

# OC-BI series

## Product Specification



Product	2820 IR Emitter
Part Number	OCBI28-60I933-ES3
Issue Date	2022/05/23

### ■ Features

- Package:clear silicon
- IR light source with high efficiency
- High performance
- RoHS

### ■ Applications

- Infrared illumination for cameras
- Face recognition
- Security monitor
- Biometric application

## ■ 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 <sup>(1)</sup>

CD = Divergence Angle <sup>(2)</sup>

E = Internal Code

FG = Wavelength <sup>(3)</sup>

H = Power consumption <sup>(4)</sup>

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
93	930nm
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

### ■ Maximum Ratings

Parameter	Symbol	Values	Unit
Operating temperature range	$T_{op}$	-40 ~ 85	°C
Storage temperature range	$T_{stg}$	-55 ~ 100	°C
Junction temperature	$T_j$	145	°C
DC Forward current	$I_F$	1000	mA
Power consumption	P(W)	3.4	W
ESD (HBM)	$V_{ESD}$	2	KV
Thermal resistance	$R_{th}$	10	K/W
Infrared Soldering Condition	260°C for 10 Seconds Max.		

### ■ Characteristics(TA = 25 °C)@1A

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage <sup>(1)</sup>	$V_F$	$I_F = 1 \text{ A}, t_p=10\text{ms}$	2.9	3.1	3.6	V
Wavelength	$\lambda_p$	$I_F = 1 \text{ A}, t_p=10\text{ms}$	-	930	-	nm
Radiant Intensity <sup>(2)</sup>	$I_e$	$I_F = 1 \text{ A}, t_p=10\text{ms}$	-	1050	-	mW/sr
Total Radiant Flux	$\Phi_e$	$I_F = 1 \text{ A}, t_p=10\text{ms}$	-	1700	-	mW
View angle <sup>(3)</sup>	$\Phi$	$I_F = 1 \text{ A}$	-	60	-	°
Reverse current	$I_R$	$V_r=5\text{V}$	-	-	10	uA
Rise/Fall Time	$T_r/T_f$	10%~90%	-	30	-	ns
Spectral Bandwidth	$\Delta\lambda$	$I_F = 1 \text{ A}, t_p=10\text{ms}$	-	42	-	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	$V_F$	$I_F = 0.35 \text{ A}, t_p=10\text{ms}$	-1.8	mV/°C
Wavelength	$\lambda_p$	$I_F = 0.35 \text{ A}, t_p=10\text{ms}$	0.25	nm/°C
Radiant Intensity	$I_e$	$I_F = 0.35 \text{ A}, t_p=10\text{ms}$	-0.3	%/°C
Radiant Power	$\Phi_e$	$I_F = 0.35 \text{ A}, t_p=10\text{ms}$	-0.3	%/°C

■ **Radiometric Power Bin Structure at 1000mA**

Bin Code	Minimum Radiant Intensity (mW/sr)	Typical Radiant Intensity (mW/sr)	Maximum Radiant Intensity (mW/sr)
A0	900	1050	--

- 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**

Bin Code	Centroid Wavelength(nm)
93	930+/-10nm

■ **Forward Voltage Bin Structure**

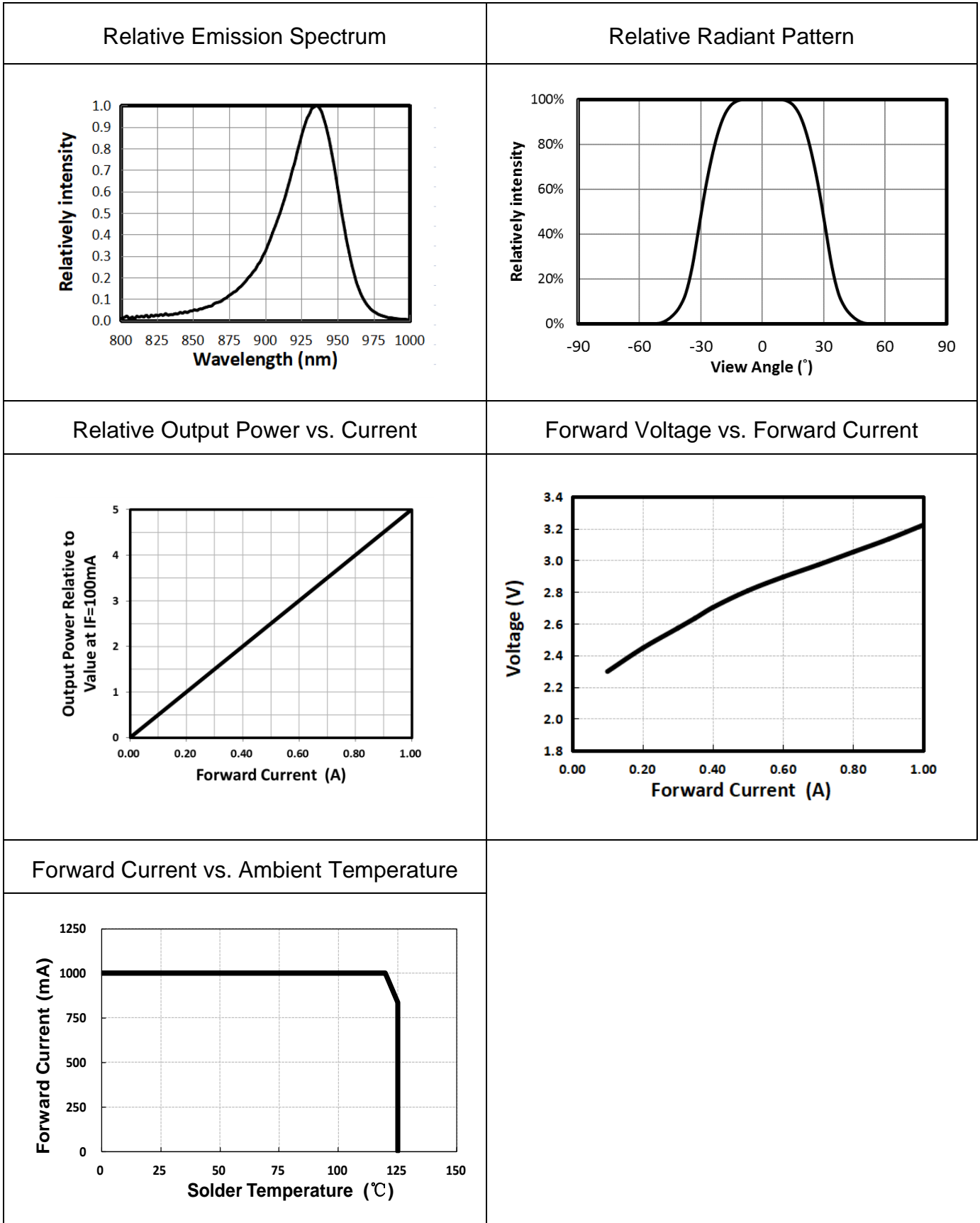
Bin Code	Minimum Voltage (V)	Typical Voltage (V)	Maximum Voltage (V)
B0	2.9	--	3.6

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

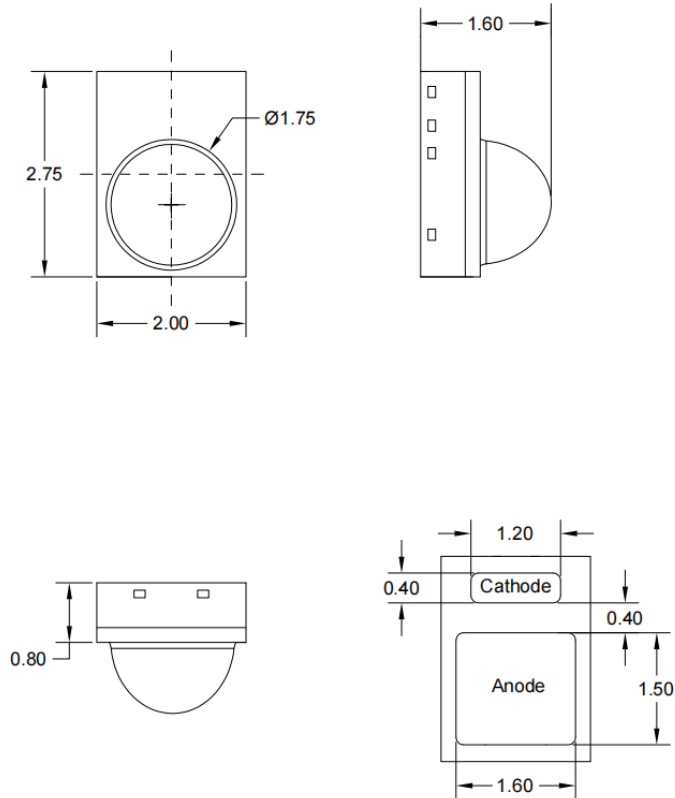
Typical Values:

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)**



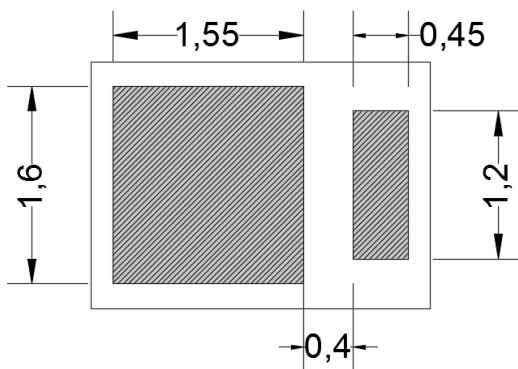
■ **Outline Dimension**



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.1$ 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

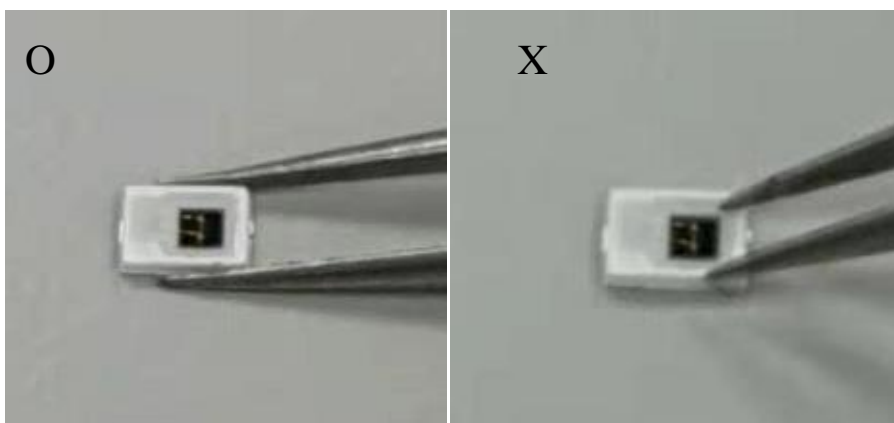
Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).

### 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

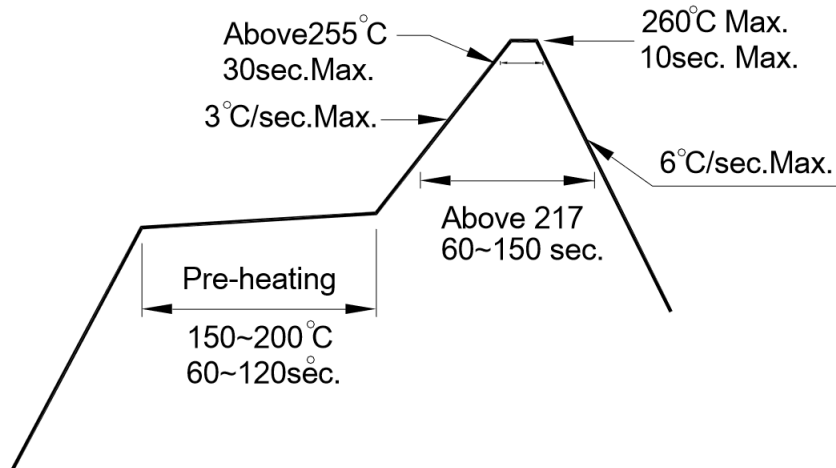
During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be used to pierce the sealing compound. In general, LED should only be handled at the housing. This also applies to LED without a diffuser, since the surface can also become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

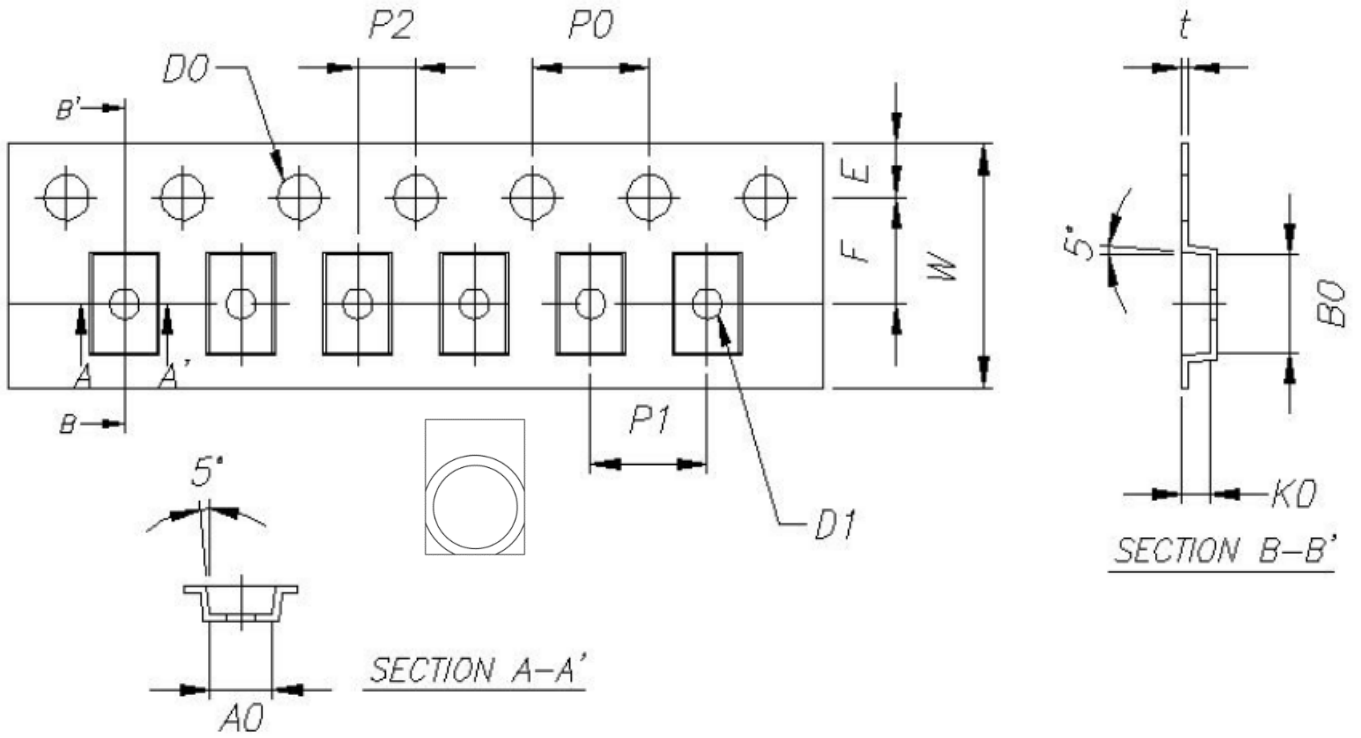
Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of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

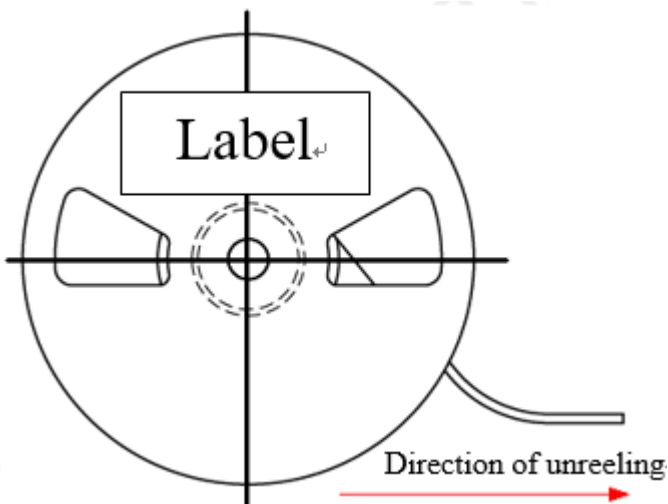


■ **Reel Packing**



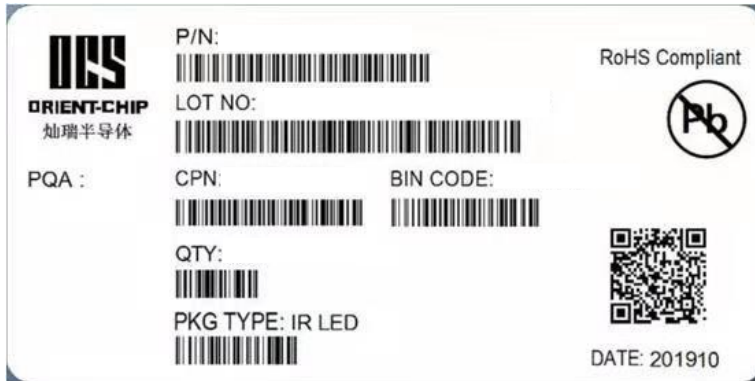
UNIT:mm

symbol	$A_0$	$B_0$	$K_0$	$P_0$	$P_1$	$P_2$	$T$
spec	$2.19 \pm 0.10$	$3.24 \pm 0.10$	$1.95 \pm 0.05$	$4.00 \pm 0.10$	$4.00 \pm 0.05$	$2.00 \pm 0.05$	$0.23 \pm 0.05$
symbol	$E$	$F$	$D_0$	$D_1$	$W$	$10P_0$	--
spec	$1.75 \pm 0.10$	$3.50 \pm 0.05$	$+0.10, -0$	$1.00 \pm 0.10$	$8.0 \pm 0.20$	$40.0 \pm 0.20$	--



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

