

LV0111CF

Ambient Light Sensor, Logarithmic Current Output, with Standby Function



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Overview

LV0111CF is a Photo IC for ultra-small package ambient light sensor which has the characteristics of spectral response similar to that of human eyes. It is suitable for the applications like mobile phone (for Digital-TV, One-segment), LCD-TV, laptop computer, PDA, DSC and Camcorder. It is goods for a free halogen.

Features

- Logarithm current output
- Excellent luminous efficiency function
- Built-in sleep function
- Low current consumption

Typical Applications

- Ambient Light Sensor
- Feature phone, Smart phone, ...
- Digital TV : (CRT, LCD, OLED, ...)
- DSC, DVC, DSLR, Mirrorless, ...

SPECIFICATION

ABSOLUTE MAXIMUM RATINGS at Ta = 25°C (Note 1)

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------|---------------------|------------|-------------|------|
| Maximum supply voltage | V _{CC} max | | 6 | V |
| Operating temperature | Topr | | -30 to +85 | °C |
| Storage temperature | Tstg | | -40 to +100 | °C |

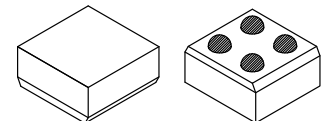
1. Stresses exceeding those listed in the Absolute Maximum Rating table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

RECOMMENED OPERATING CONDITIONS AND

OPERATING VOLTAGE RANGE at Ta = 25°C (Note 2)

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|----------------------------|-----------------|-------------|---------|-----|-----------------|------|
| | | | min | typ | max | |
| Recommended supply voltage | V _{CC} | | 2.3 | 2.5 | 5.5 | V |
| SW pin low voltage | V _I | Sleep mode | 0 | | 0.4 | V |
| SW pin high voltage | V _h | Normal mode | 1.5 | | V _{CC} | V |

2. Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.



ODCSP4J 1.08 mm x 1.08 mm

ORDERING INFORMATION

Ordering Code:
LV0111CF-TLM-H

Package
ODCSP4J
(Pb-Free / Halogen Free)

Shipping (Qty / packing)
5000 / Tape & Reel

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.
http://www.onsemi.com/pub_link/Collateral/BRD8011-D.PDF

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ELECTRICAL AND OPTICAL CHARACTERISTICS at $T_a = 25^\circ\text{C}$, $V_{CC} = 2.5\text{V}$ (Note 3)

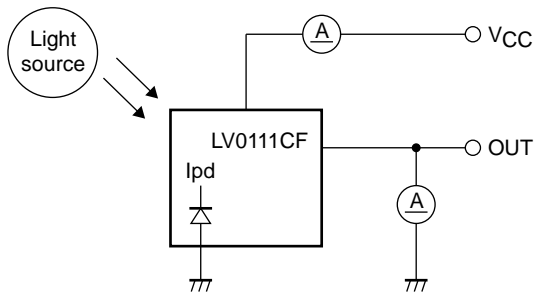
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---------------------------------------|-------------|--|---------|------|-----|---------------------|
| | | | min | typ | max | |
| Current dissipation (Note 4, 6) | I_{CC} | $E_v = 1000 \text{ lx}$, $R_L = 27\text{k}\Omega$ | 50 | 75 | 100 | μA |
| Sleep current | I_{sl} | $E_v = 0 \text{ lx}$ | | 0.01 | 0.1 | μA |
| Output current (1) (Note 4, 6) | I_{O1} | $E_v = 100 \text{ lx}$ | 18 | 21 | 24 | μA |
| Output current (2) (Note 4, 6) | I_{O2} | $E_v = 1000 \text{ lx}$ | 27 | 31 | 35 | μA |
| Dark current | I_{leak} | $E_v = 0 \text{ lx}$ | | 0.35 | 0.5 | μA |
| Temperature coefficient (Note 5) | I_{tc} | $E_v = 100 \text{ lx}$ | | 0.1 | | $\%/^\circ\text{C}$ |
| Rise time (Note 7) | T_{r1} | $E_v = 1000 \text{ lx}$ | | 40 | 100 | μs |
| Fall time (Note 7) | T_{f1} | $E_v = 1000 \text{ lx}$ | | 2 | 5 | ms |
| Peak sensitivity wave length (Note 5) | λ_p | | | 550 | | nm |

3. Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

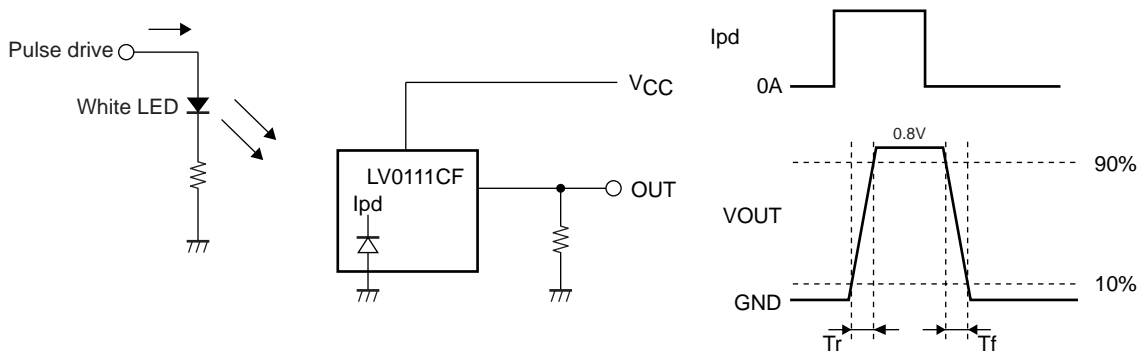
4. Measured with the standard light source A. White LED is used instead in the mass production line.

5. Design guaranteed item

6. Test circuit for measuring current dissipation and output current

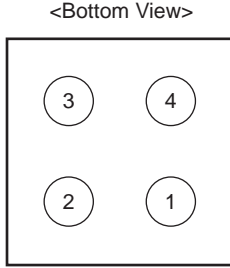
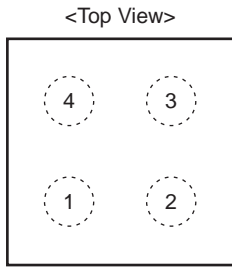


7. Measuring method of rise time (T_r) and fall time (T_f)



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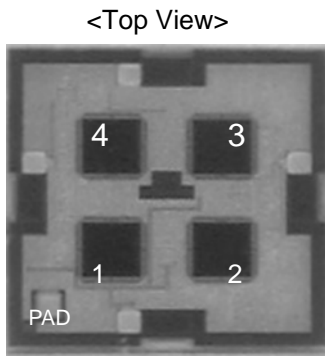
PAD LAYOUT



| Pin No. | Pin Name | Function |
|---------|----------|--------------|
| 1 | VCC | Power supply |
| 2 | EN | Enable |
| 3 | GND | Ground |
| 4 | OUT | Output |

Ball pitch : 0.5mm, Ball size : 0.25mm ϕ

PAD LAYOUT (Photos)



<Bottom View>

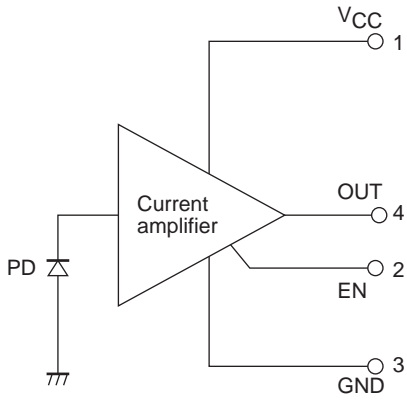
3 4

2 1

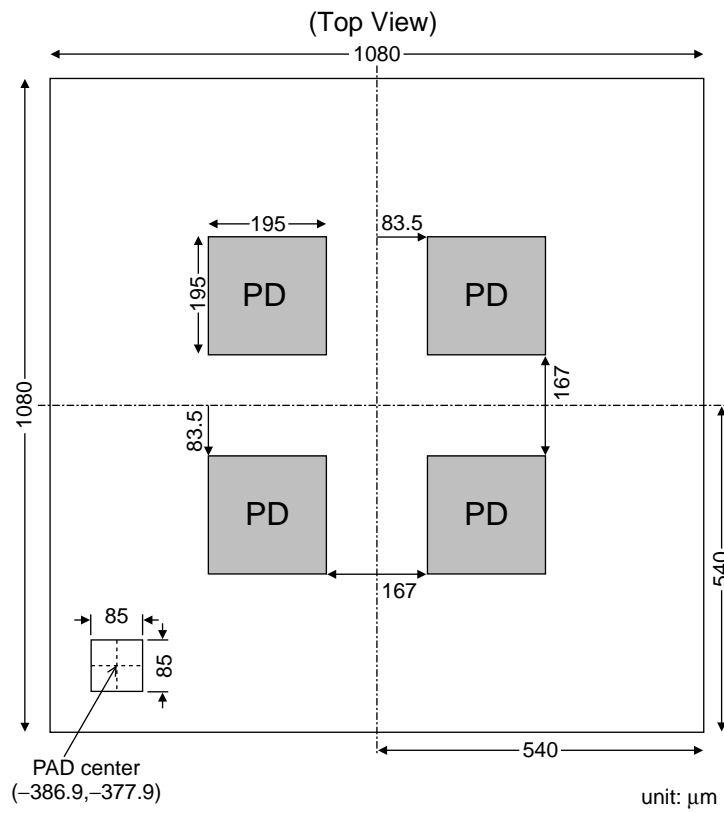
* The position with PAD becomes pin 1.

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Internal Block Diagram

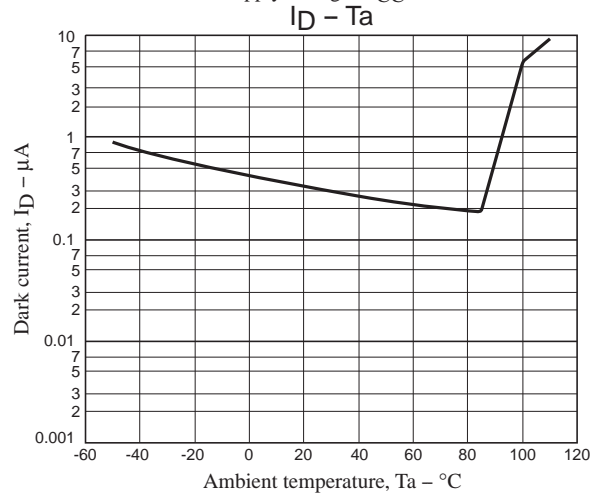
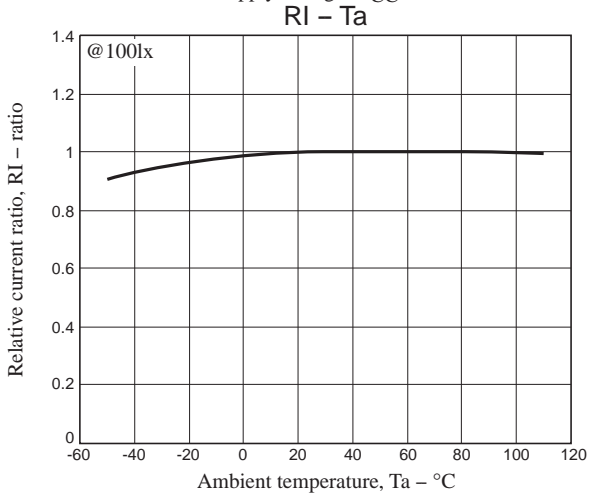
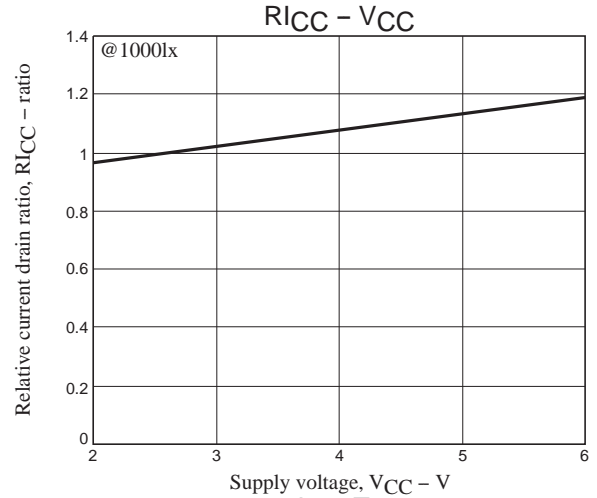
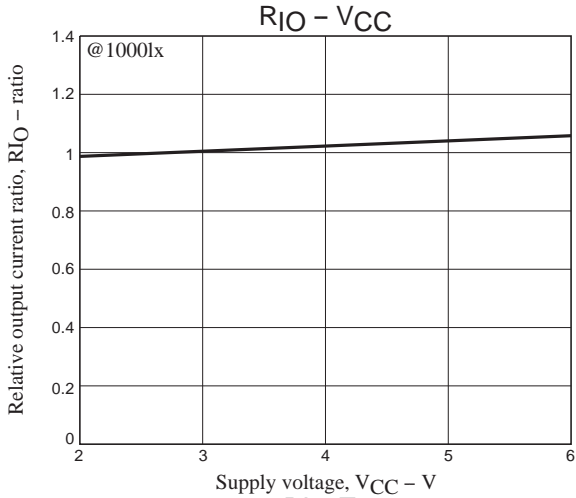
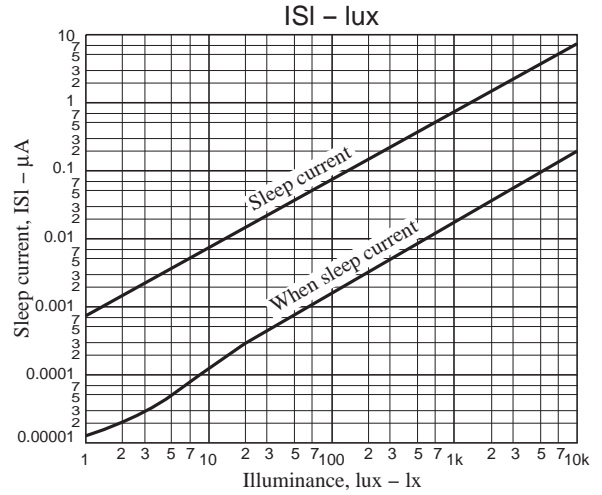
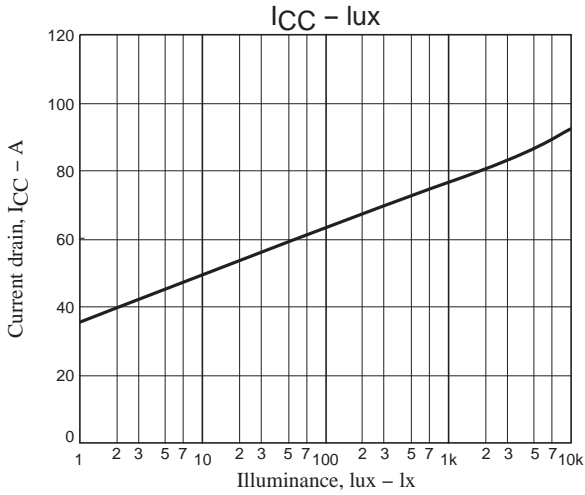
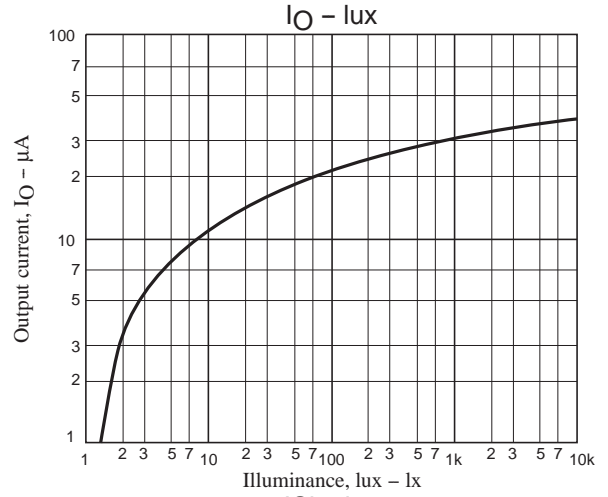
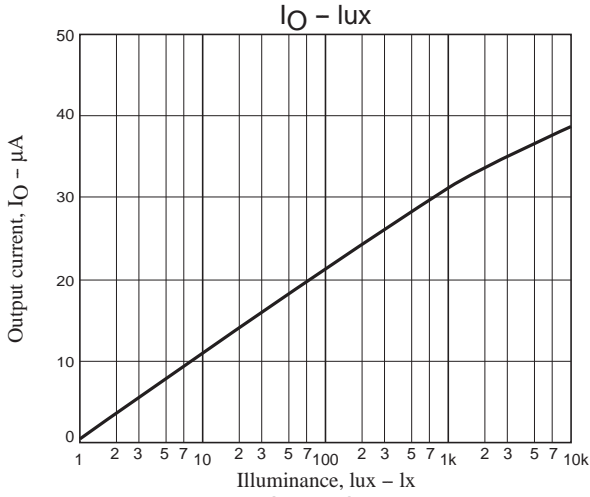


Chip Pattern Diagram

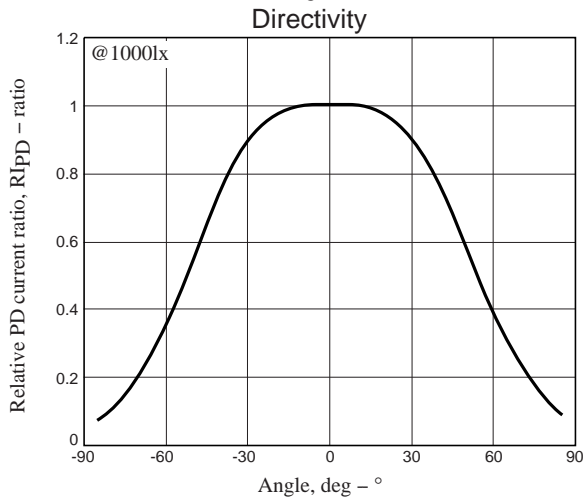
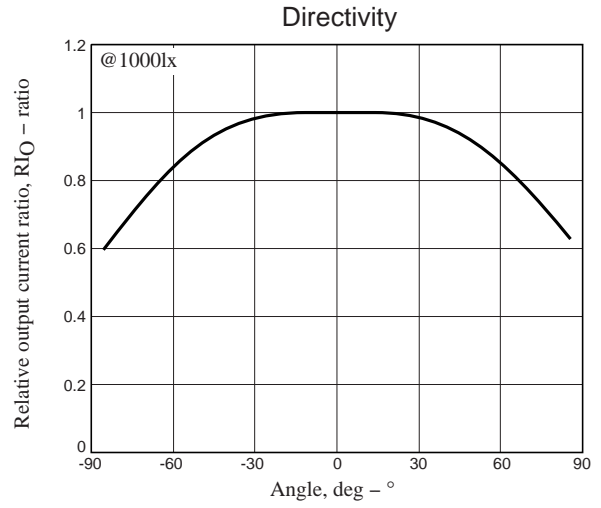
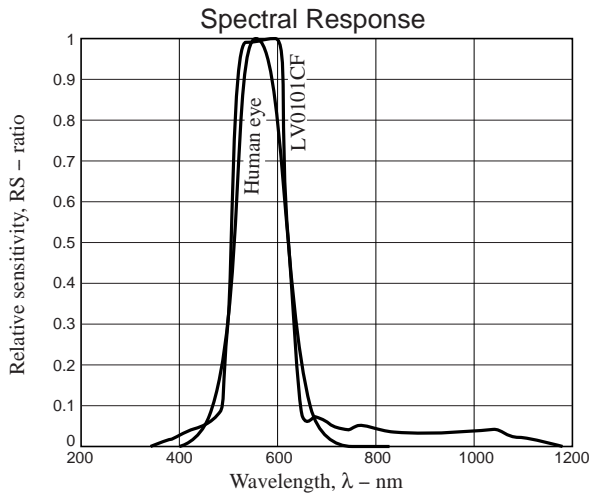


* The PAD becomes pin 1.

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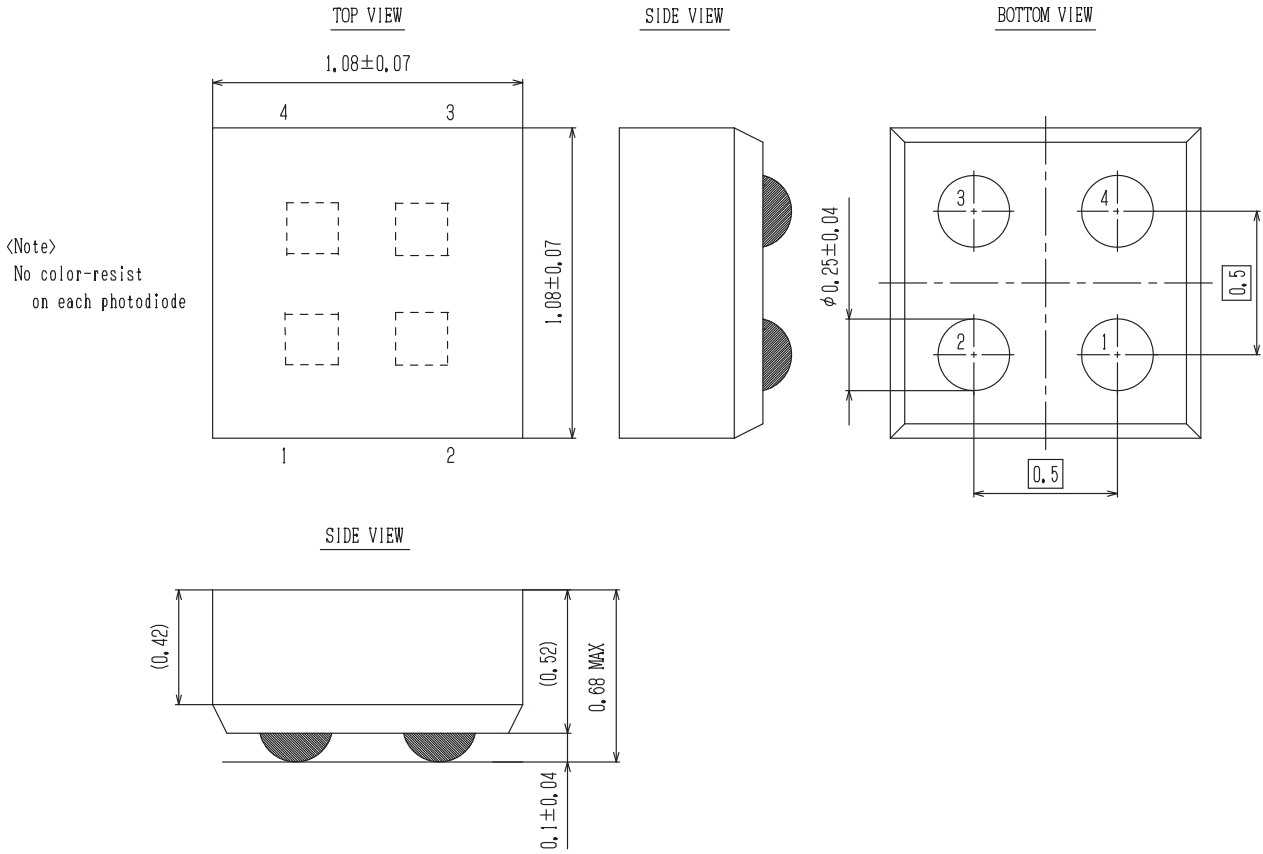


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PACKAGE DIMENSIONS

unit : mm

ODCSP4J 1.08x1.08
CASE 570AD
ISSUE 0



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