

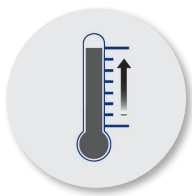
**SENSOR SIGNAL CONDITIONING ICs
FOR INDUSTRIAL, MEDICAL, AND
CONSUMER APPLICATIONS**



EASY-TO-USE SENSOR SIGNAL CONDITIONER ICs

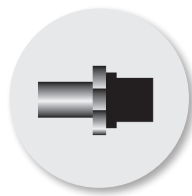
Designing sensor interfaces can be quite challenging and time consuming, and producing them in volume is often expensive due to long test cycles on costly production test equipment. Renesas Sensor Signal Conditioner (SSC) ICs facilitate both design and production of sensor interfaces by providing programmable, highly accurate, wide gain and quantization functions combined with powerful, high-order digital correction and linearization algorithms.

SENSOR SIGNAL CONDITIONING BASICS



SENSOR SIGNAL

- Physical measure
 - Pressure
 - Torque
 - Temperature
 - Force
 - Weight/load



SIGNAL CONDITIONING

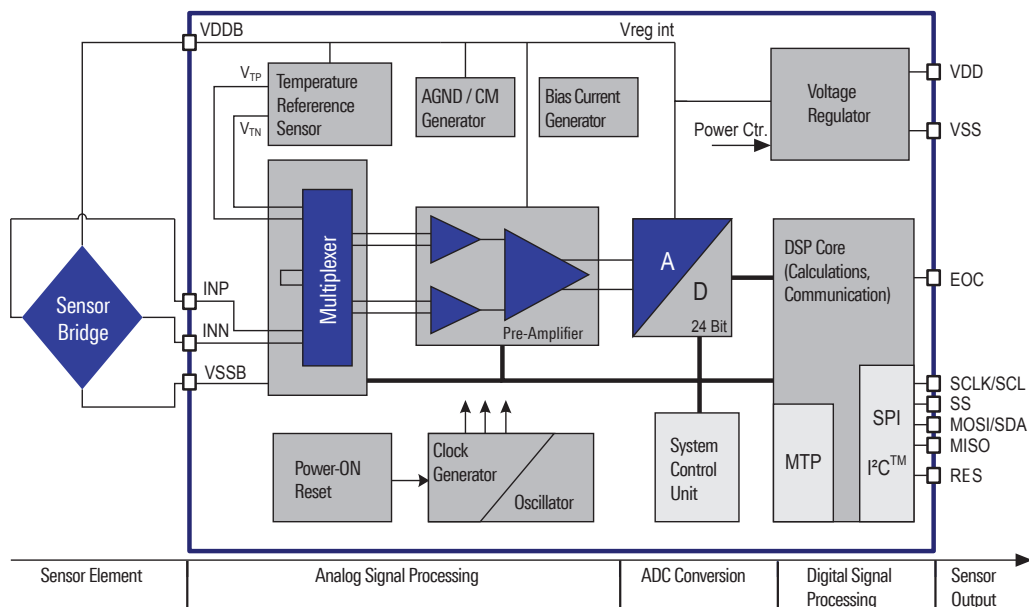
- Signal transducing
- Signal amplification
- Signal conditioning (compensation of offset, non-linearity and temperature dependency)



CONDITIONED OUTPUT

- Linear analog ratiometric voltage, current loop
- Digital PWM, I²C, SPI and OWI output

TYPICAL SSC BLOCK DIAGRAM



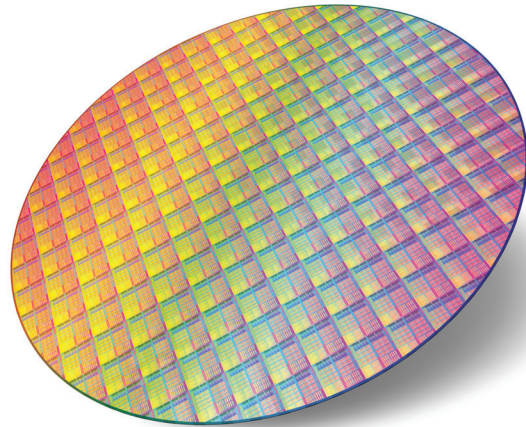
SSC PRODUCT PORTFOLIO

Renesas' Sensor Signal Conditioner ICs typically interface with following main sensor types: resistive bridges, thermopile and differential or absolute capacitors. For each sensor type, further specialization allows selecting the optimal balance between price and performance for the required operating voltage and temperature range, gain, resolution, input/output format, and qualification level.

Our SSC ICs offer digital compensation of sensor offset, sensitivity, temperature drift, and nonlinearity in wide operational temperature ranges: -50°C to $+150^{\circ}\text{C}$ (maximum range).

RENESAS SSC ICs ENABLE EASY SENSOR PLATFORM DEVELOPMENT

- Analog and One-Wire interface
- Digital I²C & SPI output
- Resistive and capacitive sensor interface
- High analog gain for sophisticated sensors
- Industrial and consumer applications
- Low-power and battery-powered applications
- Single-pass calibration
- High ADC resolution up to 24 bit
- Wafer and packaged delivery forms



RENESAS SENSOR SIGNAL CONDITIONERS

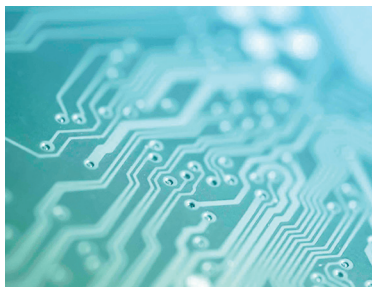
Renesas' SSCs provide an advantage to our customers' sensor modules both in performance as well as in the test and calibration process.

HIGH ACCURACY



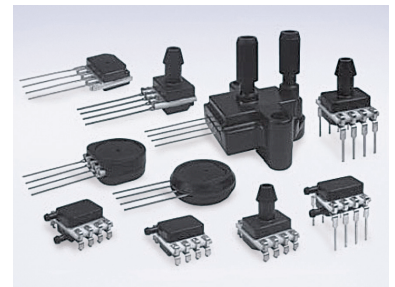
Real resolution – not inflated claims

INTEGRATED SOLUTIONS



No external trimming and single-pass calibration

BREADTH OF PRODUCT



Resistive and capacitive solutions with a variety of output options

INDUSTRIAL AND CONSUMER SSC PORTFOLIO

| Part Number | Type | Voltage | Output | ADC | Package | Typical Application/Features |
|-------------|------------|---------------|----------------|------------|--------------|-------------------------------------|
| ZSC31010 | Resistive | 2.7 to 30 V | Analog/Digital | 14 bit | SOIC, Wafer | Industrial/Analog Sensors |
| ZSC31014 | Resistive | 2.7 to 5.5 V | Digital | 14 bit | SOIC, Wafer | Industrial/I ² C Sensors |
| ZSC31015 | Resistive | 2.7 to 30 V | Analog/Digital | 14 bit | SOIC, Wafer | Industrial/Analog Sensors |
| ZSC31050 | Resistive | 2.7 to 40 V | Analog/Digital | 15 bit | SSOP, Wafer | Industrial/Current Loop |
| ZSSC3026 | Resistive | 1.8 to 3.6 V | Digital | 16 bit | Wafer | Consumer, White Goods |
| ZSSC3036 | Resistive | 1.8 to 3.6 V | Digital | 16 bit | Wafer | Industrial |
| ZSSC3027 | Resistive | 1.7 to 3.6 V | Digital | 16 bit | Wafer | Stacked Die Assemblies |
| ZSSC3018 | Resistive | 1.68 to 3.6 V | Digital | 18 bit | QFPN, Wafer | Industrial/White Goods |
| ZSSC3218 | Resistive | 1.68 to 3.6 V | Digital | 18 bit | QFPN, Wafer | Consumer/White Goods |
| ZSSC3224 | Resistive | 1.68 to 3.6 V | Digital | 24 bit | QFPN, Wafer | Industrial/Consumer |
| ZSSC3240 | Resistive | 2.7 to 48 V | Analog/Digital | 24 bit | QFPN, Wafer | Industrial/Current Loop |
| ZSSC3241 | Resistive | 2.7 to 48 V | Analog/Digital | 24 bit | QFPN, Wafer | Enhanced Industrial |
| ZSSC3281 | Resistive | 1.8 to 48V | Analog/Digital | 2 x 24 bit | PQFN, Wafer | Industrial, Dual Channel |
| ZSSC3123 | Capacitive | 2.3 to 5.5 V | Digital, PDM | 14 bit | TSSOP, Wafer | Industrial |
| ZSSC3230 | Capacitive | 1.68 to 3.6 V | Digital, PDM | 18 bit | PQFN, Wafer | Industrial/Consumer |

SENSOR APPLICATION REFERENCE DESIGNS



Oil pressure and temperature sensor



Pressure sensing in consumer electronics



Industrial pressure sensor



Sensors for white goods

WHY CHOOSE RENESAS SSCS?

Renesas SSC ICs are all-in-one, energy-efficient products that are easy-to-use and are supported by advanced software and expert technical support staff.



Decades of sensor design experience



Excellent evaluation and support tools



Unmatched technical support



Continued investment



Reduced time to market



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