

## CURRENT SENSOR

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PRODUCT SERIES: SFG-X.XCPL/A7

PRODUCT PART NUMBER: SFG-0.3CPL/A7

REVISION: Ver 1.0



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## 1. Description

### Features

- High and low level output
- Single supply voltage
- Self-check function
- Cobalt base magnetic ring.

### Advantages

- Stable accuracy
- Low hysteresis
- Short response time
- Compact design

### Applications

- Ground fault detection
- Converter leakage current detection
- Electric vehicle charge station
- IC-CPD
- Wallbox

### Standards

- EN 50178
- IEC 62752 & IEC62955
- IEC 61851
- UL1741 UL508 UL94-V0

## 2. Absolute parameter

### Absolute maximum ratings

| Parameter                     | Symbol         | Unit | Min | Typ | Max |
|-------------------------------|----------------|------|-----|-----|-----|
| Supply voltage                | V <sub>c</sub> | V    |     |     | 5.5 |
| Ambient operating temperature | T <sub>A</sub> | °C   | -40 |     | 85  |
| Ambient storage temperature   | T <sub>A</sub> | °C   | -40 |     | 105 |

Stresses above these ratings may cause permanent damage. Exposure to absolute maximum ratings for extended periods may degrade reliability.

### Isolation parameters

| Parameter                          | Symbol          | Unit | Value           |
|------------------------------------|-----------------|------|-----------------|
| RMS voltage for AC test 50Hz/1min  | V <sub>d</sub>  | kV   | 3               |
| Impulse withstand voltage 1.2/50μs | V <sub>w</sub>  | kV   | 7               |
| Lightning surge current 8/20μs     | I <sub>LS</sub> | kA   | 5               |
| Comparative tracking index         | CTI             | V    | 600             |
| Application example                | -               | V    | 600,CAT III,PD2 |

### 3. Electrical data

at  $T_A = 25^{\circ}\text{C}$ ,  $V_C = 5\text{ V}$ .

| Parameters                      | Symbol   | Unit | Min | Typ   | Max   | Remark |
|---------------------------------|----------|------|-----|-------|-------|--------|
| Supply voltage                  | $V_C$    | V    | 4.9 | 5     | 5.1   |        |
| Current consumption             | $I_C$    | mA   |     | 25    | 30    |        |
| Output voltage (Check function) | $V_{CK}$ | V    |     | $V_C$ |       |        |
| Check current                   | $I_{CK}$ | mA   |     | 30    |       |        |
| Check enable voltage            | $V_{CE}$ | V    | 3.3 |       | $V_C$ |        |
| Check disabled voltage          | $V_{CD}$ | V    |     | < 0.2 |       |        |
| Power on initialization         | $t_{on}$ | ms   |     |       | 60    |        |
| Primary nominal RMS current     | $I_M$    | A    |     | 42    |       |        |

## 4. Application information

### Self-check Function

When the main circuit is not working, the system leakage current is 0, the  $V_{out}$  = Low level ( 0v ).

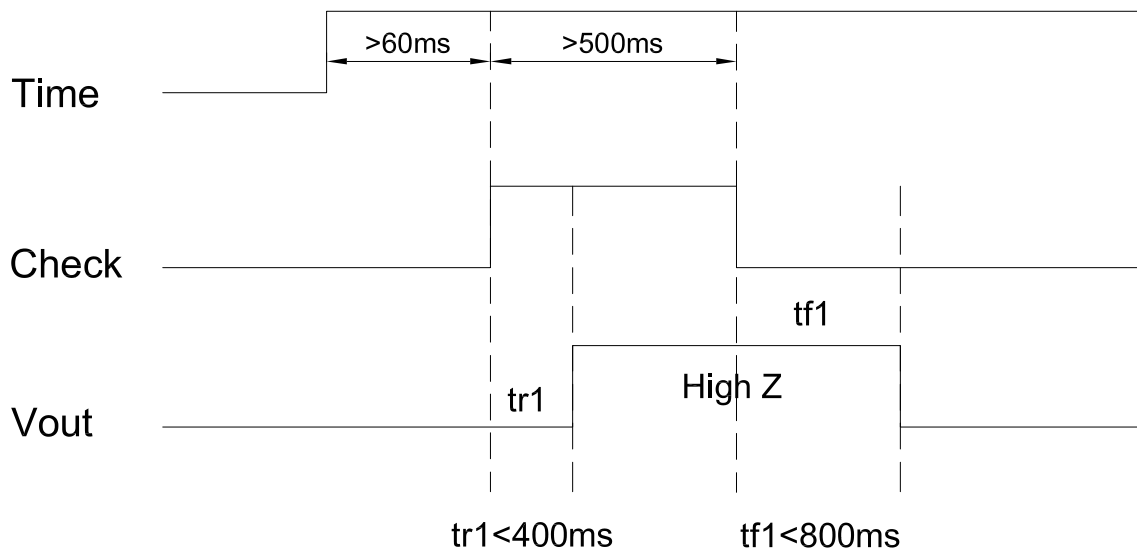
(a) .when the CHK PIN is placed at high level (3.3~5V),  $V_{out}$  rises from Low level to high level(  $V_{cc}$  );

(b) .when the CHK PIN is placed at low level (< 0.2V), the self-generated the  $V_{out}$  drops to Low level ( 0v ).

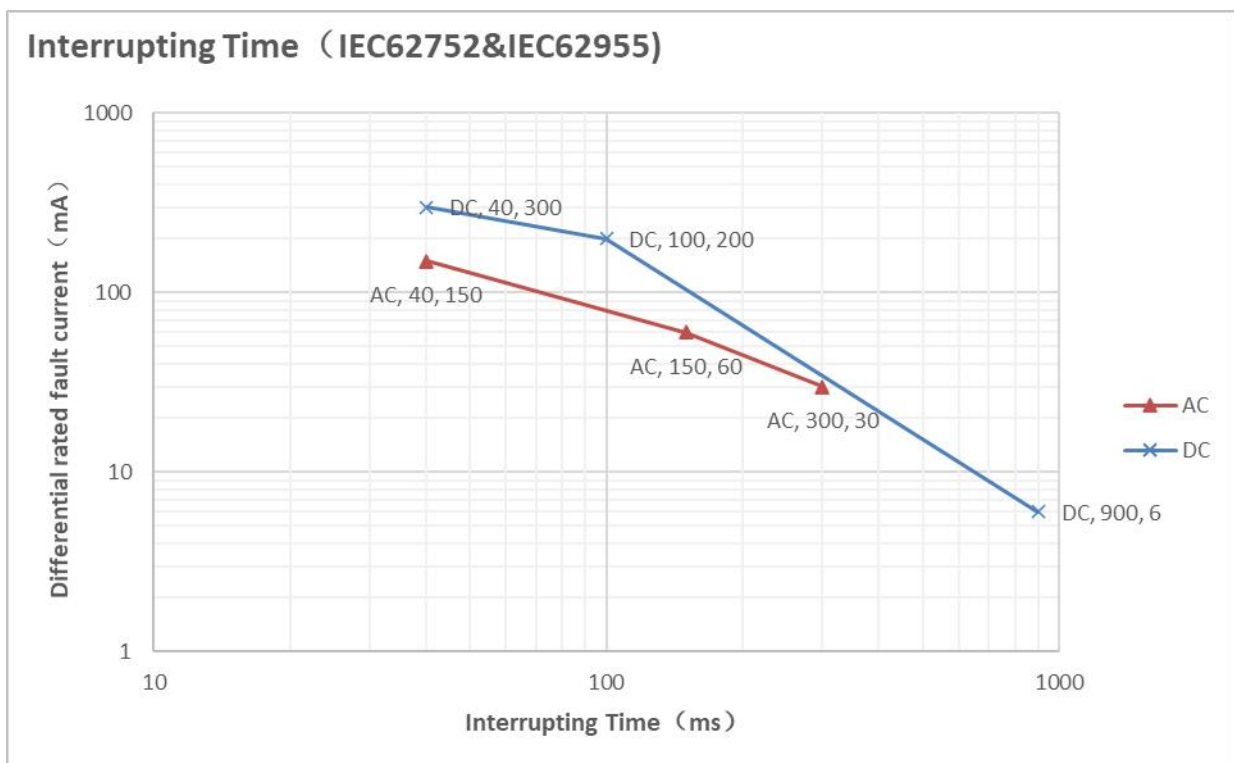
When the above (a) and (b) are completed, the leakage current sensor is judged to have normal function.

When the self-check function is not used, add a  $0\Omega$  resistance to the CHK PIIN and ground it.

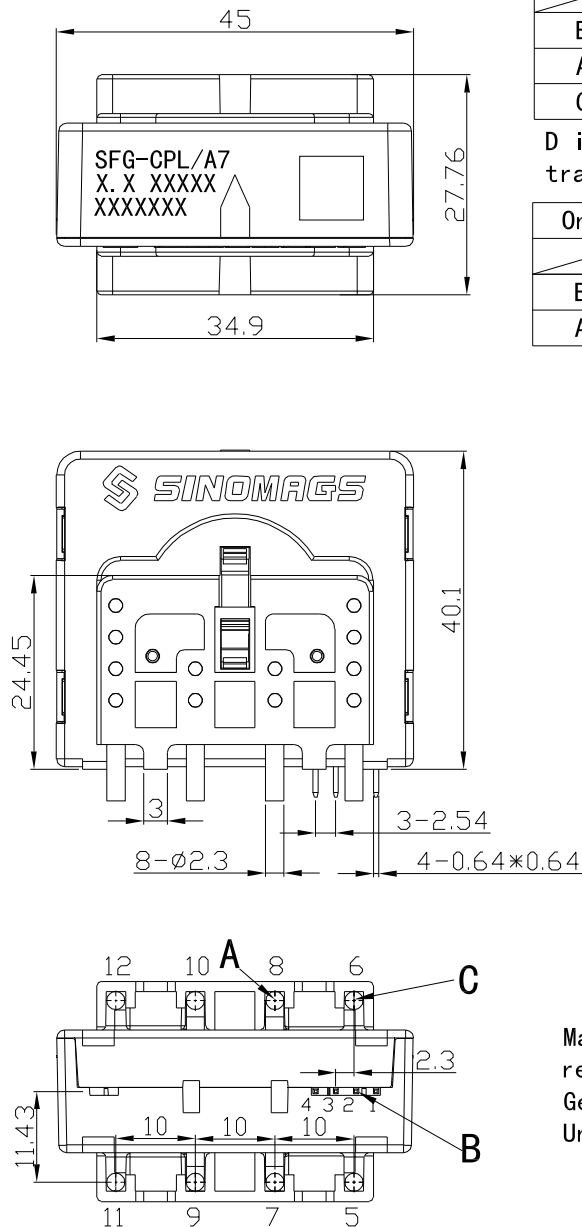
### Self-check Timing Diagram



### Interrupting Time (IEC62752 & IEC62955)



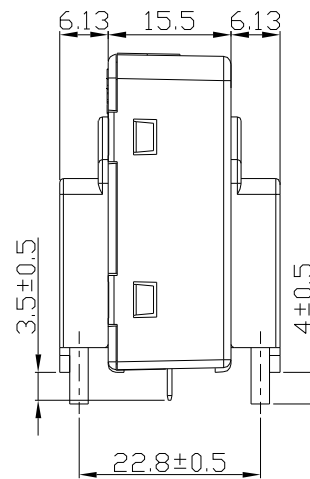
## 5. Dimensions (in mm)



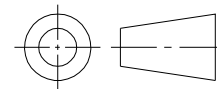
|     | D <sub>CI</sub> | D <sub>CP</sub> |
|-----|-----------------|-----------------|
| B-C | 10              | --              |
| A-C | 7.7             | 9               |
| C-D | --              | >14             |

D is secondary inside the transducer

| On the customer's PCBA |                 |                 |
|------------------------|-----------------|-----------------|
|                        | D <sub>CI</sub> | D <sub>CP</sub> |
| B-C                    | 8               | 8               |
| A-C                    | 5.3             | 5.3             |



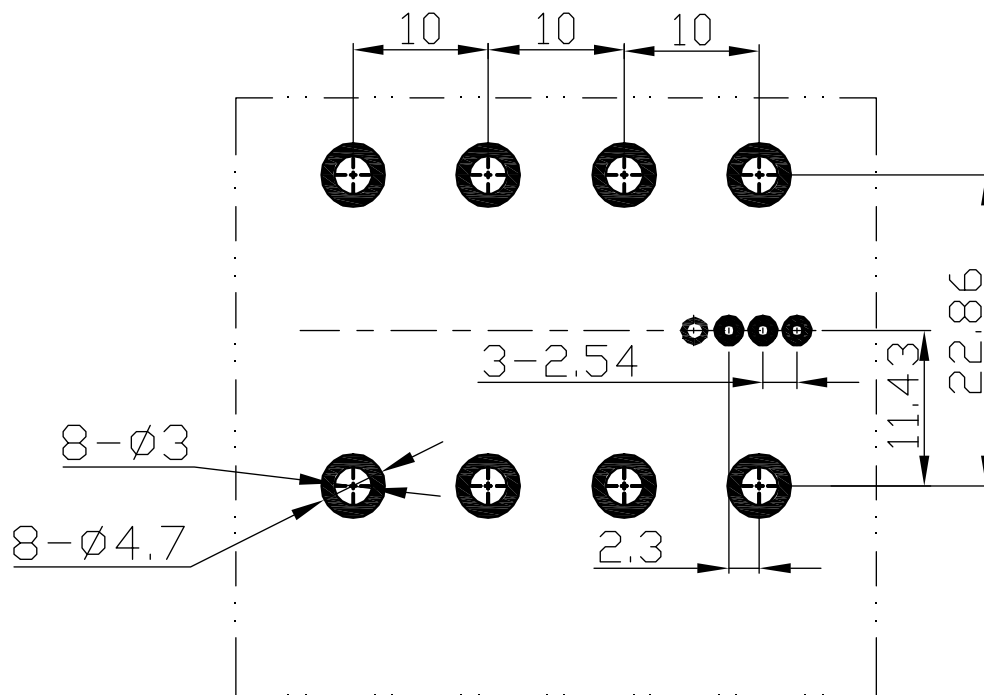
Material : Fit UL94V-0 & RoHS requirements ;  
 General tolerance :  $\pm 0.5$   
 Unit : mm



### Pin Definition

| No.  | Symbol | Description               |
|------|--------|---------------------------|
| 1    | Vo     | High and low level output |
| 2    | GND    | Power GND                 |
| 3    | VCC    | Power supply              |
| 4    | CHK    | Product Self-Check input  |
| 5-12 | IP     | Primary current           |

## 6. SFG-CPL/A7 Assembly on PCB



- Maximum PCB thickness 2.4mm
- Wave-soldering: 260°C @ 10 s
- Recommended PCB hole diameter 1.2 mm for secondary pin.