Specification for Approval

- **DEVICE NUMBER: BIR-HMC33M-2-TRB**

SAMPLES
ATTACHED AREA

PAGE / DATE	1	2	3	4	5	6	7				CONTENTS
2018.09.03	1.0	1.0	1.0	1.0	1.0	1.0	1.0				Initial Released
2019.04.22	1.1	1.1	1.1	1.1	1.1	1.1	1.1				Modification of pad design
2022.11.23	1.2	1.2	1.2	1.2	1.2	1.2	1.2				Modify the tape size

FOR CUSTOMER'S APPROVAL STAMP OR SIGNATURE

APPROVED	PURCHASE	MANUFACTURE	QUALITY	ENGINEERING

AMERICAN BRIGHT
OPTOELECTRONICS CORP.

Toll Free: 888-533-0800 | Fax: 909-628-5006
13815-C Magnolia Ave. Chino, CA 91710

w w w . a m e r i c a n b r i g h t l e d . c o m
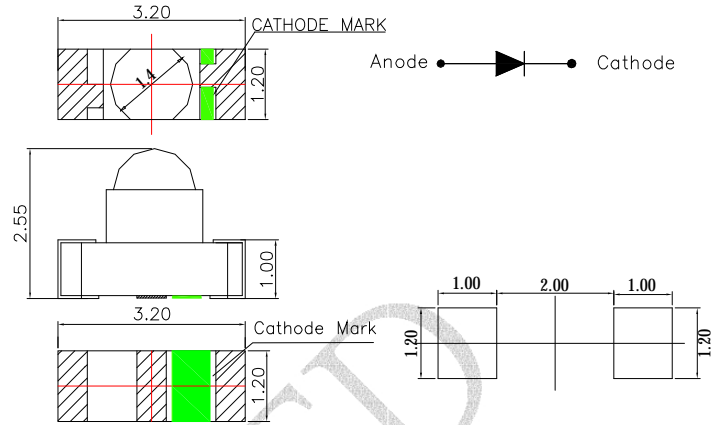
BIR-HMC33M-2-TRB

● **Features:**

1. Lens Appearance : Water Clear.

2. 3.2x1.2x2.55mm(1206) standard package.

3. Suitable for all SMT assembly methods.

4. Compatible with infrared and vapor phase reflow solder process.

5. Compatible with automatic placement equipment.

6. This product doesn't contain restriction Substance, comply ROHS standard.

● **Package Dimensions:**

NOTES:
1. All dimensions are in millimeters.
2. Tolerance is ±0.10mm unless otherwise specified.
3. Specifications are subject to change without notice.

● **Applications:**

1. Automatic Control System

2. Photo interrupter

● **Absolute Maximum Ratings(Ta=25℃)**

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	200	mW
Forward Current	I_F	100	mA
Peak Forward Current ＊1	I_{FP}	500	mA
Reverse Volage	V_R	5	V
Operating Temperature	Topr	-40℃~85℃	-
Storage Temperature	Tstg	-40℃~85℃	-
Soldering Temperature	Tsol	See Page6	-

＊1 Pulse With = 10us, 1/10Duty Cycle..

AMERICAN BRIGHT
OPTOELECTRONICS CORP.

Toll Free: 888-533-0800 | Fax: 909-628-5006
13815-C Magnolia Ave. Chino, CA 91710

www.americanbrightled.com

BIR-HMC33M-2-TRB

● Electrical and optical characteristics(Ta=25℃)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Radiant Power	Po	I_F=70mA	27.20	74.63	-	ｍｗ/sr
Forward Voltage	V_F	I_F=70mA	1.2	1.6	1.8	V
Reverse Current	I_R	V_R=5V	-	-	50	μA
Peak Wave Length	λp	I_F=70mA	930	940	950	nm
Viewing Angle	$2\theta_{1/2}$	I_F=70mA	-	30	-	deg

● Typical Electro-Optical Characteristics Curves

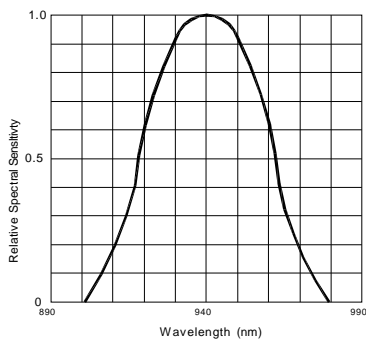Fig.1 Relative spectral sensitivity vs wavelength

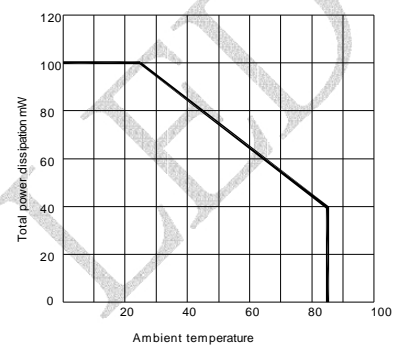Fig.2 Total power dissipation vs ambient temperature
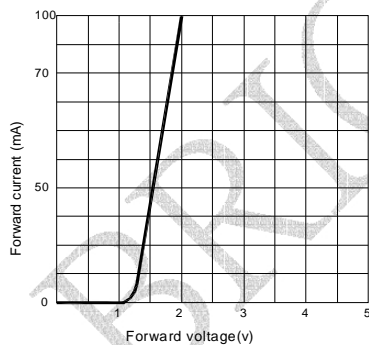
Fig.3 Forward current vs forward voltage

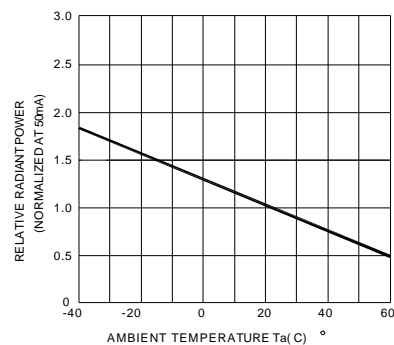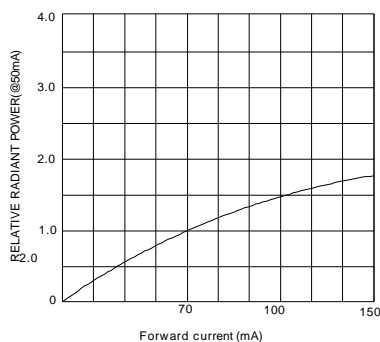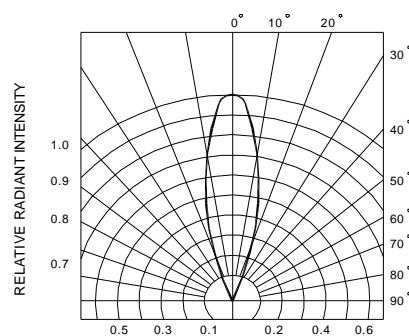Fig.4 RELATIVE LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

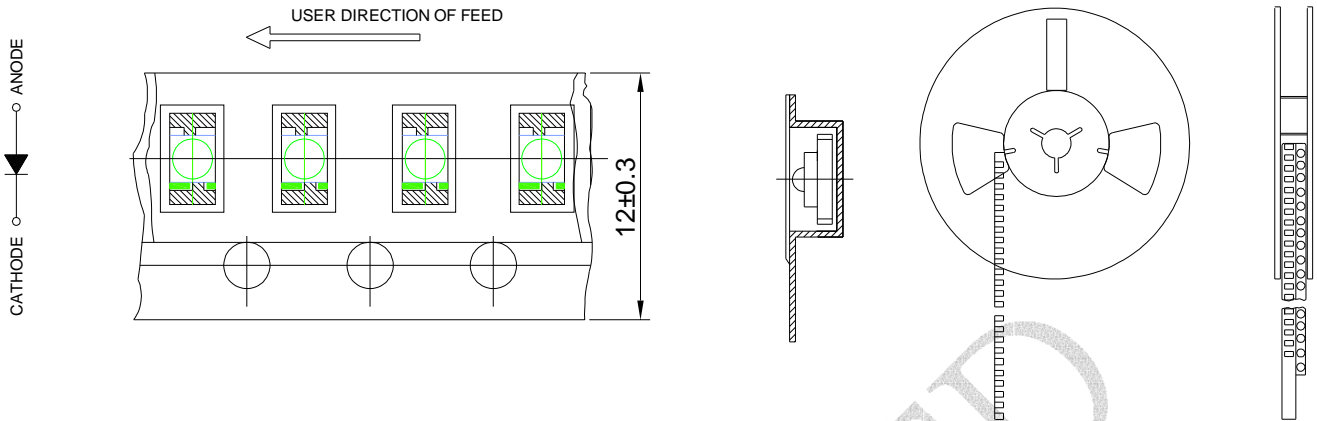Fig.5 Relative luminous intensity vs forward current
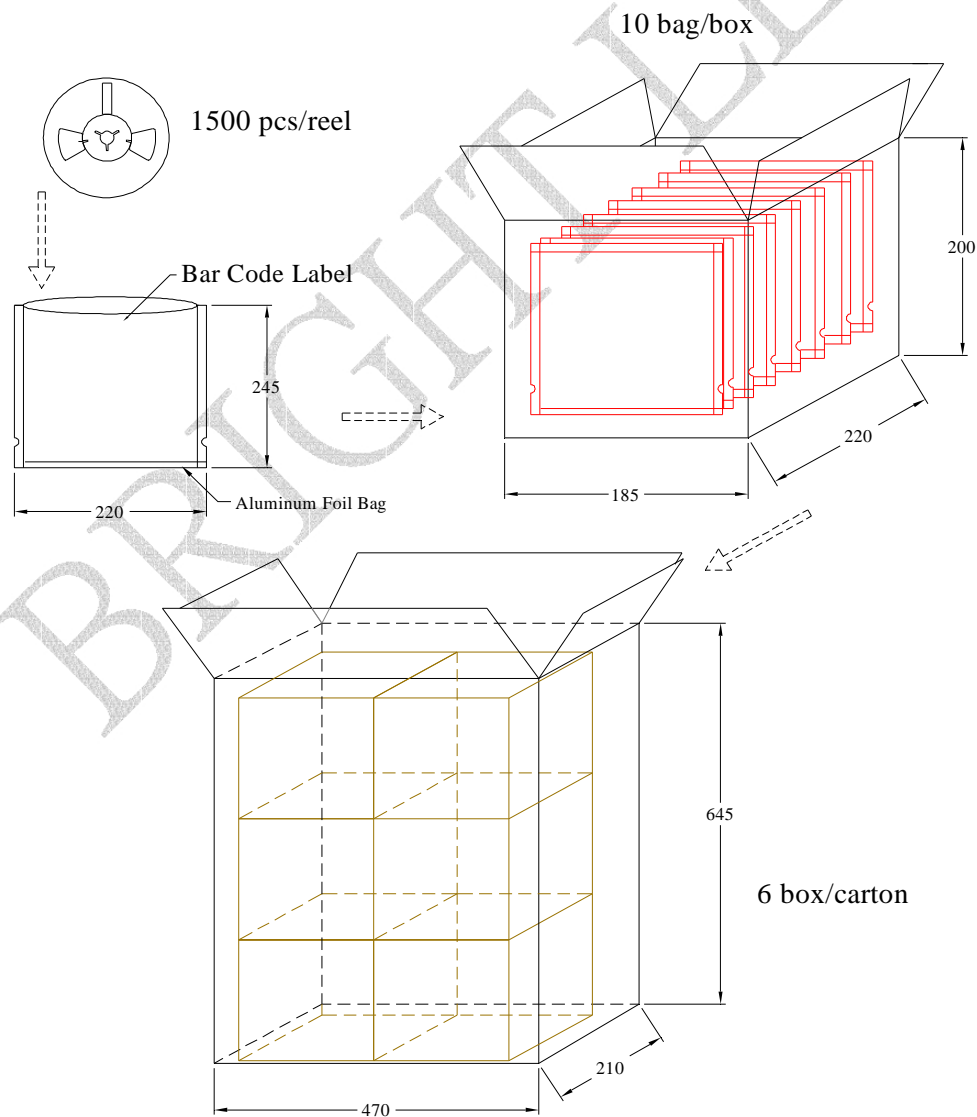
RADIATION DIAGRAM

● **Tapping and packaging specifications(Units: mm)**
   Quantity:1500PCS

USER DIRECTION OF FEED

ANODE

CATHODE

12±0.3

● **Package Method:(unit:mm) Vacuum**

10 bag/box

1500 pcs/reel

Bar Code Label

245

220

Aluminum Foil Bag

200

220

185

645

6 box/carton

210

470

● **Bin Limits**

Power Bin Limits (At 70mA)

BIN CODE	Min. (mw/sr)	Max. (mw/sr)
14	27.20	38.08
15	38.08	53.31
16	53.31	74.63
17	74.63	104.48
18	104.48	146.27

Tolerance for each Bin limit is ± 15%.

● BIN：<u>x</u>

POWER BIN CODE

● **Reliability Test**

Classification	Test Item	Reference Standard	Test Conditions	Result
Endurance Test	Operation Life	MIL-STD-750D:1026 MIL-STD-883D:1005 JIS-C-7021 :B-1	Ta: Under room temperature Test time:1,000hrs IF=Product Recommended IF	0/32
	High Temperature High Humidity Storage	MIL-STD-202F:103B JIS-C-7021 :B-11	Ta:85±5℃ RH:90%-95% Test time:240hrs	0/32
	High Temperature Storage	MIL-STD-883:1008 JIS-C-7021 :B-10	Ta:100±5℃ Test time:1,000hrs	0/32
	Low Temperature Storage	JIS-C-7021 :B-11	Ta: -40±5℃ Test time=1,000hrs	0/32
Environmental Test	Temperature Cycling	MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1010 JIS-C-7021 :A-2	Ta:-35±5℃~25±5℃~85±5℃~25±5℃ 30min 5min 30min 5min Time: 5cycles	0/32
	Thermal Shock	MIL-STD-202F:107D(1980) MIL-STD-750D:1051(1995) MIL-STD-883D:1011(1991)	Ta:-40±5℃ ~+85±5℃ 20min 20 min Time: 10cycles	0/32
	Wetting balance	MIL-STD-883:2003 MIL-STD-202F:208D MIL-STD-883D:2003	Ta:230±5℃ Time:5±0.5s	0/32
	Solder Resistance	MIL-STD-202F:210A MIL-STD-883D:1011 JIS-C-7021 :A-1	Ta:260±10℃ Time:10±1s	0/32

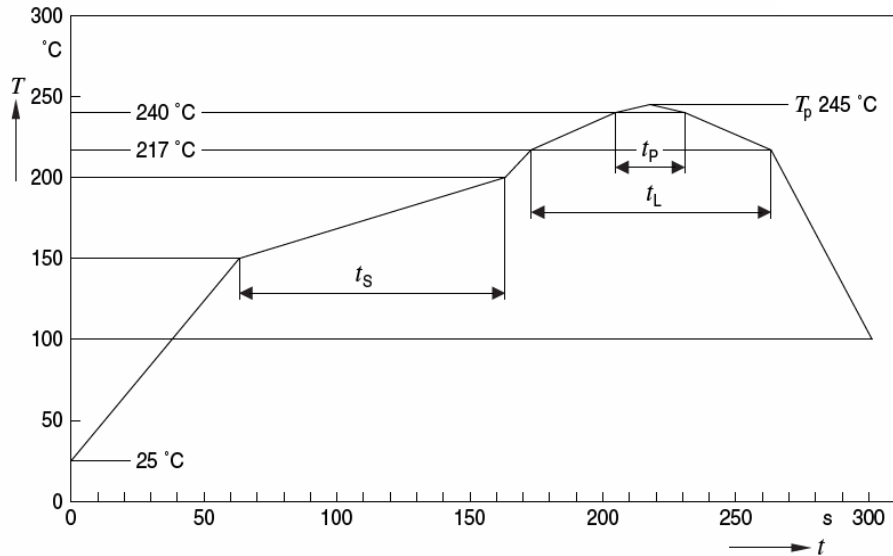● **Judgment criteria of failure for the reliability**

Measuring items	Symbol	Measuring conditions	Judgment criteria for failure
Forward voltage	V_F (V)	I_F=70mA	Initial Level*1.1
Reverse current	I_R(uA)	V_R=5V	Over U*2
Luminous intensity	Iv (mcd)	I_F=70mA	Initial Level*0.7

Note: 1.U means the upper limit of specified characteristics.

2.Measurment shall be taken between 2 hours and after the test pieces have been returned to normal ambient conditions after completion of each test.

AMERICAN BRIGHT
OPTOELECTRONICS CORP.

Toll Free: 888-533-0800 | Fax: 909-628-5006
13815-C Magnolia Ave. Chino, CA 91710

www.americanbrightled.com

BIR-HMC33M-2-TRB

● **IR-Reflow Soldering**

Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	t_L		80	100	s
Peak temperature	T_P		245	260	°C
Time within 5 °C of the specified peak temperature T_P - 5 K	t_P	10	20	30	s
Ramp-down rate* T_P to 100 °C			3	6	K/s
Time 25 °C to T_P				480	s

All temperatures refer to the center of the package, measured on the top of the component
* slope calculation DT/Dt: Dt max. 5 s; fulfillment for the whole T-range

1. Avoid any external stress applied to the resin while the LEDs are at high temperature, especially during soldering.

2. Avoid rapid cooling or any excess vibration during temperature ramp-down process.

3. Although the soldering condition is recommended above, soldering at the lowest possible temperature is feasible for the LEDs.

● **IRON   Soldering**

350℃ Within 3 sec.,One time only.

● **Notes for designing:**

Care must be taken to provide the current limiting resistor in the circuit so as to drive the BRIGHT LEDs within the rated figures. Also, caution should be taken not to overload BRIGHT LEDs with instantaneous voltage at the turning ON and OFF of the circuit.
When using the pulse drive care must be taken to keep the average current within the rated figures. Also, the circuit should be designed so as be subjected to reverse voltage when turning off the BRIGHT LEDs.

● **Storage:**

In order to avoid the absorption of moisture, it is recommended to solder BRIGHT LEDs as soon as possible after unpacking the sealed envelope.

If the envelope is still packed, to store it in the environment as following:
(1) Temperature : 5℃-30℃(41℉)Humidity : RH 60% Max.
(2) After this bag is opened, devices that will be applied to infrared reflow, vapor-phase reflow, or equivalent soldering process must be:
a. Completed within 168 hours.
b. Stored at less than 30% RH.
(3) Devices require baking before mounting, if:
    (2) a or (2) b is not met.
(4) If baking is required, devices must be baked under below conditions:
    48 hours at 60℃±3℃.

● **Package and Label of Products:**

(1) Package: Products are packed in one bag of 2500 pcs (one taping reel) and a label is attached on each bag.
(2) Label: