Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002BMEM
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: M20A-FXS (BATTERY / CHARGING): SOLAR CHARGING SYSTEM: Solar Charging System Power Generation Malfunction; 2023 - 2024 MY Prius Prius Prime [03/2023 -]		

Solar Charging System Power Generation Malfunction

DESCRIPTION

Due to the properties of the No. 1 roof window glass sub-assembly or No. 2 roof window glass sub-assembly, if the No. 1 roof window glass sub-assembly or No. 2 roof window glass sub-assembly is malfunctioning or there is an open in the wire harness between the No. 1 roof window glass sub-assembly or No. 2 roof window glass sub-assembly and solar energy control ECU assembly, the solar energy control ECU assembly may not be able to detect the malfunction as it is unable to determine if electricity is not being generated due to a malfunction or the absence of sufficient sunlight. Therefore, even if a malfunction is not detected, there may still be a malfunction. Even if the solar roof is not malfunctioning, due to the environment (seasons, shadows, etc.) or system state, power may not be able to be generated. It is necessary to confirm any environment causes based on the interview with the customer or the on-site inspection, etc. Depending on the state of the system, it is possible to make approximate judgments based on the Vehicle Control History (RoB).

WIRING DIAGRAM

Refer to the wiring diagram for DTC P196312.

Click here INFO

Refer to the wiring diagram for DTC P1EBA12.

Click here INFO

CAUTION / NOTICE / HINT

CAUTION:

Refer to the precautions before inspecting high voltage circuit.

Click here INFO

NOTICE:

- After the ignition switch is turned off, there may be a waiting time before disconnecting the negative (-) auxiliary battery terminal.

  Click here INFO
- When disconnecting and reconnecting the auxiliary battery

HINT:

When disconnecting and reconnecting the auxiliary battery, there is an automatic learning function that completes learning when the respective system is used.

Click here INFO

PROCEDURE

1.	**CHECK DTC OUTPUT (HEALTH CHECK)**

(a) Enter the following menus: Health Check.

(b) Check DTCs.

RESULT	PROCEED TO
No DTCs are output.	A
DTCs are output.	B

(c) Turn the ignition switch off.

B ▶ **GO TO DTC CHART**

A ▼

2.	**INSPECT NO. 1 ROOF WINDOW GLASS SUB-ASSEMBLY (SOLAR PANEL VOLTAGE)**

CAUTION:

Be sure to wear insulated gloves.

(a) Park the vehicle in an area where the solar radiation will be steady.

(b) Ensure that the following vehicle conditions are met.

Weather	Clear or mostly clear and sunny
Time	Between 11:00 and 14:00
Place	An area where sunlight strikes the solar roof directly

HINT:

- Make sure no part of the solar roof is shaded.
- If the solar roof is dirty, clean it.

(c) Disconnect the cable from the negative (-) auxiliary battery terminal.

(d) Remove the service plug grip.

Click here INFO

(e) Disconnect the solar energy control ECU assembly connector.

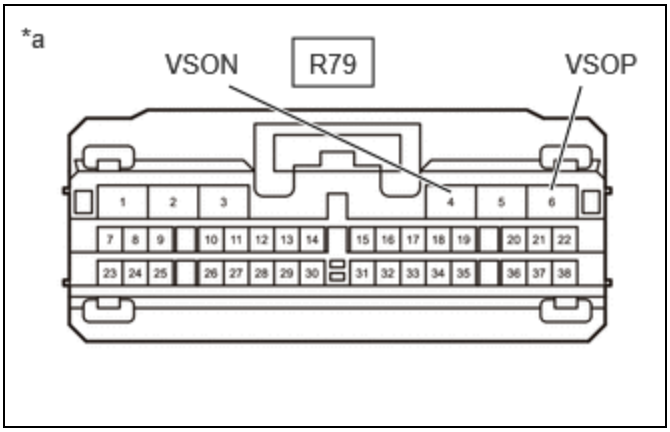
(f) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

EWD INFO

Click Location & Routing(R79)
Click Connector(R79)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R79-6 (VSOP) - R79-4 (VSON)	Ignition switch off	15 V or higher



*a	Front view of wire harness connector (to Solar Energy Control ECU Assembly)

(g) Reconnect the solar energy control ECU assembly connector.

(h) Install the service plug grip.

(i) Connect the cable to the negative (-) auxiliary battery terminal.

NG ▶ **GO TO STEP 8**

OK ▼

3.	**INSPECT NO. 2 ROOF WINDOW GLASS SUB-ASSEMBLY (SOLAR PANEL VOLTAGE)**

CAUTION:

Be sure to wear insulated gloves.

(a) Park the vehicle in an area where the solar radiation will be steady.

(b) Ensure that the following vehicle conditions are met.

Weather	Clear or mostly clear and sunny
Time	Between 11:00 and 14:00
Place	An area where sunlight strikes the solar roof directly

HINT:

- Make sure no part of the solar roof is shaded.
- If the solar roof is dirty, clean it.

(c) Disconnect the cable from the negative (-) auxiliary battery terminal.

(d) Remove the service plug grip.

Click here INFO

(e) Disconnect the solar energy control ECU assembly connector.

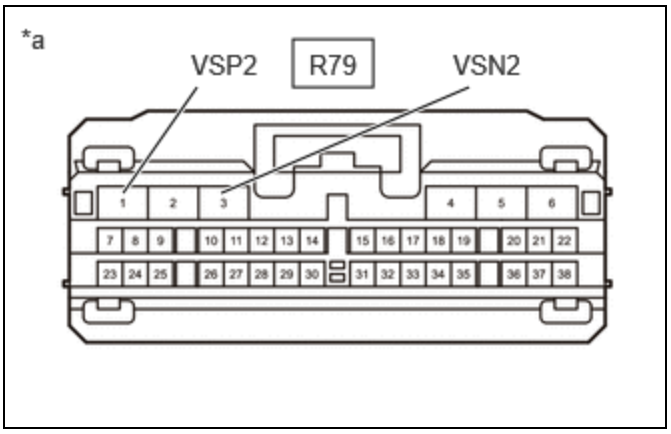
(f) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

EWD INFO

Click Location & Routing(R79)
Click Connector(R79)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R79-1 (VSP2) - R79-3 (VSN2)	Ignition switch off	15 V or higher



*a	Front view of wire harness connector (to Solar Energy Control ECU Assembly)

(g) Reconnect the solar energy control ECU assembly connector.

(h) Install the service plug grip.

(i) Connect the cable to the negative (-) auxiliary battery terminal.

NG ▶ **GO TO STEP 6**

OK ▼

4.	CHECK SOLAR ENERGY CONTROL ECU ASSEMBLY (SOLAR PANEL VOLTAGE)

(a) Park the vehicle in an area where the solar radiation will be steady.

(b) Ensure that the following vehicle conditions are met.

Weather	Clear or mostly clear and sunny
Time	Between 11:00 and 14:00
Place	An area where sunlight strikes the solar roof directly

HINT:

- Make sure no part of the solar roof is shaded.
- If the solar roof is dirty, clean it.

(c) Leave the vehicle with the ignition switch to ON (READY) for a while and then check the energy generated by the solar charging system display on the multi-information display.

Specified Condition:

The value of the cumulative energy generation amount in the combination meter increases 3 Wh or more.

The current power generation graphic on the multi-information display continues to show a condition other than 0.

HINT:

Depending on the condition of the solar charging system, it may take up to 30 minutes for the displayed value of the cumulative energy generation amount to increase.

NG ▶ **REPLACE SOLAR ENERGY CONTROL ECU ASSEMBLY**

OK ▼

5.	**CHECK DATA (VEHICLE CONTROL HISTORY (RoB)**

(a) Enter the following menus.

Powertrain > Solar Charging Control > Utility

TESTER DISPLAY
Vehicle Control History (RoB)

(b) Check for Vehicle Control History (RoB).

RESULT	PROCEED TO
Vehicle Control History (RoB) is not stored.	A
Vehicle Control History (RoB) is stored.	B

(c) Turn the ignition switch off.

A ▶ **GO TO CAUSE ANALYSIS**

B ▶ **CONFIRM VEHICLE CONTROL HISTORY (RoB)**

6.	**CHECK CONNECTOR CONNECTION CONDITION (NO. 2 ROOF WINDOW GLASS SUB-ASSEMBLY CONNECTOR)**

(a) Check the connection condition of the No. 2 roof window glass sub-assembly connector and the contact pressure of each terminal. Check the terminals for deformation, and check the connector for water ingress and foreign matter.

Click here INFO

OK:

- The connector is connected securely.

- The terminals are not deformed and are connected securely.
- No water or foreign matter in the connector.

RESULT	PROCEED TO
OK	A
NG (The connector is not connected securely.)	B
NG (The terminals are not making secure contact or are deformed, or water or foreign matter exists in the connector.)	C

B ▶ **CONNECT SECURELY**

C ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

A ▼

7.	**CHECK HARNESS AND CONNECTOR (SOLAR ENERGY CONTROL ECU ASSEMBLY - NO. 2 ROOF WINDOW GLASS SUB-ASSEMBLY)**

CAUTION:

Be sure to wear insulated gloves.

(a) Check that the service plug grip is not installed.

NOTICE:

After removing the service plug grip, do not turn the ignition switch to ON (READY), unless instructed by the repair manual because this may cause a malfunction.

(b) Disconnect the No. 2 roof window glass sub-assembly connector.

(c) Disconnect the solar energy control ECU assembly connectors.

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

Standard Resistance:

EWD INFO

Click Location & Routing(R79,R82)
Click Connector(R79)
Click Connector(R82)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R79-1 (VSP2) - R82-2 (VSP2)	Ignition switch off	Below 1 Ω
R79-3 (VSN2) - R82-1 (VSN2)	Ignition switch off	Below 1 Ω

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R79-1 (VSP2) or R82-2 (VSP2) - Body ground and other terminals	Ignition switch off	10 kΩ or higher
R79-3 (VSN2) or R82-1 (VSN2) - Body ground and other terminals	Ignition switch off	10 kΩ or higher

(e) Reconnect the solar energy control ECU assembly connector.

(f) Reconnect the No. 2 roof window glass sub-assembly connector.

OK ▶ **REPLACE NO. 2 ROOF WINDOW GLASS SUB-ASSEMBLY**

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

8.	**CHECK CONNECTOR CONNECTION CONDITION (NO. 1 ROOF WINDOW GLASS SUB-ASSEMBLY CONNECTOR)**

(a) Check the connection condition of the No. 1 roof window glass sub-assembly connector and the contact pressure of each terminal. Check the terminals for deformation, and check the connector for water ingress and foreign matter.

Click here INFO

OK:
- The connector is connected securely.
- The terminals are not deformed and are connected securely.
- No water or foreign matter in the connector.

RESULT	PROCEED TO
OK	A
NG (The connector is not connected securely.)	B
NG (The terminals are not making secure contact or are deformed, or water or foreign matter exists in the connector.)	C

B ▶ **CONNECT SECURELY**

C ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

A ▼

9.	**CHECK HARNESS AND CONNECTOR (SOLAR ENERGY CONTROL ECU ASSEMBLY - NO. 1 ROOF WINDOW GLASS SUB-ASSEMBLY)**

CAUTION:

Be sure to wear insulated gloves.

(a) Check that the service plug grip is not installed.

NOTICE:

After removing the service plug grip, do not turn the ignition switch to ON (READY), unless instructed by the repair manual because this may cause a malfunction.

(b) Disconnect the No. 1 roof window glass sub-assembly connector.

(c) Disconnect the solar energy control ECU assembly connectors.

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

Standard Resistance:

EWD INFO

Click Location & Routing(R79,R81)
Click Connector(R79)
Click Connector(R81)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R79-6 (VSOP) - R81-3 (VSOP)	Ignition switch off	Below 1 Ω
R79-4 (VSON) - R81-1 (VSON)	Ignition switch off	Below 1 Ω
R79-6 (VSOP) or R81-3 (VSOP) - Body ground and other terminals	Ignition switch off	10 kΩ or higher
R79-4 (VSON) or R81-1 (VSON) - Body ground and other terminals	Ignition switch off	10 kΩ or higher

(e) Reconnect the solar energy control ECU assembly connector.

(f) Reconnect the No. 1 roof window glass sub-assembly connector.

OK ▶ **REPLACE NO. 1 ROOF WINDOW GLASS SUB-ASSEMBLY**

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