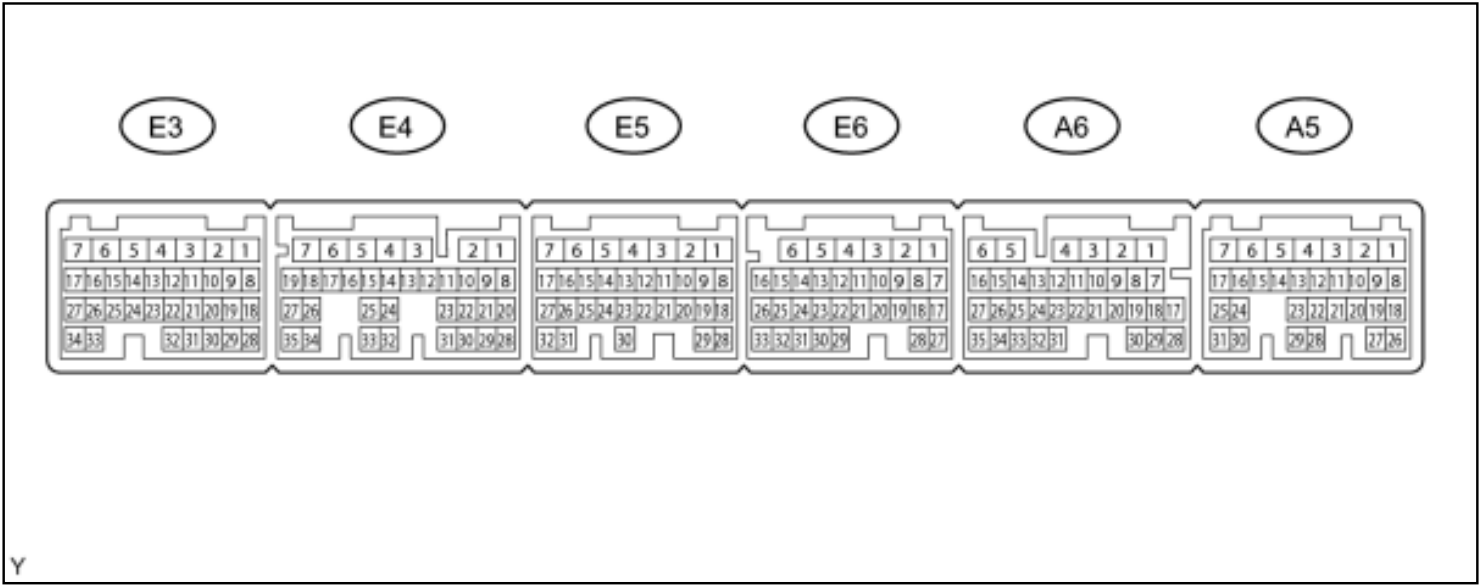


TERMINALS OF ECM



The standard normal voltage between each pair of the ECM terminals is shown in the table below. The appropriate conditions for checking each pair of the terminals are also indicated. The result of checks should be compared with the standard normal voltage for that pair of terminals, displayed in the Specified Condition column. The illustration above can be used as a reference to identify the ECM terminal locations.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
A5-7 (BATT) - E6-1 (E1)	L - W-B	Battery (for measuring battery voltage and for ECM memory)	Always	11 to 14 V
E3-1 (+BM) - E6-1 (E1)	Y-B - W-B	Power source of throttle actuator	Always	11 to 14 V
A5-8 (IGSW) - E6-1 (E1)	B-W - W-B	Engine switch	Engine switch on (IG)	11 to 14 V
A6-2 (+B) - E6-1 (E1)	B-R - W-B	Power source of ECM	Engine switch on (IG)	11 to 14 V
A6-1 (+B2) - E6-1 (E1)	B-R - W-B	Power source of ECM	Engine switch on (IG)	11 to 14 V

E4-4 (OE1+) - E4-3 (OE1-)	R - L-W	Camshaft timing oil control valve (OCV) (exhaust side for bank 1)	Idling	Pulse generation (see waveform 1)
E5-18 (OE2+) - E5-28 (OE2-)	B-W - Y-B	Camshaft timing oil control valve (exhaust side for bank 2)	Idling	Pulse generation (see waveform 1)
A5-3 (MREL) - E6-1 (E1)	Y - W-B	EFI relay	Engine switch on (IG)	11 to 14 V
E3-18 (VC) - E3-28 (E2)	L - BR	Power source for sensor (specific voltage)	Engine switch on (IG)	4.5 to 5.0 V
E3-25 (VG) - E3-24 (E2G)	B-R - B-W	Mass air flow meter	Idling, Shift lever in P or N, A/C switch OFF	0.5 to 3.0 V
E3-22 (THA) - E3-28 (E2)	B-L - BR	Intake air temperature sensor	Idling, Intake air temperature (bank 1) 0 to 80°C (32 to 176°F)	0.5 to 3.4 V
E3-19 (THW) - E3-28 (E2)	R-L - BR	Engine coolant temperature sensor	Idling, Engine coolant temperature 60 to 80°C (140 to 176°F)	0.2 to 1.0 V
E4-34 (VCTA) - E4-35 (ETA)	R - W	Power source for throttle position sensor (specific voltage)	Engine switch on (IG)	4.5 to 5.0 V
E4-26 (VTA) - E4-35 (ETA)	G-Y - W	Throttle position sensor (for engine control)	Engine switch on (IG), Throttle valve fully closed	0.5 to 1.2 V
			Engine switch on (IG), Throttle valve fully open	3.2 to 4.8 V

E4-27 (VTA2) - E4-35 (ETA)	L-B - W	Throttle position sensor (for sensor malfunction detection)	Engine switch on (IG), Accelerator pedal released	2.1 to 3.1 V
			Engine switch on (IG), Accelerator pedal released	4.5 to 5.0 V
A5-29 (VPA) - A5-20 (EPA)	L-W - L-Y	Accelerator pedal position sensor (for engine control)	Engine switch on (IG), Accelerator pedal released	0.5 to 1.1 V
			Engine switch on (IG), Accelerator pedal depressed	2.6 to 4.5 V
A5-28 (VPA2) - A5-21 (EPA2)	P-L - G-B	Accelerator pedal position sensor (for sensor malfunctioning detection)	Engine switch on (IG), Accelerator pedal released	1.2 to 2.0 V
			Engine switch on (IG), Accelerator pedal depressed	3.4 to 5.0 V
A5-23 (VCPA) - A5-20 (EPA)	P - L-Y	Power source of accelerator pedal position sensor (for VPA)	Engine switch on (IG)	4.5 to 5.0 V
A5-22 (VCP2) - A5-21 (EPA2)	G-R - G-B	Power source of accelerator pedal position sensor (for VPA2)	Engine switch on (IG)	4.5 to 5.0 V
E6-5 (HA1A) - E6-4 (E04) E6-6 (HA2A) - A5-1 (E05)	B-R - W-B B-R - W-B	Air fuel ratio sensor heater	Engine switch on (IG)	11 to 14 V
			Idling	Pulse generation (see waveform 2)
E5-23 (A1A+) - E6-1 (E1)	R - W-B	Air fuel ratio sensor	Engine switch on (IG)	3.3 V*

E5-21 (A2A+) - E6-1 (E1)	B - W-B	Air fuel ratio sensor	Engine switch on (IG)	3.3 V*
E5-22 (A1A-) - E6-1 (E1)	G - W-B	Air fuel ratio sensor	Engine switch on (IG)	2.9 V*
E5-20 (A2A-) - E6-1 (E1)	W - W-B	Air fuel ratio sensor	Engine switch on (IG)	2.9 V*
A6-4 (HT1B) - A6-4 (E03)	L-R - W-B	Heated oxygen sensor heater	Engine switch on (IG)	11 to 14 V
A6-3 (HT2B) - A6-4 (E03)	L-W - W-B		Idling	Below 3.0 V
A6-26 (OX1B) - E3-28 (E2)	R - BR	Heated oxygen sensor	Maintain engine speed at 2500 rpm for 2 minutes after warming up sensor	Pulse generation (see waveform 3)
A6-27 (OX2B) - E3-28 (E2)	B - BR			
E5-17 (#10) - E6-1 (E1)	L - W-B G - W-B W - W-B GR - W-B Y - W-B L - W-B R - W-B V - W-B	Injector for port injection	Engine switch on (IG)	11 to 14 V
E4-11 (#20) - E6-1 (E1)				
E5-16 (#30) - E6-1 (E1)				
E4-10 (#40) - E6-1 (E1)				
E5-15 (#50) - E6-1 (E1)				
E4-9 (#60) - E6-1 (E1)			Idling	Pulse generation (see waveform 4)
E5-14 (#70) - E6-1 (E1)				
E4-8 (#80) - E6-1 (E1)				

E6-20 (#1) - E6-1 (E1) E6-10 (#2) - E6-1 (E1) E6-9 (#3) - E6- 1 (E1) E6-19 (#4) - E6-1 (E1) E6-8 (#5) - E6- 1 (E1) E6-18 (#6) - E6-1 (E1) E6-17 (#7) - E6-1 (E1) E6-7 (#8) - E6- 1 (E1)	G-W - W-B L - W-B R-B - W-B W-R - W-B G - W-B R-W - W-B W-L - W-B Y-B - W-B	Injector for direct injection	Engine switch on (IG)	0 to 5 V
			Idling	Pulse generation (see waveform 5)
E4-13 (INJ1) - E6-1 (E1) E4-12 (INJ2) - E6-1 (E1)	P-L - W-B R-B - W-B	Fuel injector for direct injection confirmation signal	Idling	Pulse generation (see waveform 5)
E4-15 (INJ3) - E6-1 (E1) E4-14 (INJ4) - E6-1 (E1)	R-L - W-B LG - W-B	Fuel injector for direct injection confirmation signal	Idling	Pulse generation (see waveform 5)
E6-26 (KNK1) - E6-33 (EKNK)	W - B	Knock sensor (for bank 1 sensor 1)	Maintain engine speed at 4000 rpm after warming up	Pulse generation (see waveform 6)
E6-25 (KNK2) - E6-32 (EKN2)	G - R	Knock sensor (for bank 2 sensor 1)	Maintain engine speed at 4000 rpm after warming up	Pulse generation (see waveform 6)
E6-24 (KNK3) - E6-31 (ENK3)	R - W	Knock sensor (for bank 1 sensor 2)	Maintain engine speed at 4000 rpm after warming up	Pulse generation (see waveform 6)

E6-23 (KNK4) - E6-30 (ENK4)	B - G	Knock sensor (for bank 2 sensor 2)	Maintain engine speed at 4000 rpm after warming up	Pulse generation (see waveform 6)
E4-25 (VV1+) - E4-33 (VV1-)	B-R - R	Variable valve timing (VVT) sensor (intake side for bank 1)	Idling	Pulse generation (see waveform 7)
E5-19 (VV2+) - E5-29 (VV2-)	R - W	Variable valve timing (VVT) sensor (intake side for bank 2)	Idling	Pulse generation (see waveform 7)
E3-26 (EV1+) - E3-33 (EV1-)	B - Y-R	Variable valve timing (VVT) sensor (exhaust side for bank 1)	Idling	Pulse generation (see waveform 8)
E6-22 (EV2+) - E6-29 (EV2-)	Y - P	Variable valve timing (VVT) sensor (exhaust side for bank 2)	Idling	Pulse generation (see waveform 8)
E4-24 (G2+) - E4-32 (G2-)	R-W - Y	Camshaft position sensor	Idling	Pulse generation (see waveform 9)
E3-27 (NE+) - E3-34 (NE-)	W - L-W	Crankshaft position sensor	Idling	Pulse generation (see waveform 10)
E5-27 (IGT1) - E6-1 (E1) E4-23 (IGT2) - E6-1 (E1) E5-26 (IGT3) - E6-1 (E1) E4-22 (IGT4) - E6-1 (E1) E5-25 (IGT5) - E6-1 (E1) E4-21 (IGT6) - E6-1 (E1) E5-24 (IGT7) - E6-1 (E1)	G-W - W-B L-R - W-B L-Y - W-B B-Y - W-B P - W-B R-L - W-B P-L - W-B B-W - W-B	Ignition coil (ignition signal)	Idling	Pulse generation (see waveform 11)

E4-20 (IGT8) - E6-1 (E1)				
E5-32 (IGF1) - E6-1 (E1)	LG - W-B	Ignition coil (ignition confirmation signal)	Engine switch on (IG)	4.5 to 5.0 V
E4-28 (IGF2) - E6-1 (E1)	G-B - W-B		Idling	Pulse generation (see waveform 11)
E3-17 (PRG) - E6-1 (E1)	R-Y - W-B	Purge VSV	Engine switch on (IG)	11 to 14 V
			Idling	Pulse generation (see waveform 12)
A5-24 (SPD) - E6-1 (E1)	Y-G - W-B	Speed signal from combination meter	Engine switch on (IG), Rotate driving wheel slowly	Pulse generation (see waveform 13)
A6-20 (STA) - E6-1 (E1)	L-R - W-B	STARTER relay operation signal	Cranking	11 to 14 V
A5-2 (STAR) - E6-1 (E1)	L-Y - W-B	STARTER relay drive signal	Engine switch on (IG), Shift lever in any position other than P or N	11 to 14 V
			Cranking, Shift lever in P or N	0 to 3.0 V
A5-27 (STSW) - E6-1 (E1)	Y-B - W-B	Engine cranking required signal	Cranking, Shift lever in P or N	6.0 V or more
A5-13 (STP) - E6-1 (E1)	R-B - W-B	Stop light switch	Brake pedal depressed	7.5 to 14 V
			Brake pedal released	Below 1.5 V
A5-12 (ST1-) - E6-1 (E1)	G-W - W-B	Stop light switch (opposite to STP terminal)	Engine switch on (IG), Brake pedal depressed	Below 1.5 V

			Engine switch on (IG), Brake pedal released	7.5 to 14 V
E4-7 (M+) - E4-5 (ME01)	W - W-B	Throttle actuator	Idling with warm engine	Pulse generation (see waveform 15)
E4-6 (M-) - E4-5 (ME01)	B - W-B	Throttle actuator	Idling with warm engine	Pulse generation (see waveform 14)
A5-5 (FC) - E6-1 (E1)	R-G - W-B	C/OPN relay	Engine switch on (IG)	11 to 14 V
			Idling	0 to 3.0 V
A5-6 (FPR) - E6-1 (E1)	R-W - W-B	F/PMP relay	Engine switch on (IG)	11 to 14 V
A5-11 (W) - E6-1 (E1)	R-L - W-B	MIL	Engine switch on (IG)	Below 3.0 V
			Idling	0 to 14 V
A6-21 (TC) - E6-1 (E1)	V - W-B	Terminal TC of DLC3	Engine switch on (IG)	11 to 14 V
A5-15 (TACH) - E6-1 (E1)	R-W - W-B	Engine speed	Idling	Pulse generation (see waveform 16)
E3-16 (VPMP) - E6-1 (E1)	L-R - W-B	Vent valve (built into canister pump module)	Engine switch on (IG)	11 to 14 V
E3-15 (MPMP) - E6-1 (E1)	P - W-B	Leak detection pump (built into canister pump module)	Leak detection pump OFF	0 to 3.0 V
			Leak detection pump ON	11 to 14 V

E3-31 (PPMP) - E3-28 (E2)	LG - BR	Canister pressure sensor (built into canister pump module)	Engine switch on (IG)	3 to 3.6 V
E5-10 (FPF1) - E6-1 (E1)	V - W-B	Fuel pump (for high pressure) (spill control valve) (bank 1)	Idling	Pulse generation (see waveform 17)
E5-11 (FPD) - E6-1 (E1)	R-L - W-B	Fuel pump (for high pressure) (spill control valve) (bank 1)	Idling	Pulse generation (see waveform 17)
E5-12 (FPF2) - E6-1 (E1)	GR - W-B	Fuel pump (for high pressure) (spill control valve) (bank 2)	Idling	Pulse generation (see waveform 18)
E5-13 (FPD2) - E6-1 (E1)	L-Y - W-B	Fuel pump (for high pressure) (spill control valve) (bank 2)	Idling	Pulse generation (see waveform 18)
E6-27 (PR) - E3-28 (E2)	L-Y - BR	Fuel pressure sensor	Idling	1.8 to 2.3 V
A6-14 (CANH) - E6-1 (E1)	B - W-B	CAN communication line	Engine switch on (IG)	Pulse generation (see waveform 19)
A6-13 (CANL) - E6-1 (E1)	W - W-B	CAN communication line	Engine switch on (IG)	Pulse generation (see waveform 20)
E3-8 (AICV) - E6-1 (E1)	GR - W-B	VSV for air intake control valve operation signal	Engine switch on (IG)	11 to 14 V
A6-7 (SFTD) - E6-1 (E1)	R-B - W-B	Down-shift position switch signal	Engine switch on (IG) and shift lever in S	11 to 14 V

			Engine switch on (IG) and shift lever "-" position (down-shift)	Below 1 V
A6-8 (SFTU) - E6-1 (E1)	Y - W-B	Up-shift position switch signal	Engine switch on (IG) and shift lever in S	11 to 14 V
			Engine switch on (IG) and shift lever "+" position (up-shift)	Below 1 V
A6-16 (S) - E6-1 (E1)	W-G - W-B	S shift position switch signal	Engine switch on (IG) and shift lever in S	11 to 14 V
			Engine switch on (IG) and shift lever not in S	Below 1 V
A6-9 (CAN-) - E6-1 (E1)	W - W-B	Communication signal with TCM	Engine switch on (IG)	Pulse generation
A6-10 (CAN+) - E6-1 (E1)	B - W-B	Communication signal with TCM	Engine switch on (IG)	Pulse generation
A6-19 (ACCR) - E6-1 (E1)	W-L - W-B	ACC relay cut signal	Engine switch on (IG) → Cranking	11 to 14 V → Below 1 V
A6-29 (NSW) - E6-1 (E1)	L - W-B	Park/Neutral position switch	Engine switch on (IG), shift lever in P or N	Below 3.0 V
			Engine switch on (IG), Shift lever in any position except P or N	11 to 14 V
A5-4 (IREL) - E6-1 (E1)	R-L - W-B	INJ, INJ2 relay	Engine switch on (IG)	11 to 14 V

E6-11 (R) - E6-1 (E1)	G - W-B	Park/Neutral position switch signal	Engine switch on (IG) and Shift lever in R	11 to 14 V
			Engine switch on (IG) and Shift lever not in R	Below 1 V
E6-12 (P) - E6-1 (E1)	W - W-B	Park/Neutral position switch signal	Engine switch on (IG) and Shift lever in P	11 to 14 V
			Engine switch on (IG) and Shift lever not in P	Below 1 V
E6-13 (N) - E6-1 (E1)	G-R - W-B	Park/Neutral position switch signal	Engine switch on (IG) and Shift lever in N	11 to 14 V
			Engine switch on (IG) and Shift lever not in N	Below 1 V
E6-14 (D) - E6-1 (E1)	G-Y - W-B	Park/Neutral position switch signal	Engine switch on (IG) and Shift lever in D	11 to 14 V
			Engine switch on (IG) and Shift lever not in D	Below 1 V
A5-25 (KSW) - E6-1 (E1)	L-R - W-B	Park/Neutral position switch signal	Engine switch off → on (IG)	0 to 3.0 V
E5-9 (EMD1) - E6-1 (E1)	W-R - W-B	Camshaft timing control motor signal	Idling	Pulse generation (see waveform 21)
E4-31 (EMD2) - E6-1 (E1)	W-R - W-B	Camshaft timing control motor signal	Idling	Pulse generation (see waveform 21)

E5-30 (EMR1) - E6-1 (E1)	L-B - W-B	Camshaft timing control motor signal	Idling	Pulse generation (see waveform 22)
E4-29 (EMR2) - E6-1 (E1)	G-W - W-B	Camshaft timing control motor signal	Idling	Pulse generation (see waveform 22)
E5-8 (EDT1) - E6-1 (E1)	B-L - W-B	Camshaft timing control motor signal	Idling	Pulse generation (see waveform 23)
E4-16 (EDT2) - E6-1 (E1)	G-R - W-B	Camshaft timing control motor signal	Idling	Pulse generation (see waveform 23)
E5-31 (EMF1) - E6-1 (E1)	G-R - W-B	Camshaft timing control motor signal	Idling	0.3 to 1.3 V
E4-30 (EMF2) - E6-1 (E1)	Y-B - W-B	Camshaft timing control motor signal	Idling	0.3 to 1.3 V

***: The ECM terminal voltage is constant regardless of the output voltage from the sensor.**