

SPECIFICATION SHEET

SPECIFICATION SHEET NO.	R0126- BND16RGBAS0001	
DATE	Jan. 26, 2024	
REVISION	A0	Updated With Most Recent Data - Official First Release
DESCRIPTION AND MAIN PARAMETRICS	<p>SMD LED 1615 Series Dimension L1.6*W1.5*H0.6mm, Red/Green/Blue Tri-color</p> <p>Forward Voltage (VF) Red: 1.6~2.0V; Green: 2.5~3.0V; Blue: 2.5~3.0V</p> <p>Dominant Wavelength Rank (WL): Red: 620~632nm; Green: 515~530nm; Blue: 464~472nm</p> <p>Luminous Intensity Rank (IV) : Red: 17.5~43mcd; Green: 43.5~115mcd; Blue: 12~29mcd</p> <p>Operating Temp. Range -30°C ~+85°C</p> <p>Package in Tape/Reel, REACH/RoHS/RoHS III Compliant</p>	
CUSTOMER		
CUSTOMER PART NO.		
CROSS REF. PART NO.		
ORIGINAL MFG/PART NO.	Oriental Technology/BND-16RGBA	
PART CODE	BND16RGBAS0001	

VENDOR APPROVE

Issued/Checked/Approved



DATE: Jan. 26, 2024

CUSTOMER APPROVE

DATE:

1/26/2024

SMD LED 1615 SERIES RED/GREEN/BLUE TRI-COLOR

MAIN FEATURE

- RGB Color Chip LED Package
- High Luminous Intensity and Low Power Dissipation
- Reflow Solderable
- Product Complies to MSL Level 2a acc.To JEDEC J-STD-020 D.01
- Suitable for SMT process
- Cross Competitors Parts
- REACH/RoHS/RoHS III Compliant



APPLICATION

- Optical Indicator
- Indoor Display
- Backlighting In Dashboard And Switch
- Backlighting For LCD, Symbol And Display

PART CODE GUIDE

RFQ
[Request For Quotation](#)

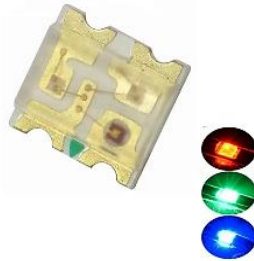
BND16	RGB	A	S0001	()
1	2	3	4	5

1. BND16: Part family Code for SMD LED 1615 Series Red/Green/Blue Tri-color Dimensions: L1.6*W1.5*H0.6mm
2. RGB: Color code, R: Red Clear; B: Blue Clear; G: Green Clear; YG: Yellow Green Clear; W: White Clear; RGB: Red/Green/Blue Tri-color
3. A: QC Code
4. S0001: Internal Control Code or special Parameters code letter A~Z or digits (1-9)
5. (): Custom Parameters code letter A~Z or digits (1-9); Blank: N/A

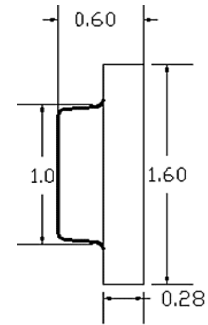
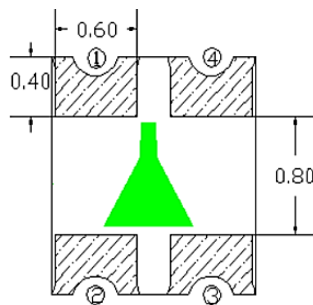
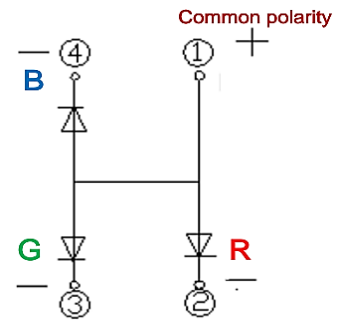
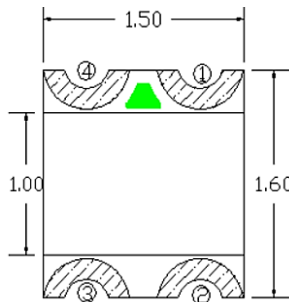
SMD LED 1615 SERIES RED/GREEN/BLUE TRI-COLOR

DIMENSION – (Unit: mm, Tol.: ±0.1mm)

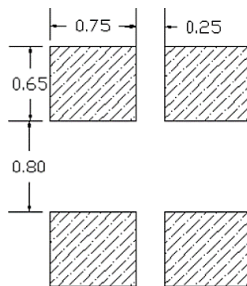
Image For Reference



BND1615 Series
Size Code 1615
Dimension
L1.6*W1.5*H0.6mm



Recommend Pad Layout



SMD LED 1615 SERIES RED/GREEN/BLUE TRI-COLOR
MAXIMUM RATING $T_s=25^{\circ}\text{C}$, RH60%

PARAMETERS		SYMBOL	VALUES	UNIT
Operating Temperature		Top	-30~+85	°C
Storage Temperature		Tstg	-40~+90	°C
Junction Temperature		Tj	115	°C
Forward Current ($T_s=25^{\circ}\text{C}$) Max.	Red	IF	25	mA
	Green		25	
	Blue		25	
Peak Forward Current Max. Duty ratio=1/10, Pulse Width=0.1ms	Red	Ipeak	60	mA
	Green		60	
	Blue		60	
Power Dissipation Max.	Red	PD	60	mW
	Green		90	
	Blue		90	
Electrostatic Discharge (acc.to ANSI/ESDA/JEDEC JS-001-2017)		VESD	≥2.0	kV

SMD LED 1615 SERIES RED/GREEN/BLUE TRI-COLOR
OPTICAL & ELECTRICAL CHARACTERISTICS $I_f=5mA, T_s=25^{\circ}C, RH60\%$

PARAMETERS		SYMBOL	VALUES			UNIT
			MIN.	TYP.	MAX.	
Forward Voltage	Red	V _F	1.6	-	2.0	V
	Green		2.5	-	3.0	
	Blue		2.5	-	3.0	
Dominant Wavelength	Red	λ_{dom}	620	-	632	nm
	Green		515	-	530	
	Blue		464	-	472	
Luminous Intensity @5mA	Red	I _v	17.5	-	43	mcd
	Green		43.5	-	115	
	Blue		12	-	29	
Viewing Angle		2 θ 1/2	-	-	-	Deg
Reverse Current		I _R (V _R =5V)	-	0.1	10	μ A
Reverse Voltage		V _R	-	-	5	V
Thermal Resistance (Junction/Solder Point)	Red	R θ _{JS}	-	269	-	KW
	Green		-	286	-	
	Blue		-	286	-	

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BIN CODE LIST- Part I

PARAMETERS		SYMBOL	VALUES	TOLERANCE	UNIT
Forward Voltage Rank (VF) @IF=5mA, Ts=25°C, RH60%	Red	V13	1.8~2.0	±0.05	V
		Vp	2.0~2.2		
	Green	V5	2.5~2.65		
		V6	2.65~2.8		
		V7	2.8~3.0		
	Blue	V5	2.5~2.65		
		V6	2.65~2.8		
		V7	2.8~3.0		
	Dominant Wavelength Rank (WLD) @IF=5mA, Ts=25°C, RH60%	Red	WG		
WH			624~628		
WI			628~632		
Green		L5	515~520		
		L6	520~525		
		L7	525~530		
Blue		DF	464~468		
		DG	468~472		

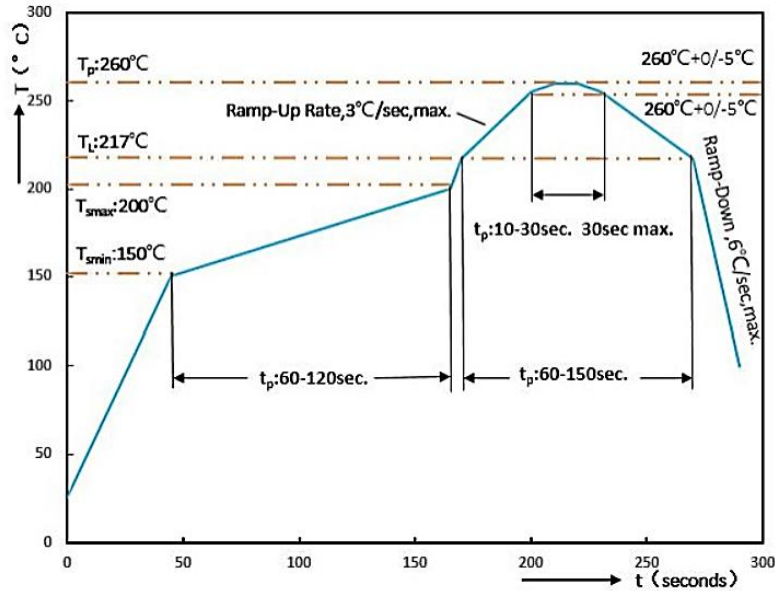
SMD LED 1615 SERIES RED/GREEN/BLUE TRI-COLOR

BIN CODE LIST- Part II

PARAMETERS		SYMBOL	VALUES	TOLERANCE	UNIT
Luminous Intensity Rank (IV) @IF=5mA, Ts=25°C, RH60%	Red	FS3	17.5~29	±10%	mcd
		FS4	29~43.5		
	Green	FS5	43.5~73		
		FS6	73~115		
	Blue	FS2	12~17.5		
		FS3	17.5~29		

Note:

1. We support custom parameter on the basis of above mentioned Bin Code List if customer required.
2. Custom parameter code can be added as per Part Code Guide Page 2.

SMD LED 1615 SERIES RED/GREEN/BLUE TRI-COLOR
REFLOW SOLDERING CHARACTERISTICS


PROFILE FEATURE		PB-FREE ASSEMBLY
Average Ramp-up Rate (Ts Max to Tp)		3°C/second Max
Preheat	Temperature Min (Ts Min.)	150°C
	Temperature Max (Ts Max.)	200°C
	Time (ts Min. to ts Max.)	60~120 seconds
Time maintained above	Temperature (TL)	217°C
	Time(ts) maintained above TL	60 ~150 seconds
Peak/Classification Temperature (Tp)		260 °C
Time (tp) within 5°C of the specified Classification Temperature (Tc)		30 seconds Max
Suggest reflow times		2 Times Max.
Ramp-downrate (Tp to TL)		6°C/second Max
Time 25°C to peak temperature		8 min Max.

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OPTICAL & ELECTRICAL CHARACTERISTICS CURVES -IF=5mA, Ts=25°C, RH60%

Figure 1. Forward Current Vs Forward Voltage

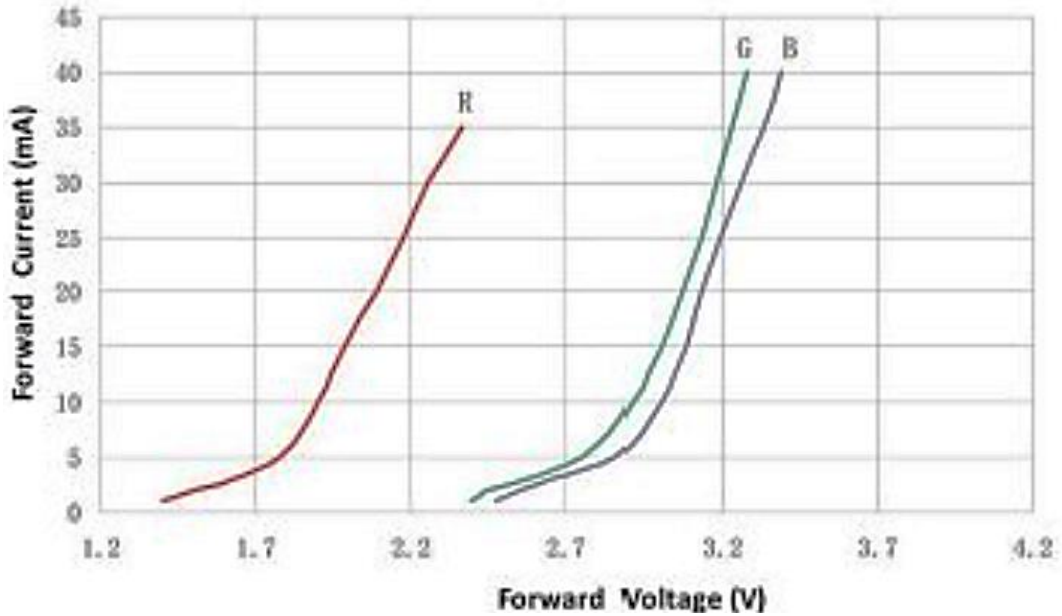
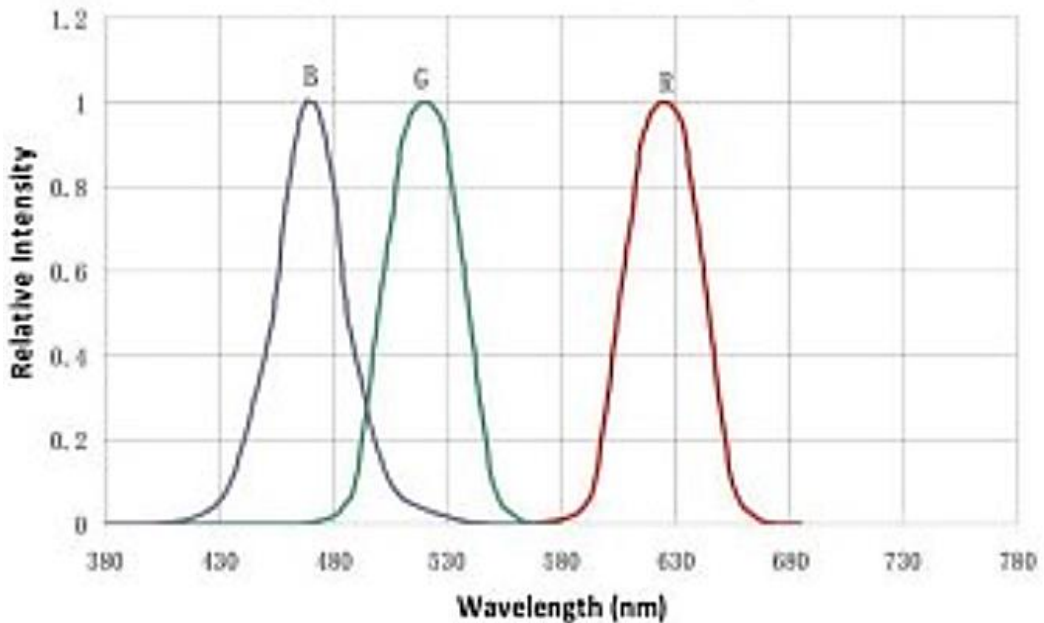


Figure 2. . Relative Intensity



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OPTICAL & ELECTRICAL CHARACTERISTICS CURVES -IF=5mA, Ts=25°C, RH60%

Figure 3. Relative Intensity Vs. Ambient Temperature

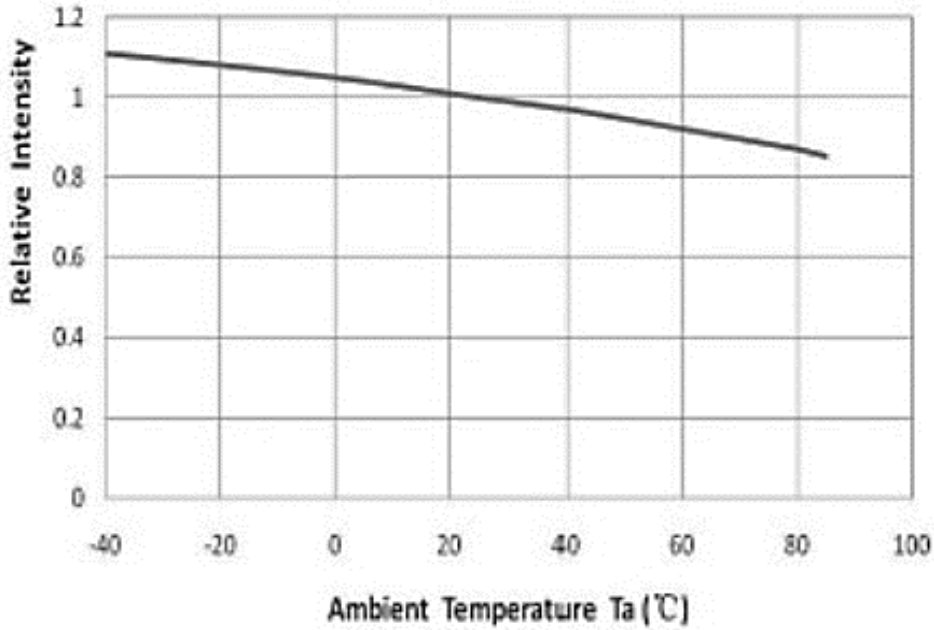
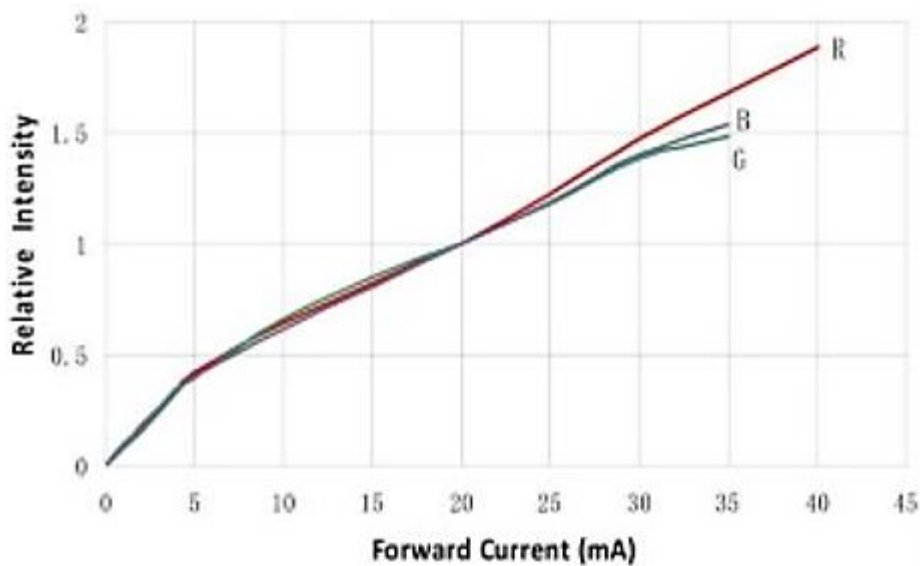


Figure 4. . Relative Intensity Vs. Forward Current



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OPTICAL & ELECTRICAL CHARACTERISTICS CURVES -IF=5mA, Ts=25°C, RH60%

Figure 5. Forward Current Derating Curve

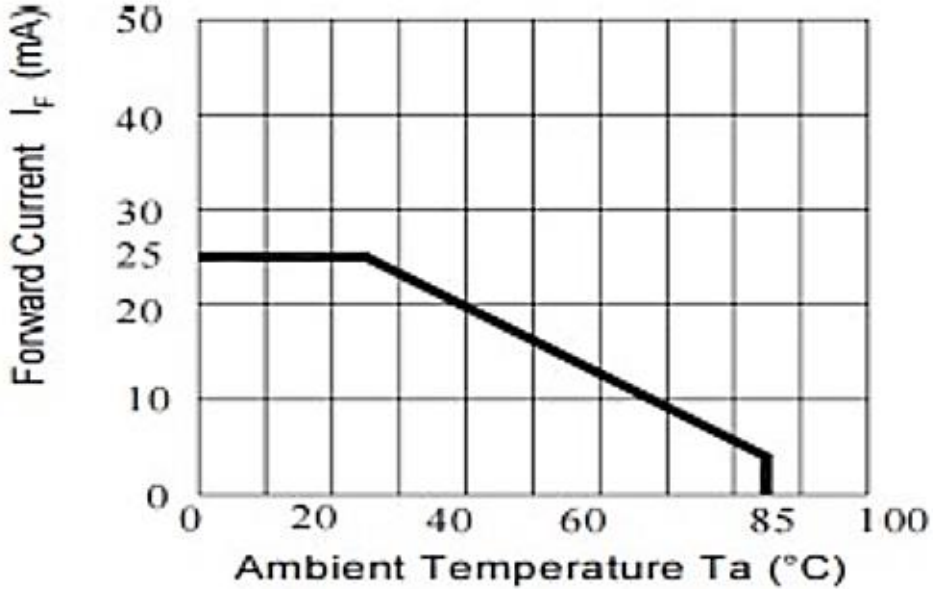
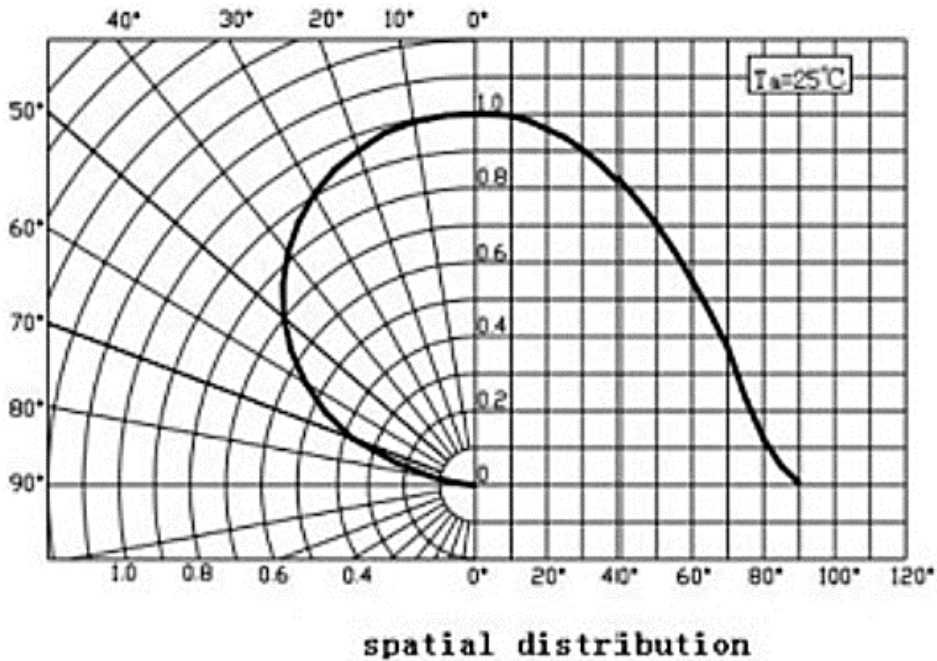
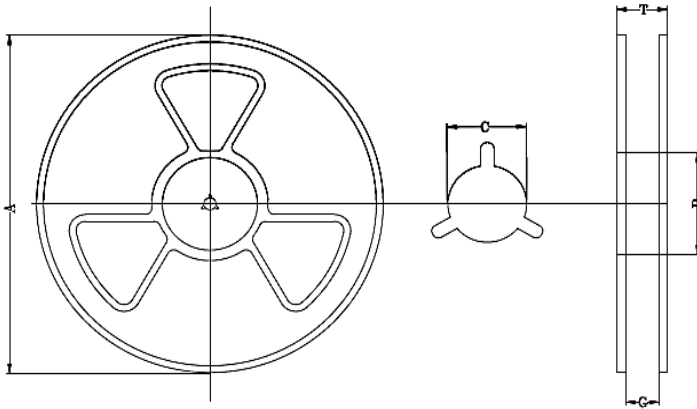


Figure 6. Radiation Diagram



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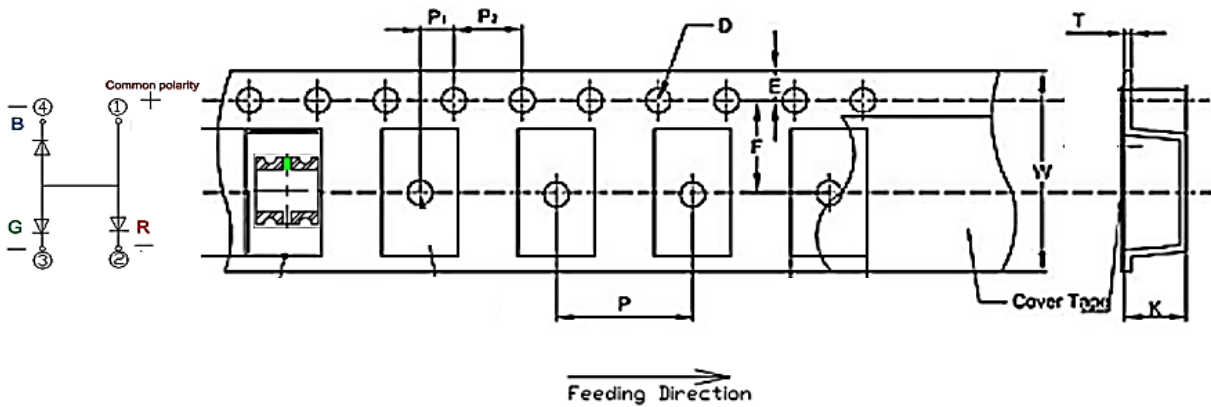
REEL DIMENSION (Unit: mm 4000pcs/Reel)



CODE	DIMENSION
A	178.0±2.0
B	Φ60±2.0
C	R6.5±0.5
G	9.0±1.0
T	12.0±1.0

TAPE DIMENSION (Unit mm)

- Cumulative Tolerance : Cumulative Tolerance/10 pitches to be ±0.2mm)
- Adhesion Strength Of Cover Tape Adhesion Strength To Be 0.1-0.7N When The Cover Tape Is Turned Off From The Carrier Tape At The Angle Of 10° To The Carrier Tape.



CODE	D	E	F	K	P	P1	P2	T	W
Dimension	1.50	1.75	3.50	0.70	4.00	2.00	4.00	0.235	8.00
	±0.20	±0.10	±0.05	±0.10	±0.10	±0.05	±0.10	±0.1	±0.30

SMD LED 1615 SERIES RED/GREEN/BLUE TRI-COLOR

APPLICATION NOTES - Part I

- Storage: To avoid the moisture penetration, we recommend store in a dry box with a desiccant, The maximum storage temperature range is 40°C and a maximum humidity of RH60%.
- Use Precaution after Opening the Packaging:
Recommend conditions after opening the package; Sealing; Temperature : 30°C; Humidity : Less than RH50%;
Recommend to use up before 72hrs after opening the package.
- If the package has been opened more than 4 weeks (MSL- 2a) or the color desiccant changes, LED Components should be dried for 12hrs at 60±5°C.
- Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering.
- Do not rapidly cool device after soldering.
- The LED should not be mounted on warped portion of PCB.
- The LED should not be used in any type of fluid such as water, oil, organic solvent and etc. When washing is required, IPA (Isopropyl Alcohol) should be used.
- When the LEDs are in operation the maximum current should be decided after measuring the package temperature.
- Long time exposure of sunlight or occasional UV exposure will cause lens discoloration.
- The driving circuit must be designed to allow forward voltage only when it is ON or OFF. If the reverse voltage is applied to LED, migration can be generated resulting in LED damage.
- LEDs are sensitive to Electro-Static Discharge (ESD). Below is a list of suggestions that BND purposes to minimize these effects. The products are sensitive to static electricity or surge voltage. ESD can damage a die and it's Reliability. When handling the product, the following measures against electrostatic discharge are strongly recommended: -Increase in reverse leakage current lowered turn-on voltage; -Abnormal emissions from the LED at low current LED; The following recommendations are suggested to help minimize the potential for an ESD event. One or more recommended work area suggestions: -Dissipating static charge with conductive materials; -Preventing charge generation with moisture; -ESD safe storage containers ESD.

SMD LED 1615 SERIES RED/GREEN/BLUE TRI-COLOR

APPLICATION NOTES- Part II

- One or more personnel suggestion options: -Antistatic wrist-strap; -Antistatic material shoes; -Antistatic clothes
Environmental controls: -Humidity control (ESD gets worse in a dry environment)
- Handling Precautions: During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be used to pierce the sealing compound.
- In general, LEDs should only be handled from the side. By the way, this also applies to LEDs Without a silicone sealant, since the surface can also become scratched. We suggests using isopropyl alcohol for cleaning. In case other solvents are used, it must be assured that these solvents do not dissolve the package or resin.
- Please do not mold this products into another resin (epoxy, urethane, etc.) and do not handle this Product with acid or sulfur material in sealed space.
- The evaluation of eye safety occurs according to the standard IEC 62471:2006 (photo biological safety of lamps and lamp systems). Within the risk grouping system of this IEC standard, the device specified in this data sheet falls into the class exempt group (exposure time 10000 s). Under real circumstances (for exposure time, conditions of the eye pupils, observation distance), it is assumed that no endangerment to the eye exists from these devices. As a matter of principle, however, it should be mentioned that intense light sources have a high secondary exposure potential due to their blinding effect. When looking at bright light sources (e.g. headlights), temporary reduction in visual acuity and afterimages can occur, leading to irritation, annoyance, visual impairment, and even accidents, depending on the situation.
- Subcomponents of this device contain, in addition to other substances, metal filed materials including silver. Metal filed materials can be affected by environments that contain traces of aggressive substances. Therefore, we recommend that customers minimize device exposure to aggressive substances during storage, production, and use. Devices that showed visible discoloration when tested using the described tests above did show no performance deviations within failure limits during the stated test duration. Respective failure limits are described in the IEC60810.

SMD LED 1615 SERIES RED/GREEN/BLUE TRI-COLOR

DISCLAIMER

- The information describes the type of component should not be considered as assured characteristics. Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Team.
- Product and functional safety devices/applications or medical devices/applications.
The components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.

GLOSSARY

- Brightness: Brightness values are measured during a current pulse of typically 20ms, with an internal reproducibility of $\pm 5\%$.
- Wavelength: The wavelength is measured at a current pulse of typically 20ms, with an internal reproducibility of ± 1.5 nm.
- Forward Voltage: The forward voltage is measured during a current pulse of typically 20ms, with an internal reproducibility of ± 0.05 V.
- Reverse Operation: Continuous reverse operation is not allowed
- Thermal Resistance: R_{thJA} results from mounting on PC board.
- Typical Values: Due to the special conditions of the manufacturing processes of semiconductor devices, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.
- Characteristic curve: In the range where the line of the graph is broken, you must expect higher differences between single devices within one packing unit.

SMD LED 1615 SERIES RED/GREEN/BLUE TRI-COLOR

IMPORTANT NOTES AND DISCLAIMER

1. **ROHS COMPLIANCE:** The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained at Download Center.
2. **REACH COMPLIANCE:** REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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8. *NextGen* requires that customers first obtain an RMA (Returned Merchandise Authorization) number prior to returning any products. Returns must be made within 30 days of the date of invoice, be in the original packaging, unused and like-new condition. At the time of quoting or purchasing, a product may say that it is Non-Cancelable/ Non-Returnable (NCNR). These products are not returnable and not refundable.