

**DESCRIPTION:**

The SENIS CS-03 series current sensors offer low current sensing with high voltage isolation. SENIS CS-03 sensors incorporate the Melexis MLX91206 high sensitivity Hall IC and a multi-turn coil to further increase sensitivity.

The CS-03 series current sensors utilize a single-ended power supply (+5VDC). The output voltage is ratiometric to the power supply: 10%-90% of the power supply voltage.



Figure 1. CS-03 series current sensor

**KEY FEATURES:**

- Low current Ranges from  $\pm 0.1$  to  $\pm 8.0A$
- High voltage isolation: > 4KV
- Linear and ratiometric analog voltage output:  $2.5 \pm 2.0V$  for +5V Supply
- Accuracy: <2% of FS
- High Frequency Bandwidth: DC to 5kHz
- High Disturbance Immunity
- Low current consumption
- Low input resistance
- Small size: 17mm x 16.3mm x 13mm
- Through hole mounting
- Rugged Package
- Wide Operating Temperature Range: -40 to +80°C
- CE Certified

**TYPICAL APPLICATIONS:**

- Process control
- Application in laboratories and in production lines, etc.
- Due its design the CS-03 sensor can be used in any application that requires continuous current sensing (no time limit)

**STANDARD CONFIGURATIONS AND PART NUMBERS:**

<b>CS0.1A-03</b>	full scale $\pm 0.1A$ , sensitivity 20V/A
<b>CS0.2A-03</b>	full scale $\pm 0.2A$ , sensitivity 10V/A
<b>CS2.0A-03</b>	full scale $\pm 2A$ , sensitivity 1V/A
<b>CS2.5A-03</b>	full scale $\pm 2.5A$ , sensitivity 0.8V/A
<b>CS8.0A-0.3</b>	full scale $\pm 8A$ , sensitivity 0.25V/A

**Special Order Options (minimum quantities apply):**

- Custom Current Ranges
- Unidirectional Configuration: Measures current from 0 to +I<sub>pri</sub>, resulting in doubled input resistance and sensitivity compared to standard bidirectional -I<sub>pri</sub> to +I<sub>pri</sub> configurations.

**MECHANICAL DIMENSIONS AND SCHEMATICS**

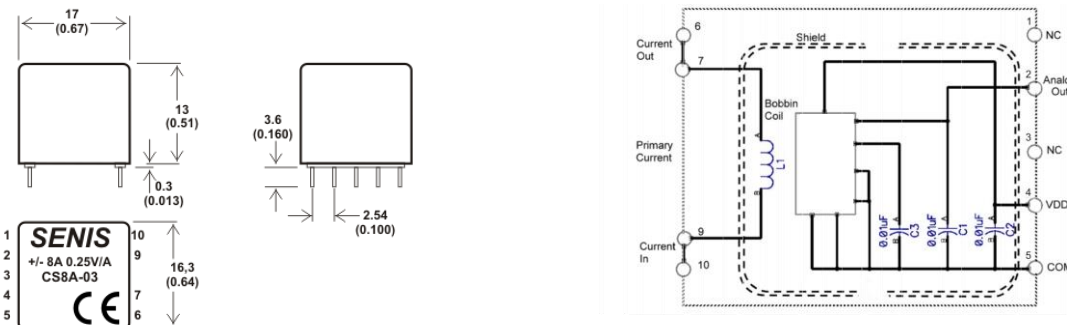


Figure 2. The CS-03 series sensor outline drawing (mechanical dimensions) and pin out description.

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## ELECTRICAL SPECIFICATIONS:

Unless otherwise noted, the given specifications apply at room temperature (23°C) and power supply of +5VDC.

CS-03 Series Parameter		Value			Remarks
		Min	Typ	Max	
<b>Vdd</b> – Supply Voltage		4.5 V	5V	5.5 V	
<b>Idd</b> – Supply Current			9mA	12 mA	
<b>Vout</b> - Analog Output Voltage Range		0.5 V		4.5 V	
<b>Iout</b> - Output Current		-2mA		2mA	
<b>Vq</b> - Quiescent voltage		2.47 V	2.5 V	2.53 V	See note 1
<b>S</b> - sensitivity	<b>CS0.1A-03</b>	19.6 V/A	20 V/A	20.4 V/A	See note 2
	<b>CS0.2A-03</b>	9.8 V/A	10 V/A	10.2 V/A	
	<b>CS2.0A-03</b>	0.98 V/A	1 V/A	1.02 V/A	
	<b>CS2.5A-03</b>	0.784 V/A	0.8 V/A	0.816 V/A	
	<b>CS8.0A-03</b>	0.245V/A	0.25 V/A	0.255V/A	
<b>Ipri</b> - input circuit current	<b>CS0.1A-03</b>	-0.1A	—	+0.1 A	
	<b>CS0.2A-03</b>	-0.2A		+0.2A	
	<b>CS2.0A-03</b>	-2.0A		+2.0A	
	<b>CS2.5A-03</b>	-2.5A		+2.5A	
	<b>CS8.0A-03</b>	-8.0A		+8.0A	
<b>Rin</b> - input resistance	<b>CS0.1A-03</b>		3.54 Ω		
	<b>CS0.2A-03</b>		0.85Ω		
	<b>CS2.0A-03</b>		0.021 Ω		
	<b>CS2.5A-03</b>		0.01 Ω		
	<b>CS8.0A-03</b>		0.0086 Ω		
<b>ΔS/ΔT</b> - sensitivity temperature drift			±200 ppm/°C		
<b>T</b> - operating temperature		-40 °C		+80 °C	
<b>NL</b> - Nonlinearity			0.5 %	1 %	
Accuracy		<2% of FS			
<b>Voff</b> - offset (@ I = 0A)			0.004 V		
Viso - dielectric isolation		≥ 4KV			
Noise Spectral Density @ f > 10 Hz (NSD <sub>w</sub> )	<b>CS0.1A-03</b>	25.9 μV/√Hz			Region of <b>white</b> noise
	<b>CS0.2A-03</b>	23.8 μV/√Hz			
	<b>CS2.0A-03</b>	20.5 μV/√Hz			
	<b>CS2.5A-03</b>	20.4 μV/√Hz			
	<b>CS8.0A-03</b>	24.8 μV/√Hz			
Frequency Bandwidth [f <sub>r</sub> ]		DC to 5 kHz			See note 3
Standards		EN61000-4-2, EN61000-4-3, EN61000-4-8 EN61000-6-2:2008, EN55022:2011 EN50178 clause 9.4.1, 9.4.2, 9.4.3, 9.4.4 and 9.4.5			

note 1: The CS0.1A-03 is programmed as bidirectional current sensor, current through the sensor is I=0A.

note 2: The CS0.1A-03 is programmed as bidirectional current sensor

note 3: The frequency bandwidth is determined by the shape of the sinusoidal output signal, not by sensitivity.