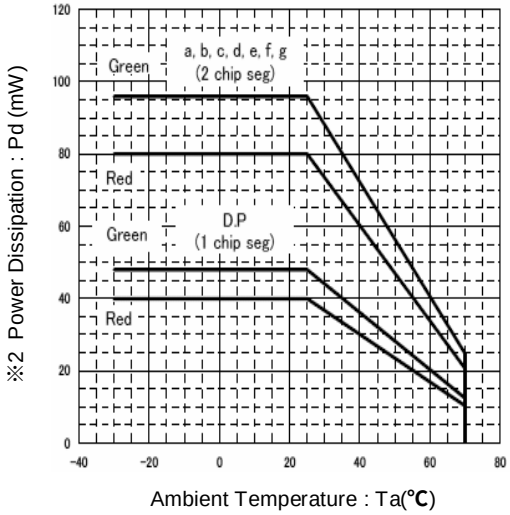


Technical Data

Ambient Temperature vs. Maximum Forward Current

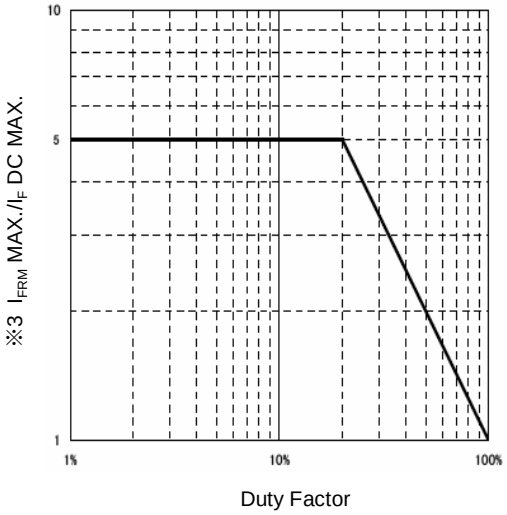


Ambient Temperature vs. Power Dissipation



Duty Factor vs. Maximum Tolerable Pulse Forward Current

Condition : Ta = 25℃, f = 500Hz



Notes

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

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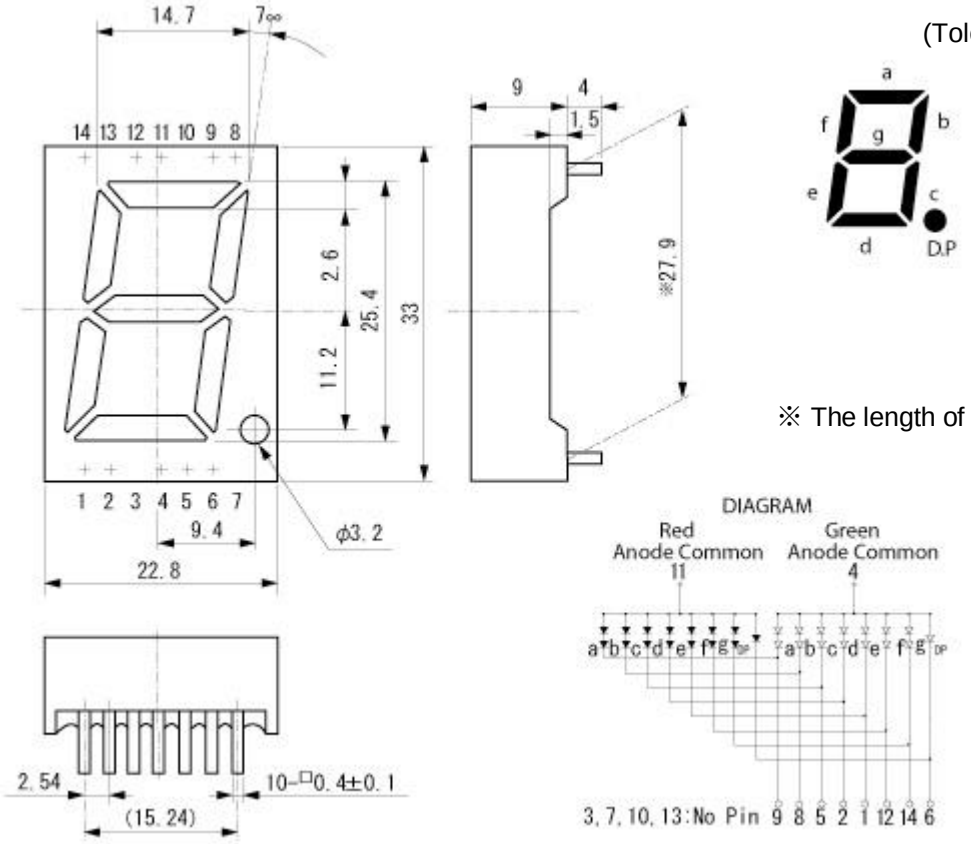
Package Dimensions

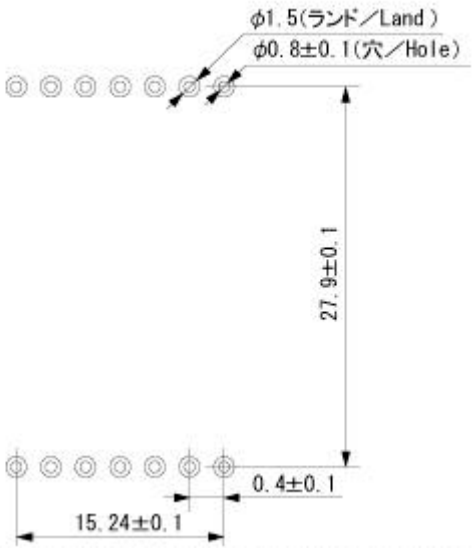
(Unit: mm)

(Tolerance：±0.25 mm)



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	EIAJED-4701/100(101)	Ta = 25℃, I_F = Maxium Rated Current/seg	1,000 h	0/10
Resistance to Soldering Heat	EIAJED-4701/300(302)	260±5℃, 3mm from package base	10s	0/10
Temperature Cycling	EIAJED-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	EIAJED-4701/100(103)	Ta = 60±2℃, RH = 90±5%	1,000 h	0/10
High Temp. Storage Life	EIAJED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/10
Low Temp. Storage Life	EIAJED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/10
Lead Tension	EIAJED-4701/400(401)	5N,1time	10s	0/10
Vibration, Variable Frequency	EIAJED-4701/400(403)	98.1m/s^2(10G), 100 ～ 2KHz sweep for 20min., XYZ each direction	2 h	0/10
Lead Bend	EIAJED-4701/400(401)	2.5N, 0 ° ←→ 90 °	Twice	0/10
Shock	JISC 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	I_F Value of each product Luminous Intensity	Testing Min. Value < Spec. Min. Value x 0.5
Forward Voltage	V_F	I_F 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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