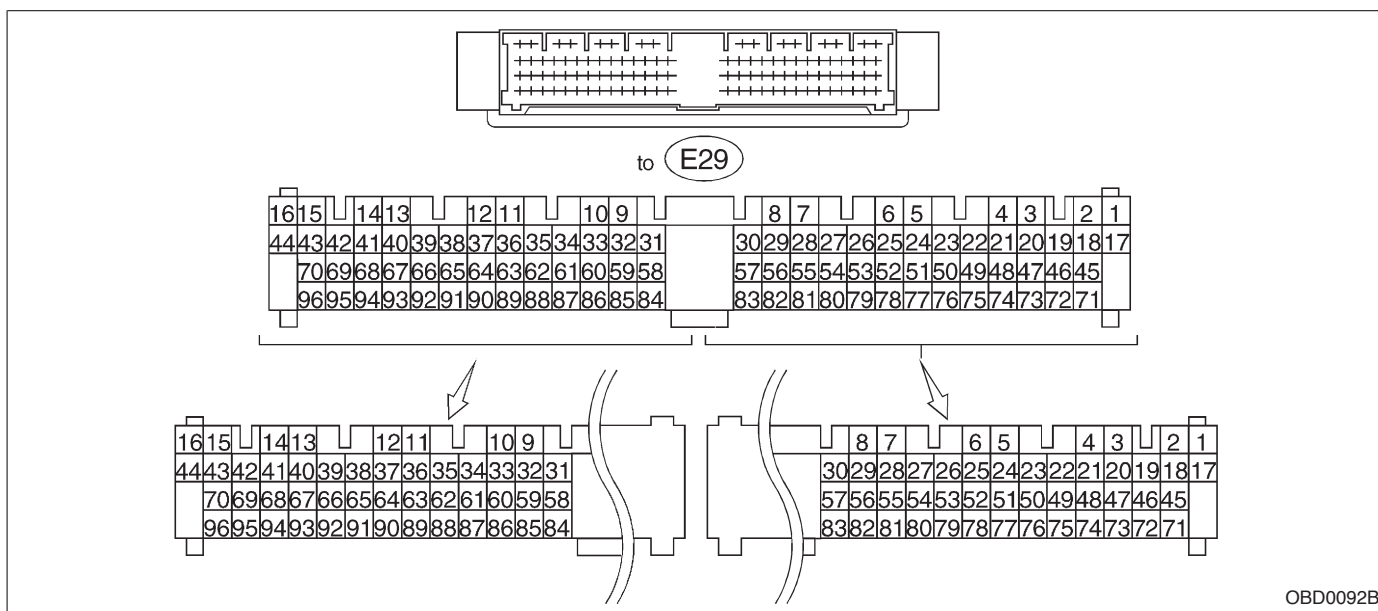


5. Specified Data

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	29	0	0	—
	Shield	E29	20	0	0	1800 cc model
Camshaft position sensor	Shield	E29	54	0	0	2200 cc model
	Signal (+)	E29	7	0	-7 - +7	Sensor output waveform
	Signal (-)	E29	28	0	0	—
Mass air flow sensor	Shield	E29	20	0	0	1800 cc model
	Shield	E29	54	0	0	2200 cc model
	Signal	E29	5	0 - 0.3	0.8 - 1.2	—
Throttle position sensor	Shield	E29	57	0	0	—
	GND	E29	20	0	0	—
	Signal	E29	6	Fully closed: 0.2 - 1.0 Fully opened: 4.2 - 4.7		—
Front oxygen sensor	Power supply	E29	21	5	5	—
	GND	E29	20	0	0	—
	Signal	E29	23	0	0 - 0.9	—
Rear oxygen sensor	Shield	E29	56	0	0	—
	Signal	E29	24	0	0 - 0.9	—
Engine coolant temperature sensor	Shield	E29	56	0	0	—
	Signal	E29	22	1.0 - 1.4	1.0 - 1.4	After warm-up
Vehicle speed sensor 2	E29	83	0 or 5	0 or 5	"5" and "0" are repeatedly displayed when vehicle is driven.	
Starter switch	E29	86	0	0	Cranking: 8 to 14	
A/C switch	E29	60	ON: 10 - 13 OFF: 0	ON: 13 - 14 OFF: 0	—	

Content	Connector No.	Terminal No.	Signal (V)		Note	
			Ignition SW ON (Engine OFF)	Engine ON (Idling)		
Ignition switch	E29	85	10 – 13	13 – 14	—	
Neutral position switch (MT)	E29	82	ON: 5.0±0.5 OFF: 0		● On MT model; switch is ON when gear is in neutral position.	
Neutral position switch (AT)			ON: 0 OFF: 5.0±0.5		● On AT model; switch is ON when shift is in “N” or “P” position.	
Test mode connector	E29	84	5	5	When connected: 0	
Knock sensor	Signal	E29	3	2.8	2200 cc model only	
	Shield	E29	56	0		
AT/MT identification	E29	81	(AT) 5 (MT) 0	(AT) 5 (MT) 0	When measuring voltage between ECM and body.	
Back-up power supply	E29	39	10 – 13	13 – 14	Ignition switch “OFF”: 10 – 13	
Control unit power supply	E29	1	10 – 13	13 – 14	—	
		2				
Ignition control	# 1, # 2	E29	41	0	1 – 3.4	—
	# 3, # 4	E29	40	0	1 – 3.4	—
Fuel injector	# 1	E29	96	10 – 13	1 – 14	Waveform
	# 2	E29	70	10 – 13	1 – 14	Waveform
	# 3	E29	44	10 – 13	1 – 14	Waveform
	# 4	E29	16	10 – 13	1 – 14	Waveform
Idle air control solenoid valve	OPEN end	E29	14	—	1 – 13	Waveform
	CLOSE end	E29	13	—	13 – 1	Waveform
Fuel pump relay control	E29	32	ON: 0.5, or less OFF: 10 – 13	0.5, or less	—	
A/C relay control	E29	31	ON: 0.5, or less OFF: 10 – 13	ON: 0.5, or less OFF: 13 – 14	—	
Radiator fan relay 1 control	E29	74	ON: 0.5, or less OFF: 10 – 13	ON: 0.5, or less OFF: 13 – 14	—	
Radiator fan relay 2 control	E29	73	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	63	10 – 13	13 – 14	—	
Malfunction indicator lamp	E29	58	—	—	Light “ON”: 1, or less Light “OFF”: 10 – 14	
Engine speed output	E29	64	—	0 – 13, or more	Waveform	
Torque control signal	E29	79	5	5	2200 cc model only	
Mass air flow signal for AT	E29	47	0 – 0.3	0.8 – 1.2	2200 cc model only	
Purge control solenoid valve	E29	72	ON: 1, or less OFF: 10 – 13	ON: 1, or less OFF: 13 – 14	—	
Atmospheric pressure sensor	E29	26	3.9 – 4.1	2.0 – 2.3	—	
Pressure sources switching solenoid valve	E29	15	ON: 1, or less OFF: 10 – 13	ON: 1, or less OFF: 13 – 14	—	
EGR solenoid valve	E29	71	ON: 1, or less OFF: 10 – 13	ON: 1, or less OFF: 13 – 14	—	
Front oxygen sensor heater signal	E29	38	0 – 1.0	0 – 1.0	—	
Rear oxygen sensor heater signal	E29	37	0 – 1.0	0 – 1.0	—	

Content	Connector No.	Terminal No.	Signal (V)		Note
			Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Fuel temperature sensor	E29	25	2.5 – 3.8	2.5 – 3.8	<ul style="list-style-type: none"> ● 1800 cc model only ● Ambient temperature: 25°C (77°F)
Fuel level sensor	E29	27	0.12 – 4.75	0.12 – 4.75	1800 cc model only
Fuel tank pressure sensor	Signal	E29	4	2.3 – 2.7	<ul style="list-style-type: none"> ● 1800 cc model only ● The value obtained after the fuel filler cap was removed once and recapped.
	Power supply	E29	21	5	—
	GND	E29	20	0	0
Fuel tank pressure control solenoid valve	E29	10	ON: 1, or less OFF: 10 – 13	ON: 1, or less OFF: 13 – 14	1800 cc model only
Vent control solenoid valve	E29	35	ON: 1, or less OFF: 10 – 13	ON: 1, or less OFF: 13 – 14	1800 cc model only
Air injection system diagnosis solenoid valve	E29	34	ON: 1, or less OFF: 10 – 13	ON: 1, or less OFF: 13 – 14	1800 cc AT model only
ASV solenoid valve	E29	43	ON: 1, or less OFF: 10 – 13	ON: 1, or less OFF: 13 – 14	1800 cc AT model only
FICD control solenoid valve	E29	9	ON: 1, or less OFF: 10 – 13	ON: 1, or less OFF: 13 – 14	<ul style="list-style-type: none"> ● 1800 cc model only ● A/C equipped model
AT diagnosis input signal	E29	80	Less than 1 ↔ More than 4	Less than 1 ↔ More than 4	Waveform
GND (sensors)	E29	20	0	0	—
GND (injectors)	E29	69	0	0	—
		95			
GND (ignition system)	E29	94	0	0	—
GND (power supply)	E29	19	0	0	—
		46			
GND (control systems)	E29	17	0	0	—
		18			
GND (oxygen sensor heater)	E29	42	0	0	—

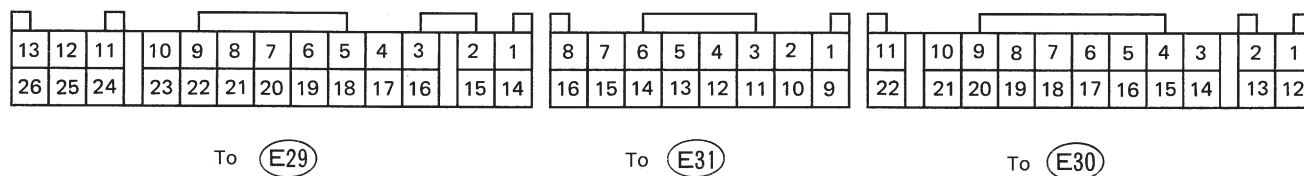
2. ENGINE CONDITION DATA

Content	Model	Specified data
Mass air flow	1800 cc	1.6 – 2.8 (g/sec): Idling
		6.1 – 10.3 (g/sec): 2,500 rpm racing
	2200 cc	1.7 – 3.3 (g/sec): Idling
		7.1 – 14.2 (g/sec): 2,500 rpm racing
Engine load	1800 cc	1.7 – 3.0 (%): Idling
		6.6 – 11.2 (%): 2,500 rpm racing
	2200 cc	1.6 – 2.9 (%): Idling
		6.4 – 12.8 (%): 2,500 rpm racing

Measuring condition:

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

6. Control Module I/O Signal



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	—	—	—