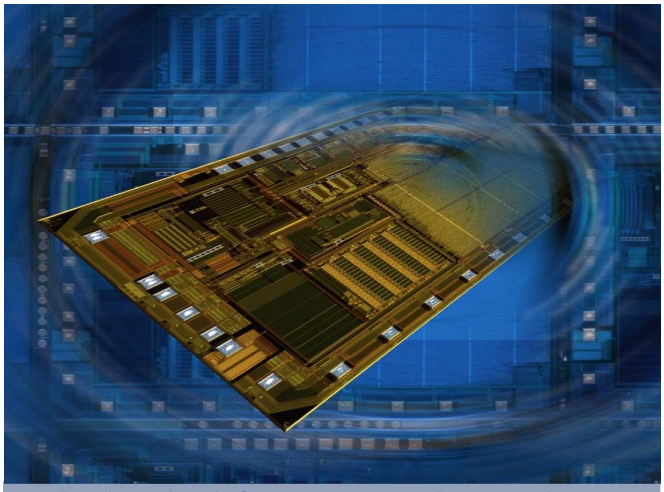
Automotive Electronics

Product Information
Evaluation Circuit for Sensor Impedance Ratios – CC215

BOSCH
Invented for life



Evaluation Circuit for Sensor Impedance Ratios
Replacement for CC212

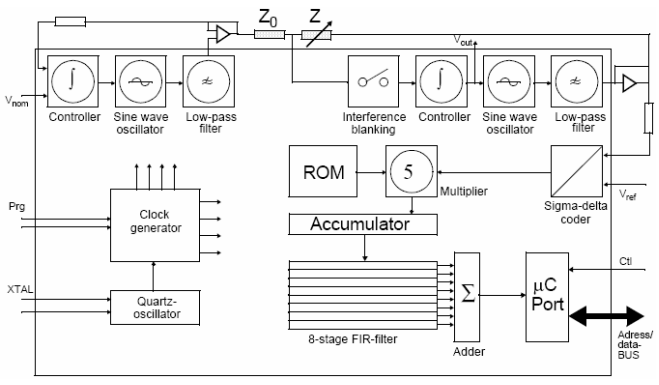
The integrated circuit CC215 evaluates the ratio of two sensor impedances using the AC bridge- principle.
The sensor impedances Z, Z_0 are supplied from two antiphase sine wave signals (10 kHz). The reference generator produces constant amplitude U_0 at Z_0, the second generator sources impedance Z with variable amplitude $A_0 = U_0 Z/Z_0$. The control voltage is used as analog output signal.
For A/D-conversion a second order SD-Coder with an over sampling rate of 128 is implemented. The resulting bit stream is decimated by a 128 stage FIR filter. The following filter stage calculates the moving average over 8 periods (10 kHz). This value is available at a 12 bit parallel interface.
On-line error control recognizes cable breakage and short circuits at the sensor connections, out-of-range conditions and overflow of the adders.

Interference blanking is available to eliminate impulse noise on the sensor connections. Blanking is activated by µC or special hardware. The time constant of blanking can be modified in 8 steps. The IC is controlled by a BUS-test and a failure flag memory. The flags appear between two sensings. They are deleted after each sensing.

Customer benefits:

- Excellent system know-how
- Smart concepts for system safety
- Secured supply
- Long- term availability of manufacturing processes and products
- QS9000 and ISO/TS16949 certified

Block diagram



Electrical characteristics

Parameter	Test Conditions	Symbol	Min.	Max.	Unit
Supply voltage		VDD, A, P	4.5	5.5	V
Supply current	VDD, A, P =5V	IDD		40	mA
Supply current	VDD, A, P =5V	IDDA		80	mA
Supply current	VDD, A, P =5V	IDDP		load dep.	mA
Operating temperature		T_J	-40	125	Deg C
Input current; Pins without Pull-up/ downs	VDD, A, P =5V	II		10	µA
Input capacitance		CI		10	pF
Digital H-Level	VDD, A, P =5V	V_{IH}	2.5		V
Digital L-Level	VDD, A, P =5V	V_{IL}		0.8	V
Output H-Level	VDD, A, P =5V; I= -1mA	V_{OH}	3.75		V
Output L-Level	VDD, A, P =5V; I= -1mA	V_{OL}		0.45	V
Digital range	Nominal	$D_{0...11}$	2C8	C83	Hex
Linear error digital	Offset, gain			+/-3	%
Ripple digital				+/-5	LSB
Temperature drift digital				+/-0.04	LSB/K
Analog range	Nominal	V_{Nom}	1.0	4.5	V
Linear error analog	Offset, gain			+/-3	%
Ripple analog				+/-5	mV
Temperature drift analog				+/-80	µV/K

Contact

Robert Bosch GmbH
Sales Semiconductors
Postbox 13 42
72703 Reutlingen
Germany
Tel.: +49 7121 35-2979
Fax: +49 7121 35-2170

Robert Bosch Corporation
Component Sales
38000 Hills Tech Drive
Farmington Hills, MI 48331
USA
Tel.: +1 248 876-7441
Fax: +1 248 848-2818

Robert Bosch K.K.
Component Sales
9-1, Ushikubo 3-chome
Tsuzuki-ku, Yokohama 224
Japan
Tel.: +81 45 9 12-83 01
Fax: +81 45 9 12-95 73

E-Mail: bosch.semiconductors@de.bosch.com
Internet: www.bosch-semiconductors.de