DTC	B1412/12	Ambient Temperature Sensor Circuit

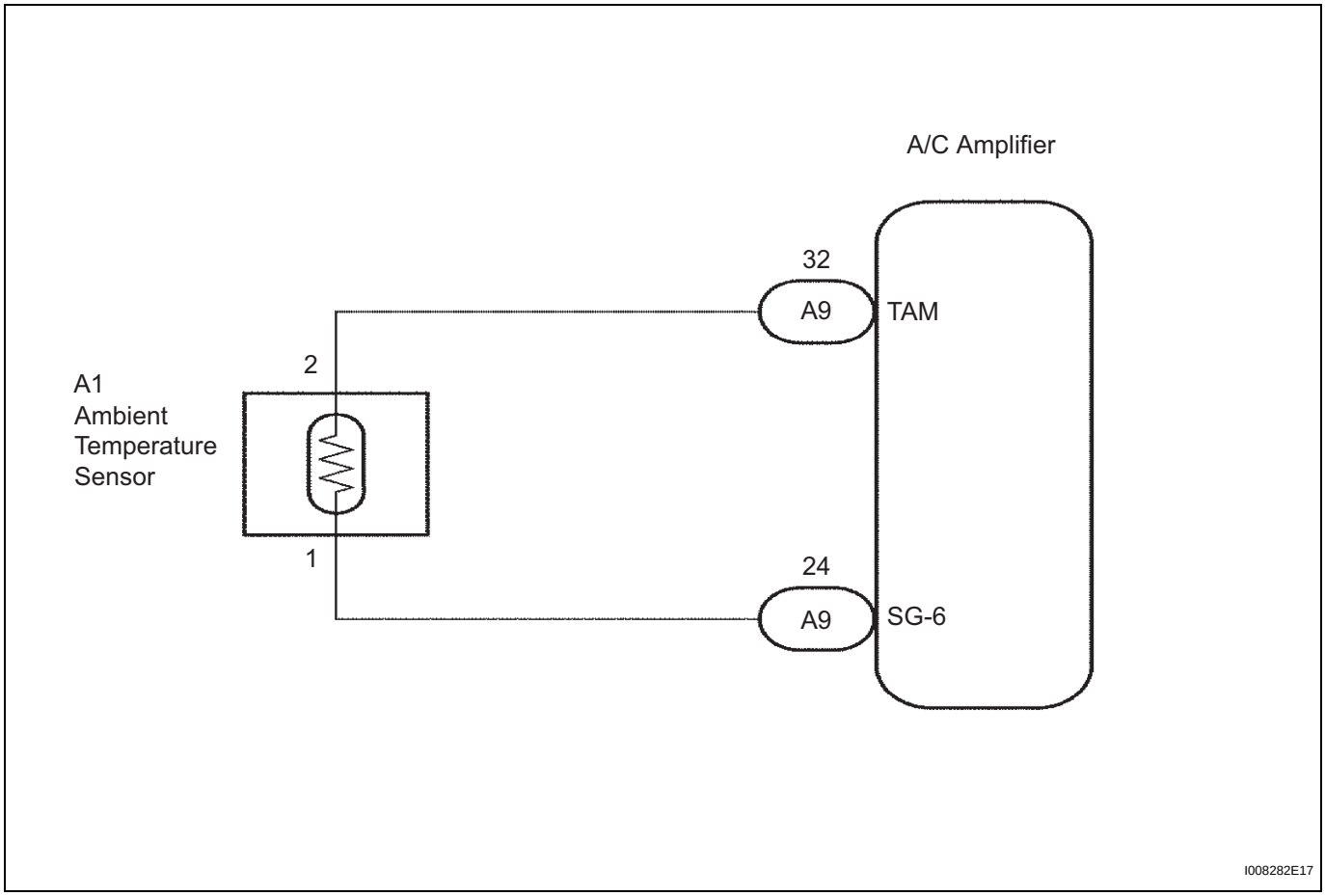
DESCRIPTION

The ambient temperature sensor is installed in front of the condenser to detect the ambient temperature which is used to control the air conditioner "AUTO" mode. This sensor is connected to the A/C amplifier and detects fluctuations in the ambient temperature. This data is used for controlling the cabin temperature. The sensor sends a signal to the A/C amplifier. The resistance of the ambient temperature sensor changes in accordance with the ambient temperature. As the temperature decreases, the resistance increases. As the temperature increases, the resistance decreases.
The A/C amplifier applies voltage (5 V) to the ambient temperature sensor and reads voltage changes as the resistance of the ambient temperature sensor changes.

AC

DTC No.	DTC Detection Condition	Trouble Area
B1412/12	Open or short in ambient temperature sensor circuit	• Ambient temperature sensor • Harness or connector between ambient temperature sensor and A/C amplifier • A/C amplifier

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.

(b) Turn the ignition switch to the ON position and turn the intelligent tester main switch on.
(c) Select the item below in the DATA LIST, and read the display on the intelligent tester.

DATA LIST / AIR CONDITIONER:

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
AMBI TEMP SENS (Ambient temperature sensor)	Ambient temperature sensor / min: -30.8°C (-23.44°F), max: 50.8°C (123.44°F)	Actual ambient temperature is displayed	-

AC

OK:

The display is as specified in the normal condition column.

Result

Result	Proceed to
NG	A
OK (When troubleshooting according to the PROBLEM SYMPTOMS TABLE)	B
OK (When troubleshooting according to the DTC)	C

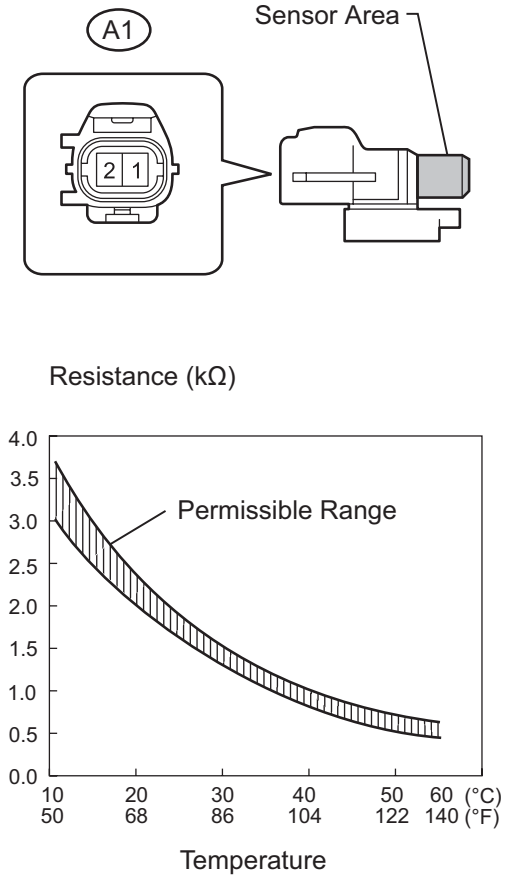
B → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

C → **REPLACE A/C AMPLIFIER**

A

2 INSPECT AMBIENT TEMPERATURE SENSOR

Component without harness connected:
(Ambient Temperature Sensor)



(a) Remove the ambient temperature sensor.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
A1-1 - A1-2	10°C (50°F)	3.00 to 3.73 kΩ
A1-1 - A1-2	15°C (59°F)	2.45 to 2.88 kΩ
A1-1 - A1-2	20°C (68°F)	1.95 to 2.30 kΩ
A1-1 - A1-2	25°C (77°F)	1.60 to 1.80 kΩ
A1-1 - A1-2	30°C (86°F)	1.28 to 1.47 kΩ
A1-1 - A1-2	35°C (95°F)	1.00 to 1.22 kΩ
A1-1 - A1-2	40°C (104°F)	0.80 to 1.00 kΩ
A1-1 - A1-2	45°C (113°F)	0.65 to 0.85 kΩ
A1-1 - A1-2	50°C (122°F)	0.50 to 0.70 kΩ
A1-1 - A1-2	55°C (131°F)	0.44 to 0.60 kΩ
A1-1 - A1-2	60°C (140°F)	0.36 to 0.50 kΩ

NOTICE:

- **Even slightly touching the sensor may change the resistance value. Be sure to hold the connector of the sensor.**
- **When measuring, the sensor temperature must be the same as the ambient temperature.**

HINT:

As the temperature increases, the resistance decreases (see the graph).

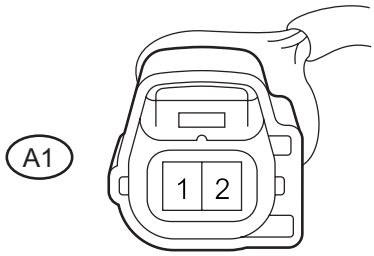
NG → **REPLACE AMBIENT TEMPERATURE SENSOR**

OK

AC

3	**CHECK HARNESS AND CONNECTOR (AMBIENT TEMPERATURE SENSOR - A/C AMPLIFIER)**

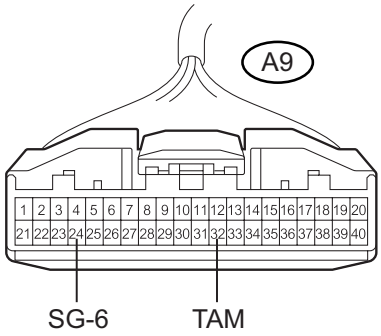
Front view of wire harness connector:
(to Ambient Temperature Sensor)



H E124473E06

(a) Disconnect the ambient temperature sensor connector.

Front view of wire harness connector:
(to A/C Amplifier)



H E143742E26

(b) Disconnect the A/C amplifier connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
A1-2 - A9-32 (TAM)	Always	Below 1 Ω
A1-1 - A9-24 (SG-6)	Always	Below 1 Ω
A9-32 (TAM) - Body ground	Always	10 kΩ or higher
A9-24 (SG-6) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE A/C AMPLIFIER