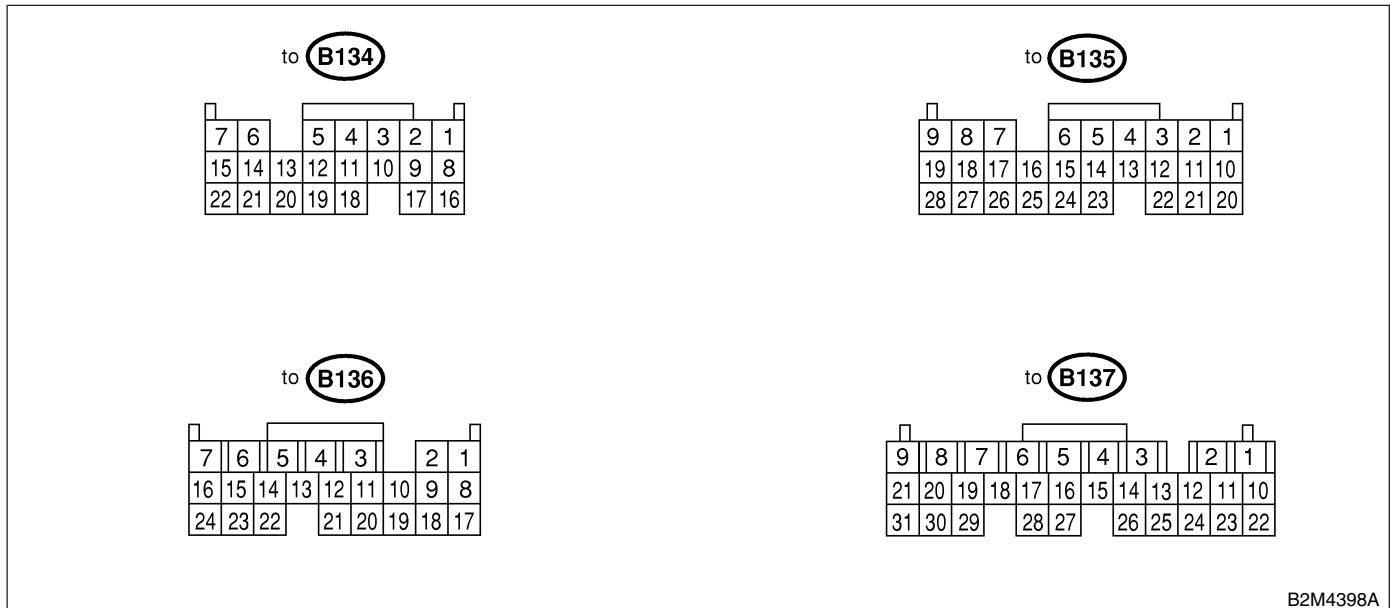


ENGINE CONTROL MODULE (ECM) I/O SIGNAL

Engine (DIAGNOSTICS)

5. Engine Control Module (ECM) I/O Signal S048526

A: ELECTRICAL SPECIFICATION S048526A08



B2M4398A

Content		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Crankshaft position sensor	Signal (+)	B135	2	0	—	Sensor output waveform <Ref. to EN(H6)-29, WAVEFORM, MEASUREMENT, Control Module I/O Signal.>
	Signal (-)	B135	11	0	0	
	Shield	B135	21	0	0	
Camshaft position sensor	Signal (+)	B135	1	0	—	Sensor output waveform <Ref. to EN(H6)-29, WAVEFORM, MEASUREMENT, Control Module I/O Signal.>
	Signal (-)	B135	10	0	0	
Throttle position sensor	Signal	B135	7	Fully closed: 0.3 — 0.8 Fully open: 4.2 — 4.7	0.3 — 0.8	—
	Power supply	B135	9	5	5	—
	GND (sensor)	B135	19	0	0	—
Rear oxygen sensor	Signal	B135	17	0 — 0.5	0 — 0.9	—
	Shield	B135	26	0	0	—
Front oxygen (A/F) sensor heater	Signal	LH1	B137	7	—	—
		LH2	B137	6	—	—
		RH1	B137	5	—	—
		RH2	B137	4	—	—
Rear oxygen sensor heater signal		B136	13	—	—	—
Vehicle speed signal		B134	1	0 or 5	0 or 5	"5" and "0" are repeatedly displayed when vehicle is driven.

ENGINE CONTROL MODULE (ECM) I/O SIGNAL

Engine (DIAGNOSTICS)

Content		Connector No.	Terminal No.	Signal (V)		Note	
				Ignition SW ON (Engine OFF)	Engine ON (Idling)		
Engine coolant temperature sensor	Signal	B135	18	—	—	After warm-up the engine.	
	GND (sensor)	B134	7	0	0	After warm-up the engine.	
	15						
Generator signal		B137	12	4 — 5	4 — 5		
Starter switch		B134	16	0	0	Cranking: 9 — 12	
A/C switch		B134	2	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—	
Ignition switch		B134	5	10 — 13	13 — 14	—	
Neutral position switch		B134	8	ON: 0 OFF: 5		Switch is ON when shift is in "N" or "P" position.	
Test mode connector		B134	14	5	5	When connected: 0	
Knock sensor	Signal	B135	1	4	2.5	2.5	—
			2	13	2.5	2.5	—
	Shield	B135	22	0	0	—	
Back-up power supply		B137	10	10 — 13	13 — 14	Ignition switch "OFF": 10 — 13	
Control unit power supply		B137	2	10 — 13	13 — 14	—	
			3	10 — 13	13 — 14	—	
Sensor power supply		B135	9	5	5	—	
Line end check 1		B134	10	0	0	—	
Ignition control	#1	B136	24	0	—	Waveform	
	#2	B136	23	0	—	Waveform	
	#3	B136	22	0	—	Waveform	
	#4	B136	21	0	—	Waveform	
	#5	B136	20	0	—	Waveform	
	#6	B136	19	0	—	Waveform	
Fuel injector	#1	B137	1	10 — 13	1 — 14	Waveform	
	#2	B136	6	10 — 13	1 — 14	Waveform	
	#3	B136	5	10 — 13	1 — 14	Waveform	
	#4	B136	4	10 — 13	1 — 14	Waveform	
	#5	B136	3	10 — 13	1 — 14	Waveform	
	#6	B136	1	10 — 13	1 — 14	Waveform	
Idle air control solenoid valve	Signal	B136	10	10 — 13	—	Waveform	
Fuel pump relay control		B136	15	ON: 0.5, or less OFF: 10 — 13	0.5, or less	—	
A/C relay control		B137	27	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—	
Radiator fan relay 1 control		B137	17	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—	
Radiator fan relay 2 control		B137	28	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	With A/C vehicles only	
Radiator fan relay 3 control		B137	24	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—	
Self-shutoff control		B134	6	10 — 13	13 — 14	—	
Malfunction indicator lamp		B137	15	—	—	Light "ON": 1, or less Light "OFF": 10 — 14	
Engine speed output		B136	9	—	0 — 13, or more	Waveform	
Torque control 1 signal		B134	19	5	5	—	

ENGINE CONTROL MODULE (ECM) I/O SIGNAL

Engine (DIAGNOSTICS)

Content	Connector No.	Terminal No.	Signal (V)		Note
			Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Torque control 2 signal	B134	18	5	5	—
Torque control cut signal	B136	14	8	8	—
EGR solenoid valve (A-)	B137	26	10 — 13	13 — 14	—
EGR solenoid valve (B-)	B137	25	10 — 13	13 — 14	—
EGR solenoid valve (A+)	B137	14	10 — 13	13 — 14	—
EGR solenoid valve (B+)	B137	13	10 — 13	13 — 14	—
Induction control solenoid valve	B137	23	0	ON: 0 OFF: 13 — 14	—
Purge control solenoid valve	B137	16	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
Fuel temperature sensor	B135	6	2.5 — 3.8	2.5 — 3.8	Ambient temperature: 25°C (75°F)
Fuel level sensor	B135	25	0.12 — 4.75	0.12 — 4.75	—
Fuel tank pressure sensor	Signal	B135	2.3 — 2.7	2.3 — 2.7	The value obtained after the fuel filler cap was removed once and recapped.
	GND (sensor)	B134	15	0	—
Fuel tank pressure control solenoid valve	B137	22	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
Drain valve	B137	11	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
A/C compressor switch	B134	13	—	—	—
A/C pressure switch	B135	23	—	—	—
AT diagnosis input signal	B135	20	Less than 1 ↔ More than 4	Less than 1 ↔ More than 4	Waveform
AT load signal	B135	28	4.3 — 4.4	0.9 — 1.4	—
Small light switch	B134	17	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Blower fan switch	B134	9	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Rear defogger switch	B134	3	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Front oxygen (A/F) sensor signal RH (+)	B137	29	3.7 — 3.9	3.7 — 3.9	—
Front oxygen (A/F) sensor signal RH (-)	B137	19	2.6 — 4.4	3.4 — 3.6	—
Front oxygen (A/F) sensor signal LH (+)	B137	30	3.7 — 3.9	3.7 — 3.9	—
Front oxygen (A/F) sensor signal LH (-)	B137	20	2.6 — 4.4	3.4 — 3.6	—
Front oxygen (A/F) sensor shield	B137	18	0	0	—
Pressure sensor	B135	8	3.0 — 4.2	1.0 — 2.6	—
Intake air temperature sensor	B135	27	—	—	—
Power steering switch	B137	24	ON: 0 OFF: 5	ON: 0 OFF: 5	—
SSM/GST communication line	B134	21	Less than 1 ↔ More than 4	Less than 1 ↔ More than 4	—
GND (sensors)	B134	15	0	0	—
GND (injectors)	B136	8	0	0	—
GND (ignition system)	B136	18	0	0	—

ENGINE CONTROL MODULE (ECM) I/O SIGNAL

Engine (DIAGNOSTICS)

Content	Con- nector No.	Termi- nal No.	Signal (V)		Note
			Ignition SW ON (Engine OFF)	Engine ON (Idling)	
GND (power supply)	B134	22	0	0	—
	B136	17	0	0	—
GND (control systems)	B134	7	0	0	—
		15	0	0	—
GND (oxygen sensor heater LH)	1	B137	0	0	—
	2	B137			
GND (oxygen sensor heater RH)	1	B137	0	0	—
	2	B137			

B: MEASUREMENT

S048526A14

Measure input/output signal voltage.

1. WAVEFORM

S048526A1401

