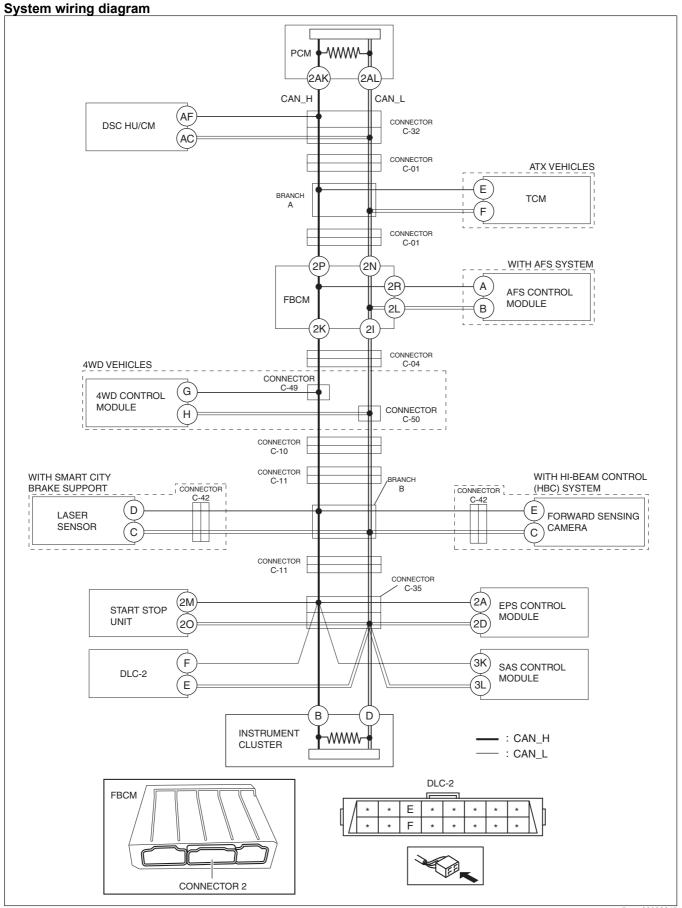
## DETERMINING SHORT BETWEEN CIRCUITS LOCATION (HS-CAN) [SKYACTIV-G 2.0 (L.H.D.)]

id100201000800

## 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-G 2.0 (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 5.
	MODULE (FBCM) AND INSTRUMENT	No	Go to the next step.
	CLUSTER FOR SHORT BETWEEN CIRCUITS		
	Disconnect the negative battery cable.		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	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-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	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?		
2	INSPECT FRONT BODY CONTROL MODULE	Yes	Replace the front body control module (FBCM) because
	(FBCM) FOR SHORT BETWEEN CIRCUITS		there is a short between circuits in the front body control
	Switch the ignition off (LOCK).		module (FBCM).
	Disconnect the negative battery cable.		(See FRONT BODY CONTROL MODULE (FBCM)
	(See NEGATIVE BATTERY CABLE		REMOVAL/INSTALLATION.)
	DISCONNECTION/CONNECTION	No	Go to the next step.
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	• Inspect for continuity between front body control		
	module (FBCM) terminals 2K and 2I.		
3	• Is there continuity?	Voo	Co to the next sten
3	INSPECT BETWEEN AFS CONTROL MODULE AND FRONT BODY CONTROL MODULE	Yes	Go to the next step.
	(FBCM) FOR SHORT BETWEEN CIRCUITS	No	Go to Step 25.
	• Inspect for continuity between AFS control		
	module terminals A and B.  • Is there continuity?		
4	INSPECT AFS CONTROL MODULE FOR	Yes	Repair or replace the wiring harness between the AFS
4		res	control module and front body control module (FBCM)
	SHORT BETWEEN CIRCUITS  • Disconnect the AES control module connector		
	Disconnect the AFS control module connector.     Inspect for continuity between AFS control	No	because the wiring harness is shorted between circuits.  Replace the AFS control module because there is a shorted because the wiring harness is shorted between circuits.
	module terminals A and B (wiring harness side).	INU	•
	• Is there continuity?		between circuits in the AFS control module.
	- is there continuity?		(See ADAPTIVE FRONT LIGHTING SYSTEM (AFS)
			CONTROL MODULE REMOVAL/INSTALLATION.)

Step	Inspection		Action
5	INSPECT BETWEEN CONNECTOR C-04 AND	Yes	Go to the next step.
	INSTRUMENT CLUSTER FOR SHORT	No	Repair or replace the wiring harness between the front
	BETWEEN CIRCUITS		body control module (FBCM) and connector C-04 because
	Switch the ignition off (LOCK).		the wiring harness is shorted between circuits.
	Disconnect the negative battery cable.		and thining trainings to chortes between en earles
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	• Disconnect connector C-04.		
	Connect the negative battery cable.		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	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?		
6	INSPECT BETWEEN CONNECTORS C-49	Yes	Go to Step 9.
	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-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	Disconnect connectors C-49 and C-50.		
	Connect the negative battery cable.		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	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 BETWEEN 4WD CONTROL	Yes	Go to the next step.
	MODULE AND CONNECTORS C-49 AND C-50	No	Repair or replace the wiring harness between connector
	FOR SHORT BETWEEN CIRCUITS		C-04 and connectors C-49 and C-50 because the wiring
	Switch the ignition off (LOCK).		harness is shorted between circuits.
	Disconnect the negative battery cable.		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	Inspect for continuity between 4WD control		
	module terminals G and H.		
	• Is there continuity?		
L	and a contamarty .		<u> </u>

Step	Inspection		Action
8	INSPECT 4WD CONTROL MODULE FOR	Yes	Repair or replace the wiring harness between the 4WD
	SHORT BETWEEN CIRCUITS	. 55	control module and connectors C-49 and C-50 because the
	• Disconnect the 4WD control module connector.		wiring harness is shorted between circuits.
	Inspect for continuity between 4WD control	No	Replace the 4WD control module because there is a short
	module terminals G and H (wiring harness side).	NO	between circuits in the 4WD control module.
	• Is there continuity?		(See 4WD CONTROL MODULE REMOVAL/
	is there continuity?		· ·
9	INSPECT BETWEEN CONNECTOR C-10 AND	Vaa	INSTALLATION.)
9	INSTRUMENT CLUSTER FOR SHORT	Yes	Go to the next step.
	BETWEEN CIRCUITS	No	Repair or replace the wiring harness between connectors
			C-49 and C-50 and connector C-10 because the wiring
	Switch the ignition off (LOCK).      Discourse of the properties better a solution.		harness is shorted between circuits.
	• Disconnect the negative battery cable.		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	• Disconnect connector C-10.		
	Connect the negative battery cable.		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	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?		
10	INSPECT BETWEEN CONNECTOR C-11 AND	Yes	Go to Step 16.
	INSTRUMENT CLUSTER FOR SHORT	No	Go to the next step.
	BETWEEN CIRCUITS		
	Switch the ignition off (LOCK).		
	Disconnect the negative battery cable.		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	Disconnect connector C-11.		
	Connect the negative battery cable.		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	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?		

Step	Inspection		Action
11	INSPECT BETWEEN CONNECTOR C-11 AND	Yes	Go to the next step.
	FORWARD SENSING CAMERA/LASER SENSOR FOR SHORT BETWEEN CIRCUITS  • Switch the ignition off (LOCK).  • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)  • 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?	No	Repair or replace the wiring harness between connector C-11 and connector C-10 because the wiring harness is shorted between circuits.
12	INSPECT BETWEEN LASER SENSOR AND	Yes	Go to the next step.
	CONNECTOR C-42 FOR SHORT BETWEEN CIRCUITS  • Disconnect connector C-42.  • Inspect for continuity between laser sensor terminals D and C.  • Is there continuity?	No	Go to Step 14.
13	INSPECT LASER SENSOR FOR SHORT BETWEEN CIRCUITS • Disconnect the laser sensor connector.	Yes	Repair or replace the wiring harness between the laser sensor and connector C-42 because the wiring harness is shorted between circuits.
	Inspect for continuity between laser sensor terminals D and C (wiring harness side).     Is there continuity?	No	Replace the laser sensor because there is a short between circuits in the laser sensor. (See LASER SENSOR REMOVAL/INSTALLATION.)
14	INSPECT BETWEEN FORWARD SENSING	Yes	Go to the next step.
1.7	CAMERA AND CONNECTOR C-42 FOR SHORT BETWEEN CIRCUITS  Inspect for continuity between forward sensing camera terminals E and C.  Is there continuity?	No	Repair or replace the wiring harness between connector C-11 and connector C-42 because the wiring harness is shorted between circuits.
15	INSPECT FORWARD SENSING CAMERA FOR SHORT BETWEEN CIRCUITS  • Disconnect the forward sensing camera	Yes	Repair or replace the wiring harness between the forward sensing camera and connector C-42 because the wiring harness is shorted between circuits.
	connector.  • Inspect for continuity between forward sensing camera terminals E and C (wiring harness side).  • Is there continuity?	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.)
16	INSPECT BETWEEN DLC-2 AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS	Yes	Repair or replace the wiring harness between DLC-2 and connector C-35 because the wiring harness is shorted between circuits.
	Switch the ignition off (LOCK).  Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)  Disconnect connector C-35.  Inspect for continuity between DLC-2 terminals F and E.  Is there continuity?	No	Go to the next step.

Step	Inspection		Action
17	INSPECT BETWEEN START STOP UNIT AND	Yes	Go to the next step.
''	CONNECTOR C-35 FOR SHORT BETWEEN	No	Go to Step 19.
	CIRCUITS	140	Go to otep 10.
	Inspect for continuity between start stop unit		
	terminals 2M and 2O.		
	• Is there continuity?		
18	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.)
19	INSPECT BETWEEN EPS CONTROL MODULE	Yes	Go to the next step.
	AND CONNECTOR C-35 FOR SHORT	No	Go to Step 21.
	BETWEEN CIRCUITS		
	Inspect for continuity between EPS control		
	module terminals 2A and 2D.		
	Is there continuity?		
20	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/
21	INCRECT DETWEEN CAS CONTROL	Voc	INSTALLATION.)
21	INSPECT BETWEEN SAS CONTROL MODULE AND CONNECTOR C-35 FOR	Yes No	Go to the next step. Go to Step 23.
	SHORT BETWEEN CIRCUITS	INO	30 to Step 23.
	Inspect for continuity between SAS control		
	module terminals 3K and 3L.		
	• Is there continuity?		
22	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/
			INSTALLATION.)
23	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.		
6.1	• Is there continuity?	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
24	INSPECT INSTRUMENT CLUSTER FOR	Yes	Repair or replace the wiring harness between the
	SHORT BETWEEN CIRCUITS		instrument cluster and connector C-35 because the wiring
	Disconnect the instrument cluster connector.  In these continuity between instrument cluster.	Nie	harness is shorted between circuits.
	• Is there continuity between instrument cluster	No	Replace the instrument cluster because there is a short
	terminals B and D (wiring harness side)? • Is there continuity?		between circuits in the instrument cluster.
	is there continuity?		(See INSTRUMENT CLUSTER REMOVAL/
			INSTALLATION.)

Step	Inspection		Action
25	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.		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)  • 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-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	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?		
26	INSPECT BETWEEN TCM AND CONNECTOR	Yes	Go to the next step.
20	C-01 FOR SHORT BETWEEN CIRCUITS	No	Go to Step 28.
	Switch the ignition off (LOCK).	140	00 to 0top 20.
	Disconnect the negative battery cable.		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	Inspect for continuity between TCM terminals E		
	and F.		
27	• Is there continuity? INSPECT TCM FOR SHORT BETWEEN	Yes	Repair or replace the wiring harness between the TCM and
21	CIRCUITS	163	connector C-01 because the wiring harness is shorted
	Disconnect the TCM connector.		between circuits.
	Inspect for continuity between TCM terminals E	No	Replace the TCM because there is a short between circuits
	and F (wiring harness side).		in the TCM.
	• Is there continuity?		(See CONTROL VALVE BODY REMOVAL/
	-		INSTALLATION [FW6A-EL, FW6AX-EL].)
28	INSPECT BETWEEN CONNECTORS C-32	Yes	Repair or replace the wiring harness between connector
	AND C-01 FOR SHORT BETWEEN CIRCUITS		C-32 and connector C-01 because the wiring harness is
	Connect connector C-01.		shorted between circuits.
	• Disconnect connector C-32.	No	Go to the next step.
	Connect the negative battery cable.      (See NECATIVE BATTERY CABLE)		
	(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	• 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?		

Step	Inspection		Action
29	INSPECT BETWEEN DSC HU/CM AND	Yes	Go to the next step.
	CONNECTOR C-32 FOR SHORT BETWEEN	No	Go to Step 31.
	CIRCUITS		
	Switch the ignition off (LOCK).		
	Disconnect the negative battery cable.		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0].)		
	(See NEGATIVE BATTERY CABLE		
	DISCONNECTION/CONNECTION		
	[SKYACTIV-G 2.0 (WITHOUT i-stop)].)		
	Inspect for continuity between DSC HU/CM terminals AF and AC.		
	• Is there continuity?		
30	INSPECT DSC HU/CM FOR SHORT BETWEEN	Yes	Repair or replace the wiring harness between the DSC HU/
	CIRCUITS		CM and connector C-32 because the wiring harness is
	Disconnect the DSC HU/CM connector.     Inspect for continuity between DSC HU/CM		shorted between circuits.
		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.)
31	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-G
			2.0].)