

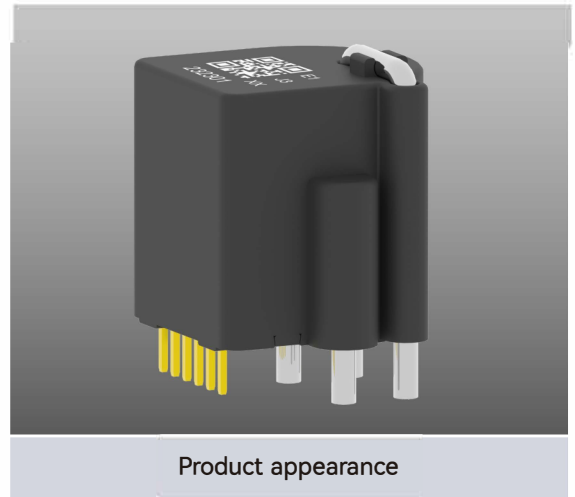
# RCJ40-E12SS

## Features

- > Dedicated B type for charging piles and compatible with the A+6 type onboard residual current protection module
- > All-in-One highly integrated digital residual current action indicator

## Standard

- > Meets the requirements of GB/T 40820 (IEC 62955) for the residual current operation characteristics of the mode three charge RDC-PD
- > Meet the requirements of GB/T 22794 (IEC 62423) basic residual current operation characteristics, and adapt to DC 6mA test requirements



Product appearance

### Trip-Current (residual current related characteristics)

Waw.	Freq.	Min.	Typ.	Max.	Unit
AC	50Hz	15.0	25.2	30.0	mA
A0	50Hz	10.5	30.0	42.0	mA
A90	50Hz	7.5	30.0	42.0	mA
A135	50Hz	3.3	35.0	42.0	mA
2PDC	50Hz	3.5	5.4	7.0	mA
3PDC	50Hz	3.1	5.1	6.2	mA
S-DC	-	3.0	5.1	6.0	mA
F	-	15.0	40.0	42.0	mA

### Trip-Time (residual current related characteristics)

Waw.	Freq.	Current	Typ.	Unit
AC	50Hz	30mA	110.0	ms
AC	50Hz	60mA	70.0	ms
AC	50Hz	150mA	20.0	ms
AC	50Hz	500mA	20.0	ms
AC	50Hz	420mA	15.0	ms
A0	50Hz	42mA	100.0	ms
A0	50Hz	84mA	25.0	ms
A0	50Hz	350mA	20.0	ms
A0	50Hz	42mA+6mADC	50.0	ms
A0	50Hz	84mA+6mADC	25.0	ms
A0	50Hz	350mA+6mADC	25.0	ms
2PDC/3PDC	50Hz	60mA	45.0	ms
2PDC/3PDC	50Hz	120mA	20.0	ms
2PDC/3PDC	50Hz	300mA	18.0	ms
S-DC	-	6mA	135.0	ms
S-DC	-	60mA	45.0	ms
S-DC	-	300mA	15.0	ms
F	-	210mA	18.0	ms

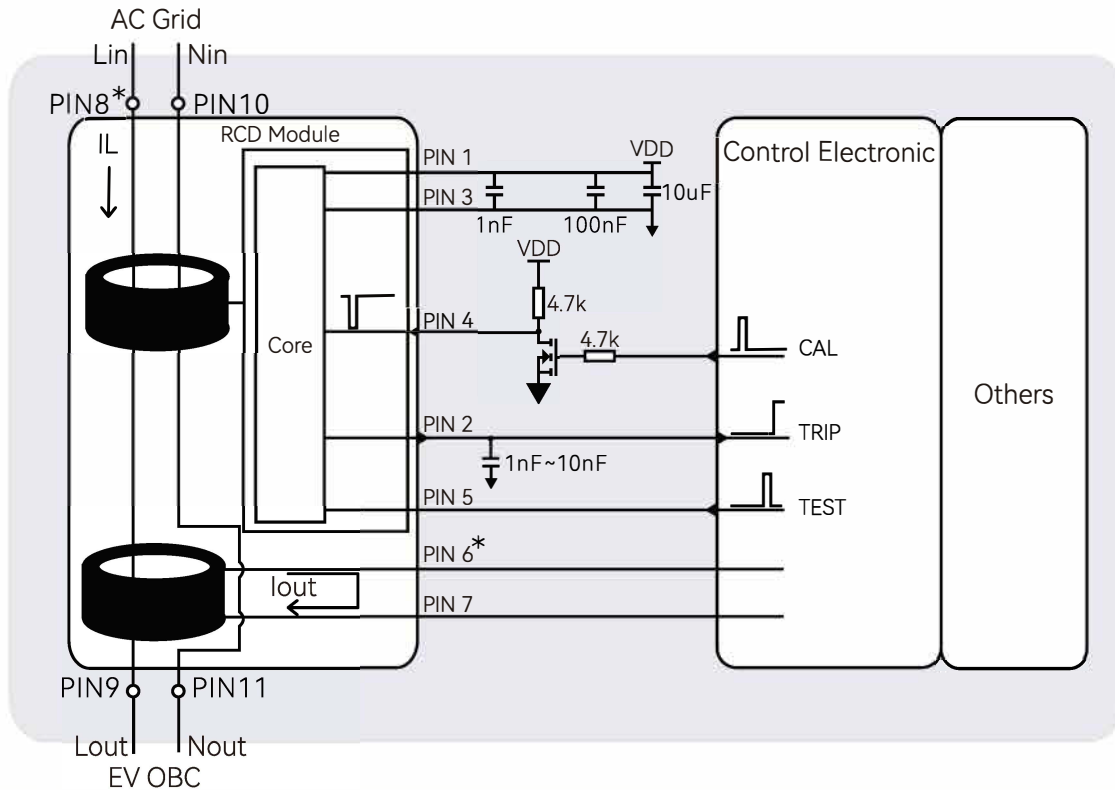
### Electrical & Reliability Characteristics

Char.	Value
Working Temperature	-40°C~105°C
Storage Temperature	-40°C~105°C
Working humidity	≤95%
Supply Voltage (VDD) <sup>(1)</sup>	4.85~5.15 VDC
Consumption	≤110 mW
Voltage Input, low level	0~0.6VDC
Voltage Input, high level	4.2~5VDC

<sup>(1)</sup> It is suggested to control VDD within 4.9~5.1 VDC to get better performance

# RCJ40-E12SS

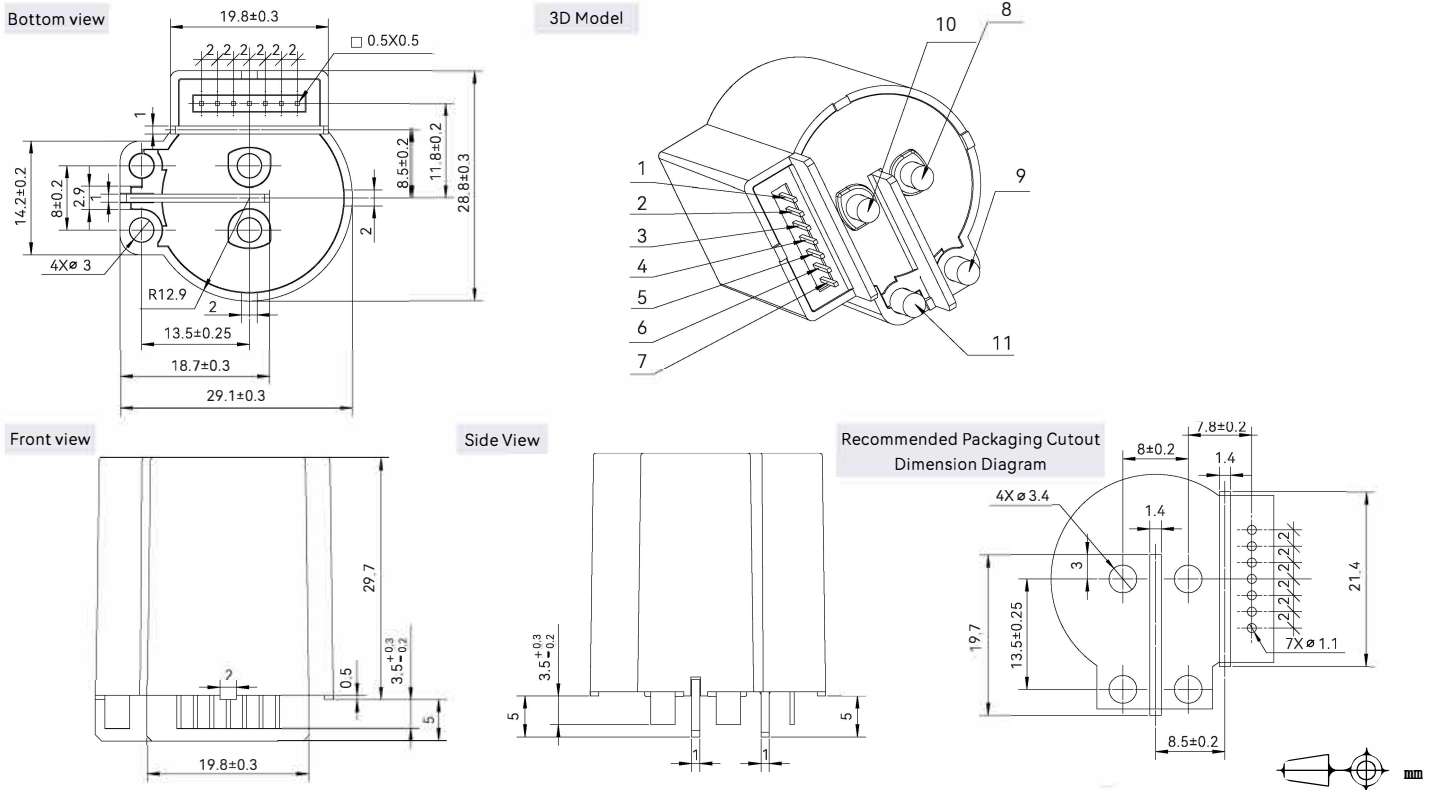
## Typical Application Schematic & Pin Definition



Pin-No.	Pin Name	Function
PIN-1	VDD	<ul style="list-style-type: none"> <li>&gt; Product power supply pin: standard supply voltage 5 VDC, power ripple <math>\leq 150\text{mV}</math>(it is recommended to use an LDO circuit; special attention should be paid to the load response performance of the LDO chip, refer to power chip LP2985A-50DB).</li> <li>&gt; Input voltage range requirements: 4.85~5.15 VDC, power output capability &gt; 100mA</li> </ul>
PIN-2	TRIP	<ul style="list-style-type: none"> <li>&gt; Product action signal output pin:</li> <li>&gt; When residual current exceeding the threshold is detected in the circuit, the output level changes from low to high.</li> </ul>
PIN-3	GND	<ul style="list-style-type: none"> <li>&gt; Product power ground pin</li> </ul>
PIN-4	CAL	<ul style="list-style-type: none"> <li>&gt; Product calibration command input pin:</li> <li>&gt; When this pin is pulled low to a low level for 50~100ms and then returns to a high level, the product enters calibration mode.</li> <li>&gt; When using this pin, please ensure to design according to the recommended timing logic.</li> </ul>
PIN-5	TEST	<ul style="list-style-type: none"> <li>&gt; Product self-test input pin:</li> <li>&gt; Before starting charging, perform a simulated test on the product through this pin to verify that the product functions correctly.</li> </ul>
PIN-6	CT *	<ul style="list-style-type: none"> <li>&gt; Secondary coil output terminal for metering (when current flows from PIN8 to PIN9, the CT induced current flows from PIN6 to PIN7)</li> </ul>
PIN-7	CT	<ul style="list-style-type: none"> <li>&gt; Secondary coil output terminal for metering</li> </ul>
PIN-8	AC Primary	<ul style="list-style-type: none"> <li>&gt; Main circuit connection, recommended connection: Lin</li> </ul>
PIN-9	AC Primary	<ul style="list-style-type: none"> <li>&gt; Main circuit connection, recommended connection: Lout</li> </ul>
PIN-10	AC Primary	<ul style="list-style-type: none"> <li>&gt; Main circuit connection, recommended connection: Nin</li> </ul>
PIN-11	AC Primary	<ul style="list-style-type: none"> <li>&gt; Main circuit connection, recommended connection: Nout</li> </ul>

# RCJ40-E12SS

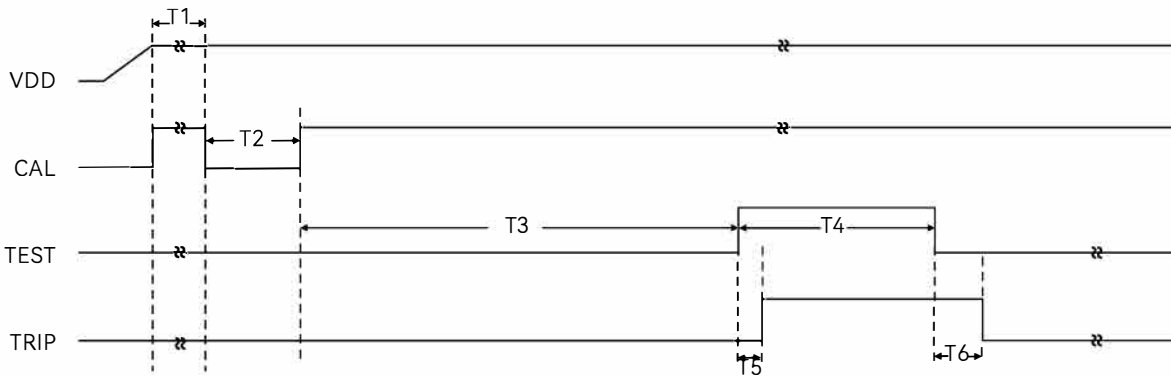
## Product Dimension



\* The limit deviation of unmarked dimensional tolerance shall be in accordance with GB/T 14486-MT5/B

Dimensions in mm

## Timing Diagram

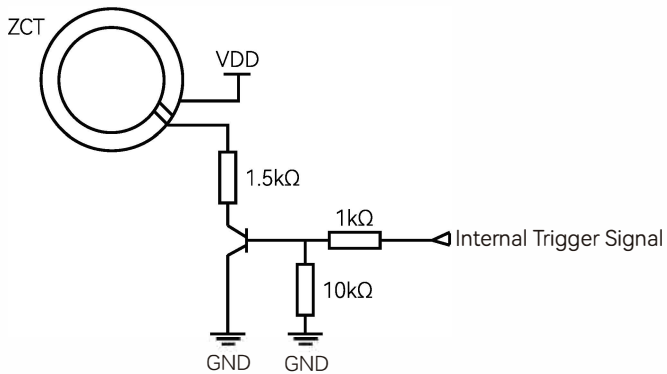


- > It is recommended to start VDD from 0V, with a monotonic power-on process lasting less than 15ms.
- > T1 represents the waiting time after power-on completion; it is recommended that  $T1 \geq 100ms$ .
- > T2 represents the system internal calibration command; it is recommended that  $50ms \leq T2 \leq 100ms$ . When the pin remains low for more than 50ms, the product begins internal calibration.
- > T3 represents the waiting time for calibration completion; it is recommended that  $T3 \geq 500ms$ .
- > T4 represents the self-test signal enabling time; it is recommended that  $T4 \geq 400ms$ .
- > T5 represents the action signal delay time,  $T5 \approx 120ms$ . It is recommended to wait 100ms after T5 ends before detecting the action signal.
- > T6 represents the action signal duration after self-test completion,  $T6 \approx 20ms$ . It is recommended to wait 150ms after T6 ends before detecting the action signal.

Note: During the self-test and calibration process (T1, T2, T3, T4), do not close the main circuit switch to prevent residual currents in the line from affecting the self-test and calibration process. Once the TRIP pin group toggles, it can be determined whether the RCD module is functioning properly for subsequent operations.

## RCJ40-E12SS

## Self-Test Circuit



- > 2 widening on the ZCT to generate simulated DC residual current
- > By using VDD to generate typical value = 6.53 mADC simulated residual current
- > Use the most stringent 6mADC value to detect whether the module can work properly and identify residual current

## Version history

Version number	Modifications	Reason for modification
V0.2.0	The UI of the product specification has been upgraded	