

**Pb-free  
HEAT**

**STANLEY**

# 3312X Series

Bi-color  $\phi 3$  Round Shape Type

## Features

Package	Bi-color $\phi 3$ Round shape type, Milky White Diffused epoxy
Product features	<ul style="list-style-type: none"> <li>• Outer Dimension <math>\phi 3</math> Round shape type</li> <li>• Operation temperature range. Storage Temperature : <math>-30^{\circ}\text{C} \sim 100^{\circ}\text{C}</math> Operating Temperature : <math>-30^{\circ}\text{C} \sim 85^{\circ}\text{C}</math></li> <li>• Lead-free soldering compatible</li> <li>• RoHS compliant</li> </ul>
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 $\lambda_d$ (nm)		Luminous Intensity $I_v$ (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)	$\Delta I_F$	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	$\mu\text{A}$
Peak Wavelength	$I_F=20\text{mA}$	$\lambda_p$	TYP.	560	630	nm
Dominant Wavelength	$I_F=20\text{mA}$	$\lambda_d$	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.

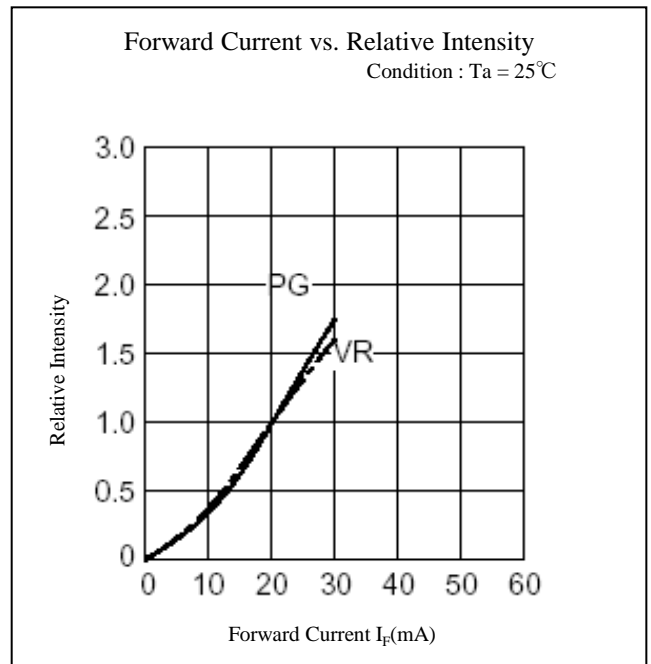
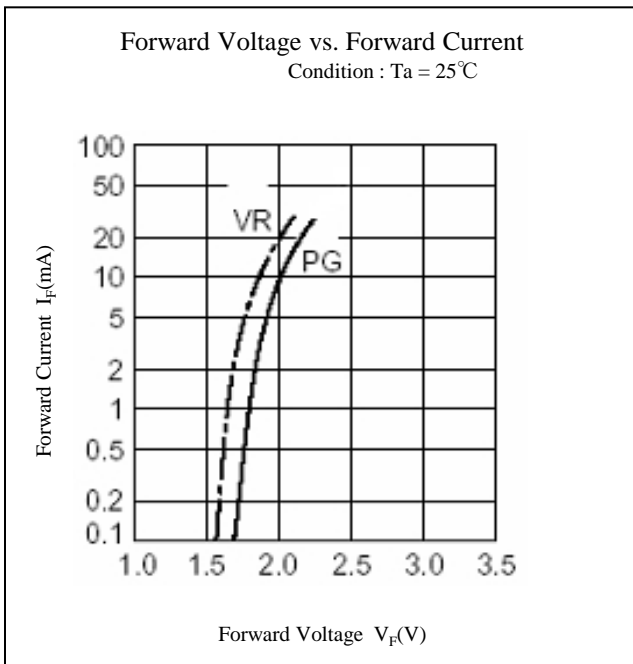
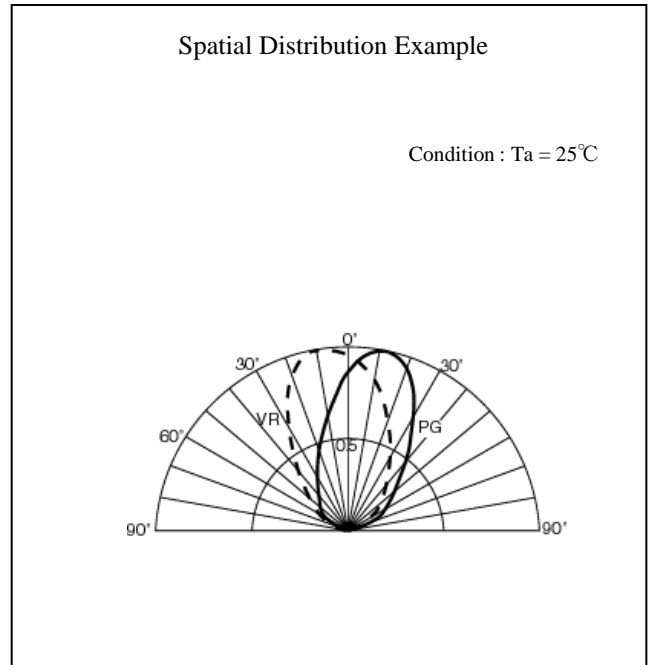
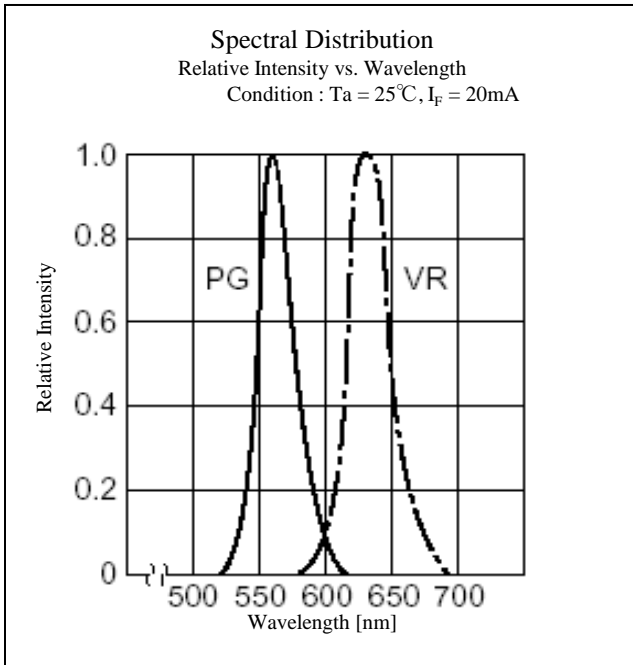
## Luminous Intensity Rank

(Ta=25°C)

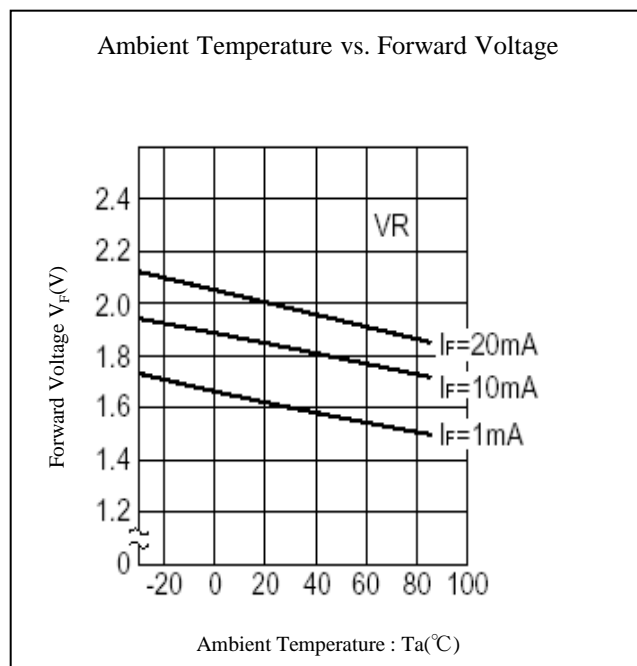
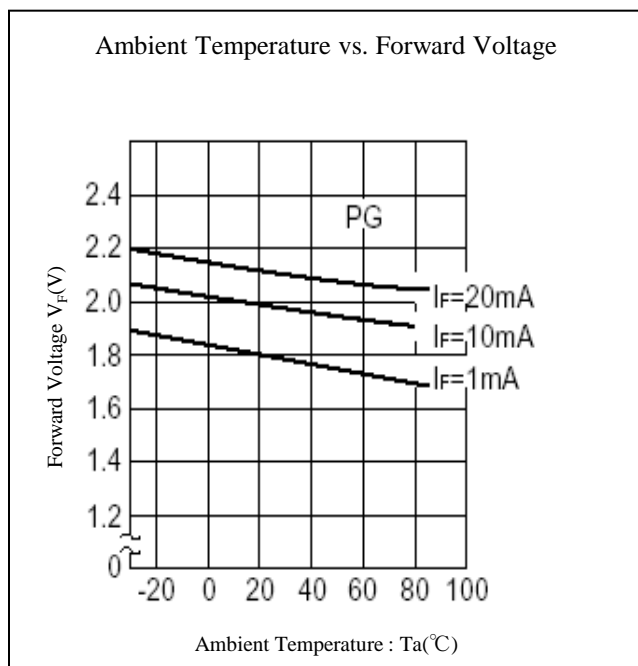
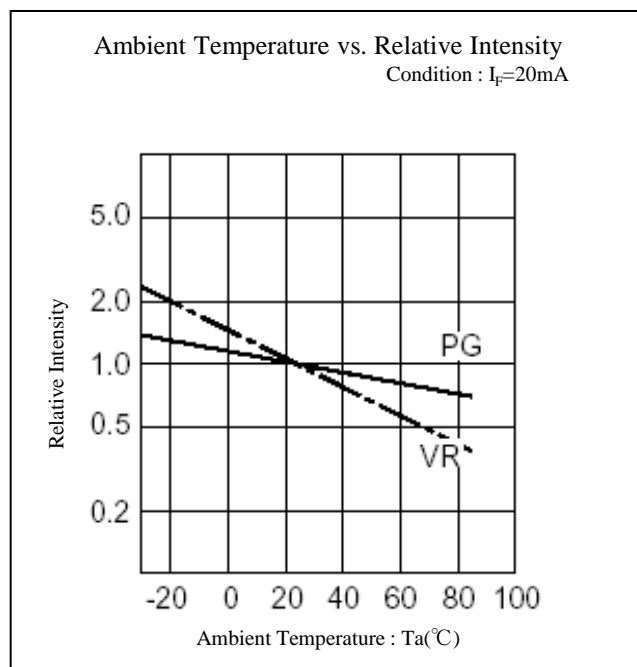
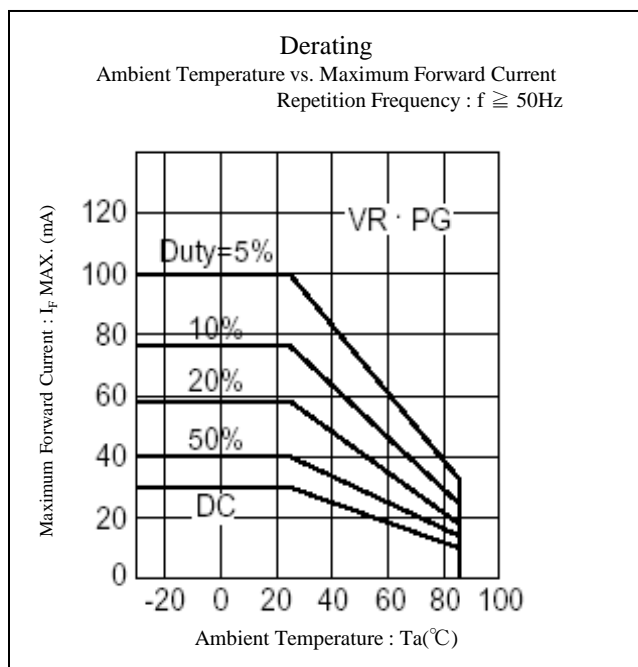
Rank	I <sub>v</sub> (mcd)				Condition
	VRPG3312X				
	PG		VR		
	MIN.	MAX.	MIN.	MAX.	
A	6.0	12.0	/	I <sub>F</sub> = 20mA	
B	8.4	16.8			
C	12.0	24.0			
D	16.8	33.6			
E	24.0	-			

※Please contact our sales staff concerning rank designation.

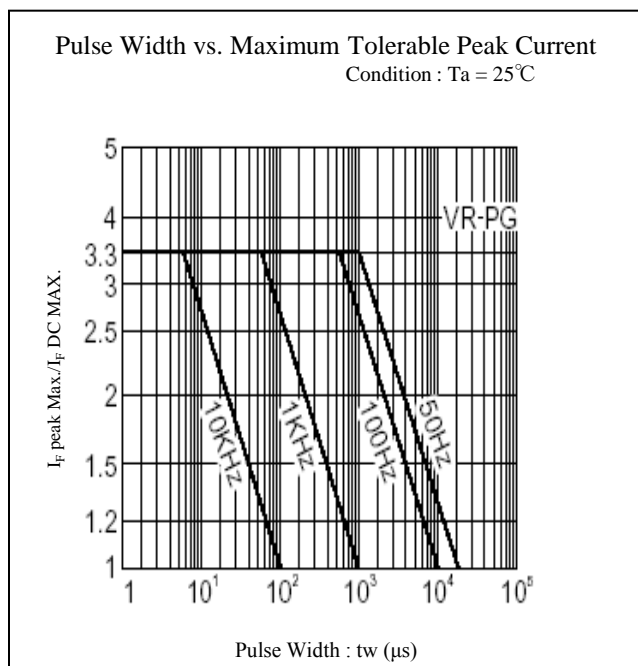
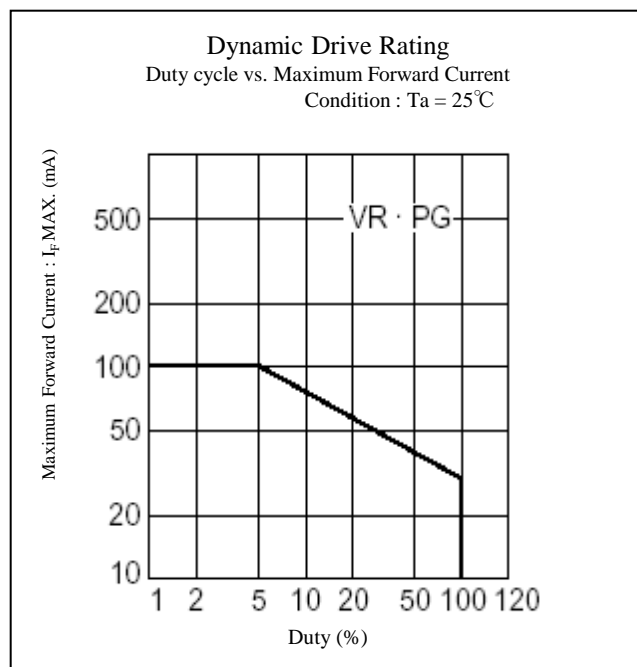
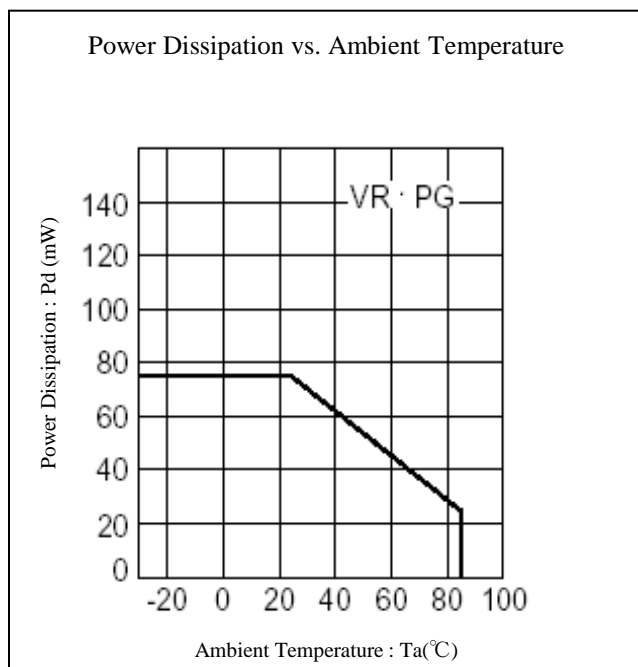
## Technical Data(VRPG)



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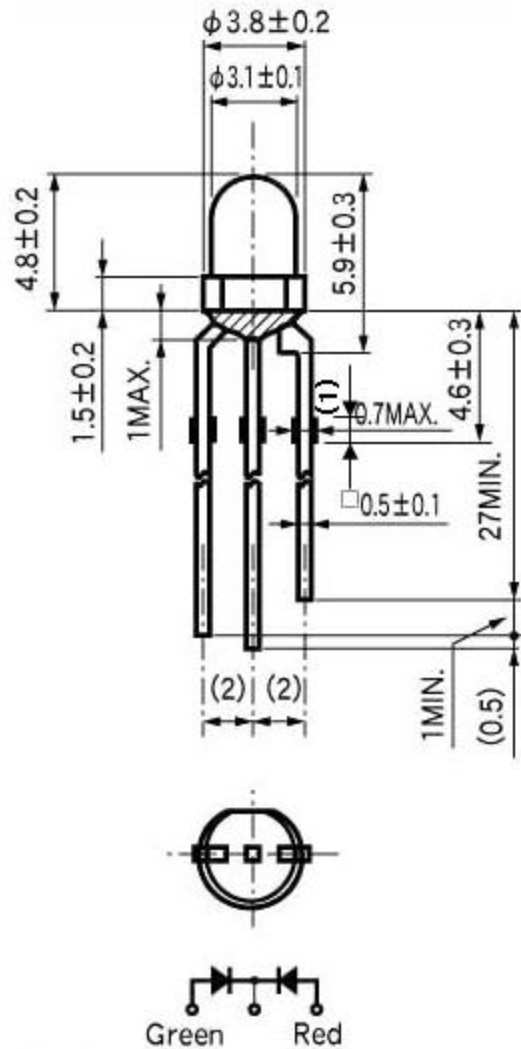




## Package Dimensions

(Unit: mm)

Mass : (0.22)g



## TTW (Through The Wave) soldering Conditions

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

- 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

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

※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, I <sub>F</sub> = 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 <sup>2</sup> (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction	2 h	0/10

## Failure Criteria

Items	Symbols	Conditions	Failure criteria
Luminous Intensity	I <sub>v</sub>	I <sub>F</sub> Value of each product Luminous Intensity	Testing Min. Value < Spec. Min. Value x 0.5
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> 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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