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Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: HYBRID BATTERY SYSTEM (for PHEV Model): P0A9B2A,...,P306B62; Hybrid/EV Battery Temperature Sensor "A" Signal Stuck In Range; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**P0A9B2A**	**Hybrid/EV Battery Temperature Sensor "A" Signal Stuck In Range**

DTC	**P0AC52A**	**Hybrid/EV Battery Temperature Sensor "B" Signal Stuck In Range**

DTC	**P0ACA2A**	**Hybrid/EV Battery Temperature Sensor "C" Signal Stuck In Range**

DTC	**P0AE82A**	**Hybrid/EV Battery Temperature Sensor "D" Signal Stuck In Range**

DTC	**P0BC22A**	**Hybrid/EV Battery Temperature Sensor "E" Signal Stuck In Range**

DTC	**P0C332A**	**Hybrid/EV Battery Temperature Sensor "F" Signal Stuck In Range**

DTC	**P0C7C2A**	**Hybrid/EV Battery Temperature Sensor "G" Signal Stuck In Range**

DTC	**P0C812A**	**Hybrid/EV Battery Temperature Sensor "H" Signal Stuck In Range**

DTC	**P0C882A**	**Hybrid/EV Battery Temperature Sensor "I" Signal Stuck In Range**

DTC	**P0C8D2A**	**Hybrid/EV Battery Temperature Sensor "J" Signal Stuck In Range**

DTC	**P0C922A**	**Hybrid/EV Battery Temperature Sensor "K" Signal Stuck In Range**

DTC	**P0C972A**	**Hybrid/EV Battery Temperature Sensor "L" Signal Stuck In Range**

DTC	**P0CA82A**	**Hybrid/EV Battery Temperature Sensor "M" Signal Stuck In Range**

DTC	**P0CAD2A**	**Hybrid/EV Battery Temperature Sensor "N" Signal Stuck In Range**

DTC	**P0CB22A**	**Hybrid/EV Battery Temperature Sensor "O" Signal Stuck In Range**

DTC	**P306562**	**Hybrid/EV Battery Temperature Sensor "Group 1" Signal Compare Failure**

DTC	**P306A62**	**Hybrid/EV Battery Temperature Sensor "Group 2" Signal Compare Failure**

DTC	**P306B62**	**Hybrid/EV Battery Temperature Sensor "Group 3" Signal Compare Failure**

DESCRIPTION

Refer to the description for DTC P0A9B11.

Click here INFO

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P0A9B2A	Hybrid/EV Battery Temperature Sensor "A" Signal Stuck In Range	The performance of battery temperature sensor 0 is abnormal and its output is stuck. (2 trip detection logic)	• No. 1 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0A9C
P0AC52A	Hybrid/EV Battery Temperature Sensor "B" Signal Stuck In Range	The performance of battery temperature sensor 1 is abnormal and its output is stuck. (2 trip detection logic)	• No. 1 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0AC6

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P0ACA2A	Hybrid/EV Battery Temperature Sensor "C" Signal Stuck In Range	The performance of battery temperature sensor 2 is abnormal and its output is stuck. (2 trip detection logic)	• No. 1 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0ACB
P0AE82A	Hybrid/EV Battery Temperature Sensor "D" Signal Stuck In Range	The performance of battery temperature sensor 3 is abnormal and its output is stuck. (2 trip detection logic)	• No. 1 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0AE9
P0BC22A	Hybrid/EV Battery Temperature Sensor "E" Signal Stuck In Range	The performance of battery temperature sensor 4 is abnormal and its output is stuck. (2 trip detection logic)	• No. 1 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0BC3
P0C332A	Hybrid/EV Battery Temperature Sensor "F" Signal Stuck In Range	The performance of battery temperature sensor 5 is abnormal and its output is stuck. (2 trip detection logic)	• No. 2 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0C34
P0C7C2A	Hybrid/EV Battery Temperature Sensor "G" Signal Stuck In Range	The performance of battery temperature sensor 6 is abnormal and its output is stuck. (2 trip detection logic)	• No. 2 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0C7D

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P0C812A	Hybrid/EV Battery Temperature Sensor "H" Signal Stuck In Range	The performance of battery temperature sensor 7 is abnormal and its output is stuck. (2 trip detection logic)	• No. 2 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0C82
P0C882A	Hybrid/EV Battery Temperature Sensor "I" Signal Stuck In Range	The performance of battery temperature sensor 8 is abnormal and its output is stuck. (2 trip detection logic)	• No. 2 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0C89
P0C8D2A	Hybrid/EV Battery Temperature Sensor "J" Signal Stuck In Range	The performance of battery temperature sensor 9 is abnormal and its output is stuck. (2 trip detection logic)	• No. 2 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0C8E
P0C922A	Hybrid/EV Battery Temperature Sensor "K" Signal Stuck In Range	The performance of battery temperature sensor 10 is abnormal and its output is stuck. (2 trip detection logic)	• No. 3 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0C93
P0C972A	Hybrid/EV Battery Temperature Sensor "L" Signal Stuck In Range	The performance of battery temperature sensor 11 is abnormal and its output is stuck. (2 trip detection logic)	• No. 3 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0C98

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P0CA82A	Hybrid/EV Battery Temperature Sensor "M" Signal Stuck In Range	The performance of battery temperature sensor 12 is abnormal and its output is stuck. (2 trip detection logic)	• No. 3 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0CA9
P0CAD2A	Hybrid/EV Battery Temperature Sensor "N" Signal Stuck In Range	The performance of battery temperature sensor 13 is abnormal and its output is stuck. (2 trip detection logic)	• No. 3 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0CAE
P0CB22A	Hybrid/EV Battery Temperature Sensor "O" Signal Stuck In Range	The performance of battery temperature sensor 14 is abnormal and its output is stuck. (2 trip detection logic)	• No. 3 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0CB3
P306562	Hybrid/EV Battery Temperature Sensor "Group 1" Signal Compare Failure	The performance of any battery temperature sensor (0 to 4) is abnormal and the difference in output between it and each other battery temperature sensor is excessively large. (1 trip detection logic)	• No. 1 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P3065
P306A62	Hybrid/EV Battery Temperature Sensor "Group 2" Signal	The performance of any battery temperature sensor (5 to 9) is abnormal and the	• No. 2 HV supply stack sub-assembly	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P306A

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
	Compare Failure	difference in output between it and each other battery temperature sensor is excessively large. (1 trip detection logic)	• Battery voltage sensor					
P306B62	Hybrid/EV Battery Temperature Sensor "Group 3" Signal Compare Failure	The performance of any battery temperature sensor (10 to 14) is abnormal and the difference in output between it and each other battery temperature sensor is excessively large. (1 trip detection logic)	• No. 3 HV supply stack sub-assembly • Battery voltage sensor	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P306B

HINT:

If the vehicle as is left as is for 24 hours, the value of "Hybrid/EV Battery Temperature" will be almost the same as the ambient temperature.

The following items can be helpful when performing repairs:

Data List

- Vehicle Speed
- Ambient Temperature

MONITOR DESCRIPTION

If the battery ECU assembly detects a malfunction in the HV battery temperature sensor, the battery ECU assembly illuminates the MIL and stores a DTC.

MONITOR STRATEGY

Related DTCs	P0A9C (INF P0A9B2A), P0AC6 (INF P0AC52A), P0ACB (INF P0ACA2A), P0AE9 (INF P0AE82A), P0BC3 (INF P0BC22A), P0C34 (INF P0C332A), P0C7D (INF P0C7C2A), P0C82 (INF P0C812A), P0C89 (INF P0C882A), P0C8E (INF P0C8D2A), P0C93 (INF P0C922A), P0C98 (INF P0C972A), P0CA9 (INF P0CA82A), P0CAE (INF P0CAD2A), P0CB3 (INF P0CB22A): Battery temperature sensor malfunction (stuck) P3065 (INF P306562), P306A (INF P306A62), P306B (INF P306B62): Battery temperature sensor malfunction (deviation)

Required sensors/components	Battery temperature sensor
Frequency of operation	Continuous
Duration	TMC's intellectual property
MIL operation	1 driving cycle / 2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The monitor will run whenever the following DTCs are not stored	TMC's intellectual property
Other conditions belong to TMC's intellectual property	-

TYPICAL MALFUNCTION THRESHOLDS

TMC's intellectual property	-

COMPONENT OPERATING RANGE

Battery ECU assembly	DTC P0A9C (INF P0A9B2A) is not detected DTC P0AC6 (INF P0AC52A) is not detected DTC P0ACB (INF P0ACA2A) is not detected DTC P0AE9 (INF P0AE82A) is not detected DTC P0BC3 (INF P0BC22A) is not detected DTC P0C34 (INF P0C332A) is not detected DTC P0C7D (INF P0C7C2A) is not detected DTC P0C82 (INF P0C812A) is not detected DTC P0C89 (INF P0C882A) is not detected DTC P0C8E (INF P0C8D2A) is not detected DTC P0C93 (INF P0C922A) is not detected DTC P0C98 (INF P0C972A) is not detected DTC P0CA9 (INF P0CA82A) is not detected DTC P0CAE (INF P0CAD2A) is not detected DTC P0CB3 (INF P0CB22A) is not detected DTC P3065 (INF P306562) is not detected DTC P306A (INF P306A62) is not detected DTC P306B (INF P306B62) is not detected

CONFIRMATION DRIVING PATTERN

HINT:

- After repair has been completed, clear the DTC and then check that the vehicle has returned to normal by performing the following All Readiness check procedure.

  Click here INFO
- When clearing the permanent DTCs, refer to the "CLEAR PERMANENT DTC" procedure.

  Click here INFO

P0A9B2A, P0AC52A, P0ACA2A, P0AE82A, P0BC22A, P0C332A, P0C7C2A, P0C812A, P0C882A, P0C8D2A, P0C922A, P0C972A, P0CA82A, P0CAD2A, P0CB22A:

1. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
2. Turn the ignition switch off and wait for 2 minutes or more.
3. Drive the vehicle for approximately 10 minutes according to the freeze frame data items "Vehicle Speed", "Accelerator Position", "Hybrid/EV Battery Temperature 1 to 15" and "Hybrid/EV Battery Current" when ambient temperature is -10°C (14°F) or higher.[*1]

HINT:

- Check that the output of each battery temperature sensor varies.
- Check that the difference in output between each battery temperature sensor is not excessively large.
- [*1]: Normal judgment procedure.

  The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.

4. Enter the following menus: Powertrain / HV Battery / Utility / All Readiness.
5. Check the DTC judgment result.

HINT:

- If the judgment result shows NORMAL, the system is normal.
- If the judgment result shows ABNORMAL, the system has a malfunction.
- If the judgment result shows INCOMPLETE or N/A, perform the normal judgment procedure again.

P306562, P306A62, P306B62:

1. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
2. Turn the ignition switch off and wait for 2 minutes or more.
3. Turn the ignition switch to ON and wait for 10 seconds or more when the ambient temperature is -10°C (14°F) or higher.[*1]

HINT:

- Check that the difference in output between each battery temperature sensor is not excessively large.
- [*1]: Normal judgment procedure.

  The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.

4. Enter the following menus: Powertrain / HV Battery / Utility / All Readiness.
5. Check the DTC judgment result.

HINT:

- If the judgment result shows NORMAL, the system is normal.
- If the judgment result shows ABNORMAL, the system has a malfunction.
- If the judgment result shows INCOMPLETE or N/A, perform the normal judgment procedure again.

WIRING DIAGRAM

Refer to the wiring diagram for DTC P0A9B11.

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 auxiliary negative (-) 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.	**INSPECT HV SUPPLY BATTERY ASSEMBLY**

HINT:

Click here INFO

NEXT

2.	**CHECK DTC OUTPUT (HV BATTERY, HYBRID CONTROL)**

Pre-procedure1

(a) None

Procedure1

(b) Check for DTCs.

Powertrain > HV Battery > Trouble Codes

Powertrain > Hybrid Control > Trouble Codes

RESULT	PROCEED TO
"P0A9B2A, P0AC52A, P0ACA2A, P0AE82A, P0BC22A, P0C332A, P0C7C2A, P0C812A, P0C882A, P0C8D2A, P0C922A, P0C972A, P0CA82A, P0CAD2A, P0CB22A, P306562, P306A62 or P306B62" only is output, or DTCs except the ones in the table below are also output.	A
DTCs of hybrid battery system in the table below are output.	B
DTCs of hybrid control system in the table below are output.	C

SYSTEM	RELEVANT DTC	
Hybrid battery system	P060A47	Hybrid/EV Battery Energy Control Module Monitoring Processor Watchdog / Safety MCU Failure
	P060B49	Hybrid/EV Battery Energy Control Module A/D Processing Internal Electronic Failure
	P060687	Hybrid/EV Battery Energy Control Module Processor to Monitoring Processor Missing Message
Hybrid control system	P0A1F94	Hybrid/EV Battery Energy Control Module Unexpected Operation

Post-procedure1

(c) Turn the ignition switch off.

B ▶ **GO TO DTC CHART (HYBRID BATTERY SYSTEM)**

C ▶ **GO TO DTC CHART (HYBRID CONTROL SYSTEM)**

A

3.	**CHECK DTC**

(a) Check the DTCs that were output when the vehicle was brought to the workshop.

RESULT	PROCEED TO
"P0A9B2A, P0AC52A, P0ACA2A, P0AE82A, P0BC22A or P306562" is also output.	A
"P0C332A, P0C7C2A, P0C812A, P0C882A, P0C8D2A or P306A62" is also output.	B
"P0C922A, P0C972A, P0CA82A, P0CAD2A, P0CB22A or P306B62" is also output.	C

B ▶ **GO TO STEP 5**

C ▶ **GO TO STEP 6**

A

4.	**CHECK HV BATTERY (BATTERY TEMPERATURE SENSOR 0 to 4)**

Click here INFO

OK ▶ **REPLACE BATTERY VOLTAGE SENSOR**

NG ▶ **REPLACE NO. 1 HV SUPPLY STACK SUB-ASSEMBLY**

5.	**CHECK HV BATTERY (BATTERY TEMPERATURE SENSOR 5 to 9)**

Click here INFO

OK ▶ **REPLACE BATTERY VOLTAGE SENSOR**

NG ▶ **REPLACE NO. 2 HV SUPPLY STACK SUB-ASSEMBLY**

6.	**CHECK HV BATTERY (BATTERY TEMPERATURE SENSOR 10 to 14)**

Click here INFO

OK ▶ **REPLACE BATTERY VOLTAGE SENSOR**

NG ▶ **REPLACE NO. 3 HV SUPPLY STACK SUB-ASSEMBLY**