Short in CAN Bus Lines

DESCRIPTION
The CAN bus lines are considered to be shorted when the resistance between terminals 6 (CANH) and 14 (CANL) of the DLC3 is below 54 Ω.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Trouble Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance between terminals 6 (CANH) and 14 (CANL) of DLC3 is below 54 Ω.</td>
<td>• Short in CAN bus lines&lt;br&gt;• ECM&lt;br&gt;• Skid control ECU&lt;br&gt;• Yaw rate sensor&lt;br&gt;• Steering angle sensor&lt;br&gt;• CAN J/C</td>
</tr>
</tbody>
</table>

WIRING DIAGRAM

INSPECTION PROCEDURE
NOTICE:
• Turn the ignition switch off before measuring the resistances of the CAN main wire and the CAN branch wire.
• After the ignition switch is turned off, check that the key reminder warning system is not in operation.
Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If doors need to be opened in order to check connectors, open the doors and leave them open.

HINT:
Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

1  CHECK CAN BUS LINES FOR SHORT CIRCUIT (DLC3 BRANCH WIRE)

(a) Turn the ignition switch OFF.
(b) Disconnect the E63 DLC3 branch wire connector.

NOTICE:
- Before disconnecting the connector, make a note of where it is connected.
- Reconnect the connector to its original position.

(c) Measure the resistance.

<table>
<thead>
<tr>
<th>Tester Connection</th>
<th>Condition</th>
<th>Specified Condition</th>
<th>Proceed to</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1-6 (CANH) - E1-14 (CANL)</td>
<td>Ignition switch OFF</td>
<td>1 Ω or more</td>
<td>OK</td>
</tr>
<tr>
<td>E1-6 (CANH) - E1-14 (CANL)</td>
<td>Ignition switch OFF</td>
<td>Below 1 Ω</td>
<td>NG</td>
</tr>
</tbody>
</table>

NG  REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO DLC3 (CAN-H, CAN-L)

OK

2  CONNECT CONNECTOR

(a) Reconnect the DLC3 branch wire connector.
3 CHECK CAN BUS LINES FOR SHORT CIRCUIT (SKID CONTROL ECU BRANCH WIRE)

(a) Turn the ignition switch OFF.
(b) Disconnect the E66 skid control ECU branch wire connector.

NOTICE:
• Before disconnecting the connector, make a note of where it is connected.
• Reconnect the connector to its original position.

(c) Measure the resistance.

Result

<table>
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<tr>
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<td>Ignition switch OFF</td>
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<td>E1-6 (CANH) - E1-14 (CANL)</td>
<td>Ignition switch OFF</td>
<td>Below 1 Ω</td>
<td>NG</td>
</tr>
</tbody>
</table>

NG  

4 CONNECT CONNECTOR

(a) Reconnect the skid control ECU branch wire connector.
5 CHECK CAN BUS LINES FOR SHORT CIRCUIT (YAW RATE SENSOR BRANCH WIRE)

(a) Turn the ignition switch OFF.
(b) Disconnect the E64 yaw rate sensor branch wire connector.

**NOTICE:**
- Before disconnecting the connector, make a note of where it is connected.
- Reconnect the connector to its original position.

(c) Measure the resistance.

**Result**

<table>
<thead>
<tr>
<th>Tester Connection</th>
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<tr>
<td>E1-6 (CANH) - E1-14 (CANL)</td>
<td>Ignition switch OFF</td>
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<td>OK</td>
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<td>E1-6 (CANH) - E1-14 (CANL)</td>
<td>Ignition switch OFF</td>
<td>Below 1 Ω</td>
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</table>

NG

6 CONNECT CONNECTOR

(a) Reconnect the yaw rate sensor branch wire connector.

NEXT
7  CHECK CAN BUS LINES FOR SHORT CIRCUIT (STEERING ANGLE SENSOR BRANCH WIRE)

(a) Turn the ignition switch OFF.
(b) Disconnect the E65 steering angle sensor branch wire connector.

NOTICE:
- Before disconnecting the connector, make a note of where it is connected.
- Reconnect the connector to its original position.

(c) Measure the resistance.

Result

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<tr>
<td>E1-6 (CANH) - E1-14 (CANL)</td>
<td>Ignition switch</td>
<td>1 Ω or more</td>
<td>OK</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1-6 (CANH) - E1-14 (CANL)</td>
<td>Ignition switch</td>
<td>Below 1 Ω</td>
<td>NG</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OK  Go to step 14

NG

8  CONNECT CONNECTOR

(a) Reconnect the steering angle sensor branch wire connector.
CHECK CAN BUS LINES FOR SHORT CIRCUIT (ECM MAIN WIRE)

(a) Turn the ignition switch OFF.
(b) Disconnect the E62 ECM main wire connector.

NOTICE:
• Before disconnecting the connector, make a note of where it is connected.
• Reconnect the connector to its original position.

(c) Measure the resistance. Result

OK → Go to step 16

NG

REPLACE CAN J/C

10 CONNECT CONNECTOR

(a) Reconnect the skid control ECU branch wire connector.
11 CHECK CAN BUS LINES FOR SHORT CIRCUIT (SKID CONTROL ECU BRANCH WIRE)

(a) Turn the ignition switch OFF.
(b) Disconnect the A4 skid control ECU connector.

(c) Measure the resistance.

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<td>Ignition switch OFF</td>
<td>Below 1 Ω</td>
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Result

OK ➔ REPLACE MASTER CYLINDER SOLENOID

NG

REPLACE CAN BRANCH WIRE CONNECTED TO SKID CONTROL ECU (CAN-H, CAN-L)

12 CONNECT CONNECTOR

(a) Reconnect the yaw rate sensor branch wire connector.

NEXT
13 CHECK CAN BUS LINES FOR SHORT CIRCUIT (YAW RATE SENSOR BRANCH WIRE)

(a) Turn the ignition switch OFF.
(b) Disconnect the E34 yaw rate sensor connector.

(c) Measure the resistance.

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<td>Ignition switch OFF</td>
<td>Below 1 Ω</td>
<td>NG</td>
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</table>

**Result**

OK ➔ REPLACE YAW RATE SENSOR

NG ➔ REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO YAW RATE SENSOR (CAN-H, CAN-L)

14 CONNECT CONNECTOR

(a) Reconnect the steering angle sensor branch wire connector.

NEXT
15 CHECK CAN BUS LINES FOR SHORT CIRCUIT (STEERING ANGLE SENSOR BRANCH WIRE)

(a) Turn the ignition switch OFF.
(b) Disconnect the E16 steering angle sensor connector.
(c) Measure the resistance.

**Result**

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NG

**REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO STEERING ANGLE SENSOR (CAN-H, CAN-L)**

16 CONNECT CONNECTOR

(a) Reconnect the ECM main wire connector.
CHECK CAN BUS LINES FOR SHORT CIRCUIT (ECM MAIN WIRE)

(a) Turn the ignition switch OFF.
(b) Disconnect the E46 ECM connector.

(c) Measure the resistance.

**Result**

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OK ➔ REPLACE ECM

REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO ECM (CAN-H, CAN-L)