DTC	P0234/34	TURBO/SUPER CHARGER OVERBOOST CONDITION

DTC	P0299/34	TURBO/SUPER CHARGER UNDERBOOST

DTC	P1251/34	STEP MOTOR FOR TURBOCHARGER CONTROL CIRCUIT (INTERMITTENT)

CIRCUIT DESCRIPTION

Refer to DTC P0045/34 on page 05–482.

DTC No.	DTC Detection Condition	Trouble Area
P0234/34	When turbocharger boost pressure continues to be higher than ECM's target boost pressure. (1 trip detection logic)	• Turbocharger sub–assy • Turbo motor driver • Manifold absolute pressure sensor • MAF meter • EGR valve stuck closed • Exhaust system and intake system are modified or clogged • ECM
P0299/34	When turbocharger boost pressure continues to be lower than ECM's target boost pressure. (1 trip detection logic)	• Turbocharger sub–assy • Turbo motor driver • Manifold absolute pressure sensor • MAF meter • EGR valve stuck open • Manifold absolute pressure sensor (hose disconnected) • Exhaust system and intake system are modified or clogged • ECM
P1251/34	When turbocharger boost pressure is higher than boost pressure for a short time in which there was possibility of engine damage. (1 trip detection logic)	• Turbocharger sub–assy • Turbo motor driver • Manifold absolute pressure sensor • MAF meter • EGR valve assy • Exhaust system and intake system are modified or clogged • ECM

WIRING DIAGRAM

Refer to DTC P0045/34 on page 05–482.

INSPECTION PROCEDURE

HINT:

Read freeze frame data using the intelligent tester II. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, and other data from the time the malfunction occurred.

1	CHECK OTHER DTC OUTPUT (IN ADDITION TO DTC P0234/34, P0299/34 AND/OR P1251/34)

(a) Connect the intelligent tester II to the DLC3.
(b) Turn the ignition switch ON and turn the intelligent tester II ON.
(c) Enter the following menus: Powertrain / Engine / DTC.
(d) Read the DTCs.
Result:

Display (DTC Output)	Proceed to
P0234/34, P0299/34 and/or P1251/34	A
P0234/34, P0299/34 and/or P1251/34 and other DTCs	B

B → **Go to RELEVANT DTC CHART (See page 05–477)**

A

2	READ DATA LIST (PIM)

(a) Connect the intelligent tester II to the DLC3.
(b) Start the engine and warm it up. Turn the intelligent tester II ON.
(c) Enter the following menu: Powertrain / Engine / Data List / MAP.
Standard:

Item	Engine Speed*	Reference Value
MAP	Ignition switch ON	Same as atmospheric pressure
MAP	Idling	100 to 130 kPa
MAP	3,000 rpm (no engine load)	110 to 140 kPa

HINT:
*: If no idling conditions are specified, the A/C switch and all accessory switches should be OFF with a fully warm engine.

NG → **REPLACE MANIFOLD ABSOLUTE PRESSURE SENSOR**

OK

3	CHECK EXHAUST SYSTEM

(a) Turn the ignition switch ON.
(b) Check the exhaust pipe for leaks.
OK: Exhaust pipe has no leaks.

NG → **REPAIR OR REPLACE**

OK

4	CHECK AIR CLEANER FILTER

(a) Check that the air cleaner filter is not clogged.
OK: Air cleaner filter is not clogged.

NG → **REPLACE AIR CLEANER FILTER**

OK

5	CHECK INTAKE SYSTEM

(a) Disconnect the air cleaner hose.
(b) Use a mirror to visually check the turbocharger for any mechanical problems.
(c) When the engine is cold, check that the impellor of the turbocharger rotates smoothly, and perform a contact check to confirm whether there is any damage on it.
OK: Impellor of turbocharger rotates smoothly.

NG → **REPAIR OR REPLACE**

OK

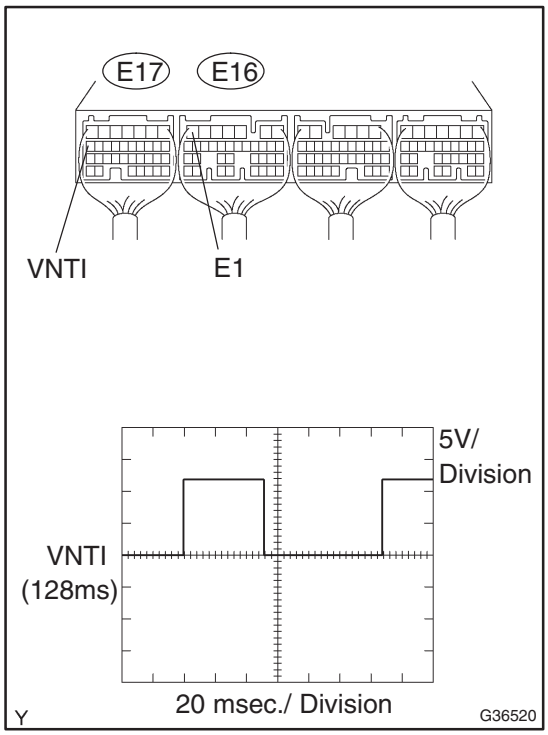
6	INSPECT TURBOCHARGER SUB–ASSY (See page 13–1)

(a) Disconnect the air cleaner hose.
(b) Use a mirror to visually check the turbocharger for any mechanical problems.
(c) When the engine is cold, check that the impellor of the turbocharger rotates smoothly, and perform a contact check to confirm whether there is any damage on it.
OK: Impellor of turbocharger rotates smoothly.

NG → **REPLACE TURBOCHARGER SUB–ASSY (See page 13–10)**

OK

7 CHECK ECM (VNTI VOLTAGE)



(a) While idling the engine, check the waveform of the ECM connectors using an oscilloscope.

Standard:

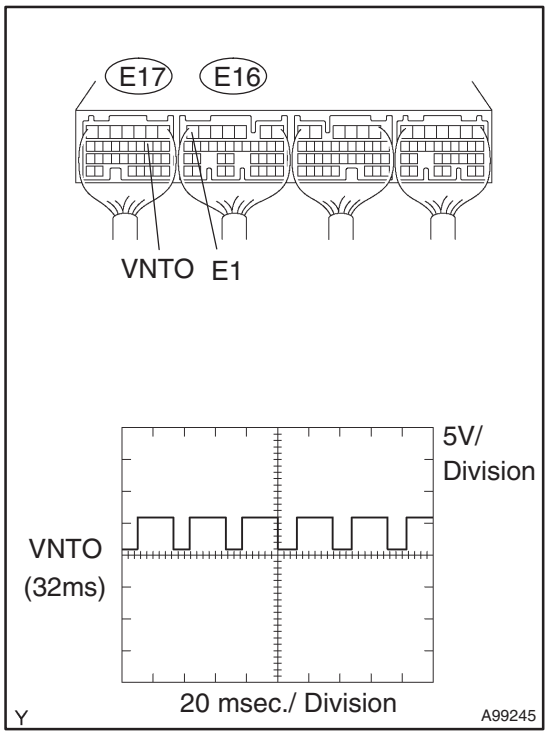
Tester Connection	Specified Condition
E17–17 (VNTI) – E16–7 (E1)	Correct waveform is shown

NG → **REPLACE ECM (See Pub. No. RM990E, page 10–34)**

NOTICE:
After replacing the ECM, allow for ECM learning start the engine and idle it until it is fully warmed up.

OK

8 CHECK ECM (VNTO VOLTAGE)



(a) While idling the engine, check the waveform of the ECM connectors using an oscilloscope.

Standard:

Tester Connection	Specified Condition
E17–10 (VNTO) – E16–7 (E1)	Correct waveform is shown

NG → **REPLACE TURBO MOTOR DRIVER**

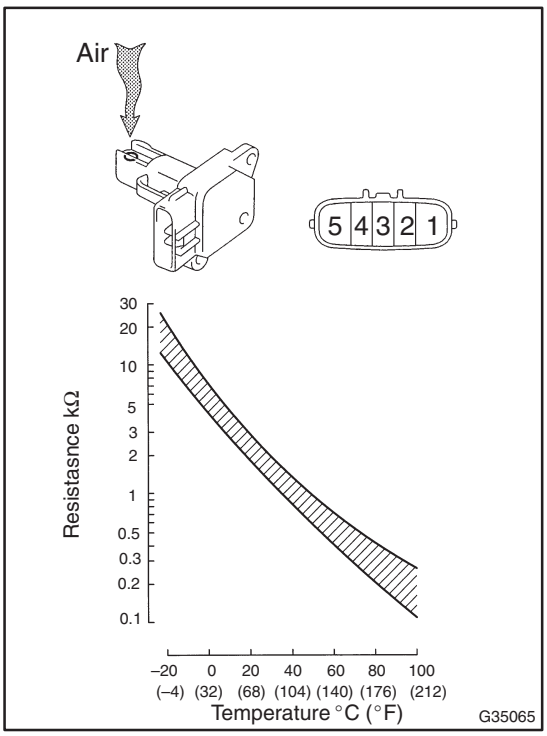
OK

9	CHECK EGR VALVE ASSY (See page 12–20)

NG → REPLACE EGR VALVE ASSY (See page 10–20)

OK

10	INSPECT INTAKE AIR TEMPERATURE SENSOR



(a) Check the IAT sensor
  (1) Remove the MAF meter.
  (2) Measure the resistance of the sensor.
  Standard:

Tester Connection	Condition	Specified Condition
4 – 5	–20°C (–4°F)	13.6 to 18.4 kΩ
4 – 5	20°C (68°F)	2.21 to 2.69 kΩ
4 – 5	60°C (140°F)	0.49 to 0.67 kΩ

NG → REPLACE MASS AIR FLOW METER

OK

REPLACE ECM (See Pub. No. RM990E, page 10–34)

NOTICE:
After replacing the ECM, allow for ECM learning start the engine and idle it until it is fully warmed up.