# DTC P0504 BRAKE SWITCH ”A”/”B” CORRELATION

## CIRCUIT DESCRIPTION

In addition to turning on the stop light, the stop light switch signals are used for a variety of engine, transmission, and suspension functions as well as being an input for diagnostic checks. It is important that the switch operates properly, therefore this switch is designed with two complementary signal outputs: STP and ST1−. The ECM analyzes these signal outputs to detect malfunctions in the stop light switch.

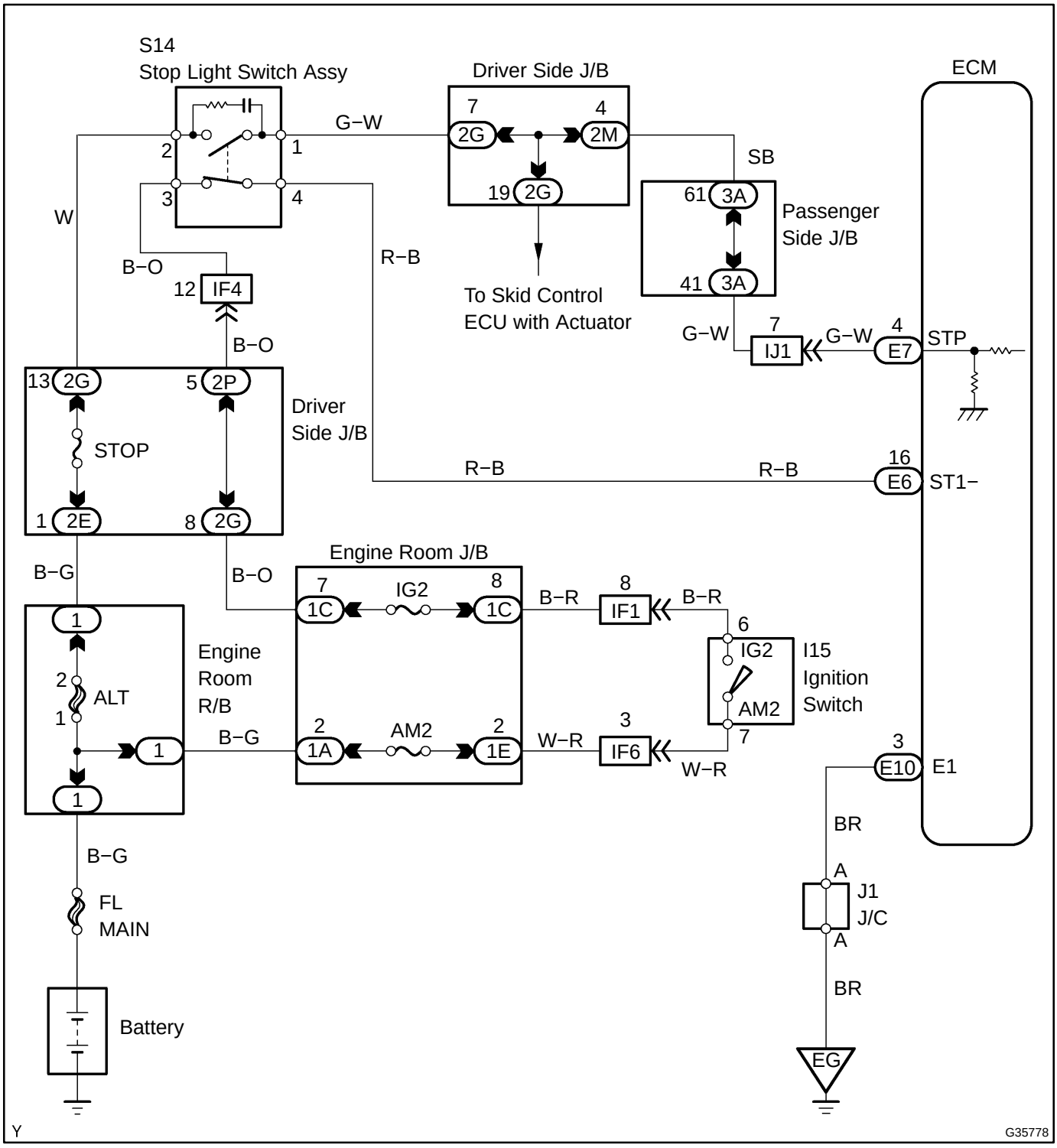
HINT:

Normal condition is as shown in the table.

| Signal | Brake pedal released | In transition | Brake pedal depressed |
|---|---|---|---|
| STP | OFF | ON | ON |
| ST1− | ON | ON | OFF |

| DTC No. | DTC Detection Condition | Trouble Area |
|---|---|---|
| P0504 | Conditions (a), (b) and (c) continue for 0.5 seconds or more:<br>(a) Ignition switch ON<br>(b) Brake pedal released<br>(c) STP signal is OFF when the ST1− signal is OFF | • Short in stop light switch signal circuit<br>• STOP fuse<br>• Stop light switch<br>• ECM |

## WIRING DIAGRAM



## INSPECTION PROCEDURE

HINT:

Read freeze frame data using the hand−held tester or the OBD II scan tool. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air−fuel ratio was lean or rich, and other data from the time the malfunction occurred.

### Hand−held tester:

| 1 | CHECK STOP LIGHT (OPERATION) |
|---|---|

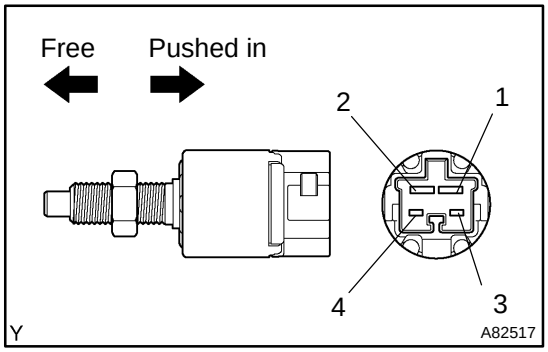
(a) Check if the stop lights turn on and off normally when the brake pedal is depressed and released.

**OK: The stop lights turn on when you depress the brake pedal.**

NG → **REPAIR OR REPLACE STOP LIGHT SWITCH CIRCUIT**

OK

| 2 | INSPECT STOP LIGHT SWITCH ASSY (RESISTANCE) |
|---|---|




(a) Check the resistance of the switch terminals.

**Standard:**

| Switch Condition | Tester Connection | Specified Condition |
|---|---|---|
| Switch pin free | 1 − 2 | Below 1 Ω |
| Switch pin free | 3 − 4 | 10 kΩ or higher |
| Switch pin pushed in | 1 − 2 | 10 kΩ or higher |
| Switch pin pushed in | 3 − 4 | Below 1 Ω |

NG → **REPLACE STOP LIGHT SWITCH ASSY**

OK

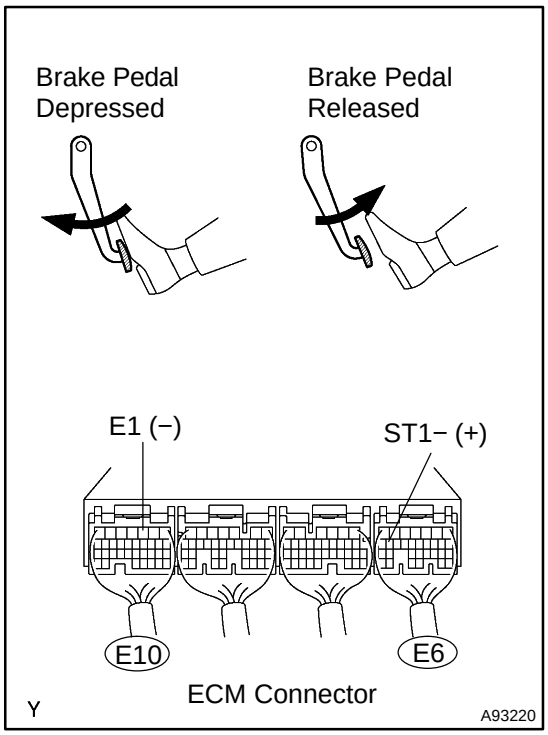
| 3 | READ VALUE OF HAND−HELD TESTER (STP SIGNAL, ST1− VOLTAGE) |
|---|---|

(a) Turn the ignition switch ON.

(b) On the hand−held tester, enter the following menus: DIAGNOSIS / ENHANCED OBD II / DATA LIST / ALL / STOP LIGHT SW. Read the value.

**Standard:**

| Brake Pedal Condition | Specified Condition |
|---|---|
| Depressed | STP Signal ON |
| Released | STP Signal OFF |




(c) Check the voltage of the E6 ECM connectors.

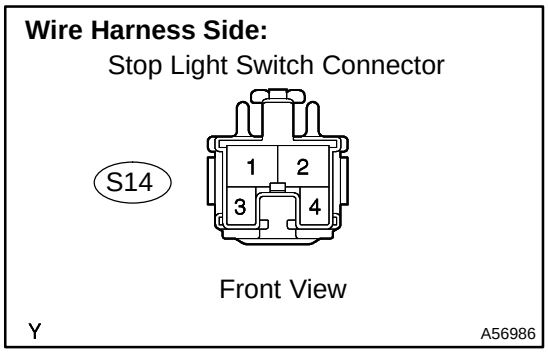
**Standard:**

| Tester Connection | Brake Pedal Condition | Specified Condition |
|---|---|---|
| E6−16 (ST1−) − E10−3 (E1) | Depressed | Below 1.5 V |
| E6−16 (ST1−) − E10−3 (E1) | Released | 7.5 to 14 V |

**OK** → **CHECK FOR INTERMITTENT PROBLEMS (See page 05−9)**

**NG**

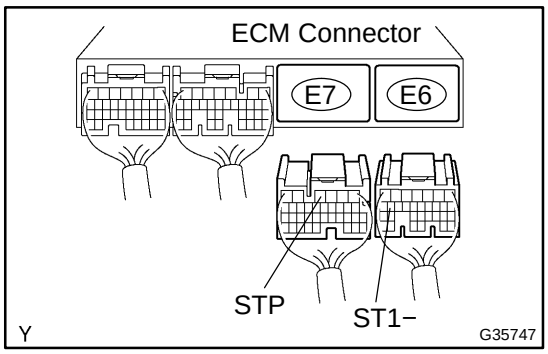
| 4 | CHECK WIRE HARNESS (STOP LIGHT SWITCH − ECM) |
|---|---|




(a) Disconnect the S14 stop light switch connector.
(b) Disconnect the E7 and E6 ECM connector.
(c) Check the resistance of the wire harness side connectors.

**Standard:**

| Tester Connection | Specified Condition |
|---|---|
| S14−1 − E7−4 (STP)<br>S14−4 − E6−16 (ST1−) | Below 1 Ω |
| S14−1 or E7−4 (STP) − Body ground<br>S14−4 or E6−16 (ST1−) − Body ground | 10 kΩ or higher |




**NG** → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

**OK**

**REPLACE ECM (See page 10−9)**

## OBD II scan tool (excluding hand−held tester):

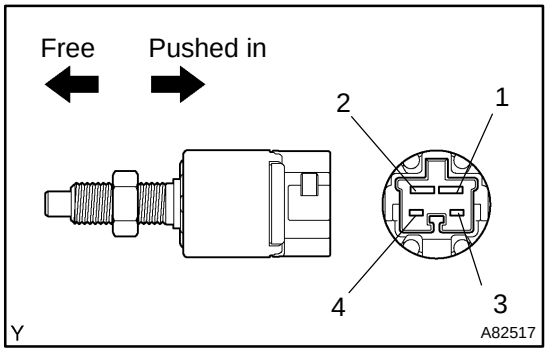
| 1 | CHECK STOP LIGHT (OPERATION) |
|---|---|

(a) Check if the stop lights turn on and off normally when the brake pedal is depressed and released.

**NG** → **REPAIR OR REPLACE STOP LIGHT SWITCH CIRCUIT**

**OK**

| 2 | INSPECT STOP LIGHT SWITCH ASSY |
|---|---|




(a) Check the resistance of the switch terminals.

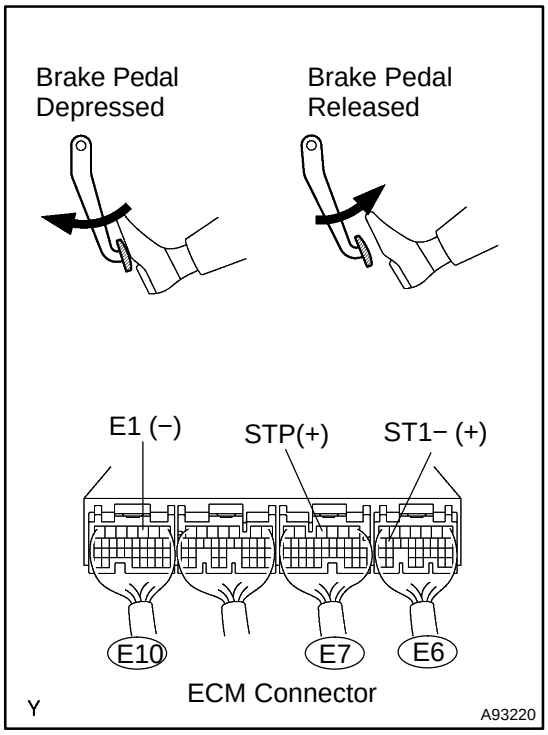
**Standard:**

| Switch Condition | Tester Connection | Specified Condition |
|---|---|---|
| Switch pin free | 1 − 2 | Below 1 Ω |
| Switch pin free | 3 − 4 | 10 kΩ or higher |
| Switch pin pushed in | 1 − 2 | 10 kΩ or higher |
| Switch pin pushed in | 3 − 4 | Below 1 Ω |

**NG** → **REPLACE STOP LIGHT SWITCH ASSY**

**OK**

## 3 INSPECT ECM (STP, ST1− VOLTAGE)



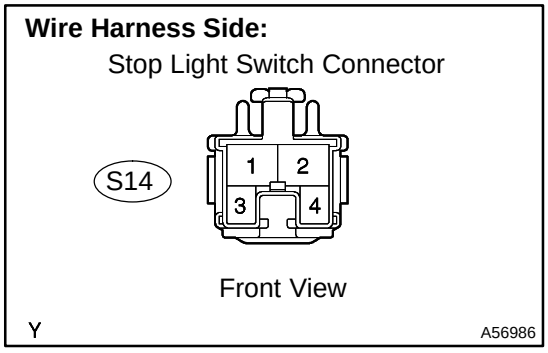

(a) Turn the ignition switch ON.
(b) Check the voltage of the ECM connectors.
**Standard:**

| Tester Connection | Brake Pedal Condition | Specified Condition |
|---|---|---|
| E7−4 (STP) − E10−3 (E1) | Depressed | 7.5 to 14 V |
| E7−4 (STP) − E10−3 (E1) | Released | Below 1.5 V |
| E6−16 (ST1−) − E10−3 (E1) | Depressed | Below 1.5 V |
| E6−16 (ST1−) − E10−3 (E1) | Released | 7.5 to 14 V |

**OK** → **CHECK FOR INTERMITTENT PROBLEMS (See page 05−9)**

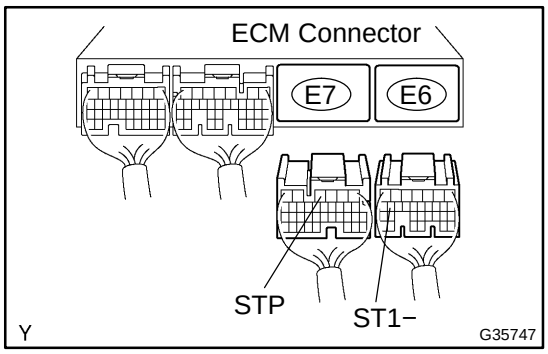
**NG**

## 4 CHECK WIRE HARNESS (STOP LIGHT SWITCH − ECM)




(a) Disconnect the S14 stop light switch connector.
(b) Disconnect the E7 and E6 ECM connector.
(c) Check the resistance of the wire harness side connectors.
**Standard:**

| Tester Connection | Specified Condition |
|---|---|
| S14−1 − E7−4 (STP)<br>S14−4 − E6−16 (ST1−) | Below 1 Ω |
| S14−1 or E7−4 (STP) − Body ground<br>S14−4 or E6−16 (ST1−) − Body ground | 10 kΩ or higher |




**NG** → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

**OK**

**REPLACE ECM (See page 10−9)**