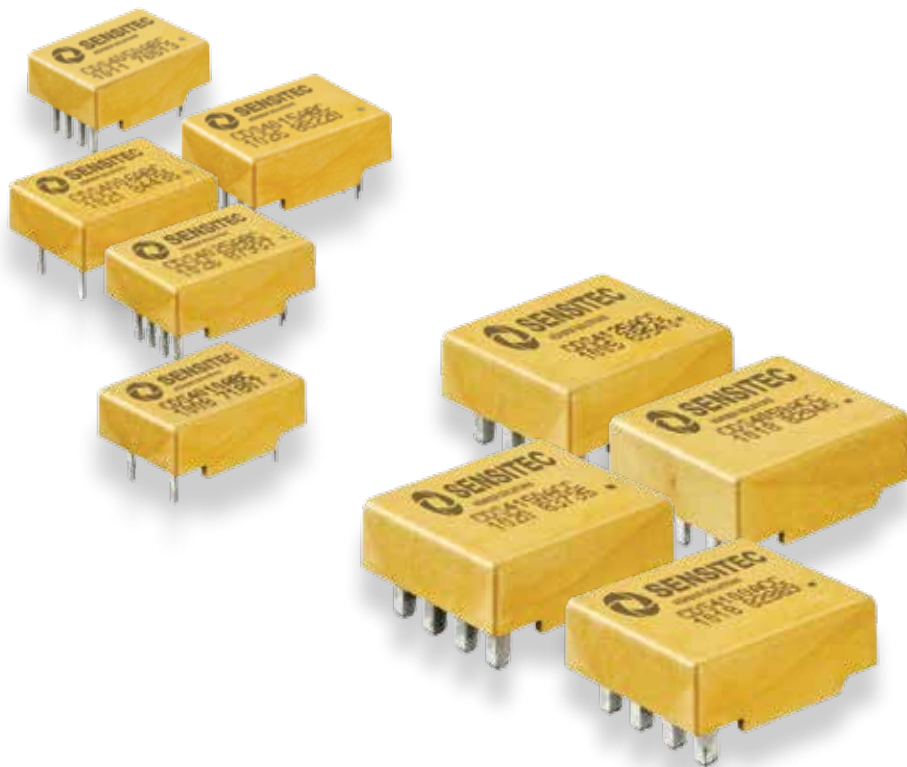


CDS4000 Current Sensors

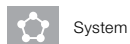
Compact magnetoresistive
sensors for highly accurate
current measurement





CDS4000 Family

Compact AMR Current Sensors with Overcurrent Detection



System



Online at
www.rs-components.de

CDS4000 current sensor
certification according to:



The CDS4000 current sensor family is designed for highly dynamic electronic measurement of DC, AC, pulsed and mixed currents with integrated galvanic isolation. The magnetoresistive technology enables an excellent dynamic response of $< 1 \mu\text{s}$ without the hysteresis that is present in iron core based designs. The measurement signal is linear within a frequency range up to 400 kHz.

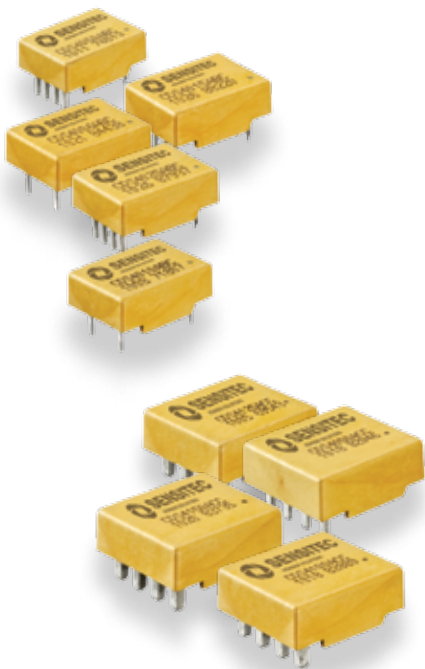
The insulation strength of the sensors is certified according to DIN EN50178, EN61800 and UL508 to allow a system voltage up to 1000 V. The system accuracy can be improved further by using either the internal or an external reference voltage. This further reduces temperature drift and several sensors can share the same reference voltage. The adjustable overcurrent detection enables a fast response in overload situations to prevent damage to power units. The CDS4000 product family offers PCB-mountable THT current sensors from 6 A up to 150 A nominal current for various industrial applications.

Features

- 9 sensor types in the range of 6 A to 150 A nominal
- Measuring range up to 3 times nominal current
- Galvanic isolation between primary and measurement circuit
- Single 5 V power supply
- Adjustable overcurrent detection
- Based on the anisotropic magnetoresistive (AMR) effect
- Ambient temperature range from -40 to $+105 \text{ }^\circ\text{C}$

Applications

- Solar power converters
- AC variable speed drives
- Converters for DC motor drives
- Uninterruptible power supplies
- Switched mode power supplies
- Power supplies for welding applications
- Laser diode drivers
- Resonant circuit power converter



Further Benefits

- 1 **Excellent accuracy**
- 2 **Low temperature drift**
- 3 **Highly dynamic response**
- 4 **Large frequency range**
- 5 **External reference possible**
- 6 **Low primary inductance**
- 7 **Negligible hysteresis**
- 8 **Small and lightweight design**
- 9 **Bus voltage up to 1000 V due to increased insulation strength**

Servo Controller with CDS4006 Current Sensors



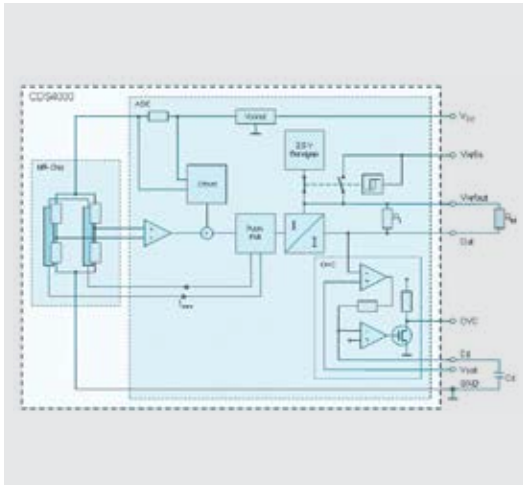
Technical Data

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{CC}	Supply voltage	4.75	5	5.25	V
I_{outN}	Nominal output current (RMS)	-	2	-	mA
I_{CN}	Nominal current consumption	-	50	60	mA
ϵ_{Σ}	Overall accuracy ¹⁾	-	0.8	1.3	% of I_{PN}
f_{co}	Upper cut-off frequency (-1 dB)	200	400	-	kHz
T_{amb}	Ambient temperature range	-40	-	+105	°C
T_B	Busbar temperature	-40	-	+105	°C
Sensor type 6, 10, 25, 50A		Housing size		21.0 x 15.5 x 8.2 mm (L x B x H)	
Sensor type 50, 100, 125, 150A		Housing size		25.0 x 22.0 x 9.7 mm (L x B x H)	

¹⁾ ($\epsilon_{\Sigma} = \epsilon_G + \epsilon_{off} + \epsilon_{lin}$) with $V_{CC} = 5$ V and $T_{amb} = 25$ °C.

The data given in the table are characteristic values. Data sheets with complete technical specifications can be found at www.sensitec.com.

Design and Wiring of CDS4006

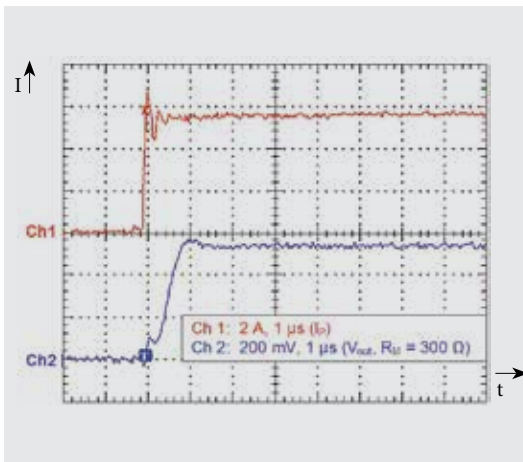


Product Codes

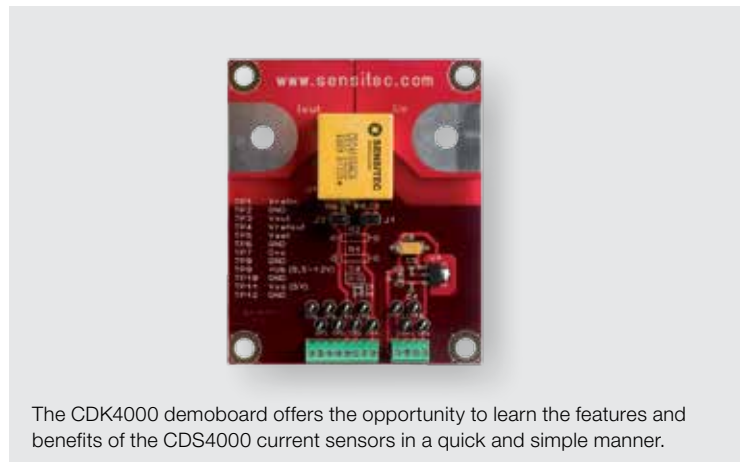
Product code sensor	Product code demoboard	I_{PN} (A)	I_{PR} (A)	Package
CDS4006ABC-KA	CDK4006ABC-KA	6	18	
CDS4010ABC-KA	CDK4010ABC-KA	10	30	
CDS4015ABC-KA	CDK4015ABC-KA	15	45	
CDS4025ABC-KA	CDK4025ABC-KA	25	75	
CDS4050ABC-KA	CDK4050ABC-KA	50	150	
CDS4050ACC-KA	CDK4050ACC-KA	50	150	
CDS4100ACC-KA	CDK4100ACC-KA	100	300	
CDS4125ACC-KA	CDK4125ACC-KA	125	375	
CDS4150ACC-KA	CDK4150ACC-KA	150	450	

I_{PN} : Nominal primary current (RMS), I_{PR} : Measurement range (For 1 s in a 60 s interval; RM = 300 Ω).

Typical Current Transition Response (CDS4006)



CDK4000 Demoboard



The CDK4000 demoboard offers the opportunity to learn the features and benefits of the CDS4000 current sensors in a quick and simple manner.

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