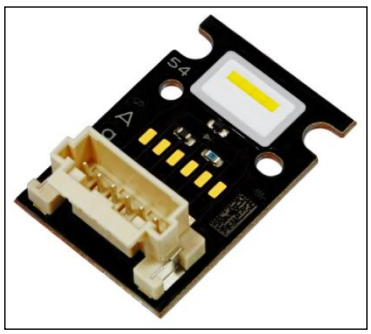
Standard product reference sheet

BUA1054A-T



Features

Package	Metal board / COB (Chip on Board) type Outer dimension: 31.5 x 21.0 x 9.3mm (L x W x H)
Product features	・Superior in high luminous flux, large current driving and heat dissipation ・High reliability to withstand harsh environments ・Small light emitting area that is superior for optical design ・Feeding by the connector ・RoHS2 / ELV compliant

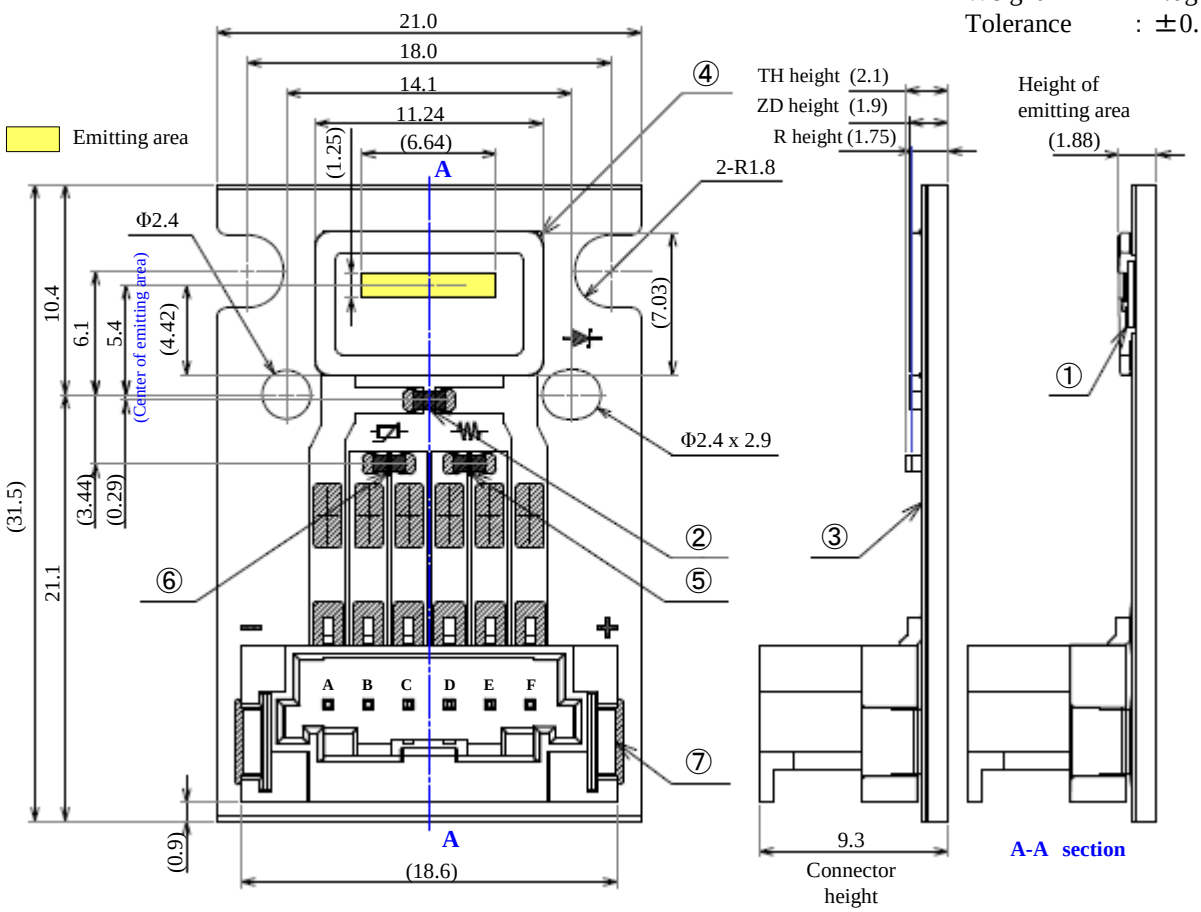
Recommended applications

・Exterior lighting for automotive and motorcycle (Head lamp, Bi-function type head lamp, etc.)
・Light source for other equipment requiring high luminance and high current drive

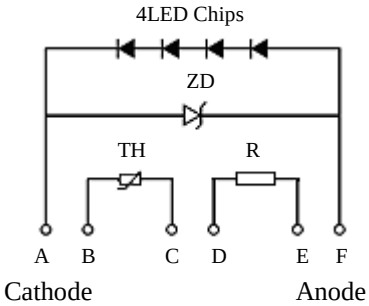
Outline dimensions

BUA1054A-T

Unit : mm
Weight : 7.0g
Tolerance : ±0.1



Internal circuit



Inside circuit

No.	Part name	Qty.
①	White LED Submount	1
②	Protection diode (ZD)	1
③	Metal board	1
④	Ring	1
⑤	Resistor (R)	1
⑥	Thermistor (TH)	1
⑦	Connector	1

Specifications BUA1054A-T

【 Product overview 】

Die material	InGaN
Emitting color	White
Emitting area color	Diffused pale yellow

【 Absolute maximum ratings 】

(Ta=25℃)

Item	Symbol	Maximum ratings	Units	
Power dissipation	Pd	30.6	W	
Forward current	I_F	200 to 2,100	mA	
Operating temperature	T_{opr}	-40 to +120	℃	Notes1
Storage temperature	T_{stg}	-40 to +120	℃	Notes1
Electro static discharge threshold "HBM"	ESD	±8,000	V	Notes2
Zener diode power dissipation	Pd-ZD	150	mW	
Zener diode voltage	Vz	32	V	

Notes1 The range of operating and storage temperature are not taping condition.

Notes2 ESD testing method : EIAJ4701/300(304) Human Body Model (HBM) 1.5kΩ,100pF

【 Thermal characteristics 】

(Ta=25℃)

Item	Symbol	Typ.	Max.	Units	
Thermal resistance 【Junction - the bottom of Cu substrate】	$R_{th(j-b)}$	0.7	1.12	℃/W	
Junction temp. increase 【Junction - the bottom of Cu substrate】	△Tj	-	30.3	℃	
Junction temperature	Tj	150		℃	Notes3
Junction temperature (1,000Hr)	Tj	160		℃	Notes3
Junction temperature (short term : 100Hr)	Tj	175		℃	Notes3

Notes3 Please refer to page 22, BUA1054A reliability testing result.

【 Electro-optical characteristics 】

(Ta=25℃)

Item	Symbol	Conditions	Min.	Typ.	Max.	Units	
Forward voltage	V_F	I_F = 1,800mA	11.3	-	15.0	V	Notes4
Luminous flux	Φv	I_F = 1,800mA	1,950	-	3,216	lm	Notes4
Chromaticity coordinates	x	I_F = 1,800mA	-	0.325	-		Notes4,5
	y		-	0.335	-		

Note4 Refer to the attached sheets for each sorting chart.

Note5 Chromaticity coordinates ; x and y according to CIE1931.

【 Electro characteristics of NTC thermistor 】

Item	Conditions	Min.	Typ.	Max.	Units
Maximum current	Thermistor temp. = 25℃	-	-	80	μA
Resistance value	Thermistor temp. = 25℃	-	150k±3%	-	Ω

Note5 Maximum current : Current value to which the NTC thermistor unit generates heat by 1℃.
The current value of 1/10 or less is recommended when used for the temperature detection.

【 Sorting chart for forward voltage : V_F 】

LEDs shall be sorted out into the following chart.

(Ta=25℃)

Forward voltage V_F (V)		Conditions
Min.	Max.	
11.3	15.0	I_F=1,800mA

Notes

Tolerance on forward voltage : ±0.1V

Measurement timing : instantly after lighting

【 Sorting chart for luminous flux : Φv 】

LEDs shall be sorted out into the following chart and each rank shall be packed separately for shipping.

Rank	Luminous flux Φ_V (lm)		Conditions
	Min.	Max.	
A	1,950	2,155	I_F=1,800mA Ta=25℃
B	2,155	2,382	
C	2,382	2,632	
D	2,632	2,909	
E	2,909	3,216	

Notes

Tolerance on luminous flux : ±7%

Measurement timing : instantly after lighting (50msec)

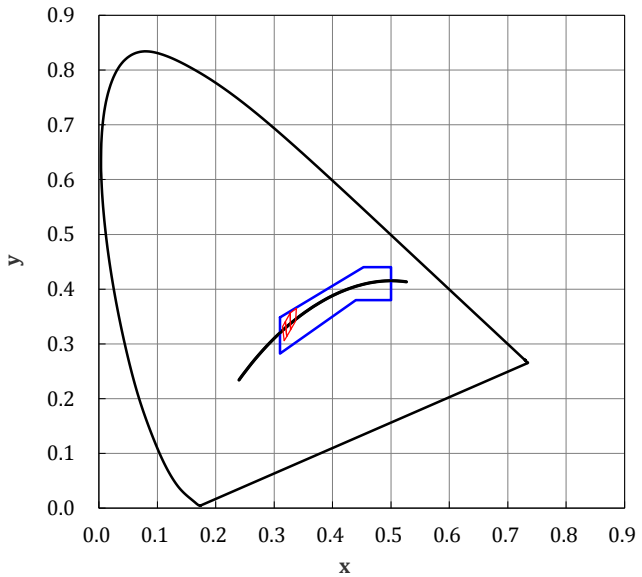
【 Resistance value table 】

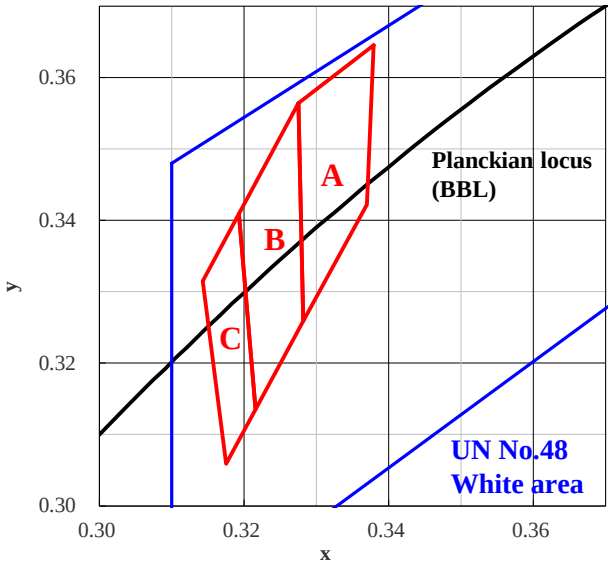
Resistance is mounted as the below table.

Resistance Value (Ω) Ta = 25℃
1kΩ

【 Sorting chart for chromaticity coordinates : x, y 】

LEDs shall be sorted out into the following chart and each rank shall be packed separately for shipping.





(I_F= 1,800mA, Ta=25℃)

Rank	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
A	0.3379	0.3645	0.3370	0.3422	0.3282	0.3259	0.3275	0.3564
B	0.3275	0.3564	0.3282	0.3259	0.3216	0.3135	0.3193	0.3409
C	0.3193	0.3409	0.3216	0.3135	0.3175	0.3059	0.3143	0.3315

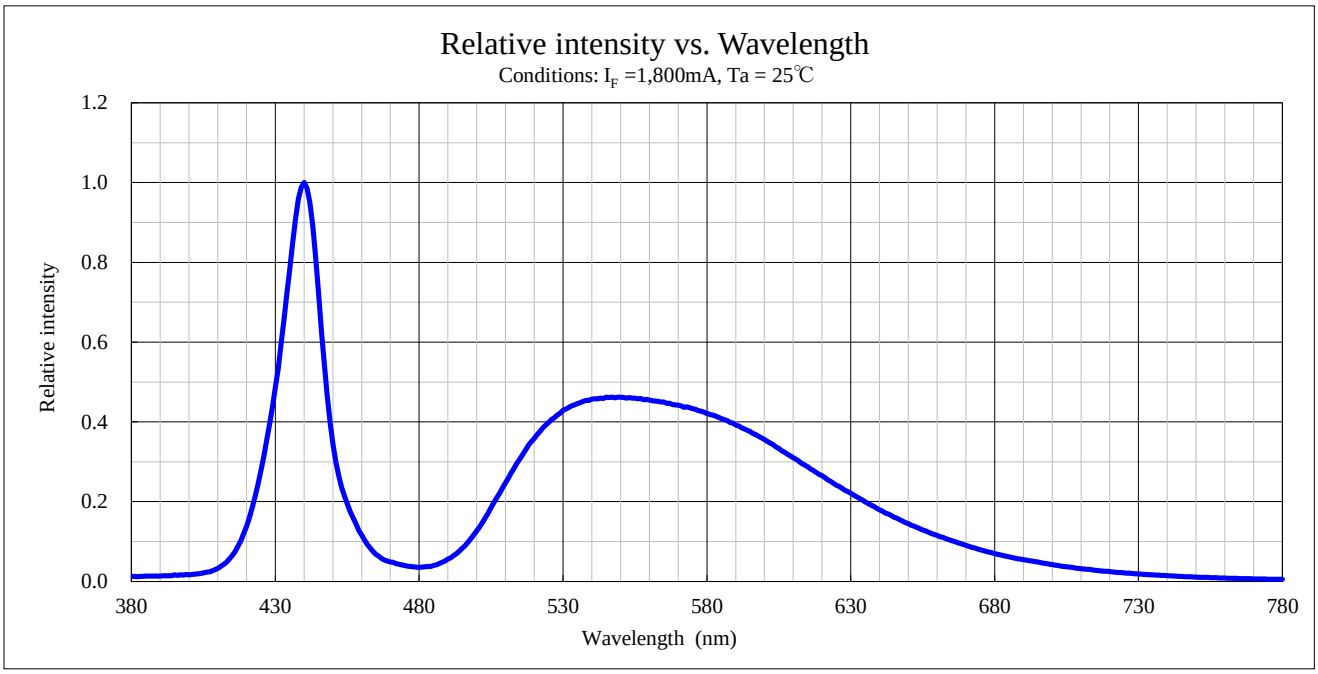
Notes

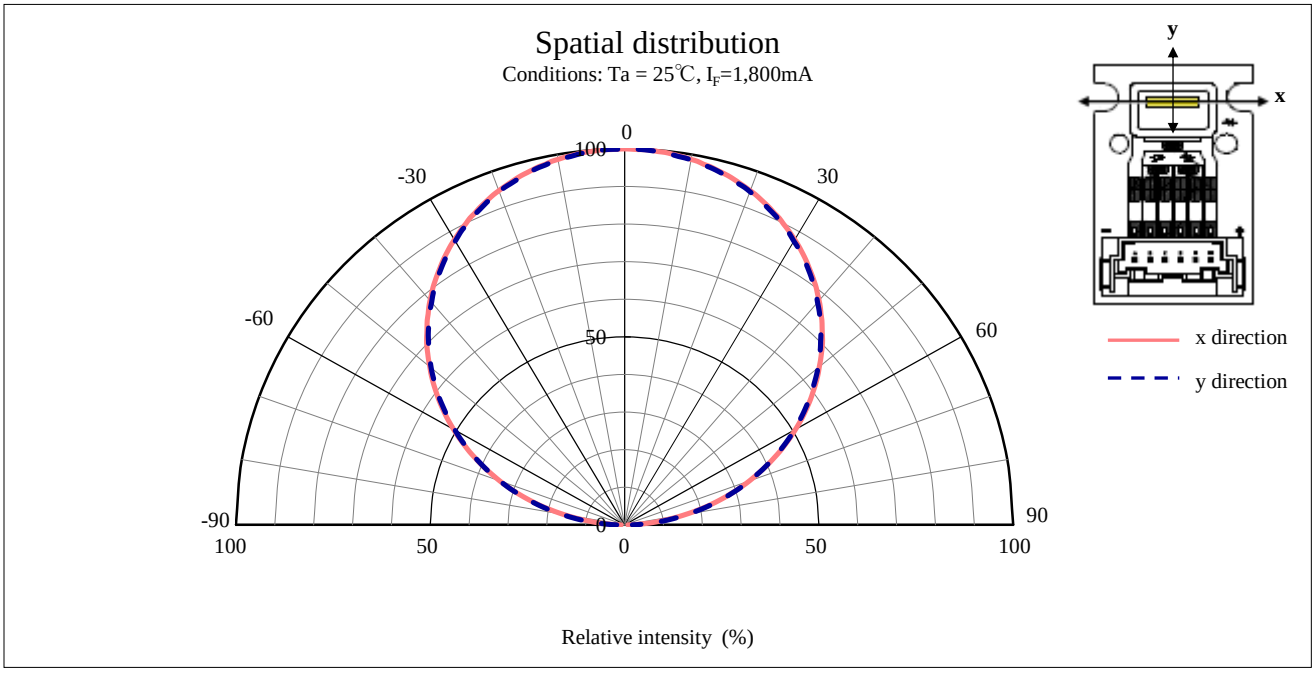
Tolerance on chromaticity coordinates : ±0.005

Measurement timing : instantly after lighting (50msec)

Technical data

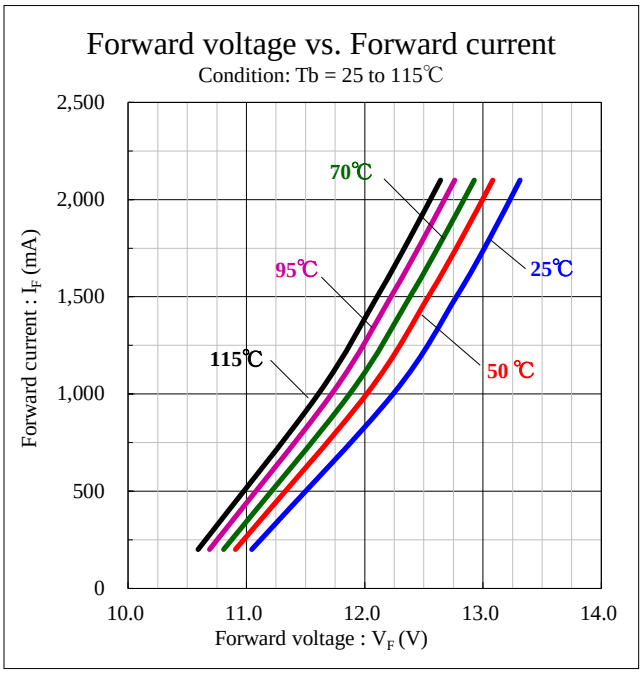
BUA1054A-T

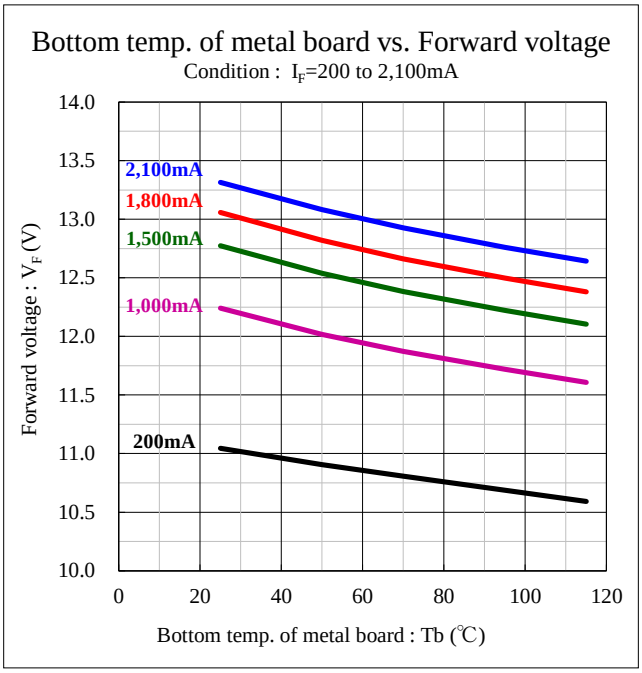


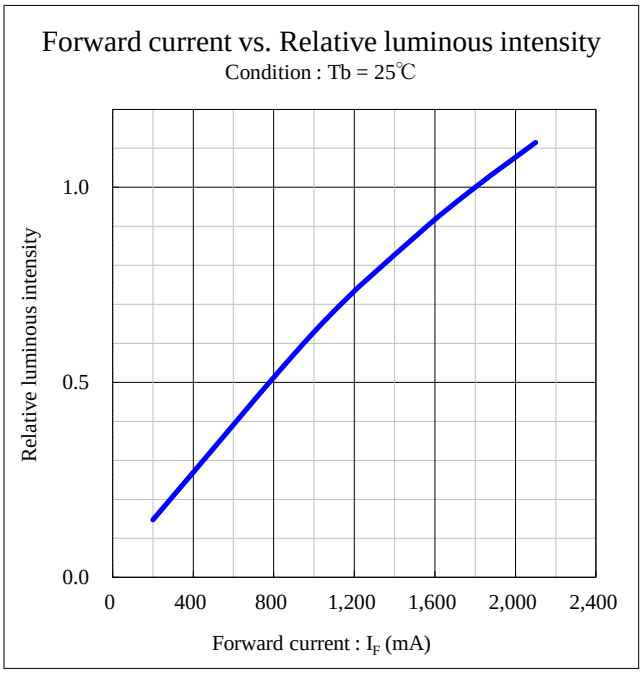


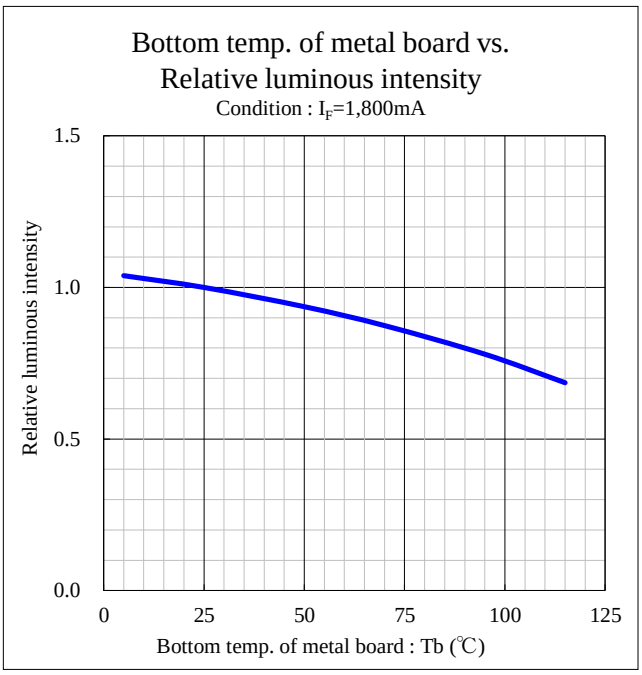
Technical data

BUA1054A-T



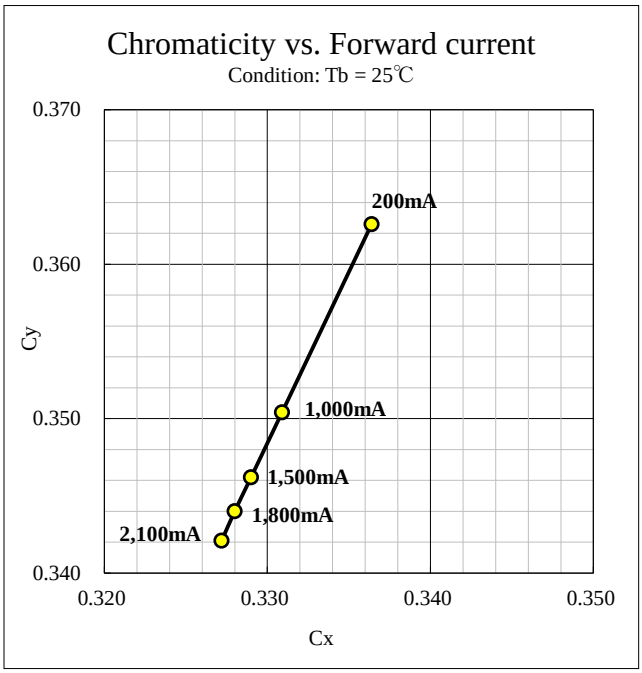


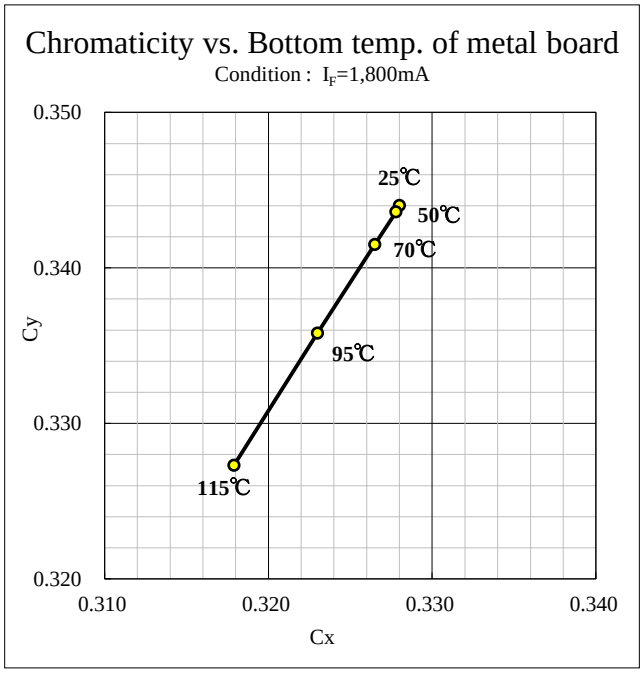


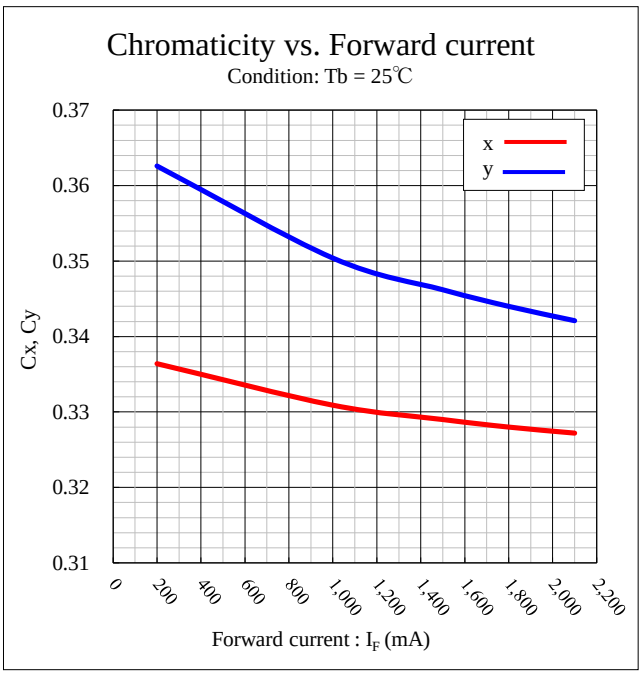


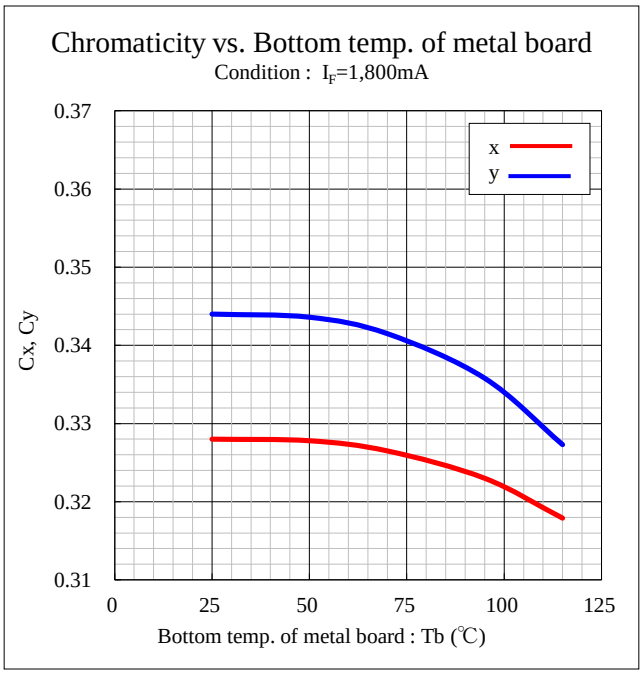
Technical data

BUA1054A-T









Handling precaution

【For Electric Static Discharge (ESD)】

This product is sensitive to voltage surges generated by On/Off status change and friction with synthetic materials, which may cause severe damage to the die or undermine its reliability. Damaged products may experience conditions such as extremely high reverse voltage, decrease of forward rise voltage, deterioration in optical characteristics.
Stanley InGaN products are packed with anti-static components. However, following precautions must be taken into account upon product shipment.

1. Electrification/Static electricity protection

In order to avoid product (die) damage from static electricity caused by unprotected handling by operator and other charged materials coming in contact with the product, Stanley recommends taking the following precautions.

① Do not place electrified non-conductive materials near the LED product.
Avoid LED products from coming into contact with metallic materials.(Should the metallic material be electrified , the sudden surge voltage will most likely damage the product.)

② Avoid a working process which may cause the LED product to rub against other materials.

③ Install ground wires for any equipment, where they can be installed, with measures to avoid static electricity surges.

④ Prepare a ESD protective area by placing a Conductive Mattress (1MΩ MAX.) and Ionizer to remove any static electricity.

⑤ Operators should wear a protective wrist-strap.

⑥ Operators should wear conductive work-clothes and shoes.

⑦ To handle the products directly, Stanley recommends the use of ceramic, and not metallic, tweezers.

2. Working environment

① A dry environment is more likely to cause static electricity. Although a dry environment is ideal for storage state of LED products, Stanley recommends an environment with approximately 50% humidity after the soldering process.

② Recommended static electricity level in the working environment is less than 150V, which is the same value as Integrated Circuits (which are sensitive to static electricity).

【Other precautions】

1. The products are designed to achieve higher performance reliability, however, they can be influenced by usage conditions.

2. Absolute maximum ratings are set to prevent LED products from breaking due to extreme stress (temperature, current, voltage, etc.). These ratings must never be overrun even for a moment.

3. To achieve the highest performance reliability, it is necessary to take into account, factors such as forward voltage adjusted to the usage temperature condition, derating of the power consumption, and other variable factors.

4. Please insert straight protective resistors into the circuit in order to stabilize LED operation and to prevent the device from overheating.

5. Please do not touch or strike non allowed pick up area（refer to page 13）,because there is possibility to damage the products. And, please avoid foreign material because molding resin has adhesiveness.

6. Please avoid to use the products with materials and products that contain sulfur and chlorine element because the reliability may be decreased. Please keep in desiccator regardless of before or after mounting not to be affected by corrosive gas when keeping products. Also please make sure if there is any gas which occur in surrounding area or enter from outside when using products.

7. Please check the actual performance in the assembly because the specification sheets are described only for LED device.

8. Please refrain from looking directly at the light source of the LED at high output, as it may harm your vision.

9. The products are designed to perform without failure in the recommended usage conditions.
   However, please take the necessary precautions to prevent from a fire, injury, and other unexpected failures.

10. Do not drop it. Do not hit it against other objects. The parts may be damaged, the soldered portions may crack or break or the patterns of the board (electrode) may be peeled off or disconnected (for examples of damaged devices, refer to the following).

11. Hold the end faces of the board or portions where no electronic device has been mounted, not the portion where the electronic devices have been mounted (be sure to wear gloves).

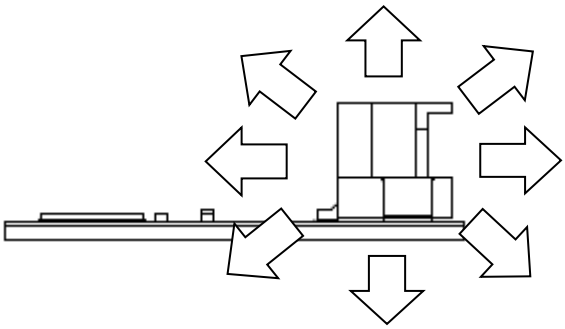
12. Do not hold the boards by piling one on top of another. Do not pile or put the boards on top of another.
    The mounted electronics devices and boards may rub against each other and, as a result, the electronic devices may be damaged.

13. When wiring, the constant stress or pulling force should not be applied to the connector area. This phenomenon might damage the connector or the pattern of the substrate. . When designing the wire positioning, please ensure that there is enough length of wire to avoid stress on the connector.

14. Connectors should be mated straightly. Angled mating operation has possibility of damaging connector.

【Other precautions】

15. When excessive stress apply to the connector, it causes the trouble.
    Please take care **the stress from any direction should be less than 10N**.



16. The products are manufactured to be used for general electronic equipment.
    Please contact our sales staff in advance when exceptional quality and reliability are required,
    when the failure or malfunction of the products might directly jeopardize life or health
    (such as for airplanes, aerospace, medical applications, nuclear reactor control systems and so on).

17. The formal specification sheets shall be exchanged and signed by both parties.

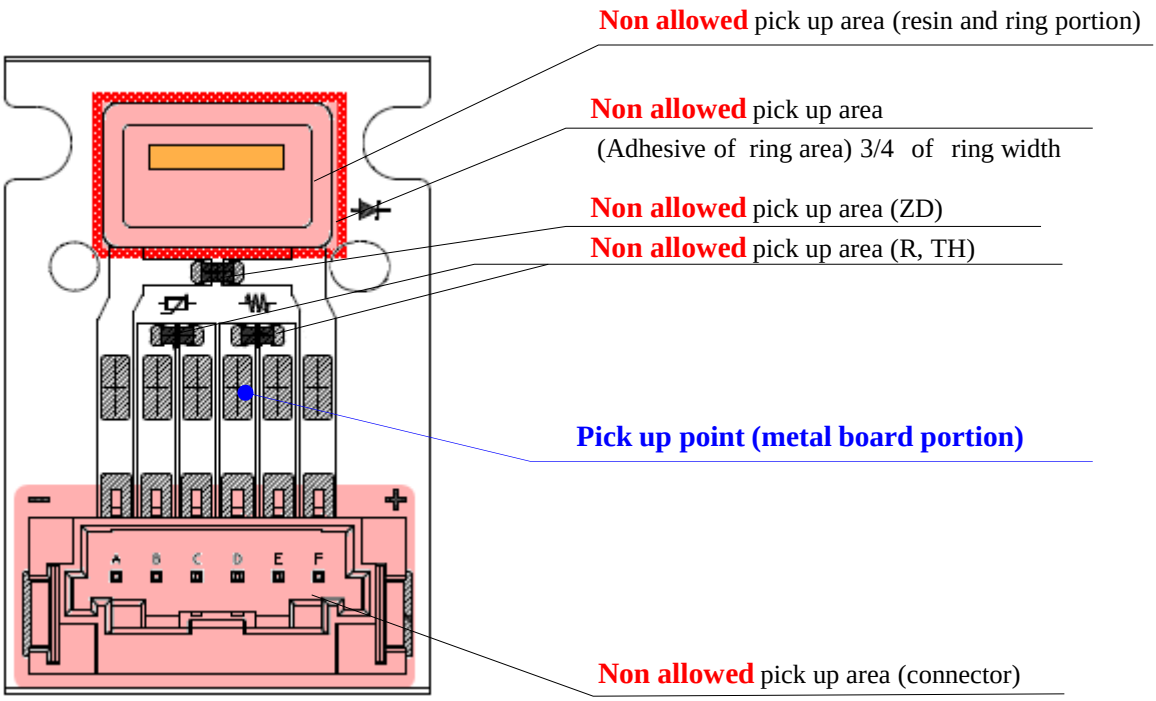
18. Please be careful that supersonic waves may cause open circuit of wire.

【Handling precautions for product Mounting】

＜Recommendation＞

Picking up point with nozzle: metal board portion of the product (shown below)

The picking up point should be within metal board portion, because the silicone resin used is soft.
(If the nozzle makes contact with the lens, the products might be destroyed)



Please adjust the load, the pick up point, the nozzle diameter, etc. before mounting because the over load can cause the breakage of the lamp housing.

Packaging specifications

BUA1054A-T

This product is baked (moisture removal) before packaging, and is shipped in moisture-proof packaging (as shown below) to minimize moisture absorption during transportation and storage. However, with regard to storing the products, Stanley recommends the use of dry-box under the following conditions is recommended. Moisture-proof bag as the packaging is made of anti-static material but packaging box is not.

【Recommended storage condition / products warranty period 】

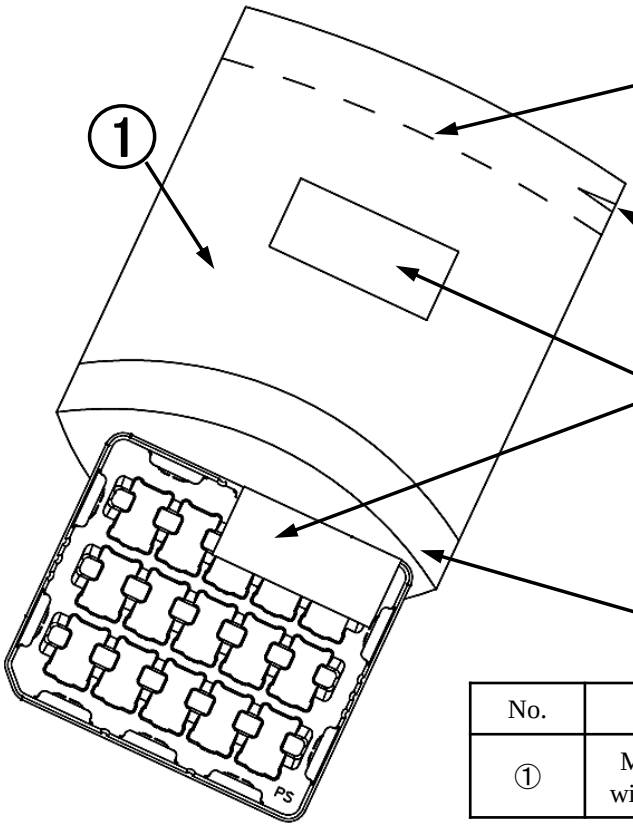
Temperature	+5～30℃
Humidity	Under 70%

In the case of the package unopened , 6 months under【 Recommended Storage Condition 】.
Please avoid rapid transition from low temp. condition to high temp. condition
and storage in corroding and dusty environment.
After unsealing the moisture-proof bag, return the product to a moisture-proof bag, re-seal with a chuck, store it under recommended conditions, and use it promptly.

Packaging specifications

BUA1054A-T

【Moisture-proof packaging specification】



Fastener for re-storage after opening bag.

Customer's opening position.

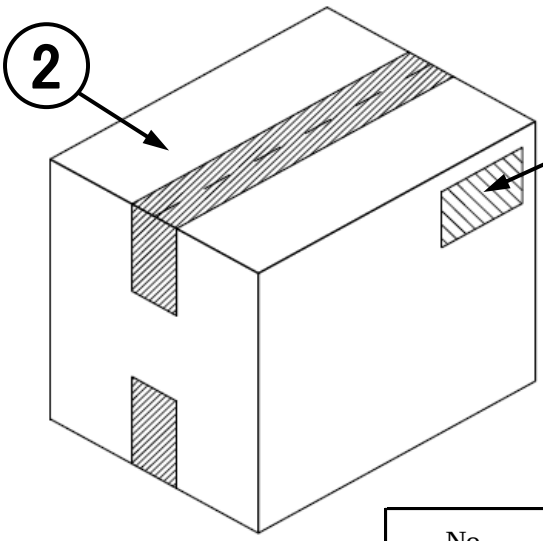
A Product Label

Heat sealed after packaging.

Desiccant with indicator for moisture level is enclosed.

No.	Part name	Material	Remarks
①	Moisture-proof bag with Aluminum layer	PET+Al+PE	with ESD protection

【Packaging box specifications】



B Opto device label

Maximum QTY. of LED contained into 1 packaging box is 150pcs. The Packaging box form might be changed according to overall shipping qty.

Outline dimension L × W × H (mm)	Capacity of the box
265 × 245 × 250	12 tray

No.	Part name	Material	Remarks
②	Packing Box	Corrugated Cardboard	without ESD protection

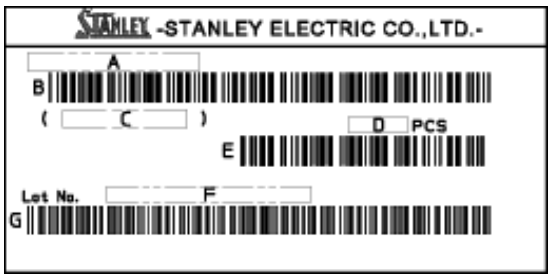
Packaging specifications

BUA1054A-T

(acc.to JIS-X0503(Code-39))

【Label specification】

(A) Product label



A. Parts number

B. Bar-code for parts number

C. Parts code (In-house identification code for each parts number)

D. Packed parts quantity

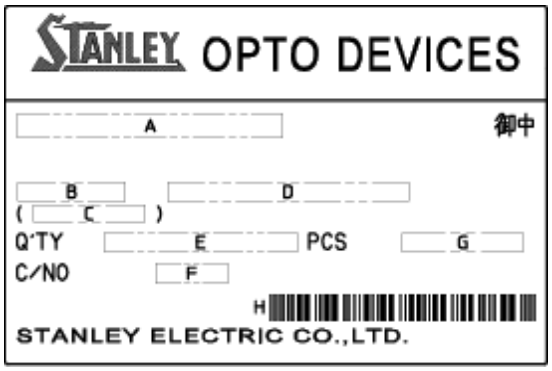
E. Bar-code for packed parts quantity

F. Lot number & rank

(Please refer to lot number notational system for details)

G. Bar-code for lot number & rank

(B) Opto device label



A. Customer name

B. Parts type

C. Parts code

D. Parts number

E. Packed parts quantity

F. Carton number

G. Shipping date

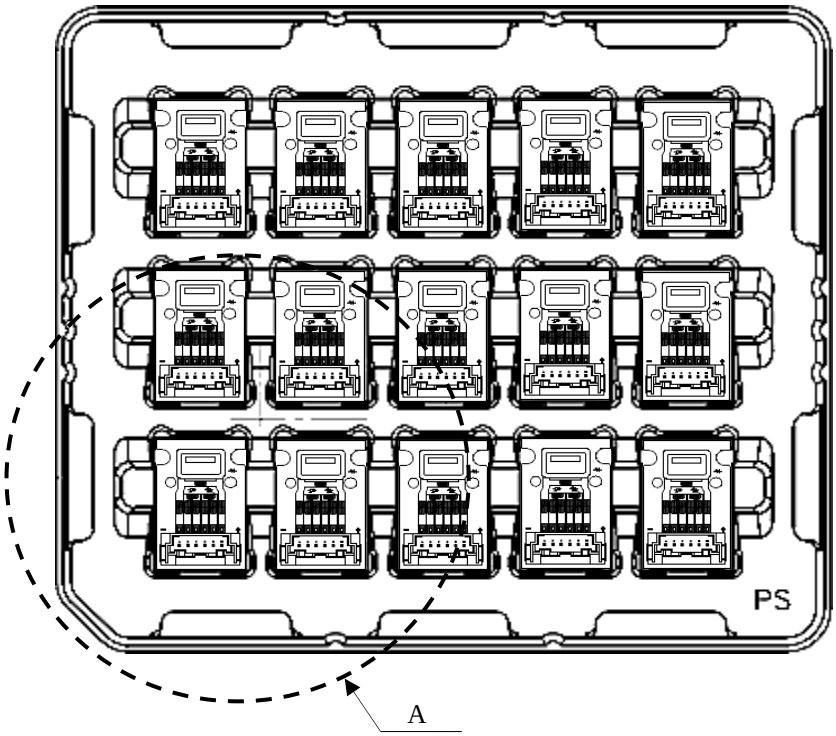
H. Bar-code for In-house identification number

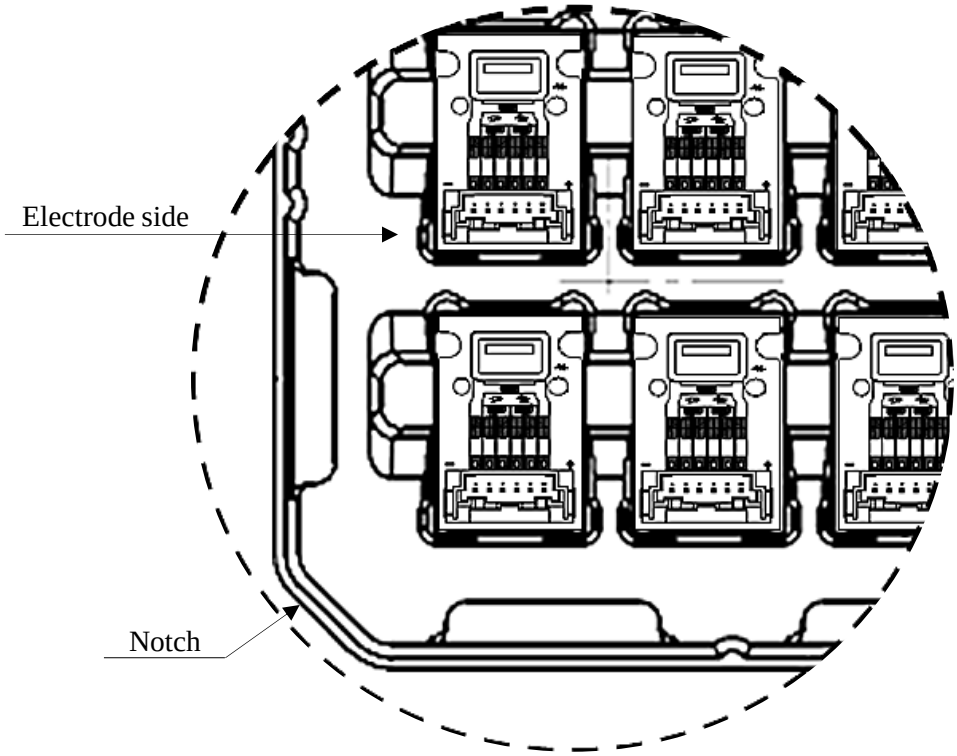
<Remarks> Bar-code font : acc.to Code-39 (JIS-X0503)

Tray specifications

BUA1054A-T

【Appearance】





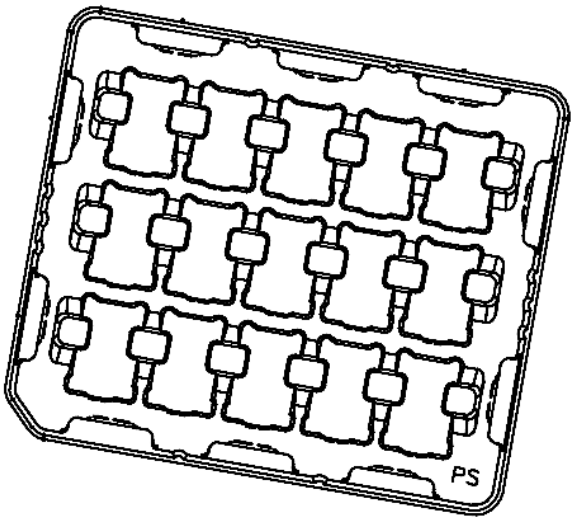
Details of part A

Tray specifications

BUA1054A-T

【 Packaging Qty.】

- 15 parts / 1 tray
- 6 tray / 1 moisture-proof packaging
- MOQ (Minimum order quantity) is 150 pcs.



Max. 6 trays (The tray of the top is empty. :as a lid)

【 Others】

Reversed-orientation, up-side down placing, side placing and out of spec. parts mix shall not be held.

【Pocket dimensions】

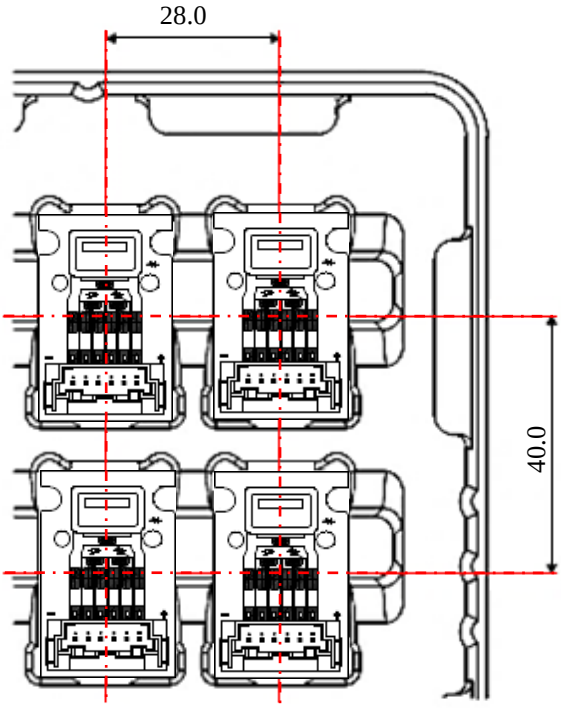
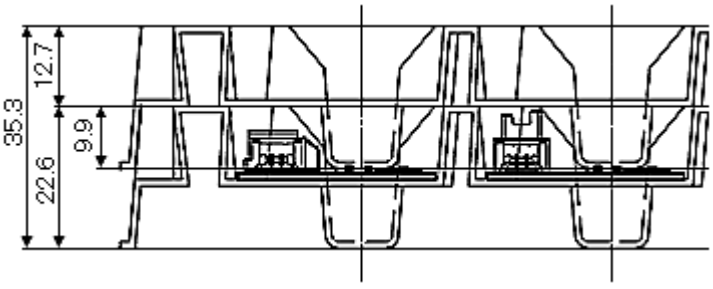


Figure of stacking

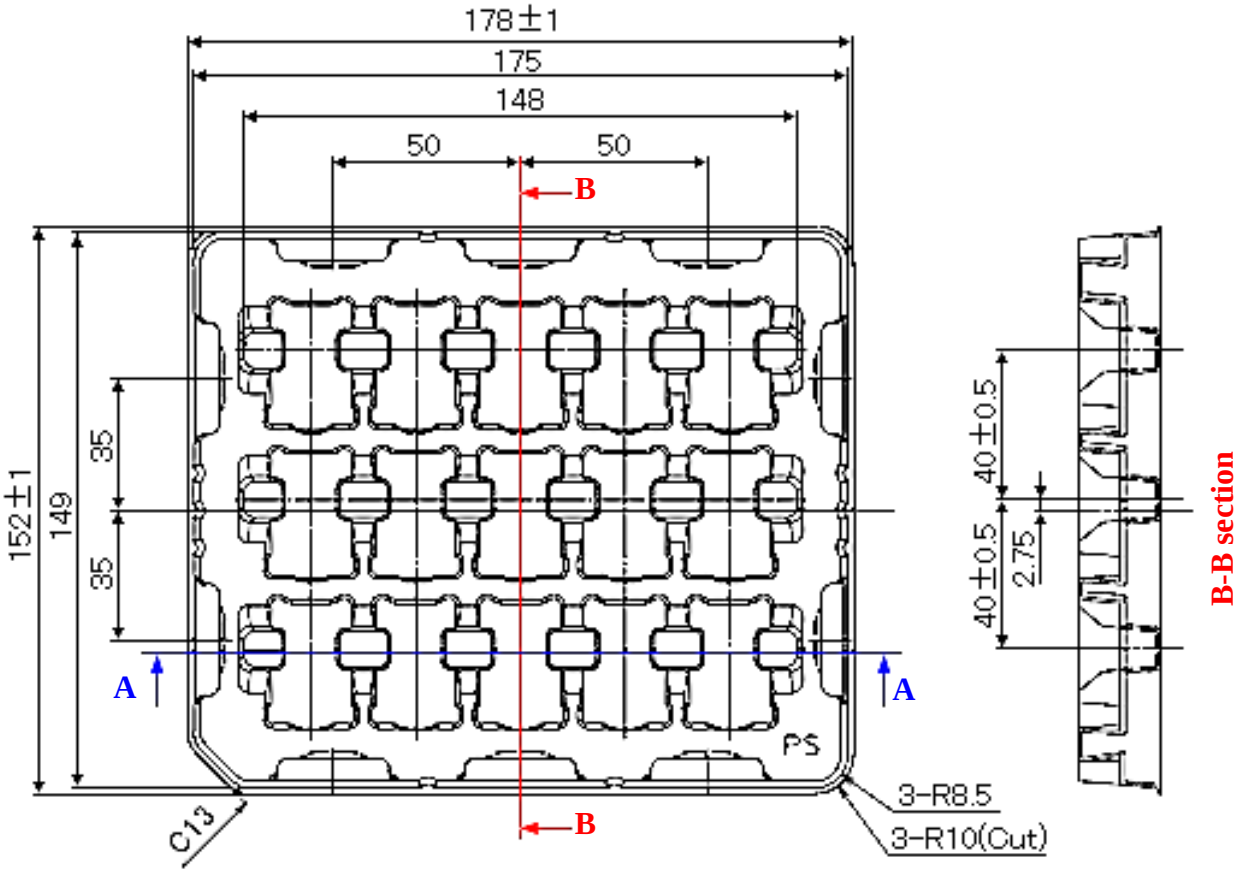


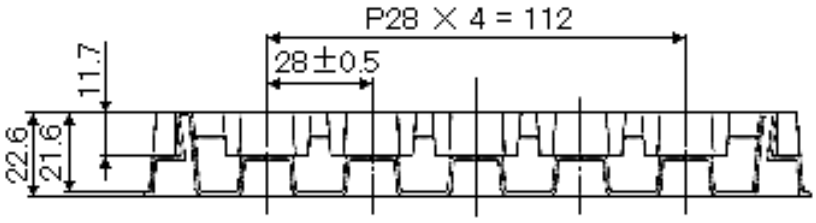
Tray specifications

BUA1054A-T

Unit :mm

【Tray Dimensions】



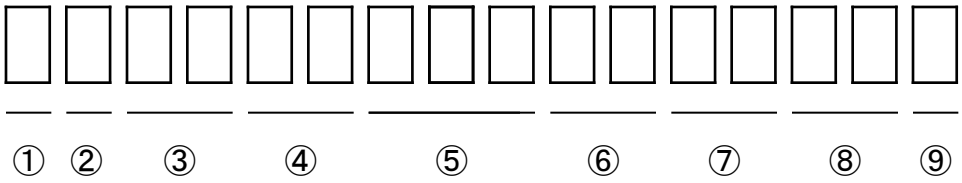


A-A section

1. Tolerance : ±0.5mm
2. Material : PS
3. Surface resistance : Max. 10E6Ω
4. Electrification voltage : Max. 150V
5. Warp : ±2.0mm

Lot number notational system

BUA1054A-T



① - 1digit : Production location (mark identify alphabet)

② - 1digit : Production year (last digit of production year 2020→0, 2021→1, 2022→2, 2023→3 ･･･)

③ - 2digits : Production month (Jan. to Sep. should be 01, 02, 03 ･･･)

④ - 2digits : Production date

⑤ - 3digits : Serial number

⑥ - 2digits : Tape and reel following number

⑦ - 2digits : Luminous flux rank.

(If luminous flux rank is 1 digit, "-" shall be dashed on the place for the second digit.

If there is no identified intensity rank, "- -" is used to indicate.)

⑧ - 2digits : Chromaticity rank

(If chromaticity rank is 1 digit, "-" shall be dashed on the place for the second digit.

If there is no identified intensity rank, "- -" is used to indicate.)

⑨- 1digit : Option rank (normally its "-")

Correspondence to RoHS2 / ELV instruction

BUA1054A-T

This product is in compliance with RoHS2 / ELV.
Prohibition substance and it's criteria value of RoHS2 / ELV are as follows.

- RoHS2 instruction … Refer to following 1 to 10.
- ELV instruction … Refer to following 1 to 4.

No.	Substances	Threshold
1	Lead and its compounds	0.1% (1,000ppm)
2	Mercury and its compounds	0.1% (1,000ppm)
3	Cadmium and its compounds	0.01% (100ppm)
4	Hexavalent chromium compounds	0.1% (1,000ppm)
5	PBB : Polybrominated Biphenyls	0.1% (1,000ppm)
6	PBDE : Polybrominated Biphenyl Ethers	0.1% (1,000ppm)
7	DEHP : Bis (2-ethylhexyl) phthalate	0.1% (1,000ppm)
8	BBP : Butyl benzyl phthalate	0.1% (1,000ppm)
9	DBP : Dibutyl phthalate	0.1% (1,000ppm)
10	DIBP : Diisobutyl phthalate	0.1% (1,000ppm)

Reliability testing result

BUA1054A-T

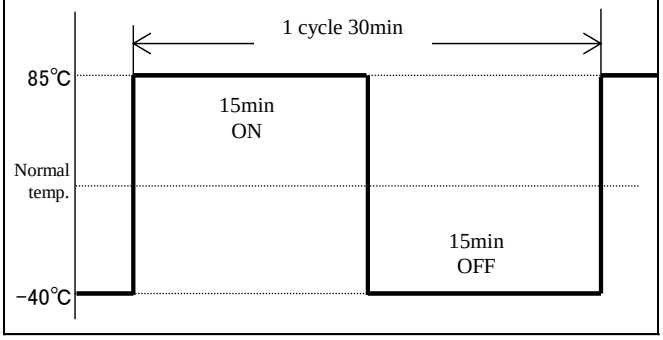
test Item	test Condition	Duration	Failuer
High temp. operating life 1	Tj=150℃	4,000h	0 / 8
High temp. operating life 2	Tj=160℃	1,000h	0 / 8
High temp. operating life 3	Tj=175℃	100h	0 / 8
High temp. strage life	Ta=120℃	1,000h	0 / 8
Low temp. strage life	Ta=-40℃	1,000h	0 / 8
Low temp. operating	Ta=-40℃ I_F=1,000mA	1,000h	0 / 8
High temp. humidity bias	Ta=85℃, Rh=85%, Tj=150℃	2,000h	0 / 8
High temp. On/Off operating	Ta=85℃, Tj=150℃, 1 cycle:15min/ON-15min/OFF	1,000 cycles	0 / 8
Low temp. On/Off operating	Ta=-40℃, I_F=1,000mA, 1 cycle:15min/ON-15min/OFF	1,000 cycles	0 / 8
Thermal shock cycle (operating)	Ta=-40℃ (15min./OFF) to 85℃/Tj=150℃ (15min./ON) **※1 : Refer to Figure 1**	1,000 cycles	0 / 8
Thermal shock cycle (Non-operating)	Ta=-40℃ to 125℃ :30min.= 1 cycle **※2 : Refer to Figure 2**	1,000 cycles	0 / 8
Electrostatic Discharge (ESD) : HBM	C=100pF R2=1.5kΩ ±8,000V	3times of each polarity	0 / 4
Electrostatic Discharge (ESD) : MM	C=200pF R2=0Ω ±250V	3times of each polarity	0 / 4
Thermal & high humidity cycle	Ta=-30℃ to 80℃ Rh=90% 8h/cycle I_F=700mA 15min/ON-15min/OFF **※3 : Refer to Figure 3**	30 cycles	0 / 4
Hydrogen sulfide test	H_2S : 3ppm, NO_2 : 6ppm, Ta=40℃ (RH80%)	135h	0 / 4
Vibration test	196m/s^2 (20G) 50 to 500Hz XYZ direction	20h of each direction	0 / 4
Mechanical shock test	14,700m/s^2 (1,500G) 0.5ms 6 direction	3times of each direction	0 / 4

Failure criteria

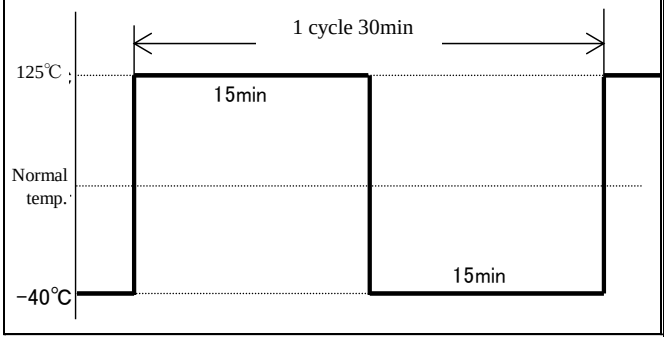
BUA1054A-T

Item	Symbol	Conditions	Acceptance Criteria
Luminous intensity	I_V	I_F=1,800mA Ta=25℃	Initial value × 0.8 > Measured value Initial value × 1.2 ≦ Measured value
Chromaticity coordinates	ccx, ccy	I_F=1,800mA Ta=25℃	Measured value < Initial value - 0.02 Measured value > Initial value + 0.02
Forward voltage	V_F	I_F=1,800mA Ta=25℃	Measured value < Initial value × 0.9 Measured value > Initial value × 1.1
Appearance	—	—	Notable discoloration, deformation and crack

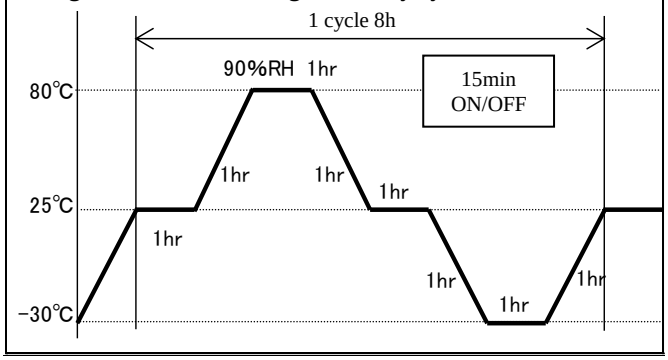
< Figure 1: Thermal shock cycle (operating) >



< Figure 2: Thermal shock cycle (non-operating) >



< Figure 3: Thermal & high humidity cycle >



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