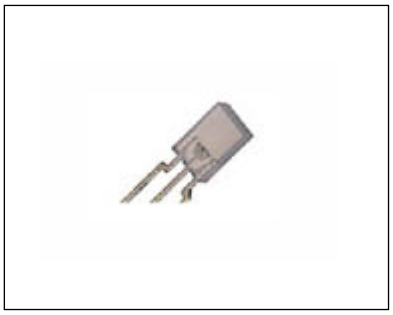


Pb-free HEAT

5641K Series

Bi-color Rectangular Shape Type

Features

Package	2×5 Bi-color Rectangular shape type, Milky White Surface Diffused epoxy
Product features	・Outer Dimension 2×5 Rectangular shape type ・Operation temperature range. Storage Temperature :-30℃～100℃ Operating Temperature :-30℃～85℃ ・No lead package and lead-free soldering compatible ・RoHS compliant
Dominant wavelength	Green : 558nm (BG) : 567nm (PG) Yellow Green : 572nm (PY) Red : 624nm (VR)
Half Intensity Angle	BG,PG,PY : θx = 137 deg. θy = 140 deg. VR : θx = 141 deg. θy = 140 deg.
Die materials	BG,PG,PY : 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℃)

Part No.	Die Name	Material	Emitted Color	Lens Color		Dominant Wavelength λ d (nm)		Luminous Intensity Iv (mcd)		
						TYP.	I_F	MIN.	TYP.	I_F
VRBG5641K	BG	GaP	Green	Milky White	Surface Diffused	558	20	1	2	20
	VR	GaAsP	Red			624	20	2	4	20
VRPG5641K	PG	GaP	Green	Milky White	Surface Diffused	567	20	2	4	20
	VR	GaAsP	Red			624	20	2	4	20
VRPY5641K	PY	GaP	Yellow Green	Milky White	Surface Diffused	572	20	4	8	20
	VR	GaAsP	Red			624	20	2	4	20

Absolute Maximum Ratings

(Ta=25℃)

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

※1 I_{FRM} Measurement condition : Pulse Width≦1ms., Duty≦1/20.

※ The ratings specified above is 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℃)

Item	Conditions	Symbol		Characteristics				Unit
				BG	PG	PY	VR	
Forward Voltage	I_F=20mA	V_F	TYP.	2.1	2.1	2.1	2.0	V
			MAX.	2.5	2.5	2.5	2.5	
Reverse Current	V_R=4V	I_R	MAX.	100	100	100	100	μA
Peak Wavelength	I_F=20mA	λ_p	TYP.	555	560	570	630	nm
Dominant Wavelength	I_F=20mA	λ_d	TYP.	558	567	572	624	nm
Spectral Line Half Width	I_F=20mA	$\Delta\lambda$	TYP.	30	30	30	30	nm
Half Intensity Angle	I_F=20mA	2θ 1/2	TYP.	137	137	137	141	deg.

Luminous Intensity Rank

(Ta=25℃)

Rank	I_V (mcd)												Condition
	VRBG5641K				VRPG5641K				VRPY5641K				
	BG		VR		PG		VR		PY		VR		
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
AA	1.0	2.8	2.0	5.6	2.0	5.6	2.0	5.6	4.0	11.2	2.0	5.6	I_F = 20mA
AB	2.0	5.6	2.0	5.6	4.0	11.2	2.0	5.6	8.0	22.4	2.0	5.6	
BA	1.0	2.8	4.0	11.2	2.0	5.6	4.0	11.2	4.0	11.2	4.0	11.2	
BB	2.0	5.6	4.0	11.2	4.0	11.2	4.0	11.2	8.0	22.4	4.0	11.2	

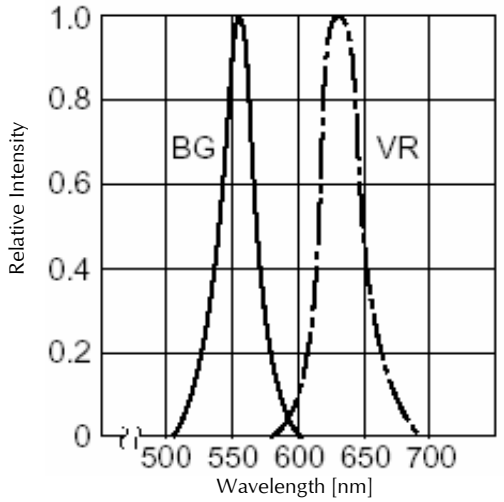
※Please contact our sales staff concerning rank designation.

Technical Data(**VRBG**)

Spectral Distribution

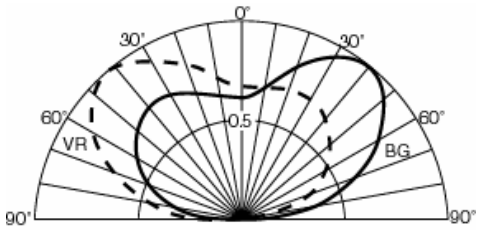
Relative Intensity vs. Wavelength

Condition : Ta = 25℃, I_F = 20mA



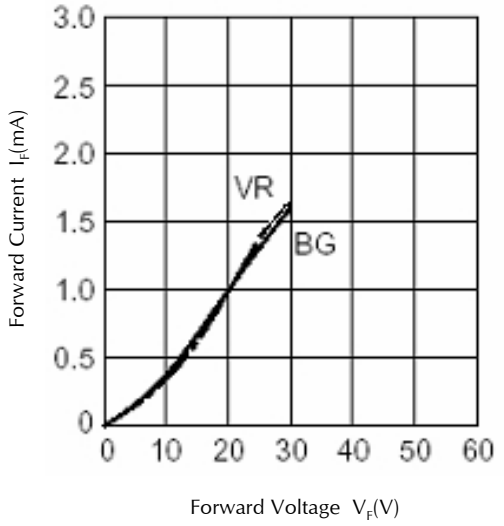
Spatial Distribution Example

Condition : Ta = 25℃



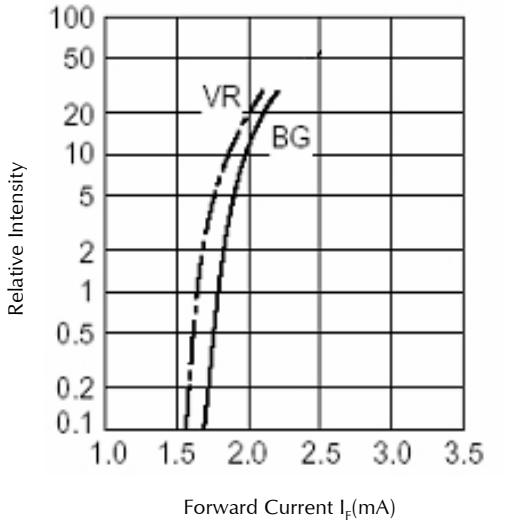
Forward Voltage vs. Forward Current

Condition : Ta = 25℃



Forward Current vs. Relative Intensity

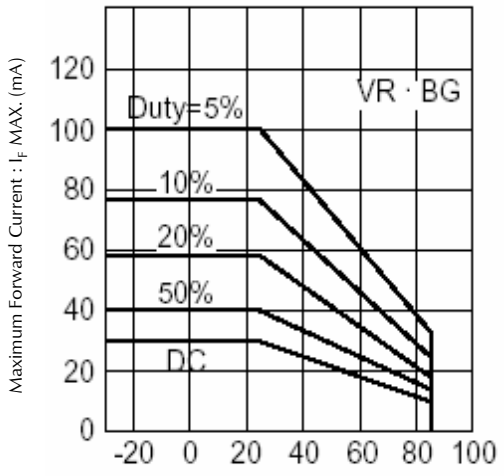
Condition : Ta = 25℃



Technical Data(**VRBG**)

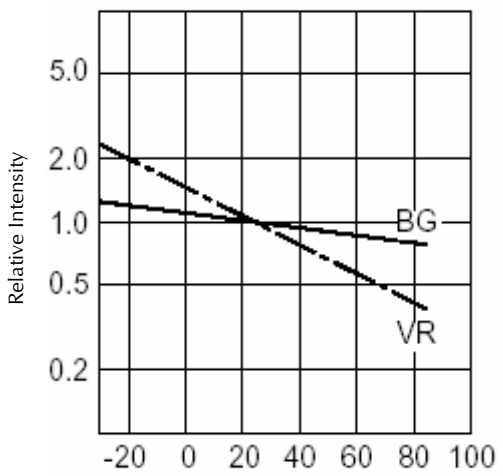
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : f ≧ 50Hz

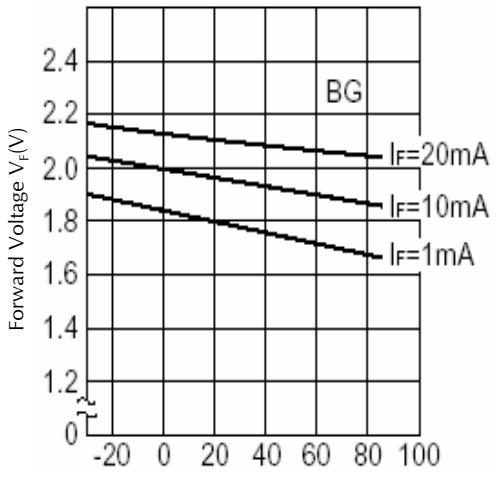


Ambient Temperature vs. Relative Intensity

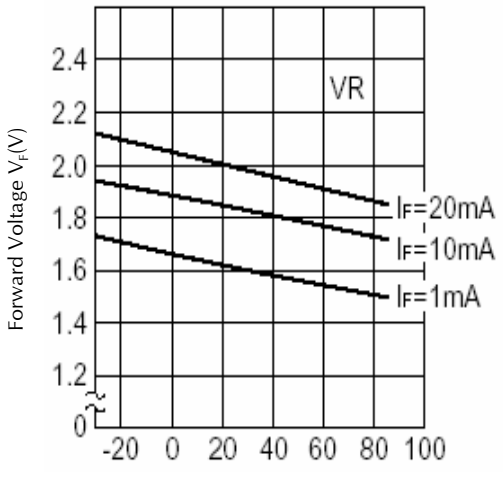
Condition : I_F=20mA



Ambient Temperature vs. Forward Voltage

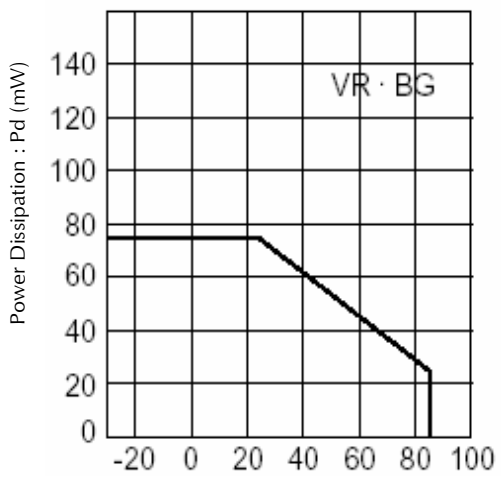


Ambient Temperature vs. Forward Voltage



Technical Data(**VRBG**)

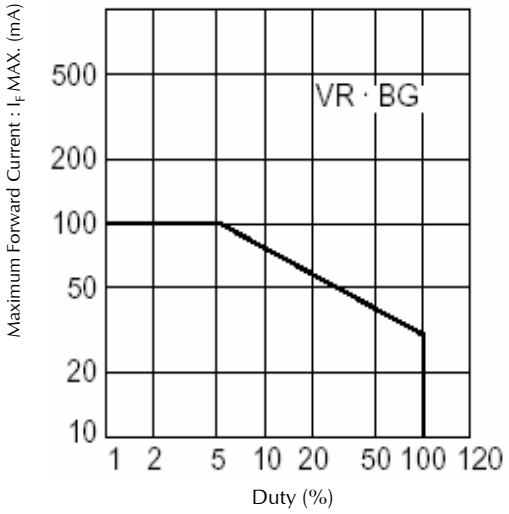
Power Dissipation vs. Ambient Temperature



Dynamic Drive Rating

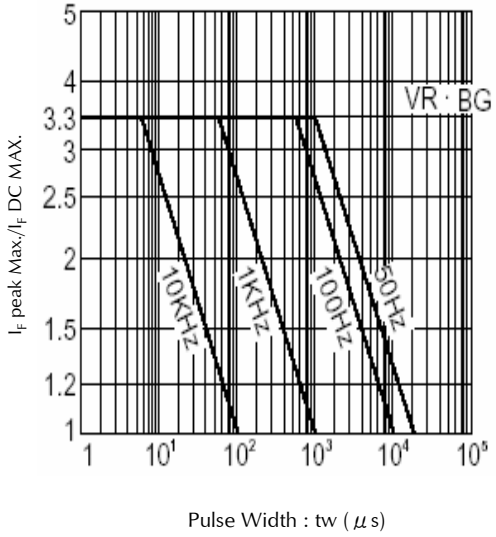
Duty cycle vs. Maximum Forward Current

Condition : Ta = 25℃



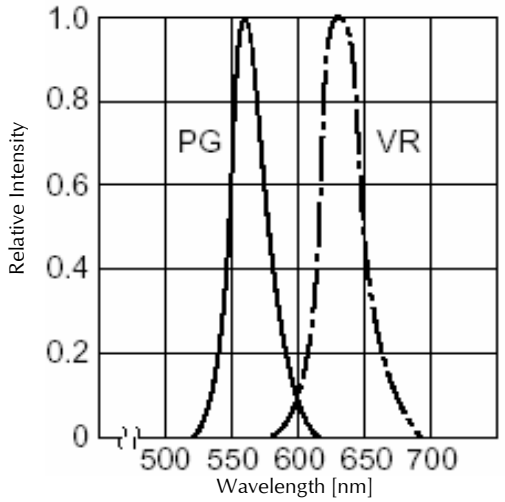
Pulse Width vs. Maximum Tolerable Peak Current

Condition : Ta = 25℃



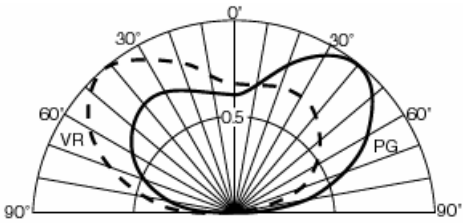
Technical Data(**VRPG**)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : Ta = 25℃, I_F = 20mA

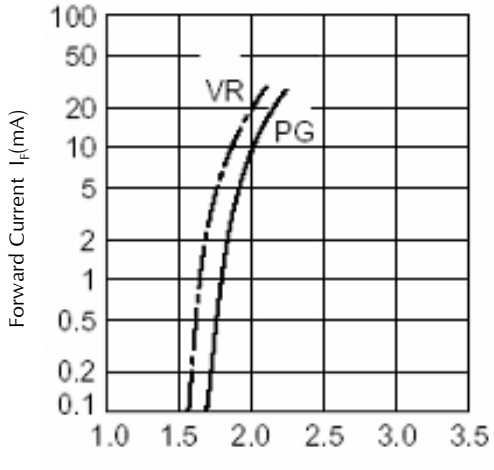


Spatial Distribution Example

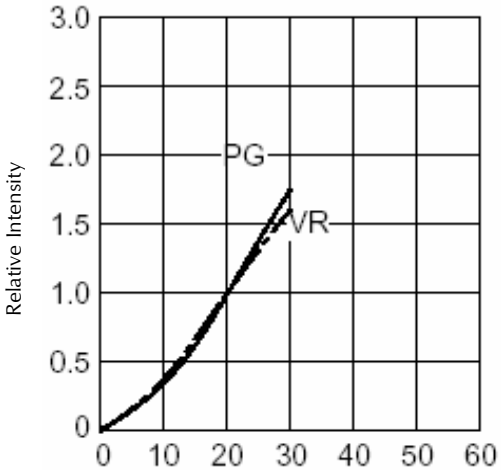
Condition : Ta = 25℃



Forward Voltage vs. Forward Current
Condition : Ta = 25℃



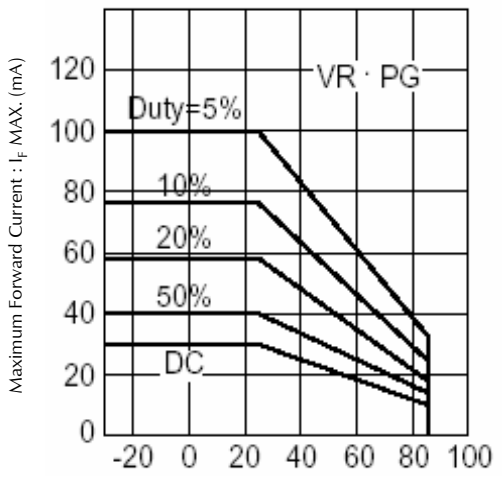
Forward Current vs. Relative Intensity
Condition : Ta = 25℃



Technical Data(**VRPG**)

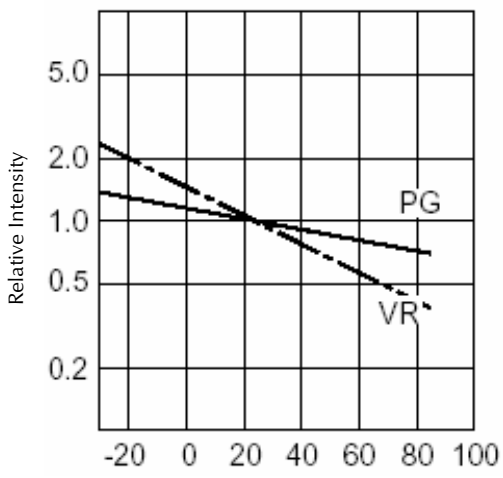
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : f ≧ 50Hz

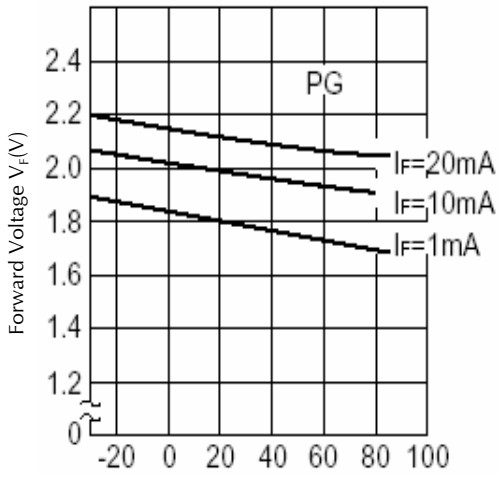


Ambient Temperature vs. Relative Intensity

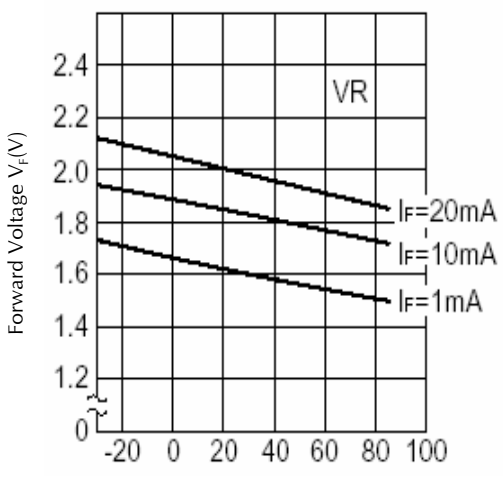
Condition : I_F=20mA



Ambient Temperature vs. Forward Voltage

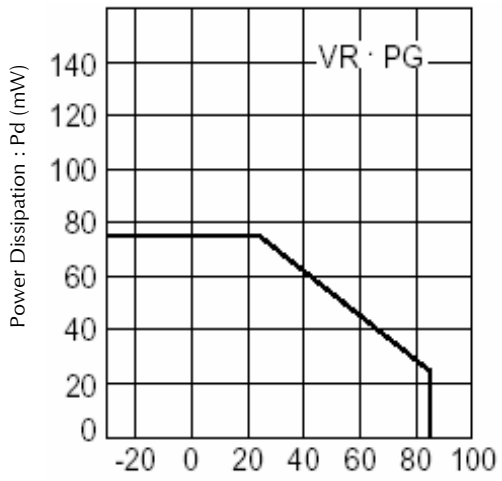


Ambient Temperature vs. Forward Voltage



Technical Data(**VRPG**)

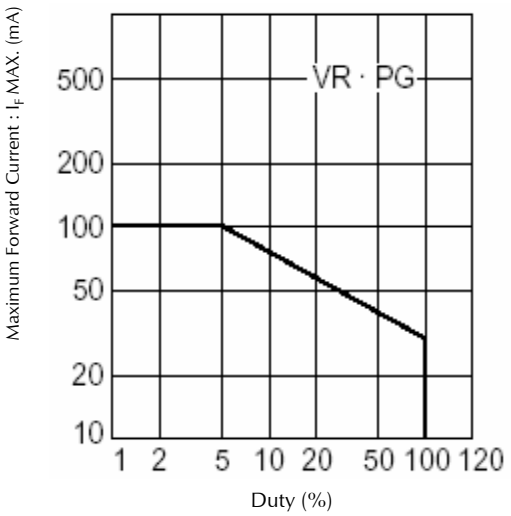
Power Dissipation vs. Ambient Temperature



Dynamic Drive Rating

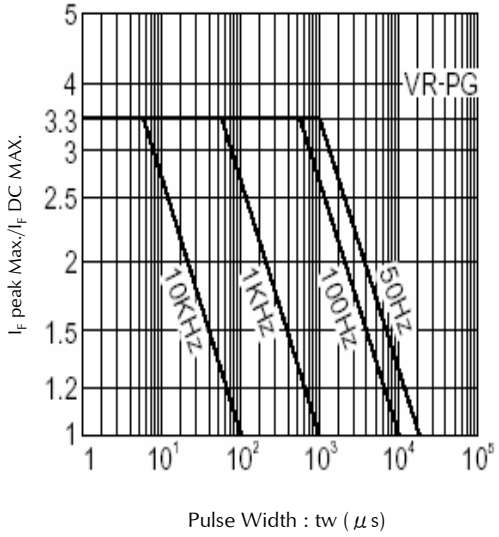
Duty cycle vs. Maximum Forward Current

Condition : Ta = 25℃



Pulse Width vs. Maximum Tolerable Peak Current

Condition : Ta = 25℃

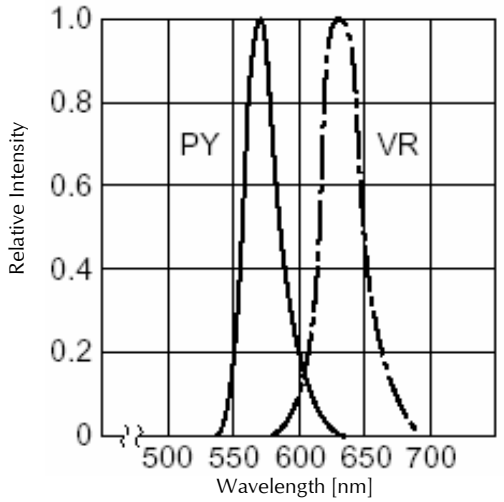


Technical Data(**VRPY**)

Spectral Distribution

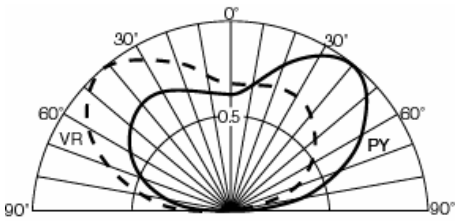
Relative Intensity vs. Wavelength

Condition : Ta = 25℃, I_F = 20mA



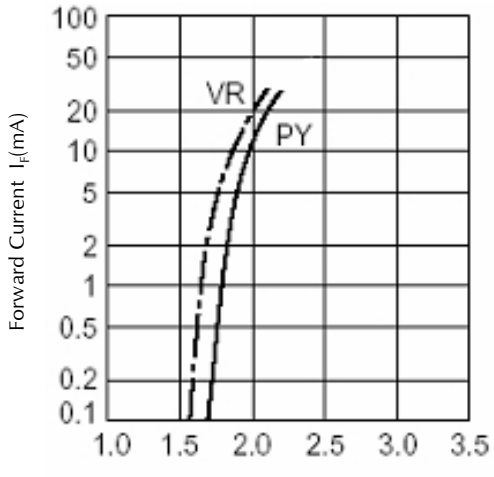
Spatial Distribution Example

Condition : Ta = 25℃



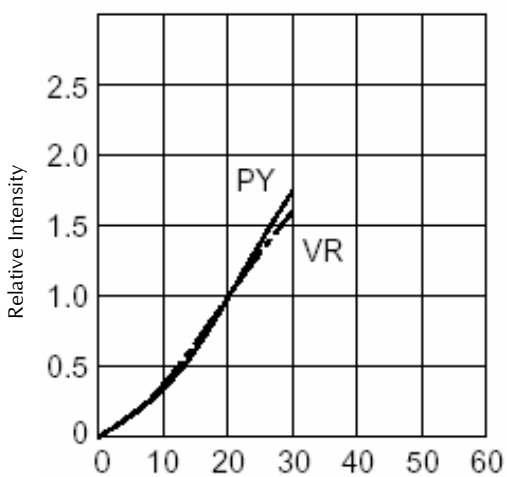
Forward Voltage vs. Forward Current

Condition : Ta = 25℃



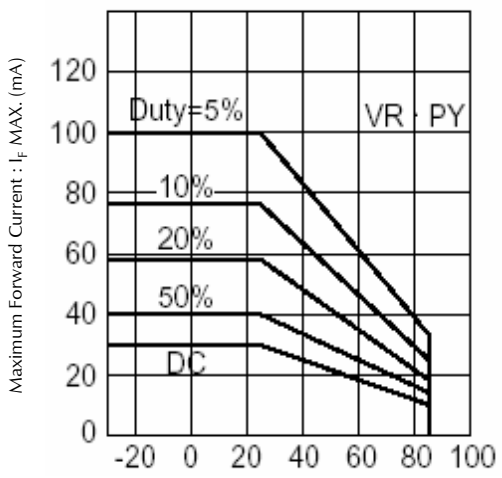
Forward Current vs. Relative Intensity

Condition : Ta = 25℃

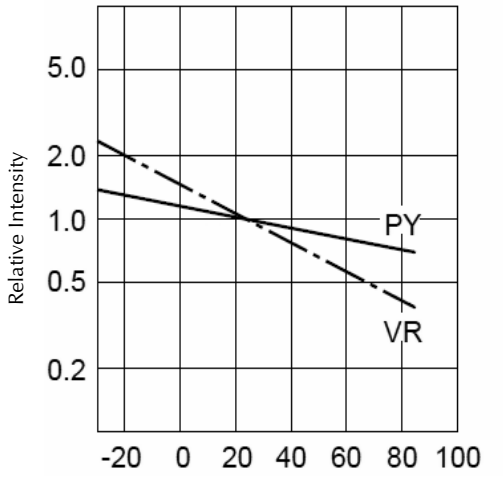


Technical Data(**VRPY**)

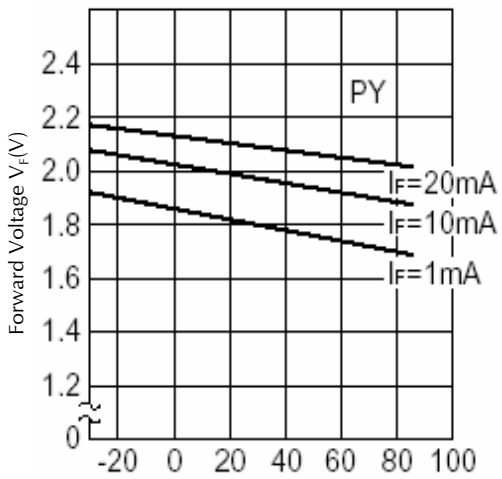
Derating
Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : f ≧ 50Hz



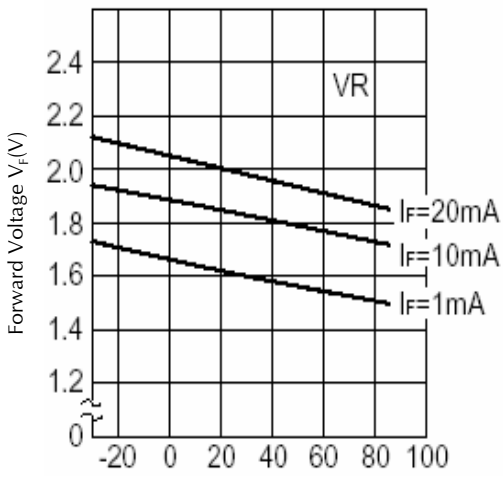
Ambient Temperature vs. Relative Intensity
Condition : I_F=20mA



Ambient Temperature vs. Forward Voltage

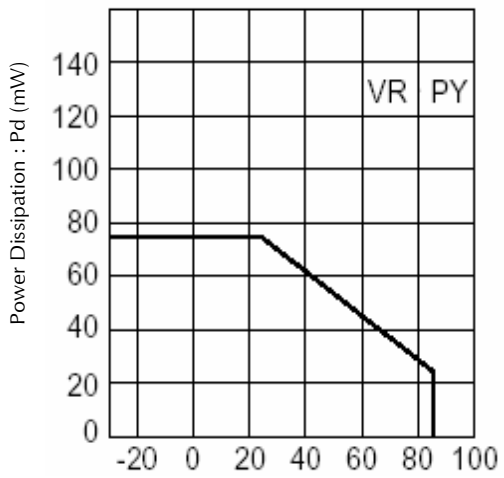


Ambient Temperature vs. Forward Voltage



Technical Data(**VRPY**)

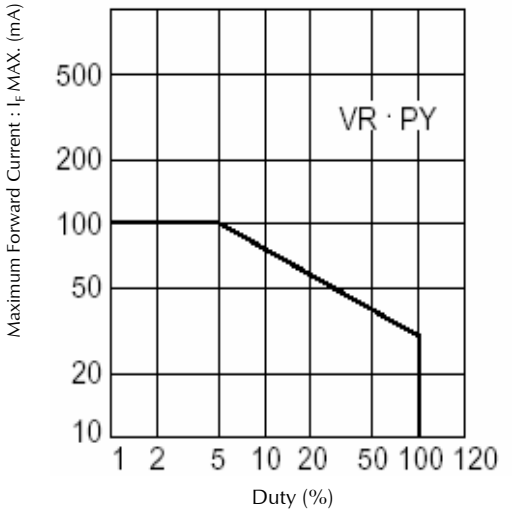
Power Dissipation vs. Ambient Temperature



Dynamic Drive Rating

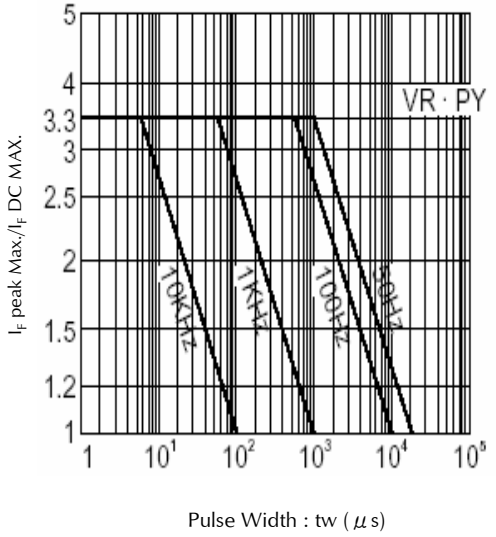
Duty cycle vs. Maximum Forward Current

Condition : Ta = 25℃



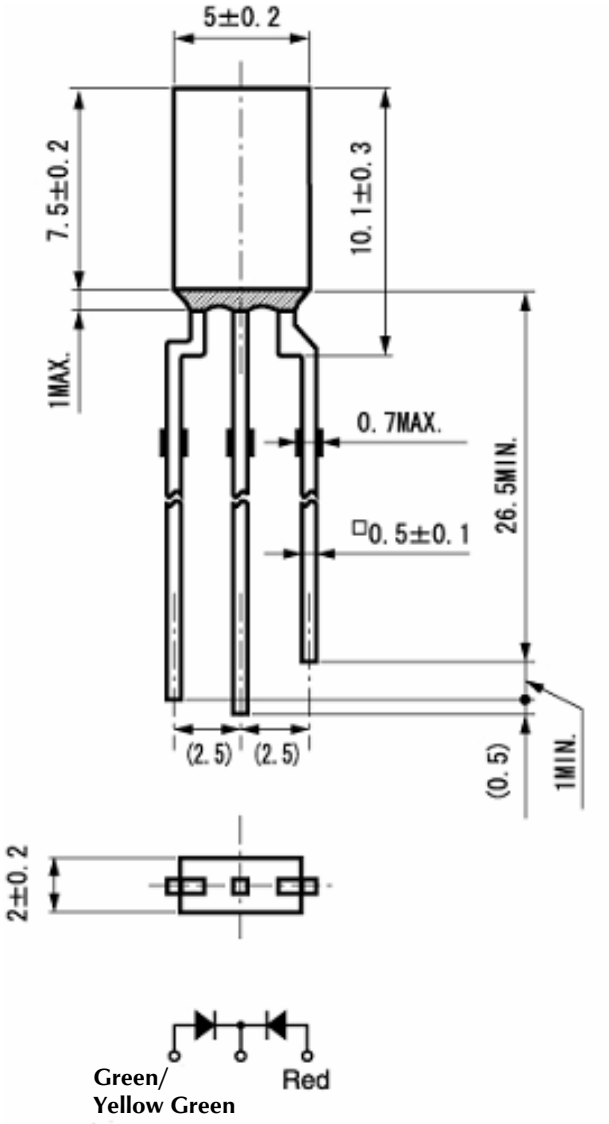
Pulse Width vs. Maximum Tolerable Peak Current

Condition : Ta = 25℃



Package Dimensions

(Unit: mm)



TTW (Through The Wave) soldering Conditions

Pre-heating	100 ℃	(MAX.)
Solder Bath Temp.	265℃	(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.	400℃	(MAX.)
Soldering time and frequency	3 s 2 times	(MAX.) (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℃, I_F = Maxium Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-4701/300(302)	260±5℃, 3mm from package base	10sec	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℃, 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)	10sec	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	I_V	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	-	-	No notable, decoloration, deformation and cracking

Special Notice to Customers Using the Products and Technical Information Shown in This Data Sheet

1) The technical information shown in the data sheets are limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.

2) For the purpose of product improvement, the specifications, characteristics and technical data described in the data sheets are subject to change without prior notice. Therefore it is recommended that the most updated specifications be used in your design.

3) When using the products described in the data sheets, please adhere to the maximum ratings for operating voltage, heat dissipation characteristics, and other precautions for use. We are not responsible for any damage which may occur if these specifications are exceeded.

4) The products described in the data sheets are made to be used in standard electronic applications such as office automation appliances, communication devices, audio visual, home appliances, and measuring instruments.

5) If the products in the data sheets are to be used for purposes other than the above which requires high level reliability and safety where failure and or malfunction of the product may cause death or other serious effects on the human body such as airplane, space activity, transportation, medical, nuclear), please contact our sales personnel.

6) In order to export the products or technologies described in this data sheet which are under the "Foreign Exchange and Foreign Trade Control Law," it is necessary to first obtain an export permit from the Japanese government.

7) No part of this data sheet may be reprinted or reproduced without prior written permission from Stanley Electric Co., Ltd.

8) The most updated edition of this data sheet can be obtained from the address below:
http://www.stanley-components.com