

# Photo Transistor --ORT-PT3121H3

## 1. Scope:

- This specification applies to NPN Photo Transistor.

## 2. Structure:

- Top Side : alumnium alloy
- Bottom Side : silver alloy
- Passivation : Silicon Nitride

## 3. Size:

- Die Size :  $(508\mu\text{m} \times 508\mu\text{m}) \pm 40\mu\text{m}$  (include scribe line)
- Thickness :  $220\mu\text{m} \pm 30\mu\text{m}$
- Pad Size :  
Base :  $(60\mu\text{m} \times 60\mu\text{m}) \pm 20\mu\text{m}$   
Emitter :  $\Phi 130\mu\text{m} \pm 20\mu\text{m}$
- Active Area :  $(382\mu\text{m} \times 382\mu\text{m}) \pm 20\mu\text{m}$
- Pattern Drawing: fig.1.

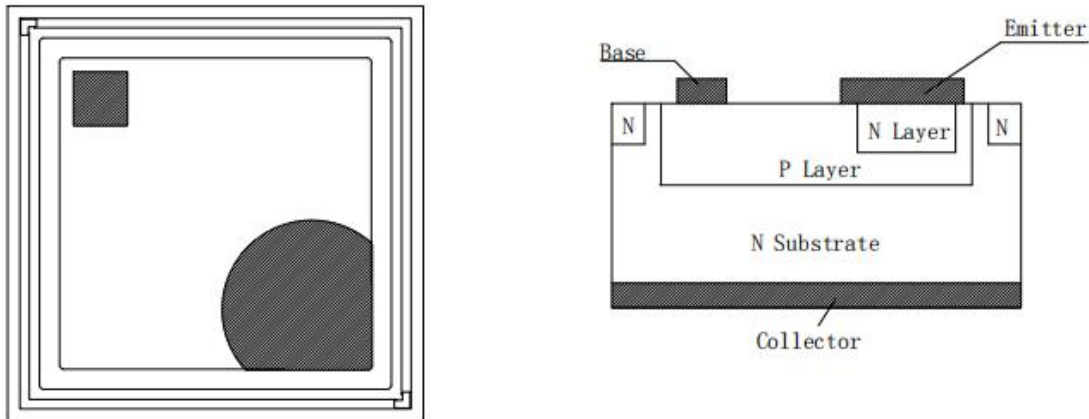


fig.1

## 4. Electro-Optical Characteristics:

(Ta=+25°C)

| Parameter              | Symbol     | Test Condition                      | Min | Typ | Max  | Unit    |
|------------------------|------------|-------------------------------------|-----|-----|------|---------|
| C-E Leakage Current    | $I_{CEO}$  | $V_{CE}=20V$                        |     |     | 50   | nA      |
| C-E Saturation Voltage | $V_{CES}$  | $I_C=1mA, I_B=0.2mA$                |     |     | 180  | mV      |
| C-E Broken Voltage     | $BV_{CEO}$ | $I_{CE}=100\mu A$                   | 50  |     |      | V       |
| C-B Broken Voltage     | $BV_{CBO}$ | $I_{CB}=50\mu A$                    | 60  |     |      | V       |
| E-B Broken Voltage     | $BV_{EBO}$ | $I_{EB}=50\mu A$                    | 6   |     |      | V       |
| E-C Broken Voltage     | $BV_{ECO}$ | $I_{EC}=10\mu A$                    | 5   |     |      | V       |
| DC Current Gain        | $h_{FE}$   | $V_{CE}=5V, I_C=1mA$                | 600 |     | 3000 | -       |
| Rise/fall time         | $t_R/t_F$  | $V_{CE}=5V, I_C=2mA, R_L=100\Omega$ |     | 7/7 |      | $\mu s$ |

\***Note** :  $BV_{ECO}$  :  $h_{FE}$ : 1500~ (  $BV_{ECO}$  = Min. 4V)



## 5. hfe Classification:

### PT3121H3 3 series(1:1.3)

| Classification | PT3121H3-3A | PT3121H3-3B | PT3121H3-3C | PT3121H3-3D | PT3121H3-3E |
|----------------|-------------|-------------|-------------|-------------|-------------|
| hfe            | 600~780     | 660~860     | 720~940     | 780~1020    | 840~1100    |

| Classification | PT3121H3-3F | PT3121H3-3G | PT3121H3-3H | PT3121H3-3I | PT3121H33J |
|----------------|-------------|-------------|-------------|-------------|------------|
| hfe            | 900~1180    | 960~1260    | 1020~1340   | 1080~1420   | 1140-1500  |

| Classification | PT3121H3-3K | PT3121H3-3L | PT3121H3-3M | PT3121H3-3N |
|----------------|-------------|-------------|-------------|-------------|
| hfe            | 1200~1580   | 1500~2000   | 2000~2600   | 2400~3000   |

### PT3121H3 5 series(1:1.5)

| Classification | PT3121H3-5A | PT3121H3-5B | PT3121H3-5C | PT3121H3-5D | PT3121H3-5E |
|----------------|-------------|-------------|-------------|-------------|-------------|
| hfe            | 600-900     | 700-1050    | 800-1300    | 900-1400    | 1100-1800   |

| Classification | PT3121H3-5F | PT3121H3-5G | PT3121H3-5H |
|----------------|-------------|-------------|-------------|
| hfe            | 1300-2000   | 1500-2300   | 2000-3000   |

### PT3121H3 7 series(1:1.7)

| Classification | PT3121H3-7A | PT3121H3-7B | PT3121H3-7C | PT3121H3-7D | PT3121H3-7E |
|----------------|-------------|-------------|-------------|-------------|-------------|
| hfe            | 600~1020    | 680~1160    | 760-1300    | 840-1440    | 920-1580    |

| Classification | PT3121H3-7F | PT3121H3-7G | PT3121H3-7N | PT3121H3-7H |
|----------------|-------------|-------------|-------------|-------------|
| hfe            | 1000-1700   | 1200-2000   | 1400-2380   | 1800-3000   |

## 6. Packing :

- Packing: Sheet Type

## 7. Application Notes:

- All data are measured by Orient's tester on bare chips within 98% of the nominal value.