Last Modified: 7-13-2007		1.6 C
Service Category: Audio/Visual/Telematics	**Section:** Park Assist/Monitoring	
Model Year: 2008	**Model:** ES350	**Doc ID:** RM000002INN009X
Title: PARK ASSIST / MONITORING: INTUITIVE PARKING ASSIST SYSTEM: C1AED: Rear Sensor Communication Malfunction (2008 ES350)		

DTC	**C1AED**	**Rear Sensor Communication Malfunction**

DESCRIPTION

This DTC is stored when there is an open or short circuit in the communication line between the rear sensors and the clearance warning ECU, or when there is a malfunction in a rear sensor.

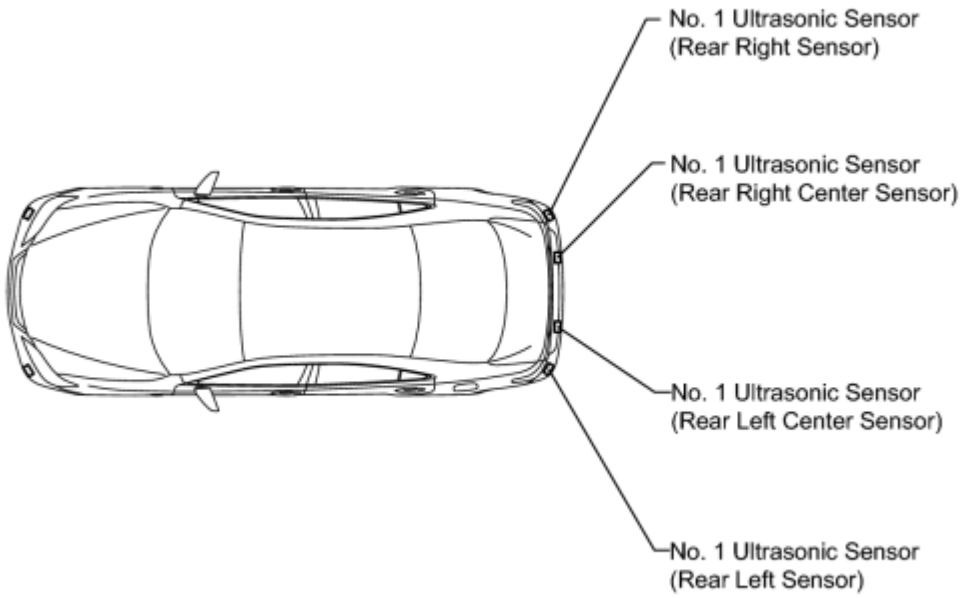
DTC Combination Table

DTC NO.	C1AED	C1AE6	C1AE7	C1AE8	C1AE9	TROUBLE AREA
DTC Detection Condition	○	○	○	○	○	1. Rear right senor malfunction 2. Rear right center senor malfunction 3. Rear left center senor malfunction 4. Rear left senor malfunction 5. Open or short in wire harness between rear right sensor and clearance warning ECU 6. Open or short in wire harness between rear right sensor and rear right center sensor 7. Open or short in wire harness between rear right center sensor and rear left center sensor 8. Open or short in wire harness between rear left center sensor and rear left sensor 9. Clearance warning ECU malfunction
	-	○	○	○	○	

○: DTC is output

-: DTC is not output

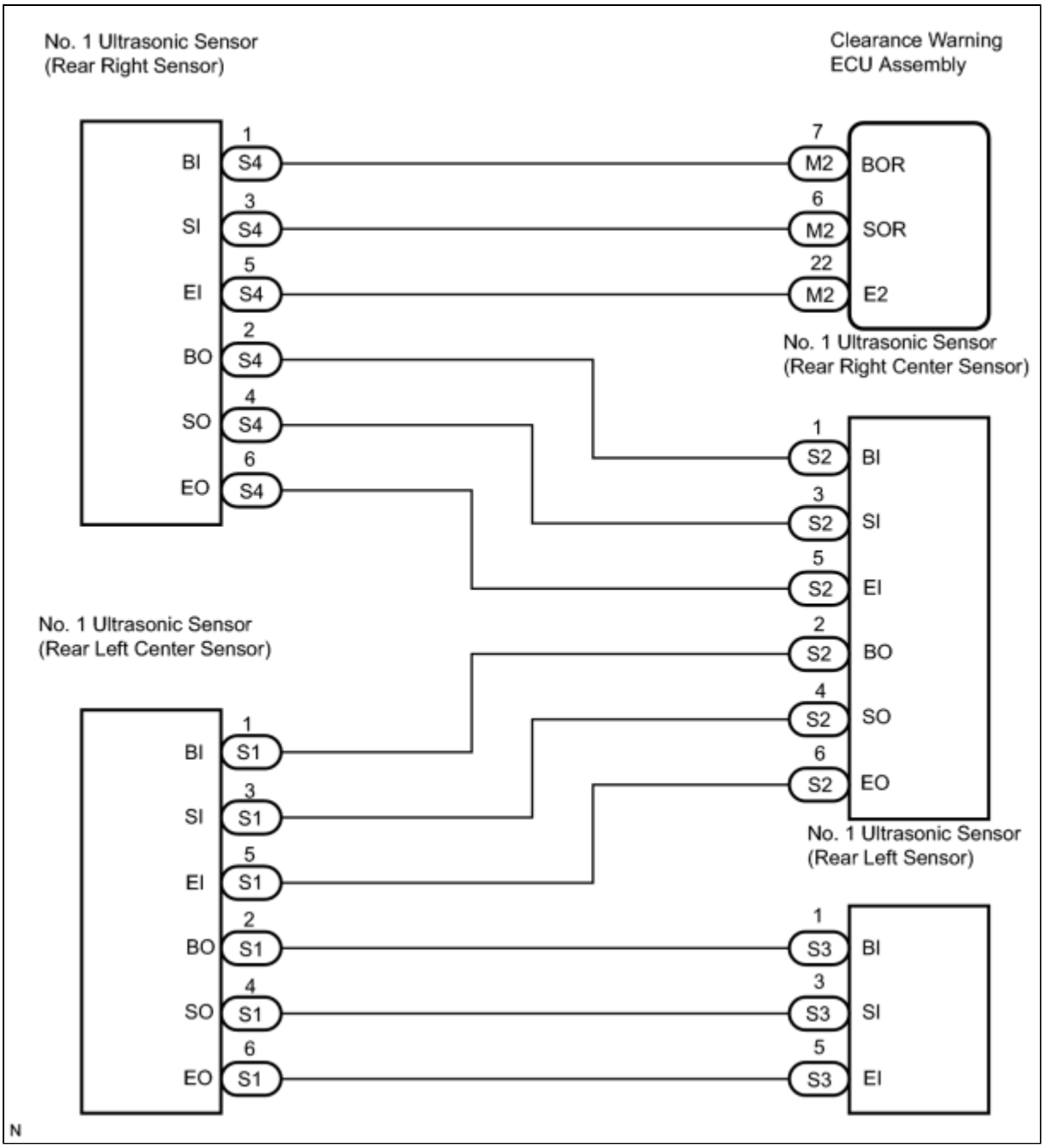
Rear No. 1 Ultrasonic Sensor Position:



H

DTC NO.	DTC DETECTION CONDITION	TROUBLE AREA
C1AED	Malfunctions of all rear sensors are detected during initialization mode after the engine switch is turned on (IG)	• Rear No.1 ultrasonic sensor circuit • Clearance warning ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	CHECK DTC OUTPUT

(a) Delete the DTCs INFO .

(b) Turn the engine switch off.

(c) Turn the engine switch on (IG).

(d) Recheck for DTCs INFO .

Result:

RESULT	PROCEED TO
DTCs C1AE6, C1AE7, C1AE8, C1AE9 and C1AED are output	A

No DTCs are output	B

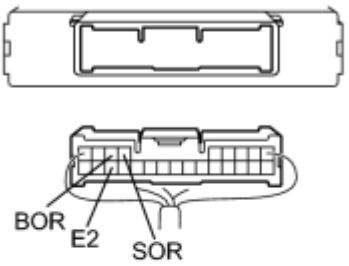
B ▶ **USE SIMULATION METHOD TO CHECK**

A ▼

2.	**CHECK HARNESS AND CONNECTOR (CLEARANCE WARNING ECU - REAR RIGHT SENSOR)**

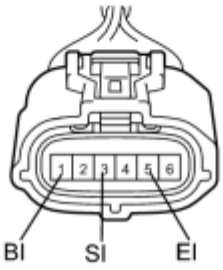
Wire Harness Side Connector Rear View:

M2
Clearance Warning ECU Assembly



Wire Harness Side Connector Front View:

S4
No. 1 Ultrasonic Sensor (Rear Right Sensor)



H

(a) Disconnect the M2 ECU connector.

(b) Disconnect the S4 sensor connector.

(c) Measure the resistance according to the value(s) in the table below.

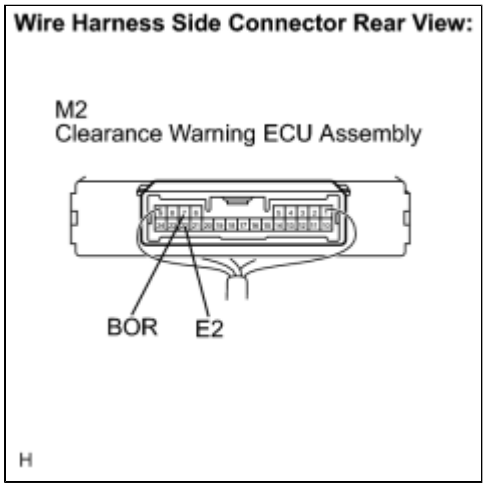
Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
M2-7 (BOR) - S4-1 (BI)	Always	Below 1 Ω
M2-6 (SOR) - S4-3 (SI)		
M2-22 (E2) - S4-5 (EI)		
M2-7 (BOR) - Body ground		10 kΩ or higher
M2-6 (SOR) - Body ground		
M2-22 (E2) - Body ground		

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

3.	CHECK CLEARANCE WARNING ECU ASSEMBLY



(a) Reconnect the M2 ECU connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
M2-22 (E2) - Body ground	Always	Below 1 Ω

(c) Measure the voltage according to the value(s) in the table below.

Standard voltage:

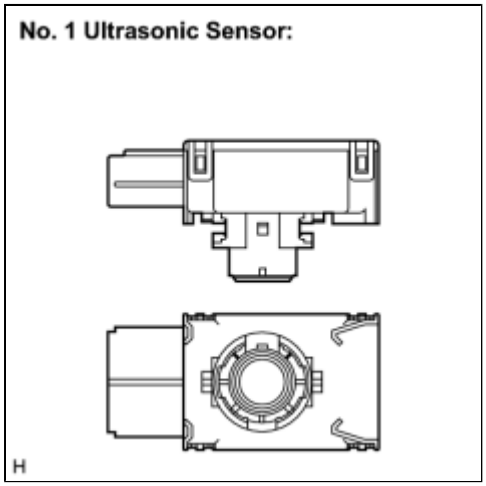
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
M2-7 (BOR) - Body ground	Engine switch on (IG)	7 to 9 V

NG ▶ **REPLACE CLEARANCE WARNING ECU ASSEMBLY**

OK

4.	REPLACE NO. 1 ULTRASONIC SENSOR (REAR RIGHT SENSOR)

(a) Replace the ultrasonic sensor INFO with a normally functioning sensor.



NEXT

5.	CHECK DTC OUTPUT

(a) Delete the DTCs INFO .

(b) Recheck for DTCs INFO .

Result:

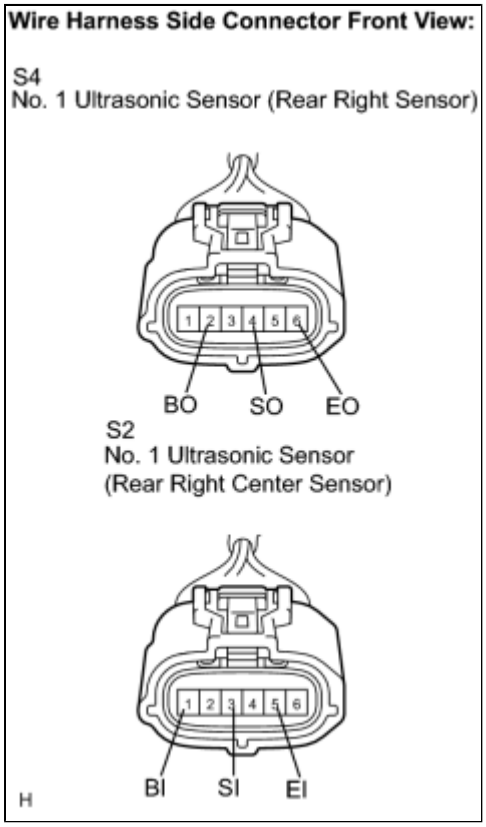
RESULT	PROCEED TO
DTCs C1AE6, C1AE7, C1AE8, C1AE9 and C1AED are output	A
No DTCs are output	B

B **END**

A

6.	CHECK HARNESS AND CONNECTOR (REAR RIGHT SENSOR - REAR RIGHT CENTER SENSOR)

(a) Disconnect the S4 and S2 sensor connectors.



(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

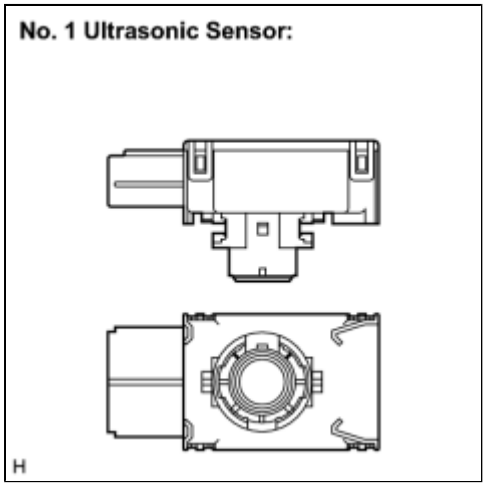
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
S4-2 (BO) - S2-1 (BI)	Always	Below 1 Ω
S4-4 (SO) - S2-3 (SI)		
S4-6 (EO) - S2-5 (EI)		
S4-2 (BO) - Body ground		10 kΩ or higher
S4-4 (SO) - Body ground		
S4-6 (EO) - Body ground		

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

7.	**REPLACE NO. 1 ULTRASONIC SENSOR (REAR RIGHT CENTER SENSOR)**

(a) Replace the ultrasonic sensor INFO with a normally functioning sensor.



NEXT

8.	CHECK DTC OUTPUT

(a) Delete the DTCs INFO .

(b) Recheck for DTCs INFO .

Result:

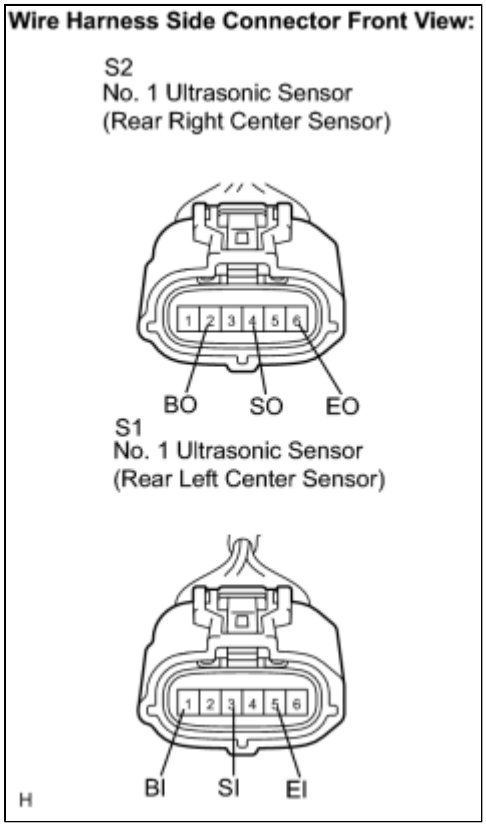
RESULT	PROCEED TO
DTCs C1AE6, C1AE7, C1AE8, C1AE9 and C1AED are output	A
No DTCs are output	B

B **END**

A

9.	CHECK HARNESS AND CONNECTOR (REAR RIGHT CENTER SENSOR - REAR LEFT CENTER SENSOR)

(a) Disconnect the S2 and S1 sensor connectors.



(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

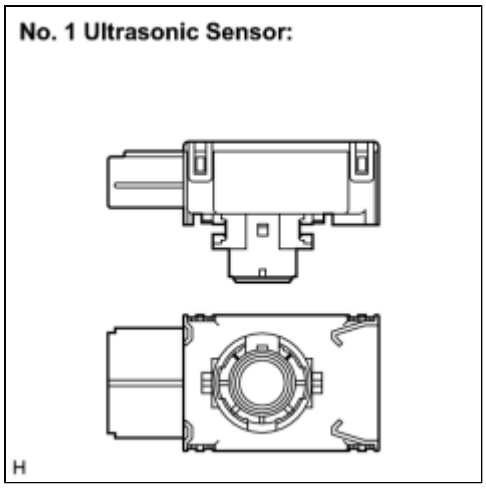
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
S2-2 (BO) - S1-1 (BI)	Always	Below 1 Ω
S2-4 (SO) - S1-3 (SI)		
S2-6 (EO) - S1-5 (EI)		
S2-2 (BO) - Body ground		10 kΩ or higher
S2-4 (SO) - Body ground		
S2-6 (EO) - Body ground		

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

10.	**REPLACE NO. 1 ULTRASONIC SENSOR (REAR LEFT CENTER SENSOR)**

(a) Replace the ultrasonic sensor INFO with a normally functioning sensor.



NEXT

11.	CHECK DTC OUTPUT

(a) Delete the DTCs INFO .

(b) Recheck for DTCs INFO .

Result:

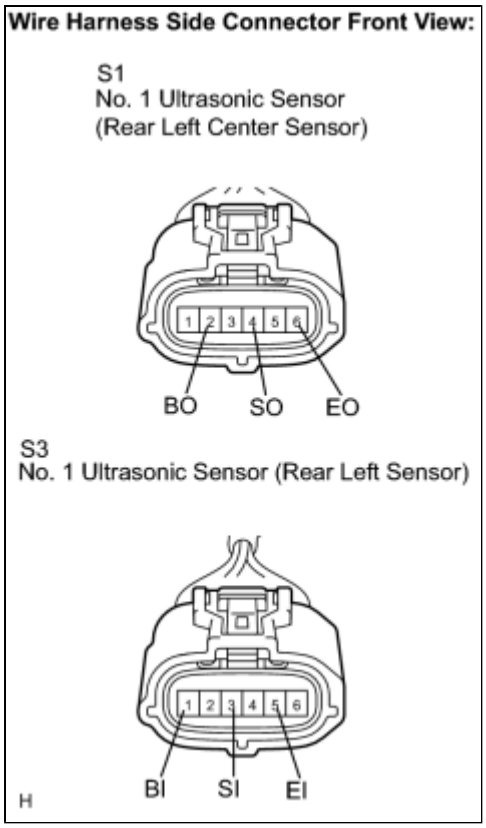
RESULT	PROCEED TO
DTCs C1AE6, C1AE7, C1AE8, C1AE9 and C1AED are output	A
No DTCs are output	B

B ▶ **END**

A

12.	CHECK HARNESS AND CONNECTOR (REAR LEFT CENTER SENSOR - REAR LEFT SENSOR)

(a) Disconnect the S1 and S3 sensor connectors.



(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

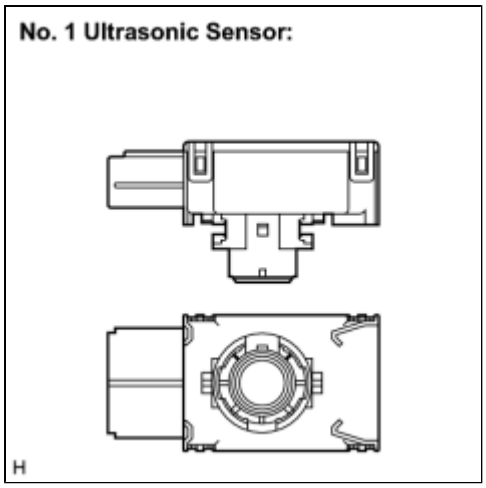
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
S1-2 (BO) - S3-1 (BI)	Always	Below 1 Ω
S1-4 (SO) - S3-3 (SI)		
S1-6 (EO) - S3-5 (EI)		
S1-2 (BO) - Body ground		10 kΩ or higher
S1-4 (SO) - Body ground		
S1-6 (EO) - Body ground		

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

13.	**REPLACE NO. 1 ULTRASONIC SENSOR (REAR LEFT SENSOR)**

(a) Replace the ultrasonic sensor INFO with a normally functioning sensor.



NEXT

18.	CHECK DTC OUTPUT

(a) Delete the DTCs INFO .

(b) Recheck for DTCs INFO .

Result:

RESULT	PROCEED TO
DTCs C1AE6, C1AE7, C1AE8, C1AE9 and C1AED are output	A
No DTCs are output	B

B ▶ **END**

A ▶ **REPLACE CLEARANCE WARNING ECU ASSEMBLY**