Inspection of ECM and Its Circuits

Reference: Precautions of ECM Circuit Inspection:K10B and K12B

CAUTION:
ECM and its circuits can be checked by measuring voltage and pulse signal with special tool connected. It is strictly prohibited to connect voltmeter or ohmmeter to ECM with ECM connectors disconnected from it.

Voltage Check

1) Remove ECM (1) from its bracket. ☞

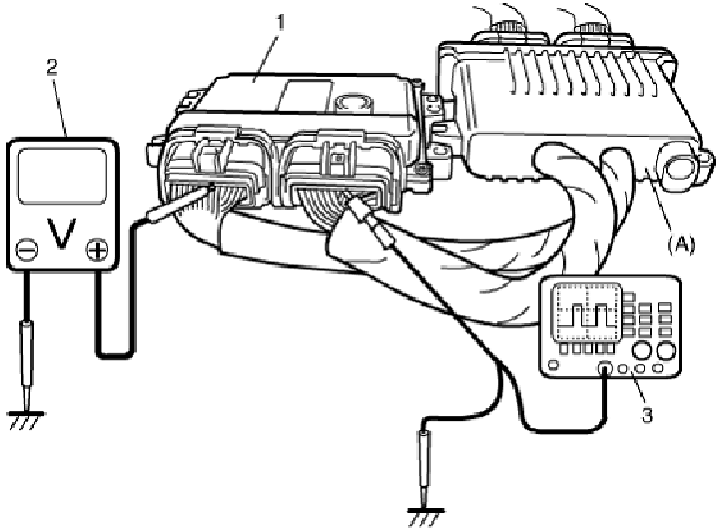
2) Connect special tool between ECM and ECM connectors securely.

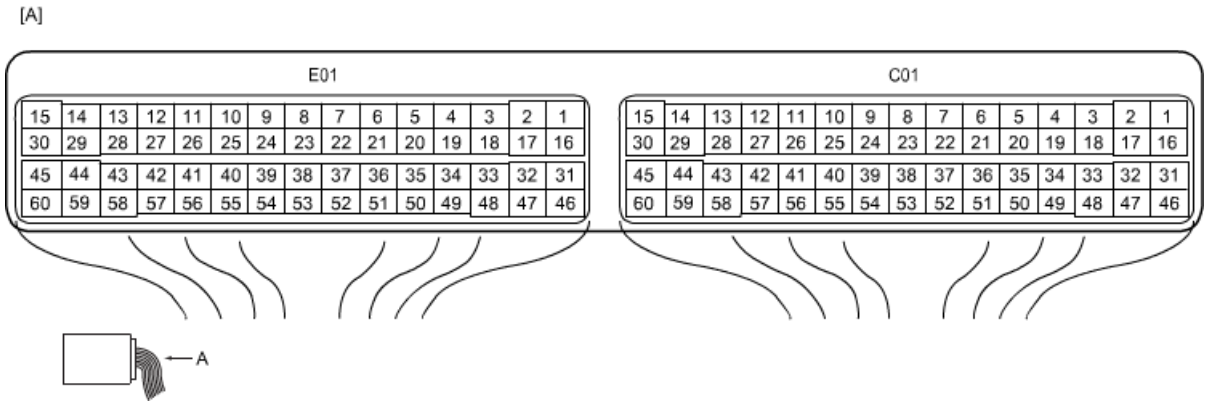
Special Tool

(A): 09933–06320

3) Check voltage and/or pulse signal using voltmeter (2) and oscilloscope (3).

NOTE:
- **As each terminal voltage is affected by battery voltage, confirm that it is 11 V or more when ignition switch is turned ON.**
- **Voltage with asterisk (*) cannot be measured with voltmeter because it is pulse signal. Use oscilloscope for its check if necessary.**
- **Before performed this inspection, be sure to read the *Precautions of ECM Circuit Inspection:K10B and K12B*.**





[A]: ECM connector (View: A)

Terminal No.	Wire color	Circuit	Normal voltage	Condition	Remarks
C01-1	BLU/YEL	Fuel injector No.1 drive circuit	10 – 14 V	Ignition switch: ON	—
			0 – 1 V ↑↓ 10 – 14 V (:K10B and K12B* and *:K10B and K12B*)	Engine: Idle speed after warming up	Output signal is active low pulse. Pulse frequency varies depending on engine speed.
C01-2	BLU/WHT	Fuel injector No.2 drive circuit	10 – 14 V	Ignition switch: ON	—
			0 – 1 V ↑↓ 10 – 14 V (:K10B and K12B* and *:K10B and K12B*)	Engine: Idle speed after warming up	Output signal is active low pulse. Pulse frequency varies depending on engine speed.
C01-3	GRN/ORN	EGR valve drive circuit 2	10 – 14 V	Ignition switch: ON	—
			*0 – 1 V ↑↓	Engine: Immediately after engine started	Output signal is active low duty pulse. Number of pulse

			10 – 14 V (*:K10B and K12B*)		generated times varies depending on vehicle condition.
C01-4	GRN/RED	EGR valve drive circuit 1	10 – 14 V	Ignition switch: ON	—
			0 – 1 V ↑↓ 10 – 14 V (:K10B and K12B*)	Engine: Immediately after engine started	Output signal is active low duty pulse. Number of pulse generated times varies depending on vehicle condition.
C01-5	GRN/WHT	Ignition coil No.2 drive circuit	0 – 1 V	Ignition switch: ON	—
			0 – 1 V ↑↓ 4 – 6 V (:K10B and K12B* and *:K10B and K12B*)	Engine: Idle speed after warming up	Output signal is active high pulse. Pulse frequency varies depending on engine speed.
C01-6	GRN/YEL	Ignition coil No.1 drive circuit	0 – 1 V	Ignition switch: ON	—
			0 – 1 V ↑↓ 4 – 6 V (:K10B and K12B* and *:K10B and K12B*)	Engine: Idle speed after warming up	Output signal is active high pulse. Pulse frequency varies depending on engine speed.
C01-7	—	—	—	—	—
C01-8	—	—	—	—	—
C01-9	—	—	—	—	—
C01-10	—	—	—	—	—
C01-11	—	—	—	—	—
C01-12	GRN/BLK	MAF sensor signal circuit	1.0 – 1.3 V	Ignition switch: ON	—
			1.3 – 2.0 V	Engine: Idle speed after warming up	—
C01-13	WHT	CAN (low) communication circuit to TCM	*1.5 – 2.5 V (*:K10B and K12B*)	Engine: Stop Ignition switch: ON	CAN communication line signal is pulse. Pulse signal displayed with a regular frequency which varies depending on engine condition.
C01-14	RED	CAN (high) communication circuit to TCM	*2.5 – 3.5 V (*:K10B and K12B*)	Engine: Stop Ignition switch: ON	CAN communication line signal is pulse. Pulse signal displayed with a regular frequency which varies depending on engine condition.
C01-15	BLK/ORN	ECM ground circuit 1	Below 0.3 V	Ignition switch: ON	—
C01-16	BLU/RED		10 – 14 V	Ignition switch: ON	—

		Fuel injector No.3 drive circuit	*0 – 1 V ↑↓ 10 – 14 V (***:K10B and K12B*** and ***:K10B and K12B***)	Engine: Idle speed after warming up	Output signal is active low pulse. Pulse frequency varies depending on engine speed.
C01-17	BLU/ORN	Fuel injector No.4 drive circuit (K12B only)	10 – 14 V	Ignition switch: ON	—
			*0 – 1 V ↑↓ 10 – 14 V (***:K10B and K12B*** and ***:K10B and K12B***)	Engine: Idle speed after warming up	Output signal is active low pulse. Pulse frequency varies depending on engine speed.
C01-18	YEL/BLU	EGR valve drive circuit 4	10 – 14 V	Ignition switch: ON	—
			*0 – 1 V ↑↓ 10 – 14 V (***:K10B and K12B***)	Engine: Immediately after engine started	Output signal is active low duty pulse. Number of pulse generated times varies depending on vehicle condition.
C01-19	WHT/RED	EGR valve drive circuit 3	10 – 14 V	Ignition switch: ON	—
			*0 – 1 V ↑↓ 10 – 14 V (***:K10B and K12B***)	Engine: Immediately after engine started	Output signal is active low duty pulse. Number of pulse generated times varies depending on vehicle condition.
C01-20	GRY/BLU	Ignition coil No.4 drive circuit (K12B only)	0 –1 V	Ignition switch: ON	—
			*0 – 1 V ↑↓ 4 – 6 V (***:K10B and K12B*** and ***:K10B and K12B***)	Engine: Idle speed after warming up	Output signal is active high pulse. Pulse frequency varies depending on engine speed.
C01-21	BLU/ORN	Ignition coil No.3 drive circuit	0 – 1 V	Ignition switch: ON	—
			*0 – 1 V ↑↓ 4 – 6 V (***:K10B and K12B*** and ***:K10B and K12B***)	Engine: Idle speed after warming up	Output signal is active high pulse. Pulse frequency varies depending on engine speed.
C01-22	RED/YEL	CMP sensor signal circuit	0 – 1 V or 4 – 6 V	Ignition switch: ON	—
			*0 – 1 V ↑↓ 4 – 6 V (***:K10B and K12B***, ***:K10B and K12B***, ***:K10B and***	Engine: Idle speed after warming up	Sensor signal is pulse. Pulse frequency varies depending on engine speed. (4 pulses are generated per 1 camshaft revolution.)

			K12B, ***:K10B and K12B*** and ***:K10B and K12B***)		
			0 – 1 V or 4 – 6 V	Ignition switch: ON	—
C01-23	PNK	CKP sensor signal circuit	*0 – 1 V ↑↓ 4 – 6 V (***:K10B and K12B***, ***:K10B and K12B***, ***:K10B and K12B***, ***:K10B and K12B*** and ***:K10B and K12B***)	Engine: Idle speed after warming up	Sensor signal is pulse. Pulse frequency varies depending on engine speed. (32 pulses are generated per 1 crankshaft revolution.)
C01-24	LT GRN	ECT sensor signal circuit	Approx. 2.6 V	Ignition switch: ON ECT: 20 °C (10 °F)	—
			Approx. 1.7 V	Ignition switch: ON ECT: 40 °C (104 °F)	—
			Approx. 0.7 V	Ignition switch: ON ECT: 80 °C (176 °F)	—
C01-25	RED/GRN	IAT sensor signal circuit	Approx. 2.6 V	Ignition switch: ON IAT: 20 °C (68 °F)	—
			Approx. 1.7 V	Ignition switch: ON ECT: 40 °C (104 °F)	—
			Approx. 0.7 V	Ignition switch: ON IAT: 80 °C (176 °F)	—
C01-26	WHT/BLU	Knock sensor signal circuit	*–1 – 1 V (***:K10B and K12B***)	Engine: Running at 4,000 rpm after warmed up engine.	—
C01-27	ORN/BLU	Knock sensor ground circuit	Below 0.3 V	Ignition switch: ON	—
C01-28	GRY	MAF and IAT sensor ground circuit	Below 0.3 V	Ignition switch: ON	—
C01-29	YEL/GRN	Starting motor relay signal circuit	0 – 1 V	Ignition switch: ON	—
			6 – 12 V	Ignition switch: Start	—
C01-30	BLK	ECM ground circuit 2	Below 0.3 V	Ignition switch: ON	—
C01-31	BLK	A/F sensor heater ground circuit	Below 0.3 V	Ignition switch: ON	—
C01-32	YEL/RED	A/F sensor heater drive circuit	10 – 14 V	Ignition switch: ON	—
			*0 – 1 V ↑↓ 10 – 14 V (***:K10B and K12B***)	Engine: Idle speed after warming up	Output signal is active low duty pulse. Duty ratio varies depending on engine condition.

C01-33	RED	A/F sensor signal circuit (UN)	Approx. 2.8 V	Engine: Idle speed after warming up	—
C01-34	BLU	A/F sensor signal circuit (VM)	Approx. 2.45 V	Engine: Idle speed after warming up	—
C01-35	YEL	A/F sensor signal circuit (IP)	*1 – 4 V (***:K10B and K12B**)	Engine: Racing after warming up	—
C01-36	BLK	A/F sensor signal circuit (IA)	*1 – 4 V (***:K10B and K12B**)	Engine: Racing after warming up	—
C01-37	—	—	—	—	—
C01-38	RED/BLK	MAP sensor signal circuit	Approx. 4.0 V	Ignition switch: ON	—
C01-39	WHT	TP sensor (sub) signal circuit	4.40 – 4.60 V	Ignition switch: ON Accelerator pedal: Idle position	—
			0.25 – 0.75 V	Ignition switch: ON Accelerator pedal: Full depressed position	—
C01-40	GRN	TP sensor (main) signal circuit	0.40 – 0.60 V	Ignition switch: ON Accelerator pedal: Idle position	—
			4.25 – 4.75 V	Ignition switch: ON Accelerator pedal: Full depressed position	—
C01-41	BRN	HO2S signal circuit	*0 – 1 V (***:K10B and K12B**)	Engine: Racing after warmed up engine.	—
C01-42	GRY/RED	MAP sensor power supply circuit	4 – 6 V	Ignition switch: ON	—
C01-43	RED	TP sensor power supply circuit	4 – 6 V	Ignition switch: ON	—
C01-44	LT GRN/BLK	Throttle motor drive circuit (close)	*0 – 12 V (***:K10B and K12B**)	Ignition switch: ON Accelerator pedal: Idle position or full depressed position	Output signal is duty pulse. Duty ratio varies depending on throttle valve and accelerator pedal position.
C01-45	LT GRN/RED	Throttle motor drive circuit (open)	*0 – 12 V (***:K10B and K12B**)	Ignition switch: ON Accelerator pedal: Idle position or full depressed position	Output signal is duty pulse. Duty ratio varies depending on throttle valve and accelerator pedal position.
C01-46	—	—	—	—	—
C01-47	RED/BLU	HO2S heater drive circuit	10 – 14 V	Ignition switch: ON	—
			*0 – 1 V ↑↓	Engine: Idle speed after warming up	

			10 – 14 V (*K10B and K12B)		Output signal is active low duty pulse. Duty ratio varies depending on engine condition.
C01-48	BLU/BLK	EVAP canister purge valve drive circuit	10 – 14 V *0 – 1 V ↑↓ 10 – 14 V (*K10B and K12B)	Ignition switch: ON EVAP canister purge valve: 10% open (using active test of SUZUKI scan tool)	— Output signal is active low duty pulse. Duty ratio varies depending on vehicle condition.
C01-49	—	—	—	—	—
C01-50	—	—	—	—	—
C01-51	YEL/GRN	A/F sensor shield ground circuit	Below 0.3 V	Ignition switch: ON	—
C01-52	BRN/YEL	HO2S shield ground circuit	Below 0.3 V	Ignition switch: ON	—
C01-53	RED/WHT	Knock sensor shield ground circuit	Below 0.3 V	Ignition switch: ON	—
C01-54	BLU/YEL	TP sensor shield ground circuit	Below 0.3 V	Ignition switch: ON	—
C01-55	BLK	TP sensor ground circuit	Below 0.3 V	Ignition switch: ON	—
C01-56	PPL	MAP sensor ground circuit	Below 0.3 V	Ignition switch: ON	—
C01-57	YEL	HO2S ground circuit	Below 0.3 V	Ignition switch: ON	—
C01-58	ORN	ECT sensor ground circuit	Below 0.3 V	Ignition switch: ON	—
C01-59	BLK	ECM ground circuit 3	Below 0.3 V	Ignition switch: ON	—
C01-60	BLK	Throttle motor ground circuit	Below 0.3 V	Ignition switch: ON	—

Terminal No.	Wire color	Circuit	Normal voltage	Condition	Remarks
E01-1	BLK/RED	Main power supply circuit 1	10 –14 V	Ignition switch: ON	—
E01-2	WHT/RED	Backup power supply circuit	10 – 14 V	—	—
E01-3	RED/BLK	CAN (high) communication circuit	*2.5 – 3.5 V (*K10B and K12B)	Engine: Stop Ignition switch: ON	CAN communication line signal is pulse. Pulse signal displayed with a regular frequency which

		to ABS / ESP® control module			varies depending on engine condition.
E01-4	BRN/WHT	Main relay drive circuit	Below 0.3 V	Ignition switch: ON	—
E01-5	—	—	—	—	—
E01-6	RED/BLU	P/S active (idle up) signal circuit	10 – 14 V	Ignition switch: ON	—
			0 – 1 V	Engine: Idle speed after warming up Steering wheel: Turning it to right or left until it stops	—
E01-7	BLU/WHT	Electric load signal circuit (for blower motor)	10 – 14 V	Ignition switch: ON	—
			Approx. 4 V	Ignition switch: ON Blower speed selector: 1 position	—
			Approx. 0.07 V	Ignition switch: ON Blower speed selector: 2 position	—
			Approx. 0.13 V	Ignition switch: ON Blower speed selector: 3 position	—
			Approx. 0.17 V	Ignition switch: ON Blower speed selector: 4 position	—
E01-8	GRN/WHT	Brake light switch signal circuit	10 – 14 V	Brake pedal: Full depressed position	—
			0 – 1 V	Brake pedal: Idle position	—
E01-9	—	—	—	—	—
E01-10	—	—	—	—	—
E01-11	BRN	Engine speed signal circuit (for P/S control module)	*0 - 1 V ↑↓ 10 - 14 V (***K10B and K12B***)	Engine: Idle speed after warming up	Output signal is pulse. Pulse frequency varies depending on engine speed.
E01-12	—	—	—	—	—
E01-13	YEL/RED	Clock signal circuit (for immobilizer coil antenna)	Refer to ***Inspection of Immobilizer Control Module and Its Circuit:K10B and K12B Model***.		—
E01-14	YEL/BLK	Serial communication circuit (for immobilizer coil antenna)			—

E01-15	PPL/WHT	Fuel pump relay drive circuit	10 – 14 V (:K10B and K12B)	Ignition switch: ON Fuel pump: Not operate	—
			0 – 2 V (:K10B and K12B)	Ignition switch: ON Fuel pump: Operate	—
E01-16	BLK/RED	Main power supply circuit 2	10 – 14 V	Ignition switch: ON	—
E01-17	RED/YEL	Throttle motor power supply circuit	10 – 14 V	Ignition switch: ON	—
			0 – 1 V	Ignition switch: OFF	—
E01-18	WHT/BLK	CAN (low) communication circuit to ABS / ESP® control module	*1.5 – 2.5 V (:K10B and K12B)	Engine: Stop Ignition switch: ON	CAN communication line signal is pulse. Pulse signal displayed with a regular frequency which varies depending on engine condition.
E01-19	—	—	—	—	—
E01-20	—	—	—	—	—
E01-21	—	—	—	—	—
E01-22	—	—	—	—	—
E01-23	—	—	—	—	—
E01-24	GRN	APP sensor (main) signal circuit	3.50 – 4.27 V	Ignition switch: ON Accelerator pedal: Full depressed position	—
			0.65 – 0.82 V	Ignition switch: ON Accelerator pedal: Idle position	—
E01-25	YEL	APP sensor (sub) signal circuit	1.74 – 2.17 V	Ignition switch: ON Accelerator pedal: Full depressed position	—
			0.30 – 0.44 V	Ignition switch: ON Accelerator pedal: Idle position	—
E01-26	BRN	APP sensor (main) power supply circuit	4 – 6 V	Ignition switch: ON	—
E01-27	RED	APP sensor (sub) power supply circuit	4 – 6 V	Ignition switch: ON	—
E01-28	GRY/RED	A/C refrigerant pressure sensor power supply circuit	4 – 6 V	Ignition switch: ON	—
E01-29	—	—	—	—	—
E01-30	GRN/BLK	Starting motor relay ground circuit	10 – 14 V	Ignition switch: ON	—

			0 – 2 V	Ignition switch: Start	—
E01-31	—	—	—	—	—
E01-32	—	—	—	—	—
E01-33	—	—	—	—	—
E01-34	—	—	—	—	—
E01-35	—	—	—	—	—
E01-36	—	—	—	—	—
E01-37	—	—	—	—	—
E01-38	—	—	—	—	—
E01-39	—	—	—	—	—
E01-40	—	—	—	—	—
E01-41	—	—	—	—	—
E01-42	—	—	—	—	—
E01-43	—	—	—	—	—
E01-44	—	—	—	—	—
E01-45	—	—	—	—	—
E01-46	BLU/ORN	Throttle motor control relay drive circuit	0 – 2 V	Ignition switch: ON	—
			*10 – 14 V (***:K10B and K12B***)	Ignition switch: Immediately after turning it to OFF	—
E01-47	GRY	A/C compressor relay drive circuit	10 – 14 V	A/C compressor: Not operate	—
			0 – 1 V	A/C compressor: Operate	—
E01-48	BLK/WHT	Ignition switch signal circuit	10 – 14 V	Ignition switch: ON	—
E01-49	WHT/BLK	A/C evaporator outlet air temperature sensor signal circuit	Approx. 3.2 V	A/C evaporator air temperature: 0 °C (32 °F)	—
			Approx. 2.7 V	A/C evaporator air temperature: 10 °C (50 °F)	—
			Approx. 1.7 V	A/C evaporator air temperature: 25 °C (77 °F)	—
E01-50	RED/GRN	A/C refrigerant pressure sensor signal circuit	Approx. 0.9 V	Engine: Running A/C compressor: Operate A/C refrigerant pressure: 0.6 MPa	—
			Approx. 1.5 V	Engine: Running A/C compressor: Operate	—

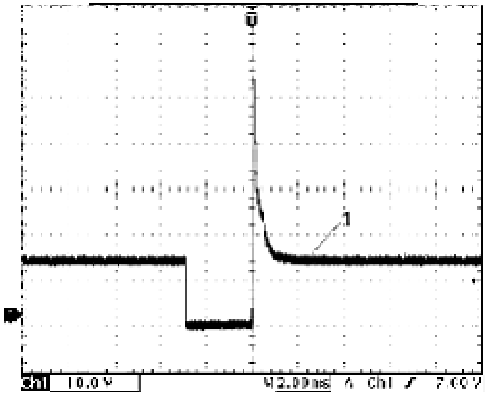
				A/C refrigerant pressure: 1.0 MPa	
			Approx. 2.3 V	Engine: Running A/C compressor: Operate A/C refrigerant pressure: 1.4 MPa	—
E01-51	—	—	—	—	—
E01-52	BLU	APP sensor (main) ground circuit	Below 0.3 V	Ignition switch: ON	—
E01-53	WHT	APP sensor (sub) ground circuit	Below 0.3 V	Ignition switch: ON	—
E01-54	GRN/YEL	A/C refrigerant pressure sensor ground circuit	Below 0.3 V	Ignition switch: ON	—
E01-55	ORN	A/C evaporator outlet air temperature sensor ground circuit	Below 0.3 V	Ignition switch: ON	—
E01-56	—	—	—	—	—
E01-57	BLK	APP sensor shield ground circuit	Below 0.3 V	Ignition switch: ON	—
E01-58	—	—	—	—	—
E01-59	LT GRN	Radiator cooling fan relay No.1 drive circuit	10 – 14 V	Ignition switch: ON ECT < 95 °C A/C switch: OFF	—
			0 – 1 V	Engine: Running ECT ≥ 97 °C A/C switch: OFF	—
E01-60	GRN	Radiator cooling fan relay No.2 and No.3 drive circuit (A/T model only)	10 – 14 V	Ignition switch: ON ECT < 100 °C A/C switch: OFF	—
			0 – 1 V	Engine: Running ECT ≥ 102 °C A/C switch: OFF	—

Reference waveform No.1

Fuel injector signal (1)

Measurement terminal	CH1: “C01-1” (No.1), “C01-2” (No.2), “C01-16” (No.3) or “C01-17” (No.4) to “C01-15”

Oscilloscope setting	CH1: 10 V/DIV TIME: 2 ms/DIV
Measurement condition	• Engine: Idle speed after warming up

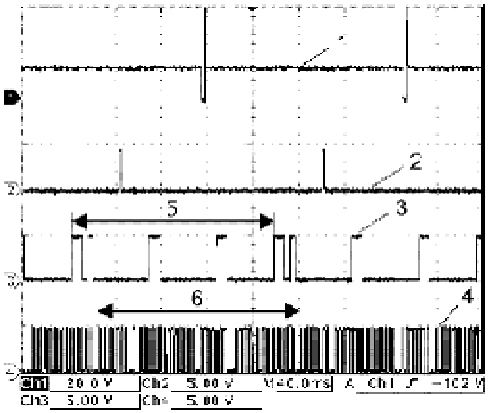


Reference waveform No.2

Fuel injector No.1 signal (1) and ignition coil No.1 signal (2)

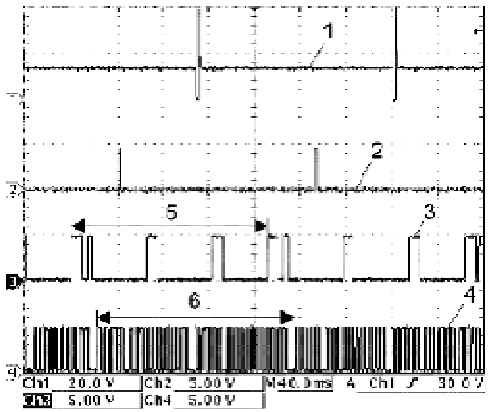
Measurement terminal	CH1: “C01-1” to “C01-15” CH2: “C01-6” to “C01-15” CH3: “C01-22” to “C01-15” CH4: “C01-23” to “C01-15”
Oscilloscope setting	CH1: 20 V/DIV, CH2: 5 V/DIV CH3: 5 V/DIV, CH4: 5 V/DIV TIME: 40 ms/DIV
Measurement condition	• Engine: Idle speed after warming up

K10B



3.	CMP sensor signal
4.	CKP sensor signal
5.	Camshaft 360° angle
6.	Crankshaft 720° angle

K12B



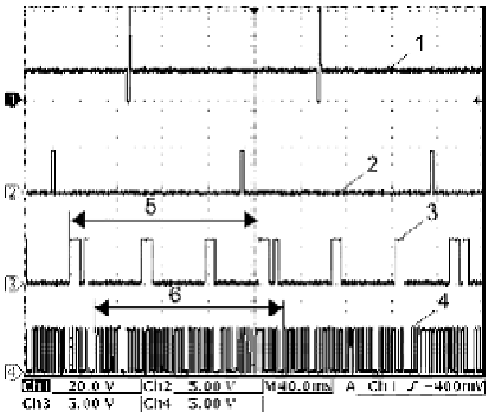
3.	CMP sensor signal
4.	CKP sensor signal
5.	Camshaft 360° angle
6.	Crankshaft 720° angle

Reference waveform No.3

Fuel injector No.2 signal (1) and ignition coil No.2 signal (2)

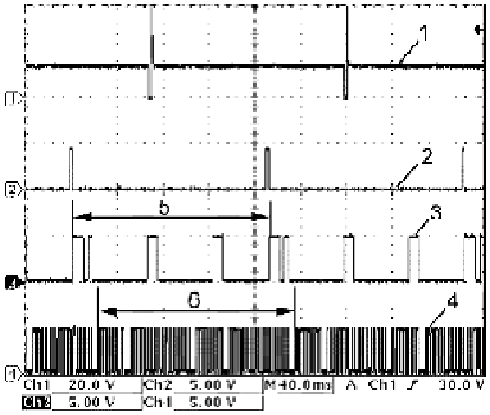
Measurement terminal	CH1: “C01-2” to “C01-15” CH2: “C01-5” to “C01-15” CH3: “C01-22” to “C01-15” CH4: “C01-23” to “C01-15”
Oscilloscope setting	CH1: 20 V/DIV, CH2: 5 V/DIV CH3: 5 V/DIV, CH4: 5 V/DIV TIME: 40 ms/DIV
Measurement condition	• Engine: Idle speed after warming up

K10B



3.	CMP sensor signal
4.	CKP sensor signal
5.	Camshaft 360° angle
6.	Crankshaft 720° angle

K12B



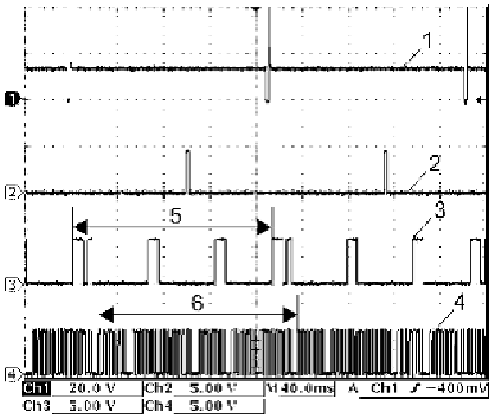
3.	CMP sensor signal
4.	CKP sensor signal
5.	Camshaft 360° angle
6.	Crankshaft 720° angle

Reference waveform No.4

Fuel injector No.3 signal (1) and ignition coil No.3 signal (2)

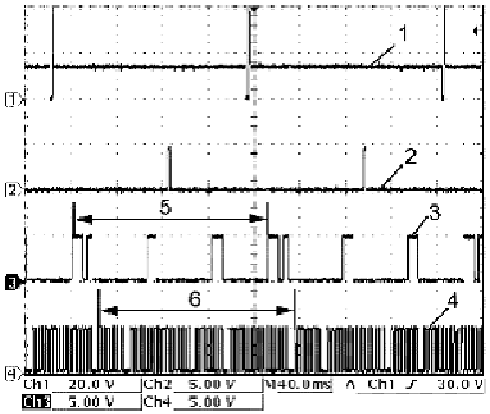
Measurement terminal	CH1: “C01-16” to “C01-15” CH2: “C01-21” to “C01-15” CH3: “C01-22” to “C01-15” CH4: “C01-23” to “C01-15”
Oscilloscope setting	CH1: 20 V/DIV, CH2: 5 V/DIV CH3: 5 V/DIV, CH4: 5 V/DIV TIME: 40 ms/DIV
Measurement condition	• Engine: Idle speed after warming up

K10B



3.	CMP sensor signal
4.	CKP sensor signal
5.	Camshaft 360° angle
6.	Crankshaft 720° angle

K12B

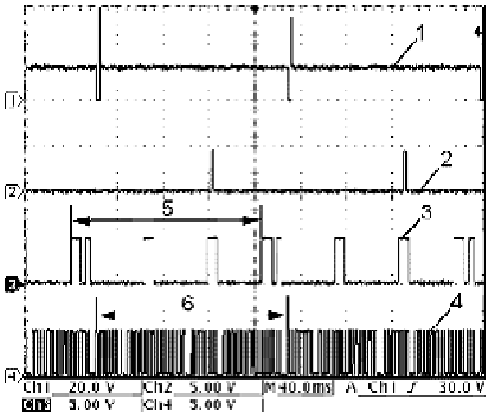


3.	CMP sensor signal
4.	CKP sensor signal
5.	Camshaft 360° angle
6.	Crankshaft 720° angle

Reference waveform No.5

Fuel injector No.4 signal (1) and ignition coil No.4 signal (2)

Measurement terminal	CH1: “C01-17” to “C01-15” CH2: “C01-20” to “C01-15” CH3: “C01-22” to “C01-15” CH4: “C01-23” to “C01-15”
Oscilloscope setting	CH1: 20 V/DIV, CH2: 5 V/DIV CH3: 5 V/DIV, CH4: 5 V/DIV TIME: 40 ms/DIV
Measurement condition	• Engine: Idle speed after warming up

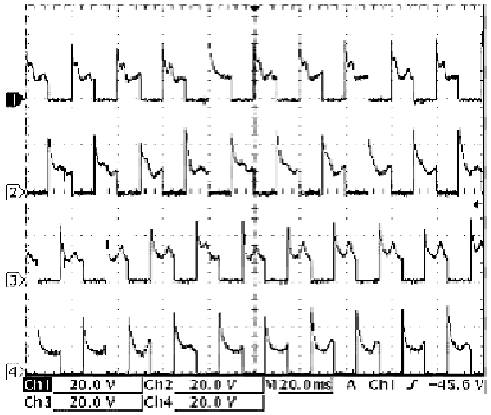


3.	CMP sensor signal
4.	CKP sensor signal
5.	Camshaft 360° angle
6.	Crankshaft 720° angle

Reference waveform No.6

EGR valve signal

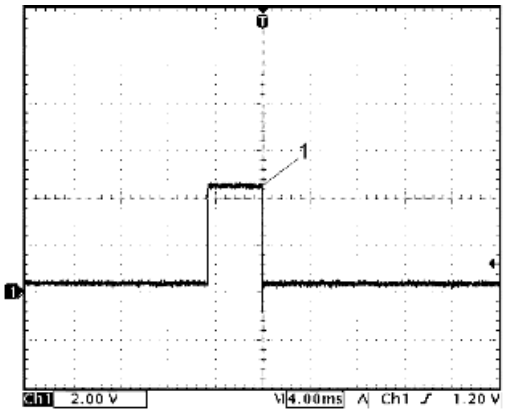
Measurement terminal	CH1: “C01-4” to “C01-15” CH2: “C01-3” to “C01-15” CH3: “C01-19” to “C01-15” CH4: “C01-18” to “C01-15”
Oscilloscope setting	CH1: 20 V/DIV, CH2: 20 V/DIV CH3: 20 V/DIV, CH4: 20 V/DIV TIME: 20 ms/DIV
Measurement condition	• Engine: Immediately after engine started



Reference waveform No.7

Ignition coil signal (1)

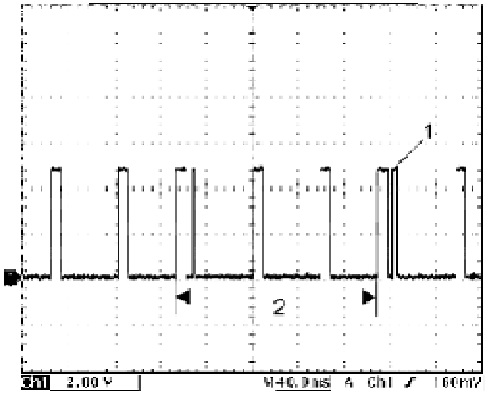
Measurement terminal	CH1: “C01-6” (No.1), “C01-5” (No.2), “C01-21” (No.3) or “C01- 20” (No.4) to “C01-15”
Oscilloscope setting	CH1: 2 V/DIV TIME: 4 ms/DIV
Measurement condition	• Engine: Idle speed after warming up



Reference waveform No.8

CMP sensor signal (1)

Measurement terminal	CH1: “C01-22” to “C01-15”
Oscilloscope setting	CH1: 2 V/DIV TIME: 40 ms/DIV
Measurement condition	• Engine: Idle speed after warming up



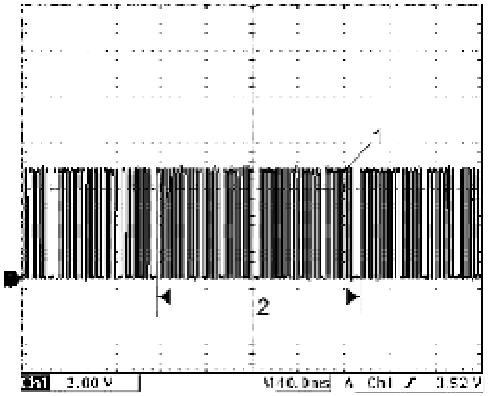
2. Camshaft 360° angle

Reference waveform No.9

CKP sensor signal (1)

Measurement terminal	CH1: “C01-23” to “C01-15”
Oscilloscope setting	

	CH1: 2 V/DIV TIME: 40 ms/DIV
Measurement condition	• Engine: Idle speed after warming up

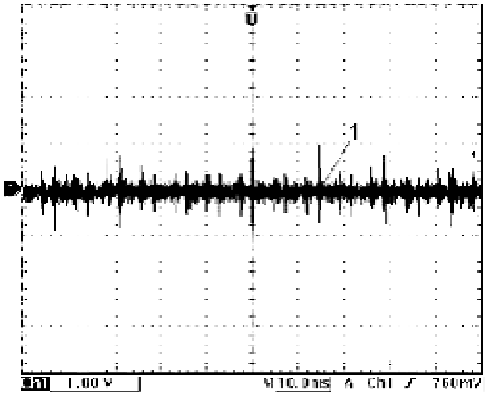


2. Crankshaft 720° angle

Reference waveform No.10

Knock sensor signal (1)

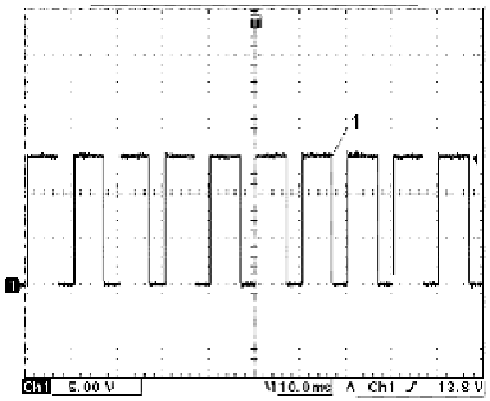
Measurement terminal	CH1: “C01-26” to “C01-27”
Oscilloscope setting	CH1: 1 V/DIV TIME: 10 ms/DIV
Measurement condition	• Engine: Running at 4,000 r/min after warmed up



Reference waveform No.11

A/F sensor heater signal (1)

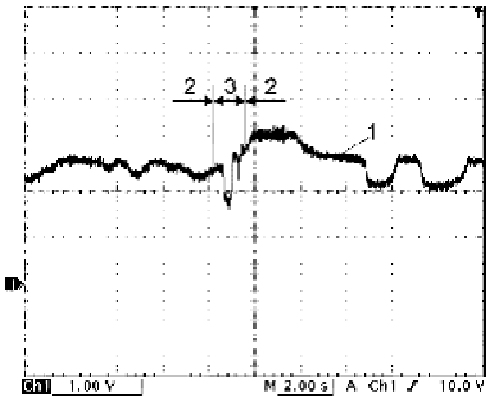
Measurement terminal	CH1: “C01-32” to “C01-31”
Oscilloscope setting	CH1: 5 V/DIV TIME: 10 ms/DIV
Measurement condition	• Engine: Idle speed after warming up



Reference waveform No.12

A/F sensor signal (1)

Measurement terminal	CH1: “C01-35” or “C01-36” to “C01-15”
Oscilloscope setting	CH1: 1 V/DIV TIME: 2 s/DIV
Measurement condition	• Engine: Racing after warming up



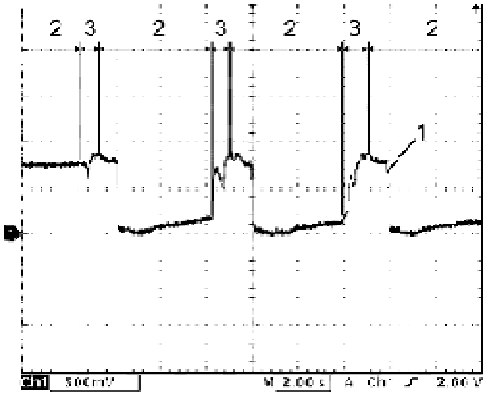
2.	Accelerator pedal: idle position
3.	Accelerator pedal: fully depressed position

Reference waveform No.13

HO2S signal (1)

	CH1: “C01-41” to “C01-57”

Measurement terminal	
Oscilloscope setting	CH1: 500 mV/DIV TIME: 2 s/DIV
Measurement condition	• Engine: Racing after warming up



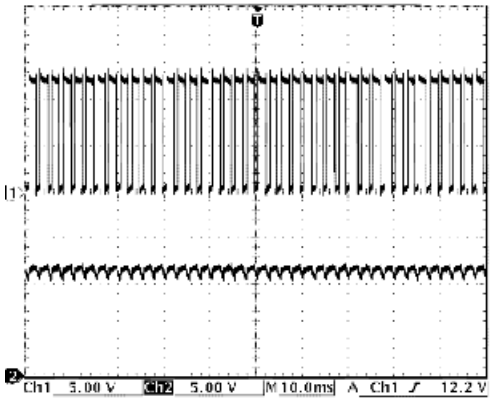
2. Accelerator pedal: idle position
3. Accelerator pedal: fully depressed position

Reference waveform No.14

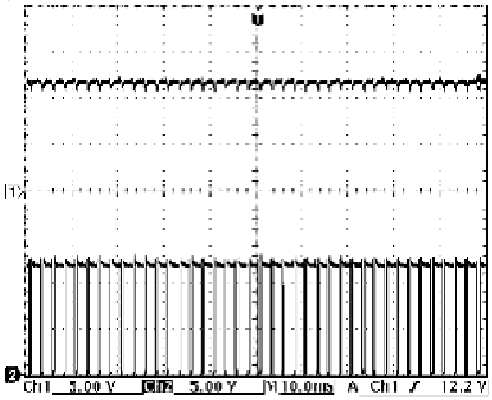
Throttle motor signal

Measurement terminal	CH1: “C01-45” to “C01-15” CH2: “C01-44” to “C01-15”
Oscilloscope setting	CH1: 5 V/DIV CH2: 5 V/DIV TIME: 10 ms/DIV
Measurement condition	• Ignition switch: ON • Accelerator pedal: Idle position or fully depressed position

Accelerator pedal at idle position



Accelerator pedal at fully depressed position

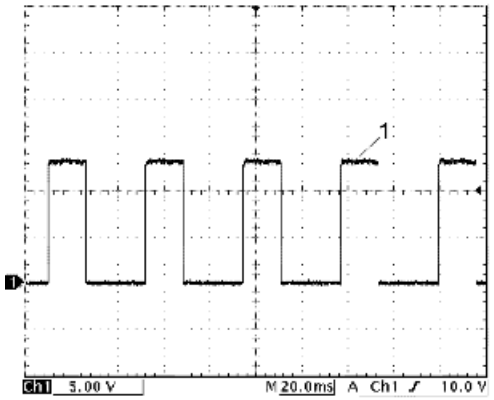


Reference waveform No.15

HO2S heater signal (1)

Measurement terminal	CH1: “C01-47” to “C01-15”

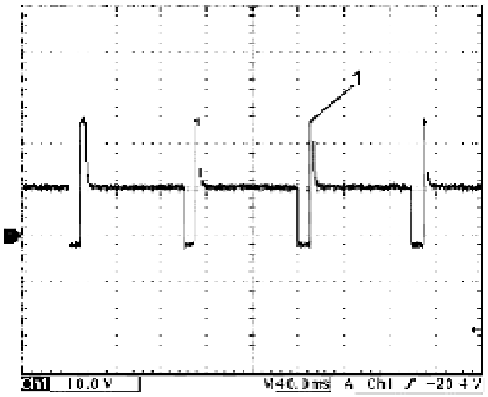
Oscilloscope setting	CH1: 5 V/DIV TIME: 20 ms/DIV
Measurement condition	• Engine: Racing after warming up



Reference waveform No.16

EVAP canister purge valve signal (1)

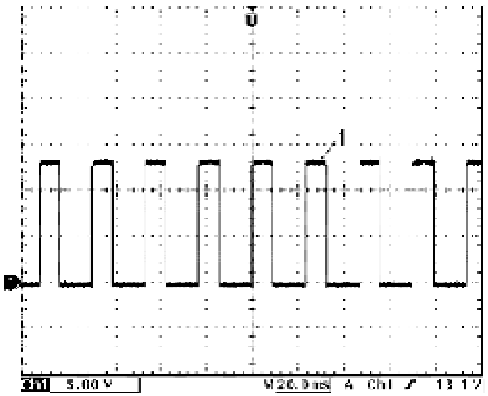
Measurement terminal	CH1: “C01-48” to “C01-15”
Oscilloscope setting	CH1: 10 V/DIV TIME: 40 ms/DIV
Measurement condition	• EVAP canister purge valve: 10% open (using “Active Test” of SUZUKI scan tool)



Reference waveform No.17

Engine revolution signal (1)

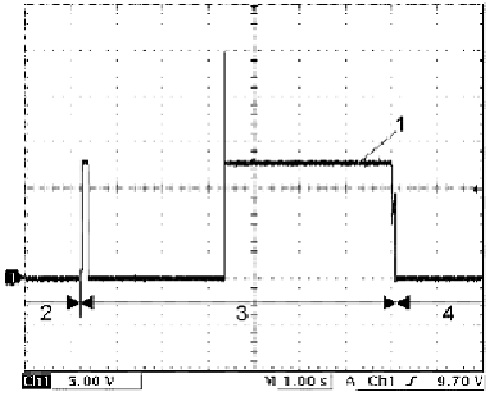
Measurement terminal	CH1: “E01-11” to “C01-15”
Oscilloscope setting	CH1: 5 V/DIV TIME: 20 ms/DIV
Measurement condition	• Engine: Idle speed after warming up



Reference waveform No.18

Fuel pump relay signal (1)

Measurement terminal	CH1: “E01-15” to “C01-15”
Oscilloscope setting	CH1: 5 V/DIV TIME: 1 s/DIV
Measurement condition	• Ignition switch: OFF → ON → Start

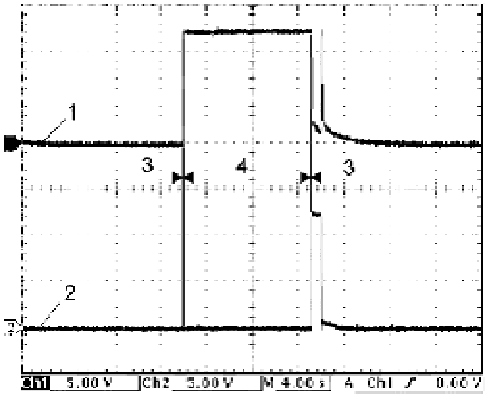


2.	Ignition switch: OFF
3.	Ignition switch: ON
4.	Ignition switch: Start → ON

Reference waveform No.19

Throttle motor control relay signal

Measurement terminal	CH1: “E01-17” to “C01-15” CH2: “E01-46” to “C01-15”
Oscilloscope setting	CH1: 5 V/DIV CH2: 5 V/DIV TIME: 4 s/DIV
Measurement condition	• Ignition switch: OFF → ON → OFF



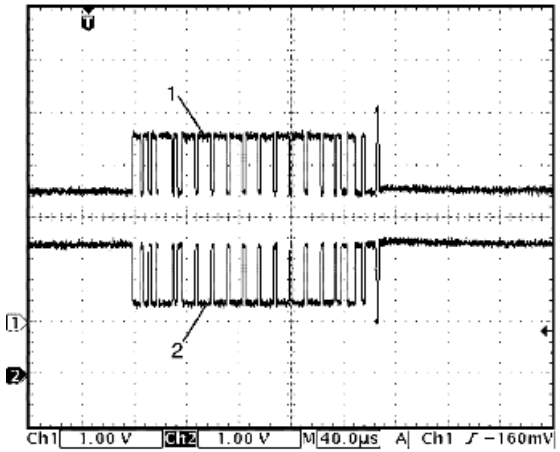
1.	Throttle motor control relay signal (switch side)
2.	Throttle motor control relay signal (coil side)
3.	Ignition switch: OFF
4.	Ignition switch: ON

Reference waveform No.20

CAN communication line signal from ABS / ESP® control module

Measurement terminal	CH1: “E01-3” to “C01-15” CH2: “E01-18” to “C01-15”
Oscilloscope setting	CH1: 1 V/DIV, CH2: 1 V/DIV TIME: 40 µs/DIV

Measurement condition	• Engine: Stop • Ignition switch: ON

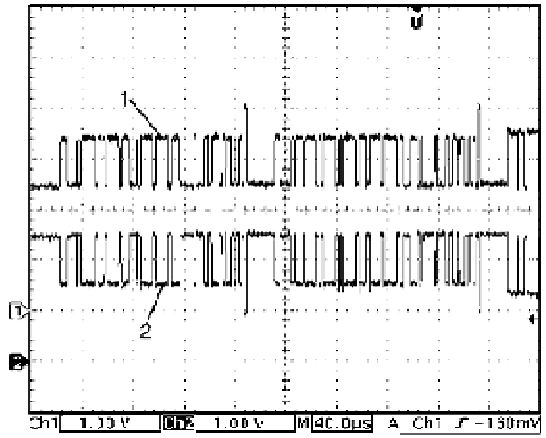


1.	CAN communication line signal (High)
2.	CAN communication line signal (Low)

Reference waveform No.21

CAN communication line signal from TCM

Measurement terminal	CH1: “C01-14” to “C01-15” CH2: “C01-13” to “C01-15”
Oscilloscope setting	CH1: 1 V/DIV, CH2: 1 V/DIV TIME: 40 µs/DIV
Measurement condition	• Engine: Stop • Ignition switch: ON



1.	CAN communication line signal (High)
2.	CAN communication line signal (Low)