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防结冰进气温度压力传感器

Heated-Temperature Absolute Pressure Sensor



产品介绍 Product Description

进气温度压力传感器由压力传感器与温度传感器两者合二为一组成进气温度压力传感器。

The TMAP is composed of pressure sensor and temperature sensor, 2 sensors into 1 product.

产品特征及优势 Feature and Benefits

- TMAP可以提供两个信号。
  The TMAP sensor provides 2 outputs, intake air pressure and temperature.
- 来源于压力感应元件并经芯片处理后的进气绝对压力信号。
  Intake manifold absolute pressure output derived from a MEMS based sensing element.
- 来源于热敏电阻的进气温度信号。
  Intake manifold air temperature output from a NTC thermistor.
- 满足低温EGR环境应用，低功耗加热。
  Heated TMAP with low-power heating, qualified for low-temperature EGR environment.
- 外观和客户接口可以与主流供应商产品兼容。
  Performance and customer interface compatible with major tier 1 suppliers' TMAP.
- 单芯片解决方案，电路单元利用SMT 技术贴装。
  Single chip solution，SMT for EMA fabrication process.
- 利用钢球技术进行通气孔密封，激光打标以得到更好的追溯性。
  Steel ball for vent hole sealing, laser marking for better traceability.
- 根据客户要求，多种量程可选（10-115,10-250,10-300,15-300,20-300,50-400kpa abs）。
  Different pressure ranges are available on customer request.

产品应用 Application

根据TMAP输出信号和气缸/歧管容积，ECU可以计算得到进气质量，与燃油压力信号配合进一步得到空气燃油比，从而通过调节喷油时间来获得最佳空气燃油比；解决新能源增程汽车低温下EGR系统介入的结冰问题，低功耗加热。

With information of intake air pressure and temperature sensor, ECU can calculate the intake air mass flow and air/fuel ratio, increase or reduce fuel injecting time to get the optimal ratio of air & fuel; Low-power heating design to resolve icing issues of EGR system activation at low temperatures for extended-range new energy vehicles.

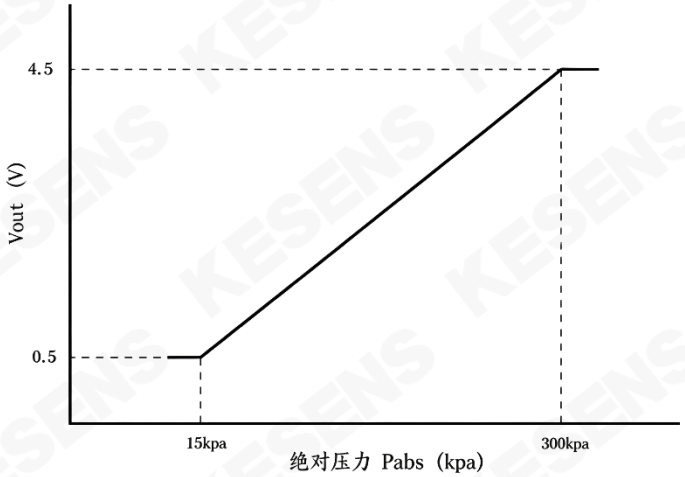
操作 Operation

基本原理 Basic Principle

进气温度压力传感器压力部分根据感应进气歧管内的真空变化，再从感知器内部电阻的改变，转换成电压信号，供ECU电脑修正喷油量和点火正时角度。温度部分由一个负温度系数热敏电阻，当温度高，电阻减小当温度低，电阻增大，随着温度电阻的变化，电压变化，0V到5V信号变化。

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According to the change of vacuum in intake manifold, the pressure part of TMAP sensor converts into voltage signal from the change of internal resistance of sensor, which is used for ECU computer to correct fuel injection quantity and ignition timing angle. The temperature part consists of a negative temperature coefficient thermistor. When the temperature is high, the resistance decreases; when the temperature is low, the resistance increases. With the change of temperature resistance, the voltage changes, and the signal changes from 0V to 5V.



温度	-40℃	-35℃	-30℃	-25℃	-20℃	-15℃	-10℃	-5℃	0℃	5℃
最大阻值(Ω)	113580	85183	64508	49306	38020	29564	23174	18305	14565	11671
标称阻值(Ω)	107300	80709	61296	46980	36322	28317	22251	17618	14051	11284
最小阻值(Ω)	101010	76235	58083	44653	34625	27069	21328	16931	13536	10896
ΔT(℃)	±2									
温度	10℃	15℃	20℃	25℃	30℃	35℃	40℃	45℃	50℃	55℃
最大阻值(Ω)	9414.2	7642.8	6242.8	5129.4	4238.3	3521.1	2940.4	2467.7	2080.9	1762.9
标称阻值(Ω)	9121.5	7420.6	6073.5	5000.0	4139.2	3445.0	2882.0	2422.8	2046.5	1736.5
最小阻值(Ω)	8828.7	7198.3	5904.2	4870.6	4040.1	3369.0	2823.6	2378.0	2012.1	1710.2
ΔT(℃)	±2									
温度	60℃	65℃	70℃	75℃	80℃	85℃	90℃	95℃	100℃	105℃
最大阻值(Ω)	1500.0	1281.8	1099.3	950.18	823.92	717.00	626.11	548.56	482.16	425.11
标称阻值(Ω)	1480.0	1266.6	1088.4	938.94	813.04	706.57	616.18	539.17	473.32	416.81
最小阻值(Ω)	1459.9	1251.4	1077.5	927.71	802.16	696.13	606.26	529.78	464.47	408.50
ΔT(℃)	±2									
温度	110℃	115℃	120℃	125℃	130℃	135℃	140℃	145℃	150℃	
最大阻值(Ω)	375.97	333.48	296.62	264.55	236.56	212.07	190.57	171.67	154.99	
标称阻值(Ω)	368.19	326.20	289.82	258.20	230.64	206.54	185.43	166.86	150.51	
最小阻值(Ω)	360.41	318.92	283.02	251.85	224.72	201.02	180.28	162.06	146.03	
ΔT(℃)	±2			±3						

连接选项 Connection Options

根据客户选择定制连接系统。

Customized to customer choice of connection system.

包装选项 Packaging Options

可提供定制包装以满足任何需要，请联系KESENS技术部了解详情。

Custom packaging can be provided to meet any need, please contact KESENS Engineering for details.

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技术参数 Functional Characteristics

参数PARAMETER	符号SYMBOL	最小值MIN.	额定值NOM.	最大值MAX.	单位UNITS
工作温度 TEMPERATURE RANGE	T	-40		130	℃
压力测量范围 （可定制） PRESSURE RANGE （Customizable）	P	10		300	kPa
电源电压 SUPPLY VOLTAGE	Vcc	4.5	5	5.5	V
电源电流 SUPPLY CURRENT	Icc		8	10	Ma
加热电源电压 HEATED SUPPLY VOLTAGE	Vcc		14		V
最大加热功率 MAX. HEATING POWER	W			2	W
输出负载电流 OUTPUT LOAD CURRENT	I_L	-1		1	mA
负载电阻 LOAD RESISTANCE	$R_{pull-up}$	5	59	100	kΩ
	$R_{pull-down}$	5	59	100	kΩ
额定输出电压（可定制） NOMINAL OUTPUT （Customizable）	Vout	10		90	%Vcc
输出电压上限值 UPPER CLAMPING LEVEL	V_{CL-HI}	4.47	4.5	4.53	V
输出电压下限值 LOWER CLAMPING LEVEL	V_{CL-LO}	0.47	0.5	0.53	V
整体精度误差 OVERALL ACCURACY ERROR	Err			2.85	kPa
压力响应时间 PRESSURE RESPONSE TIME	从10%到90%的最输出电压$T_{10/90}$10% TO 90% OF THE FINAL OUTPUT VALUE		0.65	1.8	ms

可根据客户需求定制产品，如有需求请联系我们。
Customized products available upon request. Contact us for details.

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