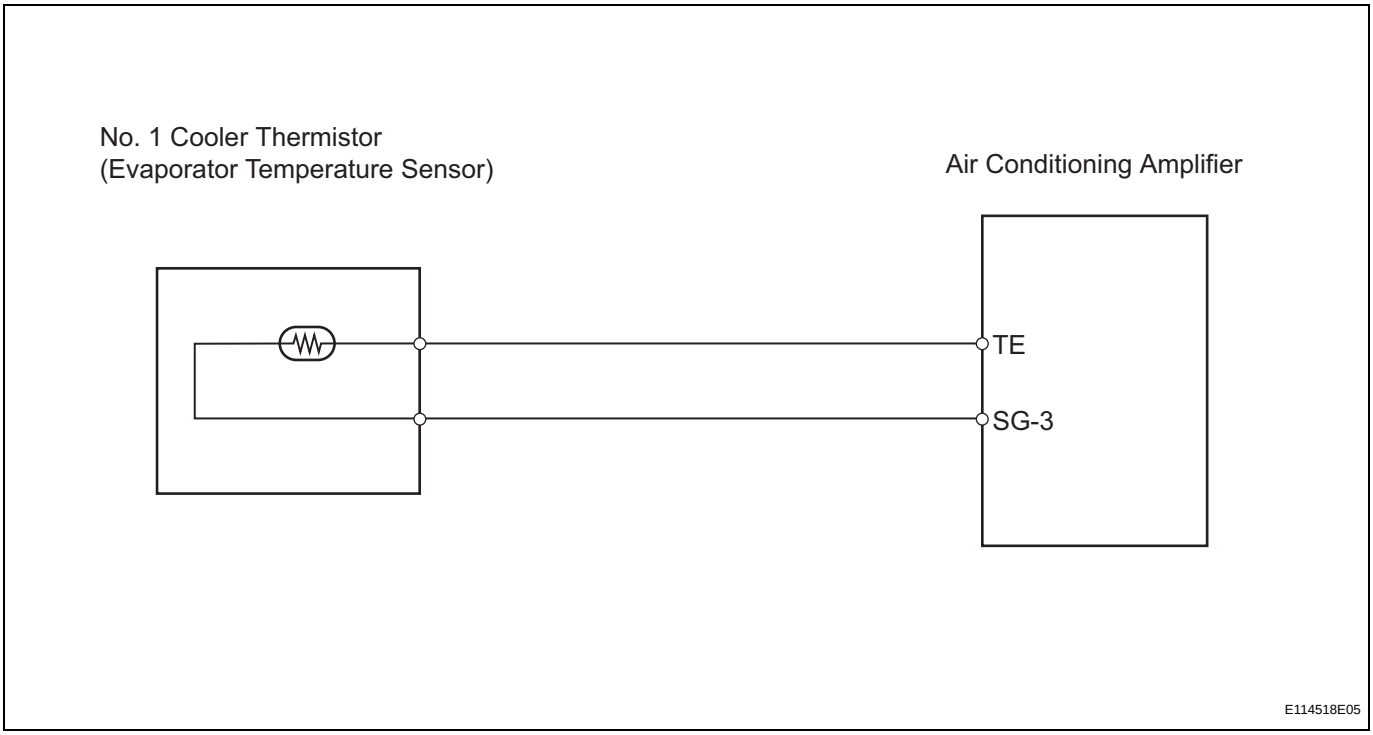
DTC	B1413/13	Evaporator Temperature Sensor Circuit

DESCRIPTION

The No. 1 cooler thermistor (evaporator temperature sensor) is installed on the evaporator in the air conditioning unit to detect the temperature of the cooled air that has passed through the evaporator and to control the air conditioner. It sends signals to the air conditioning amplifier. The signals change in accordance with the resistance of the No. 1 cooler thermistor (evaporator temperature sensor). As the temperature decreases, the resistance increases. As the temperature increases, the resistance decreases. The air conditioning amplifier applies a voltage (5 V) to the No. 1 cooler thermistor (evaporator temperature sensor) and reads voltage changes as changes in the resistance of the No. 1 cooler thermistor (evaporator temperature sensor). This sensor is used for frost prevention.

DTC No.	DTC Detection Condition	Trouble Area
B1413/13	Open or short in evaporator temperature sensor circuit	• No. 1 cooler thermistor (evaporator temperature sensor) • Harness and connector between No. 1 cooler thermistor (evaporator temperature sensor) and air conditioning amplifier • Air conditioning amplifier

WIRING DIAGRAM



AC

INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER (EVAP FIN TEMP)

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the ignition switch ON and turn the intelligent tester main switch ON.
(c) Select the item below in the DATA LIST, and read the value displayed on the intelligent tester.

Air conditioning amplifier

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
EVAP FIN TEMP	Evaporator temperature sensor / Min.: -29.7°C (-21.46°F) Max.: 59.6°C (139.28°F)	Actual evaporator temperature is displayed	Open circuit: -29.7°C (-21.46°F) Short circuit: 59.6°C (139.28°F)

OK:

The display is as specified in the normal condition column.

Result

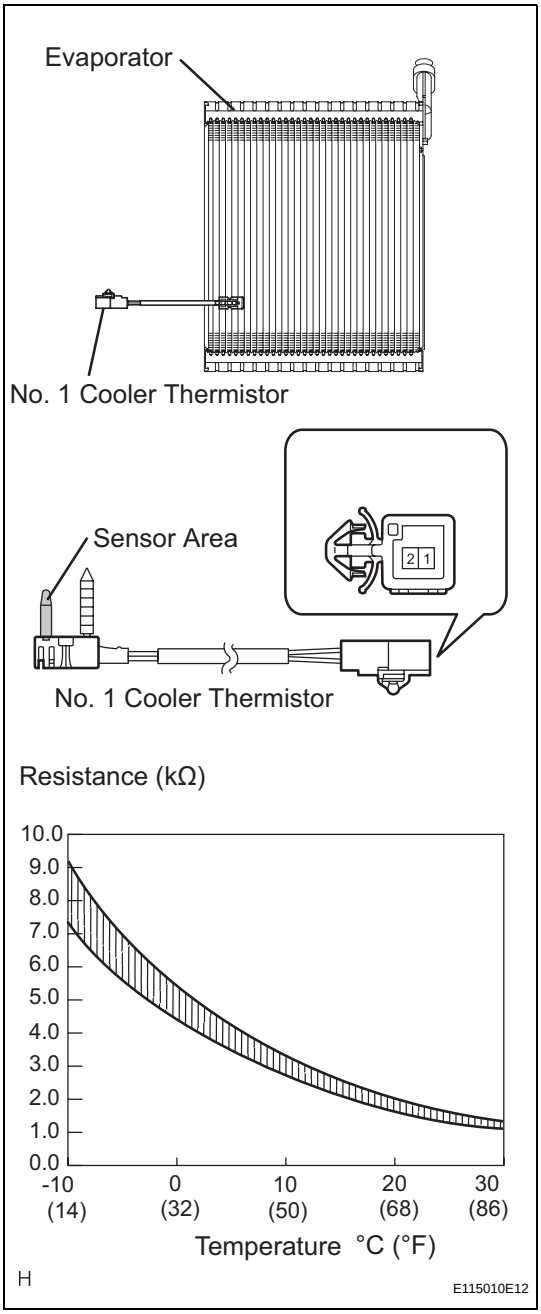
Result	Proceed to
NG	A
OK (Checking from the PROBLEM SYMPTOMS TABLE)	B
OK (Checking from the DTC)	C

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

C → REPLACE AIR CONDITIONING AMPLIFIER

A

2 INSPECT NO. 1 COOLER THERMISTOR (EVAPORATOR TEMPERATURE SENSOR)



(a) Remove the No. 1 cooler thermistor.

(b) Measure the resistance of the thermistor.

Standard resistance

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

NOTICE:

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

HINT:

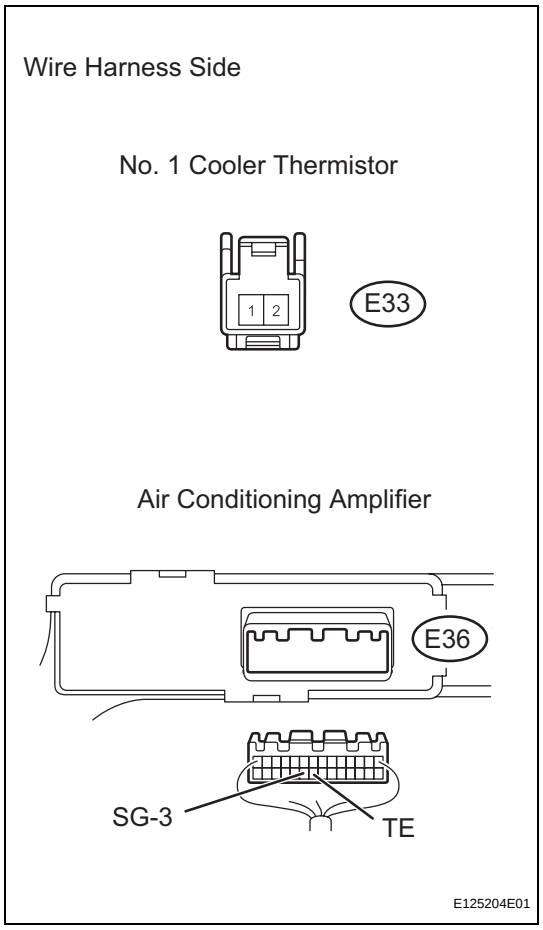
As the temperature increases, the resistance decreases (see the graph).

NG → **REPLACE NO. 1 COOLER THERMISTOR**

OK

AC

3	**CHECK WIRE HARNESS (NO. 1 COOLER THERMISTOR - AIR CONDITIONING AMPLIFIER)**



(a) Disconnect the E33 No. 1 cooler thermistor connector.
(b) Disconnect the E36 amplifier connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
E33-1 - E36-22 (TE)	Below 1 Ω
E33-2 - E36-23 (SG-3)	Below 1 Ω
E33-1 - Body ground	1 MΩ or higher
E33-2 - Body ground	1 MΩ or higher

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

OK

REPLACE AIR CONDITIONING AMPLIFIER

AC