Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002QM1S
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: HYBRID CONTROL SYSTEM (for PHEV Model): B227A11,B227A15; IGBD Circuit Short to Ground; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**B227A11**	**IGBD Circuit Short to Ground**

DTC	**B227A15**	**IGBD Relay Circuit Short to Auxiliary Battery or Open**

DESCRIPTION

The hybrid vehicle control ECU receives a power source start request from the air conditioning amplifier assembly and operates the IG-B relay.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
B227A11	IGBD Circuit Short to Ground	Short to ground in IGBD circuit (1 trip detection logic)	• Wire harness or connector • IG-B relay • Hybrid vehicle control ECU	Comes on	Master Warning: Comes on	Hybrid Control	A	SAE Code: B227C
B227A15	IGBD Relay Circuit Short to Auxiliary Battery or Open	Open or short to +B in IG-B relay circuit (1 trip detection logic)	• Wire harness or connector • IG-B relay • Hybrid vehicle control ECU	Comes on	Master Warning: Comes on	Hybrid Control	A	SAE Code: B227D

MONITOR DESCRIPTION

The hybrid vehicle control ECU outputs a DTC when it detects a malfunction in the IGB relay circuit.

MONITOR STRATEGY

Related DTCs	B227C (INF B227A11): Ignition Relay Range check (Low voltage) B227D (INF B227A15): Ignition Relay Range check (High voltage)
Required sensors/components	Hybrid vehicle control ECU
Frequency of operation	Continuous

Duration	TMC's intellectual property
MIL operation	Immediately
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	-

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

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. With ignition switch ON and wait for 5 seconds or more. [*1]

   HINT:

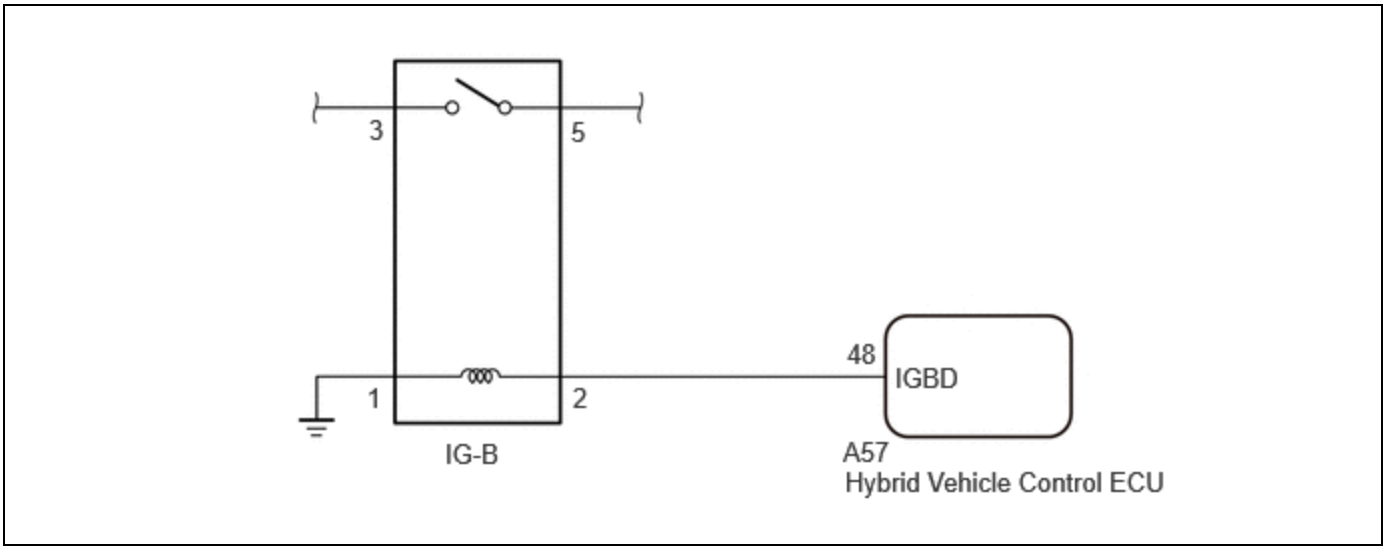
   [*1]: Normal judgment procedure.

   The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.
4. Enter the following menus: Powertrain / Hybrid Control / 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, perform the normal judgment procedure again.

WIRING DIAGRAM



PROCEDURE

1.	**INSPECT IG-B RELAY**

Pre-procedure1

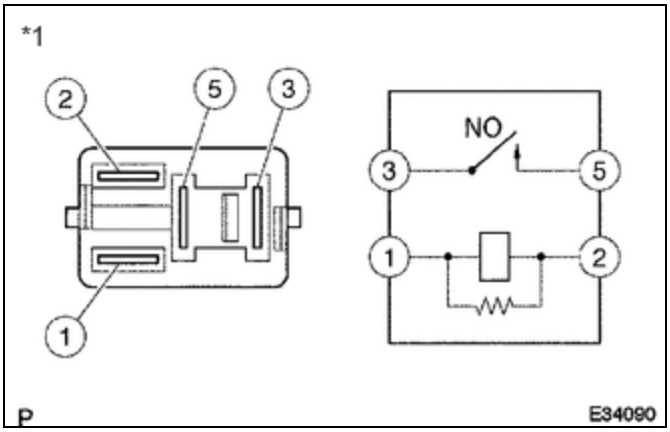
(a) Remove the IG-B relay from the No. 1 engine room relay block and No. 1 junction block assembly.

Procedure1

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
3 - 5	Auxiliary battery voltage not applied between terminals 1 and 2	10 kΩ or higher	kΩ
3 - 5	Auxiliary battery voltage applied between terminals 1 and 2	Below 1 Ω	Ω



*1	IG-B Relay

Result:

PROCEED TO
OK

PROCEED TO
NG

Post-procedure1

(c) Install the IG-B relay.

NG ▶ **REPLACE IG-B RELAY**

OK ▼

2.	CHECK HARNESS AND CONNECTOR (IG-B RELAY - BODY GROUND)

Pre-procedure1

(a) Remove the IG-B relay from the No. 1 engine room relay block and No. 1 junction block assembly.

Procedure1

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
1 (IG-B relay holder) - Body ground	Ignition switch off	Below 1 Ω	Ω

NOTICE:

Do not apply excessive force when using the probes of the tester to perform the inspection. If excessive force is used, the terminals will be damaged.

Post-procedure1

(c) Install the IG-B relay.

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

OK ▼

3.	CHECK HARNESS AND CONNECTOR (HYBRID VEHICLE CONTROL ECU - NO. 1 ENGINE ROOM RELAY BLOCK AND NO. 1 JUNCTION BLOCK ASSEMBLY)

Pre-procedure1

(a) Disconnect the hybrid vehicle control ECU connector.

(b) Remove the IG-B relay from the No. 1 engine room relay block and No. 1 junction block assembly.

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(A57)
Click Connector(A57)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A57-48 (IGBD) -2 (IG-B relay holder)	Ignition switch off	Below 1 Ω	Ω
A57-48 (IGBD) or 2 (IG-B relay holder) - Body ground and other terminals	Ignition switch off	10 kΩ or higher	kΩ

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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
2 (IG-B relay holder) - Body ground	Ignition switch off	Below 1 V	V

Post-procedure1

(e) Install the IG-B relay.

(f) Reconnect the hybrid vehicle control ECU connector.

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

OK ▼

4.	**INSPECT HYBRID VEHICLE CONTROL ECU ASSEMBLY (IGBD TERMINAL VOLTAGE)**

Pre-procedure1

(a) Remove the IG-B relay from the No. 1 engine room relay block and No. 1 junction block assembly.

Procedure1

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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
2 (IG-B relay holder) - Body ground	Ignition switch ON	7.5 to 14 V	V

NOTICE:

Do not apply excessive force when using the probes of the tester to perform the inspection. If excessive force is used, the terminals will be damaged.

Post-procedure1

(c) Install the IG-B relay.

OK ▶ **GO TO AIR CONDITIONING SYSTEM**

NG ▶ **REPLACE HYBRID VEHICLE CONTROL ECU ASSEMBLY**