DTC	B1413/13	Evaporator Temperature Sensor Circuit

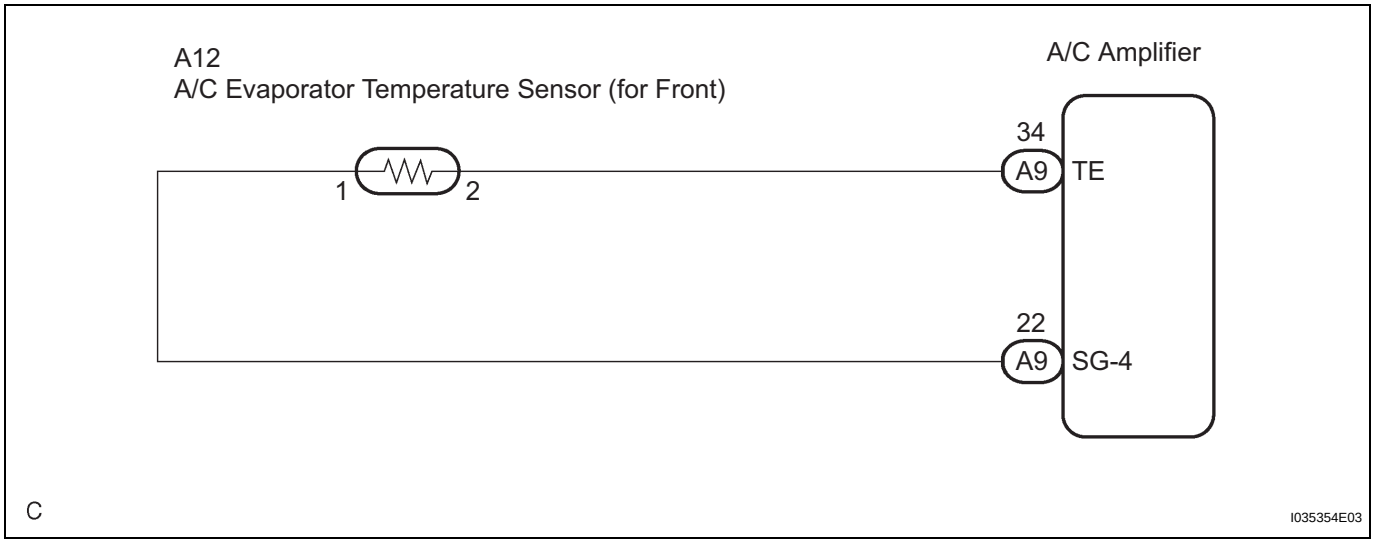
DESCRIPTION

The evaporator temperature sensor (A/C thermistor) is installed on the evaporator in the air conditioning unit. It detects the temperature of the cooled air that has passed through the evaporator and its signal is used to control the air conditioning. It sends a signal to the A/C amplifier. The resistance of the evaporator temperature sensor (A/C thermistor) changes in accordance with the temperature of the cooled air that has passed through the evaporator. As the temperature decreases, the resistance increases. As the temperature increases, the resistance decreases.

The A/C amplifier applies voltage (5 V) to the evaporator temperature sensor (A/C thermistor) and reads voltage changes as the resistance of the evaporator temperature sensor (A/C thermistor) changes. This sensor is used to prevent the evaporator from freezing.

DTC No.	DTC Detection Condition	Trouble Area
B1413/13	Open or short in evaporator temperature sensor circuit	• Evaporator temperature sensor • Harness or connector between evaporator 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
EVAP TEMP (Evaporator thermistor)	Evaporator thermistor / min.: -29.7°C (-21.46°F), max.: 59.55°C (139.19°F)	Actual evaporator temperature is displayed	-

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

AC

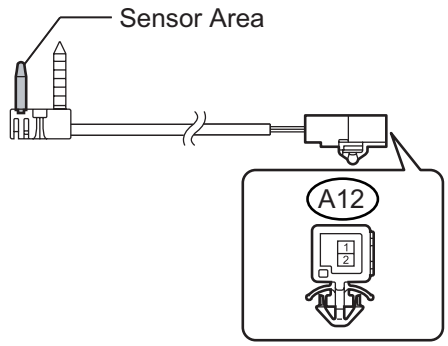
B → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

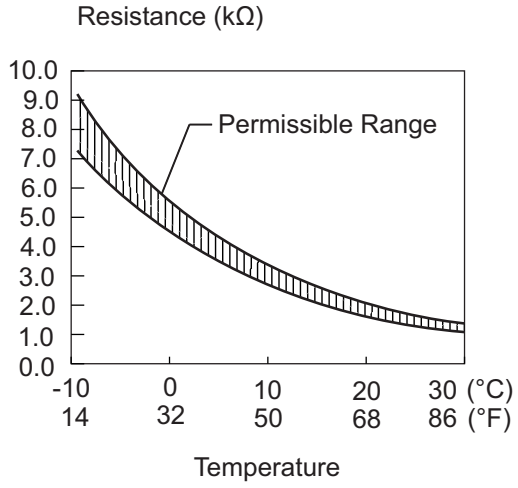
C → **REPLACE A/C AMPLIFIER**

A

2 INSPECT EVAPORATOR TEMPERATURE SENSOR

Component without harness connected:
(Evaporator Temperature Sensor)





E148014E02

(a) Disconnect the connector from the evaporator temperature sensor.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
A12-1 - A12-2	-10°C (14°F)	7.30 to 9.10 kΩ
A12-1 - A12-2	-5°C (23°F)	5.65 to 6.95 kΩ
A12-1 - A12-2	0°C (32°F)	4.40 to 5.35 kΩ
A12-1 - A12-2	5°C (41°F)	3.40 to 4.15 kΩ
A12-1 - A12-2	10°C (50°F)	2.70 to 3.25 kΩ
A12-1 - A12-2	15°C (59°F)	2.14 to 2.58 kΩ
A12-1 - A12-2	20°C (68°F)	1.71 to 2.05 kΩ
A12-1 - A12-2	25°C (77°F)	1.38 to 1.64 kΩ
A12-1 - A12-2	30°C (86°F)	1.11 to 1.32 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 evaporator temperature.**

HINT:

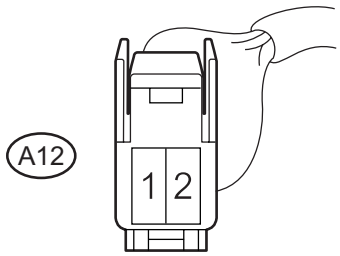
As the temperature increases, the resistance decreases (see the graph).

NG → **REPLACE EVAPORATOR TEMPERATURE SENSOR**

OK

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

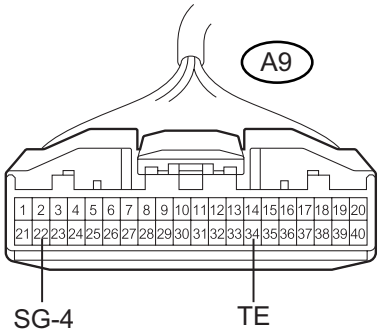
Front view of wire harness connector:
(to Evaporator Temperature Sensor)



H E124472E09

(a) Disconnect the evaporator temperature sensor connector.

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



H E143742E34

(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
A9-34 (TE) - A12-2	Always	Below 1 Ω
A9-22 (SG-4) - A12-1	Always	Below 1 Ω
A9-34 (TE) - Body ground	Always	10 kΩ or higher
A9-22 (SG-4) - Body ground	Always	10 kΩ or higher

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

OK

REPLACE A/C AMPLIFIER

AC