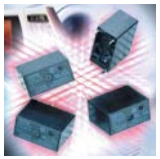
OMRON

Components Catalogue

Contents



Contents

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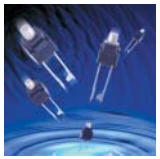

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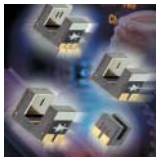
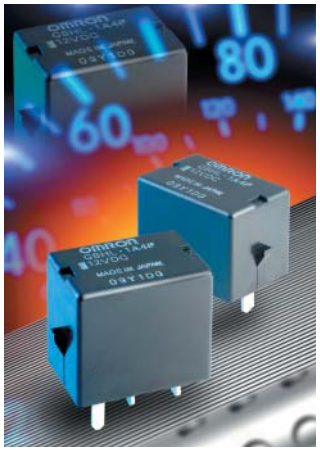


Welcome to the Omron Components Catalogue



Omron Components is a world-class business delivering a wide range of high quality, high performance components utilising latest technologies and backed by full technical, applications and logistical support.

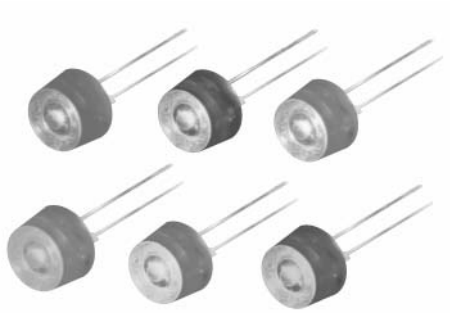
We offer the widest range of relays for power, signal and automotive applications as well as solid-state and MOSFET relays. Our G3VM MOSFETS combine the advantages of mechanical and solid-state technologies allowing design flexibility with either AC or DC load able to be connected in either direction. We are also developing our range of microsensors, and currently offer photomicrosensors and a new range of D8M-D8 micro pressure-sensors which meet stringent safety standards such as working reliably with low pressure, metal casing and flange fitting. Our broad range of switches includes micro, DIP, and tactile options, and you will find a wide selection of connectors to meet industry-standard data interconnect, power transmission and signalling. Omron Double Reflection LEDs feature built-in optical light guide technology that more than doubles effective light output compared with conventional bullet-type LEDs.

Environmental research and experience enabled us to formulate a policy to remove recognised hazardous substances from our products well within the timescales of European Directives. We have identified suitable alternative materials and agreed the changes we need to make to our production processes in order to maintain quality levels. All of our manufacturing sites have achieved ISO14001 certification for the management of environmental protection in our organisation.

Using our website alongside this catalogue, you can be kept fully up-to-date with our range of products, technical capabilities and environmental policy.

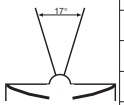
www.eu.omron.com/ocb

Compact High Brightness DR (Double Reflection) effectively saves energy and reduces environmental load.



- DR (Double Reflection) construction maintains at least twice the light radiation efficiency of conventional bullet-type LEDs.
- Provides a large luminous area that ensures improved visibility and a reduction in the number of LEDs employed.
- Each DR-LED is tested before shipping.
- Applications include: Road & Rail Traffic Signalling Heads
  Active Roadside Markers
  Solar & Battery Powered Message Boards
  High Automotive Level Stop & Turn Lamps

■ Ordering Information

Colour	Dominant wavelength (d)	Viewing angle 2θ 1/2	Standard	Item		
				Luminance intensity (typ) If (20 mA)	Rank 2 (typ) Luminant intensity	Rank 2 Model
Red	630nm		2MDR01-85R1A	6000mcd	6000mcd	2MDR01-85R1A-GH
Orange	608nm		2MDR01-85O1A	4000mcd	4000mcd	2MDR01-85O1A-GH
Yellow	590nm		2MDR01-85Y1A	6000mcd	8000mcd	2MDR01-85Y1A-GH
Green	530nm		2MDR01-85G1A	8000mcd	10000mcd	2MDR01-85G1A-HJ
Bluish Green	503nm		2MDR01-85BG1A	5000mcd	5000mcd	2MDR01-85BG1A-GH
Blue	470nm		2MDR01-85B1A	2,500mcd	3000mcd	2MDR01-85B1A-FG

Note: 1. Infra-red (17°) and Narrow Beam (7°) ultra high visibility models in development
2. All items supplied in anti-static bags (500 per)
3. Leads are silver-tinned as standard

Model Number Legend

2MDR□-□□ 1A-□
1 2 3 4

1. Number of Poles
01: Lead Model

2. Lamp Diameter
85: 8.5 dia.

3. Illumination Colour
R: Red
O: Orange
Y: Yellow
G: Green
BG: Bluish Green
B: Blue

4. Luminous Intensity Rank
□: Not Specified
FG: Rank F or G
GH: Rank G or H
HJ: Rank H or J

■ Absolute Maximum Ratings (Ta = 25°C)

Item	Code	Rated Value	Condition
Forward Current	I_F	50mA	–
Pulse Forward Current	I_{FP}	70mA	–
Reverse Voltage	V_R	5V	Ir=100μA
Operating Temperature	Topr	-30 to +85°C (-22 to +185°F)	–
Storage Temperature	Tstg	-30 to +100°C (-22 to +212°F)	–
Operating Humidity	–	30 to 90% RH	–
Soldering Temperature	Tsol	260°C (500°F) for 6 seconds Max	1.6mm from the mould

Red (2MDR01-85R1A)

Item	Code	Characteristic Value			Unit	Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	1.7	2.2	2.6	V	If = 20mA
Reverse Current	I_R	–	–	100	μA	Vr = 5V
Dominant Wavelength	λd	622	630	637	nm	If = 20mA
Peak Wavelength	λp	–	639	–	nm	If = 20mA
Spectral Half Width	$\Delta\lambda_{1/2}$	–	17	–	nm	If = 20mA
Luminous Intensity	I_V	850	6000	–	mcd	If = 20mA
Luminous Flux	ϕv	–	1250	–	mlm	If = 20mA
Radiant Flux	Po	–	9.528	–	mW	If = 20mA
Spectral Luminous Efficacy	K	–	181	–	lm/W	If = 20mA
Colour co-ordinates	X	–	0.7055	–	–	If = 20mA
	Y	–	0.2932	–	–	If = 20mA

Orange (2MDR01-85O1A)

Item	Code	Characteristic Value			Unit	Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	1.7	2.0	2.6	V	If = 20mA
Reverse Current	I_R	–	–	100	μA	Vr = 5V
Dominant Wavelength	λd	600	608	615	nm	If = 20mA
Peak Wavelength	λp	–	612	–	nm	If = 20mA
Spectral Half Width	$\Delta\lambda_{1/2}$	–	17	–	nm	If = 20mA
Luminous Intensity	I_V	850	4000	–	mcd	If = 20mA
Luminous Flux	ϕv	–	1000	–	mlm	If = 20mA
Radiant Flux	Po	–	2.948	–	mW	If = 20mA
Spectral Luminous Efficacy	K	–	387	–	lm/W	If = 20mA
Colour co-ordinates	X	–	0.6503	–	–	If = 20mA
	Y	–	0.3478	–	–	If = 20mA

Yellow (2MDR01-85Y1A)

Item	Code	Characteristic Value			Unit	Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	1.7	2.2	2.6	V	If = 20mA
Reverse Current	I_R	–	–	100	μA	Vr = 5V
Dominant Wavelength	λd	583	590	600	nm	If = 20mA
Peak Wavelength	λp	–	592	–	nm	If = 20mA
Spectral Half Width	$\Delta\lambda 1/2$	–	17	–	nm	If = 20mA
Luminous Intensity	I_V	850	6000	–	mcd	If = 20mA
Luminous Flux	ϕv	–	1600	–	mlm	If = 20mA
Radiant Flux	Po	–	3.465	–	mW	If = 20mA
Spectral Luminous Efficacy	K	–	496	–	lm/W	If = 20mA
Colour co-ordinates	X	–	0.5920	–	–	If = 20mA
	Y	–	0.4063	–	–	If = 20mA

Green (2MDR01-85G1A)

Item	Code	Characteristic Value			Unit	Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	3.0	3.4	3.8	V	If = 20mA
Reverse Current	I_R	–	–	100	μA	Vr = 5V
Dominant Wavelength	λd	520	530	540	nm	If = 20mA
Peak Wavelength	λp	–	528	–	nm	If = 20mA
Spectral Half Width	$\Delta\lambda 1/2$	–	45	–	nm	If = 20mA
Luminous Intensity	I_V	850	8000	–	mcd	If = 20mA
Luminous Flux	ϕv	–	1350	–	mlm	If = 20mA
Radiant Flux	Po	–	3.112	–	mW	If = 20mA
Spectral Luminous Efficacy	K	–	519	–	lm/W	If = 20mA
Colour co-ordinates	X	–	0.1585	–	–	If = 20mA
	Y	–	0.6972	–	–	If = 20mA

Bluish-Green (2MDR01-85YBG1A)

Item	Code	Characteristic Value			Unit	Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	3.0	3.4	3.8	V	If = 20mA
Reverse Current	I_R	–	–	100	μA	Vr = 5V
Dominant Wavelength	λd	498	503	508	nm	If = 20mA
Peak Wavelength	λp	–	501	–	nm	If = 20mA
Spectral Half Width	$\Delta\lambda 1/2$	–	35	–	nm	If = 20mA
Luminous Intensity	I_V	850	5000	–	mcd	If = 20mA
Luminous Flux	ϕv	–	850	–	mlm	If = 20mA
Radiant Flux	Po	–	3.532	–	mW	If = 20mA
Spectral Luminous Efficacy	K	–	194	–	lm/W	If = 20mA
Colour co-ordinates	X	–	0.0785	–	–	If = 20mA
	Y	–	0.4422	–	–	If = 20mA

Blue (2MDR01-85B1A)

Item	Code	Characteristic Value			Unit	Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	3.0	3.4	3.8	V	If = 20mA
Reverse Current	I_R	–	–	100	μA	Vr = 5V
Dominant Wavelength	λd	465	470	475	nm	If = 20mA
Peak Wavelength	λp	–	468	–	nm	If = 20mA
Spectral Half Width	$\Delta\lambda 1/2$	–	25	–	nm	If = 20mA
Luminous Intensity	I_V	850	2500	–	mcd	If = 20mA
Luminous Flux	ϕv	–	480	–	mlm	If = 20mA
Radiant Flux	Po	–	5.628	–	mW	If = 20mA
Spectral Luminous Efficacy	K	–	71	–	lm/W	If = 20mA
Colour co-ordinates	X	–	0.1249	–	–	If = 20mA
	Y	–	0.0875	–	–	If = 20mA

Specifications (Standard type)

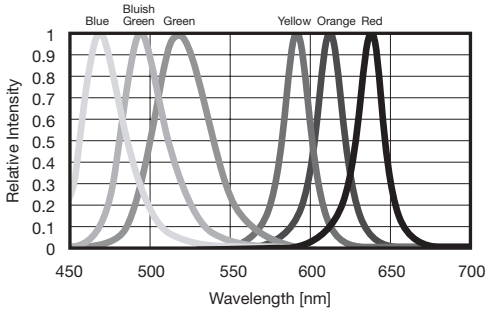


Fig 1. Relative Intensity vs Wavelength
(Sample: Blue, Bluish Green, Green, Yellow, Orange and Red)

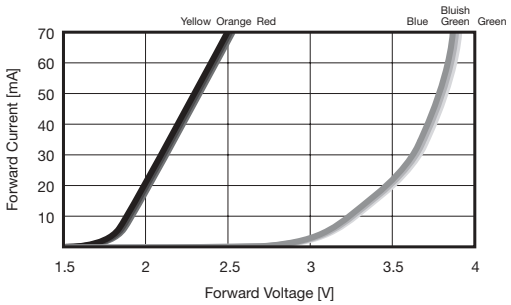


Fig 2. Forward Current vs Forward Voltage
(Sample: Blue, Bluish Green, Green, Yellow, Orange and Red)

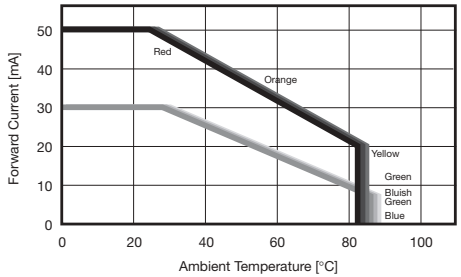


Fig 3. Forward Current vs Ambient Temperature
(Sample: Blue, Bluish Green, Green, Yellow, Orange and Red)

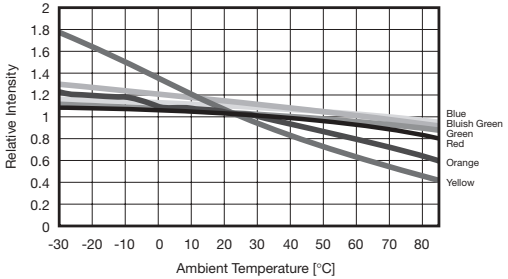


Fig 4. Relative Intensity vs Ambient Temperature
(Sample: Blue, Bluish Green, Green, Yellow, Orange and Red)

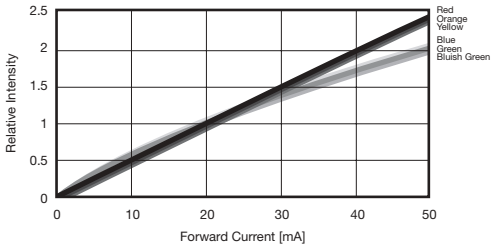


Fig 5. Relative Intensity vs Forward Current
(Sample: Blue, Bluish Green, Green, Yellow, Orange and Red)

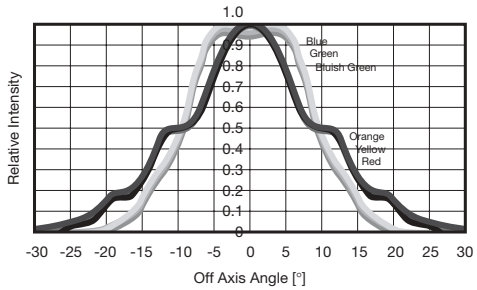


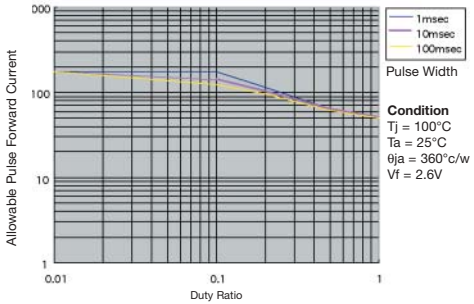
Fig 6. Relative Intensity vs Off Axis Angle
(Sample: Blue, Bluish Green, Green, Yellow, Orange and Red)

Key:

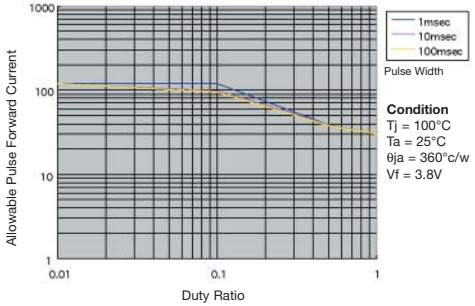
Blue | Bluish Green | Green | Yellow | Orange | Red

Product Information

Pulse Rating Characteristics
Duty Ratio vs. Allowable Forward Current

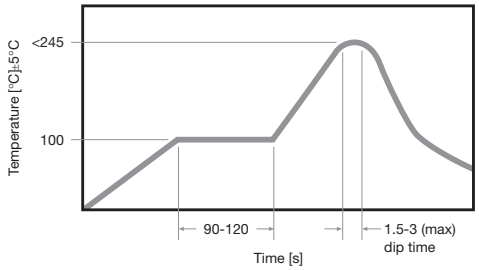


(Red, Orange & Yellow)



(Blue, Bluish Green & Green)

Conventional Flow Soldering

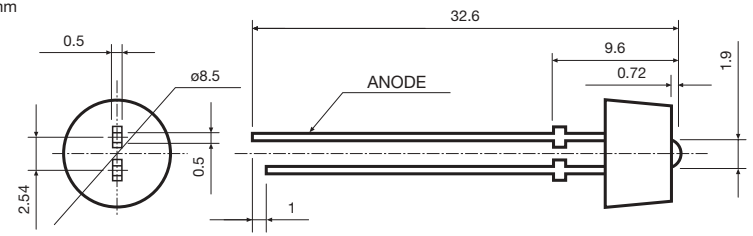


Recommended Soldering Method
Manual soldering iron.
Complete the soldering process quickly.
Use the correct wattage of soldering iron.
Do not overheat while smoothing the applied solder with the tip of the iron.

Solder: JIS Z3282, H60 or H63 (resin type flux)
Soldering iron: rated at 30-60W
Tip temperature: 260°C ± 10%
Soldering time: 3 secs, max

Note: The use of lead-free solder for DR-LED is not recommended.

Outline Drawing
Units: mm



■ Luminous Intensity Rank Standard

	Luminous Intensity standards	
	Minimum	Maximum
Rank E	1000 mcd	1700mcd
Rank F	1700 mcd	3000mcd
Rank G	3000 mcd	5300mcd
Rank H	5300 mcd	9300mcd
Rank J	9300 mcd	16000mcd
Rank K	160000 mcd	–

Maximum and minimum values each have a tolerance of±15%. Ordering by single rank is not available

Precautions

CAUTIONS

Blue, Bluish Green, and Green LEDs

Blue, bluish green, and green DR LEDs are very sensitive to surge voltages, such as those which occur in the event of electrostatic discharge. Extreme care in handling is required to protect the elements from damage and maintain LED reliability.

Make sure that the voltage applied to each LED does not exceed its absolute maximum rated voltage. Pay extreme attention to surge voltages resulting from turning the power supply ON and OFF.

HANDLING INSTRUCTIONS

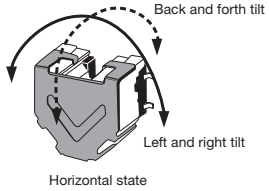
Measures for Preventing Static Electrification and Electrostatic Discharge

If a human body charged with static electricity comes in contact with blue, green, or bluish green units, the semiconductor elements may be subject to electrostatic discharge damage. The unit may be charged by induction caused by a charged object nearby the unit or by friction; therefore in these cases, if the unit comes in contact with a conductive object such as metal, the unit may be damaged as a result of electrostatic discharge. Ensure the following measures are taken when working on the unit.

1. Keep the unit away from insulators that easily build up electrostatic charge.
2. Keep the unit away from processes where the unit will be subject to friction.
3. Ground any equipment, devices and tools such as manufacturing equipment and measuring machines that require grounding.
4. Use a conductive mat or similar product to provide an environment in order to keep away from electrostatic charges.
5. Use an earth band to ground the worker's body.
6. In the case of lead forming, the lead bending point must be at least 1.5mm away in the lead-end direction from the mould so that the mould will be free of forming stress. Solder the leads after lead forming.
7. Apply solder to the leads below the tie bars, because applying solder above the tie bars may not be possible due to thin burrs.

Subminiature PCB Mounting Sensor Discriminating Left or Right Tilt

- Detects the inclination of the Sensor within an activated angle range between 45° and 75° (left and right) and a reset angle range between 50° and 20°
- A subminiature SMD PCB mounting model
- A highly reliable solid-state type by Hall IC
- A surprisingly low power consumption with a maximum of 20μA



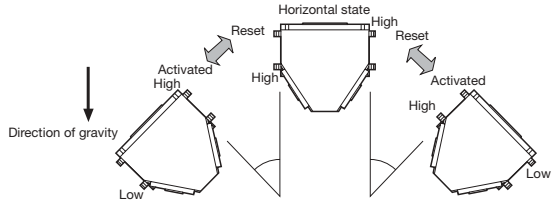
Ordering Information

Output configuration	Model
ON/OFF	D6B-1

Application

Vertical or horizontal discrimination of digital cameras, PDAs, and cellular phones.

Performance

Operating characteristics	**Activated angle**		45° to 75° (left and right)
	Reset angle		50° and 20° (left and right)
			Note: Characteristic values are provided, on condition that there is no tilt back and forth while the operation speed is 10° per second. 
Output Config.	**Horizontal state**		High-voltage signal output from the terminals on both sides.
	Inclined left or right		Low-voltage signal output only from the terminals on the side of the moving direction.
Electrical characteristics	**Ta = 25° and Vdd = 3V DC**		2.7 to 3.3 V DC
		Power supply voltage range (Vdd)	
		High-voltage output	Vdd-0.5V min.
		Low-voltage output	0.5V DC max.
		Current consumption	20 μA max. (10 μA typical)
	Maximum ratings		-0.1 to 5.0 V
		Power supply voltage (Vdd)	
		Output current (Iout)	± 1mA
Basic specs.	**Ambient temperature (operating)**		-10°C to 60°C (with no condensation)
	Ambient temperature (storage)		-25°C to 70°C (with no condensation)
	Ambient humidity (operating)		25% to 85%