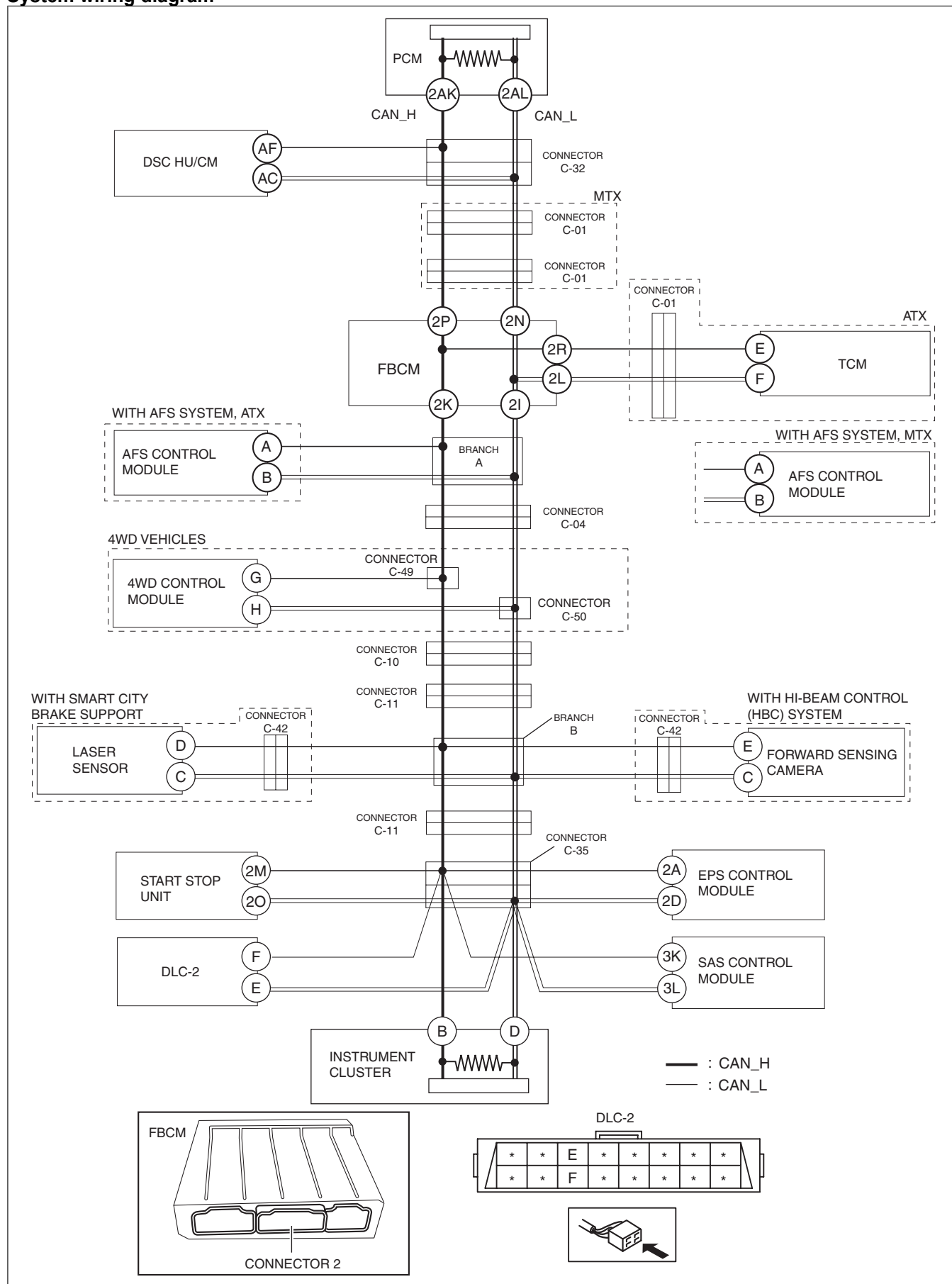

DETERMINING SHORT BETWEEN CIRCUITS LOCATION (HS-CAN) [SKYACTIV-D 2.2 (L.H.D.)]

id100205000800

Caution

- Perform the following malfunction diagnosis only when it is diagnosed with a short between circuits by CONTROLLER AREA NETWORK (CAN) MALFUNCTION DIAGNOSIS FLOW [SKYACTIV-D 2.2 (L.H.D.)].

System wiring diagram



Determination procedure

Caution

- When disconnecting the connector, verify that there is no looseness, damage, deformation, corrosion, or poor connection of the connector terminals.
- When inspecting the DLC-2, touch it with a paper clip or similar thin pin without directly inserting a tester into the terminals.

Step	Inspection	Action
1	INSPECT BETWEEN FRONT BODY CONTROL MODULE (FBCM) AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Disconnect connector 2 which has front body control module (FBCM) terminals 2K and 2I. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same? 	Yes Go to Step 6.
		No Go to the next step.
2	INSPECT FRONT BODY CONTROL MODULE (FBCM) FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Inspect for continuity between front body control module (FBCM) terminals 2K and 2I. • Is there continuity? 	Yes Replace the front body control module (FBCM) because there is a short between circuits in the front body control module (FBCM). (See FRONT BODY CONTROL MODULE (FBCM) REMOVAL/INSTALLATION.)
		No Go to the next step.
3	INSPECT BETWEEN TCM OR AFS CONTROL MODULE AND FRONT BODY CONTROL MODULE (FBCM) FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Inspect for continuity between TCM terminals E and F. (ATX) • Inspect for continuity between AFS control module terminals A and B. (MTX) • Is there continuity? 	Yes • Go to the next step. (ATX) • Go to Step 5. (MTX)
		No • Go to Step 29. (ATX) • Go to Step 27. (MTX)
4	INSPECT BETWEEN TCM AND CONNECTOR C-01 FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect connector C-01. • Inspect for continuity between TCM terminals E and F. • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness between the front body control module (FBCM) and connector C-01 because the wiring harness is shorted between circuits.

Step	Inspection	Action
5	INSPECT TCM OR AFS CONTROL MODULE FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect the TCM connector. (ATX) • Disconnect the AFS control module connector. (MTX) • Inspect for continuity between TCM terminals E and F (wiring harness side) (ATX). • Inspect for continuity between AFS control module terminals A and B (wiring harness side). (MTX) • Is there continuity? 	Yes • Repair or replace the wiring harness between the TCM and connector C-01 because the wiring harness is shorted between circuits. (ATX) • Repair or replace the wiring harness between the AFS control module and front body control module (FBCM) because the wiring harness is shorted between circuits. (MTX)
		No • Replace the TCM because there is a short between circuits in the TCM. (ATX) (See CONTROL VALVE BODY REMOVAL/INSTALLATION [FW6A-EL, FW6AX-EL].) (See CONTROL VALVE BODY REMOVAL/INSTALLATION [GW6A-EL, GW6AX-EL].) • Replace the AFS control module because there is a short between circuits in the AFS control module. (See ADAPTIVE FRONT LIGHTING SYSTEM (AFS) CONTROL MODULE REMOVAL/INSTALLATION.)
6	INSPECT BETWEEN CONNECTOR C-04 AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Disconnect connector C-04. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same? 	Yes Go to Step 8.
		No • Go to the next step. (ATX) • Repair or replace the wiring harness between the front body control module (FBCM) and connector C-04 because the wiring harness is shorted between circuits. (MTX)
7	INSPECT AFS CONTROL MODULE FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect the AFS control module connector. • Inspect for continuity between AFS control module terminals A and B (wiring harness side). • Is there continuity? 	Yes Repair or replace the wiring harness between the AFS control module and front body control module (FBCM) / connector C-04 because the wiring harness is shorted between circuits.
		No Replace the AFS control module because there is a short between circuits in the AFS control module. (See ADAPTIVE FRONT LIGHTING SYSTEM (AFS) CONTROL MODULE REMOVAL/INSTALLATION.)
8	INSPECT BETWEEN CONNECTORS C-49 AND C-50 AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Disconnect connectors C-49 and C-50. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same? 	Yes Go to Step 11.
		No Go to the next step.

Step	Inspection	Action
9	INSPECT BETWEEN 4WD CONTROL MODULE AND CONNECTORS C-49 AND C-50 FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Inspect for continuity between 4WD control module terminals G and H. • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness between connector C-04 and connectors C-49 and C-50 because the wiring harness is shorted between circuits.
10	INSPECT 4WD CONTROL MODULE FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect the 4WD control module connector. • Inspect for continuity between 4WD control module terminals G and H (wiring harness side). • Is there continuity? 	Yes Repair or replace the wiring harness between the 4WD control module and connectors C-49 and C-50 because the wiring harness is shorted between circuits.
		No Replace the 4WD control module because there is a short between circuits in the 4WD control module. (See 4WD CONTROL MODULE REMOVAL/INSTALLATION.)
11	INSPECT BETWEEN CONNECTOR C-10 AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Disconnect connector C-10. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same? 	Yes Go to the next step.
		No Repair or replace the wiring harness between connectors C-49 and C-50 and connector C-10 because the wiring harness is shorted between circuits.
12	INSPECT BETWEEN CONNECTOR C-11 AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Disconnect connector C-11. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same? 	Yes Go to Step 17.
		No Go to the next step.

Step	Inspection	Action	
13	INSPECT BETWEEN CONNECTOR C-11 AND FORWARD SENSING CAMERA/LASER SENSOR FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Inspect for continuity between forward sensing camera terminals E and C (with high beam control (HBC) system). • Inspect for continuity between laser sensor terminals D and C (with smart city brake support). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness between connector C-11 and connector C-10 because the wiring harness is shorted between circuits.
14	INSPECT BETWEEN LASER SENSOR AND CONNECTOR C-42 FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect connector C-42. • Inspect for continuity between laser sensor terminals D and C. • Is there continuity? 	Yes	Go to the next step.
		No	Go to Step 16.
15	INSPECT LASER SENSOR FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect the laser sensor connector. • Inspect for continuity between laser sensor terminals D and C (wiring harness side). • Is there continuity? 	Yes	Repair or replace the wiring harness between the laser sensor and connector C-42 because the wiring harness is shorted between circuits.
		No	Replace the laser sensor because there is a short between circuits in the laser sensor. (See LASER SENSOR REMOVAL/INSTALLATION.)
16	INSPECT BETWEEN FORWARD SENSING CAMERA AND CONNECTOR C-42 FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Inspect for continuity between forward sensing camera terminals E and C. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness between connector C-11 and connector C-42 because the wiring harness is shorted between circuits.
17	INSPECT FORWARD SENSING CAMERA FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect the forward sensing camera connector. • Inspect for continuity between forward sensing camera terminals E and C (wiring harness side). • Is there continuity? 	Yes	Repair or replace the wiring harness between the forward sensing camera and connector C-42 because the wiring harness is shorted between circuits.
		No	Replace the forward sensing camera because there is a short between circuits in the forward sensing camera. (See FORWARD SENSING CAMERA (FSC) REMOVAL/INSTALLATION.)
18	INSPECT BETWEEN DLC-2 AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Disconnect connector C-35. • Inspect for continuity between DLC-2 terminals F and E. • Is there continuity? 	Yes	Repair or replace the wiring harness between DLC-2 and connector C-35 because the wiring harness is shorted between circuits.
		No	Go to the next step.
19	INSPECT BETWEEN START STOP UNIT AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Inspect for continuity between start stop unit terminals 2M and 2O. • Is there continuity? 	Yes	Go to the next step.
		No	Go to Step 21.

Step	Inspection	Action
20	INSPECT START STOP UNIT FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect the start stop unit connector. • Is there continuity between start stop unit terminals 2M and 2O (wiring harness side)? • Is there continuity? 	Yes Repair or replace the wiring harness between the start stop unit and connector C-35 because the wiring harness is shorted between circuits.
		No Replace the start stop unit because there is a short between circuits in the start stop unit. (See START STOP UNIT REMOVAL/INSTALLATION.)
21	INSPECT BETWEEN EPS CONTROL MODULE AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Inspect for continuity between EPS control module terminals 2A and 2D. • Is there continuity? 	Yes Go to the next step.
		No Go to Step 23.
22	INSPECT EPS CONTROL MODULE FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect the EPS control module connector. • Is there continuity between EPS control module terminals 2A and 2D (wiring harness side)? • Is there continuity? 	Yes Repair or replace the wiring harness between the EPS control module and connector C-35 because the wiring harness is shorted between circuits.
		No Replace the EPS control module because there is a short between circuits in the EPS control module. (See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.)
23	INSPECT BETWEEN SAS CONTROL MODULE AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Inspect for continuity between SAS control module terminals 3K and 3L. • Is there continuity? 	Yes Go to the next step.
		No Go to Step 25.
24	INSPECT SAS CONTROL MODULE FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect the SAS control module connector. • Is there continuity between SAS control module terminals 3K and 3L (wiring harness side)? • Is there continuity? 	Yes Repair or replace the wiring harness between the SAS control module and connector C-35 because the wiring harness is shorted between circuits.
		No Replace the SAS control module because there is a short between circuits in the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
25	INSPECT BETWEEN INSTRUMENT CLUSTER AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Inspect for continuity between instrument cluster terminals B and D. • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness between connector C-11 and connector C-35 because the wiring harness is shorted between circuits.
26	INSPECT INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect the instrument cluster connector. • Is there continuity between instrument cluster terminals B and D (wiring harness side)? • Is there continuity? 	Yes Repair or replace the wiring harness between the instrument cluster and connector C-35 because the wiring harness is shorted between circuits.
		No Replace the instrument cluster because there is a short between circuits in the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)

Step	Inspection	Action
27	INSPECT BETWEEN CONNECTOR C-01 AND FRONT BODY CONTROL MODULE (FBCM) FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Connect connector 2 which has front body control module (FBCM) terminals 2K and 2I. • Disconnect connector C-01. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same? 	Yes Repair or replace the wiring harness between connector C-01 and the front body control module (FBCM) because the wiring harness is shorted between circuits.
		No Go to the next step.
28	INSPECT BETWEEN CONNECTOR C-01 AND CONNECTOR C-32 FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Connect connector C-01. • Disconnect connector C-32. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same? 	Yes Repair or replace the wiring harness between connector C-01 and connector C-32 because the wiring harness is shorted between circuits.
		No Go to Step 30.
29	INSPECT BETWEEN CONNECTORS C-32 AND FRONT BODY CONTROL MODULE (FBCM) FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Connect connector 2 which has front body control module (FBCM) terminals 2K and 2I. • Disconnect connector C-32. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same? 	Yes Repair or replace the wiring harness between connector C-32 and the front body control module (FBCM) because the wiring harness is shorted between circuits.
		No Go to the next step.

Step	Inspection	Action	
30	INSPECT BETWEEN DSC HU/CM AND CONNECTOR C-32 FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-D 2.2].) • Inspect for continuity between DSC HU/CM terminals AF and AC. • Is there continuity? 	Yes	Go to the next step.
		No	Go to Step 32.
31	INSPECT DSC HU/CM FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect the DSC HU/CM connector. • Inspect for continuity between DSC HU/CM terminals AF and AC (wiring harness side). • Is there continuity? 	Yes	Repair or replace the wiring harness between the DSC HU/CM and connector C-32 because the wiring harness is shorted between circuits.
		No	Replace the DSC HU/CM because there is a short between circuits in the DSC HU/CM. (See DSC HU/CM REMOVAL/INSTALLATION.)
32	INSPECT PCM FOR SHORT BETWEEN CIRCUITS <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for continuity between PCM terminals 2AK and 2AL (wiring harness side). • Is there continuity? 	Yes	Repair or replace the wiring harness between the PCM and connector C-32 because the wiring harness is shorted between circuits.
		No	Replace the PCM because there is a short between circuits in the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)