

OEM HYBRID STRAIN GAUGE CONDITIONER : HCPJ



DESCRIPTION

The HCPJ hybrid circuit is a strain gauge conditioner.

It consists in an instrumentation amplifier designed to work over a +/-18V (bipolar) or 13.5 to 30V (unipolar) power supply, associated to a low drift voltage reference (5 or 10V), to drive the sensor.

It offers an excellent combination of accuracy, low power consumption and excellent gain performance.

Hybrid technology gives a small volume and size : 9.5 x 3.6mm, and is therefore easy to integrate in any sensor.

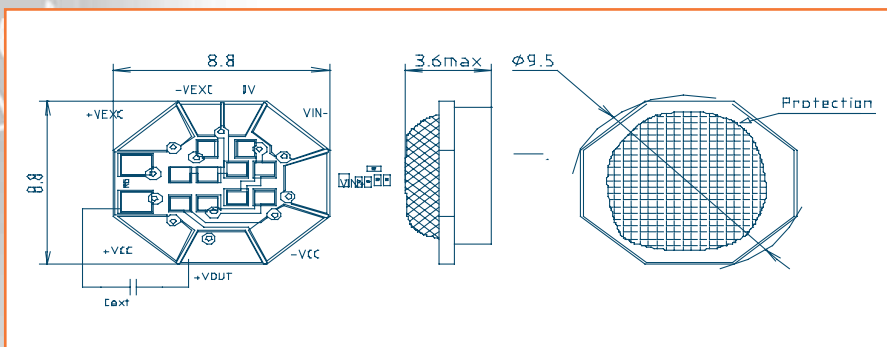
The user can adjust the gain from 1 to 1000V/V, by adding a single « RG » resistance (0805 format).

Bandwidth can be reduced by addition of a « Cext » capacitor.

APPLICATIONS

- Pressure, force and acceleration sensors conditioning.
- Severe environment applications in aeronautic and industrial field where small size is required.

INTERFACE DRAWING



ELECTRICAL SPECIFICATIONS

VPP = ± 15 V ; VCM = 0 V ; OP TEMP. = 25 °C

Parameters	Sym	Condition	Values			Unit
			Min	Typ	Max	
INPUT						
Input Offset voltage	Vio	25°C		80	600	μV
Input impedance				4		GΩ
Common mode rejection	CMRR	G = 100	80	100		dB
Input bias current	Ib	Tmin to Tmax		0.5	5	nA
Offset voltage drift				0.5	6	μV/°C
GAIN						
Gain range	G					V/V
Gain equation	G			G = 100k /Rg	1000	V/V
Gain error		T = 25 °C	1	0.4		%
Gain temperature drift	dG/dT	G = 100		± 50	0.75	ppm/°C
OUTPUT						
Bandwidth	BW	G = 1 (- 3 dB)		0.7		MHz
Output Voltage high	Vouth	RI = 2kΩ Tmin to Tmax	+ V _{alim} - 2	+ V _{alim} - 1.6		V
Output voltage low	Voutl	RI = 2kΩ Tmin to Tmax	+ V _{alim} - 2.5			V
Short circuit limit	Isc			± 20	- V _{alim} + 0.5	V
Power supply rejection	PSRR				- V _{alim} + 0.5	mA
Voltage noise	e _n -p-p	0.1 to 10 Hz	85	0.5		μVp-p
REFERENCE						
Output voltage	+Vexc	HCPJ5V		5	5.1	V
Output voltage	+Vexc	HCPJ10V	4.9	10	10.1	V
Voltage drift			9.9	10		ppm/°C
Load current	Iexc	T min to Tmax			30	mA
POWER SUPPLY						
Power supply voltage	+Vcc	Single supply	13.5		30(*)	V
	+Vcc	Dual supply	13.5		+18	V
	-Vcc	Dual supply	-18		-13.5	V
Power supply current	Icc	T min to Tmax		2	3	mA
TEMPERATURE						
Electrical specification						
Operating temperature	Ta		-40		+85	°C
			-40		+125	°C

(*) With Vpp>20V, the power supply rise time must be longer than 1 msec.

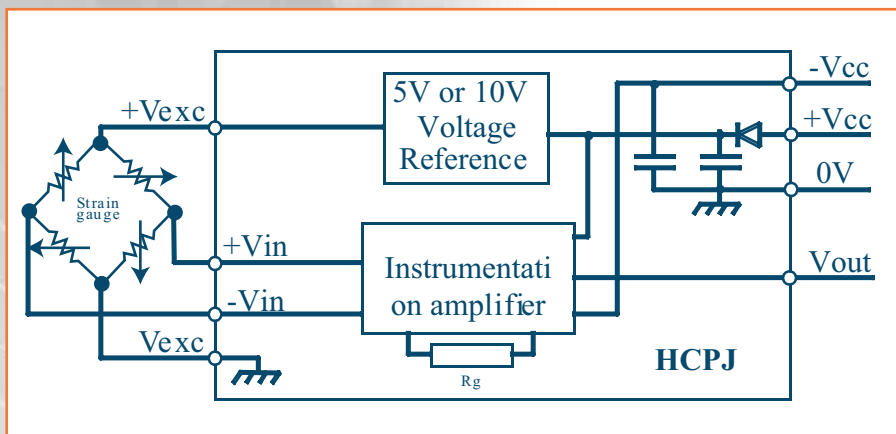
Nb :

HCPJ can be used in unipolar supply with connecting -V power to GND.

$$\text{Cut-off frequency -3dB (first order)} = \frac{1}{2.\pi.(100K\Omega).C_{ext}}$$

HCPJ is an OEM component, and does not have to comply with EMC norms.

APPLICATION & CONNECTION EXAMPLE



SELECTION GUIDE

Reference	Strain gauge excitation voltage
HCPJ-5	5 VDC
HCPJ-10	10 VDC

Also available on request :

- High temperature models, max. 180°C
- 5 or 10V voltage references alone, diameter 6.5 x 3.3 mm
- Instrumentation amplifier alone, diameter 7 x 3.6 mm