

OC-BI series

Product Specification

Product	2820 IR Emitter
Part Number	OCBI28-12I943-E0
Issue Date	2021/07/04

■ Features

- IR light source with high efficiency
- Package size = 2.75mm x 2.0mm x 0.60mm
- Peak wavelength λ_p =940nm
- View angle =120°
- Power consumption =3.6W
- RoHS

■ Applications

- Infrared emitter
- PCB Mounted Infrared Sensor

■ Product Nomenclature

The product name is designated as below:

OCBIAB–CDEFGH–IJ

Designation:

OCBI = Orient-Chip Technology Co., LTD IR Emitter Series Product for Biometric application

AB = Package size ⁽¹⁾

CD = Divergence Angle ⁽²⁾

E = Internal Code

FG = Wavelength ⁽³⁾

H = Power consumption ⁽⁴⁾

IJ = Internal Code

Notes

1. Package Size:

Symbol	Description
28	2.75mm x 2.0mm

2. Divergence Angle:

Symbol	Description
60	60°
80	80°
120	120°

3. Wavelength:

Symbol	Description
85	850nm
94	940nm

4. Power consumption:

Symbol	Description
0	0W~0.9W
1	1W~1.9W
2	2W~2.9W
3	3W~3.9W
4	4W~4.9W
5	5W~5.9W

■ Absolute Maximum Ratings

Parameter	Symbol	Values	Unit
Operating temperature range	T_{op}	-40 ~ 85	°C
Storage temperature range	T_{stg}	-55 ~ 100	°C
Junction temperature	T_j	125	°C
DC Forward current	I_F	1000	mA
Pulse current(300pps,10us pulse)	I_{pulse}	5000	mA
Power consumption	$P(W)$	3.6	W
ESD (HBM)	V_{ESD}	2	KV
Thermal resistance	R_{th}	10	K/W
Infrared Soldering Condition	260°C for 10 Seconds Max.		

■ Characteristics($T_A = 25\text{ }^{\circ}\text{C}$)@500mA

Parameter	Symbol	Condition	Min.	Typ.	Unit
Forward Voltage ⁽¹⁾	V_F	$I_F = 1A, t_p=10ms$	-	3.10	V
Wavelength	λ_p	$I_F = 1A, t_p=10ms$	-	940	nm
Radiant Intensity ⁽²⁾	I_e	$I_F = 1A, t_p=10ms$	-	350	mW/sr
Total Radiant Flux	Φ_e	$I_F = 1A, t_p=10ms$	-	1100	mW
View angle ⁽³⁾	Φ		-	120	°
Reverse current	I_R	$V_r=5V$	-	-	uA
Rise/Fall Time	T_r/T_f	10%~90%	-	30	ns
Spectral Bandwidth	$\Delta\lambda$	$I_F = 1A, t_p=10ms$		36	nm

(1). Forward Voltage tolerance is $\pm 0.1\text{ V}$

(2). Radiant Intensity & Total Radiant Flux tolerance is $\pm 10\%$

(3). View angle tolerance is $\pm 5^{\circ}$

■ Temperature-dependent Opto-Electronic Characteristics

Parameter	Symbol	Condition	Typical	Unit
Forward Voltage	V_F	$I_F = 0.35\text{ A}, t_p=10ms$	-1.8	mV/°C
Wavelength	λ_p	$I_F = 0.35\text{ A}, t_p=10ms$	0.25	nm/°C
Radiant Intensity	I_e	$I_F = 0.35\text{ A}, t_p=10ms$	-0.3	%/°C
Radiant Power	Φ_e	$I_F = 0.35\text{ A}, t_p=10ms$	-0.3	%/°C

■ **Radiometric Power Bin Structure**

Color	Bin Code	Minimum Radiometric Power (mW)	Typical Radiometric Power (mW)	Maximum Radiometric Power (mW)
Infrared 940	A0	900	1100	--

- OCS maintains a tolerance of $\pm 10\%$ on flux and power measurements.
- The flux bin of the product may be modified for improvement without notice.

■ **Peak Wavelength Bin Structure**

Color	Bin Code	Centroid Wavelength
Infrared 940	94	940

■ **Forward Voltage Bin Structure**

Color	Bin Code	Minimum Voltage (V)	Typical Voltage (V)	Maximum Voltage (V)
Infrared 940	B2	2.6	-	3.6

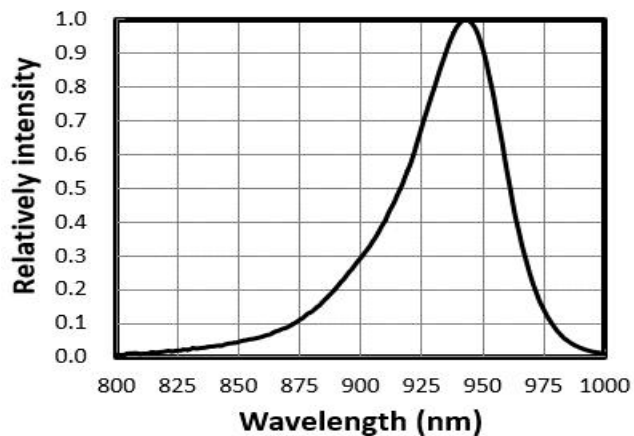
- OCS maintain a tolerance of $\pm 0.1V$ for Voltage measurements.

Typical Values:

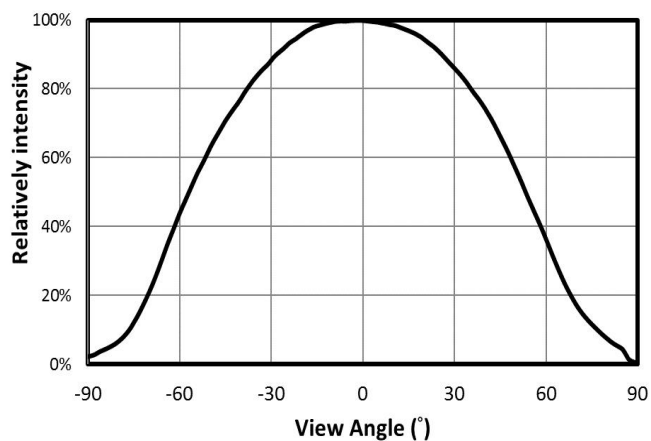
Due to the special conditions of the manufacturing processes of LED, the typical data of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.

■ Characteristics(TA =25 °C)

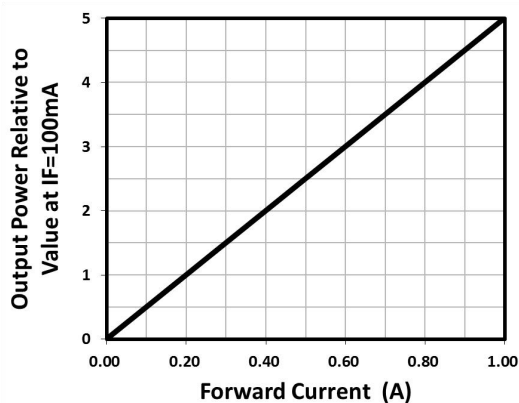
Relative Emission Spectrum



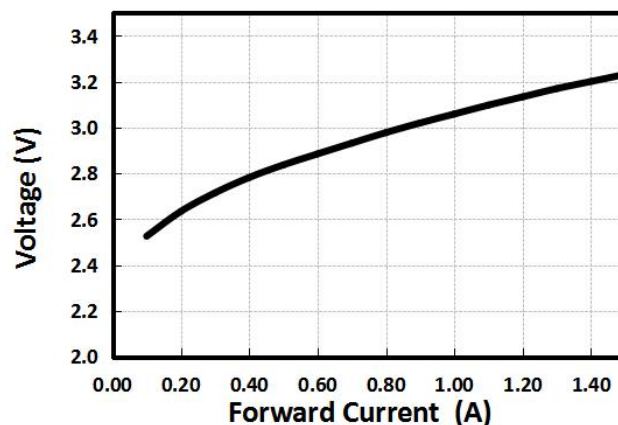
Relative Radiant Pattern



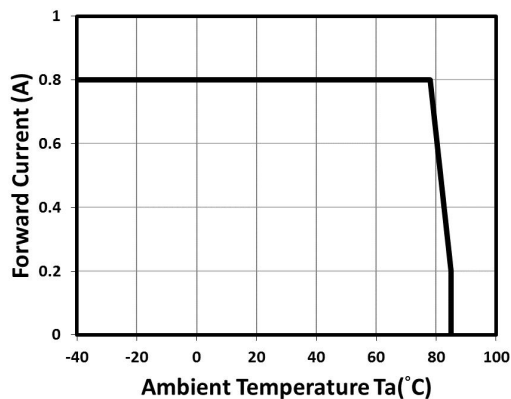
Relative Output Power vs. Current



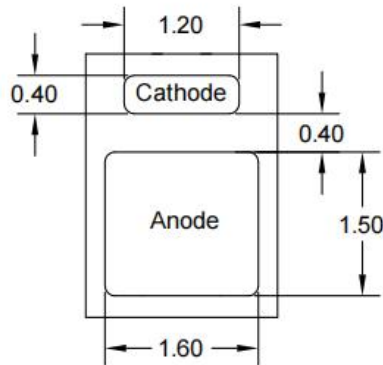
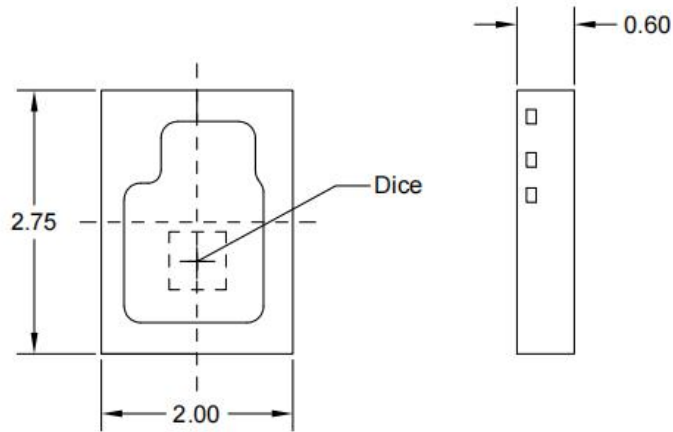
Forward Voltage vs. Forward Current



Forward Current vs. Ambient Temperature



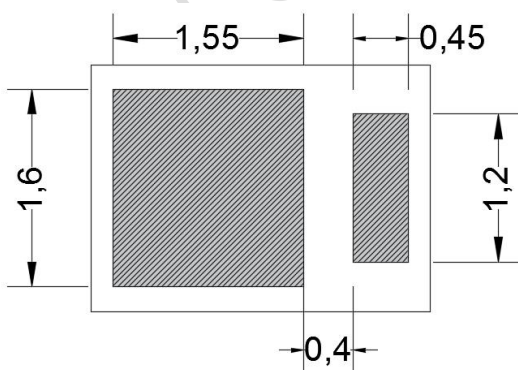
■ Outline Dimension



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.1\text{mm}$ unless otherwise noted.
3. Specifications are subject to change without notice.

■ Recommended solder pad Design



Unit: mm

Tolerance: 0.1mm

■ Cleaning

1. If washing is required, recommend to use alcohol as a solvent.
2. Recommend to avoid cleaning the LEDs by ultrasonic. If necessary, pre-test the LED is necessary to confirm whether any damage occur after the process.

■ Precautions for use

1. Over-current-proof

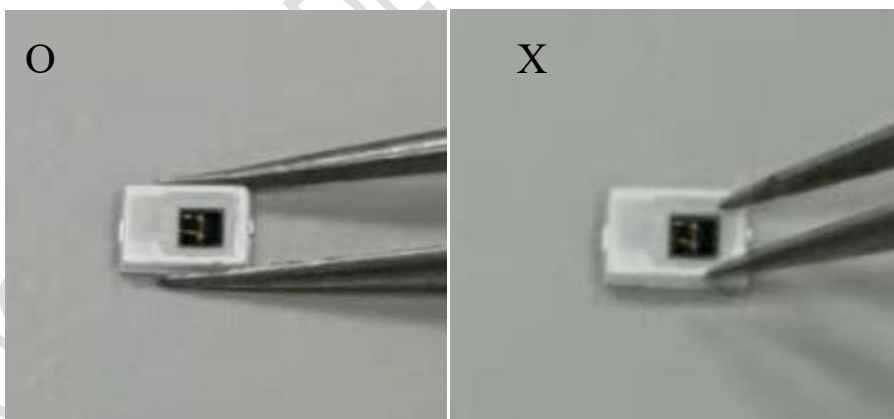
Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

- 2.1: Do not open moisture proof bag before the products are ready to use.
- 2.2 : Before opening the package: The LEDs should be kept at 30°C or less and 90%RH or less.
- 2.3 : After opening the package: The LED's floor life is 1 year under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.
- 2.4: If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 60±5°C for 24 hours.

3. Handling indications

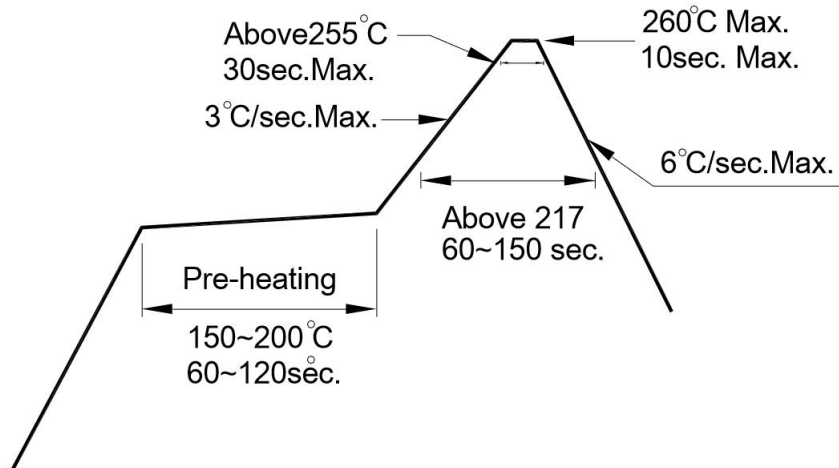
During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be used to pierce the sealing compound. In general, LED should only be handled at the housing. This also applies to LED without a diffuser, since the surface can also become scratched.



4. Soldering Condition

4.1 Pb-free solder temperature profile

(JEDEC-STD-020 latest version compliant)



- 4.2: Reflow soldering should not be done more than two times.
- 4.3: When soldering, do not put stress on the LEDs during heating.
- 4.4: After soldering, do not warp the circuit board.

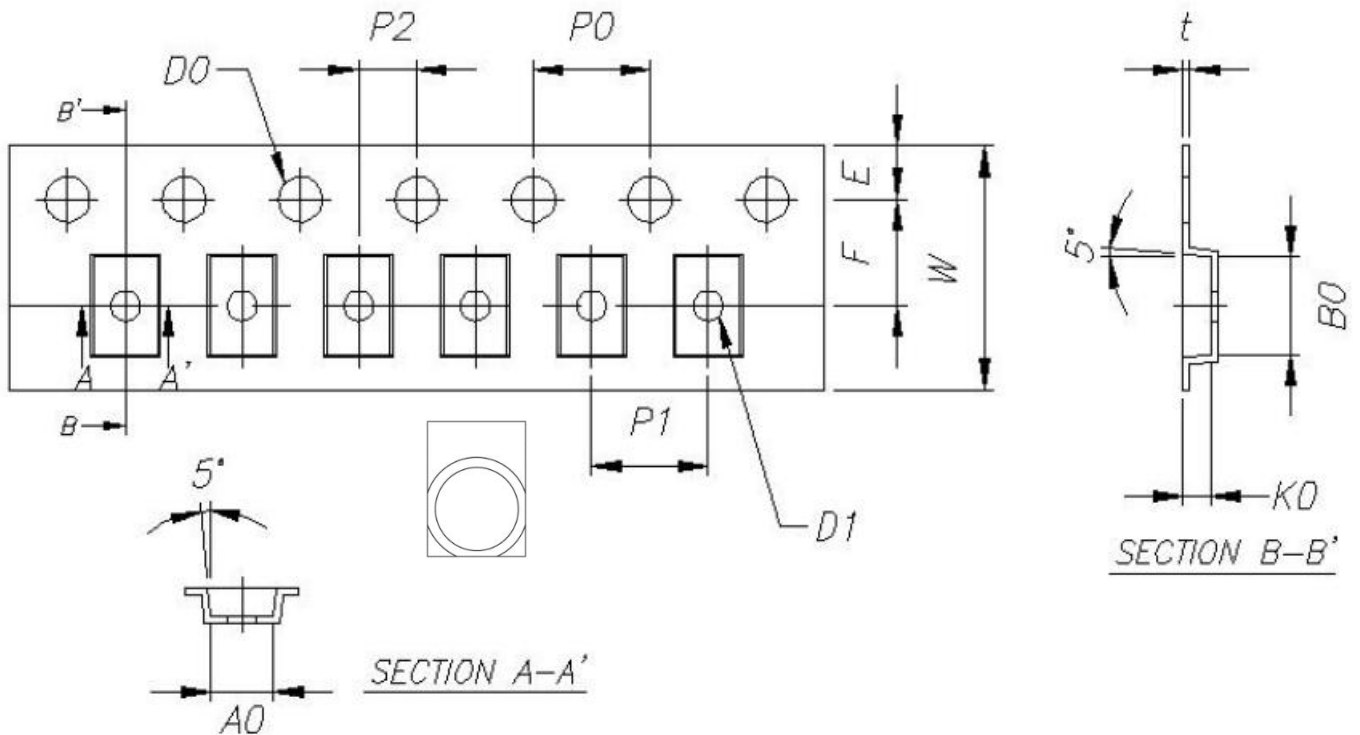
5. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

6. Repairing

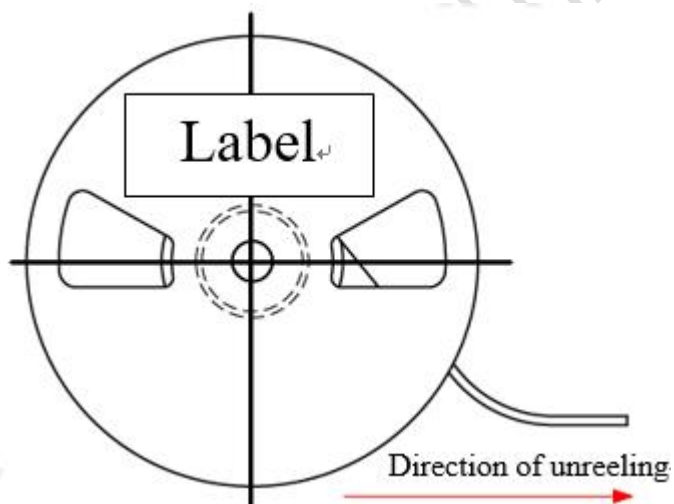
Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.

■ Reel Packing



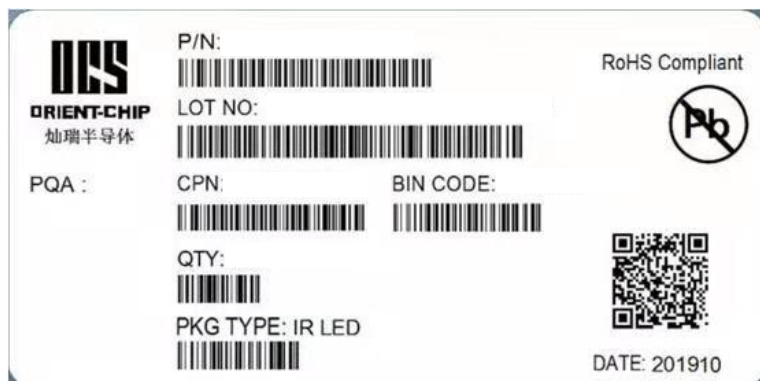
UNIT: mm

symbol	Ao	Bo	Ko	Po	P1	P2	T
spec	2.19±0.10	3.24±0.10	1.05±0.05	4.00±0.10	4.00±0.05	2.00±0.05	0.23±0.05
symbol	E	F	D0	D1	W	10Po	--
spec	1.75±0.10	3.50±0.05	+0.10, -0	1.00±0.10	8.0±0.20	40.0±0.20	--



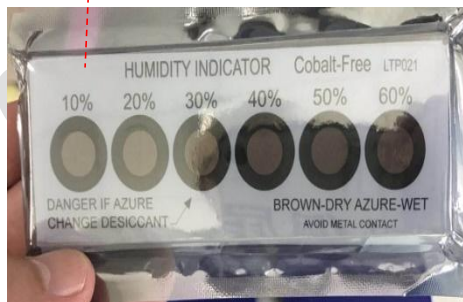
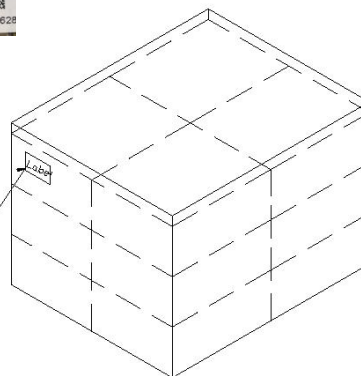
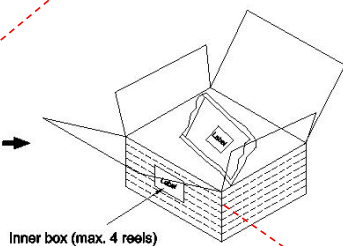
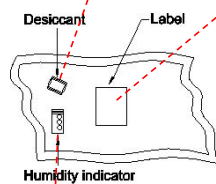
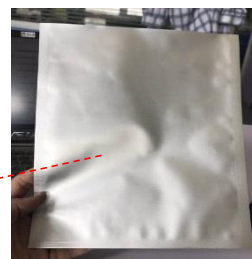
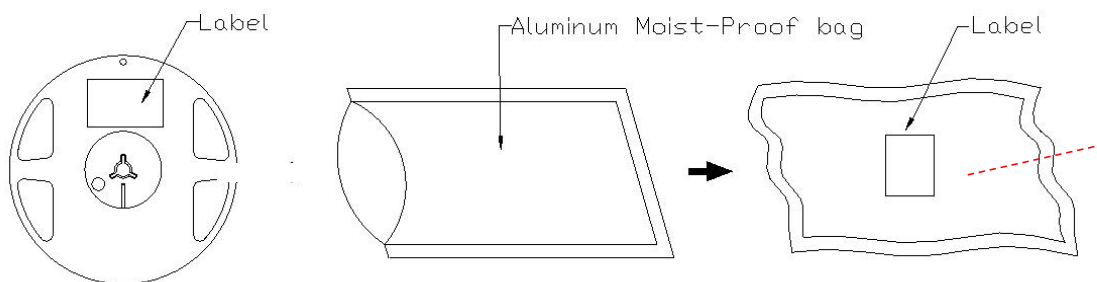
7-inch Anti-Static Reel
Max 2000pcs/reel

■ Product Labeling



- P/N: OCS Product Model Name
- LOT: Lot Number
- QTY: Q'ty
- BIN: mW/nm/Vf (ex.[A1/94/V1])
- DATE: Enter the warehouse

■ Moisture Resistant Packing



■ **Modified records**

Version	Description	Issue Date
V0	New spec	2021/07/04