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| Last Modified: 12-04-2024 | 6.11:8.1.0 | Doc ID: RM1000000290AC |
| Model Year Start: 2023 | Model: Prius Prime | Prod Date Range: [12/2022 -] |
| Title: THEFT DETERRENT / KEYLESS ENTRY: SMART KEY SYSTEM (for Start Function): B27A513; Front Floor Electrical Key Oscillator Circuit Open; 2023 - 2024 MY Prius Prius Prime [12/2022 -] | | |

| | | |
|------------|----------------|---|
| DTC | B27A513 | Front Floor Electrical Key Oscillator Circuit Open |
|------------|----------------|---|

DESCRIPTION

The certification ECU (smart key ECU assembly) generates a request signal and transmits the signal to the No. 1 indoor electrical key antenna assembly (front floor). For the No. 1 indoor electrical key antenna assembly (front floor) to detect when the electrical key transmitter sub-assembly is in the cabin, the signal from the certification ECU (smart key ECU assembly) requesting a response from the electrical key transmitter sub-assembly is transmitted inside the vehicle. DTC B27A513 is stored by the certification ECU (smart key ECU assembly) when an open is detected between the certification ECU (smart key ECU assembly) and No. 1 indoor electrical key antenna assembly (front floor).

| DTC NO. | DETECTION ITEM | DTC DETECTION CONDITION | TROUBLE AREA | DTC OUTPUT FROM | PRIORITY | NOTE |
|---------|--|---|---|-----------------|----------|---|
| B27A513 | Front Floor Electrical Key Oscillator Circuit Open | An open is detected in the circuit between the certification ECU (smart key ECU assembly) and No. 1 indoor electrical key antenna assembly (front floor) (1 trip detection logic*). | <ul style="list-style-type: none"> • Certification ECU (smart key ECU assembly) • No. 1 indoor electrical key antenna assembly (front floor) • Wire harness or connector | Smart Key | A | DTC Output Confirmation Operation: Any time |

*: Only output while a malfunction is present.

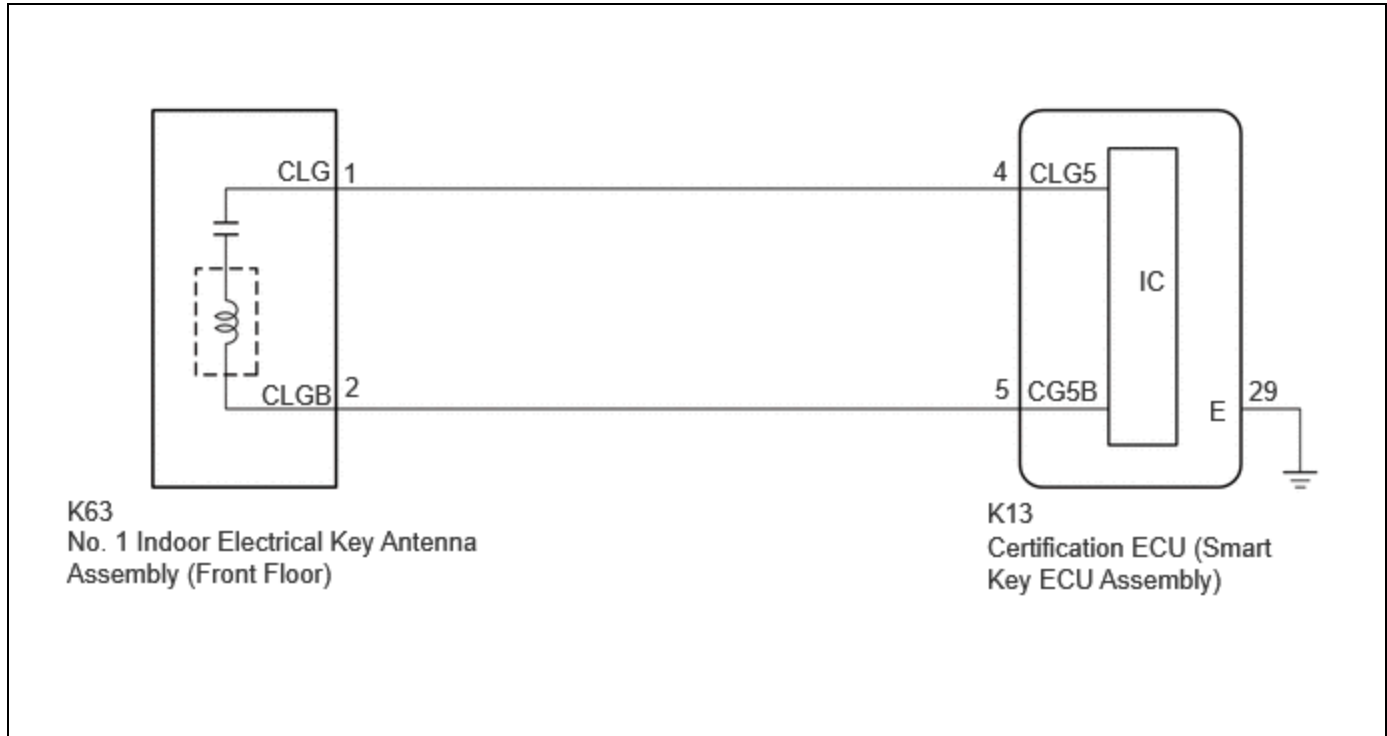
Vehicle Condition and Fail-safe Operation when Malfunction Detected

| VEHICLE CONDITION WHEN MALFUNCTION DETECTED | FAIL-SAFE OPERATION WHEN MALFUNCTION DETECTED |
|--|---|
| When electrical key transmitter sub-assembly is in front seat area: <ul style="list-style-type: none"> • Power source mode does not change when power switch pressed • Electrical key transmitter sub-assembly locked inside vehicle | - |

Related Data List and Active Test

| | |
|---------|--|
| DTC NO. | DATA LIST AND ACTIVE TEST |
| B27A513 | Key diagnostic mode can be used to perform troubleshooting |

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 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 CONNECTOR CONNECTION |
|-----------|-----------------------------------|

- (a) Check that the connectors are properly connected to the certification ECU (smart key ECU assembly) and No. 1 indoor electrical key antenna assembly (front floor).

OK:

Connectors are properly connected.

NG  **CONNECT CONNECTORS PROPERLY**

OK



| | |
|-----------|--|
| 2. | CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) - NO. 1 INDOOR ELECTRICAL KEY ANTENNA ASSEMBLY (FRONT FLOOR)) |
|-----------|--|

Pre-procedure1

- (a) Disconnect the K13 certification ECU (smart key ECU assembly) connector.
 (b) Disconnect the K63 No. 1 indoor electrical key antenna assembly (front floor) connector.

Procedure1

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

Standard Resistance:



[Click Location & Routing\(K13,K63\).](#)

[Click Connector\(K13\).](#)

[Click Connector\(K63\).](#)

| TESTER CONNECTION | CONDITION | SPECIFIED CONDITION | RESULT |
|-----------------------------|-----------|---------------------|----------|
| K13-4 (CLG5) - K63-1 CLG | Always | Below 1 Ω | Ω |
| K13-5 (CG5B) - K63-2 (CLGB) | Always | Below 1 Ω | Ω |

Post-procedure1

- (d) Connect the K13 certification ECU (smart key ECU assembly) connector.

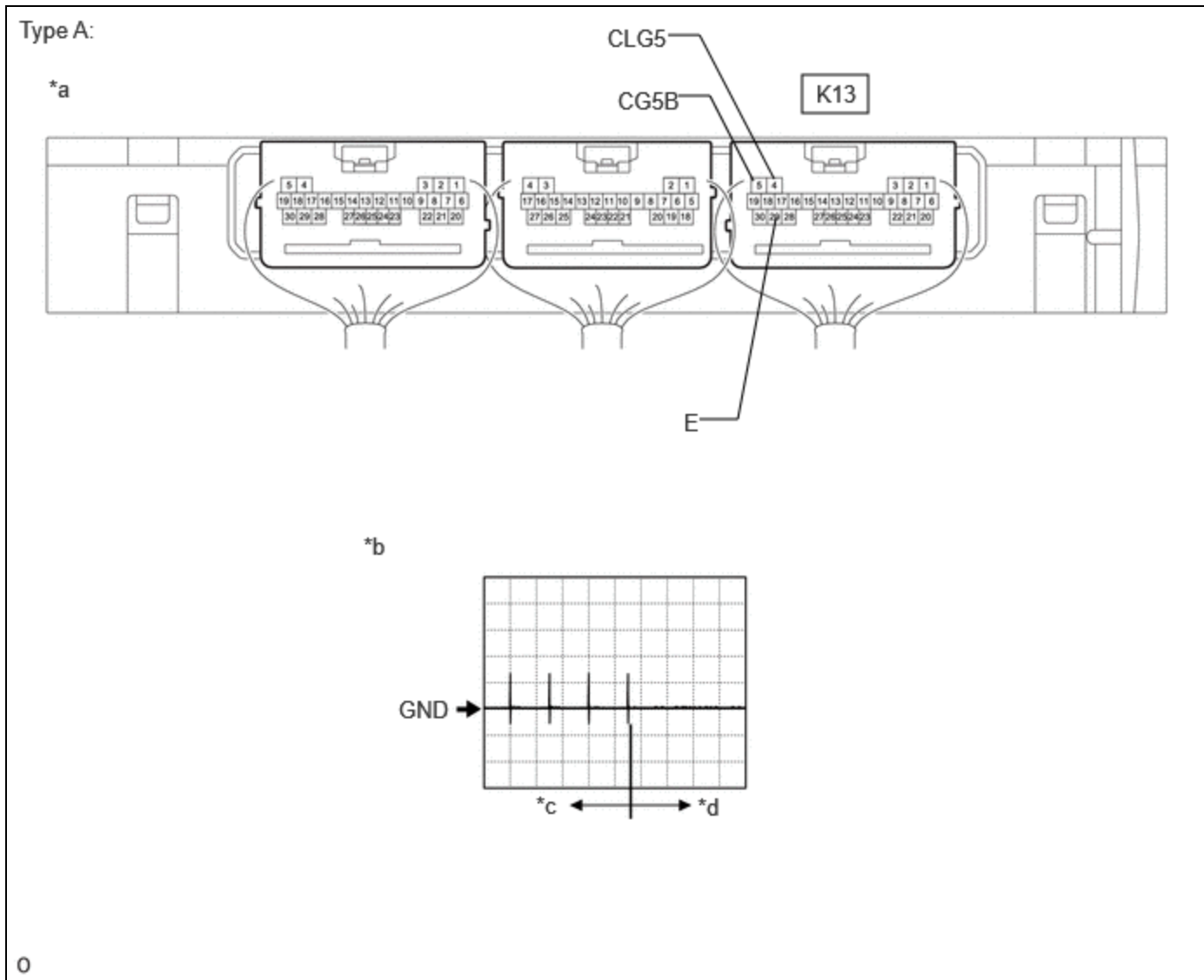
NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

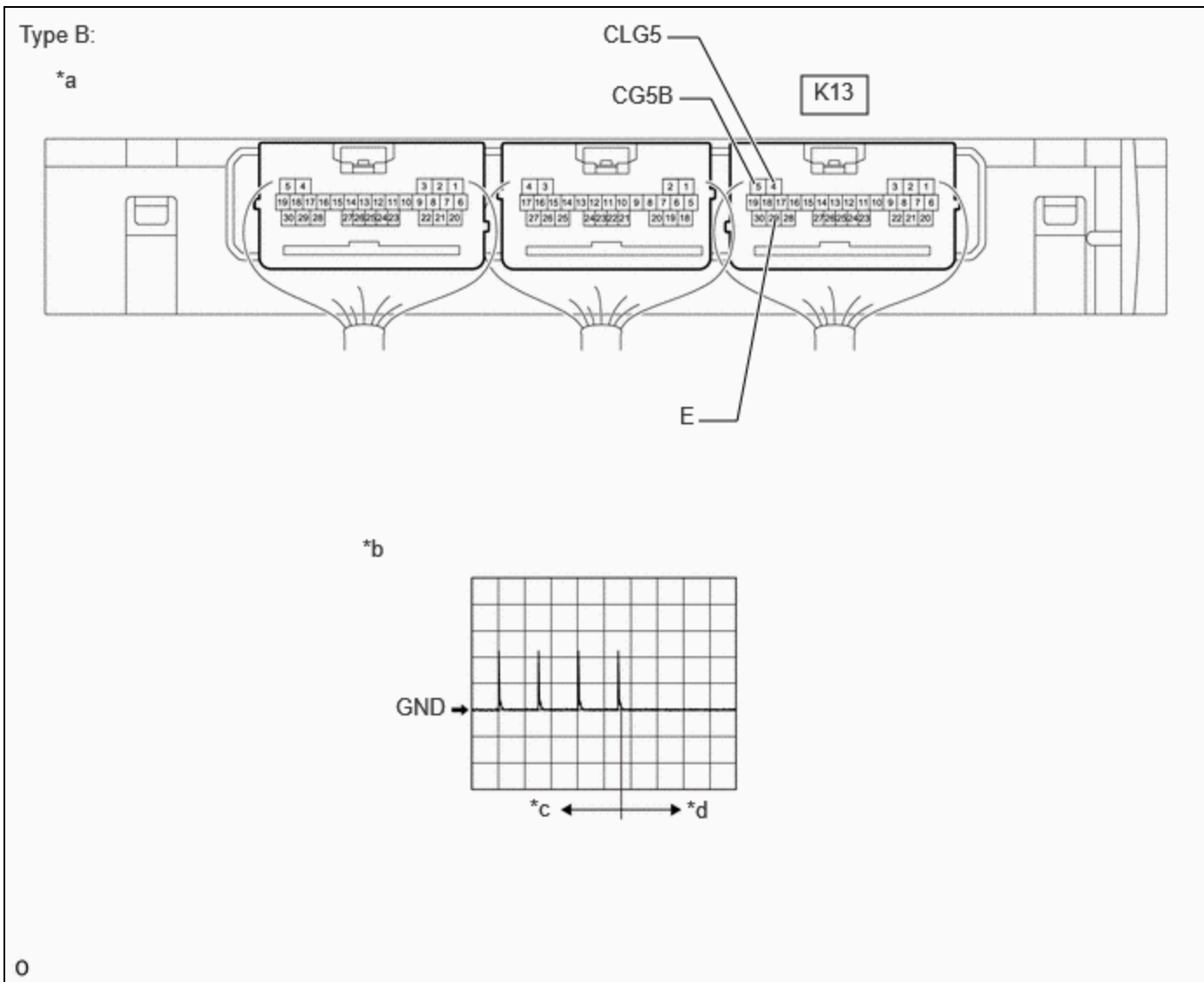


| | |
|-----------|--|
| 3. | CHECK CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (OUTPUT TO NO. 1 INDOOR ELECTRICAL KEY ANTENNA ASSEMBLY (FRONT FLOOR)) |
|-----------|--|

(a) Using an oscilloscope, check the waveform.



| | | | |
|----|---|----|---|
| *a | Component with harness connected (Certification ECU (Smart Key ECU Assembly)) | *b | Waveform |
| *c | For 30 seconds after any door closed | *d | After 30 seconds or more have elapsed since any door closed |



| | | | |
|----|---|----|---|
| *a | Component with harness connected (Certification ECU (Smart Key ECU Assembly)) | *b | Waveform |
| *c | For 30 seconds after any door closed | *d | After 30 seconds or more have elapsed since any door closed |

OK:



[Click Location & Routing\(K13\)](#)

[Click Connector\(K13\)](#)

| TESTER CONNECTION | CONDITION | TOOL SETTING | SPECIFIED CONDITION |
|---------------------------|---|------------------------|---------------------------------|
| K13-4 (CLG5) - K13-29 (E) | Procedure: 1. Ignition switch off 2. Electrical key transmitter sub-assembly not inside vehicle 3. Within 30 seconds of closing any door | 5 V/DIV., 500 ms./DIV. | Pulse generation (See waveform) |

| TESTER CONNECTION | CONDITION | TOOL SETTING | SPECIFIED CONDITION |
|---------------------------|--|------------------------|---------------------------------|
| K13-5 (CG5B) - K13-29 (E) | Procedure: <ol style="list-style-type: none"> 1. Ignition switch off 2. Electrical key transmitter sub-assembly not inside vehicle 3. Within 30 seconds of closing any door | 5 V/DIV., 500 ms./DIV. | Pulse generation (See waveform) |

OK ► **REPLACE NO. 1 INDOOR ELECTRICAL KEY ANTENNA ASSEMBLY (FRONT FLOOR)**

NG ► **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)**

Click here [INFO](#)

