

KP21x/ MAP

The manifold air pressure (MAP) is an important parameter to compute the air/fuel ratio provided to the engine for lower emission due to better combustion and increased efficiency. For cost sensitive engine systems a MAP sensor shows the potential to complement or even substitute mass air flow (MAF) sensors. In addition manifold pressure data can be used to compute diagnostics of leakages and malfunctions of the exhaust gas recirculation valve. In automotive applications where high production volumes are common there is substantial interest in precision, low-cost and fully integrated sensors. In this context products of the developed MAP sensor family KP21x are the optimum solution for aspirated or turbo diesel and gasoline engines management systems.

- Absolute air pressure measurement
- Excellent accuracy of up to 1.0kPa over a large temperature range
- Ratiometric analog output
- Output signal fully compensated
- Pressure range from 15 to 150kPa
- Temperature range (ambient) from -40 to +140°C
- SMD package (PG-DSOF-8-16)
- Output clamping (optional for KP216)
- Complete product family (KP214, KP215, KP216)

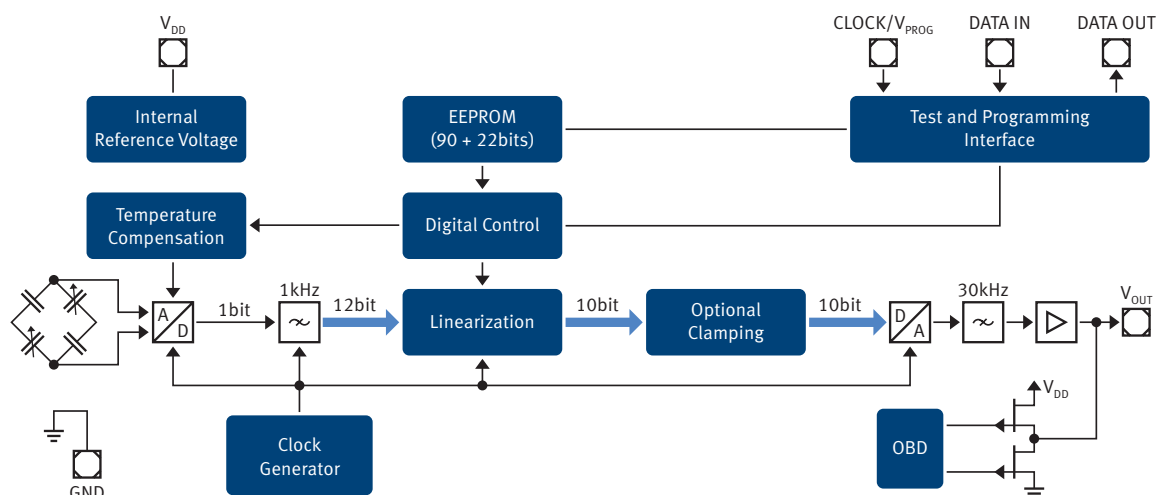
- Engine control/MAP applications
- Industrial controls

The diagram illustrates the electrical connection between the MAP module and the Electronic control unit (ECU). The MAP module, on the left, features a red KP21x sensor block with pins 1 through 8. Pins 1 and 2 are labeled 'Test' and 'CLOCK/ V_{PROG}' respectively. Pins 3 and 4 are labeled 'DATA IN' and 'DATA OUT'. Pins 5 and 6 are labeled 'V_{DD}' and 'GND'. Pins 7 and 8 are labeled 'V_{OUT}' and 'GND'. A T-Sensor is connected to the bottom of the module. The ECU, on the right, is represented by a blue block with pins for 'Ref', 'A/D IN', 'Microcontroller', 'A/D IN', and 'GND'. The circuit includes a 5V supply connected to the V_{DD} pin (pin 5) and the Ref pin. A voltage divider network consisting of resistors R₁¹⁾ and R₂¹⁾ is connected between the 5V supply and the A/D IN pin. A capacitor C₃ is connected between the A/D IN pin and GND. The V_{OUT} pin (pin 7) is connected to the A/D IN pin through a resistor R₃. Capacitors C₁ and C₂ are connected between pins 5 and 6, and pins 6 and 7 respectively, to ground.

KP21x/MAP

Integrated Pressure Sensor IC for Manifold Air Pressure Measurement Applications

Highly Integrated Sensors - Single Chip



Infinite offers an extensive broad product portfolio for diesel engine management systems from micro-machined sensors to smart power ICs and microcontrollers. The KP21x pressure sensor as an integrated pressure sensor for manifold pressure measurement is a benchmark in terms of reliability, performance and integration level.

Product Summary

Parameter	Range			Unit
	min.	typ.	max.	
Accuracy			1.0	% F.S.
Pressure range	10		150	kPa
Sensitivity	40		88	mV/kPa
Supply voltage	4.5	5.0	5.5	V
Output current			1.0	mA
Output voltage	0.1		4.85	V
Operating temperature	-40		+140	°C
Programmable Transfer Functions				
Transfer function pressure min.	15		60	kPa
Transfer function pressure max.	100		150	kPa
Transfer function voltage min.	0.1		0.5	V
Transfer function voltage max.	4.5		4.85	V
Lower programmable clamping level (KP226)	0.0		0.63	V
Upper programmable clamping level (KP226)	4.37		5.0	V

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