

PCM INSPECTION [ZJ, Z6]

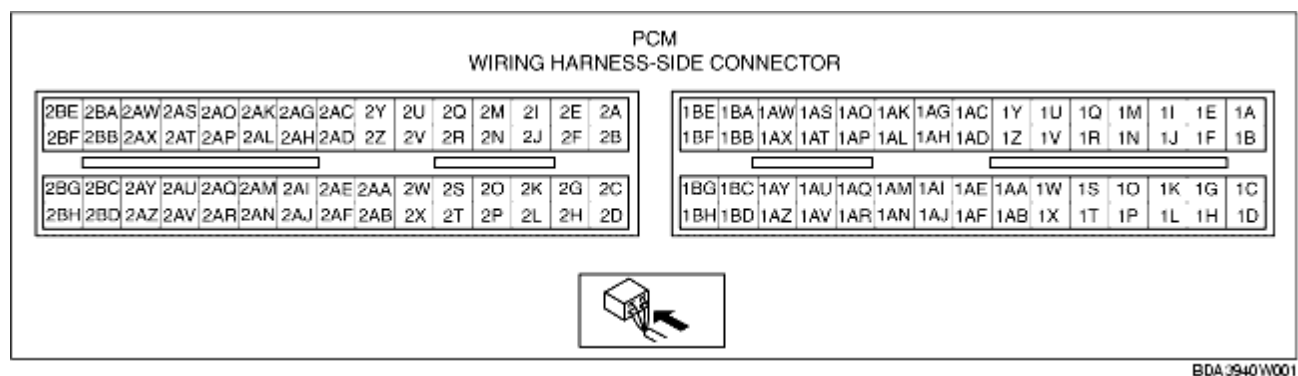
B3E014018880W08

Not Using the WDS or Equivalent

Note

- The PCM terminal voltage can vary with conditions when measuring and changes due to age deterioration on the vehicle, causing false diagnosis. Therefore a comprehensive inspection of the input and output systems, and the PCM is necessary to determine where the malfunction occurs.

PCM terminal voltage table (Reference)



Terminal voltage table (Reference)

Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
1A	-	-	-	-	-
1B	-	-	-	-	-
1C	-	-	-	-	-
1D	-	-	-	-	-
1E	-	-	-	-	-
1F	-	-	-	-	-
1G*1	Internal GND	Input/turbine speed sensor shield wire	Under any condition	1.0 or less	• Related wiring harness
1H	-	-	-	-	-
1I	-	-	-	-	-
1J	-	-	-	-	-
1K*1	Input/turbine speed sensor (-)	Input/turbine speed sensor	(See Inspection Using An Oscilloscope (Reference) .)		• Input/turbine speed sensor • Related wiring harness
1L	-	-	-	-	-
1M	-	-	-	-	-
1N	-	-	-	-	-
	Input/turbine	Input/turbine	(See Inspection Using An Oscilloscope .)		• Input/turbine speed sensor

1O*1	speed sensor (+)	speed sensor	(Reference.)			• Related wiring harness
1P	*3CPP switch	CPP switch	Ignition switch is turned to the ON position.	Clutch pedal depressed	1.0 or less	• CPP switch • Related wiring harness
				Clutch pedal released	B+	
	*1Manual up	Up switch	Ignition switch is turned to the ON position.	Detects up-shift operation of selector lever in M range	1.0 or less	• Selector lever • Related wiring harness
				Others	B+	
1Q	Refrigerant pressure (low, high)	Refrigerant pressure switch (low pressure switch, high pressure switch)	Refrigerant pressure is more than the specification or less than the specification. (Refrigerant pressure switch (low pressure switch, high pressure switch) is off.)		B+	• Refrigerant pressure switch (low pressure switch, high pressure switch) • Related wiring harness
					1.0 or less	
1R	-	-	-	-	-	-
1S	CAN_L	Instrument cluster, ABS HU/CM, DSC HU/CM, DLC-2	Because this terminal is for CAN, good/no good judgment by terminal voltage is not possible.			-
1T	-	-	-	-	-	-
1U	Refrigerant pressure (middle)	Refrigerant pressure switch (middle)	Idle	Refrigerant pressure is 1.52 MPa {15.5 kgf/cm ² , 221 psi} or more	1.0 or less	• Refrigerant pressure switch (middle) • Related wiring harness
				Refrigerant pressure is 12.3 MPa {125 kgf/cm ² , 1783 psi} or less	B+	
1V	Brake switch	Brake switch	Brake pedal depressed		B+	• Brake switch • Related wiring harness
			Brake pedal released		1.0 or less	
1W	CAN_H	Instrument cluster, ABS HU/CM, DSC HU/CM, DLC-2	Because this terminal is for CAN, good/no good judgment by terminal voltage is not possible.			-
1X*1	Selector lever position	TR switch	Ignition switch is turned to the ON position.	P position	Approx. 4.6	• TR switch • Related wiring harness
				R position	Approx. 3.9	
				N position	Approx. 3.2	
				D range	Approx. 2.5	
				M range	Approx. 2.5	
1Y	-	-	-	-	-	-
1Z	-	-	-	-	-	-
1AA	-	-	-	-	-	-
	*3Neutral		Ignition switch is	Neutral	1.0 or less	• Neutral switch

1AB	switch	Neutral switch	turned to the ON position.	Except above	B+	• Related wiring harness
	*1Manual down	Down switch	Ignition switch is turned to the ON position.	Detects down-shift operation of selector lever in M range	1.0 or less	• Selector lever • Related wiring harness
				Others	B+	
1AC	Fuel pump control	Fuel pump relay	Immediately after ignition switch is turned to the ON position.		1.0 or less	• Fuel pump relay • Related wiring harness
			Ignition switch is turned to the ON position.		B+	
			Cranking		1.0 or less	
			Idle			
1AD	-	-	-	-	-	-
1AE	-	-	-	-	-	-
1AF*1	Pressure control solenoid (+)	Pressure control solenoid	(See Inspection Using An Oscilloscope (Reference).)			• Pressure control solenoid • Related wiring harness
1AG	-	-	-	-	-	-
1AH	-	-	-	-	-	-
1AI	-	-	-	-	-	-
1AJ*1	Shift solenoid D	Shift solenoid D	P or N position		B+	• Shift solenoid D • Related wiring harness
			Except above		1.0 or less	
1AK	Starter relay control	Starter relay	Cranking		1.0 or less	• Starter relay • Related wiring harness
1AL	The A/C cut-off control.	A/C relay	The A/C is operating.		1.0 or less	• A/C relay • Related wiring harness
			The A/C is not operating.		B+	
1AM	-	-	-	-	-	-
1AN*1	Internal GND	TFT sensor, TR switch	Under any condition		1.0 or less	• Related wiring harness
1AO	-	-	-	-	-	-
1AP	Fan control	Fan control module	Test mode is on.*2	CTP	B+	• Fan control module
				WOT	1.0 or less	• Related wiring harness
1AQ*1	M range switch	M range switch	Ignition switch is turned to the ON position.	M range	1.0 or less	• Selector lever • Related wiring harness
				Except above	B+	
1AR*1	Shift solenoid E	Shift solenoid E	During TCC operation		B+	• Shift solenoid E • Related wiring harness
			Except above		1.0 or less	
1AS	-	-	-	-	-	-
1AT	-	-	-	-	-	-
1AU*1	ATF temperature	TFT sensor	Ignition switch is turned to	TFT is 20 °C {68 ° F}	Approx. 3.3	• TFT sensor • Related wiring
				TFT is 40 °C {104 ° F}	Approx. 2.4	

			the ON position.	TFT is 60 °C {140 ° F}	Approx. 1.5	harness
1AV*1	Pressure control solenoid (-)	Pressure control solenoid	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none"> Pressure control solenoid Related wiring harness
1AW	Main relay	Main relay	Ignition switch is off.	B+	1.0 or less	<ul style="list-style-type: none"> Main relay Related wiring harness
			Ignition switch is turned to the ON position.			
1AX	Back-up power supply	Battery	Under any condition	B+		<ul style="list-style-type: none"> Battery Related wiring harness
1AY*1	Vehicle speed	VSS	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none"> VSS Related wiring harness
1AZ*1	Shift solenoid A	Shift solenoid A	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none"> Shift solenoid A Related wiring harness
1BA	-	-	-	-	-	-
1BB	Battery voltage	Main relay	Ignition switch is off.	1.0 or less	B+	<ul style="list-style-type: none"> Main relay Battery Related wiring harness
			Ignition switch is turned to the ON position.			
1BC*1	VSS power supply	VSS	Ignition switch is turned to the ON position.	B+		<ul style="list-style-type: none"> Related wiring harness
1BD*1	Shift solenoid C	Shift solenoid C	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none"> Shift solenoid C Related wiring harness
1BE	Ignition switch	Ignition switch	Ignition switch is off.	1.0 or less	B+	<ul style="list-style-type: none"> Ignition switch Related wiring harness
			Ignition switch is turned to the ON position.			
1BF	Battery voltage	Main relay	Ignition switch is off	1.0 or less	B+	<ul style="list-style-type: none"> Main relay Battery Related wiring harness
			Ignition switch is turned to the ON position.			
1BG*1	Battery voltage	Main relay	Ignition switch is off.	1.0 or less	B+	<ul style="list-style-type: none"> Main relay Battery Related wiring harness
			Ignition switch is turned to the ON position.			
1BH*1	Shift solenoid B	Shift solenoid B	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none"> Shift solenoid B Related wiring harness
2A	Ignition coil power supply	Ignition coil	Ignition switch is turned to the ON position.	B+		<ul style="list-style-type: none"> Related wiring harness
2B	Fuel injection control	Fuel injector No.1	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none"> Fuel injector No.1 Related wiring harness
2C	Fuel injection control	Fuel injector No.2	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none"> Fuel injector No.2 Related wiring harness
2D	Fuel injection control	Fuel injector No.3	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none"> Fuel injector No.3 Related wiring harness

2E	Fuel injector No.1 power supply	Fuel injector No.1	Ignition switch is turned to the ON position.		B+	• Related wiring harness
2F	Fuel injector No.2 power supply	Fuel injector No.2	Ignition switch is turned to the ON position.		B+	• Related wiring harness
2G	Fuel injector No.3 power supply	Fuel injector No.3	Ignition switch is turned to the ON position.		B+	• Related wiring harness
2H	Fuel injection control	Fuel injector No.4	(See Inspection Using An Oscilloscope (Reference).)			• Fuel injector No.4 • Related wiring harness
2I	-	-	-		-	-
2J	ECT	ECT sensor	Ignition switch is turned to the ON position.	ECT is 20 °C {68 ° F}	Approx. 3.0	• ECT sensor • Related wiring harness
				ECT is 60 °C {140 ° F}	Approx. 1.4	
				ECT is 80 °C {176 ° F}	Approx. 0.9	
2K	Rear HO2S	Rear HO2S	Idle		Alternates between 0 and 1.0	• Rear HO2S • Related wiring harness
2L	Fuel injector No.4 power supply	Fuel injector No.4	Ignition switch is turned to the ON position.		B+	• Related wiring harness
2M	ESA control	Ignition coil No.4	(See Inspection Using An Oscilloscope (Reference).)			• Ignition coil No.4 • Related wiring harness
2N	EGR control	EGR valve	Idle (EGR control operating)		1.0 or less	• EGR valve • Related wiring harness
2O	-	-	-		-	-
2P	CKP	CKP sensor	(See Inspection Using An Oscilloscope (Reference).)			• CKP sensor • Related wiring harness
2Q	ESA control	Ignition coil No.3	(See Inspection Using An Oscilloscope (Reference).)			• Ignition coil No.3 • Related wiring harness
2R	EGR control	EGR valve	Idle (EGR control operating)		B+	• EGR valve • Related wiring harness
2S	BARO sensor	BARO sensor	Ignition switch is turned to the ON position.	Altitude:0 m {0 ft}	2.3-2.8*4	• BARO sensor • Related wiring harnesses
				Altitude:500 m {1,640 ft}	2.2-2.8*4	
				Altitude:1,000 m {3,281 ft}	2.1-2.8*4	
				Altitude:1,500 m {4921 ft}	2.0-2.8*4	
				Altitude: 2,000 m {6,562 ft}	1.9-2.7*4	
				Altitude: 2,500 m {8,202 ft}	1.8-2.6*4	

2T	Input/output device power supply	CKP sensor, CMP sensor, front HO2S, rear HO2S, purge solenoid valve	Ignition switch is turned to the ON position.		B+	• Related wiring harness
2U	ESA control	Ignition coil No.2	(See Inspection Using An Oscilloscope (Reference).)			• Ignition coil No.2 • Related wiring harness
2V	EGR control	EGR valve	Idle (EGR control operating)		B+	• EGR valve • Related wiring harness
2W	Constant voltage (vref)	TP sensor, BARO sensor	Ignition switch is turned to the ON position.		Approx. 5.0	• TP sensor • BARO sensor • Related wiring harness
2X	IAC (+)	IAC valve	(See Inspection Using An Oscilloscope (Reference).)			• IAC valve • Related wiring harness
2Y	ESA control	Ignition coil No.1	(See Inspection Using An Oscilloscope (Reference).)			• Ignition coil No.1 • Related wiring harness
2Z	EGR control	EGR valve	Idle (EGR control operating)		1.0 or less	• EGR valve • Related wiring harness
2AA	TP	TP sensor	Ignition switch is turned to the ON position.	CTP	0.3-1.0	• TP sensor • Related wiring harness
				WOT	3.1-4.5	
2AB	IAC (-)	IAC valve	(See Inspection Using An Oscilloscope (Reference).)			• IAC valve • Related wiring harness
2AC	PSP switch	PSP switch	Idle	Steering wheel at straight ahead position	B+	• PSP switch • Related wiring harness
				While turning steering wheel	1.0 or less	
2AD	-	-	-		-	-
2AE	Internal GND	TP sensor	Under any condition		1.0 or less	• Related wiring harness
2AF	Variable tumble control (open)	Variable tumble shutter valve actuator	The engine is hot.	When the ignition switch turned to the ON position.	B+*5	• Variable tumble shutter valve actuator • Related wiring harness
			Idle after cold start	When the ECT reaches 60 °C {140 °F}		
			Except above		1.0 or less	
2AG	Variable valve timing control (-)	OCV	Under any condition		1.0 or less	• OCV • Related wiring harness
2AH	-	-	-		-	-
2Ai	Front HO2S	Front HO2S	(See Inspection Using An Oscilloscope (Reference).)			• Front HO2S • Related wiring harness
				When the ignition		• Variable tumble

2AJ	Variable tumble control (close)	Variable tumble shutter valve actuator	The engine is cold.	switch turned to the ON position.	B+*5	shutter valve actuator • Related wiring harness
			Except above		1.0 or less	
2AK	Variable valve timing control (+)	OCV	(See Inspection Using An Oscilloscope (Reference).)			• OCV • Related wiring harness
2AL	-	-	-	-	-	-
2AM	Front HO2S heater control	Front HO2S heater	(See Inspection Using An Oscilloscope (Reference).)			• Front HO2S • Related wiring harness
2AN	Generator control	Generator (terminal D)	(See Inspection Using An Oscilloscope (Reference).)			• Generator • Related wiring harness
2AO*6	Variable intake-air control (open)	Variable intake-air shutter valve actuator	When the ignition switch turned to the ON position.		1.0 or less	• Variable intake-air shutter valve actuator • Related wiring harness
			When the engine speed is increased gradually and reaches 4,100 rpm.		B+*5	
			Except above		1.0 or less	
2AP	-	-	-	-	-	-
2AQ	IAT	IAT sensor	Ignition switch is turned to the ON position.	IAT is 20 °C {68 °F}	Approx. 2.2	• IAT sensor • Related wiring harness
				IAT is 30 °C {86 °F}	Approx. 1.8	
2AR	Generator output voltage	Generator (terminal P)	(See Inspection Using An Oscilloscope (Reference).)			• Generator • Related wiring harness
2AS*6	Variable intake-air control (close)	Variable intake-air shutter valve actuator	When the ignition switch is turned to the ON position.		B+*5	• Variable intake-air shutter valve actuator • Related wiring harness
			When the engine speed is decreased gradually and reaches 4,100 rpm.			
			Except above		1.0 or less	
2AT	Rear HO2S	Rear HO2S	After fixed period of time from engine start		1.0 or less	• Rear HO2S • Related wiring harness
			Engine speed is 2,700 or more.		B+	
2AU	MAF	MAF sensor	Ignition switch is turned to the ON position.		Approx. 0.7	• MAF sensor • Related wiring harness
			Idle		Approx. 1.3	
2AV	Purge control	Purge solenoid valve	(See Inspection Using An Oscilloscope (Reference).)			• Purge solenoid valve • Related wiring harness
2AW	-	-	-	-	-	-
2AX	Internal GND	ECT sensor, front HO2S, rear HO2S, BARO sensor	Under any condition		1.0 or less	• Related wiring harness
2AY	Internal GND	IAT sensor	Under any condition		1.0 or less	• Related wiring harness
2AZ	GND	GND	Under any condition		1.0 or less	• Related wiring harness

2BA	Knocking	Knock sensor	Ignition switch is turned to the ON position. (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter)	Approx. 2.4	<ul style="list-style-type: none"> Knock sensor Related wiring harness
2BB	CMP	CMP sensor	(See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> CMP sensor Related wiring harness
2BC	Internal GND	MAF sensor	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harness
2BD	GND	GND	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harness
2BE	Internal GND	HO2S shield wire	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harness
2BF	Internal GND	CKP sensor, CMP sensor	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harness
2BG	Power supply	MAF sensor, EGR valve	Under any condition	B+	<ul style="list-style-type: none"> Related wiring harness
2BH	GND	GND	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harness

*1 : ATX

*2 : Turn the test mode on using the WDS simulation test.

*3 : MTX

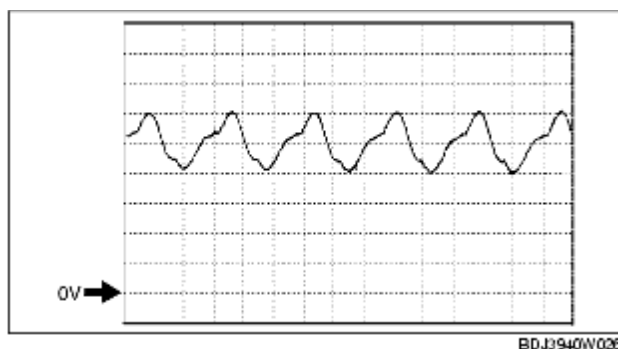
*4 : The voltage may vary excessively depending on the weather or battery conditions.

*5 : The voltage changes for a specified time.

*6 : Z6

Inspection Using An Oscilloscope (Reference)

Input/turbine speed sensor (-) signal



PCM terminals

- 1K (+)-Negative battery terminal (-)

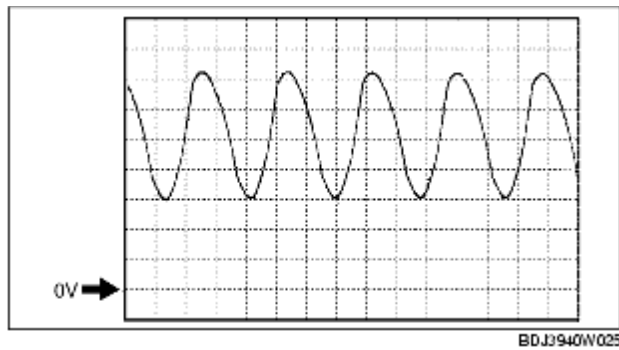
Oscilloscope setting

- 500 mV/DIV (Y), 1 ms/DIV (X), DC range

Vehicle condition

- Idle after warm-up

Input/turbine speed sensor (+) signal



PCM terminals

- 1O (+)-Negative battery terminal (-)

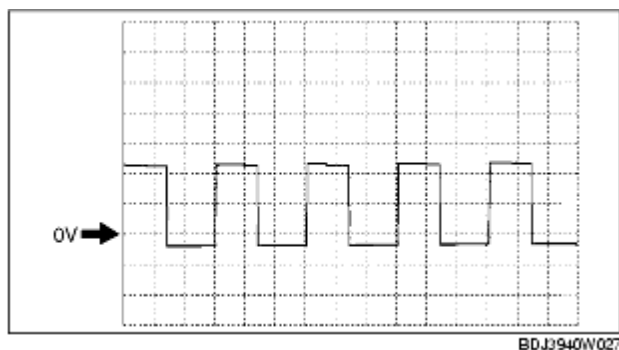
Oscilloscope setting

- 500 mV/DIV (Y), 1 ms/DIV (X), DC range

Vehicle condition

- Idle after warm-up

Pressure control solenoid (+) signal



PCM terminals

- 1AF (+)-Negative battery terminal (-)

Oscilloscope setting

- 5 V/DIV (Y), 1 ms/DIV (X), DC range

Vehicle condition

- All of the following conditions are met.
 - Ignition switch is turned to the ON position. (engine off)
 - P or N position
 - CTP

Pressure control solenoid (-) signal

PCM terminals

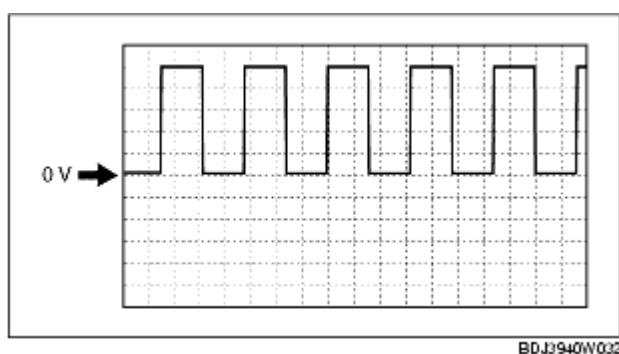
- 1AV (+)-Negative battery terminal (-)

Oscilloscope setting

- 200 mV/DIV (Y), 1 ms/DIV (X), DC range

Vehicle condition

- All of the following conditions are met.
 - Ignition switch is turned to the ON position. (engine off)
 - P or N position
 - CTP

Vehicle speed signal (ATX)**PCM terminals**

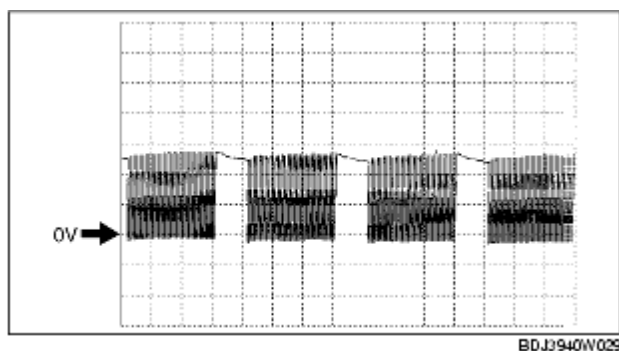
- 1AY (+)-Negative battery terminal (-)

Oscilloscope setting

- 1 V/DIV (Y), 2.5 ms/DIV (X), DC range

Vehicle condition

- Vehicle speed is 32 km/h {20 mph}.

Shift solenoid A signal**PCM terminals**

- 1AZ (+)-Negative battery terminal (-)

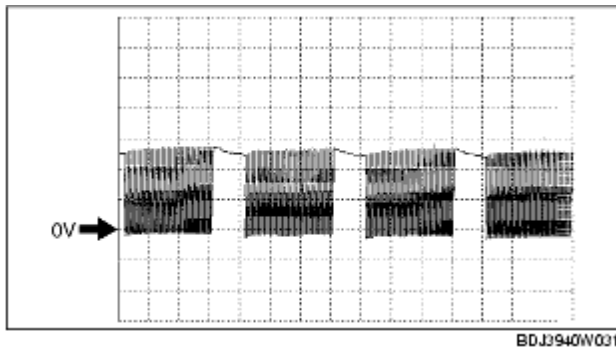
Oscilloscope setting

- 5 V/DIV (Y), 5 ms/DIV (X), DC range

Vehicle condition

- 4GR

Shift solenoid C signal



PCM terminals

- 1BD (+)-Negative battery terminal (-)

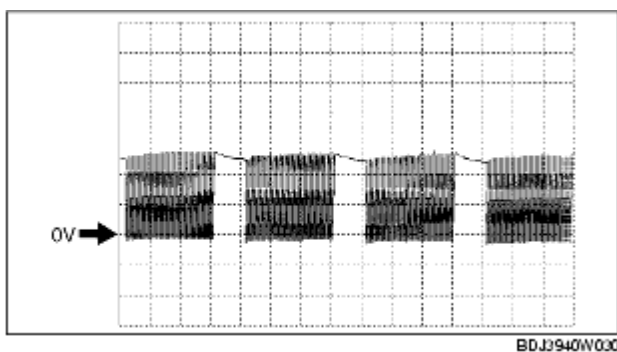
Oscilloscope setting

- 5 V/DIV (Y), 5 ms/DIV (X), DC range

Vehicle condition

- 1GR or 2GR

Shift solenoid B signal



PCM terminals

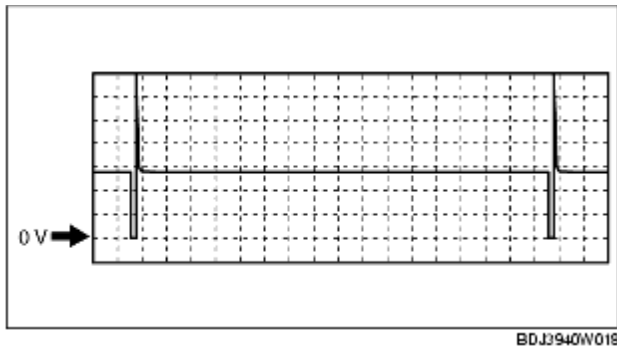
- 1BH (+)-Negative battery terminal (-)

Oscilloscope setting

- 5 V/DIV (Y), 5 ms/DIV (X), DC range

Vehicle condition

- 1GR (except L range (HOLD))

Fuel injection control signal**PCM terminals**

- No.1: 2B (+)-Negative battery terminal (-)
- No.2: 2C (+)-Negative battery terminal (-)
- No.3: 2D (+)-Negative battery terminal (-)
- No.4: 2H (+)-Negative battery terminal (-)

Oscilloscope setting

- 5 V/DIV (Y), 10 ms/DIV (X), DC range

Vehicle condition

- Idle after warm-up

ESA control signal**PCM terminals**

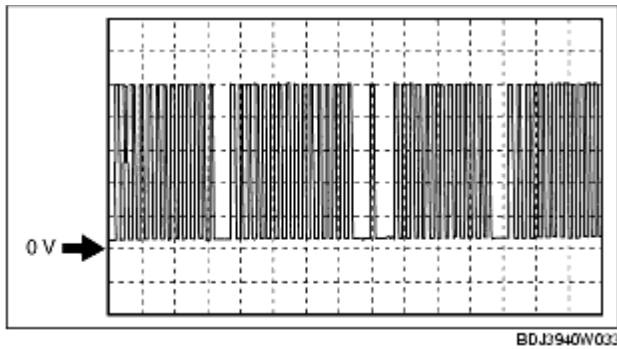
- No.1: 2Y (+)-Negative battery terminal (-)
- No.2: 2U (+)-Negative battery terminal (-)
- No.3: 2Q (+)-Negative battery terminal (-)
- No.4: 2M (+)-Negative battery terminal (-)

Oscilloscope setting

- 0.5 V/DIV (Y), 40 ms/DIV (X), DC range

Vehicle condition

- Idle after warm-up

CKP signal**PCM terminals**

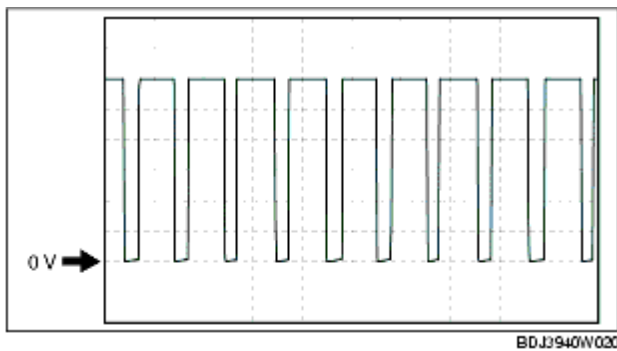
- 2P (+)-Negative battery terminal (-)

Oscilloscope setting

- 1 V/DIV (Y), 10 ms/DIV (X), DC range

Vehicle condition

- Idle after warm-up

IAC (+) signal**PCM terminals**

- 2X (+)-Negative battery terminal (-)

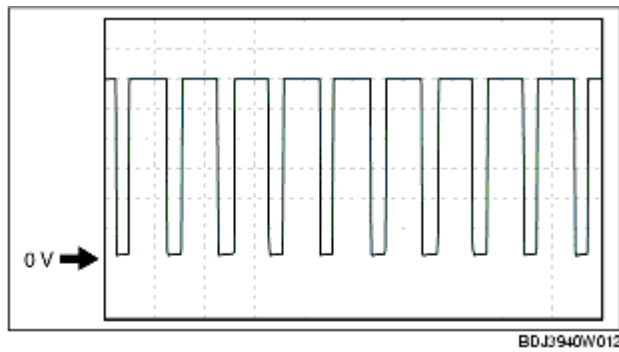
Oscilloscope setting

- 2 V/DIV (Y), 2 ms/DIV (X), DC range

Vehicle condition

- Idle after warm-up

IAC (-) signal



PCM terminals

- 2AB (+)-Negative battery terminal (-)

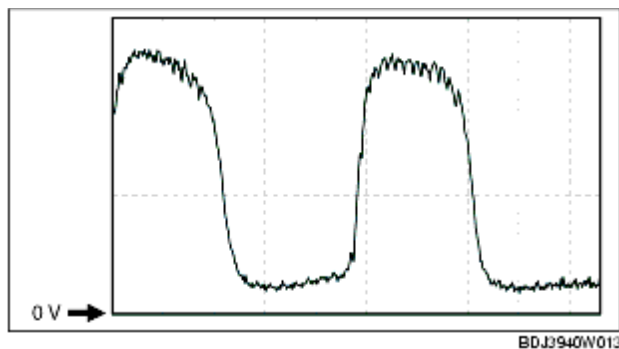
Oscilloscope setting

- 2 V/DIV (Y), 2 ms/DIV (X), DC range

Vehicle condition

- Idle after warm-up

Oxygen concentration signal



PCM terminals

- 2AI (+)-Negative battery terminal (-)

Oscilloscope setting

- 0.2 V/DIV (Y), 1 s/DIV (X), DC range

Vehicle condition

- Idle after warm-up

Variable valve timing control (+) signal

PCM terminals

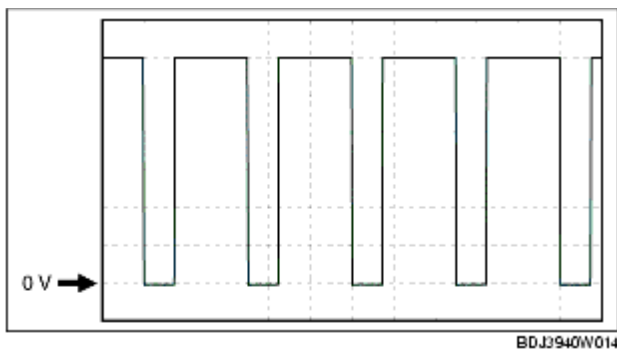
- 2AK (+)-Negative battery terminal (-)

Oscilloscope setting

- 5 V/DIV (Y), 1 ms/DIV (X), DC range

Vehicle condition

- Idle after warm-up

HO2S heater signal**PCM terminals**

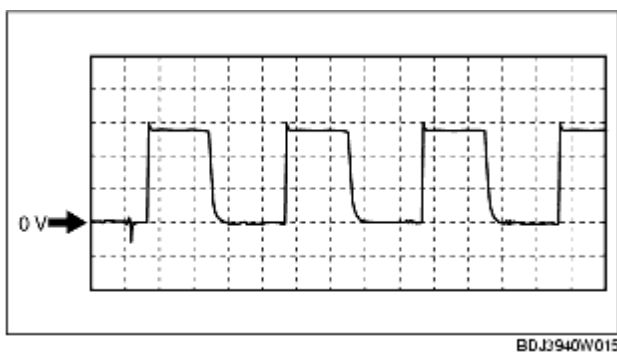
- 2AM (+)-Negative battery terminal (-)

Oscilloscope setting

- 2 V/DIV (Y), 0.1 s/DIV (X), DC range

Vehicle condition

- Idle after warm-up

Generator control signal**PCM terminals**

- 2AN (+)-Negative battery terminal (-)

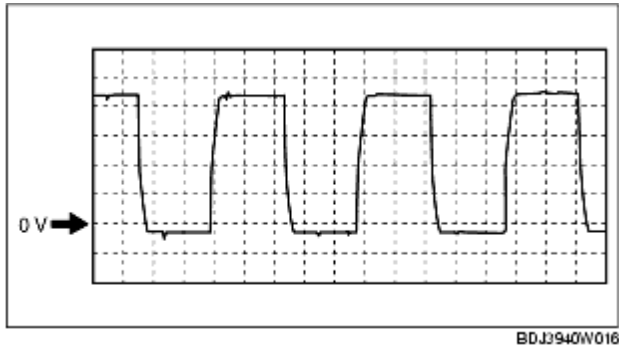
Oscilloscope setting

- 0.5 V/DIV (Y), 1 ms/DIV (X), DC range

Vehicle condition

- Idle after warm-up

Generator output voltage signal



PCM terminals

- 2AR (+)-Negative battery terminal (-)

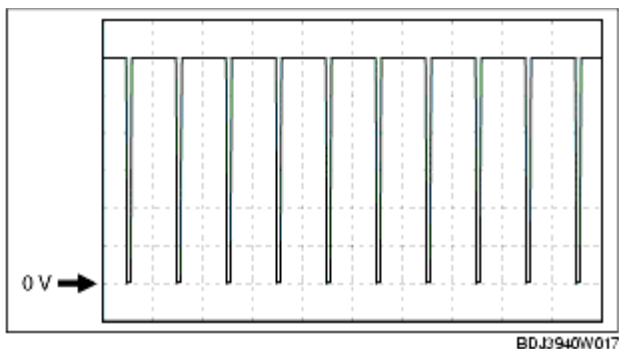
Oscilloscope setting

- 2 V/DIV (Y), 1 ms/DIV (X), DC range

Vehicle condition

- Idle after warm-up

Purge control signal



PCM terminals

- 2AV (+)-Negative battery terminal (-)

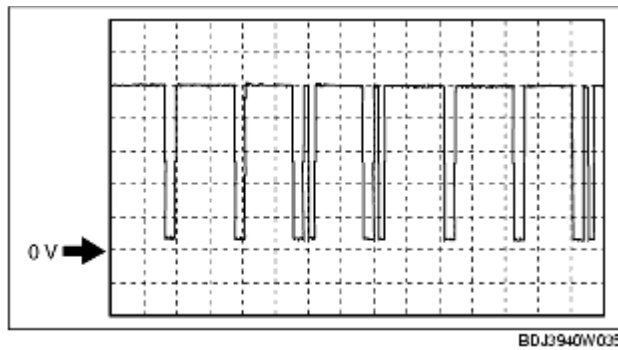
Oscilloscope setting

- 2 V/DIV (Y), 0.1 s/DIV (X), DC range

Vehicle condition

- Idle after warm-up

CMP signal



PCM terminals

- 2BB (+)-Negative battery terminal (-)

Oscilloscope setting

- 1 V/DIV (Y), 20 ms/DIV (X), DC range

Vehicle condition

- Idle after warm-up

Using the WDS or Equivalent

Note

• PIDs for the following parts are not available on this model. Go to the appropriate part inspection page.

- CMP sensor (See [CAMSHAFT POSITION \(CMP\) SENSOR INSPECTION \[ZJ, Z6\].](#))
- Main relay (See [RELAY INSPECTION.](#))

1. Connect the WDS or equivalent to the DLC-2.
2. Turn the ignition switch to the ON position.
3. Measure the PID value.

- If PID value is not within the specification, follow the instructions in Action column.

Note

• The PID/DATA MONITOR function monitors the calculated value of the input/output signals in the PCM. Therefore, an output device malfunction is not directly indicated as a malfunction of the monitored value for the output device. If a monitored value of an output device is out of specification, inspect the monitored value of the input device related to the output control.

• The simulation items that are used in the ENGINE CONTROL SYSTEM OPERATION INSPECTION are as follows.

- ACCS, ALTF, ARPMDES, EVAPCP, FAN_DUTY, FP, FUELPW1, GENVDSD, HTR11, HTR12, IAC, IMRC, IMTV, INJ_1, INJ_2, INJ_3, INJ_4, SEGRP, test, VT ACT1, VT DUTY1

Item (definition)	Unit/Condition	Condition/Specification (Reference)	Inspection item(s)	PCM terminal
AC_REQ (Refrigerant		• Refrigerant pressure is more than the specification or less		

pressure switch (low pressure switch, high pressure switch))	On/Off			than the specification. (Refrigerant pressure switch (low pressure switch, high pressure switch) is off.): Off • Others: On	• Refrigerant pressure switch (low pressure switch, high pressure switch)	1Q
ACCS (A/C relay)	On/Off			• A/C is operating: On • A/C is not operating: Off	• The following PIDs - CPP, CPP/PNP, PSP, ECT, PCM_T, RPM, TP, TR, AC_REQ, COLP	1AL
ALTF (Generator field coil control duty value)	%			• Ignition switch is turned to the ON position: 0% • Idling, E/L is operating: Duty value increases.	• The following PIDs - ECT, IAT, RPM, VSS, ALTT V, VPWR • Generator	2AN
ALTT V (Generator output voltage)	V			• Ignition switch is turned to the ON position: Approx. 1.0 V or less • Idling (no electrical load): Approx. 14 V (This is an internal calculation value and differs from the terminal voltage.)	• Generator	2AR
ARPMDES (Target engine speed)	RPM			• Indicate the target engine speed	• The following PIDs - CPP, CPP/PNP, PSP, ECT, IAT, RPM, TP, MAF, BARO, VSS, AC_REQ, COLP • IAC valve	-
BARO (Barometric pressure)	kPa	Bar	psi	• Ignition switch is turned to the ON position: Indicate the atmospheric pressure	• BARO sensor	2S
	V			• Ignition switch is turned to the ON position - Altitude: 0 m {0 ft}: 2.3-2.8*1 - Altitude: 500 m {1,640 ft}: 2.2-2.8*1 - Altitude: 1,000 m {3,281 ft}: 2.1-2.8*1 - Altitude: 1,500 m {4,921 ft}: 2.0-2.8*1 - Altitude: 2,000 m {6,562 ft}: 1.9-2.7*1 - Altitude: 2,500 m {8,202 ft}: 1.8-2.6*1		
BOO (Brake switch)	On/Off			• Brake pedal is depressed: On • Brake pedal is released: Off	• Brake switch	1V
CATT11_DSD (Estimated catalytic	°C	°F		• Indicate the estimated	• The following PIDs	-

converter temperature)			catalytic converter temperature	- BARO, ECT, IAT, MAF, RPM	
CHRG LP (Generator warning light)	On/Off		<ul style="list-style-type: none"> Ignition switch is turned to the ON position: On Idling: Off 	• Generator warning light	-
COLP (Refrigerant pressure switch (medium pressure switch))	On/Off		<ul style="list-style-type: none"> Refrigerant pressure is 1.52 MPa {15.5 kgf/cm², 221 psi} or more: On Refrigerant pressure is 12.3 MPa {125 kgf/cm², 1783 psi} or less: Off 	• Refrigerant pressure switch (medium-pressure switch)	1U
CPP* ² (Clutch pedal position)	On/Off		<ul style="list-style-type: none"> Clutch pedal is depressed: On Clutch pedal is released: Off 	• CPP switch	1P
CPP/PNP* ² (Shift lever position)	Drive/Neutral		<ul style="list-style-type: none"> Neutral: Neutral Other than neutral: Drive 	• Neutral switch	1AB
DTCCNT (Number of DTC detected)	No unit		• Number of DTCs stored	-	-
DWN SW* ³	(See PID/DATA MONITOR INSPECTION [FN4A-EL])				
ECT (Engine coolant temperature)	°C	°F	• Ignition switch is turned to the ON position: Indicate the ECT	• ECT sensor	2J
	V		<ul style="list-style-type: none"> ECT is 20 °C {68 °F}: Approx. 3.0 V ECT is 60 °C {140 °F}: Approx. 1.4 V ECT is 80 °C {176 °F}: Approx. 0.9 V 		
EQ_RAT_DSD (Theoretical air/fuel ratio coefficient to calculate target air/fuel ratio)	No unit		• Idling after warm-up: Approx.1	• Front HO2S	-
EVAPCP (Purge solenoid valve duty value)	%		<ul style="list-style-type: none"> Ignition switch is turned to the ON position: 0 % Increase the engine speed: Duty value rises 	• The following PIDs - ECT, IAT, RPM, TP, MAF, O2S11, BOO, VPWR	2AV
FAN_DUTY (Fan control duty value)	%		<ul style="list-style-type: none"> When all of following condition are met: 90 % - Test mode On - WOP 	• The following PIDs - test, TP	-
FP (Fuel pump relay)	On/Off		<ul style="list-style-type: none"> Immediately after ignition switch is turned to the ON position: On Ignition switch is turned to the ON position: Off Idling: On Cranking: On 	• Fuel pump relay	1AC
				• The following PIDs - CPP, CPP/PNP, PSP,	

FUELPW (Fuel injector duration)	ms	• Idling: Approx. 2.0 ms	ECT, IAT, RPM, TP, MAF, O2S11, O2S12, BARO, VSS, TR, BOO, AC_REQ, COLP, VPWR	2B, 2C, 2D, 2H
FUELSYS (Fuel system status)	OL/CL/ OL Drive/ OL Fault/ CL Fault	• Idling after warm-up: CL	• The following PIDs - CPP, CPP/PNP, PSP, ECT, IAT, RPM, TP, MAF, O2S11, O2S12, BARO, VSS, TR, BOO, AC_REQ, COLP, VPWR	-
GEAR*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])			
GENVDSD (Target generator voltage)	V	• Indicate the target generator voltage	• The following PIDs - ECT, IAT, RPM, VSS, ALTT V, VPWR • Generator	-
HTR11 (Front HO2S heater control)	On/Off	• Ignition switch is turned to the ON position: Off • When the vehicle is driving at engine speed less than 4,300 rpm: On	• The following PIDs - ECT, IAT, RPM, TP, MAF, BARO, VPWR	2AM
HTR12 (Rear HO2S heater control)	On/Off	• After fixed period of time from engine start: On • Engine speed is 2,700 or more: Off	• The following PIDs - ECT, IAT, RPM, TP, MAF, BARO, VPWR	2AT
IAC (IAC duty value)	%	• Ignition switch is turned to the ON position: 0 % • Idling (ECT is 88 °C {190 °F}, no load condition): Approx. 25 %	• The following PIDs - CPP, CPP/PNP, PSP, ECT, IAT, RPM, TP, MAF, BARO, VSS, AC_REQ, COLP	2X, 2AB
IAT (Intake air temperature)	°C	• Ignition switch is turned to the ON position: Indicate the IAT	• IAT sensor	2AQ
	V	• IAT is 20°C {68°F}: Approx. 2.2 V • IAT is 30°C {86°F}: Approx. 1.8 V		
IMRC (Variable tumble control)	%	• Cold start and 3,250 rpm or less: 12.5-50 • Hot start or 3,250 rpm or more: 12.5-42	• The following PIDs - ECT, RPM, TP	2AF, 2AJ
	On/Off	• Cold start and 3,250 rpm or less: On • Hot start or 3,250 rpm or more: Off		
IMTV*6	%	• Engine speed is less than 4,100 rpm: 12.5-50 • Engine speed is 4,100 rpm or	• The following PIDs	

(Variable intake-air control)			more: 12.5-42	- RPM	
	On/Off		<ul style="list-style-type: none">• Engine speed is less than 4,100 rpm: On• Engine speed is 4,100 rpm or more: Off		2AO, 2AS
INGEAR (Gears are engaged.)	On/Off		MTX <ul style="list-style-type: none">• When the following conditions are satisfied: On<ul style="list-style-type: none">- Not neutral- Clutch pedal released• Except above: Off	<ul style="list-style-type: none">• CPP switch• Neutral switch	1P, 1AB
			ATX <ul style="list-style-type: none">• Driving range: On• Except above: Off	<ul style="list-style-type: none">• TR switch	-
IVS (CTP condition)	Idle/Off Idle		<ul style="list-style-type: none">• Idling: Idle• Other than idling: Off Idle	<ul style="list-style-type: none">• The following PIDs<ul style="list-style-type: none">- TP	-
KNOCKR (Knocking retard)	°		<ul style="list-style-type: none">• Ignition switch is turned to the ON position: 0 °• Idling: 0 °	<ul style="list-style-type: none">• KS	2BA
LINEDES*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])				
LOAD (Engine load)	%		<ul style="list-style-type: none">• Idling (after warm-up): Approx. 23 %	<ul style="list-style-type: none">• The following PIDs<ul style="list-style-type: none">- BARO, IAT, MAF, RPM	-
LONGFT1 (Long term fuel trim)	%		<ul style="list-style-type: none">• Idling (after warm-up): Approx. -15-+15 %	<ul style="list-style-type: none">• The following PIDs<ul style="list-style-type: none">- CPP, CPP/PNP, PSP, ECT, IAT, RPM, TP, MAF, O2S11, O2S12, BARO, VSS, TR, BOO, AC_REQ, COLP, VPWR	-
LPS*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])				
MAF (Mass air flow)	g/s		<ul style="list-style-type: none">• Ignition switch is turned to the ON position: Approx. 0 g/s• Idling: Approx. 2.7 g/s	<ul style="list-style-type: none">• MAF sensor	2AU
	V		<ul style="list-style-type: none">• Ignition switch is turned to the ON position: Approx. 0.7 V• Idling: Approx. 1.3 V		
MIL (Malfunction indicator lamp)	On/Off		<ul style="list-style-type: none">• Ignition switch is turned to the ON position: On• Idling: Off(If there is a malfunction in emission control related system: On)	<ul style="list-style-type: none">• MIL	-
MIL_DIS (Travelled distance since MIL illuminated)	km	mile	Indicate the travelled distance since the MIL illuminated		
MNL SW*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])				
			<ul style="list-style-type: none">• Ignition switch is turned to the		

O2S11 (Front HO2S)	V	ON position: 1.0 V or less • Idling (after warm-up): Alternates between 0 and 1.0 V	• Front HO2S	2AI
O2S12 (Rear HO2S)	V	• Idling (after warm-up): Alternates between 0 and 1.0 V	• Rear HO2S	2K
OP_SW_B*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])			
PCM_T (PCM temperature sensor)	V	• Ignition switch is turned to the ON position: Indicate the PCM temperature sensor output voltage	• PCM	-
PCM_T_Max (Maximum PCM temperature)	V	• Ignition switch is turned to the ON position: Indicate the maximum PCM temperature sensor output voltage	• PCM	-
PSP (PSP switch)	High/Low	• Steering wheel is in straight ahead position: Low • Steering wheel is fully turned: High	• PSP switch	2AC
RFCFLAG (PCM adaptive memory produce verification)	Learnt/Not Learnt	• Idling (after running PCM adaptive memory procedure drive mode): Learnt • Right after the negative battery cable is disconnected (before running PCM adaptive memory procedure drive mode): Not Learnt	• Perform "DRIVE MODE".	-
RO2FT1 (Rear oxygen sensor fuel trim)	No unit	• Idling after warm-up: Approx. - 0.03-+0.03	• The following PID - O2S12	2K
RPM (Engine speed)	RPM	• Indicate the engine speed	• CKP sensor	2P
SEGRP (EGR control)	Step	• Ignition switch is turned to the ON position: 0 step • Idling: 0 step • Vehicle driving when engine speed is 1,000-4,700 rpm: 0-52 step	• EGR valve	2N, 2R, 2V, 2Z
SEGRP DSD (EGR valve position desired)	%	• Ignition switch is turned to the ON position: 0 % • Idling: 0 % • Vehicle driving when engine speed is 1,000-4,700 rpm: 0- 100 %	• The following PID - MAF, TP, ECT, RPM, VSS	-
SHRTFT1 (Short term fuel trim (front))	%	• Idling (after warm-up): -25- +25%	• The following PIDs - CPP, CPP/PNP, PSP, ECT, IAT, RPM, TP, MAF, O2S11, O2S12, BARO, VSS, TR, BOO, AC_REQ, COLP, VPWR	-
SHRTFT11 (Short term fuel	%	• Idling (after warm-up): -25- +25%	• The following PIDs - CPP, CPP/PNP, PSP, ECT, IAT, RPM, TP, MAF, O2S11,	2AI

trim (front))			O2S12, BARO, VSS, TR, BOO, AC_REQ, COLP, VPWR	
SHRTFT12 (Short term fuel trim (rear))	%	• Idling after warm-up: Approx. 99 %	• The following PIDs - CPP, CPP/PNP, PSP, ECT, IAT, RPM, TP, MAF, O2S11, O2S12, BARO, VSS, TR, BOO, AC_REQ, COLP, VPWR	2K
SPARKADV (Ignition timing)	° (BTDC)	• Indicate the ignition timing	• The following PIDs - CPP, CPP/PNP, PSP, ECT, IAT, RPM, TP, MAF, KNOCKR, TR, BOO, AC_REQ, COLP	2BB
SSA/SS1*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])			
SSB/SS2*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])			
SSC/SS3*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])			
TCS*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])			
test (Test mode)	On/Off	• During test mode: On • Other than test mode: Off	-	-
TFT*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])			
TFTV*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])			
TIRESIZE (Tire revolution per mile)	No unit	• Indicate the tire revolution per a mile		
TP (TP)	%	• CTP: Approx. 12 % • WOT: Approx. 75 %	• TP sensor	2AA
	V	• CTP: 0.31.0 V • WOT: 3.14.5 V		
TP REL (Throttle position signal (relative value))	%	• CTP: Approx. 0 % • WOT: Approx. 100 %	• TP sensor	2AA
TPCT (TP sensor voltage at CTP)	V	0.31.0 V	• TP sensor	2AA
TR*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])			
TR_SENS*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])			
TSS*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])			
UP SW*3	(See PID/DATA MONITOR INSPECTION [FN4A-EL])			
VPWR (Battery positive voltage)	V	• Ignition switch is turned to the ON position.: B+ • Idling: B+	• Battery • Main relay	1AX, 1BB, 1BF 1BG*3
Vref		• Ignition switch is turned to the		

(Constant voltage)	V		ON position.: Approx. 5 V	• Battery	2W
VSS (Vehicle speed)	KPH	MPH	• Vehicle running: Indicate the vehicle speed	• VSS	*2_ *31AY
VT ACT1 (Actual valve timing)	°		• Idling: 0 ° • Racing: 025 °	• The following PIDs - ECT, RPM, TP, MAF • OCV	2AG, 2AK
VT DIFF1 (Difference between target valve timing and actual valve timing)	°		• Idling: 0 °	• The following PIDs - ECT, RPM, TP, MAF • OCV	-
VT DUTY1 (OCV control)	%		• Idling: Approx. 10 %	• The following PIDs - ECT, RPM, TP, MAF	2AG, 2AK

*1 : The voltage may vary excessively depending on the weather or battery conditions.

*2 : MTX

*3 : ATX

*4 : Alternator generating current value

*5 : A/C compressor pressure switch

*6 : Z6