

DTC P2251:00 [SKYACTIV-G 2.0, SKYACTIV-G 2.5]

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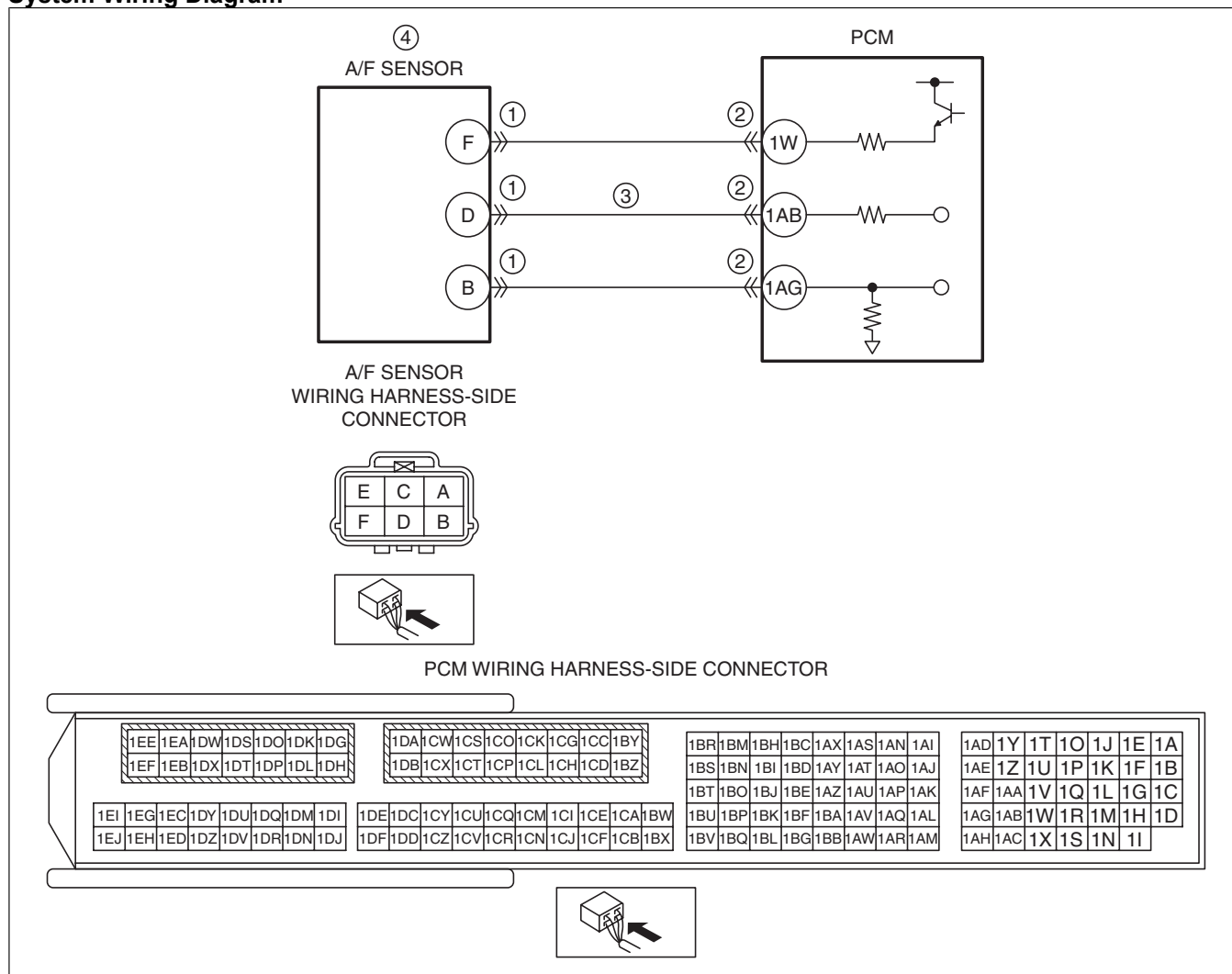
Note

- To determine the malfunctioning part, proceed with the diagnostics from "Function Inspection Using M-MDS".

Details On DTCs

DESCRIPTION	Open circuit between A/F sensor terminal D and PCM terminal 1AB	
DETECTION CONDITION	Determination conditions	<ul style="list-style-type: none">• The following conditions are met:<ul style="list-style-type: none">— A/F sensor element impedance is specified value or more— A/F sensor terminal F voltage (B+ terminal) is less than specified value or unstable.
	Preconditions	<ul style="list-style-type: none">• Battery voltage: 11—18 V *1• A/F sensor is activated.• The following DTCs are not detected:<ul style="list-style-type: none">— A/F sensor terminal F voltage (B+ terminal) is less than specified value:<ul style="list-style-type: none">• A/F sensor heater: P0031:00, P0032:00— A/F sensor terminal F voltage (B+ terminal) is unstable:<ul style="list-style-type: none">• Internal PCM malfunction: P064D:00 <p>*1: Value can be verified by displaying PIDs using M-MDS</p>
	Drive cycle	<ul style="list-style-type: none">• 2
	Self test type	<ul style="list-style-type: none">• CMDTC self test, KOER self test
	Sensor used	<ul style="list-style-type: none">• A/F sensor
FAIL-SAFE FUNCTION	<ul style="list-style-type: none">• Fixes duty value of A/F sensor heater• Stops fuel feedback control of A/F sensor	
VEHICLE STATUS WHEN DTCs ARE OUTPUT	<ul style="list-style-type: none">• Illuminates check engine light.	
POSSIBLE CAUSE	<ul style="list-style-type: none">• A/F sensor connector or terminals malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between A/F sensor terminal D and PCM terminal 1AB• A/F sensor malfunction• PCM malfunction	

System Wiring Diagram



ac5wzw00006547

Function Explanation (DTC Detection Outline)

- If the PCM detects an open circuit in the wiring harness between A/F sensor terminal D and PCM terminal 1AB (COM wiring harness), it stores a DTC. In addition, when there is an open circuit in the wiring harness between A/F sensor terminal D and PCM terminal 1AB (COM wiring harness), the A/F sensor terminal F (B+ terminal) becomes unstable. At this time, the PCM determines an open circuit in the wiring harness (COM wiring harness) between A/F sensor terminal D and PCM terminal 1AB and stores a DTC.
- If the A/F sensor does not activate, monitoring cannot occur because the A/F sensor element has an insulation property which keeps it at a specific temperature range or less.

Repeatability Verification Procedure

- Warm up the engine to allow the engine coolant temperature to reach **80 °C {176 °F} or more**.
- Start the engine and leave it idling for **1 min**.

Note

- Match the engine coolant temperature in the recorded FREEZE FRAME DATA (Mode 2)/snapshot data, the vehicle speed, and engine speed values to the best extent possible while driving the vehicle.
- Try to reproduce the malfunction by driving the vehicle for **5 min** based on the values in the FREEZE FRAME DATA (Mode 2)/snapshot data.

PID Item/Simulation Item Used In Diagnosis

PID/DATA monitor item table

Item	Definition	Unit/ Condition	Condition/Specification (Reference)
O2S11	A/F sensor	μA	<ul style="list-style-type: none"> • Idle (after warm up): Approx. -39 μA • Deceleration fuel cut (accelerator pedal released from engine speed of 4,000 rpm or more): Approx. 3.84 mA

Function Inspection Using M-MDS

STEP	INSPECTION	RESULTS	ACTION
1	PURPOSE: VERIFY RELATED SERVICE INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Information availability. • Is any related Service Information available? 	Yes	Perform repair or diagnosis according to the available Service Information.
		No	Go to the next step.
2	PURPOSE: RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the troubleshooting procedure to perform the procedure from Step 1.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order. Note <ul style="list-style-type: none"> • Recording can be facilitated using the screen capture function of the PC. Go to the troubleshooting procedure to perform the procedure from Step 1.

Troubleshooting Diagnostic Procedure

Intention of troubleshooting procedure

- Step 1—3
 - Perform an inspection of the A/F sensor and PCM-related connectors and wiring harnesses.
- Step 4
 - Perform a unit inspection of the A/F sensor.
- Step 5—6
 - Verify that the primary malfunction is resolved and there are no other malfunctions.

STEP	INSPECTION	RESULTS	ACTION
1	PURPOSE: INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/ pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 5.
		No	Go to the next step.
2	PURPOSE: INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 5.
		No	Go to the next step.
3	PURPOSE: INSPECT A/F SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Verify that the A/F sensor and PCM connectors are disconnected. • Inspect for continuity between A/F sensor terminal D (wiring harness-side) and PCM terminal 1AB (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between A/F sensor terminal D and PCM terminal 1AB. If there is a common connector: <ul style="list-style-type: none"> • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for an open circuit. • Repair or replace the malfunctioning part. If there is no common connector: <ul style="list-style-type: none"> • Repair or replace the wiring harness which has an open circuit. Go to Step 5.

STEP	INSPECTION	RESULTS	ACTION
4	PURPOSE: DETERMINE INTEGRITY OF A/F SENSOR <ul style="list-style-type: none"> Reconnect all disconnected connectors. Inspect the A/F sensor. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/ INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
5	PURPOSE: VERIFICATION OF VEHICLE REPAIR COMPLETION <ul style="list-style-type: none"> Always reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) Perform the KOER self test. (See KOEO/KOER SELF TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) Is the PENDING CODE for this DTC present? 	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) Go to the next step.
		No	Go to the next step.
6	PURPOSE: VERIFY IF THERE IS ANY OTHER MALFUNCTION <ul style="list-style-type: none"> Is any other DTC or pending code stored? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	DTC troubleshooting completed.