# TERMINAL VOLTAGE TABLES

## PCM INSPECTION [LF, L3]

### Without Using the M-MDS

### California emission regulation applicable model

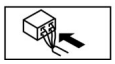
**NOTE:**

- The PCM terminal voltage can vary with the conditions when measuring and changes due to aged deterioration on the vehicle, causing false diagnosis. Therefore determine comprehensively where the malfunction occurs among the input systems, output systems, and the PCM.

PCM
WIRING HARNESS-SIDE CONNECTOR

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2BE | 2BA | 2AW | 2AS | 2AO | 2AK | 2AG | 2AC | 2Y | 2U | 2Q | 2M | 2I | 2E | 2A |
| 2BF | 2BB | 2AX | 2AT | 2AP | 2AL | 2AH | 2AD | 2Z | 2V | 2R | 2N | 2J | 2F | 2B |
| 2BG | 2BC | 2AY | 2AU | 2AQ | 2AM | 2AI | 2AE | 2AA | 2W | 2S | 2O | 2K | 2G | 2C |
| 2BH | 2BD | 2AZ | 2AV | 2AR | 2AN | 2AJ | 2AF | 2AB | 2X | 2T | 2P | 2L | 2H | 2D |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1BE | 1BA | 1AW | 1AS | 1AO | 1AK | 1AG | 1AC | 1Y | 1U | 1Q | 1M | 1I | 1E | 1A |
| 1BF | 1BB | 1AX | 1AT | 1AP | 1AL | 1AH | 1AD | 1Z | 1V | 1R | 1N | 1J | 1F | 1B |
| 1BG | 1BC | 1AY | 1AU | 1AQ | 1AM | 1AI | 1AE | 1AA | 1W | 1S | 1O | 1K | 1G | 1C |
| 1BH | 1BD | 1AZ | 1AV | 1AR | 1AN | 1AJ | 1AF | 1AB | 1X | 1T | 1P | 1L | 1H | 1D |



Terminal Voltage Tables (Part 1)

| Terminal | Signal | Connected to | Test condition | | Voltage (V) | Inspection item |
|---|---|---|---|---|---|---|
| 1A | Shift solenoid A*1 | Shift solenoid A | ● (See Inspection Using An Oscilloscope (Reference).) | | | ● Shift solenoid A<br>● Related wiring harness |
| | —*2 | — | — | | — | — |
| 1B | Starter relay control | Starter relay | Under any condition | | Below 1.0 | ● Starter relay<br>● Related wiring harness |
| 1C | — | — | — | | — | — |
| 1D | —*1 | — | — | | — | — |
| | Clutch operation*2 | CPP switch | Clutch pedal depressed | | Below 1.0 | ● CPP switch<br>● Related wiring harness |
| | | | Clutch pedal released | | B+ | |
| 1E | Shift solenoid B*1 | Shift solenoid B | ● (See Inspection Using An Oscilloscope (Reference).) | | | ● Shift solenoid B<br>● Related wiring harness |
| | —*2 | — | — | | — | — |
| 1F | Shift solenoid C*1 | Shift solenoid C | ● (See Inspection Using An Oscilloscope (Reference).) | | | ● Shift solenoid C<br>● Related wiring harness |
| | —*2 | — | — | | — | — |
| 1G | — | — | — | | — | — |
| 1H | Fuel pump control | Fuel pump relay | Ignition switch to the ON position | | B+ | ● Fuel pump relay<br>● Related wiring harness |
| | | | Cranking | | Below 1.0 | |
| | | | Idle | | Below 1.0 | |
| 1I | A/C | A/C relay | Idle | A/C operating | Below 1.0 | ● A/C relay<br>● Related wiring harness |
| | | | | A/C not operating | B+ | |
| 1J | Refrigerant pressure switch (medium) | Refrigerant pressure switch (medium) | A/C ON | Refrigerant pressure is above 1.52 MPa {15.5 kgf/cm$^2$, 220 psi} | Below 1.0 | ● Refrigerant pressure switch<br>● Related wiring harness |
| | | | | Refrigerant pressure is below 1.23 MPa {12.5 kgf/cm$^2$, 178 psi} | B+ | |
| 1K | — | — | — | | — | — |
| 1L | — | — | — | | — | — |
| 1M | Pressure control solenoid (+)*1 | Pressure control solenoid | ● (See Inspection Using An Oscilloscope (Reference).) | | | ● Pressure control solenoid<br>● Related wiring harness |
| | —*2 | — | — | | — | — |

## Terminal Voltage Tables (Part 2)

| | | | | | | |
|---|---|---|---|---|---|---|
| 1N | Pressure control solenoid (–)*1 | Pressure control solenoid | ● (See Inspection Using An Oscilloscope (Reference).) | | | ● Pressure control solenoid<br>● Related wiring harness |
| | —*2 | — | — | | — | — |
| 1O | — | — | — | | — | — |
| 1P | — | — | — | | — | — |
| 1Q | Main relay control | Main relay | Ignition switch off after 15 min | | B+ | ● Main relay<br>● Related wiring harness |
| | | | Ignition switch to the ON position | | Below 1.0 | |
| 1R | — | — | — | | — | — |
| 1S | GND (shield)*1 | Input/turbine speed sensor harness, GND | Under any condition | | Below 1.0 | ● Related wiring harness |
| | —*2 | — | — | | — | — |
| 1T | — | — | — | | — | — |
| 1U | EVAP leak detection pump (pump) | EVAP leak detection pump | Ignition switch to the ON position | | B+ | ● EVAP leak detection pump<br>● Related wiring harnesses |
| | | | Idling | | B+ | |
| 1V | EVAP leak detection pump (solenoid) | EVAP leak detection pump | Ignition switch to the ON position | | B+ | ● EVAP leak detection pump<br>● Related wiring harnesses |
| | | | Idling | | B+ | |
| 1W | — | — | — | | — | — |
| 1X | —*1 | — | — | | — | — |
| | Neutral position*2 | Neutral switch | Ignition switch is turned to the ON position | Shift lever is at neutral position | Below 1.0 | ● Neutral switch<br>● Related wiring harness |
| | | | | Shift lever is not at neutral position | B+ | |
| 1Y | Cooling fan control | Fan control module | ● Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | ● Fan control module<br>● Related wiring harness |
| 1Z | Shift solenoid E*1 | Shift solenoid E | ● (See Inspection Using An Oscilloscope (Reference).) | | | ● Shift solenoid E<br>● Related wiring harness |
| | —*2 | — | — | | — | — |
| 1AA | — | — | — | | — | — |
| 1AB | Brake | Brake switch | Brake pedal depressed | | B+ | ● Brake switch<br>● Related wiring harness |
| | | | Brake pedal released | | Below 1.0 | |
| 1AC | APP sensor 2 | APP sensor | ● Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | ● APP sensor<br>● Related wiring harness |

## Terminal Voltage Tables (Part 3)

| | | | | | | |
|---|---|---|---|---|---|---|
| 1AD | Shift solenoid D*1 | Shift solenoid D | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | • Shift solenoid D<br>• Related wiring harness |
| | —*2 | — | — | | — | — |
| 1AE | — | — | — | | — | — |
| 1AF | Manual down*1 | 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<br>• Related wiring harness |
| | | | | Others | B+ | |
| | —*2 | — | — | | — | — |
| 1AG | Input/turbine speed sensor (–)*1 | Input/turbine speed sensor | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | • Input/turbine speed sensor<br>• Related wiring harness |
| | —*2 | — | — | | — | — |
| 1AH | Selector lever position*1 | TR switch | Ignition switch is turned to the ON position | P position | Approx. 4.6 | • TR switch<br>• Related wiring harness |
| | | | | R position | Approx. 3.9 | |
| | | | | N position | Approx. 3.2 | |
| | | | | D range | Approx. 2.5 | |
| | | | | M range | Approx. 2.5 | |
| | —*2 | — | — | | — | — |
| 1AI | CAN (L) | Instrument cluster, ABS HU/CM,<br>EHPAS control module | Because this terminal is for CAN, good/no good judgment by terminal voltage is not possible. | | | • Related wiring harness |
| 1AJ | Manual up*1 | 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<br>• Related wiring harness |
| | | | | Others | B+ | |
| | —*2 | — | — | | — | — |
| 1AK | MAF | MAF sensor | Ignition switch to the ON position | | Approx. 0.7 | • MAF sensor<br>• Related wiring harness |
| | | | Idle (after warm up) | | Approx. 1.5 | |
| 1AL | Constant voltage (Vref) | APP sensor | Ignition switch to the ON position | | Approx. 5.0 | • Related wiring harness |
| 1AM | CAN (H) | Instrument cluster, ABS HU/CM,<br>EHPAS control module | Because this terminal is for CAN, good/no good judgment by terminal voltage is not possible. | | | • Related wiring harness |
| 1AN | M range switch*1 | M range switch | Ignition switch is turned to the ON position. | M range | 1.0 or less | • Selector lever<br>• Related wiring harness |
| | | | | Except above | B+ | |
| | —*2 | — | — | | — | — |

## Terminal Voltage Tables (Part 4)

| | | | | | | |
|---|---|---|---|---|---|---|
| 1AO | Input/turbine speed sensor (+)*1 | Input/turbine speed sensor | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | • Input/turbine speed sensor<br>• Related wiring harness |
| | —*2 | — | — | | — | — |
| 1AP | APP sensor 1 | APP sensor | Ignition switch to the ON position | When the accelerator pedal is depressed | Approx. 3.0 | • APP sensor<br>• Related wiring harness |
| | | | | When the accelerator pedal is released | Approx. 0.4 | |
| 1AQ | Cruise control switch | Cruise control switch | Ignition switch to the ON position | ON/OFF switch pressed in | Approx. 0 | • Cruise control switch<br>• Related wiring harnesses |
| | | | | CANCEL switch pressed in | Approx. 1.1 | |
| | | | | SET/COAST switch pressed in | Approx. 3.1 | |
| | | | | RES/ACCEL switch pressed in | Approx. 4.2 | |
| | | | | Except above | Approx. 5 | |
| 1AR | Sensor GND | MAF sensor | Under any condition | | Below 1.0 | • Related wiring harness |
| 1AS | Sensor GND | TFT sensor*1, TR switch*1, IAT sensor, APP sensor | Under any condition | | Below 1.0 | • Related wiring harness |
| 1AT | IAT | MAF/IAT sensor | Ignition switch to the ON position | IAT 0 °C {32 °F} | Approx. 3.43 | • IAT sensor<br>• Related wiring harness |
| | | | | IAT 20 °C {68 °F} | Approx. 2.38 | |
| | | | | IAT 40 °C {104 °F} | Approx. 1.49 | |
| | | | | IAT 60 °C {140 °F} | Approx. 0.89 | |
| | | | | IAT 80 °C {176 °F} | Approx. 0.53 | |
| | | | | IAT 100 °C {212 °F} | Approx. 0.33 | |
| 1AU | A/C on signal | Refrigerant pressure switch (high and low) | Idle | A/C switch and fan switch on | Below 1.0 | • Refrigerant pressure switch<br>• Related wiring harness |
| 1AV | — | — | — | | — | — |
| 1AW | Vehicle speed*1 | VSS | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | • VSS<br>• Related wiring harness |
| | —*2 | — | — | | — | — |

## Terminal Voltage Tables (Part 5)

| | | | | | |
|---|---|---|---|---|---|
| 1AX | Drive-by-wire relay control | Drive-by-wire relay | Ignition switch off | B+→ Below 1.0 | • Drive-by-wire relay<br>• Related wiring harness |
| | | | Ignition switch to the ON position | Below 1.0 | |
| 1AY | Ignition switch | Ignition switch | Ignition switch off | Below 1.0 | • Related wiring harness |
| | | | Ignition switch to the ON position | B+ | |
| 1AZ | GND | GND | Under any condition | Below 1.0 | • Related wiring harness |
| 1BA | Back-up power supply | Battery (positive terminal) | Under any condition | B+ | • Battery<br>• Related wiring harness |
| 1BB | GND | GND | Under any condition | Below 1.0 | • Related wiring harness |
| 1BC | — | — | — | — | — |
| 1BD | GND | GND | Under any condition | Below 1.0 | • Related wiring harness |
| 1BE | B+ | Main relay | Ignition switch off after 15 min | Below 1.0 | • Battery<br>• Related wiring harness |
| | | | Ignition switch to the ON position | B+ | |
| 1BF | B+ | Drive-by-wire relay | Ignition switch off | Below 1.0 | • Battery<br>• Related wiring harness |
| | | | Ignition switch to the ON position | B+ | |
| 1BG | B+*1 | Main relay | Ignition switch off after 15 min | Below 1.0 | • Battery<br>• Related wiring harness |
| | | | Ignition switch to the ON position | B+ | |
| | —*2 | — | — | — | — |
| 1BH | GND | GND | Under any condition | Below 1.0 | • Related wiring harness |
| 2A | Throttle actuator control (+) | Throttle actuator | Ignition switch to the ON position | B+ | • Throttle actuator<br>• Related wiring harness |
| 2B | Throttle actuator control (–) | Throttle actuator | Idle (after warm up) | Approx. 3.5—5.5 | • Throttle actuator<br>• Related wiring harness |
| 2C | Purge control | Purge solenoid valve | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Purge solenoid valve<br>• Related wiring harness |
| 2D | — | — | — | — | — |
| 2E | OCV control | OCV | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • OCV valve<br>• Related wiring harness |
| 2F | — | — | — | — | — |

## Terminal Voltage Tables (Part 6)

| | | | | | |
|---|---|---|---|---|---|
| 2G | EGR valve #2 coil control | EGR valve (terminal A) | Ignition switch to the ON position | B+ | • EGR valve<br>• Related wiring harness |
| | | | Idle | B+ | |
| 2H | EGR valve #4 coil control | EGR valve (terminal F) | Ignition switch to the ON position | B+ | • EGR valve<br>• Related wiring harness |
| | | | Idle | B+ | |
| 2I | Variable tumble control | Variable tumble solenoid valve | ECT above 62 °C {143 °F} while idling. | B+ | • Variable tumble solenoid valve<br>• Related wiring harness |
| | | | ECT below 63 °C {145 °F} and engine speed below 3,750 rpm | Below 1.0 | |
| 2J | Variable intake air control | Variable intake air solenoid valve | Ignition switch to the ON position | Below 1.0 | • Variable intake air solenoid valve<br>• Related wiring harness |
| | | | Engine speed: below 4,750 rpm [LF]/4,600 rpm [L3] | Below 1.0 | |
| | | | Engine speed: above 4,750 rpm [LF]/4,600 rpm [L3] | B+ | |
| 2K | EGR valve #1 coil control | EGR valve (terminal E) | Ignition switch to the ON position | Below 1.0 | • EGR valve<br>• Related wiring harness |
| | | | Idle | Below 1.0 | |
| 2L | EGR valve #3 coil control | EGR valve (terminal B) | Ignition switch to the ON position | B+ | • EGR valve<br>• Related wiring harness |
| | | | Idle | B+ | |
| 2M | —*1 | — | — | — | — |
| | VSS(+)*2 | VSS | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • VSS<br>• Related wiring harness |
| 2N | —*1 | — | — | — | — |
| | VSS(-)*2 | VSS | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • VSS<br>• Related wiring harness |
| 2O | — | — | — | — | — |
| 2P | — | — | — | — | — |
| 2Q | Rear HO2S | Rear HO2S | Ignition switch to the ON position | Approx. 0 | • Rear HO2S<br>• Related wiring harness |
| | | | Idle (after warm up) | Alternates between 0 and 1.0 | |
| 2R | Fornt HO2S | Fornt HO2S | Ignition switch to the ON position | Approx. 0 | • Fornt HO2S<br>• Related wiring harness |
| | | | Idle (after warm up) | Alternates between 0 and 1.0 | |
| 2S | CMP | CMP sensor | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • CMP sensor<br>• Related wiring harness |
| 2T | — | — | — | — | — |

## Terminal Voltage Tables (Part 7)

| | | | | | | |
|---|---|---|---|---|---|---|
| 2U | Knocking (+) | KS | Ignition switch to the ON position (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter) | | Approx. 4.3 | ● KS<br>● Related wiring harness |
| 2V | Knocking (–) | KS | Ignition switch to the ON position (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter) | | Below 1.0 | ● KS<br>● Related wiring harness |
| 2W | CKP | CKP sensor | ● Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | ● CKP sensor<br>● Related wiring harness |
| 2X | GND (shield) | KS harness, A/F sensor, HO2S (front, rear) harness, GND | Under any condition | | Below 1.0 | ● Related wiring harness |
| 2Y | — | — | — | | — | — |
| 2Z | Sensor GND | A/F sensor | Under any condition | | Below 1.0 | ● Related wiring harness |
| 2AA | — | — | — | | — | — |
| 2AB | — | — | — | | — | — |
| 2AC | ATF temperature*1 | TFT sensor | Ignition switch is turned to the ON position. | TFT is 20 °C {68 °F} | Approx. 3.3 | ● TFT sensor<br>● Related wiring harness |
| | | | | TFT is 40 °C {104 °F} | Approx. 2.4 | |
| | | | | TFT is 60 °C {140 °F} | Approx. 1.5 | |
| | —*2 | — | — | | — | — |
| 2AD | A/F sensor | A/F sensor | Idle (after warm up): Approx. 0 mA | | — | ● A/F sensor<br>● Related wiring harness |
| 2AE | Variable tumble shutter valve monitor | Variable tumble shutter valve switch | ECT above 63 °C {145 °F} while idling. | | Approx. 5.0 | ● Variable tumble shutter valve switch<br>● Related wiring harness |
| | | | ECT below 63 °C {145 °F} and engine speed below 3,750 rpm | | Below 1.0 | |
| 2AF | — | — | — | | — | — |
| 2AG | Manifold absolute pressure | MAP sensor | Ignition switch to the ON position (at sea level) | | Approx. 4.1 | ● MAP sensor<br>● Related wiring harness |
| | | | Idle | | Approx. 1.4 | |

## Terminal Voltage Tables (Part 8)

| | | | | | | |
|---|---|---|---|---|---|---|
| 2AH | ECT | ECT sensor | Ignition switch to the ON position | IAT 20 °C {68 °F} | 3.04—3.14 | • ECT sensor<br>• Related wiring harness |
| | | | | IAT 40 °C {104 °F} | 2.09—2.21 | |
| | | | | IAT 60 °C {140 °F} | 1.29—1.39 | |
| | | | | IAT 80 °C {176 °F} | 0.76—0.83 | |
| | | | | IAT 100 °C {212 °F} | 0.45—0.49 | |
| 2AI | Generator field coil control | Generator (terminal D) | • Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference).) | | | • Following PIDs: IAT, ECT, RPM, VPWR, ALTT V<br>• Generator<br>• Related wiring harness |
| 2AJ | Generator output voltage | Generator (terminal P) | • Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference).) | | | • Generator<br>• Related wiring harness |
| 2AK | TP (No. 1) | TP sensor No. 1 | Ignition switch to the ON position | APP closed | 0.53—1.00 | • TP sensor<br>• Related wiring harness |
| | | | | APP open | 4.25—4.75 | |
| 2AL | TP (No. 2) | TP sensor No. 2 | Ignition switch to the ON position | APP closed | 4.00—4.47 | • TP sensor<br>• Related wiring harness |
| | | | | APP open | 0.25—0.75 | |
| 2AM | Constant voltage (Vref) | CMP sensor | Ignition switch to the ON position | | B+ | • CMP sensor<br>• Related wiring harness |
| 2AN | — | — | — | | — | — |
| 2AO | Constant voltage (Vref) | TP sensor | Ignition switch to the ON position | | Approx. 5.0 | • TP sensor<br>• Related wiring harness |
| 2AP | Sensor GND | TP sensor | Under any condition | | Below 1.0 | • TP sensor<br>• Related wiring harness |
| 2AQ | Constant voltage (Vref) | CKP sensor | Ignition switch to the ON position | | B+ | • CKP sensor<br>• Related wiring harness |
| 2AR | — | — | — | | — | — |
| 2AS | — | — | — | | — | — |

## Terminal Voltage Tables (Part 9)

| | | | | | |
|---|---|---|---|---|---|
| 2AT | IGT4 | Ignition coil (No.4 cylinders) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Ignition coil<br>• Related wiring harness |
| 2AU | Constant voltage (Vref) | MAP sensor, variable tumble shutter valve switch | Ignition switch to the ON position | Approx. 5.0 | • MAP sensor<br>• Variable tumble shutter valve switch<br>• Related wiring harness |
| 2AV | — | — | — | — | — |
| 2AW | IGT2 | Ignition coil (No.2 cylinders) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Ignition coil<br>• Related wiring harness |
| 2AX | IGT3 | Ignition coil (No.3 cylinders) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Ignition coil<br>• Related wiring harness |
| 2AY | Sensor GND | Variable tumble shutter valve switch, ECT sensor, MAP sensor, HO2S (front, rear) | Under any condition | Below 1.0 | • Variable tumble shutter valve switch<br>• ECT sensor<br>• MAP sensor<br>• HO2S (front, rear)<br>• Related wiring harness |
| 2AZ | Fuel injection (#4) | Fuel injector No.4 | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Fuel injector No.4<br>• Related wiring harness |
| 2BA | IGT1 | Ignition coil (No.1 cylinders) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Ignition coil<br>• Related wiring harness |
| 2BB | Fuel injection (#1) | Fuel injector No.1 | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Fuel injector No.1<br>• Related wiring harness |
| 2BC | Fuel injection (#2) | Fuel injector No.2 | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Fuel injector No.2<br>• Related wiring harness |
| 2BD | Fuel injection (#3) | Fuel injector No.3 | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Fuel injector No.3<br>• Related wiring harness |

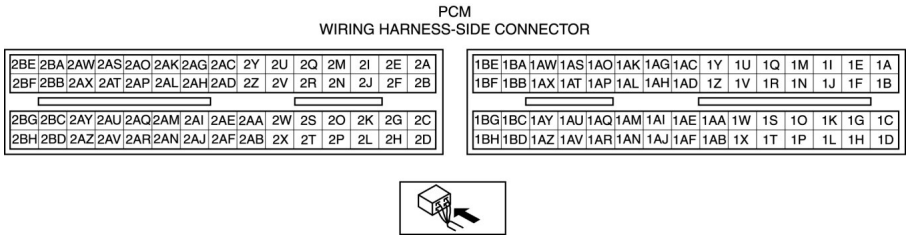
## Terminal Voltage Tables (Part 10)

| | | | | | |
|---|---|---|---|---|---|
| 2BE | Rear HO2S heater control | Rear HO2S heater | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Rear HO2S heater<br>• Related wiring harness |
| 2BF | Front HO2S heater control | Front HO2S heater | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Front HO2S heater<br>• Related wiring harness |
| 2BG | A/F sensor heater control | A/F sensor heater | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • A/F sensor heater<br>• Related wiring harness |
| 2BH | GND | GND | Under any condition | Below 1.0 | • Related wiring harness |

*1
ATX
*2
MTX

**Except for California emission regulation applicable model with LF ATX**

**NOTE:**
- The PCM terminal voltage can vary with the conditions when measuring and changes due to aged deterioration on the vehicle, causing false diagnosis. Therefore determine comprehensively where the malfunction occurs among the input systems, output systems, and the PCM.



| Terminal | Signal | Connected to | Test condition | | Voltage (V) | Inspection item |
|---|---|---|---|---|---|---|
| 1A | B+ | Main relay | Ignition switch off after 5 min | | Below 1.0 | • Battery<br>• Related wiring harness |
| | | | Ignition switch to the ON position | | B+ | |
| 1B | Shift solenoid A | Shift solenoid A | • (See Inspection Using An Oscilloscope (Reference).) | | | • Shift solenoid A<br>• Related wiring harness |
| 1C | Shift solenoid B | Shift solenoid B | • (See Inspection Using An Oscilloscope (Reference).) | | | • Shift solenoid B<br>• Related wiring harness |
| 1D | Shift solenoid C | Shift solenoid C | • (See Inspection Using An Oscilloscope (Reference).) | | | • Shift solenoid C<br>• Related wiring harness |
| 1E | Shift solenoid D | Shift solenoid D | During TCC operation | | B+ | • Shift solenoid D<br>• Related wiring harness |
| | | | Except above | | 1.0 or less | |
| 1F | Shift solenoid E | Shift solenoid E | During TCC operation | | B+ | • Shift solenoid E<br>• Related wiring harness |
| | | | Except above | | 1.0 or less | |
| 1G | Pressure control solenoid (+) | Pressure control solenoid | • (See Inspection Using An Oscilloscope (Reference).) | | | • Pressure control solenoid<br>• Related wiring harness |
| 1H | Pressure control solenoid (–) | Pressure control solenoid | • (See Inspection Using An Oscilloscope (Reference).) | | | • Pressure control solenoid<br>• Related wiring harness |
| 1I | — | — | — | | — | — |
| 1J | Vehicle speed | VSS | • (See Inspection Using An Oscilloscope (Reference).) | | | • VSS<br>• Related wiring harness |
| 1K | Manual 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<br>• Related wiring harness |
| | | | | Others | B+ | |
| 1L | — | — | — | | — | — |
| 1M | Input/turbine speed sensor (+) | Input/turbine speed sensor | • (See Inspection Using An Oscilloscope (Reference).) | | | • Input/turbine speed sensor<br>• Related wiring harness |
| 1N | — | — | — | | — | — |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1O | M range switch | M range switch | Ignition switch is turned to the ON position. | M range | 1.0 or less | • Selector lever<br>• Related wiring harness |
| | | | | Except above | B+ | |
| 1P | Manual 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<br>• Related wiring harness |
| | | | | Others | B+ | |
| 1Q | Input/turbine speed sensor (–) | Input/turbine speed sensor | • (See Inspection Using An Oscilloscope (Reference).) | | | • Input/turbine speed sensor<br>• Related wiring harness |
| 1R | Refrigerant pressure switch (medium) | Refrigerant pressure switch (medium) | A/C ON | Refrigerant pressure is above 1.52 MPa {15.5 kgf/cm$^2$, 220 psi} | Below 1.0 | • Refrigerant pressure switch<br>• Related wiring harness |
| | | | | Refrigerant pressure is below 1.23 MPa {12.5 kgf/cm$^2$, 178 psi} | B+ | |
| 1S | Selector lever position | TR switch | Ignition switch is turned to the ON position | P position | Approx. 4.6 | • TR switch<br>• Related wiring harness |
| | | | | R position | Approx. 3.9 | |
| | | | | N position | Approx. 3.2 | |
| | | | | D range | Approx. 2.5 | |
| | | | | M range | Approx. 2.5 | |
| 1T | — | — | — | | — | — |
| 1U | ATF temperature | TFT sensor | Ignition switch is turned to the ON position. | TFT is 20 °C {68 °F} | Approx. 3.3 | • TFT sensor<br>• Related wiring harness |
| | | | | TFT is 40 °C {104 °F} | Approx. 2.4 | |
| | | | | TFT is 60 °C {140 °F} | Approx. 1.5 | |
| 1V | — | — | — | | — | — |
| 1W | Cooling fan control | Fan control module | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | • Fan control module.<br>• Related wiring harness |
| 1X | — | — | — | | — | — |
| 1Y | APP sensor 1 | APP sensor | Ignition switch to the ON position | When the accelerator pedal is depressed | Approx. 3.0 | • APP sensor<br>• Related wiring harness |
| | | | | When the accelerator pedal is released | Approx. 0.4 | |
| 1Z | — | — | — | | — | — |
| 1AA | Sensor GND | TR sensor, TFT sensor, IAT sensor, APP sensor | Under any condition | | Below 1.0 | • Related wiring harness |
| 1AB | Starter relay control | Starter relay | Under any condition | | Below 1.0 | • Starter relay<br>• Related wiring harness |
| 1AC | MAF | MAF sensor | Ignition switch to the ON position | | Approx. 0.7 | • MAF sensor<br>• Related wiring harness |
| | | | Idle (after warm up) | | Approx. 1.3 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1AD | Cruise control switch | Cruise control switch | Ignition switch to the ON position | ON/OFF switch pressed in | Approx. 0 | • Cruise control switch<br>• Related wiring harnesses |
| | | | | CANCEL switch pressed in | Approx. 1.1 | |
| | | | | SET/COAST switch pressed in | Approx. 3.1 | |
| | | | | RES/ACCEL switch pressed in | Approx. 4.2 | |
| | | | | Except above | Approx. 5 | |
| 1AE | Sensor GND | MAF sensor | Under any condition | | Below 1.0 | • Related wiring harness |
| 1AF | EVAP leak detection pump (pump) | EVAP leak detection pump | Ignition switch to the ON position | | B+ | • EVAP leak detection pump<br>• Related wiring harnesses |
| | | | Idling | | B+ | |
| 1AG | — | — | — | | — | — |
| 1AH | IAT | MAF/IAT sensor | Ignition switch to the ON position | IAT 0 °C {32 °F} | Approx. 3.43 | • IAT sensor<br>• Related wiring harness |
| | | | | IAT 20 °C {68 °F} | Approx. 2.38 | |
| | | | | IAT 40 °C {104 °F} | Approx. 1.49 | |
| | | | | IAT 60 °C {140 °F} | Approx. 0.89 | |
| | | | | IAT 80 °C {176 °F} | Approx. 0.53 | |
| | | | | IAT 100 °C {212 °F} | Approx. 0.33 | |
| 1AI | CAN (L) | Instrument cluster, ABS HU/CM, EHPAS control module | Because this terminal is for CAN, good/no good judgment by terminal voltage is not possible. | | | • Related wiring harness |
| 1AJ | EVAP leak detection pump (solenoid) | EVAP leak detection pump | Ignition switch to the ON position | | B+ | • EVAP leak detection pump<br>• Related wiring harnesses |
| | | | Idling | | B+ | |
| 1AK | — | — | — | | — | — |
| 1AL | APP sensor 2 | APP sensor | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | • APP sensor<br>• Related wiring harness |
| 1AM | CAN (H) | Instrument cluster, ABS HU/CM, EHPAS control module | Because this terminal is for CAN, good/no good judgment by terminal voltage is not possible. | | | • Related wiring harness |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1AN | A/C | A/C relay | Idle | A/C operating | Below 1.0 | • A/C relay<br>• Related wiring harness |
| | | | | A/C not operating | B+ | |
| 1AO | — | — | — | | — | — |
| 1AP | A/C on signal | Refrigerant pressure switch (high and low) | Idle | A/C switch and fan switch on | Below 1.0 | • Refrigerant pressure switch<br>• Related wiring harness |
| 1AQ | — | — | — | | — | — |
| 1AR | Fuel pump control | Fuel pump relay | Ignition switch to the ON position after 1 s | | B+ | • Fuel pump relay<br>• Related wiring harness |
| | | | Cranking | | Below 1.0 | |
| | | | Idle | | Below 1.0 | |
| 1AS | — | — | — | | — | — |
| 1AT | Main relay control | Main relay | Ignition switch off after 5 min | | B+ | • Main relay<br>• Related wiring harness |
| | | | Ignition switch to the ON position | | Below 1.0 | |
| 1AU | Brake | Brake switch | Brake pedal depressed | | B+ | • Brake switch<br>• Related wiring harness |
| | | | Brake pedal released | | Below 1.0 | |
| 1AV | GND (shield) | Input/turbine speed sensor harness, GND | Under any condition | | Below 1.0 | • Related wiring harness |
| 1AW | Constant voltage (Vref) | APP sensor | Ignition switch to the ON position | | Approx. 5.0 | • Related wiring harness |
| 1AX | Ignition switch | Ignition switch | Ignition switch off | | Below 1.0 | • Related wiring harness |
| | | | Ignition switch to the ON position | | B+ | |
| 1AY | Drive-by-wire relay | Drive-by-wire relay | Ignition switch off | | B+ | • Related wiring harness |
| | | | Ignition switch to the ON position | | Below 1.0 | |
| 1AZ | GND | GND | Under any condition | | Below 1.0 | • Related wiring harness |
| 1BA | Back-up power supply | Battery (positive terminal) | Under any condition | | B+ | • Battery<br>• Related wiring harness |
| 1BB | GND | GND | Under any condition | | Below 1.0 | • Related wiring harness |
| 1BC | — | — | — | | — | — |
| 1BD | GND | GND | Under any condition | | Below 1.0 | • Related wiring harness |
| 1BE | B+ | Main relay | Ignition switch off after 5 min | | Below 1.0 | • Battery<br>• Related wiring harness |
| | | | Ignition switch to the ON position | | B+ | |
| 1BF | Throttle actuator power supply | Drive-by-wire relay | Ignition switch off after 10 s | | Below 1.0 | • Related wiring harness |
| | | | Ignition switch to the ON position | | B+ | |
| 1BG | — | — | — | | — | — |
| 1BH | GND | GND | Under any condition | | Below 1.0 | • Related wiring harness |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2A | Throttle actuator control (+) | Throttle actuator | Ignition switch to the ON position | | B+ | • Throttle actuator<br>• Related wiring harness |
| 2B | Throttle actuator control (–) | Throttle actuator | Idle (after warm up) | | Approx. 3.5—5.5 | • Throttle actuator<br>• Related wiring harness |
| 2C | HO2S heater control | HO2S heater | Idle (after warm up) | | Below 1.0 | • HO2S heater<br>• Related wiring harness |
| | | | Engine speed above 4,000 rpm | | B+ | |
| 2D | — | — | — | | — | — |
| 2E | — | — | — | | — | — |
| 2F | — | — | — | | — | — |
| 2G | A/F sensor heater control | A/F sensor heater | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | • A/F sensor heater<br>• Related wiring harness |
| 2H | — | — | — | | — | — |
| 2I | TP (No. 2) | TP sensor No. 2 | Ignition switch to the ON position | APP closed | 4.00—4.47 | • TP sensor<br>• Related wiring harness |
| | | | | APP open | 0.25—0.75 | |
| 2J | — | — | — | | — | — |
| 2K | Constant voltage (Vref) | TP sensor | Ignition switch to the ON position | | Approx. 5.0 | • TP sensor<br>• Related wiring harness |
| 2L | — | — | — | | — | — |
| 2M | TP (No. 1) | TP sensor No. 1 | Ignition switch to the ON position | APP closed | 0.53—1.00 | • TP sensor<br>• Related wiring harness |
| | | | | APP open | 4.25—4.75 | |
| 2N | — | — | — | | — | — |
| 2O | TP sensor GND | TP sensor | Under any condition | | Below 1.0 | • TP sensor<br>• Related wiring harness |
| 2P | GND (shield) | KS harness, HO2S, A/F sensor, GND | Under any condition | | Below 1.0 | • Related wiring harness |
| 2Q | Knocking (+) | KS | Ignition switch to the ON position (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter) | | Approx. 4.3 | • KS<br>• Related wiring harness |
| 2R | Knocking (–) | KS | Ignition switch to the ON position (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter) | | Below 1.0 | • KS<br>• Related wiring harness |
| 2S | — | — | — | | — | — |

| | | | | | |
|---|---|---|---|---|---|
| 2T | Constant voltage (Vref) | CKP sensor | Ignition switch to the ON position | B+ | • CKP sensor<br>• Related wiring harness |
| 2U | CKP | CKP sensor | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • CKP sensor<br>• Related wiring harness |
| 2V | CMP | CMP sensor | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • CMP sensor<br>• Related wiring harness |
| 2W | Constant voltage (Vref) | MAP sensor, variable tumble shutter valve switch | Ignition switch to the ON position | Approx. 5.0 | • Related wiring harness |
| 2X | Constant voltage (Vref) | CMP sensor | Ignition switch to the ON position | B+ | • CKP sensor<br>• Related wiring harness |
| 2Y | — | — | — | — | — |
| 2Z | A/F sensor power supply | A/F sensor | Idle (after warm up) | Approx. 4.1 | • A/F sensor<br>• Related wiring harness |
| 2AA | Sensor GND | HO2S, ECT sensor, MAP sensor, variable tumble shutter valve switch | Under any condition | Below 1.0 | • Related wiring harness |
| 2AB | — | — | — | — | — |
| 2AC | A/F sensor VSIP | A/F sensor | Idle (after warm up) | Approx. 4.0 | • A/F sensor<br>• Related wiring harness |
| 2AD | A/F sensor IP+ | A/F sensor | When the engine speed is increased, the voltage increased. | | • A/F sensor<br>• Related wiring harness |
| 2AE | Variable tumble shutter valve monitor | Variable tumble shutter valve switch | ECT above 63 °C {145 °F} while idling. | Approx. 5.0 *1, B+ *2 | • Variable tumble shutter valve switch<br>• Related wiring harness |
| | | | ECT below 63 °C {145 °F} and engine speed below 3,750 rpm | Below 1.0 | |
| 2AF | OCV control | OCV | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • OCV valve<br>• Related wiring harness |
| 2AG | — | — | — | — | — |
| 2AH | HO2S | HO2S | Ignition switch to the ON position | Approx. 0 | • HO2S<br>• Related wiring harness |
| | | | Idle (after warm up) | Alternates between 0 and 1.0 | |
| 2AI | Variable tumble control | Variable tumble solenoid valve | ECT above 62 °C {143 °F} while idling. | B+ | • Variable tumble solenoid valve<br>• Related wiring harness |
| | | | ECT below 63 °C {145 °F} and engine speed below 3,750 rpm | Below 1.0 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2AJ | Variable intake air control | Variable intake air solenoid valve | Ignition switch to the ON position | | Below 1.0 | • Variable intake air solenoid valve<br>• Related wiring harness |
| | | | Engine speed: below 4,750 rpm | | Below 1.0 | |
| | | | Engine speed: above 4,750 rpm | | B+ | |
| 2AK | ECT | ECT sensor | Ignition switch to the ON position | IAT 20 °C {68 °F} | 3.04—3.14 | • ECT sensor<br>• Related wiring harness |
| | | | | IAT 40 °C {104 °F} | 2.09—2.21 | |
| | | | | IAT 60 °C {140 °F} | 1.29—1.39 | |
| | | | | IAT 80 °C {176 °F} | 0.76—0.83 | |
| | | | | IAT 100 °C {212 °F} | 0.45—0.49 | |
| 2AL | Manifold absolute pressure | MAP sensor | Ignition switch to the ON position (at sea level) | | Approx. 4.1 | • MAP sensor<br>• Related wiring harness |
| | | | Idle | | Approx. 1.2 | |
| 2AM | Generator output voltage | Generator (terminal P) | • Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference).) | | | • Generator<br>• Related wiring harness |
| 2AN | Purge control | Purge solenoid valve | • Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference).) | | | • Purge solenoid valve<br>• Related wiring harness |
| 2AO | — | — | — | | — | — |
| 2AP | — | — | — | | — | — |
| 2AQ | Generator field coil control | Generator (terminal D) | • Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference).) | | | • Following PIDs: IAT, ECT, RPM, VPWR, ALTT V.<br>• Generator<br>• Related wiring harness |
| 2AR | EGR valve #2 coil control | EGR valve (terminal A) | Ignition switch to the ON position | | B+ | • EGR valve<br>• Related wiring harness |
| | | | Idle | | B+ | |
| 2AS | — | — | — | | — | — |
| 2AT | — | — | — | | — | — |
| 2AU | EGR valve #1 coil control | EGR valve (terminal E) | Ignition switch to the ON position | | Below 1.0 | • EGR valve<br>• Related wiring harness |
| | | | Idle | | Below 1.0 | |

| | | | | | |
|---|---|---|---|---|---|
| 2AV | EGR valve #4 coil control | EGR valve (terminal F) | Ignition switch to the ON position | Below 1.0 | • EGR valve<br>• Related wiring harness |
| | | | Idle | Below 1.0 | |
| 2AW | — | — | — | — | — |
| 2AX | — | — | — | — | — |
| 2AY | EGR valve #3 coil control | EGR valve (terminal B) | Ignition switch to the ON position | B+ | • EGR valve<br>• Related wiring harness |
| | | | Idle | B+ | |
| 2AZ | Fuel injection (#4) | Fuel injector No.4 | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Fuel injector No.4<br>• Related wiring harness |
| 2BA | — | — | — | — | — |
| 2BB | Fuel injection (#1) | Fuel injector No.1 | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Fuel injector No.1<br>• Related wiring harness |
| 2BC | Fuel injection (#2) | Fuel injector No.2 | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Fuel injector No.2<br>• Related wiring harness |
| 2BD | Fuel injection (#3) | Fuel injector No.3 | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Fuel injector No.3<br>• Related wiring harness |
| 2BE | IGT1 | Ignition coil (No.1 cylinders) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Ignition coil<br>• Related wiring harness |
| 2BF | IGT2 | Ignition coil (No.2 cylinders) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Ignition coil<br>• Related wiring harness |
| 2BG | IGT3 | Ignition coil (No.3 cylinders) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Ignition coil<br>• Related wiring harness |
| 2BH | IGT4 | Ignition coil (No.4 cylinders) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Ignition coil<br>• Related wiring harness |

*1

California emission regulation applicable model

*2

Except for California emission regulation applicable model

Except for California emission regulation applicable model with LF MTX and L3

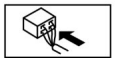
NOTE:

- The PCM terminal voltage can vary with the conditions when measuring and changes due to aged deterioration on the vehicle, causing false diagnosis. Therefore determine comprehensively where the malfunction occurs among the input systems, output systems, and the PCM.

PCM
WIRING HARNESS-SIDE CONNECTOR

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2BE | 2BA | 2AW | 2AS | 2AO | 2AK | 2AG | 2AC | 2Y | 2U | 2Q | 2M | 2I | 2E | 2A |
| 2BF | 2BB | 2AX | 2AT | 2AP | 2AL | 2AH | 2AD | 2Z | 2V | 2R | 2N | 2J | 2F | 2B |
| 2BG | 2BC | 2AY | 2AU | 2AQ | 2AM | 2AI | 2AE | 2AA | 2W | 2S | 2O | 2K | 2G | 2C |
| 2BH | 2BD | 2AZ | 2AV | 2AR | 2AN | 2AJ | 2AF | 2AB | 2X | 2T | 2P | 2L | 2H | 2D |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1BE | 1BA | 1AW | 1AS | 1AO | 1AK | 1AG | 1AC | 1Y | 1U | 1Q | 1M | 1I | 1E | 1A |
| 1BF | 1BB | 1AX | 1AT | 1AP | 1AL | 1AH | 1AD | 1Z | 1V | 1R | 1N | 1J | 1F | 1B |
| 1BG | 1BC | 1AY | 1AU | 1AQ | 1AM | 1AI | 1AE | 1AA | 1W | 1S | 1O | 1K | 1G | 1C |
| 1BH | 1BD | 1AZ | 1AV | 1AR | 1AN | 1AJ | 1AF | 1AB | 1X | 1T | 1P | 1L | 1H | 1D |



| Terminal | Signal | Connected to | Test condition | | Voltage (V) | Inspection item |
|---|---|---|---|---|---|---|
| 1A | — | — | — | | — | — |
| 1B | Starter relay control | Starter relay | Under any condition | | Below 1.0 | ● Starter relay<br>● Related wiring harness |
| 1C | — | — | — | | — | — |
| 1D | —*1 | — | — | | — | — |
| | Clutch operation*2 | CPP switch | Clutch pedal depressed | | Below 1.0 | ● CPP switch<br>● Related wiring harness |
| | | | Clutch pedal released | | B+ | |
| 1E | — | — | — | | — | — |
| 1F | — | — | — | | — | — |
| 1G | — | — | — | | — | — |
| 1H | Fuel pump control | Fuel pump relay | Ignition switch to the ON position | | B+ | ● Fuel pump relay<br>● Related wiring harness |
| | | | Cranking | | Below 1.0 | |
| | | | Idle | | Below 1.0 | |
| 1I | A/C | A/C relay | Idle | A/C operating | Below 1.0 | ● A/C relay<br>● Related wiring harness |
| | | | | A/C not operating | B+ | |
| 1J | Refrigerant pressure switch (medium) | Refrigerant pressure switch (medium) | A/C ON | Refrigerant pressure is above 1.52 MPa {15.5 kgf/cm$^2$, 220 psi} | Below 1.0 | ● Refrigerant pressure switch<br>● Related wiring harness |
| | | | | Refrigerant pressure is below 1.23 MPa {12.5 kgf/cm$^2$, 178 psi} | B+ | |
| 1K | — | — | — | | — | — |
| 1L | — | — | — | | — | — |
| 1M | — | — | — | | — | — |
| 1N | — | — | — | | — | — |
| 1O | — | — | — | | — | — |
| 1P | — | — | — | | — | — |
| 1Q | Main relay control | Main relay | Ignition switch off after 15 min | | B+ | ● Main relay<br>● Related wiring harness |
| | | | Ignition switch to the ON position | | Below 1.0 | |
| 1R | Cooling fan control | Fan control module | ● Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | ● Fan control module<br>● Related wiring harness |
| 1S | — | — | — | | — | — |
| 1T | — | — | — | | — | — |
| 1U | EVAP leak detection pump (pump) | EVAP leak detection pump | Ignition switch to the ON position | | B+ | ● EVAP leak detection pump<br>● Related wiring harnesses |
| | | | Idling | | B+ | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1V | EVAP leak detection pump (solenoid) | EVAP leak detection pump | Ignition switch to the ON position | | B+ | ● EVAP leak detection pump<br>● Related wiring harnesses |
| | | | Idling | | B+ | |
| 1W | — | — | — | | — | — |
| 1X | —*1 | — | — | | — | — |
| | Neutral position*2 | Neutral switch | Ignition switch is turned to the ON position | Shift lever is at neutral position | Below 1.0 | ● Neutral switch<br>● Related wiring harness |
| | | | | Shift lever is not at neutral position | B+ | |
| 1Y | — | — | — | | — | — |
| 1Z | — | — | — | | — | — |
| 1AA | — | — | — | | — | — |
| 1AB | Brake | Brake switch | Brake pedal depressed | | B+ | ● Brake switch<br>● Related wiring harness |
| | | | Brake pedal released | | Below 1.0 | |
| 1AC | — | — | — | | — | — |
| 1AD | — | — | — | | — | — |
| 1AE | — | — | — | | — | — |
| 1AF | — | — | — | | — | — |
| 1AG | — | — | — | | — | — |
| 1AH | — | — | — | | — | — |
| 1AI | CAN (L) | Instrument cluster, ABS HU/CM,<br>EHPAS control module | Because this terminal is for CAN, good/no good judgment by terminal voltage is not possible. | | | ● Related wiring harness |
| 1AJ | — | — | — | | — | — |
| 1AK | MAF | MAF sensor | Ignition switch to the ON position | | Approx. 0.7 | ● MAF sensor<br>● Related wiring harness |
| | | | Idle (after warm up) | | Approx. 1.5 | |
| 1AL | Constant voltage (Vref) | APP sensor | Ignition switch to the ON position | | Approx. 5.0 | ● Related wiring harness |
| 1AM | CAN (H) | Instrument cluster, ABS HU/CM,<br>EHPAS control module | Because this terminal is for CAN, good/no good judgment by terminal voltage is not possible. | | | ● Related wiring harness |
| 1AN | — | — | — | | — | — |
| 1AO | APP sensor 2 | APP sensor | ● Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | ● APP sensor<br>● Related wiring harness |
| 1AP | APP sensor 1 | APP sensor | Ignition switch to the ON position | When the accelerator pedal is depressed | Approx. 3.0 | ● APP sensor<br>● Related wiring harness |
| | | | | When the accelerator pedal is released | Approx. 0.4 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1AQ | Cruise control switch | Cruise control switch | Ignition switch to the ON position | ON/OFF switch pressed in | Approx. 0 | • Cruise control switch<br>• Related wiring harnesses |
| | | | | CANCEL switch pressed in | Approx. 1.1 | |
| | | | | SET/COAST switch pressed in | Approx. 3.1 | |
| | | | | RES/ACCEL switch pressed in | Approx. 4.2 | |
| | | | | Except above | Approx. 5 | |
| 1AR | Sensor GND | MAF sensor | Under any condition | | Below 1.0 | • Related wiring harness |
| 1AS | — | — | — | | — | — |
| 1AT | IAT | MAF/IAT sensor | Ignition switch to the ON position | IAT 0 °C {32 °F} | Approx. 3.43 | • IAT sensor<br>• Related wiring harness |
| | | | | IAT 20 °C {68 °F} | Approx. 2.38 | |
| | | | | IAT 40 °C {104 °F} | Approx. 1.49 | |
| | | | | IAT 60 °C {140 °F} | Approx. 0.89 | |
| | | | | IAT 80 °C {176 °F} | Approx. 0.53 | |
| | | | | IAT 100 °C {212 °F} | Approx. 0.33 | |
| 1AU | A/C on signal | Refrigerant pressure switch (high and low) | Idle | A/C switch and fan switch on | Below 1.0 | • Refrigerant pressure switch<br>• Related wiring harness |
| 1AV | Sensor GND | IAT sensor, APP sensor | Under any condition | | Below 1.0 | • Related wiring harness |
| 1AW | — | — | — | | — | — |
| 1AX | Drive-by-wire relay control | Drive-by-wire relay | Ignition switch off | | B+→ Below 1.0 | • Drive-by-wire relay<br>• Related wiring harness |
| | | | Ignition switch to the ON position | | Below 1.0 | |
| 1AY | Ignition switch | Ignition switch | Ignition switch off | | Below 1.0 | • Related wiring harness |
| | | | Ignition switch to the ON position | | B+ | |
| 1AZ | GND | GND | Under any condition | | Below 1.0 | • Related wiring harness |
| 1BA | Back-up power supply | Battery (positive terminal) | Under any condition | | B+ | • Battery<br>• Related wiring harness |
| 1BB | GND | GND | Under any condition | | Below 1.0 | • Related wiring harness |
| 1BC | — | — | — | | — | — |

| | | | | | |
|---|---|---|---|---|---|
| 1BD | GND | GND | Under any condition | Below 1.0 | • Related wiring harness |
| 1BE | B+ | Main relay | Ignition switch off after 15 min | Below 1.0 | • Battery<br>• Related wiring harness |
| | | | Ignition switch to the ON position | B+ | |
| 1BF | B+ | Drive-by-wire relay | Ignition switch off | Below 1.0 | • Battery<br>• Related wiring harness |
| | | | Ignition switch to the ON position | B+ | |
| 1BG | — | — | — | — | — |
| 1BH | GND | GND | Under any condition | Below 1.0 | • Related wiring harness |
| 2A | Throttle actuator control (+) | Throttle actuator | Ignition switch to the ON position | B+ | • Throttle actuator<br>• Related wiring harness |
| 2B | Throttle actuator control (–) | Throttle actuator | Idle (after warm up) | Approx. 3.5—5.5 | • Throttle actuator<br>• Related wiring harness |
| 2C | Purge control | Purge solenoid valve | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Purge solenoid valve<br>• Related wiring harness |
| 2D | — | — | — | — | — |
| 2E | OCV control | OCV | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • OCV valve<br>• Related wiring harness |
| 2F | — | — | — | — | — |
| 2G | EGR valve #2 coil control | EGR valve (terminal A) | Ignition switch to the ON position | B+ | • EGR valve<br>• Related wiring harness |
| | | | Idle | B+ | |
| 2H | EGR valve #4 coil control | EGR valve (terminal F) | Ignition switch to the ON position | B+ | • EGR valve<br>• Related wiring harness |
| | | | Idle | B+ | |
| 2I | Variable tumble control | Variable tumble solenoid valve | ECT above 62 °C {143 °F} while idling. | B+ | • Variable tumble solenoid valve<br>• Related wiring harness |
| | | | ECT below 63 °C {145 °F} and engine speed below 3,750 rpm | Below 1.0 | |
| 2J | Variable intake air control | Variable intake air solenoid valve | Ignition switch to the ON position | Below 1.0 | • Variable intake air solenoid valve<br>• Related wiring harness |
| | | | Engine speed: below 4,750 rpm [LF]/4,600 rpm [L3] | Below 1.0 | |
| | | | Engine speed: above 4,750 rpm [LF]/4,600 rpm [L3] | B+ | |
| 2K | EGR valve #1 coil control | EGR valve (terminal E) | Ignition switch to the ON position | Below 1.0 | • EGR valve<br>• Related wiring harness |
| | | | Idle | Below 1.0 | |

| | | | | | |
|---|---|---|---|---|---|
| 2L | EGR valve #3 coil control | EGR valve (terminal B) | Ignition switch to the ON position | B+ | • EGR valve<br>• Related wiring harness |
| | | | Idle | B+ | |
| 2M | VSS(+) | VSS | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • VSS<br>• Related wiring harness |
| 2N | VSS(-) | VSS | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • VSS<br>• Related wiring harness |
| 2O | — | — | — | — | — |
| 2P | Sensor GND | Variable tumble shutter valve switch, ECT sensor, MAP sensor, HO2S | Under any condition | Below 1.0 | • Variable tumble shutter valve switch<br>• ECT sensor<br>• MAP sensor<br>• HO2S<br>• Related wiring harness |
| 2Q | HO2S | HO2S | Ignition switch to the ON position | Approx. 0 | • HO2S<br>• Related wiring harness |
| | | | Idle (after warm up) | Alternates between 0 and 1.0 | |
| 2R | — | — | — | — | — |
| 2S | CMP | CMP sensor | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • CMP sensor<br>• Related wiring harness |
| 2T | — | — | — | — | — |
| 2U | Knocking (+) | KS | Ignition switch to the ON position (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter) | Approx. 4.3 | • KS<br>• Related wiring harness |
| 2V | Knocking (–) | KS | Ignition switch to the ON position (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter) | Below 1.0 | • KS<br>• Related wiring harness |
| 2W | CKP | CKP sensor | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • CKP sensor<br>• Related wiring harness |
| 2X | GND (shield) | KS harness, A/F sensor, HO2S harness, GND | Under any condition | Below 1.0 | • Related wiring harness |
| 2Y | — | — | — | — | — |
| 2Z | A/F sensor power supply | A/F sensor | Idle (after warm up) | Approx. 4.1 | • A/F sensor<br>• Related wiring harness |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2AA | — | — | — | | — | — |
| 2AB | — | — | — | | — | — |
| 2AC | A/F sensor VSIP | A/F sensor | Idle (after warm up) | | Approx. 4.0 | • A/F sensor<br>• Related wiring harness |
| 2AD | A/F sensor IP+ | A/F sensor | When the engine speed is increased, the voltage increased. | | | • A/F sensor<br>• Related wiring harness |
| 2AE | Variable tumble shutter valve monitor | Variable tumble shutter valve switch | ECT above 63 °C {145 °F} while idling. | | Approx. 5.0 *3, B+ *4 | • Variable tumble shutter valve switch<br>• Related wiring harness |
| | | | ECT below 63 °C {145 °F} and engine speed below 3,750 rpm | | Below 1.0 | |
| 2AF | — | — | — | | — | — |
| 2AG | Manifold absolute pressure | MAP sensor | Ignition switch to the ON position (at sea level) | | Approx. 4.1 | • MAP sensor<br>• Related wiring harness |
| | | | Idle | | Approx. 1.4 | |
| 2AH | ECT | ECT sensor | Ignition switch to the ON position | IAT 20 °C {68 °F} | 3.04—3.14 | • ECT sensor<br>• Related wiring harness |
| | | | | IAT 40 °C {104 °F} | 2.09—2.21 | |
| | | | | IAT 60 °C {140 °F} | 1.29—1.39 | |
| | | | | IAT 80 °C {176 °F} | 0.76—0.83 | |
| | | | | IAT 100 °C {212 °F} | 0.45—0.49 | |
| 2AI | Generator field coil control | Generator (terminal D) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | • Following PIDs: IAT, ECT, RPM, VPWR, ALTT V<br>• Generator<br>• Related wiring harness |
| 2AJ | Generator output voltage | Generator (terminal P) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | | • Generator<br>• Related wiring harness |
| 2AK | TP (No. 1) | TP sensor No. 1 | Ignition switch to the ON position | APP closed | 0.53—1.00 | • TP sensor<br>• Related wiring harness |
| | | | | APP open | 4.25—4.75 | |
| 2AL | TP (No. 2) | TP sensor No. 2 | Ignition switch to the ON position | APP closed | 4.00—4.47 | • TP sensor<br>• Related wiring harness |
| | | | | APP open | 0.25—0.75 | |

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|---|---|---|---|---|---|
| 2AM | Constant voltage (Vref) | CMP sensor | Ignition switch to the ON position | B+ | • CMP sensor<br>• Related wiring harness |
| 2AN | — | — | — | — | — |
| 2AO | Constant voltage (Vref) | TP sensor | Ignition switch to the ON position | Approx. 5.0 | • TP sensor<br>• Related wiring harness |
| 2AP | Sensor GND | TP sensor | Under any condition | Below 1.0 | • TP sensor<br>• Related wiring harness |
| 2AQ | Constant voltage (Vref) | CKP sensor | Ignition switch to the ON position | B+ | • CKP sensor<br>• Related wiring harness |
| 2AR | Constant voltage (Vref) | MAP sensor, variable tumble shutter valve switch | Ignition switch to the ON position | Approx. 5.0 | • MAP sensor<br>• Variable tumble shutter valve switch<br>• Related wiring harness |
| 2AS | — | — | — | — | — |
| 2AT | IGT4 | Ignition coil (No.4 cylinders) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Ignition coil<br>• Related wiring harness |
| 2AU | — | — | — | — | — |
| 2AV | — | — | — | — | — |
| 2AW | IGT2 | Ignition coil (No.2 cylinders) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Ignition coil<br>• Related wiring harness |
| 2AX | IGT3 | Ignition coil (No.3 cylinders) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Ignition coil<br>• Related wiring harness |
| 2AY | — | — | — | — | — |
| 2AZ | Fuel injection (#4) | Fuel injector No.4 | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Fuel injector No.4<br>• Related wiring harness |
| 2BA | IGT1 | Ignition coil (No.1 cylinders) | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Ignition coil<br>• Related wiring harness |
| 2BB | Fuel injection (#1) | Fuel injector No.1 | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Fuel injector No.1<br>• Related wiring harness |
| 2BC | Fuel injection (#2) | Fuel injector No.2 | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Fuel injector No.2<br>• Related wiring harness |
| 2BD | Fuel injection (#3) | Fuel injector No.3 | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • Fuel injector No.3<br>• Related wiring harness |
| 2BE | HO2S heater control | HO2S heater | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • HO2S heater<br>• Related wiring harness |
| 2BF | — | — | — | — | — |
| 2BG | A/F sensor heater control | A/F sensor heater | • Inspect using the wave profile.<br>(See Inspection Using An Oscilloscope (Reference).) | | • A/F sensor heater<br>• Related wiring harness |
| 2BH | — | — | — | — | — |

*1
ATX
*2
MTX
*3
California emission regulation applicable model
*4
Except for California emission regulation applicable model