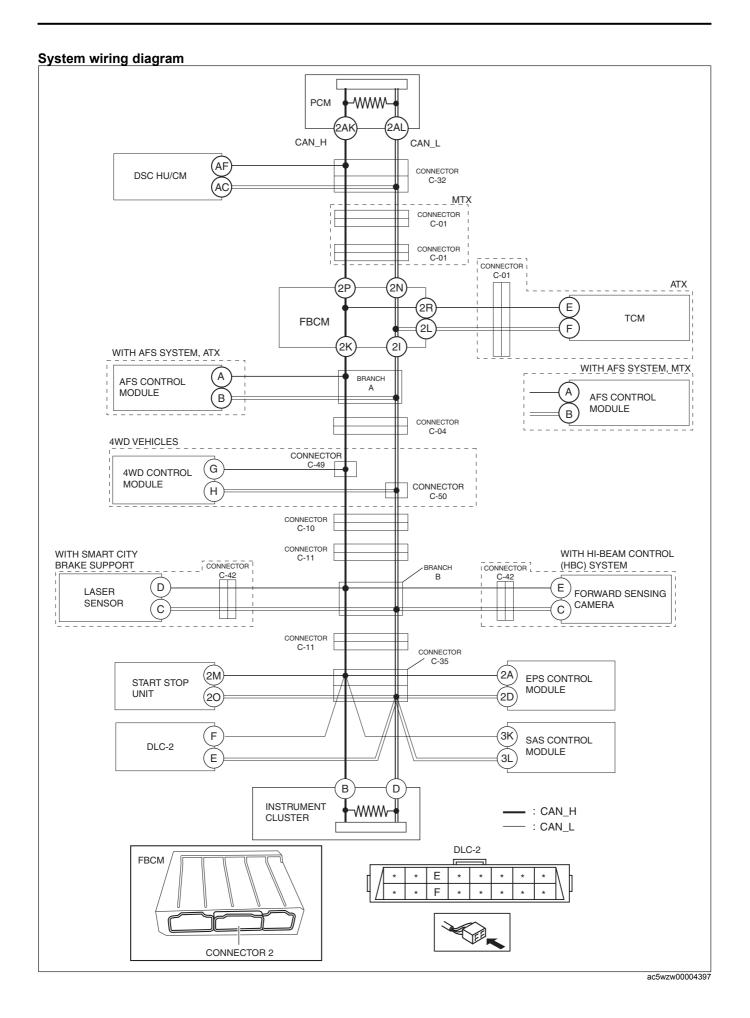
DETERMINING SHORT BETWEEN CIRCUITS LOCATION (HS-CAN) [SKYACTIV-D 2.2 (L.H.D.)]

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.)].



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	Yes	Go to Step 6.
	MODULE (FBCM) AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS • 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	No	Go to the next step.
2	INSPECT FRONT BODY CONTROL MODULE (FBCM) FOR SHORT BETWEEN CIRCUITS • 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.) Go to the next step.
3	INSPECT BETWEEN TCM OR AFS CONTROL MODULE AND FRONT BODY CONTROL MODULE (FBCM) FOR SHORT BETWEEN CIRCUITS • 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) Go to Step 29. (ATX) Go to Step 27. (MTX)
4	INSPECT BETWEEN TCM AND CONNECTOR	Yes	Go to the next step.
	 C-01 FOR SHORT BETWEEN CIRCUITS Disconnect connector C-01. Inspect for continuity between TCM terminals E and F. Is there continuity? 	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	Yes	Repair or replace the wiring harness between the TCM
	FOR SHORT BETWEEN CIRCUITS		and connector C-01 because the wiring harness is
	Disconnect the TCM connector. (ATX)		shorted between circuits. (ATX)
	Disconnect the AFS control module connector.		Repair or replace the wiring harness between the AFS
	(MTX)		control module and front body control module (FBCM)
	Inspect for continuity between TCM terminals E		because the wiring harness is shorted between circuits.
	and F (wiring harness side) (ATX).		(MTX)
	Inspect for continuity between AFS control	No	Replace the TCM because there is a short between
	module terminals A and B (wiring harness side).		circuits in the TCM. (ATX)
	(MTX)		(See CONTROL VALVE BODY REMOVAL/
	Is there continuity?		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	Yes	Go to Step 8.
	INSTRUMENT CLUSTER FOR SHORT	No	Go to step 6. Go to the next step. (ATX)
	BETWEEN CIRCUITS	140	Repair or replace the wiring harness between the front
	Switch the ignition off (LOCK).		body control module (FBCM) and connector C-04
	Disconnect the negative battery cable.		because the wiring harness is shorted between circuits.
	(See NEGATIVE BATTERY CABLE		(MTX)
	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?		
7	INSPECT AFS CONTROL MODULE FOR	Yes	Repair or replace the wiring harness between the AFS
	SHORT BETWEEN CIRCUITS		control module and front body control module (FBCM) /
	Disconnect the AFS control module connector.		connector C-04 because the wiring harness is shorted
	Inspect for continuity between AFS control module terminals A and B (wiring between aids)	NIa	between circuits.
	module terminals A and B (wiring harness side). • Is there continuity?	No	Replace the AFS control module because there is a short between circuits in the AFS control module.
	10 thoro continuity:		(See ADAPTIVE FRONT LIGHTING SYSTEM (AFS)
			CONTROL MODULE REMOVAL/INSTALLATION.)
8	INSPECT BETWEEN CONNECTORS C-49	Yes	Go to Step 11.
	AND C-50 AND INSTRUMENT CLUSTER FOR	No	Go to the next step.
	SHORT BETWEEN CIRCUITS		·
	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 NECATIVE 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?		
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Step	Inspection		Action
9	INSPECT BETWEEN 4WD CONTROL	Yes	Go to the next step.
, in the second	MODULE AND CONNECTORS C-49 AND C-50 FOR SHORT BETWEEN CIRCUITS • 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?	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	Yes	Repair or replace the wiring harness between the 4WD
.0	SHORT BETWEEN CIRCUITS • Disconnect the 4WD control module connector. • Inspect for continuity between 4WD control module terminals G and H (wiring harness side). • Is there continuity?	No	control module and connectors C-49 and C-50 because the wiring harness is shorted between circuits. 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	Yes	Go to the next step.
	INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS • 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?	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	Yes	Go to Step 17.
	INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS • 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?	No	Go to the next step.

Step	Inspection		Action	
13	INSPECT BETWEEN CONNECTOR C-11 AND	Yes	Go to the next step.	
	FORWARD SENSING CAMERA/LASER	No	Repair or replace the wiring harness between connector	
	SENSOR FOR SHORT BETWEEN CIRCUITS		C-11 and connector C-10 because the wiring harness is	
	Switch the ignition off (LOCK).		shorted between circuits.	
	 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 Annual Provided Continuity between laser sensor The sensor of the sensor of the banks of the sensor of the sens			
	terminals D and C (with smart city brake			
	support).			
14	• Is there continuity? INSPECT BETWEEN LASER SENSOR AND	Yes	Go to the next step.	
14	CONNECTOR C-42 FOR SHORT BETWEEN	No	Go to Step 16.	
	CIRCUITS	INO	GO to Step 16.	
	Disconnect connector C-42.			
	Inspect for continuity between laser sensor			
	terminals D and C.			
	Is there continuity?			
15	INSPECT LASER SENSOR FOR SHORT	Yes	Repair or replace the wiring harness between the laser	
	BETWEEN CIRCUITS		sensor and connector C-42 because the wiring harness is	
	Disconnect the laser sensor connector.		shorted between circuits.	
	Inspect for continuity between laser sensor	No	Replace the laser sensor because there is a short between	
	terminals D and C (wiring harness side).		circuits in the laser sensor.	
	Is there continuity?		(See LASER SENSOR REMOVAL/INSTALLATION.)	
16	INSPECT BETWEEN FORWARD SENSING	Yes	Go to the next step.	
	CAMERA AND CONNECTOR C-42 FOR	No	Repair or replace the wiring harness between connector	
	SHORT BETWEEN CIRCUITS		C-11 and connector C-42 because the wiring harness is	
	Inspect for continuity between forward sensing		shorted between circuits.	
	camera terminals E and C.			
47	• Is there continuity?	V	Denois or real and the minimum beauties between the Country	
17	INSPECT FORWARD SENSING CAMERA FOR	Yes	Repair or replace the wiring harness between the forward	
	 SHORT BETWEEN CIRCUITS Disconnect the forward sensing camera connector. Inspect for continuity between forward sensing 		sensing camera and connector C-42 because the wiring harness is shorted between circuits.	
		No	Replace the forward sensing camera because there is a	
		INU	short between circuits in the forward sensing camera.	
	camera terminals E and C (wiring harness side).		(See FORWARD SENSING CAMERA (FSC) REMOVAL/	
	• Is there continuity?		INSTALLATION.)	
18	INSPECT BETWEEN DLC-2 AND	Yes	Repair or replace the wiring harness between DLC-2 and	
	CONNECTOR C-35 FOR SHORT BETWEEN		connector C-35 because the wiring harness is shorted	
	CIRCUITS		between circuits.	
	Switch the ignition off (LOCK).	No	Go to the next step.	
	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.			
19	• Is there continuity? INSPECT BETWEEN START STOP UNIT AND	Yes	Go to the next sten	
19	CONNECTOR C-35 FOR SHORT BETWEEN	No	Go to the next step. Go to Step 21.	
	CIRCUITS	INO	ου ιο οι ο μ 21.	
	Inspect for continuity between start stop unit			
	terminals 2M and 2O.			
	• Is there continuity?			
	is also continuity.			

Step	Inspection		Action
20	INSPECT START STOP UNIT FOR SHORT	Yes	Repair or replace the wiring harness between the start stop
	BETWEEN CIRCUITS		unit and connector C-35 because the wiring harness is
	Disconnect the start stop unit connector.		shorted between circuits.
	Is there continuity between start stop unit	No	Replace the start stop unit because there is a short
	terminals 2M and 2O (wiring harness side)?		between circuits in the start stop unit.
	Is there continuity?		(See START STOP UNIT REMOVAL/INSTALLATION.)
21	INSPECT BETWEEN EPS CONTROL MODULE	Yes	Go to the next step.
	AND CONNECTOR C-35 FOR SHORT	No	Go to Step 23.
	BETWEEN CIRCUITS		·
	Inspect for continuity between EPS control		
	module terminals 2A and 2D.		
	Is there continuity?		
22	INSPECT EPS CONTROL MODULE FOR	Yes	Repair or replace the wiring harness between the EPS
	SHORT BETWEEN CIRCUITS		control module and connector C-35 because the wiring
	Disconnect the EPS control module connector.		harness is shorted between circuits.
	• Is there continuity between EPS control module	No	Replace the EPS control module because there is a short
	terminals 2A and 2D (wiring harness side)?		between circuits in the EPS control module.
	Is there continuity?		(See STEERING WHEEL AND COLUMN REMOVAL/
			INSTALLATION.)
23	INSPECT BETWEEN SAS CONTROL	Yes	Go to the next step.
	MODULE AND CONNECTOR C-35 FOR	No	Go to Step 25.
	SHORT BETWEEN CIRCUITS		
	Inspect for continuity between SAS control		
	module terminals 3K and 3L.		
	Is there continuity?		
24	INSPECT SAS CONTROL MODULE FOR	Yes	Repair or replace the wiring harness between the SAS
	SHORT BETWEEN CIRCUITS		control module and connector C-35 because the wiring
	Disconnect the SAS control module connector.		harness is shorted between circuits.
	• Is there continuity between SAS control module	No	Replace the SAS control module because there is a short
	terminals 3K and 3L (wiring harness side)?		between circuits in the SAS control module.
	Is there continuity?		(See SAS CONTROL MODULE REMOVAL/
0.5	INCREAT RETWEEN INCTRUMENT OF HOTER		INSTALLATION.)
25	INSPECT BETWEEN INSTRUMENT CLUSTER	Yes	Go to the next step.
	AND CONNECTOR C-35 FOR SHORT	No	Repair or replace the wiring harness between connector
	BETWEEN CIRCUITS		C-11 and connector C-35 because the wiring harness is
	Inspect for continuity between instrument		shorted between circuits.
	cluster terminals B and D.		
26	• Is there continuity? INSPECT INSTRUMENT CLUSTER FOR	Voc	Denair or replace the wiring berness between the
20	SHORT BETWEEN CIRCUITS	Yes	Repair or replace the wiring harness between the instrument cluster and connector C-35 because the wiring
	Disconnect the instrument cluster connector. Is there continuity between instrument cluster.	NI-	harness is shorted between circuits.
	,	No	Replace the instrument cluster because there is a short
	terminals B and D (wiring harness side)?		between circuits in the instrument cluster.
	• Is there continuity?		(See INSTRUMENT CLUSTER REMOVAL/
			INSTALLATION.)

Step	Inspection		Action
27	INSPECT BETWEEN CONNECTOR C-01 AND	Yes	Repair or replace the wiring harness between connector
	FRONT BODY CONTROL MODULE (FBCM)		C-01 and the front body control module (FBCM) because
	FOR SHORT BETWEEN CIRCUITS		the wiring harness is shorted between circuits.
	Switch the ignition off (LOCK).	No	Go to the next step.
	Disconnect the negative battery cable.	110	Go to the flext step.
	(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?		
28	INSPECT BETWEEN CONNECTOR C-01 AND	Yes	Repair or replace the wiring harness between connector
20	CONNECTOR C-32 FOR SHORT BETWEEN	165	C-01 and connector C-32 because the wiring harness is
	CIRCUITS		shorted between circuits.
	Switch the ignition off (LOCK).	No	Go to Step 30.
	Disconnect the negative battery cable.	INO	30 to Step 30.
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-D 2.2].)		
	• Connect connector C-01.		
	Disconnect connector C-32.		
	Connect the negative battery cable. (See NECATIVE 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?		
29	INSPECT BETWEEN CONNECTORS C-32	Yes	Repair or replace the wiring harness between connector
29	AND FRONT BODY CONTROL MODULE	163	C-32 and the front body control module (FBCM) because
	(FBCM) FOR SHORT BETWEEN CIRCUITS		the wiring harness is shorted between circuits.
	Connect connector 2 which has front body	No	Go to the next step.
	control module (FBCM) terminals 2K and 2I.	110	Co to the flext step.
	• 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?		
	oumo:		

Step	Inspection		Action
30	INSPECT BETWEEN DSC HU/CM AND	Yes	Go to the next step.
	CONNECTOR C-32 FOR SHORT BETWEEN	No	Go to Step 32.
	CIRCUITS		
	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?		
31	INSPECT DSC HU/CM FOR SHORT BETWEEN	Yes	3
	CIRCUITS		CM and connector C-32 because the wiring harness is
	Disconnect the DSC HU/CM connector.		shorted between circuits.
	• Inspect for continuity between DSC HU/CM	No	Replace the DSC HU/CM because there is a short between
	terminals AF and AC (wiring harness side).		circuits in the DSC HU/CM.
	• Is there continuity?		(See DSC HU/CM REMOVAL/INSTALLATION.)
32	INSPECT PCM FOR SHORT BETWEEN	Yes	Repair or replace the wiring harness between the PCM and
	CIRCUITS		connector C-32 because the wiring harness is shorted
	Disconnect the PCM connector.		between circuits.
	Inspect for continuity between PCM terminals	No	Replace the PCM because there is a short between circuits
	2AK and 2AL (wiring harness side).		in the PCM.
	Is there continuity?		(See PCM REMOVAL/INSTALLATION [SKYACTIV-D
			2.2].)