Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002909O
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [12/2022 -]
Title: THEFT DETERRENT / KEYLESS ENTRY: SMART KEY SYSTEM (for Start Function): B227511,B227512; Starter Circuit Short to Ground; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

DTC	**B227511**	**Starter Circuit Short to Ground**

DTC	**B227512**	**Starter Circuit Short to Battery**

DESCRIPTION

This DTC is stored when a malfunction is detected in the starter circuit inside the certification ECU (smart key ECU assembly).

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	DTC OUTPUT FROM	PRIORITY	NOTE
B227511	Starter Circuit Short to Ground	Certification ECU (smart key ECU assembly) internal HV activation request output circuit malfunction or external circuit malfunction (1-trip detection logic*)	• Certification ECU (smart key ECU assembly) • Hybrid vehicle control ECU • Wire harness or connector	Power Source Control	B	**DTC Output Confirmation Operation:** Turn the ignition switch to ON and wait 10 seconds or more, then start the hybrid control system 3 times.
B227512	Starter Circuit Short to Battery	Certification ECU (smart key ECU assembly) internal HV activation request output circuit malfunction or external circuit malfunction (1-trip detection logic*)	• Certification ECU (smart key ECU assembly) • Hybrid vehicle control ECU • Wire harness or connector	Power Source Control	B	**DTC Output Confirmation Operation:** Turn the ignition switch to ON and wait 10 seconds or more, then start the hybrid control system 3 times.

*: Only detected while a malfunction is present and the ignition switch is ON.

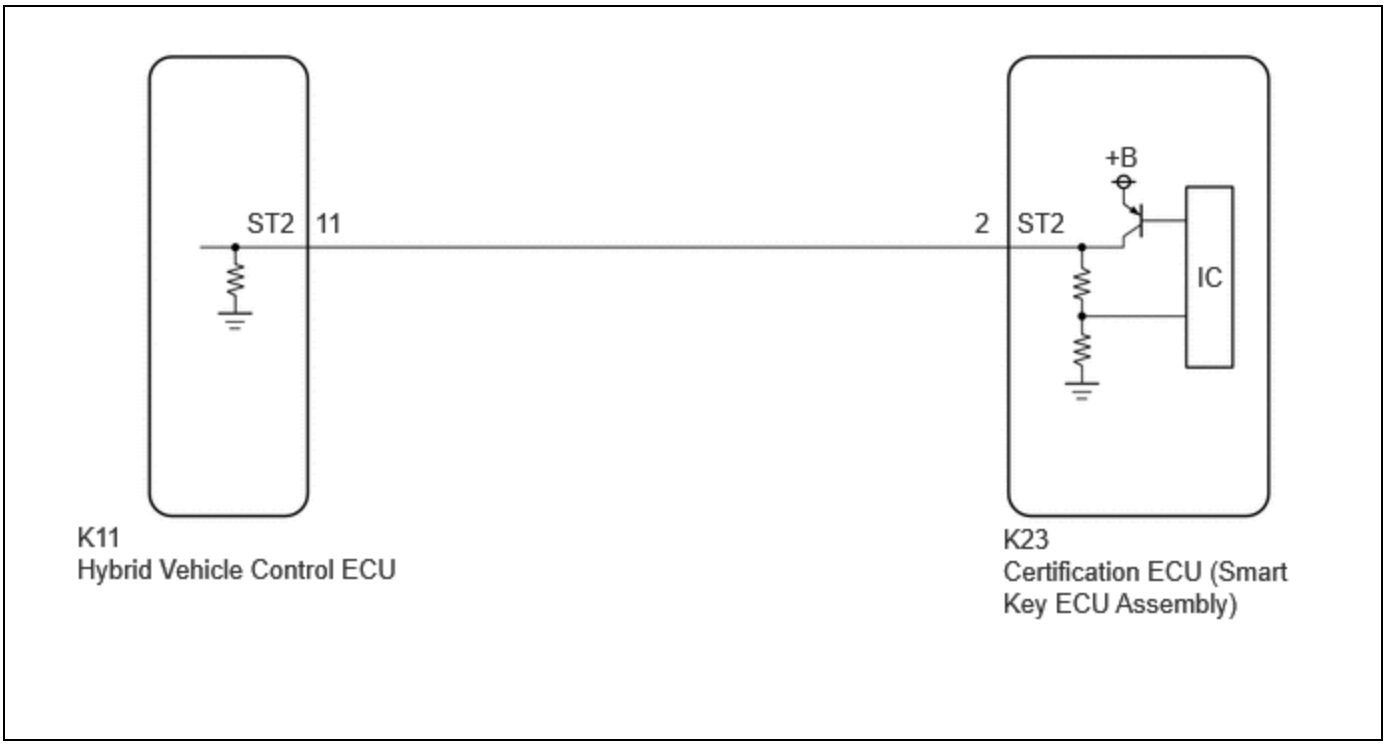
Vehicle Condition and Fail-safe Function when Malfunction Detected

VEHICLE CONDITION WHEN MALFUNCTION DETECTED	FAIL-SAFE FUNCTION WHEN MALFUNCTION DETECTED
• The power source mode changes to ON (READY) even though the hybrid control system is not started. • The power source mode does not change to ON (READY) even though the hybrid control system is started.	-

Related Data List and Active Test Items

DTC NO.	DATA LIST AND ACTIVE TEST
B227511 B227512	-

WIRING DIAGRAM



CAUTION / NOTICE / HINT

NOTICE:

- When using the GTS with the ignition switch off, perform lock and unlock operations using the door control switch of the multiplex network master switch assembly at intervals of 1.5 seconds or less until communication between the GTS and the vehicle begins, and then select the vehicle model manually.

  Then select Model Code "KEY REGIST" under manual mode and enter the following menus: Body Electrical / Smart Key(CAN). While using the GTS, periodically perform lock and unlock operations using the door control switch of the multiplex network master switch assembly at intervals of 1.5 seconds or less to maintain communication between the GTS and the vehicle.
- The smart key system (for Start Function) uses the LIN communication system and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Troubleshoot

the smart key system (for Start Function) after confirming that the communication systems are functioning properly.

Click here INFO

- Before replacing the hybrid vehicle control ECU or certification ECU (smart key ECU assembly), refer to Registration.

Click here INFO

- After repair, confirm that no DTCs are output by performing "DTC Output Confirmation Operation".

PROCEDURE

1.	**CHECK FOR DTC**

Pre-procedure1

(a) Turn the ignition switch to ON and wait 25 seconds.

Procedure1

(b) Using the GTS, check for certification ECU (smart key ECU assembly) DTCs.

Body Electrical > Power Source Control > Trouble Codes

OK:

DTC B228562 is not output simultaneously.

RESULT	PROCEED TO
B228562 is not output	A
B228562 is output	B

Post-procedure1

(c) None

B ▶ **GO TO DTC B228562**

A ▼

2.	**CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) - HYBRID VEHICLE CONTROL ECU)**

Pre-procedure1

(a) Disconnect the K23 certification ECU (smart key ECU assembly) connector.

(b) Disconnect the K11 hybrid vehicle control ECU connector.

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(K23,K11)
Click Connector(K23)
Click Connector(K11)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
K23-2 (ST2) - K11-11 (ST2)	Always	Below 1 Ω	Ω
K23-2 (ST2) or K11-11 (ST2) - Other terminals and body ground	Always	10 kΩ or higher	kΩ

Post-procedure1

(d) Connect the K23 certification ECU (smart key ECU assembly) connector.

(e) Connect the K11 hybrid vehicle control ECU connector.

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

OK ▼

3.	**CHECK CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)**

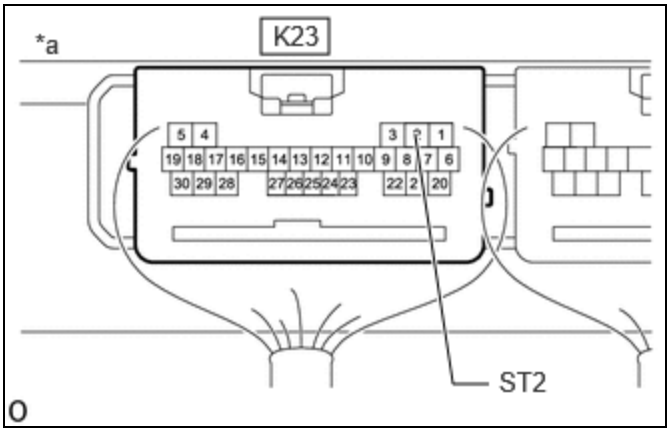
(a) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

EWD INFO

Click Location & Routing(K23)
Click Connector(K23)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
K23-2 (ST2) - Body ground	With the brake pedal depressed, the power switch is pressed and held	8.5 V or higher	V
K23-2 (ST2) - Body ground	After approx. 3 sec. has elapsed,	1 V or less	V



*a	Component with harness connected (Certification ECU (Smart Key ECU Assembly))

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
	the power switch is released		

OK ▶ **REPLACE HYBRID VEHICLE CONTROL ECU** INFO

NG ▶ **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)** INFO