

CURRENT SENSOR

PRODUCT SERIES: SFG-X.XCPL/A

PRODUCT PART NUMBER: SFG-0.3CPL/A6

REVISION: Ver 1.3



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CONTENT

1.	Description	2
2.	Absolute parameter	3
3.	Electrical data	4
4.	Application information	5
5.	Dimensions (in mm)	7

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
- IEC 61851
- UL1741 UL508 UL94-V0

2. Absolute parameter

Absolute maximum ratings

Parameter	Symbol	Unit	Min	Typ	Max
Supply voltage	V _c	V			5.5
Ambient operating temperature	T _A	°C	-40		105
Ambient storage temperature	T _A	°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 _d	kV	3
Impulse withstand voltage 1.2/50μs	V _w	kV	7
Lightning surge current 8/20μs	I _{LS}	kA	5
Comparative tracking index	CTI	V	600
Application example	-	V	600,CAT III,PD2

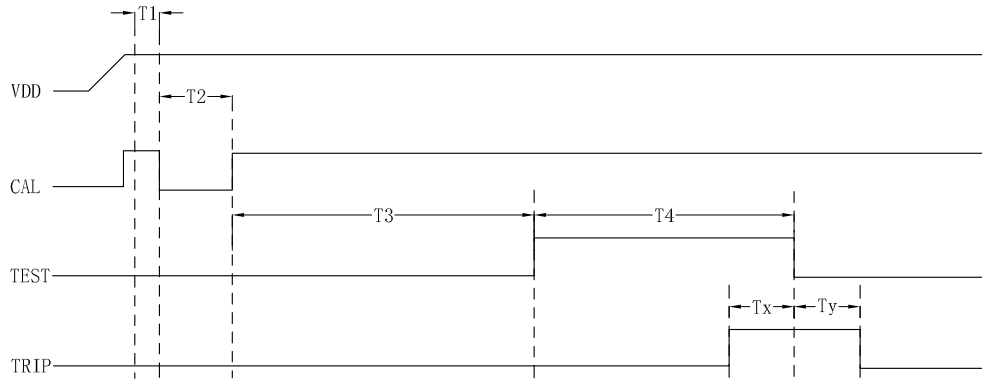
3. Electrical data

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	

4. Application information

Self-check Function



>VDD power on speed $\leq 5\text{ms/V}$

> $T1 \geq 100\text{ms}$

> $50\text{ms} \leq T2 \leq 100\text{ms}$ and the low-level time of the CAL pin exceeds 50ms, the product begins to enter the zero calibration stage

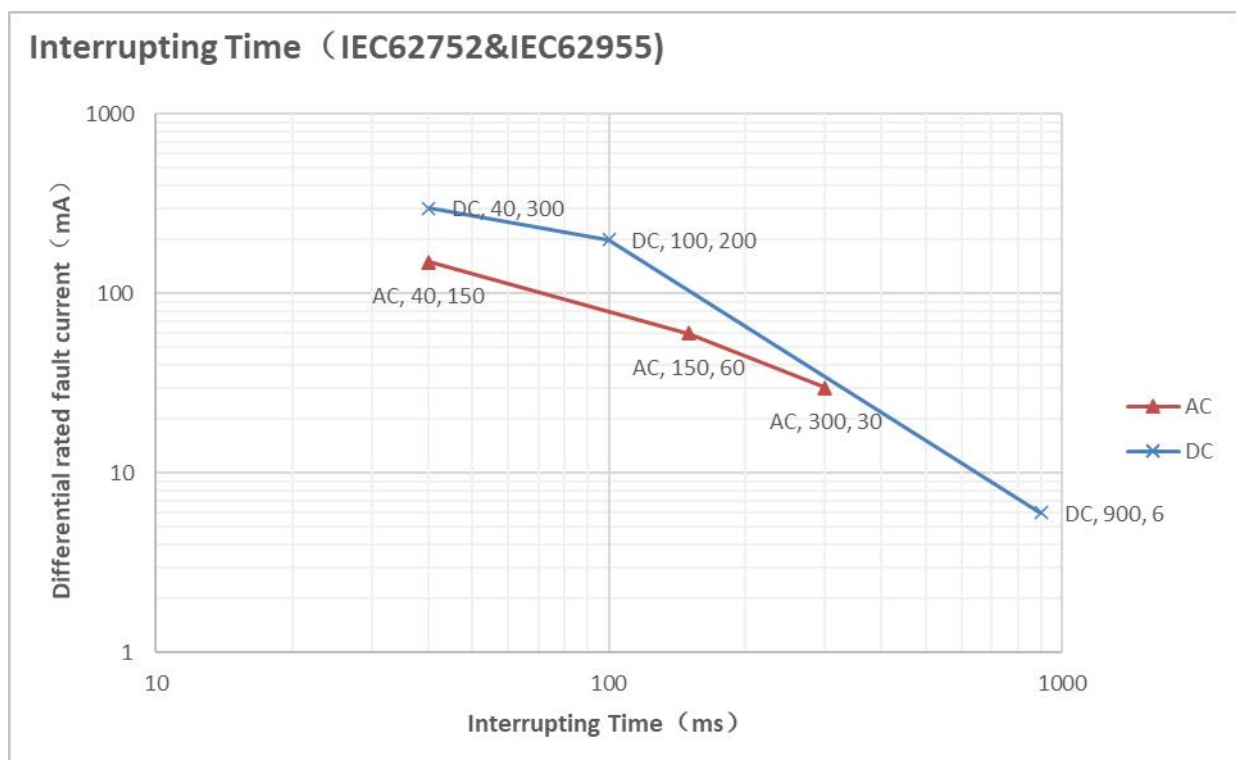
> $T3 \geq 500\text{ms}$, waiting for zero calibration completion

> $T4 \approx 400\text{ms}$, and the Test self test signal must be enabled until T3 is completed before it can be applied

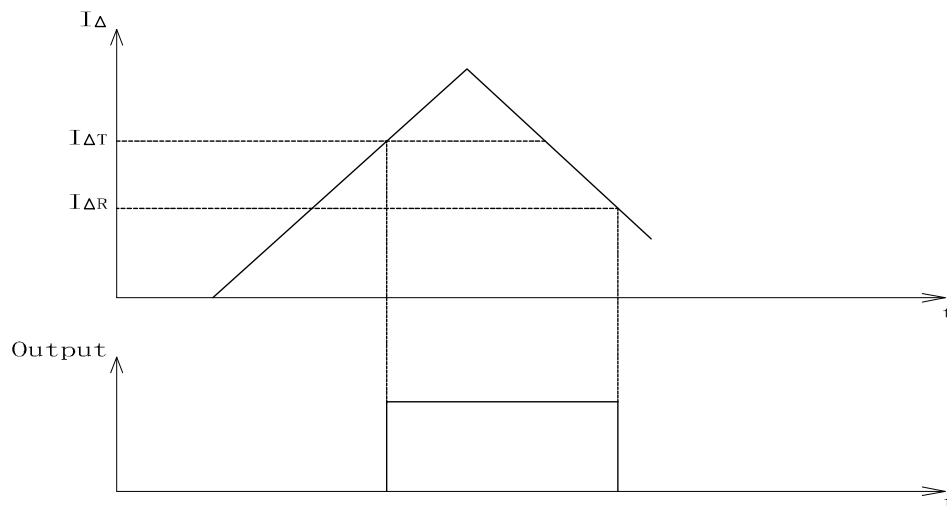
>TRIP pin output high level duration $T_x=100\text{ms}$ (verify self check function)

> $T_y=100\text{ms}$ is the high-level fading time of the TRIP pin (self checking function verification is prohibited)

Interrupting Time (IEC62752 & IEC62955)



Digital signal flipping threshold



>To minimize the digital signal output jitter caused by unstable residual current

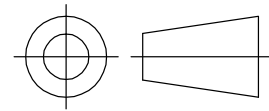
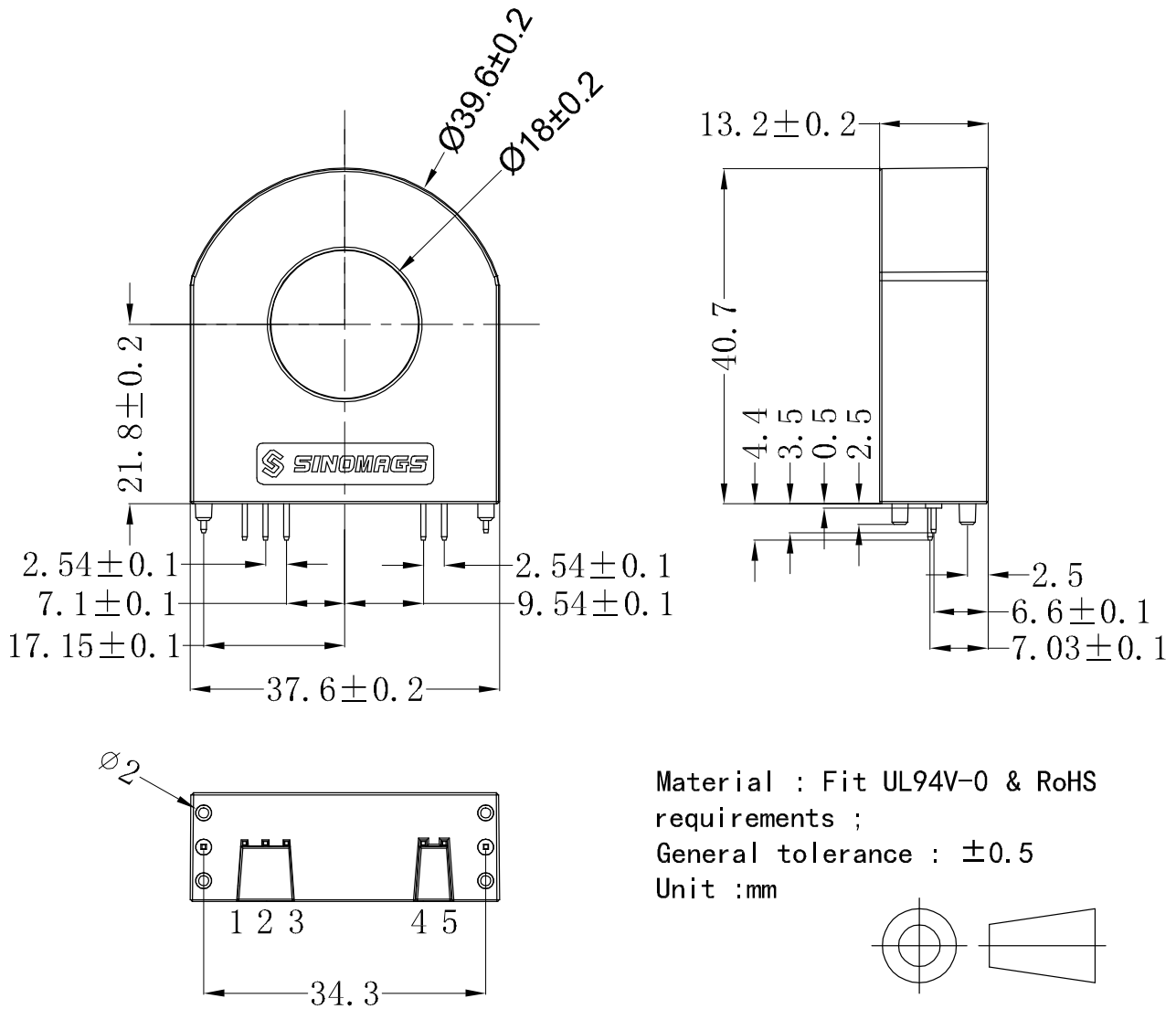
The digital logic output pins of the product are designed with flip threshold settings

>When the tripping threshold of $I_{\Delta T}$ is reached, the TRIP pin flips, while the remaining current

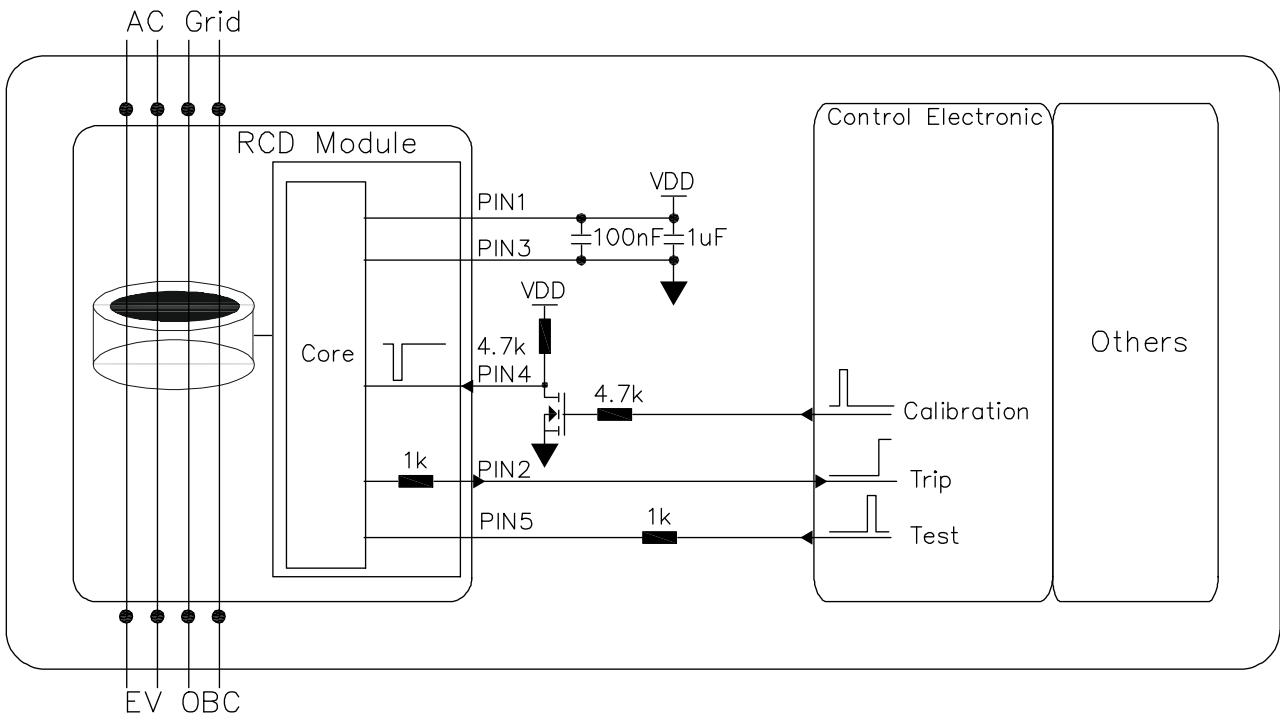
When the recovery threshold is lowered to $I_{\Delta R}$, the TRIP pins are flipped back to their normal state

>The $I_{\Delta T}$ set value is 100% of the typical action value, and the $I_{\Delta R}$ set value is 55% of the typical action value

5. Dimensions (in mm)



Pin Definition



No.	Symbol	Function Description
PIN-1	VCC	>Product power supply pin, standard power supply voltage 5VDC, power ripple $\leq 150\text{mV}$ >The input voltage range is required to be 4.85-5.15VDC, and the power output capacity should be $>100\text{mA}$
PIN-2	TRIP	>Product action signal output pin >When residual current in the circuit is detected to exceed the threshold, the output level changes from low to high
PIN-3	GND	>Product power grounding pin
PIN-4	CAL(Calibration)	>Product calibration command input pin >When the pin is pulled down to a low level for 50-100ms and then restored to a high level, the product enters calibration mode >When using this pin function, it is generally necessary to ensure that the charging circuit is disconnected during the self check process of the charging station startup . On to prevent residual current in the circuit from affecting the zero calibration effect during the zero calibration process >When using this pin, be sure to design according to the recommended timing logic
PIN-5	TEST(Selfcheck)	>Product self check input pin >Before starting the charging process, conduct a simulation test on the product using this pin to verify if its functionality is normal