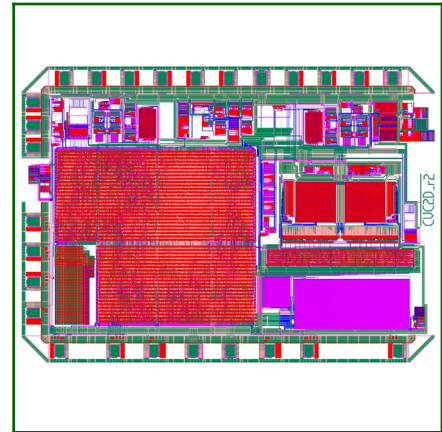


Two-channel charge amplifier

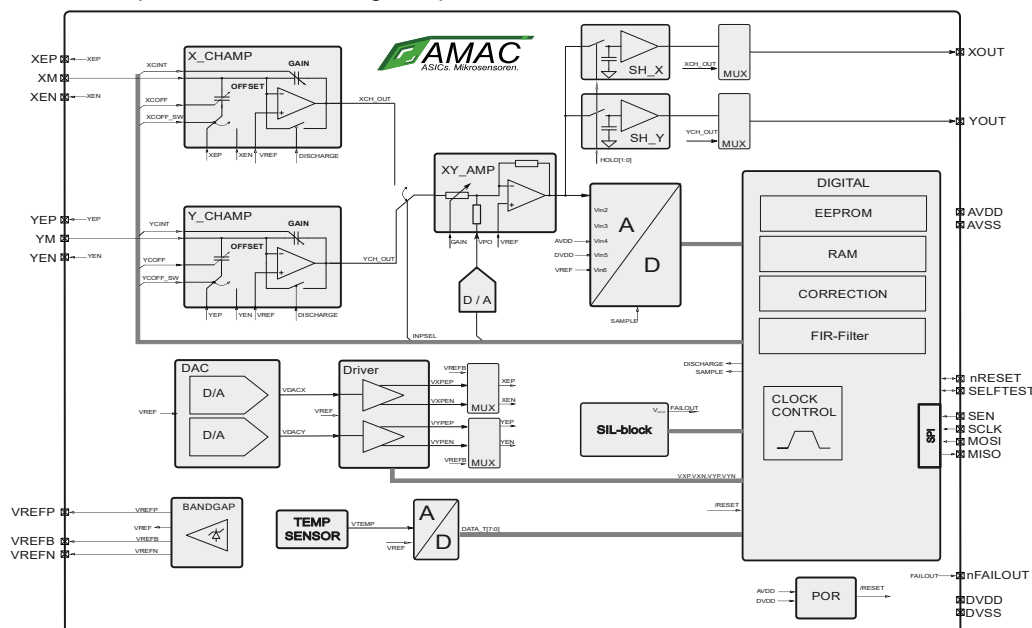
AM-CVC2D

Features

- Sensor controlling/optimization.
- 10 bit DAC for adjustment of the excitation voltages.
- Driver for generation of the recharging voltages for continuous and self-test modes.
- Internal reference voltage via adjustable band gap
- Two charge amplifiers with programmable offset and integration capacitances
- Two sample-and-hold amplifiers for the analogue outputs
- Amplifier for analogue signal before the A/D converter
- 14 bit A/D converter of the analogue signals
- Digital sensor characteristic curves and temperature correction
- FIR filter block of four filters, with up to 31 selectable sampling points per filter
- Digital configuration of threshold detection
- Component for handling SIL-relevant measurements and test cases (self-test after Power-ON, continuous test of two counter phase sensor elements of the same axis)
- Analogue multiplexer for output of analogue voltage, test or reference voltage
- SPI and I²C Interface
- Real-time data transmission from ASIC, SPI master mode
- Power-On-Reset (POR) with configuration from EEPROM
- Internal clock generator
- Internal temperature sensor



The AM-CVC2D is a two-channel charge amplifier with analogue and digital outputs, fully configurable. The IC serves for sensor excitation and charge evaluation. The IC uses as charge input two external capacitive sensors and can be controlled via a serial protocol. The AM-CVC2D consists of a mixed-signal integrated circuit, which is composed of the following components:



Specifications:

Parameter	Characteristic value
Operating voltage:	3.3V, $\pm 5\%$ (DVDD / AVDD)
Current consumption:	$\leq 15\text{mA}$
Operating temperature range:	$-10 \dots +150^\circ\text{C}$
Clock:	Internal RC oscillator set to a nominal frequency of 40 MHz Configurable carrier frequency
Reference voltage: (VREF)	Can be set in 16 steps each of 8 mV (4 bit), nominal 1.2 V
Power On Reset:	Resetting of all registers Loading of configuration from the integrated EEPROM Start time, including EEPROM read-out at 150 KHz: nominal 10.5 ms
Driver for sensor excitation:	Generation of the recharging voltages XEP/XEN and YEP/YEN Voltage are configured symmetrically to VREF = 1.2 V Setting range: $0 V_{PP} \dots \pm 1.5 V_{PP}$ in 0.146mV steps (10 Bit)
Charge amplifier: X_CHAMP, Y_CHAMP	Internal configurable integration capacitor Adjustment range 0,1pF – 12,8 pF in steps of 100fF Tolerance $C_{\text{intern}} \pm 20\%$, $C_{\text{ges}} < 100\text{pF}$ ($C_{\text{int}} + C_{\text{sensor}}$) Offset compensation for sensor $\Delta C_{\text{MAX}}: \pm 3,2\text{pF}$ in steps of 25fF Parallel resistor of sensor $R_{\text{ISO}} > 20\text{M}\Omega$

Ordering information:

Please send requests by email to info@amac-chemnitz.de or call us at +49 371 33 42 04 – 0.