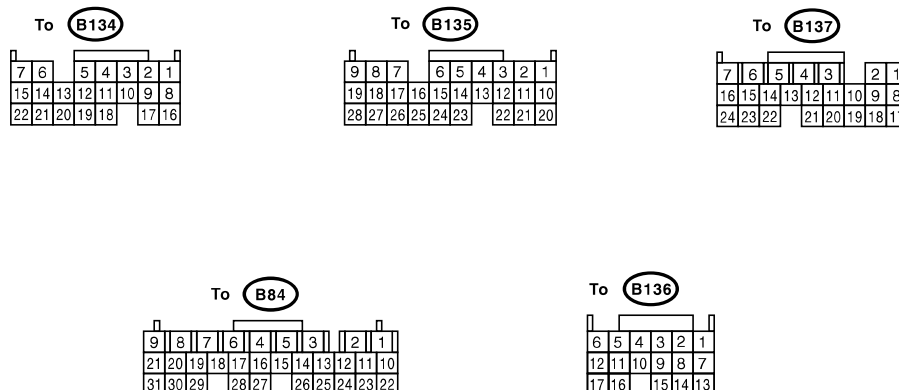


5. Engine Control Module (ECM) I/O Signal

A: ELECTRICAL SPECIFICATION



EN-01286

Content		Con- nector No.	Termi- nal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Crank- shaft posi- tion sensor	Signal (+)	B135	2	0	-7 — +7	Sensor output waveform
	Signal (-)	B135	11	0	0	—
	Shield	B135	21	0	0	—
Camshaft position sensor	Signal (+)	B135	1	0	-7 — +7	Sensor output waveform
	Signal (-)	B135	10	0	0	—
	Shield	B135	21	0	0	—
Throttle position sensor	Signal	B135	7	Fully closed: 0.2 — 1.0 Fully opened: 4.2 — 4.7		—
	Power supply	B135	9	5	5	—
	GND (sen- sor)	B135	19	0	0	—
Rear oxy- gen sen- sor	Signal	B135	17	0	0 — 0.9	—
	Shield	B135	26	0	0	—
	GND (sen- sor)	B135	19	0	0	—
Front oxy- gen (A/F) sensor heater	Signal 1	B84	5	0 — 1.0	0 — 1.0	—
	Signal 2	B84	4	0 — 1.0	0 — 1.0	—
Rear oxygen sensor heater signal		B137	13	0 — 1.0	0 — 1.0	—
Engine coolant tempera- ture sen- sor	Signal	B135	18	1.0 — 1.4	1.0 — 1.4	After warm-up the engine.
	GND (sen- sor)	B135	19	0	0	After warm-up the engine.
Vehicle speed signal		B134	1	0 or 5	0 or 5	“5” and “0” are repeatedly dis- played when vehicle is driven.

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)		
Generator signal		B84	11	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 10 — 13	Waveform	
Mass air flow sen- sor	Signal	B136	13	—	0.3 — 4.5	—	
	Shield	B136	8	0	0	—	
	GND	B136	7	0	0	—	
Intake air temperature sensor signal		B135	27	—	—	—	
Exhaust gas tem- perature sensor	Signal	B135	16	—	—	—	
	GND (sensor)	B135	19	0	0	—	
Tumble generator valve posi- tion sensor RH	Signal	B135	23	Fully closed: 0.2 — 1.0 Fully opened: 4.2 — 4.7		—	
	Power supply	B135	9	5	5	—	
	GND (sensor)	B135	19	0	0	—	
Tumble generator valve posi- tion sensor LH	Signal	B135	13	Fully closed: 0.2 — 1.0 Fully opened: 4.2 — 4.7		—	
	Power supply	B135	9	5	5	—	
	GND (sensor)	B135	19	0	0	—	
Tumble generator valve RH (open)		B136	4	0 or 5	0 or 5	—	
Tumble generator valve RH (close)		B136	5	0 or 5	0 or 5	—	
Tumble generator valve LH (open)		B136	10	0 or 5	0 or 5	—	
Tumble generator valve LH (close)		B136	11	0 or 5	0 or 5	—	
Wastegate control sole- noid valve		B84	24	10 — 13	13 — 14	—	
Starter switch		B134	16	0	0	Cranking: 8 — 14	
A/C switch		B134	6	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—	
Ignition switch		B134	14	10 — 13	13 — 14	—	
Neutral position switch		B134	8	ON: 12±0.5 OFF: 0		Switch is ON when gear is in neutral position.	
Test mode connector		B134	5	5	5	When connected: 0	
Knock sensor	Signal	B135	4	2.8	2.8	—	
	Shield	B135	22	0	0	—	
Back-up power supply		B84	10	10 — 13	13 — 14	Ignition switch “OFF”: 10 — 13	
Control unit power sup- ply		B84	2	10 — 13	13 — 14	—	
		B84	3	10 — 13	13 — 14	—	
Sensor power supply		B135	9	5	5	—	
Line end check 1		B134	10	0	0	—	
Ignition control	#1	B137	24	0	13 — 14	Waveform	
	#2	B137	23	0	13 — 14	Waveform	
	#3	B137	22	0	13 — 14	Waveform	
	#4	B137	21	0	13 — 14	Waveform	

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)	
Fuel injec- tor	#1	B84	1	10 — 13	1 — 14	Waveform
	#2	B137	6	10 — 13	1 — 14	Waveform
	#3	B137	5	10 — 13	1 — 14	Waveform
	#4	B137	4	10 — 13	1 — 14	Waveform
Idle air control solenoid valve	Signal	B137	10	0 or 13 — 14	0 or 13 — 14	Waveform
Fuel pump control unit	Signal 1	B134	13	—	—	—
	Signal 2	B137	16	—	—	—
A/C relay control		B84	27	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—
Radiator fan relay 1 control		B84	17	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—
Radiator fan relay 2 control		B84	28	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	Model with A/C only
Malfunction indicator lamp		B84	15	—	—	Light "ON": 1, or less Light "OFF": 10 — 14
Engine speed output		B137	9	—	0 — 13, or more	Waveform
Purge control solenoid valve		B84	16	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
Manifold absolute pressure sensor	Signal	B135	8	1.7 — 2.4	1.1 — 1.6	—
	Power supply	B135	9	5	5	
	GND (sen- sor)	B135	19	0	0	
Fuel level sensor		B135	25	0.12 — 4.75	0.12 — 4.75	—
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	—
Power steering oil pres- sure switch		B135	24	10 — 13	ON: 0 OFF: 13 — 14	—
Wiper switch		B135	12	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—
Front oxygen (A/F) sen- sor signal (+)		B84	29	2.8 — 3.2	2.8 — 3.2	—
Front oxygen (A/F) sen- sor signal (—)		B84	19	2.4 — 2.7	2.4 — 2.7	—
Front oxygen (A/F) sen- sor shield		B84	18	0	0	—
SSM/GST communica- tion line		B134	21	Less than 1 ←→ More than 4	Less than 1 ←→ More than 4	—
Torque control 1 signal		B134	19	More than 4	More than 4	—
Torque control 2 signal		B134	18	More than 4	More than 4	—
Torque control cut sig- nal		B137	14	8	8	—
AT diagnosis input sig- nal		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	—
GND (sensors)		B135	19	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 (injectors)	B137	8	0	0	—
GND (ignition system)	B137	18	0	0	—
GND (power supply)	B137	17	0	0	—
	B134	22	0	0	—
GND (control systems)	B134	7	0	0	—
	B134	15	0	0	—
GND (oxygen sensor heater 1)	B84	9	0	0	—
GND (oxygen sensor heater 2)	B84	8	0	0	—