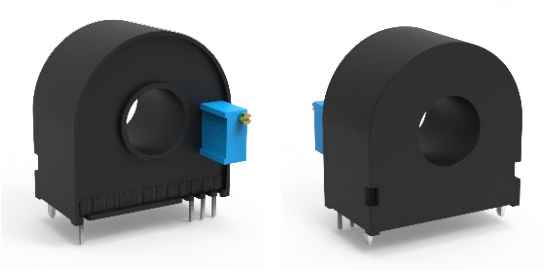
TR3V P02 SERIES

CHIPSENSE

Current Sensor

Model number

TR3V 0.005 P02
TR3V 0.01 P02
TR3V 0.05 P02
TR3V 0.20 P02



RoHS compliant

CE

Used to measure 50Hz AC current,with galvanic separation between the primary and the secondary circuits.

Features

- Ac current sensor based on transformer technology
- DC voltage output
- Insulating plastic case recognized according to UL 94-V0
- High Accuracy
- Very low offset drift over temperature
- Standards:
  - IEC 60664-1:2020
  - IEC 61800-5-1:2022
  - IEC 62109-1:2010

Applications

- Residual AC current measurement
- Wide range of single-phase or three-phase current detection (up to ±100A AC)
- Failure mode detection of current sources
- Symmetrical fault detection (such as at the output end of the inverter)
- AC screen

Safety

This sensor must be used according to IEC61800-5-1.
This sensor must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the following manufacture's operating instructions.

Caution, risk of electrical shock!

When operating the sensor, certain parts of the module can carry hazardous voltage (e.g., Primary busbar, power supply). Ignore this warning can lead to injury and/or cause serious damage.
This sensor is a built-in device, whose conducting parts must be inaccessible after installation. A protective housing or additional shield could be used.
Main supply must be able to be disconnected.

Absolute maximum ratings(not operating)

Parameter	Symbol	Unit	Value
Supply voltage	V_C	V	±18
Primary conductor temperature	T_B	℃	100

※ Using beyond the above voltage limit for power supply may cause permanent damage to the sensor.

Environmental and mechanical characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Ambient operating temperature	T_A	℃	-40		85	
Ambient storge temperature	T_S	℃	-45		105	
Mass	m	g		28		

※ Exposure to the above-mentioned maximum temperature for a long time may reduce the reliability of the product.

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test @ 50Hz,1min	V_d	kV	3	According IEC 60664-1
Impulse withstand voltage 1.2/50μs	V_W	kV	6	According IEC 60664-1
Clearance (pri.- sec.)	d_{Cl}	mm	10	
Creepage distance (pri.- sec.)	d_{Cp}	mm	10	
Comparative traking index	*CTI*	PLC	Group Ⅲa	
Application example	-	-	400V	Reinforced insulation,according to IEC 61800-5-1, IEC 62109-1 CATⅢ, PD2
Application example	-	-	800V	Basic insulation,according to IEC 61800-5-1, IEC 62109-1 CATⅢ, PD2

Electrical data

TR3V 0.005 P02

※ With T_A = 25℃, V_C = ±12V, Output measuring resistance R_L=10kΩ,unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary rated residual current	I_{PN}	mA		5		AC
Primary residual current measurement range	I_{PM}	mA		8		AC
Supply voltage	V_C	V	±12		±15	±5%
Current consumption	I_C	mA		3		@ I_{PN}=0A
Rated output voltage	V_{OUT}	V		5		DC Voltage
Measuring resistance	R_L	kΩ	10			
Theoretical sensitivity	G_{th}	V/A		1000		
Temperature of G	TCG	mV/k		±1.5		@-40℃~85℃
Electrical offset voltage	V_{OE}	mV	-20		20	
Temperature drift of zero voltage@I_P = 0	TCV_{OE}	mV/k		±0.2		@-40℃~85℃
Linearityerror0…I_{PN}	ε_L	%	-1	±0.5	1	
Accuracy@ I_{PN}	X	%	-1	±0.5	1	
Frequency bandwidth	BW	Hz		50		

Electrical data

TR3V 0.01 P02

※ With T_A = 25℃, V_C = ±12V, Output measuring resistance R_L=10kΩ,unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary rated residual current	I_{PN}	mA		10		AC
Primary residual current measurement range	I_{PM}	mA		15		AC
Supply voltage	V_C	V	±12		±15	±5%
Current consumption	I_C	mA		3		@ I_{PN}=0A
Rated output voltage	V_{OUT}	V		5		DC Voltage
Measuring resistance	R_L	kΩ	10			
Theoretical sensitivity	G_{th}	V/A		500		
Temperature of G	TCG	mV/k		±1.5		@-40℃~85℃
Electrical offset voltage	V_{OE}	mV	-20		20	
Temperature drift of zero voltage@I_P = 0	TCV_{OE}	mV/k		±0.2		@-40℃~85℃
Linearityerror0…I_{PN}	ε_L	%	-1	±0.5	1	
Accuracy@ I_{PN}	X	%	-1	±0.5	1	
Frequency bandwidth	BW	Hz		50		

Electrical data

TR3V 0.05 P02

※ With T_A = 25℃, V_C = ±12V, Output measuring resistance R_L=10kΩ,unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary rated residual current	I_{PN}	mA		50		AC
Primary residual current measurement range	I_{PM}	mA		80		AC
Supply voltage	V_C	V	±12		±15	±5%
Current consumption	I_C	mA		3		@ I_{PN}=0A
Rated output voltage	V_{OUT}	V		5		DC Voltage
Measuring resistance	R_L	kΩ	10			
Theoretical sensitivity	G_{th}	V/A		100		
Temperature of G	TCG	mV/k		±1.5		@-40℃~85℃
Electrical offset voltage	V_{OE}	mV	-20		20	
Temperature drift of zero voltage@I_P = 0	TCV_{OE}	mV/k		±0.2		@-40℃~85℃
Linearityerror0…I_{PN}	ε_L	%	-1	±0.5	1	
Accuracy@ I_{PN}	X	%	-1	±0.5	1	
Frequency bandwidth	BW	Hz		50		

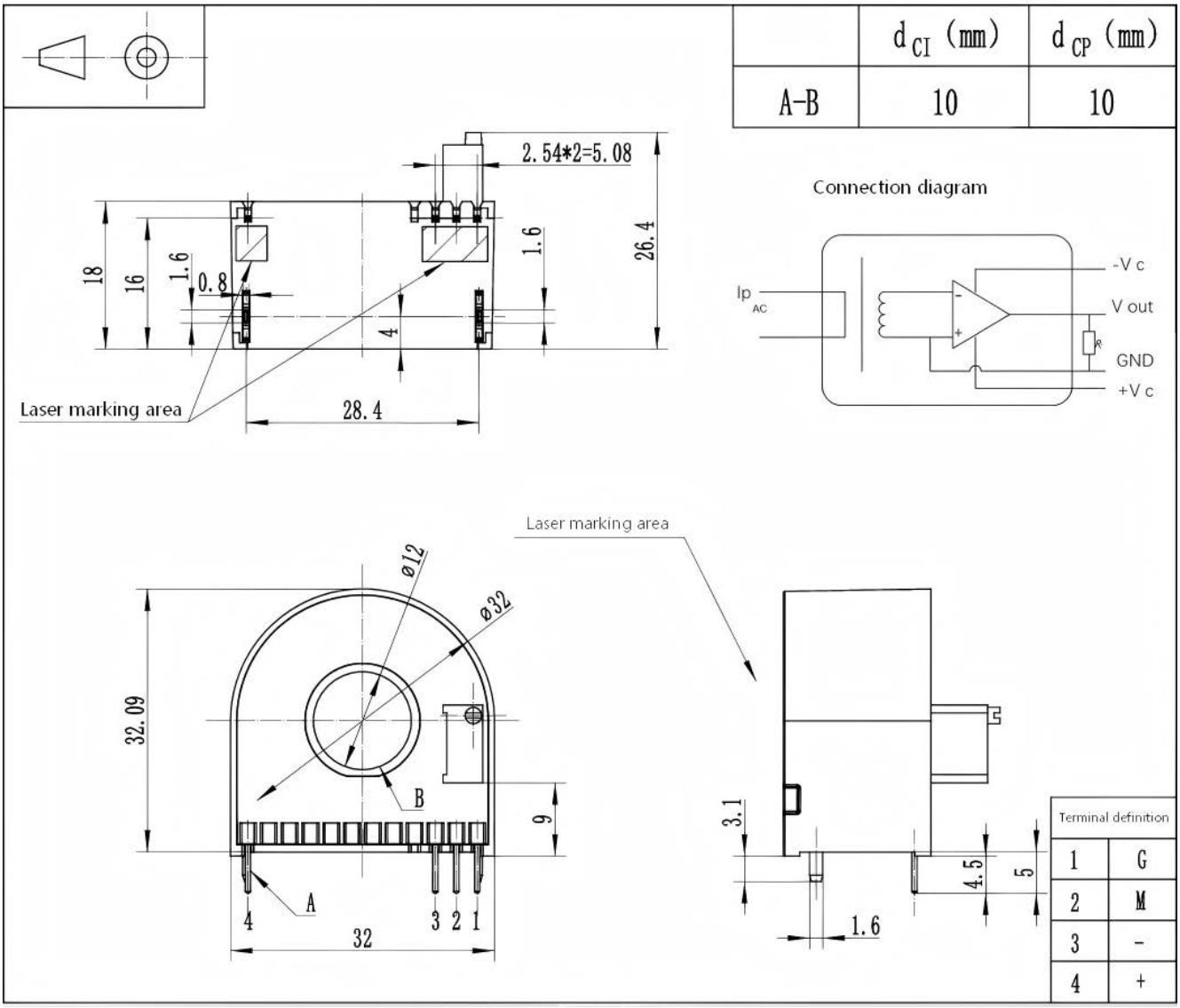
Electrical data

TR3V 0.20 P02

※ With T_A = 25℃, V_C = ±12V, Output measuring resistance R_L=10kΩ,unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary rated residual current	I_{PN}	mA		200		AC
Primary residual current measurement range	I_{PM}	mA		250		AC
Supply voltage	V_C	V	±12		±15	±5%
Current consumption	I_C	mA		3		@ I_{PN}=0A
Rated output voltage	V_{OUT}	V		5		DC Voltage
Measuring resistance	R_L	kΩ	10			
Theoretical sensitivity	G_{th}	V/A		25		
Temperature of G	TCG	mV/k		±1.5		@-40℃~85℃
Electrical offset voltage	V_{OE}	mV	-20		20	
Temperature drift of zero voltage@I_P = 0	TCV_{OE}	mV/k		±0.2		@-40℃~85℃
Linearityerror0…I_{PN}	ε_L	%	-1	±0.5	1	
Accuracy@ I_{PN}	X	%	-1	±0.5	1	
Frequency bandwidth	BW	Hz		50		

Dimensions（in mm. 1 mm = 0.0394 inch）



	d_{CI} (mm)	d_{CP} (mm)
A-B	10	10

Terminal definition	
1	G
2	M
3	-
4	+

Mechanical characteristic

- ✧ General tolerance ±0.3mm
- ✧ Primary hole Φ12mm
- ✧ Suggested PCB wiring dimensions
  - Electrical connection pins 4 x Φ1.2
  - Fixed connection pins 4 x Φ2.0

Remarks

This is a standard model. For different applications (measurement, secondary connections…), please contact CHIPSENSE.