Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002AQOZ
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM (for PHEV Model): P1F2015; Evaporator Refrigerant Temperature Sensor Circuit Short to Battery or Open; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**P1F2015**	**Evaporator Refrigerant Temperature Sensor Circuit Short to Battery or Open**

DESCRIPTION

The evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly) is installed to the refrigerant piping after the No. 1 cooler evaporator sub-assembly, and detects the refrigerant temperature after it passes through the No. 1 cooler evaporator sub-assembly.

The resistance of the evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly) changes in accordance with the refrigerant gas temperature. Resistance increases as the refrigerant gas temperature drops and decreases as the temperature rises.

The heat pump ECU assembly outputs a voltage to the evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly) and reads voltage changes that result from the changes in the resistance of the evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly).

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	MEMORY	DTC OUTPUT FROM	PRIORITY	NOTE
P1F2015	Evaporator Refrigerant Temperature Sensor Circuit Short to Battery or Open	Diagnosis Condition: Ignition switch ON Malfunction Status: Open or short to +B in evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly) circuit Detection Time: Continuously for 4 seconds or more	• Evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly) • Harness or connector • Air conditioning amplifier assembly • Heat pump ECU assembly	Does not come on	Memorized	Air Conditioner	A	-

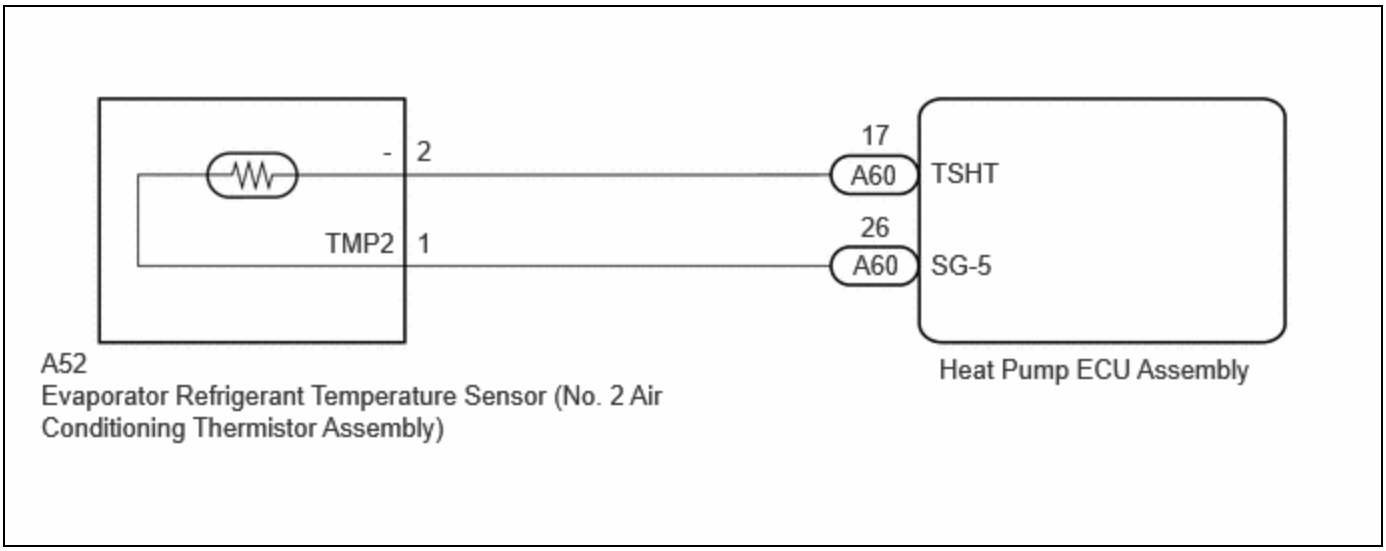
DTC Detection Condition Combination Table

		VEHICLE CONDITION	
		PATTERN 1	PATTERN 2
Diagnosis Condition	Ignition switch ON	○	○
Malfunction	Open in evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly) circuit	○	-
	Short to +B in evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly) circuit	-	○
Detection Time		Continuously for 4 seconds or more	Continuously for 4 seconds or more
Trip Count		1 trip	1 trip

HINT:

If the conditions of either of these patterns are detected, a DTC will be stored

WIRING DIAGRAM



PROCEDURE

1.	**CHECK EVAPORATOR REFRIGERANT TEMPERATURE SENSOR (NO. 2 AIR CONDITIONING THERMISTOR ASSEMBLY) CIRCUIT**

Pre-procedure1

(a) Disconnect the A52 evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly) connector.

Procedure1

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

Standard Voltage:

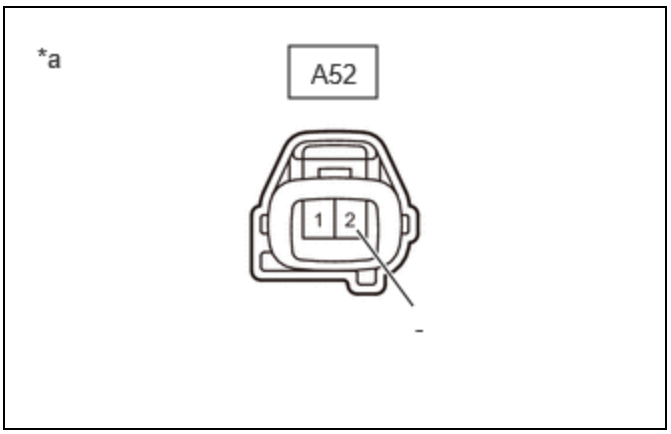
EWD INFO

Click Location & Routing(A52)
Click Connector(A52)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A52-2 (-) - Body ground	Ignition switch ON	0 to 5.5 V	V

Result:

PROCEED TO
OK



*a	Front view of wire harness connector (to Evaporator Refrigerant Temperature Sensor (No. 2 Air Conditioning Thermistor Assembly))

PROCEED TO
NG

Post-procedure1

(c) None

NG ▶ **GO TO STEP 5**

OK ▼

2.	**CLEAR DTC**

(a) Clear the DTCs.

Body Electrical > Air Conditioner > Clear DTCs

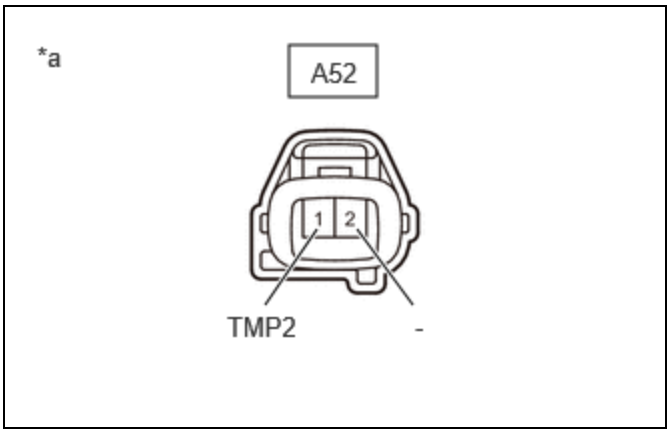
NEXT ▼

3.	**CHECK FOR DTC**

Pre-procedure1

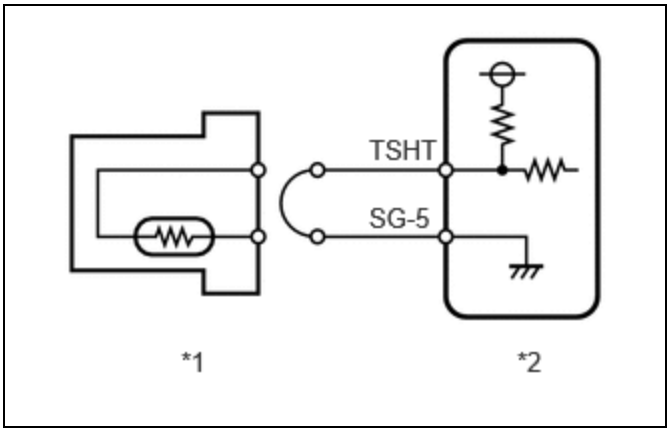
(a) Turn the ignition switch off.

(b) Disconnect the A52 evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly) connector.



*a	Front view of wire harness connector (to Evaporator Refrigerant Temperature Sensor (No. 2 Air Conditioning Thermistor Assembly))

(c) Connect terminals 1 and 2 of the evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly) connector on the wire harness side.



*1	Evaporator Refrigerant Temperature Sensor (No. 2 Air Conditioning Thermistor Assembly)
*2	Heat Pump ECU Assembly

(d) Turn the ignition switch to ON and wait for 4 seconds or more.

Procedure1

(e) Check for DTCs.

Body Electrical > Air Conditioner > Trouble Codes

RESULT	PROCEED TO
P1F2011 is output	A
P1F2015 is output	B

Post-procedure1

(f) None

A **REPLACE EVAPORATOR REFRIGERANT TEMPERATURE SENSOR (NO. 2 AIR CONDITIONING THERMISTOR ASSEMBLY)**

B

4.	**CHECK HARNESS AND CONNECTOR (EVAPORATOR REFRIGERANT TEMPERATURE SENSOR (NO. 2 AIR CONDITIONING THERMISTOR ASSEMBLY) - HEAT PUMP ECU ASSEMBLY)**

Pre-procedure1

(a) Disconnect the A52 evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly) connector.

(b) Disconnect the A60 heat pump ECU assembly connector.

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(A52,A60)
Click Connector(A52)
Click Connector(A60)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A52-2 (-) - A60-17 (TSHT)	Always	Below 1 Ω	Ω
A52-1 (TMP2) - A60-26 (SG-5)	Always	Below 1 Ω	Ω

Post-procedure1

(d) None

OK ▶ **REPLACE HEAT PUMP ECU ASSEMBLY**

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

5.	**CHECK HARNESS AND CONNECTOR (EVAPORATOR REFRIGERANT TEMPERATURE SENSOR (NO. 2 AIR CONDITIONING THERMISTOR ASSEMBLY) - HEAT PUMP ECU ASSEMBLY)**

Pre-procedure1

(a) Disconnect the A52 evaporator refrigerant temperature sensor (No. 2 air conditioning thermistor assembly) connector.

(b) Disconnect the A60 heat pump ECU assembly connector.

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(A52,A60)

Click Connector(A52)
Click Connector(A60)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A52-2 (-) or A60-17 (TSHT) - Other terminals and body ground	Always	10 kΩ or higher	kΩ

Post-procedure1

(d) None

OK ▶ **REPLACE HEAT PUMP ECU ASSEMBLY**

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**