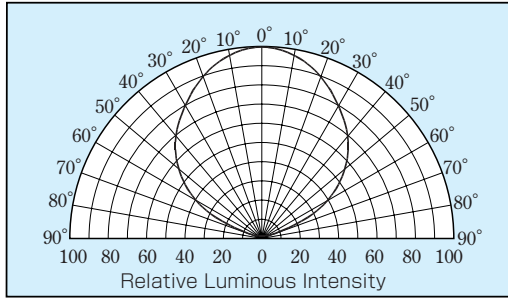




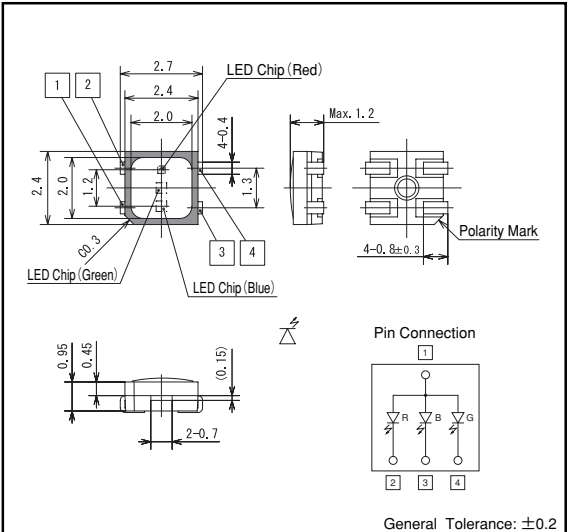
Characters

- Chip LED (2.4×2.4×0.95)
- Black Face type

Directive Characteristics (Ta=25°C)



Package Outlines (Unit:mm)

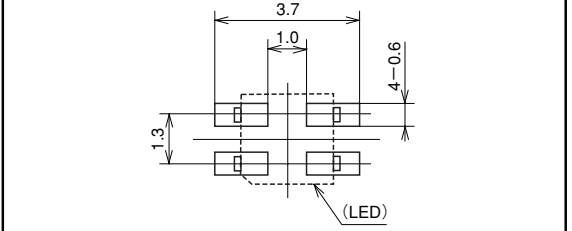


Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Value			Unit
		BLUE	GREEN	RED	
Par lamp	Power Dissipation	135			mW
Par chip	DC Forward Current	20	20	40	mA
	Pulsed Forward Current	100	100	150	mA
Par chip	Reverse Voltage	5			V
	Operating Temperature	-30~ + 85			°C
	Storage Temperature	-40~ +100			°C

★¹ Duty 1/10 Pulse Width 10 ms.

Recommended soldering Pattern (Unit:mm)



Electrical and Optical Characteristics (Ta=25°C)

Part No.★ ²		Luminous Intensity (mcd)★ ³			Forward Voltage (V)			Wavelength Characteristics (nm)			
		Typ.	Min.	If(mA)	Typ.	Max.	If(mA)	λ _D Min.	λ _D Max.	Δλ Typ.	If(mA)
E1S27-*M1F7-03	B	-	48	20	3.4	3.9	20	460	480	25	20
	G	-	180	20	3.4	3.9	20	510	540	35	20
	R	-	62	20	2.0	2.8	20	613.5	627.5	20	20

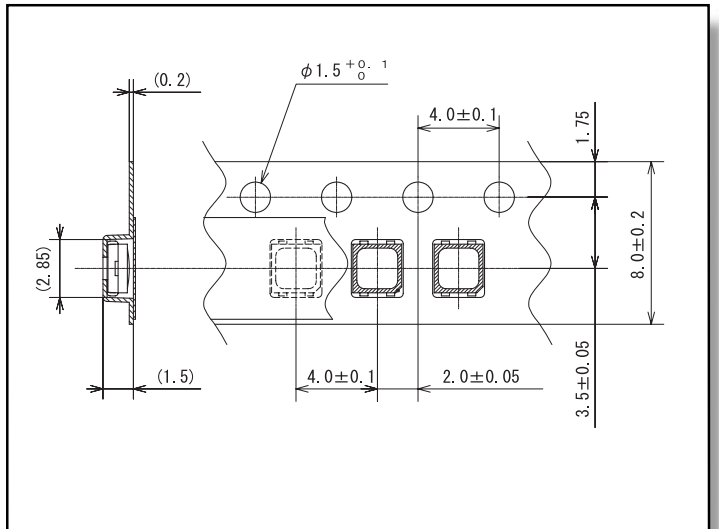
★² See next page table for Luminous Intensity Ranks. ★³ Axial Direction (Luminous Intensity)

Package

Taping ----- 3000pieces/reel

★Please use the Part Number above for your order.

Taping Outline Dimensions (Unit:mm)



E1S27-*M1F7-03




– Common Anode –

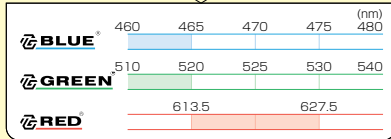
Standard

Sub Parts No. : E1S27-YM1F7-03 (Type A, B, C and D included)




Wavelength Combinations

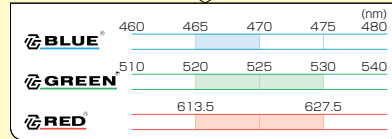
Type A

E1S27-AM1F7-03		
	Color Range(nm)	Iv(mcd)
 BLUE	460~465	48~128
 GREEN	510~520	180~368
 RED	613.5~627.5	62~170






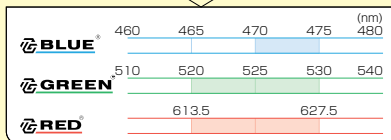
Type B

E1S27-BM1F7-03		
	Color Range(nm)	Iv(mcd)
 BLUE	465~470	48~128
 GREEN	520~530	180~368
 RED	613.5~627.5	62~170






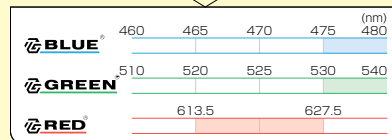
Type C

E1S27-CM1F7-03		
	Color Range(nm)	Iv(mcd)
 BLUE	470~475	48~128
 GREEN	520~530	180~368
 RED	613.5~627.5	62~170






Type D

E1S27-DM1F7-03		
	Color Range(nm)	Iv(mcd)
 BLUE	475~480	48~128
 GREEN	530~540	180~368
 RED	613.5~627.5	62~170



Luminous Intensity Ranks

(mcd)

	 RED	 GREEN	 BLUE
B	62~87	180~257	48~78
C			78~128
D		257~368	48~78
E			78~128
F	87~122	180~257	48~78
G			78~128
H		257~368	48~78
J			78~128
K	122~170	180~257	48~78
L			78~128
M		257~368	48~78
N			78~128




* Please contact us to specify the luminous intensity ranks.

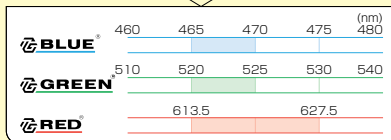
Upper Grade

Sub Parts No. : E1S27-ZM1F7-03 (Type F, G and H included)




Wavelength Combinations

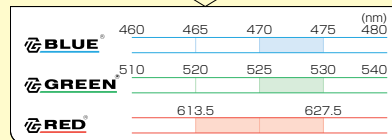
Type F

E1S27-FM1F7-03		
	Color Range(nm)	Iv(mcd)
 BLUE	465~470	60~128
 GREEN	520~525	233~476
 RED	613.5~627.5	62~170






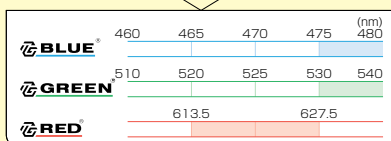
Type G

E1S27-GM1F7-03		
	Color Range(nm)	Iv(mcd)
 BLUE	470~475	60~128
 GREEN	525~530	233~476
 RED	613.5~627.5	62~170



Type H




E1S27-HM1F7-03		
	Color Range(nm)	Iv(mcd)
 BLUE	475~480	60~128
 GREEN	530~540	233~476
 RED	613.5~627.5	62~170



Remarks
 · Measurement Condition : If=20mA
 · Common cathode type is also available.
 · Contact us for further information.

Luminous Intensity Ranks

(mcd)

	 RED	 GREEN	 BLUE
B	62~87	233~333	60~88
C			88~128
D		333~476	60~88
E			88~128
F	87~122	233~333	60~88
G			88~128
H		333~476	60~88
J			88~128
K	122~170	233~333	60~88
L			88~128
M		333~476	60~88
N			88~128

* Please contact us to specify the luminous intensity ranks.

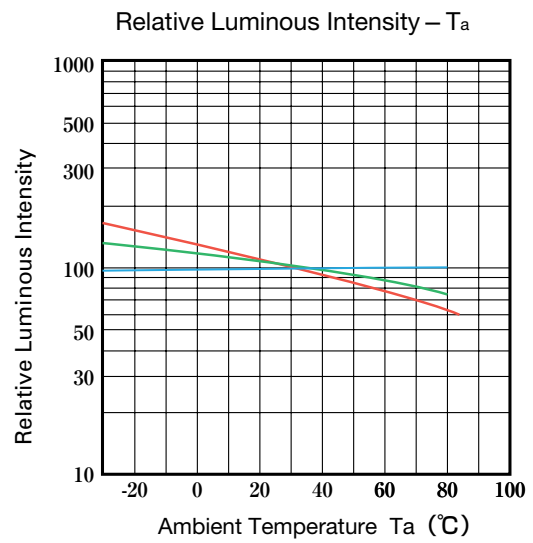
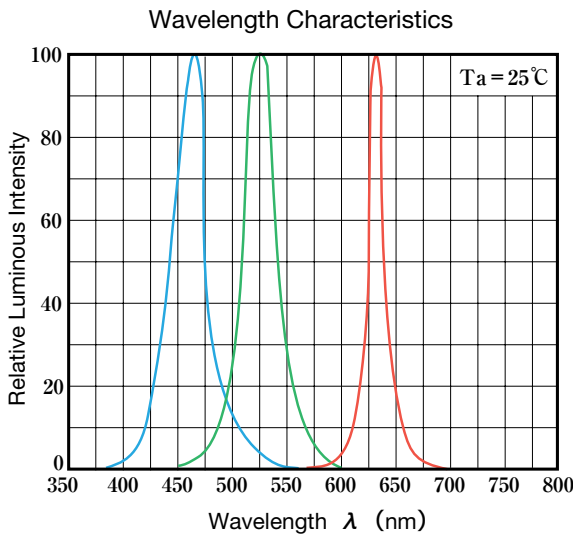
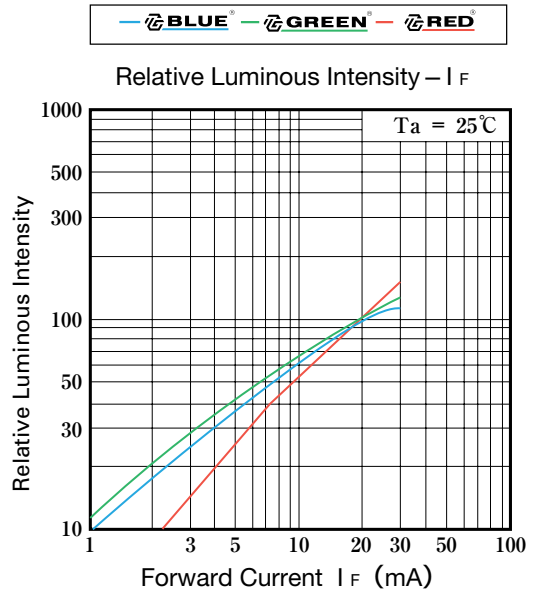
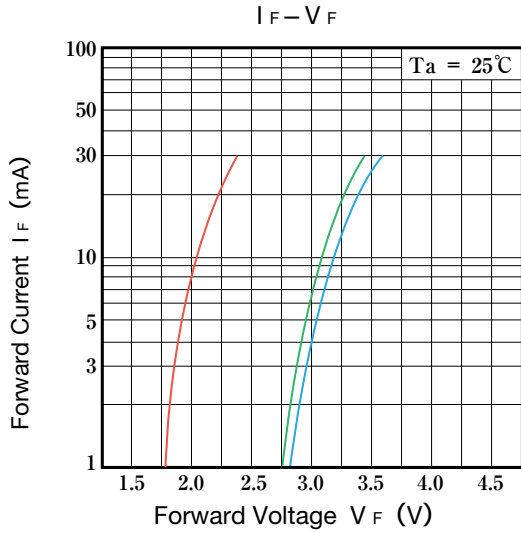
<How to use the tables>

Please select the LED type according to the wavelength combinations from the table on the left, and then select the luminous intensity rank from the table on the right.

Typical Characteristics

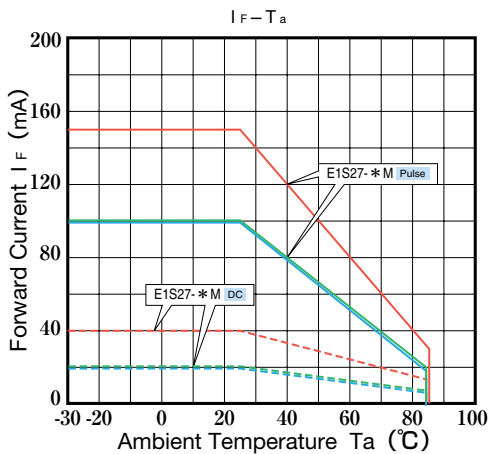
E1S27-*M1F7-03

* The data shows typical value, and the value is not guaranteed.



3 in 1

Allowable Value



PRECAUTIONS IN USE

① Soldering Conditions

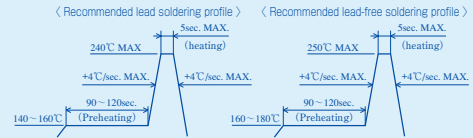
- When soldering chip LEDs, the humidity encapsulated in the resin may expand with heat and disturb the junction bond. This may also affect the optical characteristics of the LED.

[E1S10, E1S11]

- Maximum allowable soldering conditions are:
Solder dipping : 260 degrees C max., 5 seconds max., twice.
Reflow solder : 240 degrees C max., 5 seconds max., no more than twice. Pre-heat is 150 degrees C max., 2 minute max.
Soldering iron : 280 degrees C max., 3 seconds max., once.

[E1S27]

- The product doesn't adapt to dip solder and flow solder.
- Do not stress its resin while soldering.
- Handle product after it returns room temperature.
- When reflow soldering, use recommended profile.
- Do not repair after soldering. In necessitous case, refer to following conditions to repair and check that the product is not damaged and depleted.
- Maximum allowable soldering conditions are:
280 degrees C max., 3 seconds max., 25W max. one time Take 2 seconds interval between soldering each terminal.



② Storage

- After opening keep the bag flap closed and store in a dry environment.

[E1S10, E1S11]

- Second soldering process should be finished within 72hours since LEDs was taken out from the bags (the state of leaving : 5 to 30 degrees C, 70%RH max)

[E1S27]

- Use within 7 days after opening the sealed bag.

③ Cleaning

- Do not use organic solvents such as acetone.
Organic solvents will damage the surface of the chip.
When ultrasonic cleaning, inspect before immersion.

④ Static Electricity

- These products are so sensitive to static electricity charge that users are required to handle with care. Particularly if an over-current and over-voltage which exceeds the Absolute Maximum Rating of Products is applied, the overflow in energy may cause damage to, or possibly result in electrical destruction of, the Products. Customer is requested to adequate countermeasures against static electricity charge and surge when handling Products.
- A protection device should be installed in the LED driving circuit, which does not exceed the max. rating for surge current during on/off switching.
- Proper grounding of Products (via 1MΩ), use of conductive mat, semiconductive working uniform and shoes, and semiconductive containers are considered to be effective as countermeasures against static electricity and surge.
- When the electrified product touches the low resistance part such as the metal face, there is a high possibility that it may be charged due to radical electric discharge.
When grinding, use of resisting element such as conductive mat is effective for parts where the product directly touches.
- A tip of soldering iron is requested to be grounded. An ionizer should also be installed where risk of static generation is high.
- If the countermeasures mentioned above are implemented, LED can work well.
Users are required to check those countermeasures when problems occur by static electricity charge.

⑤ Safety Precautions

- Users are requested to comply with the laws and public regulations concerning safety.
- The light output of the Products may cause injuries to human eyes in circumstances where the Products are viewed directly for more than a few seconds.



PRECAUTIONS IN USE

1

The products described in this brochure are intended only for standard applications or general electronic equipment such as office equipment, communications, and electronic instrumentation and household electrical appliances.

When they are used for transport equipment, disaster prevention and crime prevention equipment as well as other safety devices calling for high reliability and safety, users are required to pay particular heed to the safety design of the equipment as a whole in terms of fail-safe design and redundant design to maintain the reliability and safety of the equipment.

Consult Toyoda Gosei's staff in advance for special applications such as aviation, spacecraft, heating equipment and life-sustaining equipment which require exceptionally high reliability and safety and if their failure or malfunction may threaten human lives or may be detrimental to human bodies.

It is to be understood that the seller shall not be held responsible for any damage incurred as a result of using the product for the purpose which is not the standard the seller has intended to be used for, unless the seller agrees to the non-standard use in writing.

2

Users are requested to comply with the laws and public regulations concerning safety.

3

In the event the products which are to be used are in mass production, the execution of written specifications or purchase agreement between the seller and the customer is required.

The seller shall bear no responsibility for any damages or injury that are caused by customers' usage of the products without the execution of such specification or purchase agreement.

4

The detail of tolerance for Electrical/Optical characteristics can be found on the execution of written specifications.