

ACCESSORIES & EQUIPMENT

Wireless Door Lock Control System (w/o Smart Key System) (Diagnostics - Introduction) - Sienna

WIRELESS DOOR LOCK CONTROL SYSTEM (W/O SMART KEY SYSTEM)

PRECAUTION

PRECAUTION

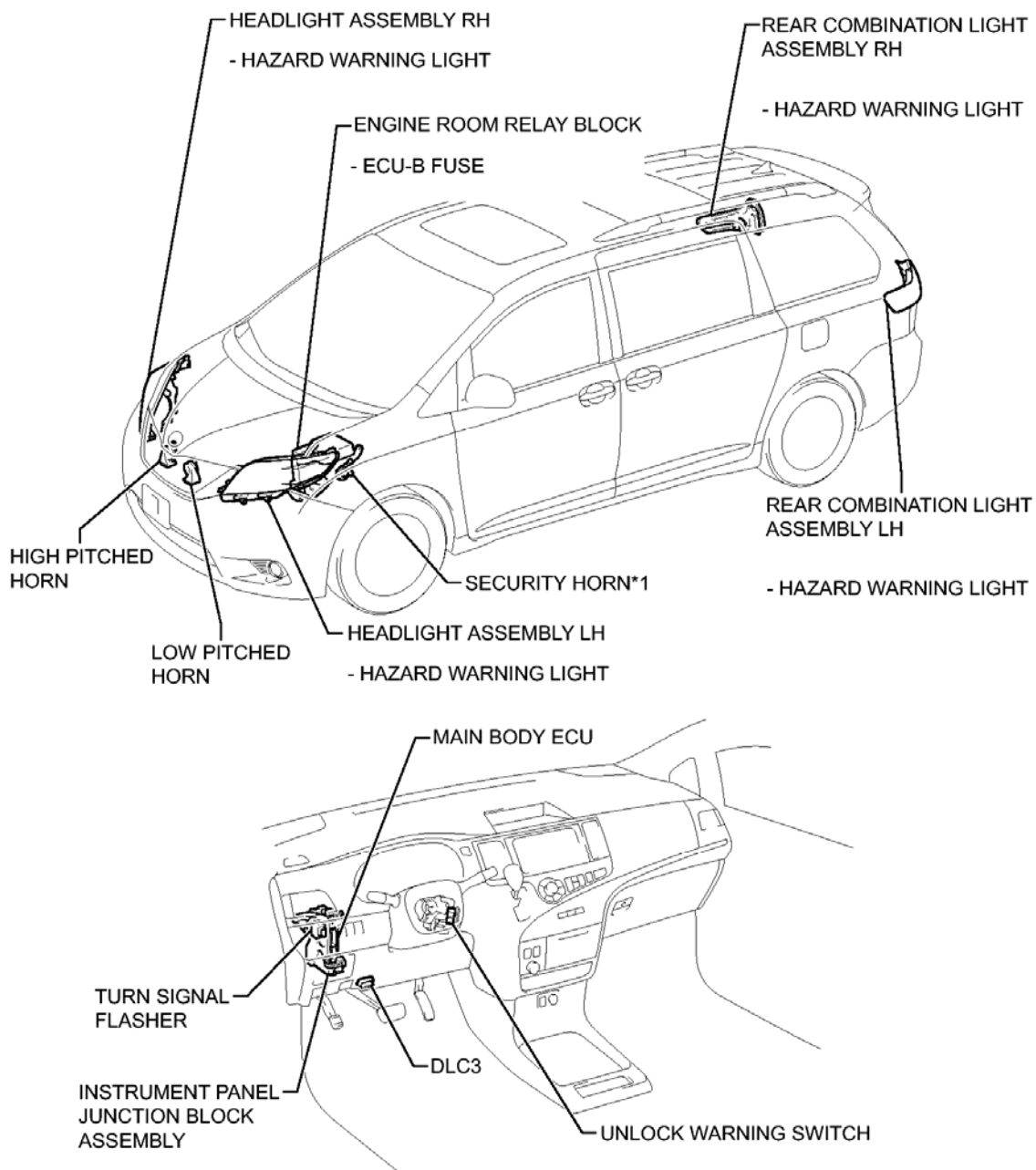
1. PRECAUTION WHEN USING TECHSTREAM

- a. When using the Techstream to troubleshoot the power door lock control system:

Connect the Techstream to the DLC3 while the ignition switch is off, and turn a door courtesy light switch on and off at 1.5-second intervals until communication between the Techstream and vehicle begins.

PARTS LOCATION

ILLUSTRATION

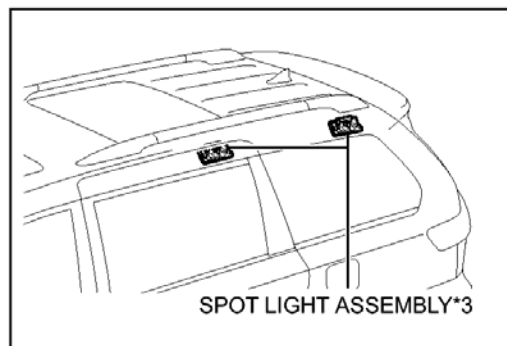
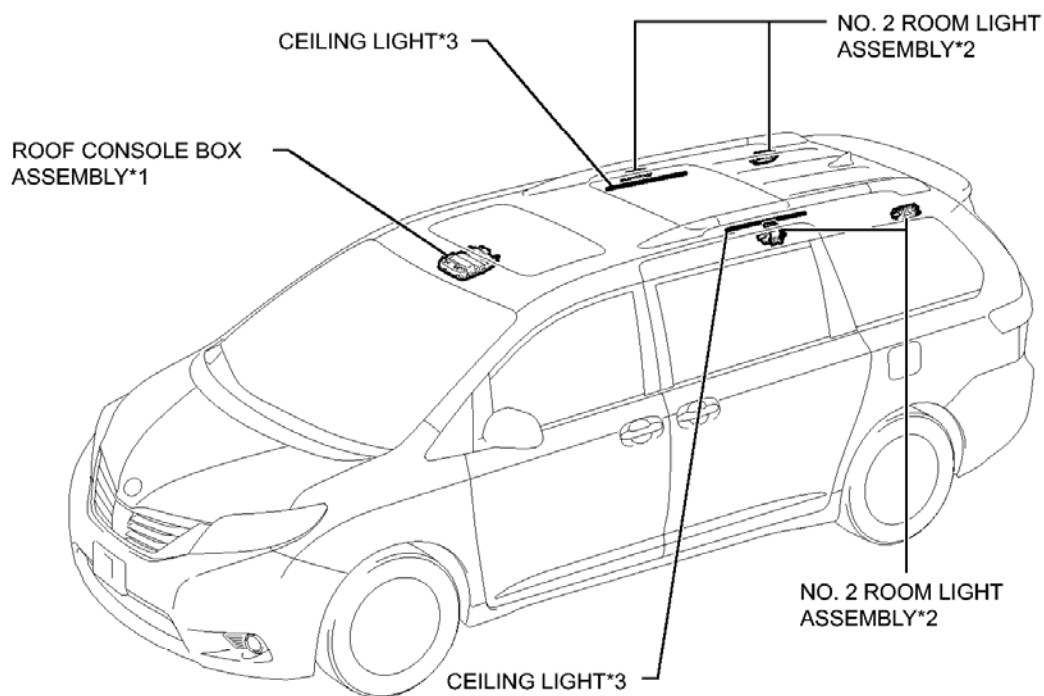
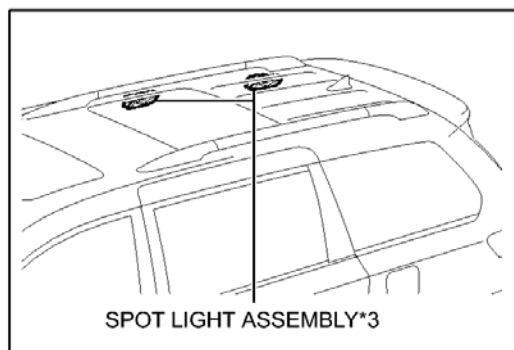


*1: w/ Theft Deterrent System

P

Fig. 1: Wireless Door Lock Control System (w/o Smart Key System) Components Location (1 Of 5)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION



*1: w/ Overhead Console

*2: w/o Rear Sliding Roof

*3: w/ Rear Sliding Roof

Fig. 2: Wireless Door Lock Control System (w/o Smart Key System) Components Location (2 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION

w/ Power Slide Door System:

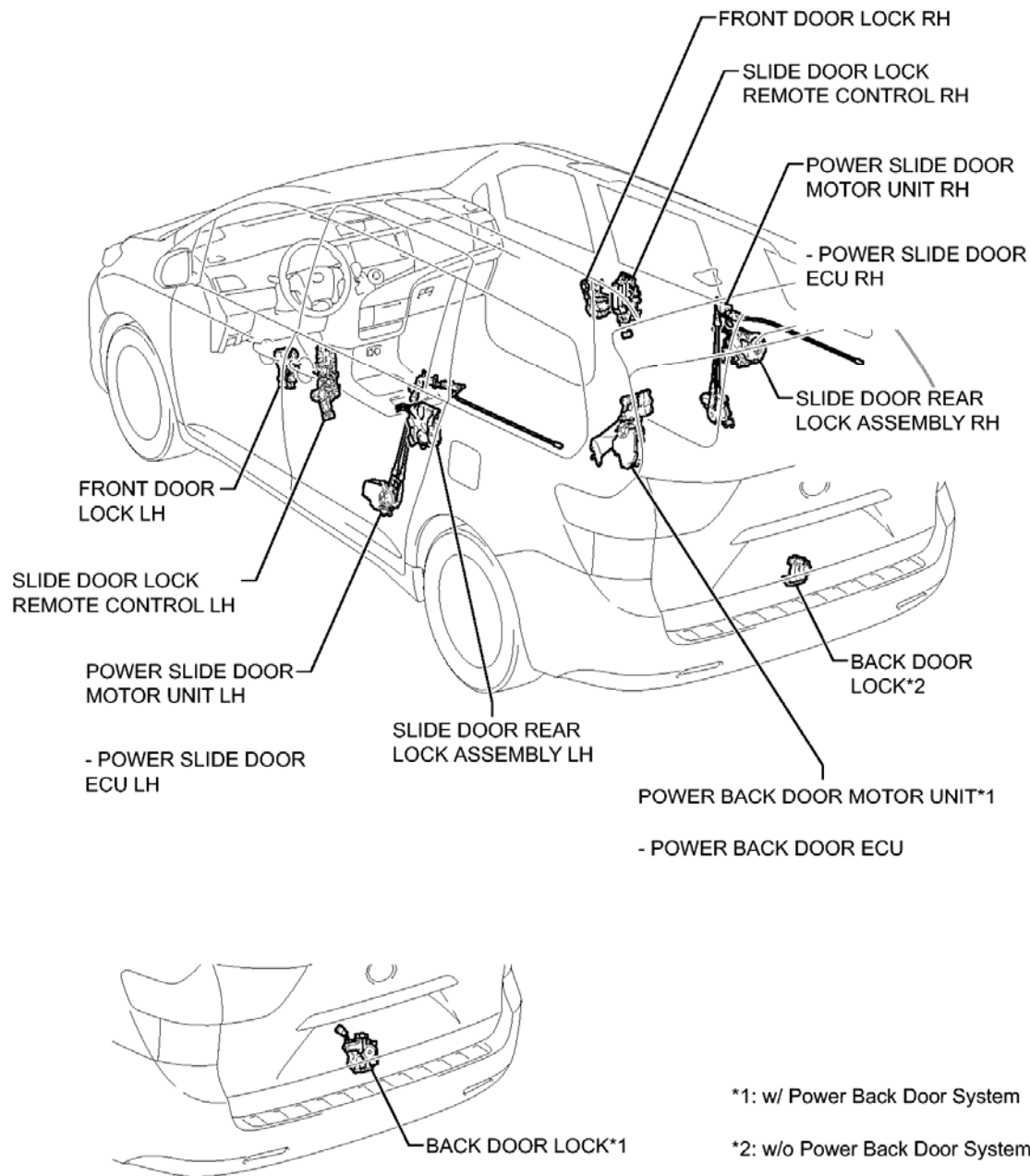


Fig. 3: Wireless Door Lock Control System (w/o Smart Key System) Components Location (w/ Power Slide Door System) (3 Of 5)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION

w/o Power Slide Door System:

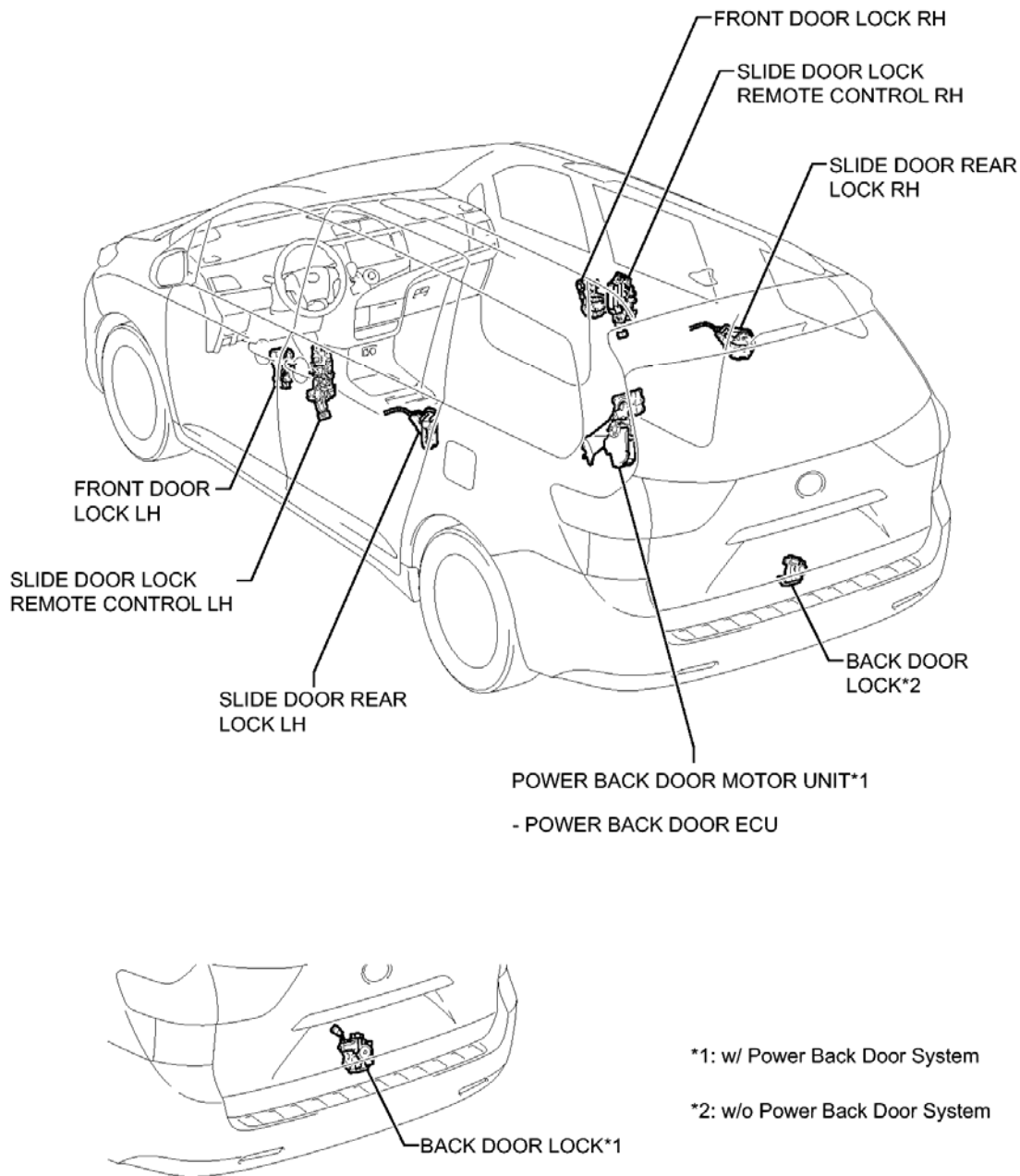
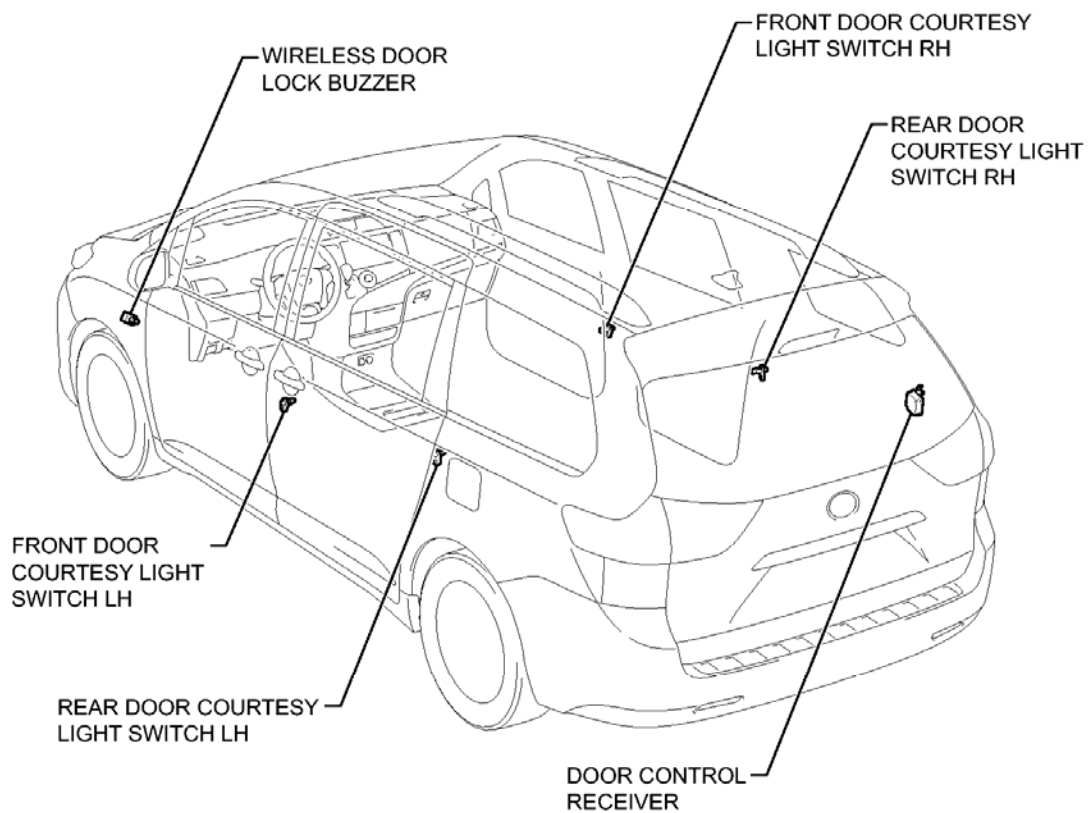


Fig. 4: Wireless Door Lock Control System (w/o Smart Key System) Components Location (w/o Power Slide Door System) (4 Of 5)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION

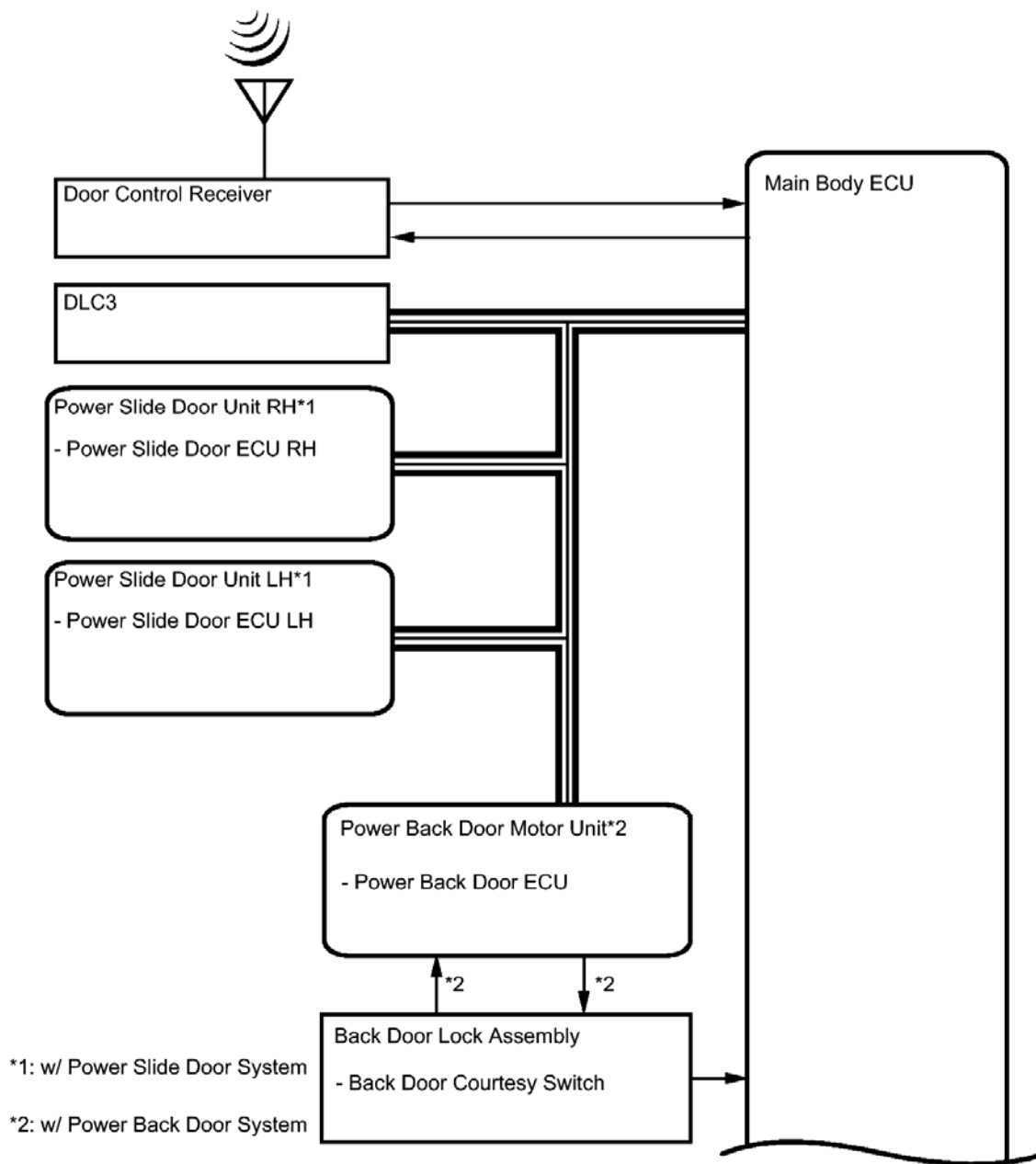


P

Fig. 5: Wireless Door Lock Control System (w/o Smart Key System) Components Location (5 Of 5)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

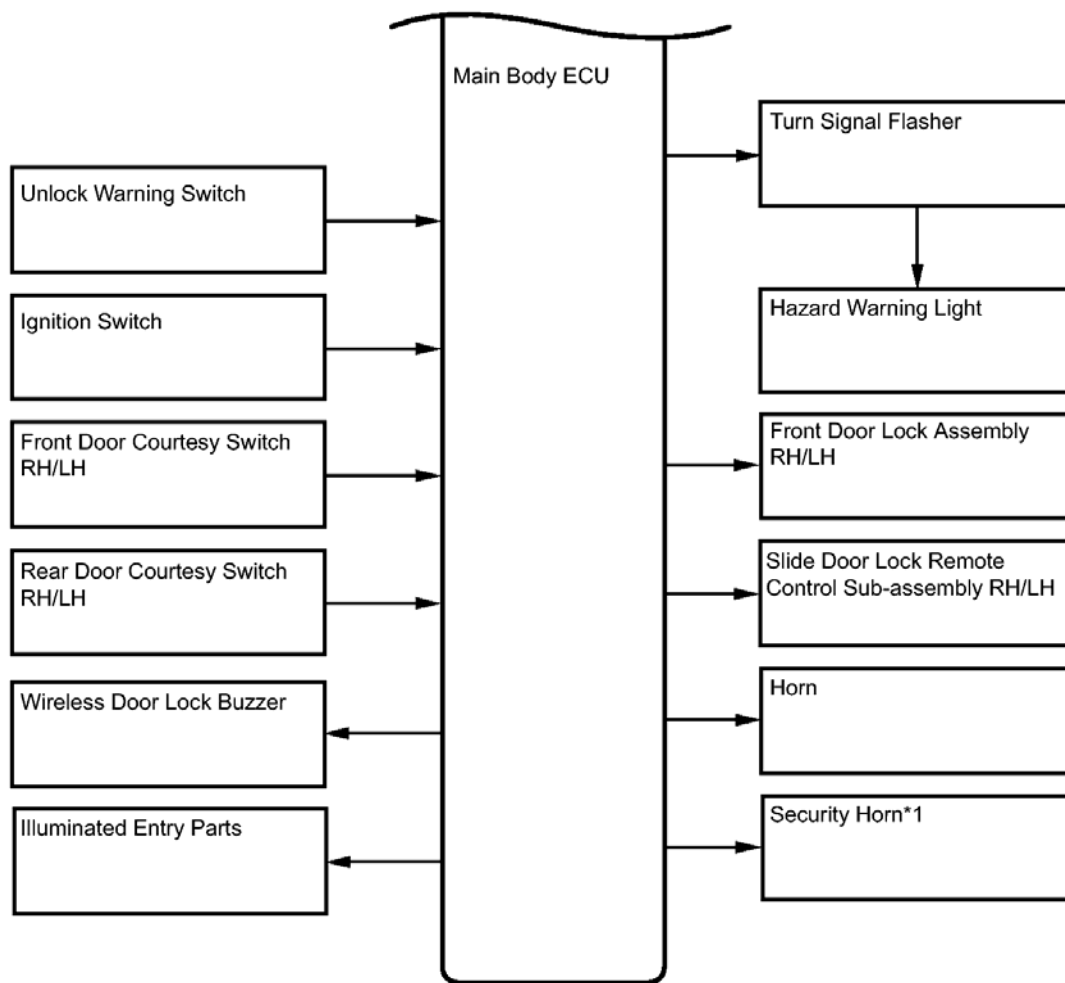
SYSTEM DIAGRAM

SYSTEM DIAGRAM



≡ : CAN Communication Line

Fig. 6: Wireless Door Lock Control System (w/o Smart Key System) - System Diagram (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



*1: w/ Theft Deterrent System

≡ : CAN Communication Line

Fig. 7: Wireless Door Lock Control System (w/o Smart Key System) - System Diagram (2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

COMMUNICATION TABLE

Transmitting ECU (Transmitter)	Receiving ECU (Receiver)	Signal	Line
Main body ECU	Power Back Door ECU (Power Back door motor unit)*1	Power back door control signal	CAN
Power Slide Door Unit RH*2 (Power Slide Door ECU RH)	Main Body ECU	Power Slide Door RH Control Signal	CAN
Power Slide Door Unit LH*2 (Power Slide Door ECU LH)	Main Body ECU	Power Slide Door LH Control Signal	CAN

*1: w/ Power Back Door System

*2: w/ Power Slide Door System

SYSTEM DESCRIPTION

SYSTEM DESCRIPTION

1. WIRELESS DOOR LOCK CONTROL SYSTEM

The wireless door lock control system functions to lock and unlock all the doors from a distance. The system is controlled by a door control transmitter which sends radio waves to the door control receiver. The main body ECU performs an ID code identification process and engages the door lock.

2. FUNCTION OF MAIN COMPONENTS

Component	Function
Door control transmitter	• Has LOCK, UNLOCK, POWER BACK DOOR*1, POWER SLIDE DOOR RH*2, POWER SLIDE DOOR LH*2 and PANIC switches. • Transmits weak radio waves (recognition codes and function codes) to the door control receiver. • Illuminates the indicator light (LED) during transmission.

Door control receiver	Receives weak radio waves (recognition codes and function codes) and outputs them as code data to the main body ECU.
• Front door courtesy switch LH/RH • Rear door courtesy switch LH/RH • Back door courtesy switch	Turns on when a door is opened and turns off when it is closed. Outputs door status signals (open or closed) to the main body ECU.
Unlock warning switch	Detects if the key is inserted in the ignition key cylinder or not.
Door unlock detection switch	Transmits the door lock positions of each door to the main body ECU.
Main body ECU	Sends wireless door lock control signals in response to the code data from the door control receiver and signals from each switch.

*1: w/ Power Back Door System

*2: w/ Power Slide Door System

3. SYSTEM FUNCTION

The door control transmitter has the LOCK, UNLOCK, POWER BACK DOOR*1, POWER SLIDE

DOOR RH*2, POWER SLIDE DOOR LH*2 and PANIC switches. Operating these switches activates each function.

The wireless door lock control system has the following functions:

HINT:

The default settings of the following functions are on. Some of these functions can be customized. Refer to **CUSTOMIZE PARAMETERS**.

Function	Operation
All door lock	Pressing the LOCK switch locks all doors.
All door unlock (Unlock 2 operation)	Pressing the UNLOCK switch twice within 3 seconds unlocks all the doors after the driver door is unlocked.
Automatic lock	If none of the doors is opened within 60 seconds after they are unlocked by the wireless door lock control, all the doors will lock again automatically.
Power back door open/close operation*1	Pressing the POWER BACK DOOR switch of the transmitter for longer than about 0.8 seconds opens or closes the back door.
Power slide door open/close function*2	Pressing the POWER SLIDE DOOR RH/LH switch of the transmitter for longer than about 0.8 seconds opens or closes the

	power slide door RH/LH.
Answer back	• When the doors are locked by wireless operation, the hazard warning lights flash once and wireless door lock buzzer sounds once. • When the doors are unlocked by wireless operation, the hazard warning lights flash twice and wireless door lock buzzer sounds twice.
	Pressing the PANIC switch of the transmitter for longer than about 0.8 seconds causes the following alarms to activate: • Sounds the horn. • Flashes the headlights, taillights and hazard warning lights.

Panic alarm	• Illuminates the interior lights (when the switch is in the DOOR position). While the panic alarm is operating, pressing any switch of the transmitter cancels the alarm operation.
Door ajar warning	The buzzer sounds when the LOCK switch is pressed when any of the doors are ajar, and it sounds for 10 seconds continuously. The buzzer stops when all doors are closed or the UNLOCK switch is pressed.
Illuminated entry	When all the doors are locked, pressing UNLOCK switch causes the interior lights to come on simultaneously with the unlock operation.
	The following are conditions to enter the self-diagnostic mode: • If the door control receiver

Self-diagnostic mode	receives normal radio waves from the door control transmitter when the system is in diagnostic mode, it flashes the interior lights and sounds the wireless door lock buzzer in a normal pattern that corresponds to the function of each switch. • Read DTCs using the Techstream.
Transmitter recognition code registration	Enables the registration (writing and storing) of transmitter recognition codes in the EEPROM that is contained in the door control receiver.

*1: w/ Power Back Door System

*2: w/ Power Slide Door System

4. TRANSMITTER RECOGNITION CODE REGISTRATION FUNCTION

The table below shows the 4 ID registration function modes. The codes are electronically registered (written and stored) in the EEPROM that is contained in the door control receiver.

--	--

Mode	Function
Add mode	Adds a newly received code while preserving any previously registered codes. This mode is used when adding a new transmitter. If the maximum registration number is exceeded, the oldest one is cleared first.
Rewrite mode	Clears all previously registered codes and registers only newly input codes.
Confirmation mode	Confirms how many codes are currently registered. When adding a new code, this mode is used to check how many codes already

	exist.
Prohibition mode	Deletes all the registered codes and disables the wireless door lock function. This mode is used when the transmitter is lost.

5. CONDITIONS THAT WIRELESS FUNCTIONS DO NOT OPERATE

- a. Lock function will not operate when either of the following conditions is met:
 - Any of the doors is open.
 - The key is inserted in the ignition key cylinder.
- b. Unlock function will not operate when the following condition is met:
 - The key is inserted in the ignition key cylinder.

HOW TO PROCEED WITH TROUBLESHOOTING

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- The wireless door lock control system troubleshooting procedures are based on the premise that the power door lock control system is operating normally. Check the power door lock control system first before troubleshooting the wireless door lock control system. Use this procedure to troubleshoot the wireless door lock control system.
- *: Use the Techstream.

1. VEHICLE BROUGHT TO WORKSHOP

NEXT: Go to next step

2. CUSTOMER PROBLEM ANALYSIS CHECK

- a. Interview the customer to confirm the problem. Refer to **HOW TO PROCEED WITH TROUBLESHOOTING**.

NEXT: Go to next step

3. INSPECT BATTERY VOLTAGE

Standard voltage

11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding to the next step.

NEXT: Go to next step

4. CHECK FOR DTC*

- Check for DTCs and note any codes that are output. Refer to **DIAGNOSTIC TROUBLE CODE CHART**.
- Clear the DTCs.
- Recheck for DTCs. Based on the DTCs output above, try to force output of the same CAN communication system DTC or wireless door lock control system DTC by simulating the symptoms indicated by the DTC.

RESULT

Result	Proceed to
DTC is not output	A
CAN communication system DTC is output	B
Wireless door lock control system DTC is output	C

B --> GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING

C --> GO TO DIAGNOSTIC TROUBLE CODE CHART. Refer to DIAGNOSTIC TROUBLE CODE CHART

A: Go to next step

5. PROBLEM SYMPTOMS TABLE

- Refer to **PROBLEM SYMPTOMS TABLE**.

RESULT

Result	Proceed
--------	---------

	to
Fault is not listed in Problem Symptoms Table	A
Fault is listed in Problem Symptoms Table	B

B --> Go to step 7

A: Go to next step

6. OVERALL ANALYSIS AND TROUBLESHOOTING*

- a. Operation Check. Refer to **OPERATION CHECK**
- b. Terminals of ECU. Refer to **TERMINALS OF ECU**
- c. Data List / Active Test. Refer to **DATA LIST / ACTIVE TEST**

NEXT: Go to next step

7. REPAIR OR REPLACE

NEXT: Go to next step

8. CONFIRMATION TEST

NEXT --> END

OPERATION CHECK

OPERATION CHECK

1. NOTICE WHEN CHECKING THE FOLLOWING

- a. Power door lock/unlock function:

This wireless door lock control function operates only when the following 3 conditions are met:

1. There is no key in the ignition key cylinder.
2. All doors are closed.
3. The power door lock system is operating normally.

HINT:

The unlock function operates even when a door is open.

b. Power back door open function*1:

This wireless door lock control function operates only when the following 4 conditions are met:

1. The ignition switch is off.
2. All doors are unlocked.
3. The power back door system operates normally.
4. Main switch is on.

c. Power slide door open function*2:

This wireless door lock control function operates only when the following 5 conditions are met:

1. The ignition switch is off.
2. All doors are unlocked.
3. The power slide door system operates normally.
4. The fuel lid is closed (power slide door LH side).
5. Main switch is on.

d. Power back door close function*1:

This wireless door lock control function operates only when the following 3 conditions are met:

1. The ignition switch is off.
2. The power back door system operates normally.
3. Main switch is on.

e. Power slide door close function*2:

This wireless door lock control function operates only when the following 3 conditions are met:

1. The ignition switch is off.
2. The power slide door system operates normally.
3. Main switch is on.

f. The size of the wireless door lock control operational area differs depending on the situation.

1. The size of the operation area differs depending on the user and the way the transmitter is held.
2. In certain areas, the remote control function will only operate partially for the operational area, which will be reduced due to the vehicle body shape and the influence of the surrounding environment.
3. Since the transmitter uses weak radio waves, strong radio waves or electrical noise in the frequency used by the transmitter may reduce the size of the operational area and the remote

control may not function.

4. When the transmitter battery is weak, the size of the operational area is reduced and the remote control may not function.

HINT:

If the door control transmitter has been left in a place that is exposed to direct sunlight, such as on the instrument panel, it may cause the battery to be weakened or cause other related problems.

*1: w/ Power Back Door System

*2: w/ Power Slide Door System

2. CHECK WIRELESS DOOR LOCK CONTROL FUNCTIONS

HINT:

- The switches described in this text are the switches for transmitting signals. The switches are built into the door control transmitter.
 - All the functions listed below must be checked in comparison with the remote control operational area.
- a. Make sure that the vehicle is in an area that allows the wireless control function to operate.
 - b. Check basic functions.
 1. Check whether the LED of the transmitter comes on 3 times when each switch is pressed 3 times.

HINT:

If the LED does not come on when the switch has been pressed 3 times or more, it may have a weak battery.

2. Check that all doors lock when LOCK switch is pressed.
 3. Check that the driver side door unlock when the UNLOCK switch is pressed once, and unlocks all doors when pressed twice within 3 seconds.
 4. Check that the power back door opens or closes when the POWER BACK DOOR switch is held down for 0.8 seconds or more*1.
 5. Check that the power back door reverses immediately when the POWER BACK DOOR switch is pressed while the door is automatically moving (no delay)*1.
 6. Check that the power slide door RH/LH opens or closes when the POWER SLIDE DOOR RH/LH switch is held down for 0.8 seconds or more*2.
 7. Check that the power slide door RH/LH reverses immediately when the POWER SLIDE DOOR RH/LH switch is pressed while the door is automatically moving (no delay)*2.
- c. Check the chattering prevention function.
 1. Check that the corresponding operation occurs only once and is not repeated continuously while the switch is held. However, when the switch is operated repeatedly at 1-second

intervals, check that the corresponding operation is carried out.

d. Check the automatic locking function.

1. Check that the doors relock automatically as long as none of the doors have been opened or all doors have not been locked within approximately 60 seconds after all doors are unlocked by pressing the UNLOCK switch.
2. Check that the automatic locking function does not operate when any door has been opened within approximately 60 seconds of unlocking the doors by pressing the UNLOCK switch.
3. Check that the automatic locking function does not operate when all doors have been locked manually (such as using key linked operation, or by pressing the lock switch) within approximately 60 seconds of unlocking the doors by pressing the UNLOCK switch.

e. Check the switch operation fail-safe function.

1. Check that the doors cannot be locked or unlocked by operating a switch on the unregistered transmitter, and that the doors are locked and unlocked by operating a switch on the registered transmitter.

f. Check the door ajar warning function.

1. Check that the wireless door lock buzzer sounds for approximately 10 seconds when the LOCK switch is pressed with any of the doors ajar or open.

g. Check the repeat function.

1. Check that all doors attempt to automatically lock once again 1 second after the LOCK switch has been pressed while the driver door control knob is being held in the unlock position.

h. Check the answer-back function.

1. When the LOCK switch is pressed, check that the hazard warning lights flash once and the buzzer sounds once, simultaneously with the locking operation.
2. When the UNLOCK switch is pressed once, check that the hazard warning lights flash twice and the buzzer sounds twice, simultaneously with the unlocking operation.

i. Check the interior light on function.

HINT:

Turn the interior light switch to the DOOR position before the check.

1. Check that the roof console box assembly and spot light assembly come on simultaneously with the unlocking operation when the UNLOCK switch has been pressed.

j. Check the remote panic function.

1. Check that the horn sounds, the headlights and taillights flash and the interior light remains on (when the light switch is turned to the DOOR position) for 60 seconds by the theft alarm function, when the PANIC switch is held down for 0.8 seconds or more. Also, check that the horn stops sounding and the lights stop flashing when any switch of the transmitter is pressed.

*1: w/ Power Back Door System

*2: w/ Power Slide Door System

REGISTRATION

REGISTRATION

HINT:

- Register a new recognition code when replacing the door control transmitter or the door control receiver.
- Add mode is used to retain the already registered codes while registering a new recognition code. This mode is used when adding a transmitter.
- Rewrite mode is used to clear all the previously registered codes and register only new recognition codes. This mode is used when exchanging the transmitter or the door control receiver for new one.
- Confirmation mode is used to confirm how many recognition codes have already been registered before an additional registration of a recognition code.
- Prohibition mode is used to clear all the registered codes and cancel the wireless door lock function. Use this mode when the transmitter is lost.
- All of the steps in the following registration procedure must be performed in sequential order continuously.

1. REGISTRATION OF RECOGNITION CODE (MANUAL OPERATION)

- a. The following conditions should be met.
 1. No key is inserted in the ignition key cylinder.
 2. Only driver side door is opened.
- b. Perform the following operations to select the desired mode.
 1. Insert and remove the key from the ignition switch twice within 5 seconds. (End in removed)
 2. After the above operation, close and open the driver door twice. (End in open)

Then insert the key into the ignition key cylinder and remove it.

HINT:

Complete this procedure within 40 seconds.

3. After the above operations, close and open the driver door twice. (End in open)

Then insert the key into the ignition key cylinder and close the driver door.

HINT:

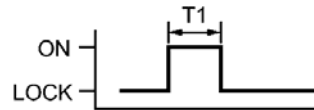
Complete this procedure within 40 seconds.

4. Turn the ignition switch from LOCK to ON and back to LOCK at approximately 1-second intervals 1 to 5 times to select a mode (see the illustration below). Then remove the key from the ignition key cylinder.

Number of ON-LOCK Operations of the Ignition Switch

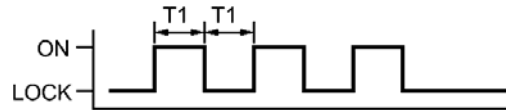
Add Mode:

ON-LOCK operation: 1 time



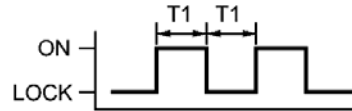
Confirmation Mode:

ON-LOCK operation: 3 times



Rewrite Mode:

ON-LOCK operation: 2 times



Prohibition Mode:

ON-LOCK operation: 5 times



T1: Approx. 1 second

N

Fig. 8: Identifying Number Of ON-LOCK Operations Of The Ignition Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

Complete this procedure within 40 seconds.

NOTE: If the number of the ON-LOCK operations of the ignition switch is 0, 4, 6 or more, there will be no response to indicate which mode has been selected.

- After selecting a mode, the main body ECU (driver side junction block assembly) automatically performs the power door LOCK- UNLOCK operation within 5 seconds to indicate the selected mode (see the illustration below).

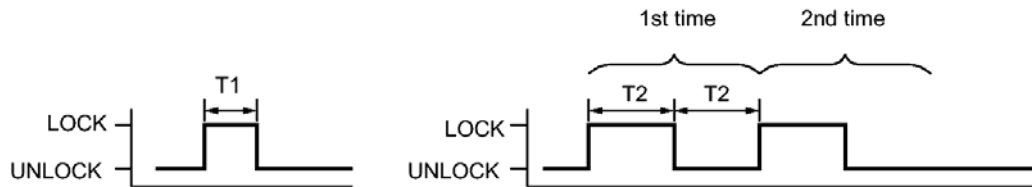
Response to a Selected Mode (Power Door Lock Operation)

Add Mode:

Confirmation Mode:

LOCK-UNLOCK operation: 1 time

LOCK-UNLOCK operation: The number of registered codes (1 to 6 times)

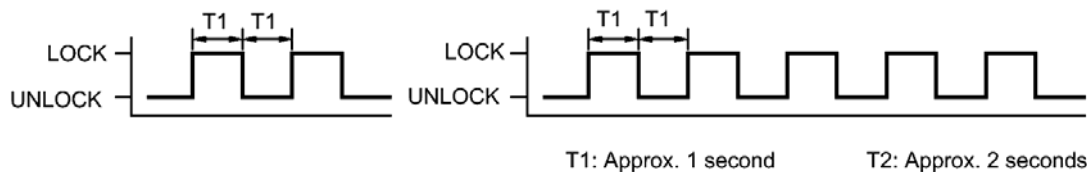


Rewrite Mode:

Prohibition Mode:

LOCK-UNLOCK operation: 2 times

LOCK-UNLOCK operation: 5 times



N

Fig. 9: Identifying Response To A Selected Mode (Power Door Lock Operation)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

- In confirmation mode, the LOCK- UNLOCK operation will occur once for each recognition code that has been registered. For example, if 2 recognition codes have been registered, the LOCK-UNLOCK operation will occur 2 times.
- In confirmation mode and prohibition mode, once a LOCK-UNLOCK operation response has occurred, the registration procedure will end.

c. Register new recognition codes (Add mode or Rewrite mode):

1. Within 45 seconds after add mode or rewrite mode has been selected, press the LOCK and UNLOCK switches on the transmitter switch simultaneously for 1.0 to 1.5 seconds.

Then, press either one of the switches for more than 1.0 second. (Procedure "A")

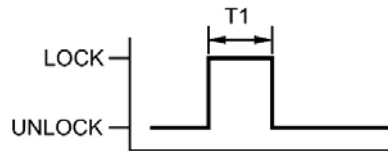
2. Within 5 seconds after the transmitter switch has been released, the LOCK-UNLOCK operation will be automatically performed once if the registration of the recognition code of the transmitter is completed correctly.

If the LOCK-UNLOCK operation is performed twice, registration of the recognition code has failed. Perform the registration procedure from the beginning. (Procedure "B")

Response to Registration Completion

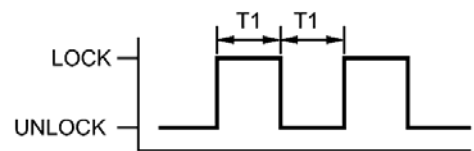
LOCK-UNLOCK Occurs Once:

Registration of recognition code has been completed.



LOCK-UNLOCK Occurs Twice:

Registration of recognition code has failed.



T1: Approx. 1 second

N

Fig. 10: Identifying Response To Registration Completion
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. If multiple transmitters need to be registered, repeat procedures "A" and "B" within 45 seconds each.

HINT:

- Up to the maximum registration number can be registered at once.
- If even one of the following conditions is met, registration mode will end.
 - 40 seconds have elapsed after a recognition code has been registered.
 - Any of the doors are opened.
 - The key is inserted into the ignition key cylinder.
 - The maximum registration number is reached.

2. REGISTRATION OF RECOGNITION CODE (USING TECHSTREAM)

- a. Turn the ignition switch to ON.
- b. Select either add or rewrite mode according to the Techstream display.
- c. The number of registered codes is indicated.
- d. Registration of the door control transmitter.
 1. If either add mode or rewrite mode has been selected, press the LOCK and UNLOCK switches on the transmitter simultaneously.
 2. Within 3 seconds of releasing the LOCK and UNLOCK switches, press either of the switches on the door control transmitter.

NOTE:

- Do not press the LOCK and UNLOCK switches simultaneously for more than 1.5 seconds.
- Perform this operation within 1 meter of the driver seat to register the transmitter.
- Do not push other transmitter switches during the transmitter registration process.

3. The main body ECU (driver side junction block assembly) automatically performs the power door LOCK-UNLOCK operation once in order to indicate whether registration has been completed correctly or not.
4. If continuing registration, the next recognition code must be registered in the door control transmitter within 30 seconds.

HINT:

Up to 6 recognition codes can be registered.

- e. Completing the registration mode.
 1. Registration mode will end when any of the following occurs:
 - 30 seconds or more have elapsed after a code is registered.
 - The Techstream is used to finish registration.
 - The Techstream is disconnected.
 - The ignition switch is turned off.
- f. Perform the following after registration is completed.
 1. Perform the wireless door lock control operation check. Refer to **OPERATION CHECK**.

HINT:

If the wireless door lock control does not operate, perform the registration procedure again.

CUSTOMIZE PARAMETERS

CUSTOMIZE PARAMETERS

HINT:

The following items can be customized.

NOTE:

- **When the customer requests a change in a function, first make sure that the function can be customized.**
- **Be sure to make a note of the current settings before customizing.**
- **When troubleshooting a function, first make sure that the function is set to the default setting.**

1. CUSTOMIZE

- a. Connect the Techstream to the DLC3.
- b. Turn the ignition switch to ON.
- c. Turn the Techstream on.
- d. Enter the following menu: Utility / Customize / Wireless Door Lock.
- e. Select the setting by referring to the table below.

WIRELESS DOOR LOCK CONTROL SYSTEM

Display (item)	Default	Function	Setting
Wireless Control	ON	Function that turns wireless door lock function ON/OFF	ON or OFF
Hazard Answer Back	ON	When the doors are locked by wireless operation, the hazard warning lights flash once. When the doors are unlocked by wireless operation, the hazard warning lights flash twice.	ON or OFF
Open Door Warning	ON	The buzzer sounds when LOCK is pressed when any of the doors are ajar.	ON or OFF
Unlock 2 Operation	ON	Function that unlocks driver side door when unlock switch on transmitter is pressed once, and unlocks all doors when pressed twice. If	ON or OFF

		setting is OFF, pressing unlock switch once makes all doors unlock.	
Panic Function	ON	Function to operate theft deterrent system by continuously pressing panic switch on transmitter for 0.8 seconds	ON or OFF
Auto Lock Time	60 s	This function regulates the interval between unlocking and automatic relocking of doors.	30 s, 60 s or 120 s
Wireless Auto Lock	ON	This function turns the wireless auto lock function on or off.	ON or OFF
Wireless Buzzer Vol	Level7	Wireless door lock buzzer Volume	Level7, Level6, Level5, Level4, Level3, Level2, Level1 or Level0

PROBLEM SYMPTOMS TABLE

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

WIRELESS DOOR LOCK CONTROL SYSTEM

Symptom	Suspected Area	See
Only wireless control function is inoperative.	Proceed to "Only wireless control function is inoperative"	Refer to <u>Only Wireless Control Function is Inoperative</u>
Only answer-back function does not operate normally.	Proceed to "No answer-back"	Refer to <u>No Answer-Back</u>
Only automatic lock function does not operate normally.	Perform the operation check	Refer to <u>OPERATION CHECK</u>
	Key reminder warning system (unlock warning switch circuit)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Lighting system (door courtesy light switch circuit)	Refer to <u>Door Courtesy Switch Circuit</u>
	Main body ECU	-
Only illuminated entry function does not operate.	Perform the operation check	Refer to <u>OPERATION CHECK</u>
	Lighting system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Main body ECU	-
Only door ajar warning function does not operate.	Perform the operation check	Refer to <u>OPERATION CHECK</u>
	Lighting system (door courtesy light switch circuit)	Refer to <u>Door Courtesy Switch Circuit</u>
	Main body ECU	-
Only panic alarm function does not operate (w/ theft deterrent system).	Perform operation check	Refer to <u>OPERATION CHECK</u>
	Lighting system (int) (interior lights)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Lighting system (ext) (headlights, taillights, hazard lights)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Theft deterrent system	

	(vehicle horn, security horn)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Main body ECU	-
Only panic alarm function does not operate (w/o theft deterrent system).	Perform operation check	Refer to <u>OPERATION CHECK</u>
	Lighting system (int) (interior lights)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Lighting system (ext) (headlights, taillights, hazard lights)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Horn system	Refer to <u>PROBLEM SYMPTOMS TABLE</u>
	Wire harness or connector (vehicle horn - main body ECU)	-
	Main body ECU	-

TERMINALS OF ECU

TERMINALS OF ECU

1. CHECK MAIN BODY ECU AND INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY

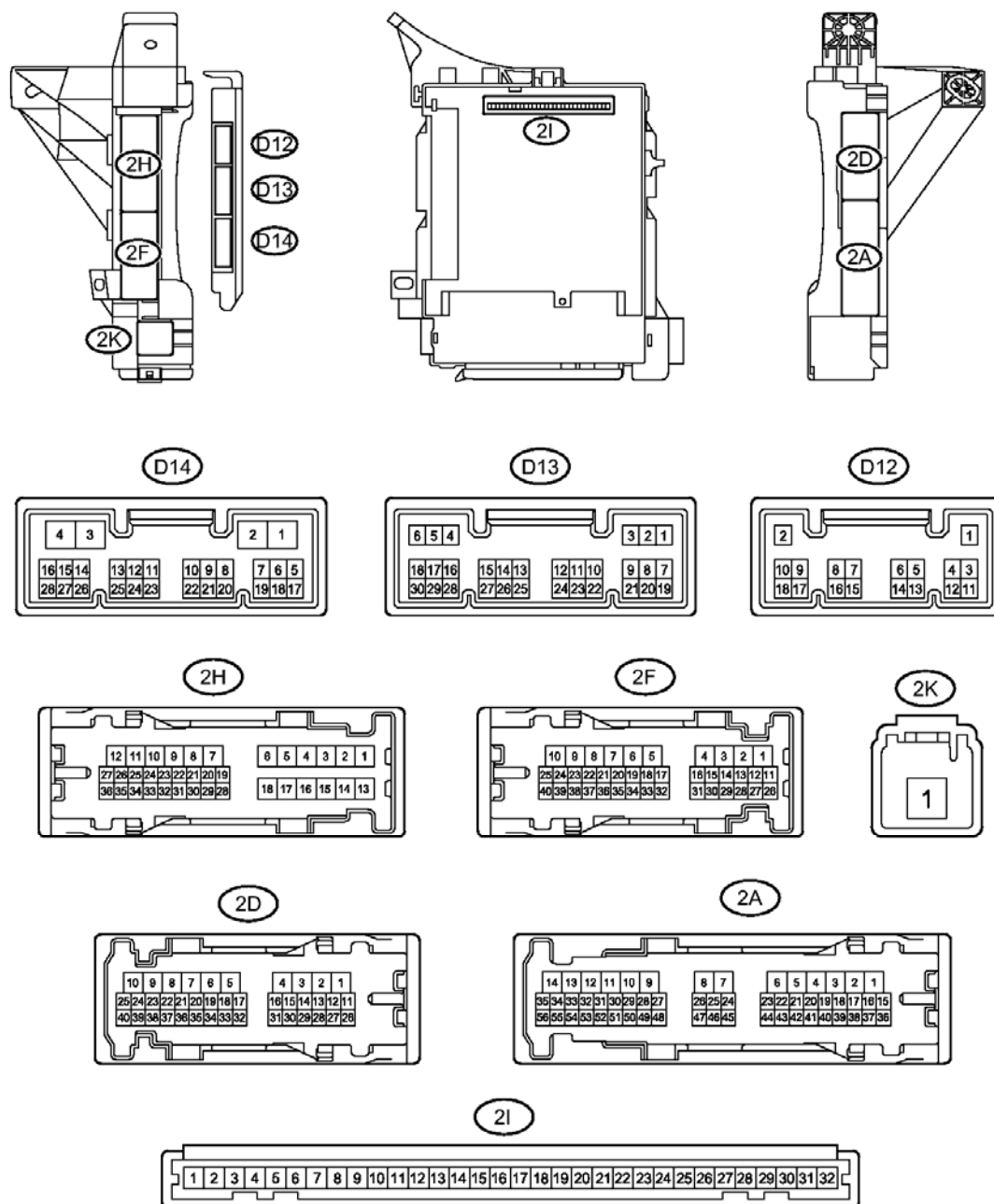


Fig. 11: Main Body ECU & Instrument Panel Junction Block Assembly Connector Terminal Identification
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Remove the main body ECU.
- Disconnect the main body ECU connectors.
- Measure the voltage and resistance according to the value(s) in the table below.

HINT:

Measure the values on the wire harness side with the connector disconnected.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
2I-29 (ACC) - Body ground	-	Ignition power supply (ACC signal)	Ignition switch ACC --> off	11 to 14 V --> Below 1 V
2I-32 (IG) - Body ground	-	Ignition power supply (IG signal)	Ignition switch ON --> off	11 to 14 V --> Below 1 V
2I-30 (BECU) - Body ground	-	+B power supply	Always	11 to 14 V
2I-31 (ALTB) - Body ground	-	+B (power system alternator system) power supply	Always	11 to 14 V
D13-17 (KSW) - Body ground	R - Body ground	Unlock warning switch input	No key in ignition key cylinder (OFF) --> Key inserted (ON)	10 kohms or higher - -> Below 1 ohms
2I-11 (GND1) - Body ground	-	Ground	Always	Below 1 ohms

If the result is not as specified, there may be a malfunction on the wire harness side.

- d. Reconnect the main body ECU connectors.
- e. Measure the voltage according to the value(s) in the table below.

Terminal No.	Wiring Color	Terminal Description	Condition	Specified Condition
--------------	--------------	----------------------	-----------	---------------------

(Symbol)				
2H-35 (FLCY) - Body ground	P - Body ground	Driver side door courtesy light switch input	Driver side door CLOSED (OFF) --> OPEN (ON)	Pulse generation --> Below 1 V
2H-27 (FRCY) - Body ground	GR - Body ground	Passenger side courtesy light switch input	Passenger side door CLOSED (OFF) --> OPEN (ON)	Pulse generation --> Below 1 V
D13-6 (RCTY) - Body ground	L - Body ground	Rear courtesy light switch RH input	Rear door RH CLOSED (OFF) --> OPEN (ON)	Pulse generation --> Below 1 V
D12-3 (LCTY) - Body ground	GR - Body ground	Rear courtesy light switch LH input	Rear door LH CLOSED (OFF) --> OPEN (ON)	Pulse generation --> Below 1 V
D13-19 (BCTY) - Body ground	GR - Body ground	Back door courtesy light switch input	Back door CLOSED (OFF) --> OPEN (ON)	Pulse generation --> Below 1 V
D13-3 (HAZ) - Body ground	B - Body ground	Turn signal flasher relay signal	Any transmitter switch pressed -- > not pressed	Below 1 V --> 11 to 14 V
D13-25 (PRG) - Body ground	GR - Body ground	Door control receiver output	Key inserted in ignition key cylinder -- > Key pulled out of ignition key cylinder	11 to 14 V --> Pulse generation --> 11 to 14 V
			Ignition	

D13-26 (RDA) - Body ground	P - Body ground	Door control receiver input	switch off, all doors closed and transmitter switch not pressed	11 to 14 V
			Ignition switch off, all doors closed and transmitter switch pressed	Pulse generation
2F-24 (HORN) - Body ground	G-W - Body ground	Vehicle horn signal	Vehicle horn is sounding (Panic alarm system is in alarm sounding state)	Below 1 V <-- --> 12 V
2F-25 (BZR) - Body ground	G - Body ground	Wireless door lock buzzer signal	Wireless door lock buzzer OFF --> ON	Below 1 V --> Pulse generation

If the result is not as specified, the main body ECU may have a malfunction.

DIAGNOSIS SYSTEM

DIAGNOSIS SYSTEM

1. DESCRIPTION

The ECU stores trouble codes when malfunctions occur.

The diagnostic system allows for reading of the trouble codes from the DLC3 using the Techstream.

Use the Techstream to help diagnose and repair the problem.

2. CHECK DLC3

- Check the DLC3. Refer to **GENERAL INFORMATION** .

DTC CHECK / CLEAR

DTC CHECK / CLEAR

1. DTC CHECK/CLEAR (USING TECHSTREAM)

a. CHECK DTC

1. Connect the Techstream to the DLC3.
2. Turn the ignition switch to ON.
3. Read the DTC by following the prompts on the Techstream screen.

HINT:

Refer to the Techstream operator's manual for further details.

b. CLEAR DTC

1. Connect the Techstream to the DLC3.
2. Turn the ignition switch to ON.
3. Clear the DTC by following the directions on the Techstream screen.

HINT:

The Techstream has a SNAPSHOT function which records the monitored data.

Refer to the Techstream operator's manual for further details.

2. SELF-DIAGNOSTIC MODE (OPERATING IGNITION KEY CYLINDER)

a. Switch to self-diagnostic mode.

1. Insert the key into the ignition key cylinder and remove it.
2. Within 5 seconds after the key is removed, insert it into the ignition key cylinder and then turn the ignition switch to ON then off once. (End in off)
3. Within 30 seconds after turning the ignition switch off, perform the following 9 times: Turn the ignition switch to ON then off. (End in off)

HINT:

Turning the ignition switch to ON after the procedure above has been completed will end the self-diagnostic mode.

NOTE: **If the system fails to enter self-diagnostic mode, the system will return to normal mode.**

- #### **b. Check that the system has switched to self-diagnostic mode by checking the interior light output pattern.**

Interior Light Output:

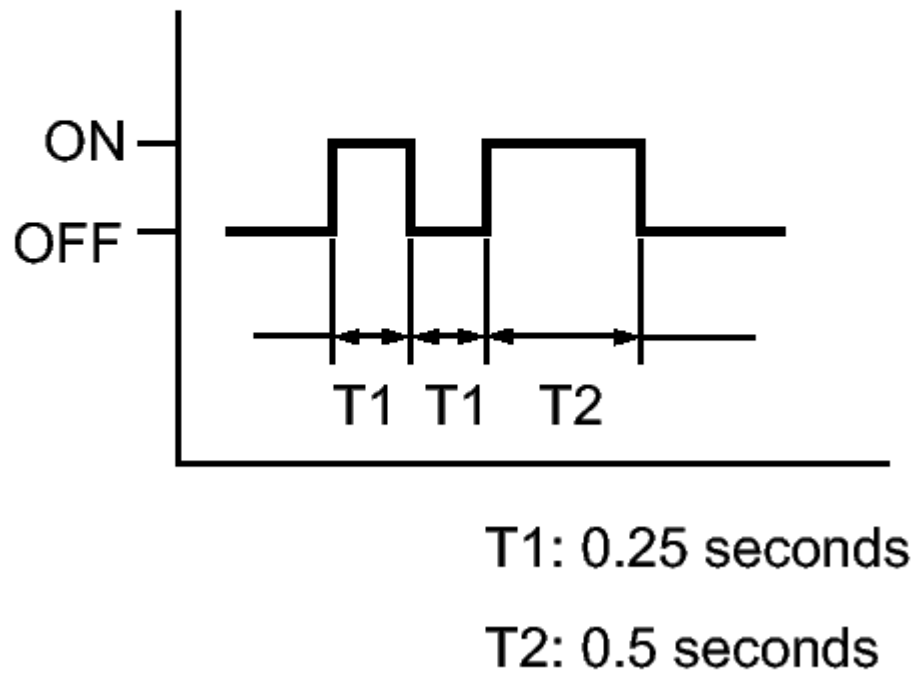


Fig. 12: Identifying Interior Light Output Pattern

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Check that the system has switched to self-diagnostic mode by checking the wireless door lock buzzer output pattern.

Wireless Door Lock Buzzer Output:

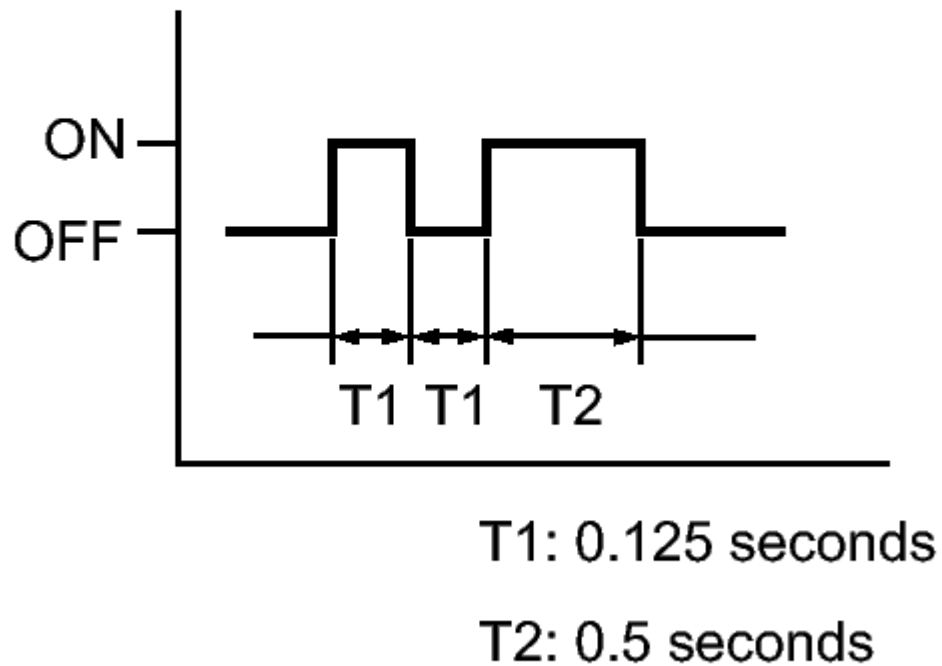


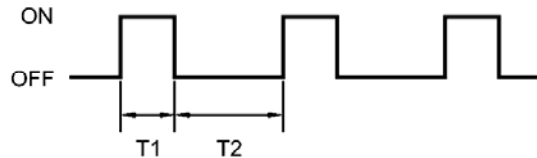
Fig. 13: Identifying Wireless Door Lock Buzzer Output Pattern
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Check the diagnostic outputs when the door control transmitter switch is held down. The diagnostic outputs can be checked by the interior light and wireless door lock buzzer patterns.

Interior Light and Wireless Door Lock Buzzer Output:

Normal Wave

(LOCK/UNLOCK Switch):



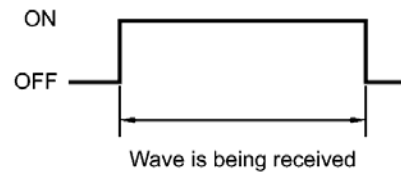
T1: 0.25 seconds (Interior Light)

0.125 seconds (Wireless Door Lock Buzzer)

T2: 0.5 seconds (Interior Light)

0.25 seconds (Wireless Door Lock Buzzer)

Unmatching Recognition Code:



No Diagnostic Output:



N

Fig. 14: Identifying Interior Light And Wireless Door Lock Buzzer Output Patterns
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. SELF-DIAGNOSTIC MODE (USING TECHSTREAM)

- a. Switch to self-diagnostic mode.
 1. Connect the Techstream to the DLC3.
 2. Turn the ignition switch to ON and turn the Techstream main switch on.

HINT:

Refer to the Techstream operator's manual for further details.

DATA LIST / ACTIVE TEST

DATA LIST / ACTIVE TEST

1. DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTE: In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

- a. Connect the Techstream to the DLC3.
- b. Turn the ignition switch to ON.
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Main Body / Data List.
- e. Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Key Unlock Warning SW	Unlock warning switch/ON or OFF	ON: Ignition key inserted OFF: Ignition key not inserted	-
Wireless Control	Wireless door lock control function/ON or OFF	ON: Operating OFF: Not operating	-
Hazard Answer Back	Hazard answer-back of wireless/ON or OFF	ON: Operating OFF: Not operating	-
Wireless Auto Lock	Automatic lock function / ON or OFF	ON: Operating OFF: Not operating	-
Open Door Warning	Open door warning/ON or OFF	ON: Operating OFF: Not operating	-
	2 times operation of	ON: All doors unlock when UNLOCK switch pressed	

Unlock 2 Operation	wireless unlock / ON or OFF	twice OFF: All doors unlock when UNLOCK switch pressed once	-
Panic Function	Panic function/ON or OFF	ON: Operating OFF: Not operating	-
Auto Lock Time	Automatic lock time/120 s, 60 s or 30 s	120 s: 120 seconds 60 s: 60 seconds 30 s: 30 seconds	-
Wireless Buzz Vol	Wireless buzzer volume / LEVEL0 to LEVEL7	Level7: Biggest volume Level6 Level5 Level4 Level3 Level2 Level1: Smallest volume Level0: No sound	-

2. ACTIVE TEST

HINT:

Using the Techstream to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts.

This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.

- d. Enter the following menus: Body Electrical / Main Body / Active Test.
- e. Perform the Active Test according to the display on the Techstream.

MAIN BODY

Tester Display	Test Part	Control Range	Diagnostic Note
Hazard	Turns the turn signal flasher relay	ON/OFF	Observe headlight and rear combination light for correct operation
Illuminated Entry System	Interior light and ignition key cylinder light (Interior light switch is in DOOR position and all doors are closed)	ON/OFF	-
Wireless Buzzer	Wireless door lock buzzer	ON/OFF	-
Security Horn	Turns the security horns	ON/OFF	-

DIAGNOSTIC TROUBLE CODE CHART

DIAGNOSTIC TROUBLE CODE CHART

HINT:

- If a trouble code is output during the DTC check, inspect the trouble areas listed for that code. For details of the code, refer to the appropriate information in the DTC chart.

- Inspect the fuses and relays before troubleshooting the areas shown in the table below.

WIRELESS DOOR LOCK CONTROL SYSTEM

DTC Code	Detection Item	Trouble Area	See
B1242	Wireless Door Lock Tuner Circuit Malfunction	- Wire harness or connector - Door control receiver - Main body ECU	Refer to <u>DTC B1242: Wireless Door Lock Tuner Circuit Malfunction</u>