

DA: Intake Air Temperature (IAT) Sensor

[← DA: Introduction](#)

DA1 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS)

Are DTCS P0111, P0112, P0113, P0114, or P1112 present?

Yes	No
For DTC P0111, GO to DA12 . For KOEO and KOER DTC P0112, GO to DA6 . For KOEO and KOER DTC P0113, GO to DA2 . For continuous memory DTCS P0112, P0113 or P1112, GO to DA9 . For DTC P0114, GO to DA9 .	For all others, GO to Section 4, Diagnostic Trouble Code (DTC) Charts and Descriptions .

DA2 DTC P0113: CHECK THE IAT SIGNAL CIRCUIT

Note: The DTC indicates the sensor signal is greater than the self-test maximum.

- MAF/IAT Sensor connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) MAF/IAT Sensor Connector, Harness Side	(-)
IAT - Pin 1	Ground

Is the voltage between 4.5 - 5.5 V?

Yes	No
GO to DA3 .	GO to DA4 .

DA3 CHECK THE IAT SENSOR RESISTANCE

- Ignition OFF.
- Measure the resistance between:

(+) MAF/IAT Sensor Connector, Component Side	(-) MAF/IAT Sensor Connector, Component Side
IAT - Pin 1	SIGRTN - Pin 2

Is the resistance between 1K - 500K ohms?

Yes	No
	INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic

GO to [DA4](#).

Engine Controls.

CLEAR the DTCs. REPEAT the self-test.

DA4 CHECK THE SIGNAL AND SIGRTN CIRCUITS FOR AN OPEN IN THE HARNESS

- PCM connector disconnected.
- Measure the resistance between:

(+) MAF/IAT Sensor Connector, Harness Side	(-) PCM Connector, Harness Side
IAT - Pin 1	IAT
SIGRTN - Pin 2	SIGRTN

Are the resistances less than 5 ohms?

Yes	No
GO to DA5 .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

DA5 CHECK THE SIGNAL FOR A SHORT TO VOLTAGE IN HARNESS

- Ignition OFF.
- PCM connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) MAF/IAT Sensor Connector, Harness Side	(-)
IAT - Pin 1	Ground

Is the voltage greater than 1 V?

Yes	No
REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.	GO to DA14 .

DA6 DTC P0112: SIMULATE AN OPPOSITE SIGNAL TO THE PCM

Note: The DTC indicates the sensor signal is less than the self-test minimum.

- MAF/IAT Sensor connector disconnected.
- Ignition ON, engine OFF.
- Access the PCM and monitor the IAT PID.

Is the voltage greater than 4.2 V?

Yes	No
INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CLEAR the DTCs. REPEAT the self-test.	GO to DA7 .

DA7 CHECK THE IAT CIRCUIT FOR A SHORT TO MAF RTN

- Ignition OFF.
- PCM connector disconnected.
- Measure the resistance between:

(+) MAF/IAT Sensor Connector, Harness Side	(-) MAF/IAT Sensor Connector, Harness Side
IAT - Pin 1	MAF RTN - Pin 4

Is the resistance less than 5 ohms?

Yes	No
REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.	GO to DA8 .

DA8 CHECK THE IAT CIRCUIT FOR A SHORT TO GROUND

- PCM connector disconnected.
- Measure the resistance between:

(+) PCM Connector, Harness Side	(-) PCM Connector, Harness Side
IAT	SIGRTN

- Measure the resistance between:

(+) PCM Connector, Harness Side	(-) 12 Volt Vehicle Battery
IAT	Negative terminal

Is the resistance greater than 10K ohms?

Yes	No
GO to DA14 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

DA9 SELF-TEST DTCS P0112, P0113, P0114 OR P1112: INTERMITTENT CHECK

- Ignition ON, engine OFF.
- Access the PCM and monitor the IAT PID.
- While observing the PID, carry out the following:
 - Tap on the sensor to simulate road shock
 - Wiggle the sensor connector

Is there a large change in the voltage reading?

Yes	No
DISCONNECT and INSPECT the connector. If OK, INSTALL a new MAF/IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls.	GO to DA10 .

CLEAR the DTCs. REPEAT the self-test.	
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DA10 CHECK THE ELECTRONIC ENGINE CONTROL (EEC) WIRING HARNESS

- Access the PCM and monitor the IAT PID.
- While observing the PID, wiggle, shake, and bend small sections of the wiring harness while working from the sensor to the PCM.

Is there a large change in the voltage reading?

Yes	No
ISOLATE the concern. REPAIR as necessary. CLEAR the DTCs. REPEAT the self-test.	GO to DA11 .

DA11 CHECK THE PCM AND VEHICLE HARNESS CONNECTORS

- Ignition OFF.
- PCM connector disconnected.
- MAF/IAT Sensor connector disconnected.

Are the connectors and terminals OK?

Yes	No
The concern is not present at this time. DISREGARD the current diagnostic trouble code (DTC) at this time. DIAGNOSE the next DTC. GO to Section 4, Diagnostic Trouble Code (DTC) Charts and Descriptions .	REPAIR as necessary. CLEAR the DTCs. REPEAT the self-test.

DA12 DTC P0111: CHECK THE RESISTANCE OF THE IAT SENSOR WITH THE ENGINE OFF

Note: Verify the engine temperature is at ambient temperature before continuing with this test.

- Ignition OFF.
- IAT Sensor connector disconnected.
- Measure the resistance between:

(+) IAT Sensor Connector, Component Side	(-) IAT Sensor Connector, Component Side
IAT	SIGRTN

- Refer to the chart at the beginning of this test for the resistance specifications.

Is the resistance within specification?

Yes	No
GO to DA13 .	INSTALL a new IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls.

CLEAR the DTCs. REPEAT the self-test.

DA13 DTC P0111: CHECK THE RESISTANCE OF THE IAT SENSOR

Note: Verify the engine is at operating temperature before taking the IAT reading.

- IAT Sensor connector connected.
- Run the engine until the engine temperature stabilizes.
- Ignition OFF.
- IAT Sensor connector disconnected.
- Measure the resistance between:

(+) IAT Sensor Connector, Component Side	(-) IAT Sensor Connector, Component Side
IAT	SIGRTN

- Refer to the chart at the beginning of this test for the resistance specifications.

Is the resistance within specification?

Yes	No
The concern is not present at this time. CARRY OUT the OBD drive cycle to determine if fuel, HO ₂ S, catalyst and misfire monitors can be executed. REFER to Section 2, On Board Diagnostic (OBD) Drive Cycle. REPEAT the PCM self-test if necessary.	INSTALL a new IAT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CLEAR the DTCs. REPEAT the self-test.

DA14 CHECK FOR CORRECT PCM OPERATION

- Disconnect all the PCM connectors.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Connect all the PCM connectors and make sure they seat correctly.
- Carry out the PCM self-test and verify the concern is still present.

Is the concern still present?

Yes	No
INSTALL a new PCM. REFER to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM) , Programming the VID Block for a Replacement PCM.	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.
