

Overview and Specification of Hydrogen Sensor



Engineering & Technology

- The sensing principle of Sejong Hydrogen Sensor is contact combustion type, and it is composed of detection chip based on silicon using MEMS technology.
- It is designed to use 24VDC power for vehicle application.

Features

- EMC Reliability for Vehicle Application
- Linear analog output proportional to gas concentration
- Low power consumption
- Compact size
- Fast warm-up and response time
- High Sensitivity & Selectivity at Hydrogen gas
- Application ; FCEV , Coolant module

Advantages

- Mass production using MEMS chip technology
- Sensor design provides reliability throughout the life of the vehicle

Status

- Proto sample available
- Mass production : Scheduled (*December, 2017*)



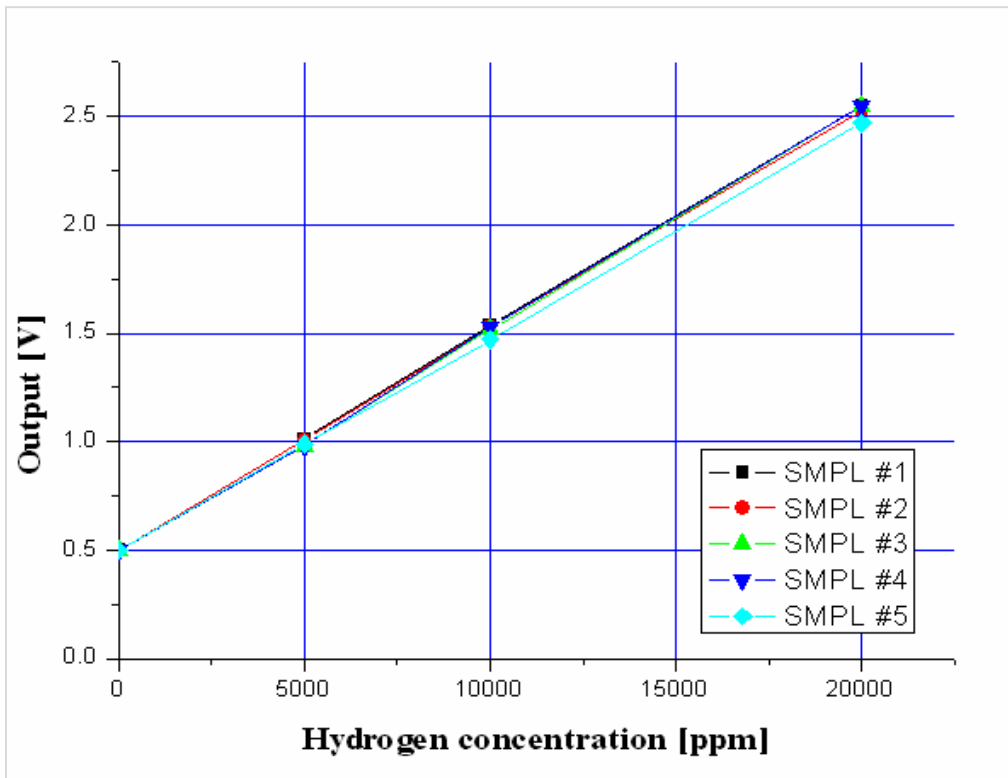
Hydrogen sensor (P/N:SJG531000)



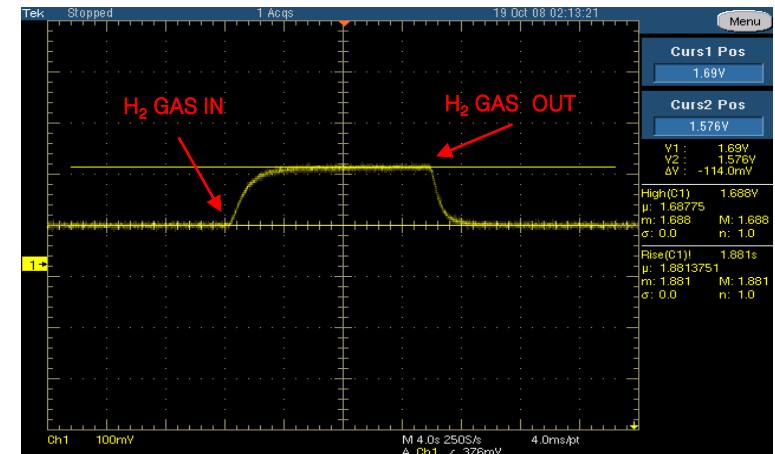
Connector A'ssy (P/N : MG643744)
: Production by KET Company

No	Parameters	unit	Specification	Note
1	Supply voltage	Vdc	18~32	
2	Current consumption	mA	<75	@RT
3	Detection gas	-	H2/AIR	
4	Detectable range	vol%	0.1~4	
5	Reponse time	Seconds	< 2	
6	Start-up time	Seconds	< 1	
7	Output signal	Vdc	Voltage (0.5~4.5)	
8	Accuracy	%	±20	Reading value
9	Operating temp.	°C	-40 ~ 105	
10	Storge temp.	°C	-40 ~ 115	
11	Operating Humidity	%RH	10 ~ 100	
12	Cross sensitivity	-	No detection toward CO(at 100ppm), DME(at 1%), EtOH(at 1%), THC(at 1%), NO2(at 100ppm), SO2(at 100ppm)	
13	Dimensions	mm	60 x 56.2 x 15.8	
14	Weight	g	<43	
15	IP CODE	-	IP6K9	
16	Pressure	bara	atmospheric	
17	Pin map	-	3pin (Vcc/Signal/GND)	

Sensor output characteristic

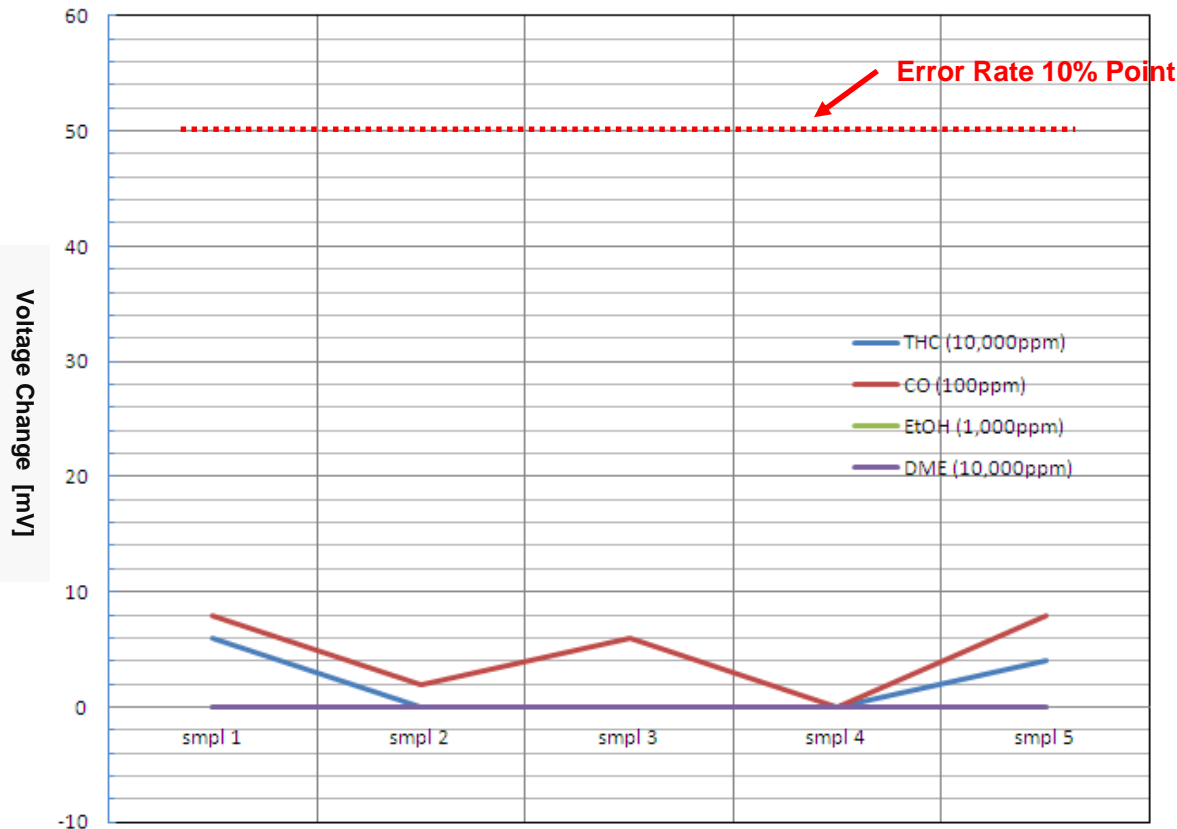


- Test temp. : R.T.
- Test Sample No. : 5EA
- Test Result
 - Reaction time : < 2 Seconds
 - Recovery time : < 2 Seconds
 - Output Error Rate : <20%



< Sensor chip original signal output wave
at H2 2vol%>

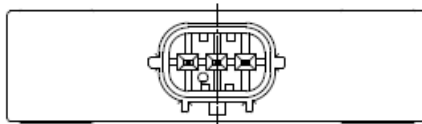
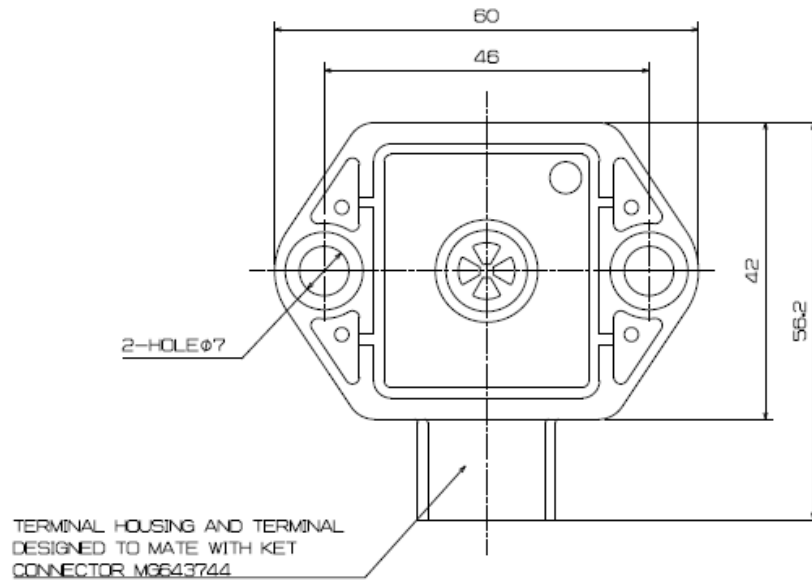
Gas selectivity of hydrogen sensor



- Test Gas : THC, CO, EtOH, DME (4 Types)
- Test Samples No. : 5EA
- Test Result
 - DME, EtOH Gas Reaction : No Reaction
 - CO, THC Gas Reaction : Slightly reacted. However it is completely spec-in against specification.

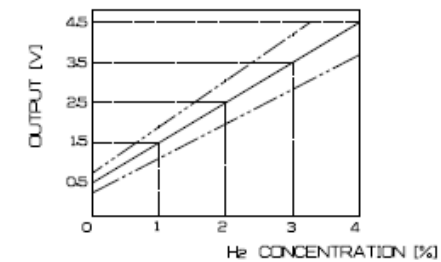
Reliability of hydrogen sensor

No.	Test Item	Result
1	High temp. operation/storage	Passed
2	Low temp. operation/storage	Passed
3	High humidity/High temp. operation/storage	Passed
4	Passed Temperature cycle	Passed
5	Thermal shock	Passed
6	Temp/Humidity cycle	Passed
7	Dew cycle	Passed
8	Salt water Immersion	Passed
9	Vibration	Passed
10	Voltage sag	Passed
11	Electromagnetic Compatibility	Passed
12	Over voltage	Passed
13	Revers voltage	Passed
14	Short circuit protection	Passed



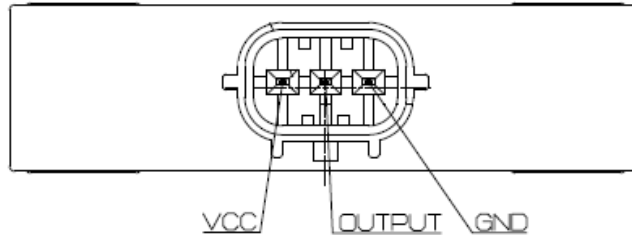
出力特性

(OUTPUT CHARACTERISTIC)

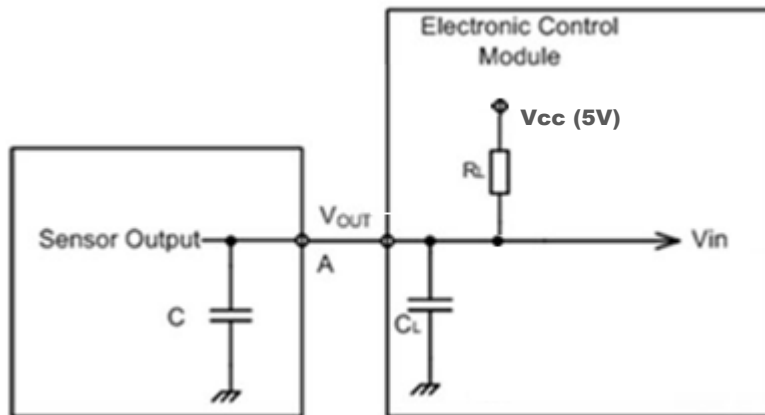


— : RATED OUTPUT
 - - - : LOWER (-20%) / UPPER LIMIT (20%)

Pin map



Output circuit



$$R_L : 4.3K$$

$$C_L : 10nF$$

Matching Connector
: KET Connector MG643744

