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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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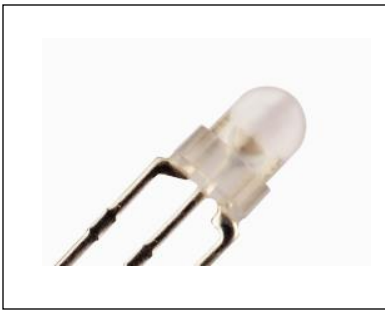
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**Pb-free  
HEAT**



# 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</math>3 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 λd (nm)		Luminous Intensity Iv (mcd)		
						TYP.	I <sub>F</sub>	MIN.	TYP.	I <sub>F</sub>
						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

(Ta=25°C)

Item	Conditions	Symbol	Characteristics			Unit
			TYP.	PG	VR	
Forward Voltage	I <sub>F</sub> =20mA	V <sub>F</sub>	TYP.	2.1	2.0	V
			MAX.	2.5	2.5	
Reverse Current	V <sub>R</sub> =4V	I <sub>R</sub>	MAX.	100	100	μA
Peak Wavelength	I <sub>F</sub> =20mA	λ <sub>p</sub>	TYP.	560	630	nm
Dominant Wavelength	I <sub>F</sub> =20mA	λ <sub>d</sub>	TYP.	567	624	nm
Spectral Line Half Width	I <sub>F</sub> =20mA	Δλ	TYP.	30	30	nm
Half Intensity Angle	I <sub>F</sub> =20mA	2θ <sub>1/2</sub>	TYP.	68	59	deg.

## Luminous Intensity Rank

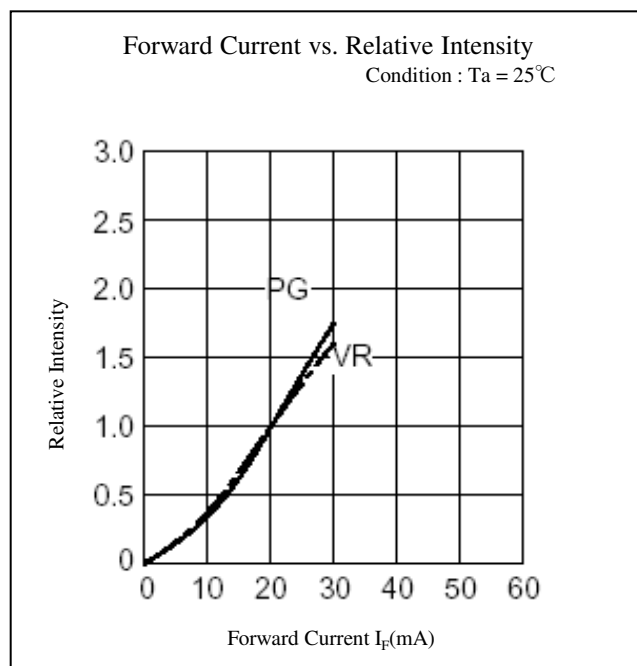
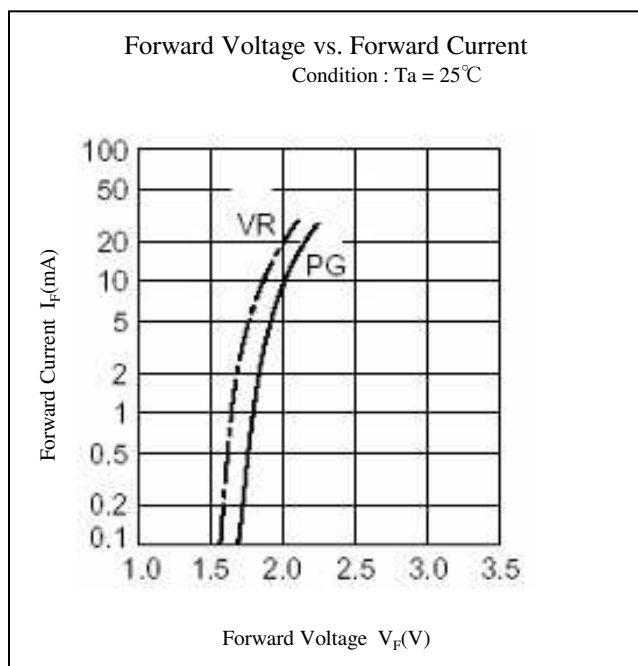
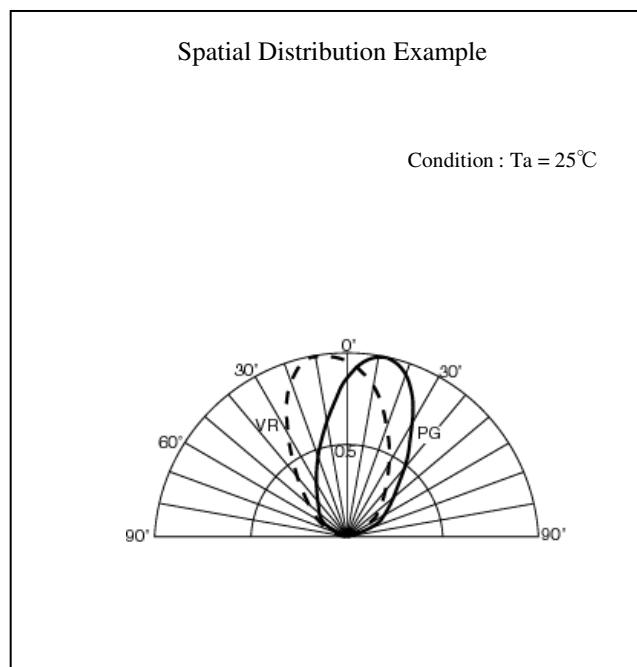
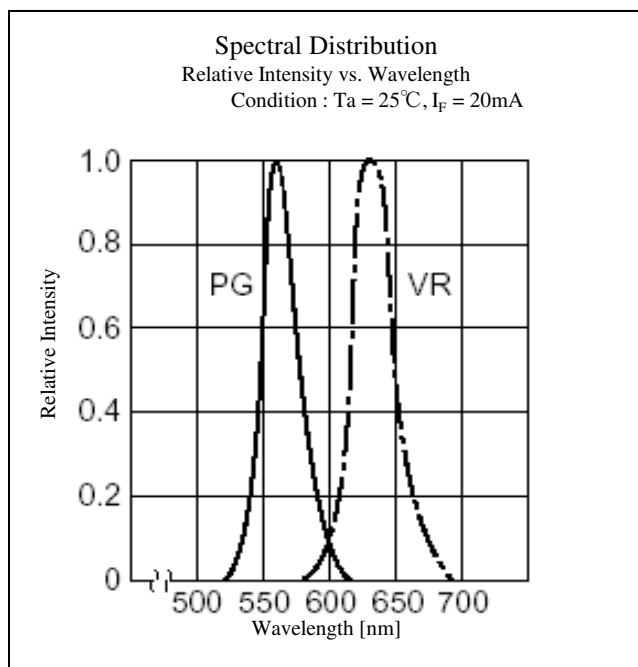
(Ta=25°C)

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	-			

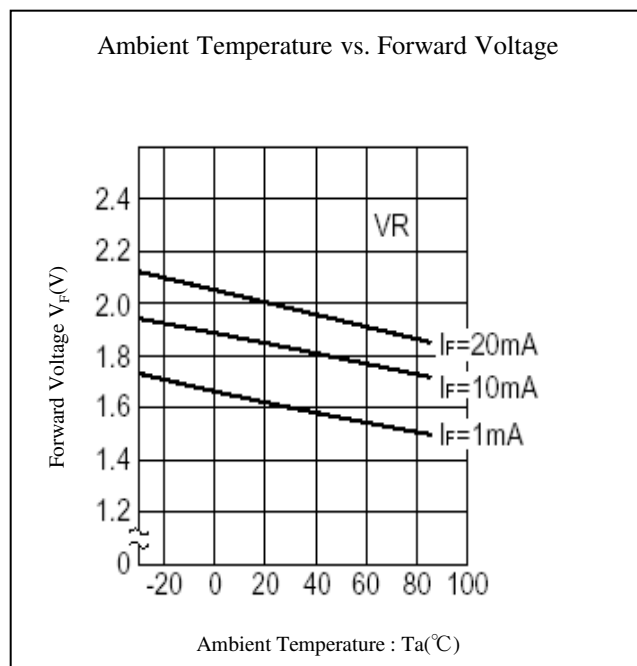
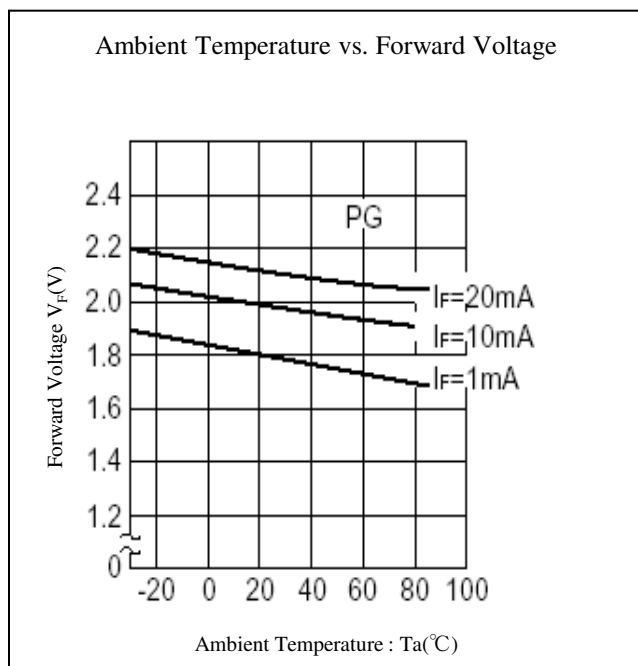
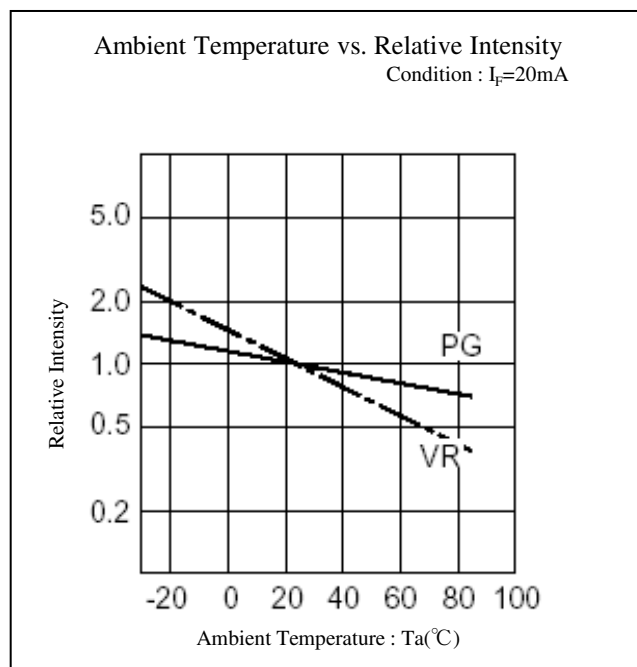
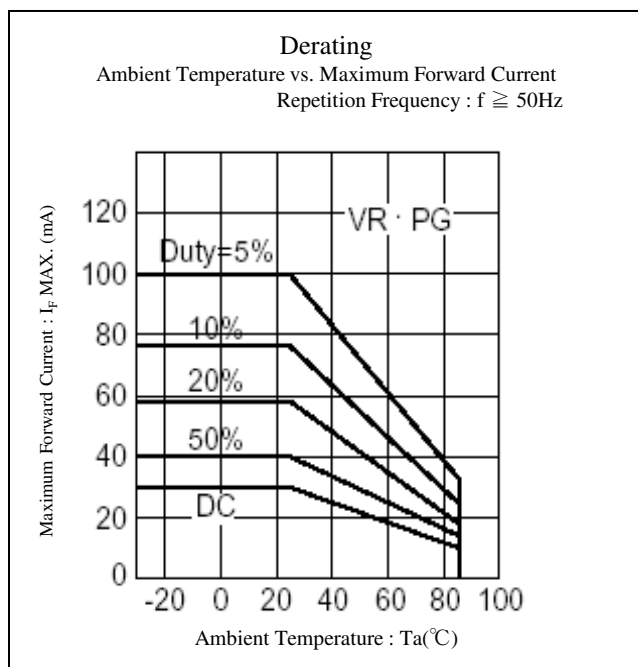
※Please contact our sales staff concerning rank designation.



## Technical Data(VRPG)

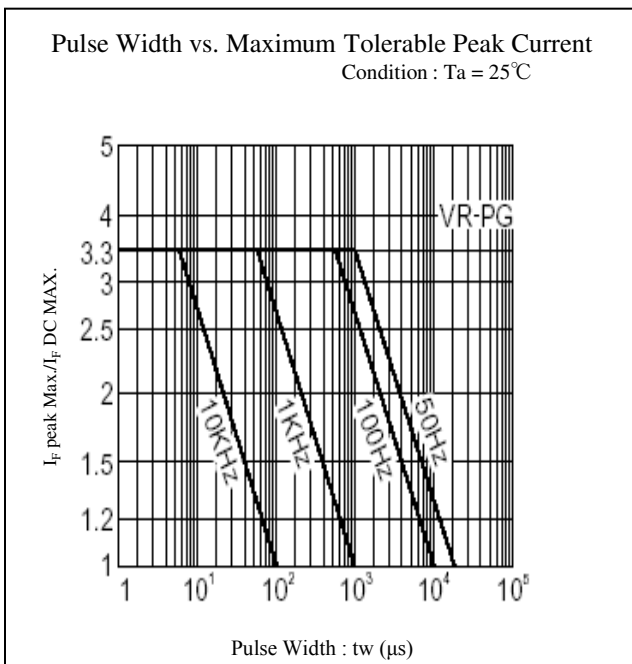
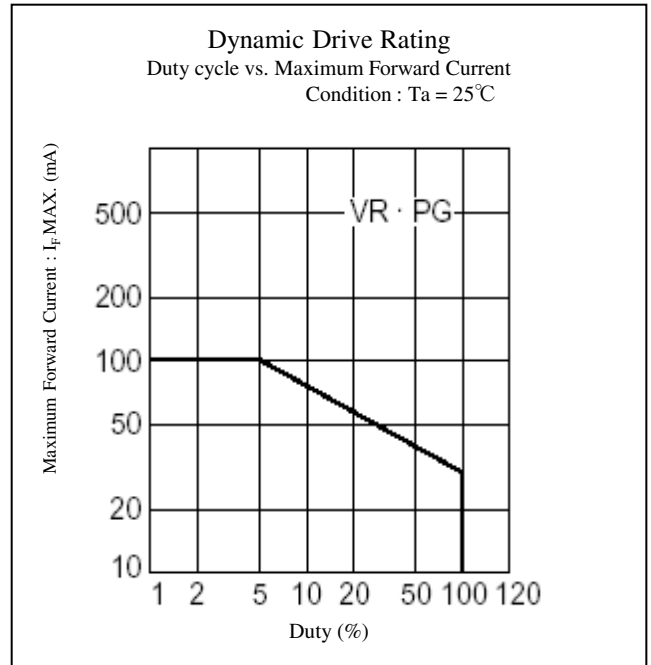
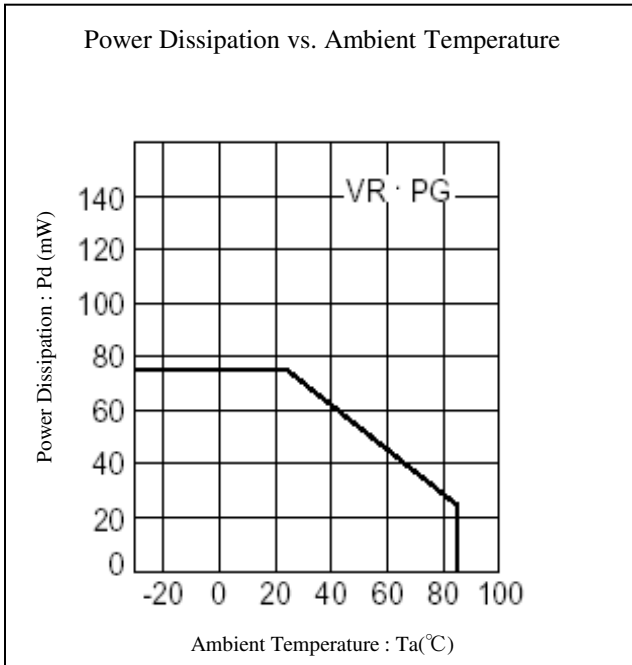


## Technical Data(VRPG)





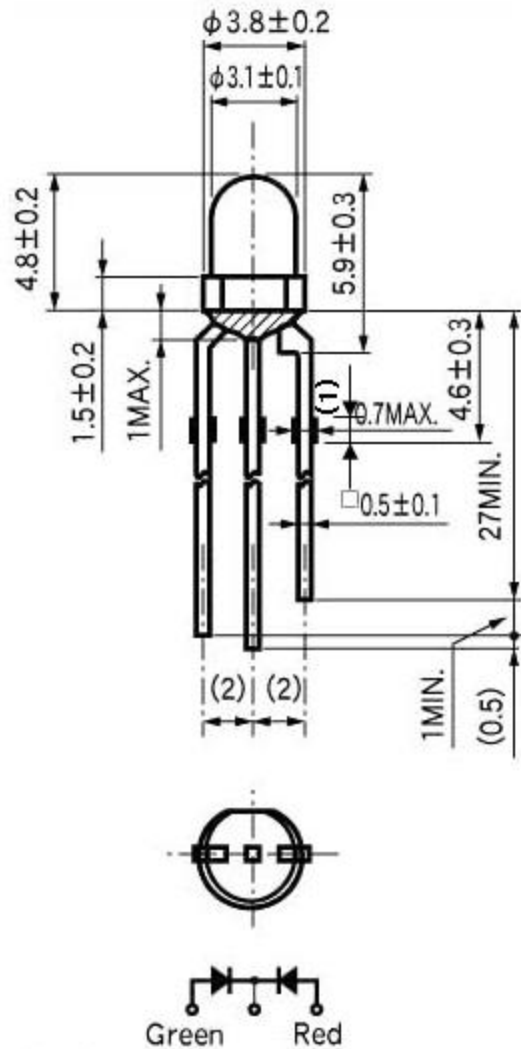
## Technical Data(VRPG)



## 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, 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 <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	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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