TBC-RC512 Series Closed Loop Mode Hall Effect Current Sensor

TBC-RC512 series current sensor is a closed loop device based on the measuring principle of the hall effect and null balance method, with a galvanic isolation between primary and secondary circuit. It provides accurate electronic measurement of DC, AC or pulsed currents.

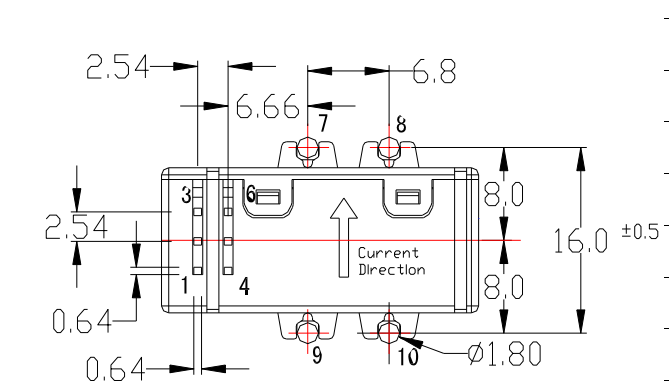
Electrical data (Ta=25℃±5℃)

Parameter \ Type	TBC0.5RC512	TBC1.0RC512	TBC2.0RC512	TBC3.0RC512	Unit
Rated input (Ipn)	±0.5	±1.0	±2.0	±3.0	A
Measure range (Ip)	±0.8	±1.6	±3.2	±4.8	A
Secondary turns (Ns)	333±1	333±1	333±1	333±1	T
Internal resister	200±0.1%	100±0.1%	50±0.1%	33.3±0.1%	Ω
Rated output	±Ip=±Ipn ±1.2±2.0%				V
Supply voltage	+5±5%				V
Power consumption	≤15+Ip/Ns				mA
Reference voltage	+2.5±0.5%(Output)				V
Zero voltage	@ Ip=0 2.5±1.0%				V
Zero voltage drift	≤±0.75 (Typ) ,≤±1.5 (Max)				mV/℃
output drift	≤±0.75 (Typ) ,≤±1.5 (Max)				mV/℃
Linearity	@ Ip=0-±Ipn ≤0.1				%FS
Total precision	≤±5.0				%
di/dt accurately followed	> 5.0				A/μS
Response time	@ Ip=Ipn, 5.0 A/μS ,10%-90% < 3.0				μS
Bandwidth	@-3dB DC-100				KHz
Check current	8.33±10%	166±10%	333±10%	500±10%	mA
Output voltage (Check function)	0.2±1.0%				V
Check enable voltage	2.7 ~ Vc				V
Check disabled voltage	0.2				V
Galvanic isolation	@ 3.0				KV

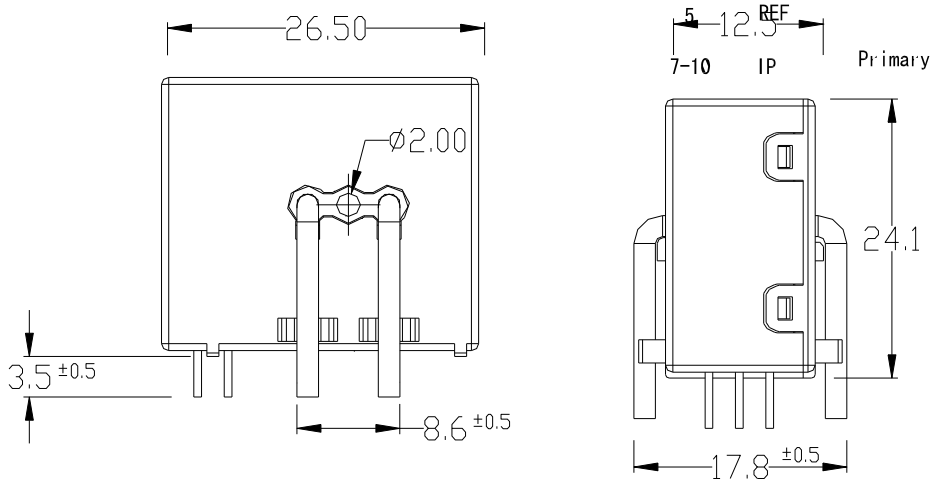
Applications

- AC variable speed drives
- Static converters for DC motor drives
- Battery supplied applications
- Uninterruptible Power Supplies (UPS)
- Switched Mode Power Supplies (SMPS)
- Power supplies for welding applications
- Solar inverters

Mechanical dimension (for reference only)



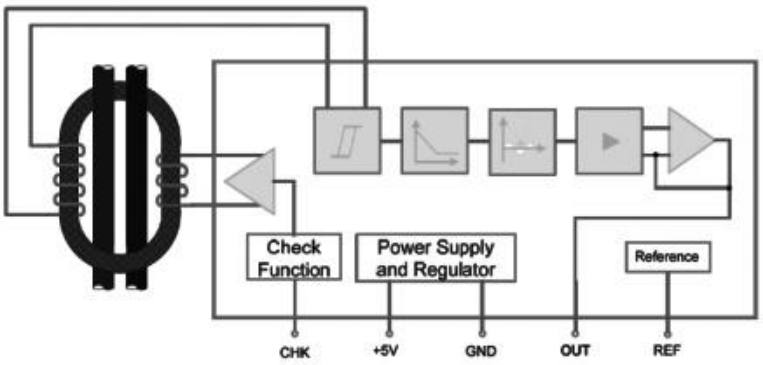
PINS	Symbol	Description
1	VCC	Power supply +5V
2	GND	Power GND
		Product Self-Check
		Reference voltage output
3	VO	Signal output
4	CHK	input
5	REF	
7-10	IP	Primary Current



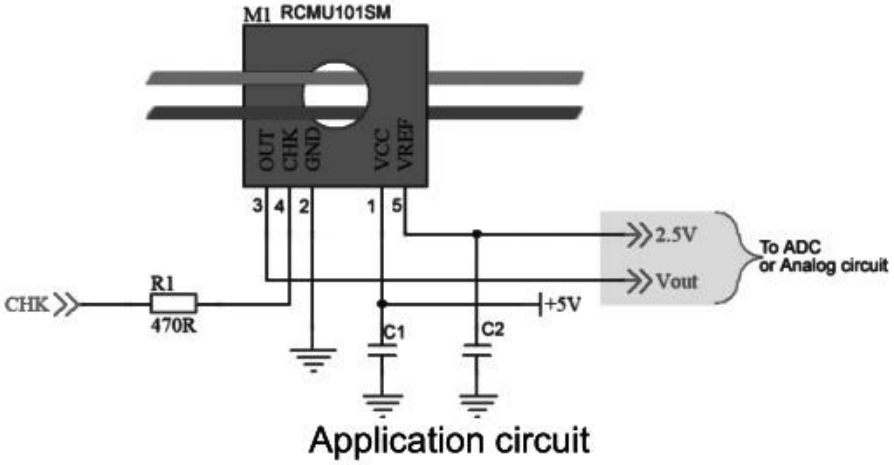
Remarks:

1. All dimensions are in mm.
2. General tolerance ±1mm.

Application circuit



Functional block diagram



Application circuit

Note: C1/C2/D1 should be close to the current sensor's pin

Component selection reference:

Designator	Description
C1	X7R, ≧22uF/16V,±10%,1206
C2	X7R,10uF/16V,±10%,0805

Directions for use

1. When the current will be measured goes through a sensor, the voltage will be measured at the output end. (Note: The false wiring may result in the damage of the sensor)

2. Custom design in the different rated input current and the output voltage are available.

Standards

UL94-V0.

EN60947-1:2004

IEC60950-1:2001

EN50178:1998

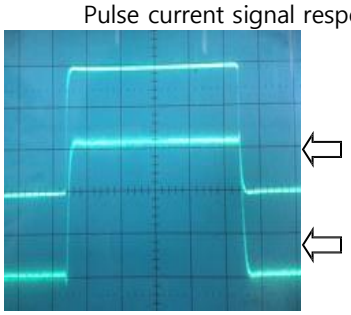
SJ 20790-2000

General data

	Value	Unit	Symbol
Operating temperature	-40 to +85	ºC	TA
Storage temperature	-40 to +125	ºC	TS
Mass (approx)	11.5	g	M

Characteristics chart

Pulse current signal response characteristic



(Input signal)

(Output signal)

Effects of impulse noise

(Output voltage)

Input current-Output Voltage characteristic