MODE $06 Data

Test item (related DTC)	Test value		Description	Scaling
	TID	CID		
EVAP control system (P0440)	$22	$00	Differential pressure	*16.67/256/256 kPa
	$23	$00	Differential rising pressure	(N-128)*16.67/256/256 kPa
	$24	$00	Differential pressure	(N-128)*16.67/256/256 kPa

OBD System Description - Fuel System Monitor

STSE011101011 (03(01)

System Description / Monitoring Procedure

As fuel system components age or otherwise change over the life of the vehicle, the adaptive fuel strategy learns deviations from stoichiometry while running in closed loop fuel. These learned corrections are stored in keep alive memory as long term fuel trim corrections. They may be stored continue to change beyond normal limits or if a malfunction occurs, the long term fuel trim values will reach a calibratable rich or lean limit where the adaptive fuel strategy is no longer allowed to compensate for additional fuel system changes. Long term fuel trim corrections at their limits, in conjunction with a calibratable deviation in short term fuel trim, indicate a rich or lean fuel system malfunction.

DTC Description / Detecting Condition / Confirmation Procedure

P0171, P0172

Refer to “DTC P0171 / P0172: Fuel System Too Lean / Rich”.

Fuel System Monitor

Operation

DTCs	P0171, P0172
Monitor execution	Continuous
Sensors / components OK	IAT, BARO. press
Monitoring duration	5 s

Enable condition

Parameter	Minimum	Maximum
Intake air temp.	–10 (14) °C (°F)	
Barometric pressure	560 mmHg	
Fuel level	15%	
Fuel control status	Long term fuel control	

Typical malfunction thresholds

P0171:	Long + short term > 43% and (short term > 20% or long term > 20%)
P0172:	Long + short term < –34% and (short term < –19% or long term < –16%)

OBD System Description - Oxygen Sensor Monitor

STSE011101012 (03(01)

System Description / Monitoring Procedure

Primary HO2S

For a primary HO2S, the system monitors maximum and minimum voltage, lean-to-rich and rich-to-lean response rates, and switching cycles during monitoring conditions once per driving cycle. The sensor is also monitored for activity continuously.

Secondary HO2S

A secondary HO2S is used for catalyst monitoring and dual oxygen sensor control for fuel control system. The output voltage of the secondary HO2S is maintained to be close to target voltage by dual oxygen sensor control. With non-aged catalyst system, amplitude of the voltage changing is very narrow and slow. But along with aging of the catalyst, the amplitude is going to be wider and quicker. Then the system calculates average of the voltage during monitoring conditions once per driving cycle, and compares the average with malfunction criteria.

DTC Description / Detecting Condition / Confirmation Procedure

P0131

Refer to “DTC P0131: HO2S-1 Circuit Low Voltage”.

P0132

Refer to “DTC P0132: HO2S-1 Circuit High Voltage”

Typical malfunction thresholds

Heater current < 0.22 A or > 4.0 A Heater voltage < 10 V or > 13.8 V

MODE $06 Data

Self diagnostic test item (related DTC)	Test value		Description	Scaling
	TID	CID		
O2S 1 heater circuit malfunction (P0135)	$28	$00	Minimum sensor current	*18.75/256 s
	$28	$00	Maximum sensor current	*18.75/256 s
	$29	$00	Minimum sensor current	*18.75/256 s
	$29	$00	Maximum sensor current	*18.75/256 s
O2S 2 heater circuit malfunction (P0141)	$2A	$00	Minimum sensor current	*18.75/256 s
	$2A	$00	Maximum sensor current	*18.75/256 s
	$2B	$00	Minimum sensor current	*18.75/256 s
	$2B	$00	Maximum sensor current	*18.75/256 s

OBD System Description - EGR System Monitor

STSE011101014 (03(01)

System Description / Monitoring Procedure

The EGR system consists of an EGR valve, an EGR pressure transducer, and an EGR solenoid vacuum valve (for system check). To detected EGR system malfunction, a EGR solenoid vacuum valve is added to the EGR system. The intake pressure changes are measured by two kinds of procedure. One method (Method A) is the measuring of the pressure change during the steady state condition switching the EGR solenoid vacuum valve (for system check) on and off to detect entire system leak. Another method (Method B) is the measuring of the pressure change during deceleration condition switching the EGR solenoid vacuum valve on and off to detect EGR valve failure such that a vehicle would exceed 1.5 times of the emission standard.

EGR System Monitoring System

ITSE01110003-01

DTC Description / Detecting Condition / Confirmation Procedure

P0400

Refer to “DTC P0400: Exhaust Gas Recirculation (EGR) Flow Malfunction”.

EGR System Monitor

Operation

DTCs	P0400
Monitor execution	Once per driving cycle
Sensors / components OK	MDP, TP, ECT, Back-up power
Monitoring duration	Method A: 2.25 s Method B: 2 s

Enable condition

Parameter	Minimum	Maximum
Method A		
Engine coolant temp.	70 (158) °C (°F)	110 (230) °C (°F)
Intake air temp.	–10 (14) °C (°F)	70 (158) °C (°F)
Barometric pressure	560 mmHg	
Engine speed	2300 rpm (M/T) 1500 rpm (A/T)	3000 rpm
Calculated load value	12.5%	31.0%
Vehicle speed	30 km/h	
TP change		0.37 ° / s
Engine speed change		156 rpm / s
Time from engine start	240 s	
Time from switch change (A/C, PPS, P/N position switch)	3 s	
EGR control status	EGR controlled mode	

Parameter	Minimum	Maximum
Method B		
Engine coolant temp.	70 (158) °C (°F)	110 (230) °C (°F)
Intake air temp.	–10 (14) °C (°F)	70 (158) °C (°F)
Barometric pressure	560 mmHg	
Engine speed		4000 rpm
Vehicle speed	46 km/h	
Engine speed change		150 rpm / s
Time from engine start	290 s	
Time from switch change (A/C, PPS, P/N position switch)	3 s	
Fuel control status	Fuel shut-off mode	

Typical malfunction thresholds

Method A: MDP difference between EGR ON & OFF < 7.4 – 23.2 mmHg (according to engine speed)
Method B: MDP difference between EGR ON & OFF < 35 – 100 mmHg (according to engine speed)

MODE $06 Data

Self diagnostic test item (related DTC)	Test value		Description	Scaling
	TID	CID		
EGR (P0400)	$2C	$00	Differential Pressure	*31.68/256/256 kPa
	$2C	$00	Differential Pressure	*31.68/256/256 kPa
	$2D	$00	Differential Pressure	*31.68/256/256 kPa

OBD System Description - Comprehensive Component (Engine Input) Monitor

STSE011101015 (03(01)

Monitoring Procedure

Input signals of MAF (P0102 / P0103), IAT (P0112 / P0113), ECT (P0117 / P0118), TP (P0122 / P0123), Fuel tank pressure sensor (P0450), Fuel level sensor (P0463), MDP (P01408) and Barometric pressure sensor (P1450, P1451) are checked for open, short of circuit by monitoring input voltage.

DTC Description / Detecting Condition / Confirmation Procedure

P0101
Refer to “DTC P0101: Mass Air Flow (MAF) Sensor Circuit Performance Problem”.
P0102
Refer to “DTC P0102: Mass Air Flow (MAF) Sensor Circuit Low Input”.
P0103
Refer to “DTC P0103: Mass Air Flow (MAF) Sensor Circuit High Input”.
P0112
Refer to “DTC P0112: Intake Air Temperature (IAT) Sensor Circuit Low Input”.
P0113
Refer to “DTC P0113: Intake Air Temperature (IAT) Sensor Circuit High Input”.
P0117
Refer to “DTC P0117: Engine Coolant Temperature (ECT) Sensor Circuit Low Input”.
P0118
Refer to “DTC P0118: Engine Coolant Temperature (ECT) Sensor Circuit High Input”.
P0121
Refer to “DTC P0121: Throttle Position (TP) Sensor Circuit Range / Performance Problem”.
P0122
Refer to “DTC P0122: Throttle Position (TP) Sensor Circuit Low Input”.
P0123
Refer to “DTC P0123: Throttle Position (TP) Sensor Circuit High Input”.
P0125
Refer to “DTC P0125: Insufficient Coolant Temperature for Closed Loop Fuel Control”.
P0335
Refer to “DTC P0335: Crankshaft Position (CKP) Sensor Circuit Malfunction”.
P0340
Refer to “DTC P0340: Camshaft Position (CMP) Sensor Circuit Malfunction”.
P0450
Refer to “DTC P0450: EVAP Control System Pressure Sensor Malfunction”.
P0461