

**Pb-free
HEAT**



3312X Series

Bi-color ϕ 3 Round Shape Type

Features

Package	Bi-color ϕ 3 Round shape type, Milky White Diffused epoxy
Product features	<ul style="list-style-type: none"> • Outer Dimension ϕ3 Round shape type • Operation temperature range. Storage Temperature : -30°C ~ 100°C Operating Temperature : -30°C ~ 85°C • Lead-free soldering compatible • RoHS compliant
Dominant wavelength	Green : 567nm (PG) Red : 624nm (VR)
Half Intensity Angle	PG : 68 deg. VR : 59 deg.
Die materials	PG : GaP VR : GaAsP
Rank grouping parameter	Sorted by luminous intensity per rank taping
Soldering methods	TTW (Through The Wave) soldering and manual soldering
ESD	More than 2kV(HBM)
Packing	Bulk : 200pcs(MIN.)

Recommended Applications

Amusement Equipment, Electric Household Appliances, OA/FA, Other General Applications

Color and Luminous Intensity

(Ta=25°C)

Part No.	Die Name	Material	Emitted Color	Lens Color		Dominant Wavelength λd (nm)		Luminous Intensity Iv (mcd)		
						TYP.	I _F	MIN.	TYP.	I _F
						VRPG3312X	PG	GaP	Green	Milky White
VR	GaAsP	Red	624	20	4		8	20		

Absolute Maximum Ratings

($T_a=25^\circ\text{C}$)

Item	Symbol	Absolute Maximum Ratings		Unit
		PG	VR	
Power Dissipation	P_d	75	75	mW
Forward Current	I_F	30	30	mA
Pulse Forward Current ※1	I_{FRM}	100	100	mA
Derating ($T_a=25^\circ\text{C}$ or higher)	ΔI_F	0.33	0.33	mA/ $^\circ\text{C}$
Reverse Voltage	V_R	4	4	V
Operating Temperature	T_{opr}	-30~+85		$^\circ\text{C}$
Storage Temperature	T_{stg}	-30~+100		$^\circ\text{C}$

※1 I_{FRM} Measurement condition : Pulse Width $\leq 1\text{ms.}$, Duty $\leq 1/20$.

※ The ratings specified above are under the condition that only one diode is lit.
50% Max. of each rating shall be applied when two diodes are lit simultaneously.

Electro-Optical Characteristics

($T_a=25^\circ\text{C}$)

Item	Conditions	Symbol	Characteristics			Unit
			TYP.	PG	VR	
Forward Voltage	$I_F=20\text{mA}$	V_F	TYP.	2.1	2.0	V
			MAX.	2.5	2.5	
Reverse Current	$V_R=4\text{V}$	I_R	MAX.	100	100	μA
Peak Wavelength	$I_F=20\text{mA}$	λ_p	TYP.	560	630	nm
Dominant Wavelength	$I_F=20\text{mA}$	λ_d	TYP.	567	624	nm
Spectral Line Half Width	$I_F=20\text{mA}$	$\Delta\lambda$	TYP.	30	30	nm
Half Intensity Angle	$I_F=20\text{mA}$	$2\theta_{1/2}$	TYP.	68	59	deg.

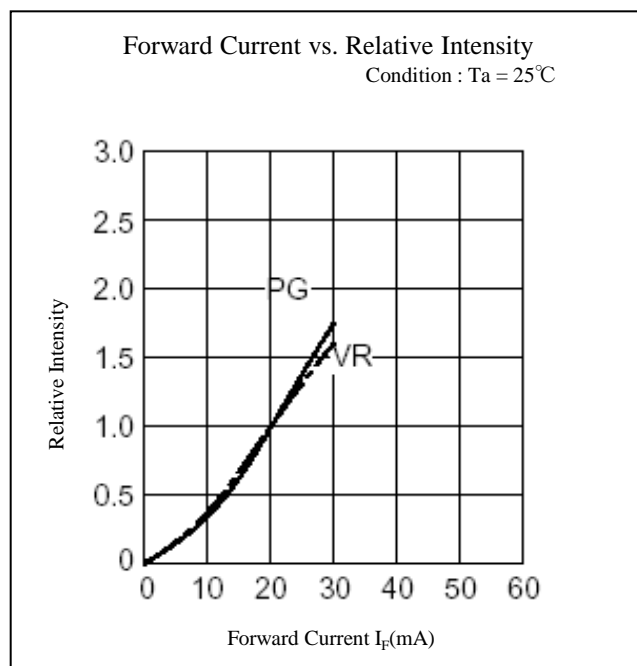
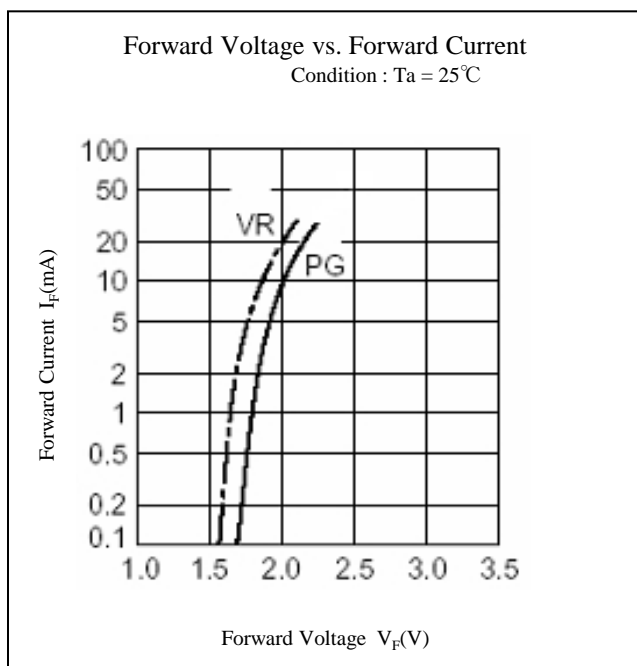
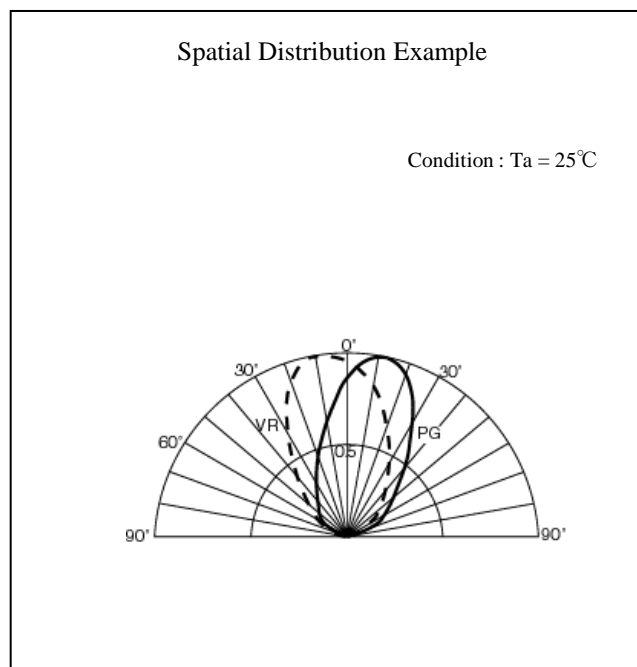
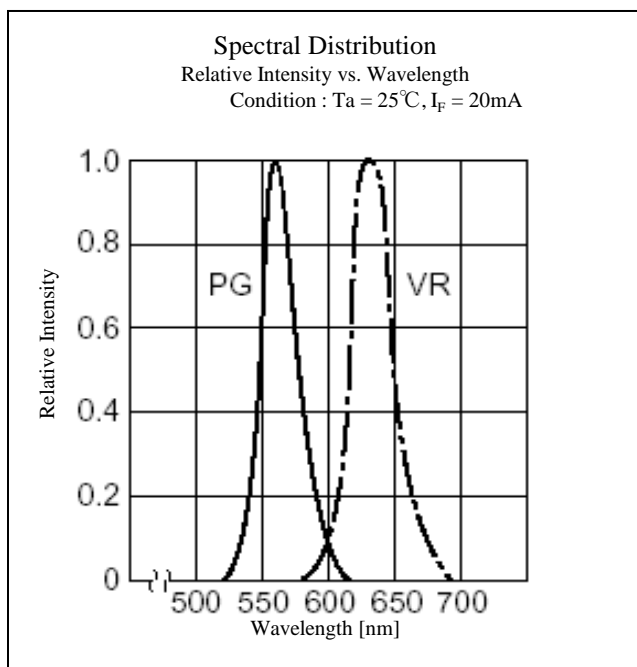
Luminous Intensity Rank

(Ta=25°C)

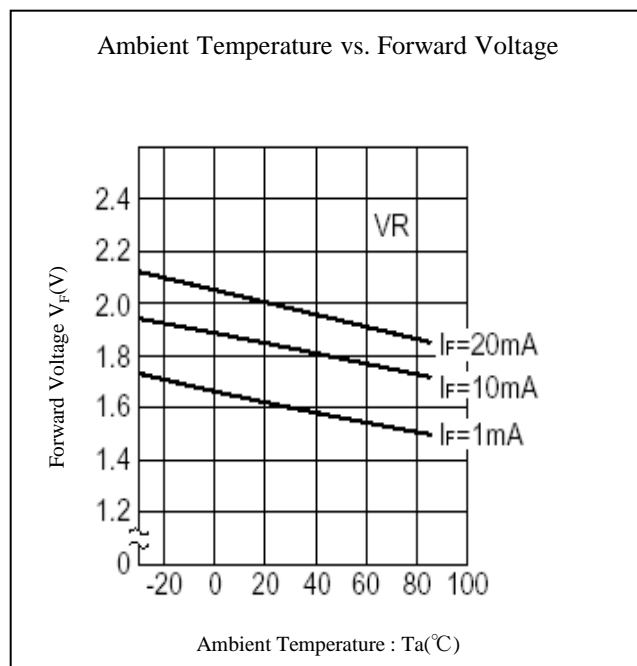
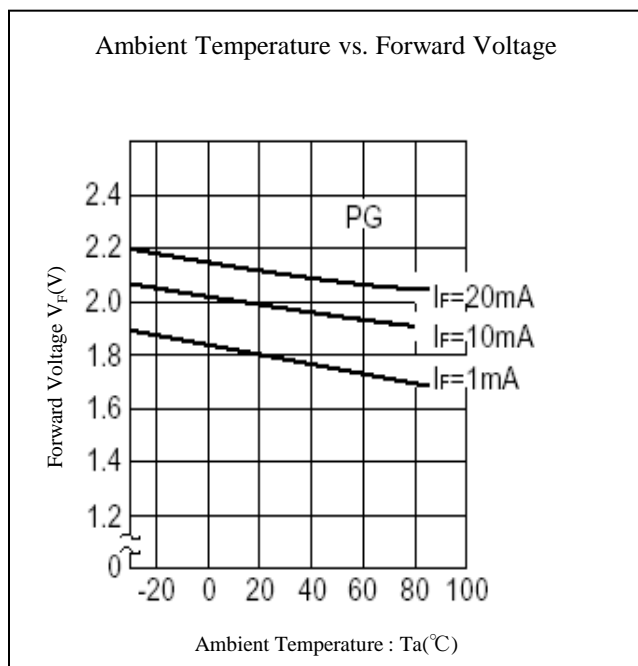
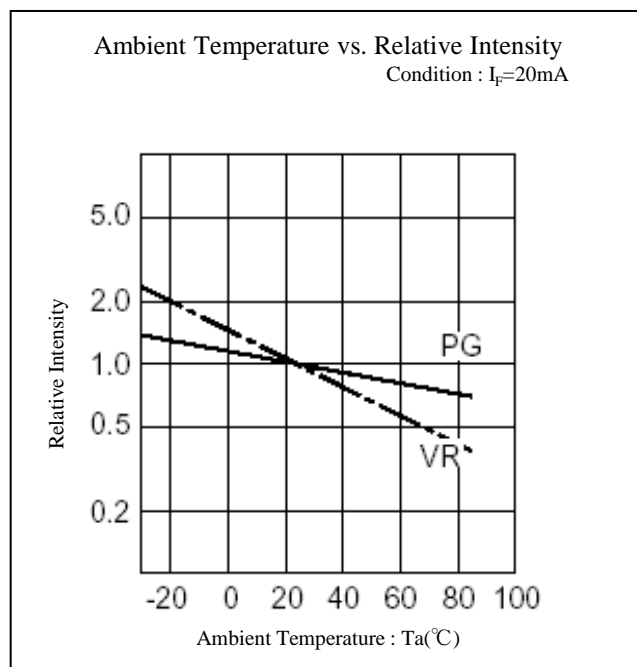
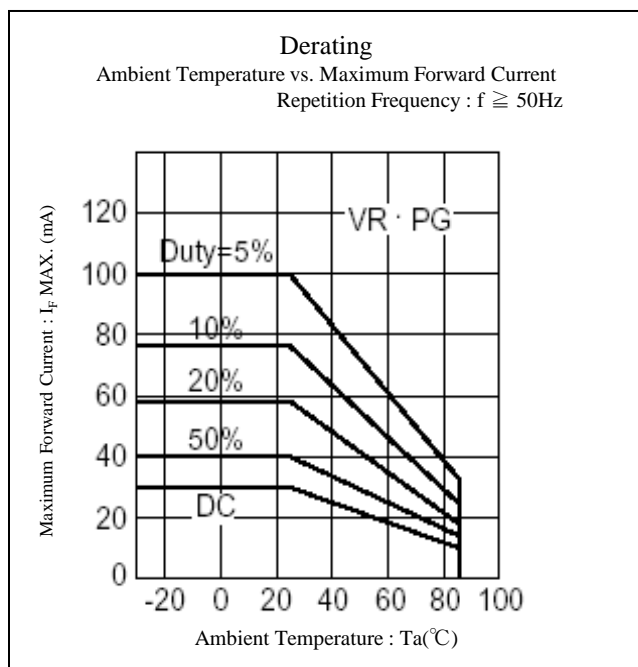
Rank	I _v (mcd)				Condition
	VRPG3312X				
	PG		VR		
	MIN.	MAX.	MIN.	MAX.	
A	6.0	12.0	/	I _F = 20mA	
B	8.4	16.8			
C	12.0	24.0			
D	16.8	33.6			
E	24.0	-			

※Please contact our sales staff concerning rank designation.

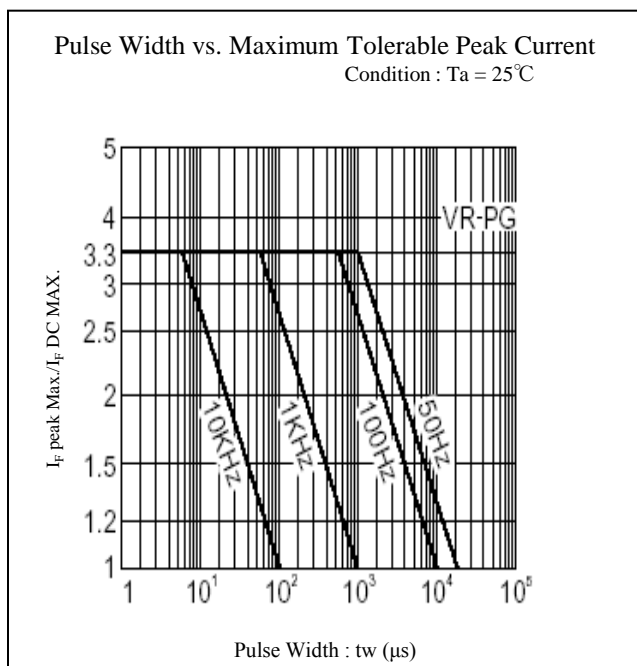
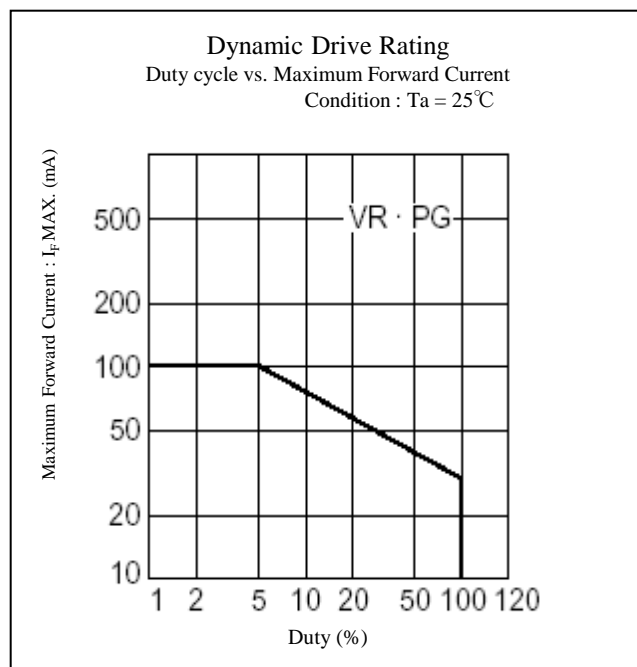
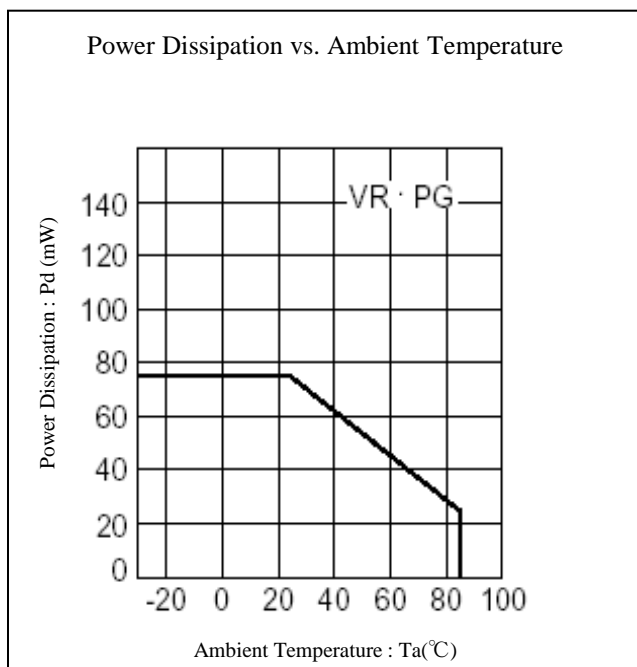
Technical Data(VRPG)



Technical Data(VRPG)



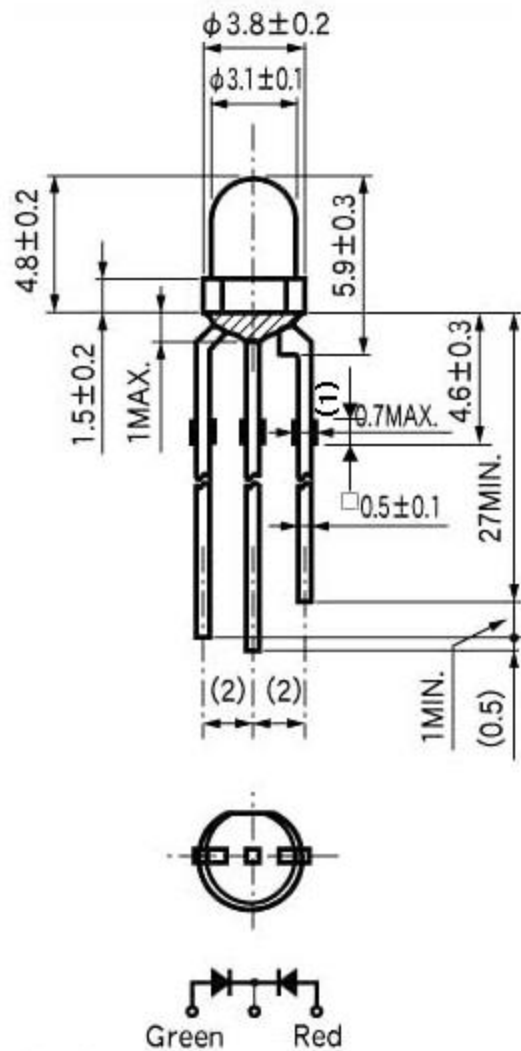
Technical Data(VRPG)



Package Dimensions

(Unit: mm)

Mass : (0.22)g



TTW (Through The Wave) soldering Conditions

Pre-heating	100 °C	(MAX.)
Solder Bath Temp.	265°C	(MAX.)
Dipping Time	5 s	(MAX.)

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

※The detail is described to LED and Photodetector handling precautions of home page:
 "Mounting through-hole Type Devices" and "Soldering", and use it after the confirmation, please.

Manual Soldering Conditions

Iron tip temp.	360°C	(MAX.)
Soldering time and frequency	3 s	(MAX.)
	2 times	(MAX.)

※The detail is described to LED and Photodetector handling precautions of home page:
 "Mounting through-hole Type Devices" and "Soldering", and use it after the confirmation, please.

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	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-4701/300(302)	260±5°C, 3mm from package base	10s	0/25
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	0/25
Wet High Temp. Storage Life	EIAJ ED-4701/100(103)	Ta = 60±2°C, RH = 90±5%	1,000 h	0/25
High Temp. Storage Life	EIAJ ED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/25
Low Temp. Storage Life	EIAJ ED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/25
Lead Tension	EIAJ ED-4701/400(401)	10N, 1time (□0.4 and Flat Package : 5N)	10s	0/10
Vibration, Variable Frequency	EIAJ ED-4701/400(403)	98.1m/s ² (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction	2 h	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	VF	IF Value of each product Forward Voltage	Testing Max. Value ≥ Spec. Max. Value x 1.2
Reverse Current	IR	VR = 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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