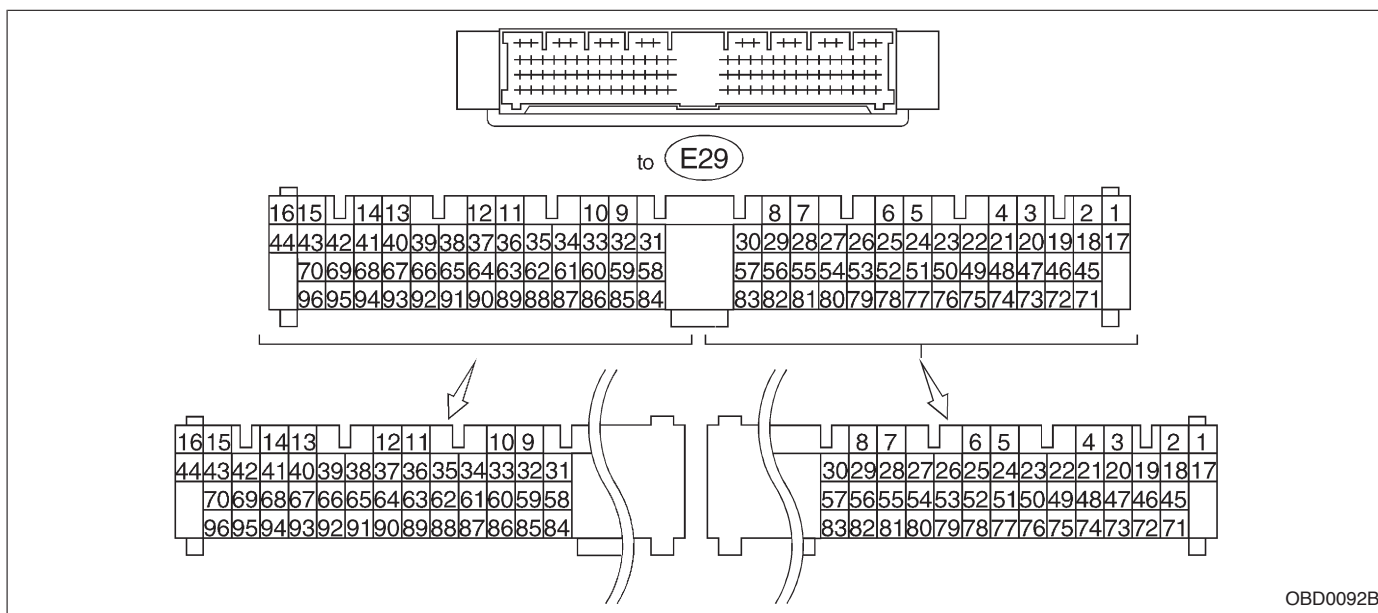


5. Specified Data

1. ENGINE CONTROL MODULE (ECM) I/O SIGNAL



OBD0092B

Content	Connector No.	Terminal No.	Signal (V)		Note	
			Ignition SW ON (Engine OFF)	Engine ON (Idling)		
Crankshaft position sensor	Signal (+)	E29	8	0	-7 — +7	Sensor output waveform
	Signal (-)	E29	7	0	0	—
	Shield	E29	52	0	0	—
Camshaft position sensor	Signal (+)	E29	6	0	-7 — +7	Sensor output waveform
	Signal (-)	E29	5	0	0	—
	Shield	E29	52	0	0	—
Mass air flow sensor	Signal	E29	26	0 — 0.3	0.8 — 1.2	—
	Shield	E29	54	0	0	—
	GND	E29	25	0	0	—
Throttle position sensor	Signal	E29	24	Fully closed: 0.2 — 1.0 Fully opened: 4.2 — 4.7		—
	Power supply	E29	22	5	5	—
	GND	E29	25	0	0	—
Front oxygen sensor	Signal	E29	28	0	0 — 0.9	—
	Shield	E29	56	0	0	—
Rear oxygen sensor	Signal	E29	27	0	0 — 0.9	—
	Shield	E29	56	0	0	—
Engine coolant temperature sensor	E29	29	1.0 — 1.4	1.0 — 1.4	After warm-up	
Vehicle speed sensor 2	E29	57	0 or 5	0 or 5	"5" and "0" are repeatedly displayed when vehicle is driven.	
Starter switch	E29	81	0	0	Cranking: 8 to 14	
A/C switch	E29	80	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—	
Ignition switch	E29	79	10 — 13	13 — 14	—	

Content		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW		
				ON (Engine OFF)	Engine ON (Idling)	
Neutral position switch		E29	78	ON: 0 OFF: 5.0±0.5		Switch is ON when shift is in "N" or "P" position.
Test mode connector		E29	75	5	5	When connected: 0
Knock sensor	Signal	E29	30	2.8	2.8	—
	Shield	E29	56	0	0	—
Back-up power supply		E29	42	10 – 13	13 – 14	Ignition switch "OFF": 10 – 13
Control unit power supply		E29	15	10 – 13	13 – 14	—
			16			
Ignition control	# 1, # 2	E29	14	0	1 – 3.4	—
	# 3, # 4	E29	13	0	1 – 3.4	—
Fuel injector	# 1	E29	2	10 – 13	1 – 14	Waveform
	# 2	E29	1	10 – 13	1 – 14	Waveform
	# 3	E29	18	10 – 13	1 – 14	Waveform
	# 4	E29	17	10 – 13	1 – 14	Waveform
Idle air control solenoid valve	OPEN end	E29	12	—	1 – 13	Waveform
	CLOSE end	E29	11	—	13 – 1	Waveform
Fuel pump relay control		E29	84	ON: 0.5, or less OFF: 10 – 13	0.5, or less	—
A/C relay control		E29	85	ON: 0.5, or less OFF: 10 – 13	ON: 0.5, or less OFF: 13 – 14	—
Radiator fan relay 1 control	E29	77	88	ON: 0.5, or less OFF: 10 – 13	ON: 0.5, or less OFF: 13 – 14	—
		77				
Radiator fan relay 2 control		E29	61	ON: 0.5, or less OFF: 10 – 13	ON: 0.5, or less OFF: 13 – 14	With A/C vehicles only
Self-shutoff control		E29	86	10 – 13	13 – 14	—
Malfunction indicator lamp		E29	31	—	—	Light "ON": 1, or less Light "OFF": 10 – 14
Engine speed output		E29	33	—	0 – 13, or more	Waveform
Torque control signal		E29	49	5	5	—
Torque control cut signal		E29	36	8	8	—
Mass air flow signal for AT		E29	35	0 – 0.3	0.8 – 1.2	—
Purge control solenoid valve		E29	59	ON: 1, or less OFF: 10 – 13	ON: 1, or less OFF: 13 – 14	—
Atmospheric pressure sensor		E29	23	3.9 – 4.1	2.0 – 2.3	—
Pressure sources switching solenoid valve		E29	58	ON: 1, or less OFF: 10 – 13	ON: 1, or less OFF: 13 – 14	—
EGR solenoid valve		E29	60	ON: 1, or less OFF: 10 – 13	ON: 1, or less OFF: 13 – 14	—
Front oxygen sensor heater signal		E29	44	0 – 1.0	0 – 1.0	—
Rear oxygen sensor heater signal		E29	43	0 – 1.0	0 – 1.0	—
AT diagnosis input signal		E29	48	Less than 1 ↔ More than 4	Less than 1 ↔ More than 4	Waveform
GND (sensors)		E29	25	0	0	—
GND (injectors)	E29	71	72	0	0	—
		71				
GND (ignition system)		E29	69	0	0	—

Content	Connector No.	Terminal No.	Signal (V)		Note
			Ignition SW	Engine ON (Idling)	
			ON (Engine OFF)		
GND (power supply)	E29	95	0	0	—
		96			
GND (control systems)	E29	45	0	0	—
		46			
GND (oxygen sensor heater)	E29	70	0	0	—

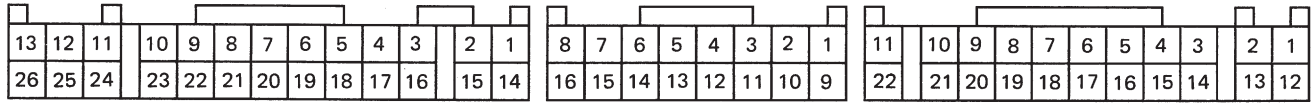
2. ENGINE CONDITION DATA

Content	Specified data
Mass air flow	1.9 — 3.6 (g/sec): Idling
	7.0 — 14.8 (g/sec): 2,500 rpm racing
Engine load	1.9 — 3.6 (%): Idling
	7.0 — 14.8 (%): 2,500 rpm racing

Measuring condition:

- Gear position is in “N” or “P” position.
- A/C is turned OFF.
- All accessory switches are turned OFF.

9. CONTROL MODULE I/O Signal



To (E29)

To (E31)

To (E30)

G2M0446

Content		Connector No.	Terminal No.	Signal (V)		Note
				Ig SW ON (Engine OFF)	Engine ON (Idling)	
Crankshaft position sensor	Signal (+)	E30	6	0	±6	Sensor output waveform
	Signal (-)	E30	7	0	0	—
	Shield	E30	11	0	0	—
Camshaft position sensor	Signal (+)	E30	8	0	±2.7	Sensor output waveform
	Signal (-)	E30	9	0	0	—
	Shield	E30	11	0	0	—
Mass air flow sensor	Signal	E30	5	0 — 0.3	0.8 — 1.2	—
	GND	E31	1	0	0	—
	Shield	E30	11	0	0	—
Throttle position sensor	Signal	E30	4	Fully closed: 0.2 — 1.0 Fully opened: 4.2 — 4.5		—
	Power supply	E30	15	5	5	—
	GND	E30	11	0	0	—
Oxygen sensor	Signal	E30	10	0	Rich mixture: 0.7 Lean mixture: 0	—
	Shield	E30	11	0	0	—
Engine coolant temperature sensor		E30	3	0.7 — 1.0	0.7 — 1.0	After warm-up
Vehicle speed sensor 2		E29	4	0 or 5	0 or 5	"5" and "0" are repeatedly displayed when vehicle is driven.
Starter switch		E29	12	0	0	Cranking: 10 — 14
A/C switch		E29	11	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—
Ignition switch		E29	10	10 — 13	13 — 14	—
Neutral position switch (MT)	E29	16	ON: 0 OFF: 10 — 13		<ul style="list-style-type: none"> ● On MT model; switch is ON when gear is in neutral position. ● On AT model; switch is ON when shift is in "P" or "N" position. 	
Park/Neutral position switch (AT)						
Test mode connector	E29	20	5	5	When connected: 0	
Read memory connector	E29	19	5	5	When connected: 0	
AT/MT identification	E29	17	(AT) 5 (MT) 0	(AT) 5 (MT) 0	When measuring voltage between ECM and body.	
Back-up power supply	E29	26	10 — 13	13 — 14	—	
Control unit power supply	E29	13	10 — 13	13 — 14	—	

Content		Connector No.	Terminal No.	Signal (V)		Note
				Ig SW ON (Engine OFF)	Engine ON (Idling)	
Ignition control	# 1, # 2	E30	21	0	3.4, max.	—
	# 3, # 4	E30	20	0	3.4, max.	—
Fuel injector	# 1	E30	2	10 — 13	13 — 14	Waveform
	# 2	E30	1	10 — 13	13 — 14	Waveform
	# 3	E30	13	10 — 13	13 — 14	Waveform
	# 4	E30	12	10 — 13	13 — 14	Waveform
Idle air control solenoid valve	OPEN end	E29	2	—	1, max. — 13, min.	Waveform
	CLOSE end	E29	1	—	13, min. — 1, max.	Waveform
Fuel pump relay control		E29	8	ON: 0 OFF: 10 — 13	0	—
A/C relay control		E29	9	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Radiator fan relay 1 control		E29	23	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Radiator fan relay 2 control		E29	7	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Self-shutoff control		E29	18	10 — 13	13 — 14	—
Malfunction indicator lamp		E29	22	—	—	<ul style="list-style-type: none"> ● Light "ON": 1, or less ● Light "OFF": 10 — 14
Engine speed output		E29	3	—	0 — 13, min.	Waveform
EGR solenoid valve		E30	18	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Air suction solenoid valve		E31	3	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
FICD solenoid valve		E29	24	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	A/C equipped model
Purge control solenoid valve		E30	19	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Power steering pressure		E30	14	5	5	<ul style="list-style-type: none"> ● Steering wheel turned to extreme end of travel: 0 ● When driving straight forward: 5
Recirculation gas temperature sensor		E31	4	—	—	—
Fuel temperature sensor (California FWD model only)		E31	8	2.5 — 3.8	2.5 — 3.8	Ambient temperature: 25°C (77°F)
Tank pressure control solenoid valve (California FWD model only)		E29	21	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Fuel tank pressure sensor (California FWD model only)	Signal	E31	5	2.3 — 2.7	2.3 — 2.7	The value obtained after the fuel filler cap was removed once and recapped.
	Power supply	E30	15	5	5	—
	GND	E30	11	0	0	—
GND (sensors)		E30	11	0	0	—
GND (injectors)		E29	15	0	0	—
GND (ignition system)		E29	14	0	0	—

Content	Connector No.	Terminal No.	Signal (V)		Note
			Ig SW ON (Engine OFF)	Engine ON (Idling)	
GND (power supply)	E29	25	0	0	—
GND (control systems)	E30	22	0	0	—
Select Monitor Signal	E29	6	—	—	—
	E29	5	—	—	—