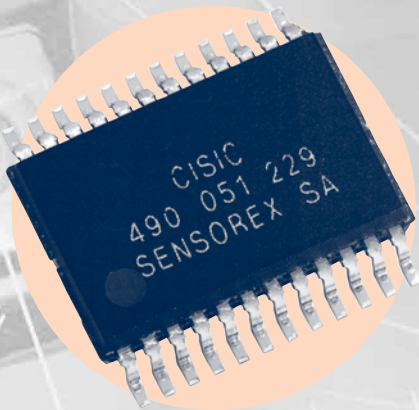


OEM HYBRID INDUCTIVE TRANSDUCER CONDITIONER : CISIC



CHARACTERISTICS

- Internal oscillator and voltage reference
- Voltage output proportional to sensor core position
- Excitation frequency from 200 Hz to 20 kHz
- Sensor phase shift compensation
- Unipolar power supply : 10.5V typ.
- Consumption (without sensor) : 7mA
- Linearity: 0.05% typ.
- Temperature : -40°C to +85°C
- Small size packaging : SSOP24

PRODUCT DESCRIPTION

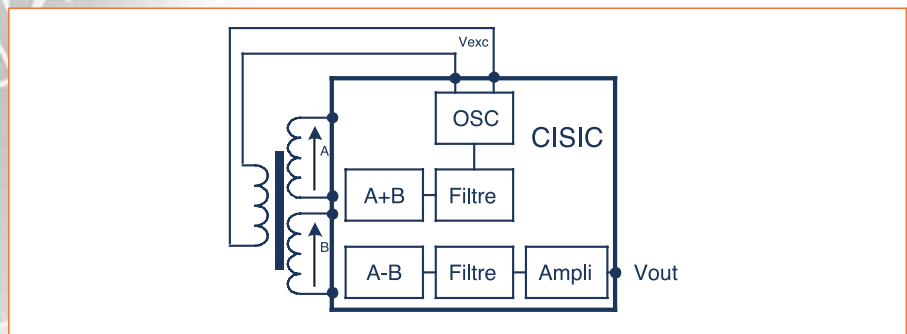
CISIC is an integrated specifically designed for the signal conditioning of inductive displacement LVDT and RVDT sensors.

CISIC has an oscillator with variable frequency and amplitude for excitation of the sensor primary coil, and a demodulator to deliver a continuous output signal, proportional to the core position.

CISIC is used for conditioning off all types of LVDT and RVDT sensors:

- Half bridge (3 wires);
- Differential (4 wires);
- Ratiometric (5 wires and 6 wires)

BLOCK DIAGRAM



CISIC has a control loop which enables delivery of an output signal (in the case of ratiometric sensors) which is proportional to the difference/sum ratio of the two secondary signals.

This demodulation principle enables reduction of the influence of external parameters such as temperature and sine wave generator drifts.

For demodulation of signals from differential (4 wires) and half bridge sensors, this control enables regulation of the excitation voltage V_{exc} , thus cancelling out any possible oscillator drifts.

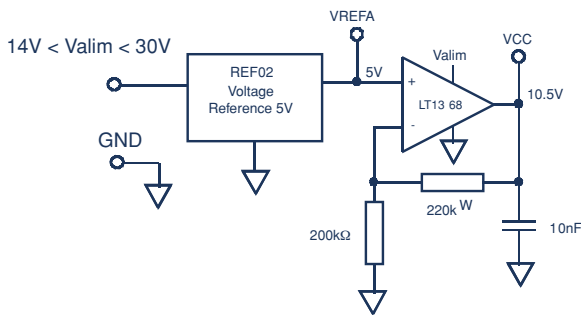
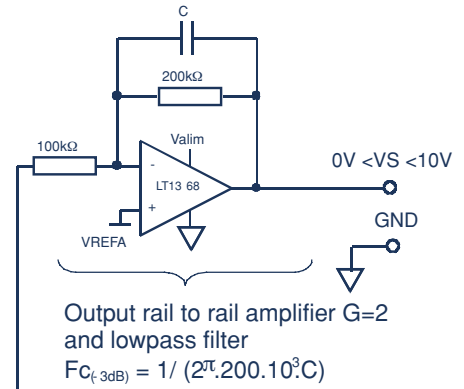
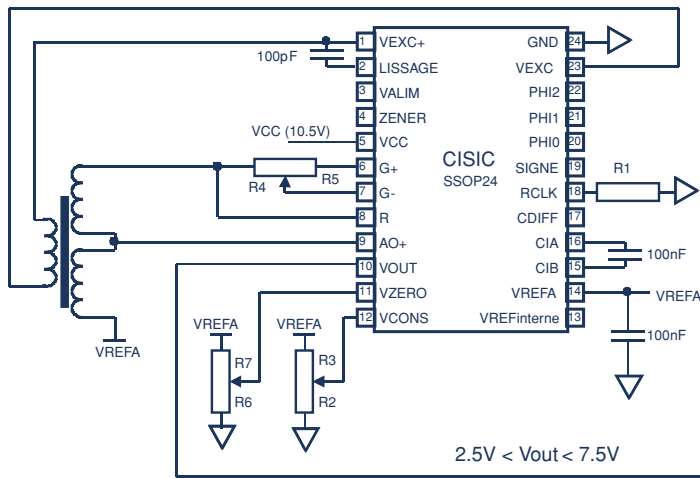
SPECIFICATIONS

Parameter	Symbol	Min	Typ	Max	Unit
Power supply	VAlim	10.3	10.5	10.7	V
Consumption	IAlim		7	9	mA
Internal reference	Vrefinter.	4.4	4.8	5.1	V
Temperature drift	dVrefinter.		+/-150	+/-350	ppm/°C
Excitation LVDT					
Voltage ¹	Vexc	0	2.2	3	V rms
Frequency	Fexc	200		20k	Hz
Excitation current	Iexc			20	mA rms
Peak to peak current	Icc		50		mA
Offset excitation ²	Voffset			+/-25	mV
Amplitude drift ⁷	dA		+/-50	+/-150	ppm/°C
Frequency drift	dF		+/-280	+/-350	ppm/°C
Signal de sortie					
Max voltage	Vout		7.5	9.4	V
Min voltage	Vout	0.05	2.5		V
Output current	Iout			10	mA
Linearity error ³			0.05	0.10	%
Zero thermal drift ⁴	dZ		+/-7	+/-10	ppm/°C
Gain thermal drift ⁵	dG		+/-50	+/-150	ppm/°C
Power supply rejection			80		dB
Output noise	Vb		5	10	mVrms
Bandwidth ⁶				2000	Hz
Operating temperature	T°	-40		+85	°C

Notes :

- 1) $V_{exc rms} = V_{exc+rms} - V_{exc-dc}$
- 2) $V_{offset} = V_{exc+dc} - V_{exc-dc}$
- 3) Maximum deviation of output Vout (at 25°C) in relation to the straight line, determined by the least squares method.
- 4) $dZ = (V_{out}(-40^{\circ}C) - V_{out}(+85^{\circ}C)) / (EM * (85+40))$.
(G=1) Vout referenced in relation to VREFA.
- 5) Gain drift determined at +FS and -FS (FS: Full scale) X.
 $V_{out} = [a_{25} (1 + \alpha(25-\theta))] X$
(X : core rod position).
 a_{25} = gain at 25°C; α = gain drift expressed in ppm/°C.
- 6) Demodulator bandwidth (for Cdiff = 0)
- 7) Drift expressed in relation to signal.

APPLICATION DIAGRAM WITH DIFFERENTIAL SENSOR



Internal generation of CISIC 10.5V supply and 5V reference voltage