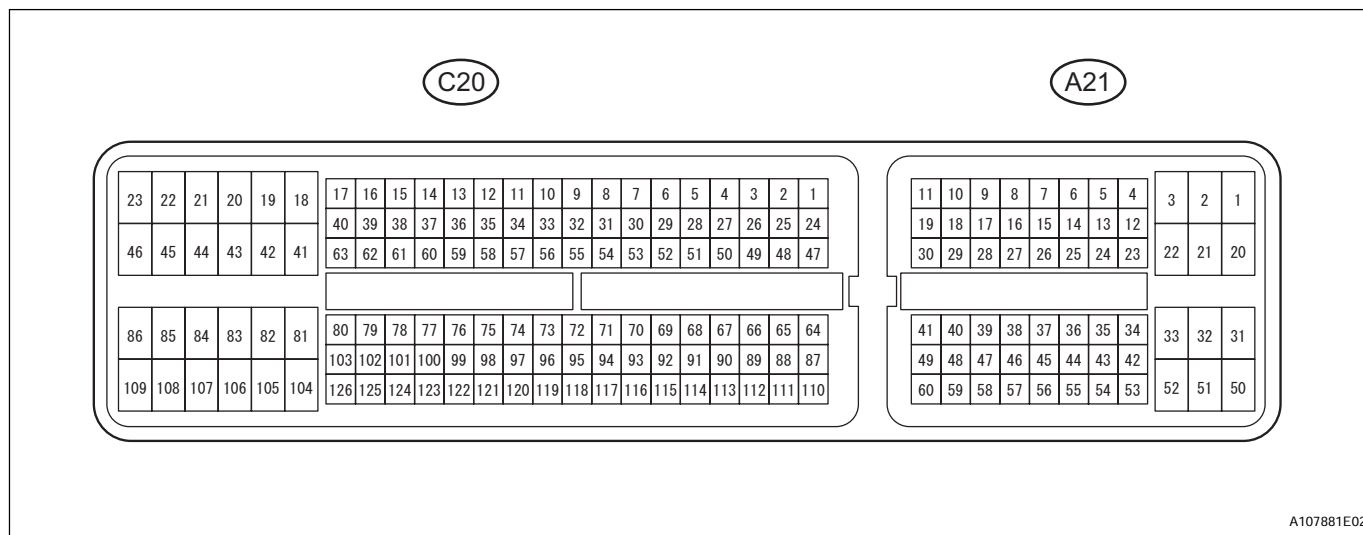


TERMINALS OF ECM



HINT:

The standard normal voltage between each pair of ECM terminals is shown in the table below. The appropriate conditions for checking each pair of 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.

Symbols (Terminal No.)	Wiring Colors	Terminal Descriptions	Conditions	Specified Conditions
BATT (A21-20) - E1 (C20-104)	Y - W	Battery (for measuring battery voltage and for ECM memory)	Always	11 to 14 V
+BM (A21-3) - ME01 (C20-43)	GR - BR	Power source of throttle actuator	Always	11 to 14 V
IGSW (A21-28) - E1 (C20-104)	R - W	Ignition switch	Ignition switch ON	11 to 14 V
+B (A21-2) - E1 (C20-104)	B - W	Power source of ECM	Ignition switch ON	11 to 14 V
+B2 (A21-1) - E1 (C20-104)	B - W	Power source of ECM	Ignition switch ON	11 to 14 V
OC1+ (C20-100) - OC1- (C20-123)	BR - R	Camshaft timing oil control valve (OCV)	Idling	Pulse generation (see waveform 1)
MREL (A21-44) - E1 (C20-104)	GR - W	EFI relay	Ignition switch ON	11 to 14 V
VG (C20-118) - E2G (C20-116)	GR - LG	Mass air flow meter	Idling, Shift lever position P or N, A/C switch OFF	0.5 to 3.0 V
THA (C20-65) - ETHA (C20-88)	P - O	Intake air temperature sensor	Idling, Intake air temperature 20°C (68°F)	0.5 to 3.4 V
THW (C20-97) - ETHW (C20-96)	L - P	Engine coolant temperature sensor	Idling, Engine coolant temperature 80°C (176°F)	0.2 to 1.0 V
VCTA (C20-67) - ETA (C20-91)	W - V	Power source of throttle position sensor (specific voltage)	Ignition switch ON	4.5 to 5.5 V
VTA1 (C20-115) - ETA (C20-91)	Y - V	Throttle position sensor (for engine control)	Ignition switch ON, Throttle valve fully closed	0.5 to 1.1 V
			Ignition switch ON, Throttle valve fully open	3.3 to 4.9 V
VTA2 (C20-114) - ETA (C20-91)	GR - V	Throttle position sensor (for sensor malfunction detection)	Ignition switch ON, Throttle valve fully closed	2.1 to 3.1 V
			Ignition switch ON, Throttle valve fully open	4.6 to 5.0 V

Symbols (Terminal No.)	Wiring Colors	Terminal Descriptions	Conditions	Specified Conditions
VPA (A21-55) - EPA (A21-59)	R - G	Accelerator pedal position sensor (for engine control)	Ignition switch ON, Accelerator pedal released	0.5 to 1.1 V
			Ignition switch ON, Accelerator pedal fully depressed	2.6 to 4.5 V
VPA2 (A21-56) - EPA2 (A21-60)	L - BR	Accelerator pedal position sensor (for sensor malfunctioning detection)	Ignition switch ON, Accelerator pedal released	1.2 to 2.0 V
			Ignition switch ON, Accelerator pedal fully depressed	3.4 to 5.0 V
VCPA (A21-57) - EPA (A21-59)	B - G	Power source of accelerator pedal position sensor (for VPA)	Ignition switch ON	4.5 to 5.5 V
VCP2 (A21-58) - EPA2 (A21-60)	W - BR	Power source of accelerator pedal position sensor (for VPA2)	Ignition switch ON	4.5 to 5.5 V
HA1A (C20-109) - E04 (C20-46)	G - W-B	A/F sensor heater	Idling	Below 3.0 V
			Ignition switch ON	11 to 14 V
A1A+ (C20-112) - E1 (C20-104)	V - W	A/F sensor	Ignition switch ON	3.3 V*
A1A- (C20-113) - E1 (C20-104)	LG - W	A/F sensor	Ignition switch ON	3.0 V*
HT1B (C20-47) - E03 (C20-86)	LG - W-B	Heated oxygen sensor heater	Idling	Below 3.0 V
			Ignition switch ON	11 to 14 V
OX1B (C20-64) - EX1B (C20-87)	G - GR	Heated oxygen sensor	Engine speed maintained at 2,500 rpm for 2 minutes after warming up sensor	Pulse generation (see waveform 2)
			Ignition switch ON	11 to 14 V
#10 (C20-108) - E01 (C20-45) #20 (C20-107) - E01 (C20-45) #30 (C20-106) - E01 (C20-45) #40 (C20-105) - E01 (C20-45)	SB - BR GR - BR P - BR L - BR	Injector	Idling	Pulse generation (see waveform 3)
			Engine speed maintained at 4,000 after warming up engine	Pulse generation (see waveform 4)
KNK1 (C20-110) - EKNK (C20-111)	R - G	Knock sensor	Engine speed maintained at 4,000 after warming up engine	Pulse generation (see waveform 4)
G2+ (C20-99) - NE- (C20-121)	B - P	Camshaft position sensor	Idling	Pulse generation (see waveform 5)
NE+ (C20-122) - NE- (C20-121)	L - P	Crankshaft position sensor	Idling	Pulse generation (see waveform 5)
IGT1 (C20-85) - E1 (C20-104) IGT2 (C20-84) - E1 (C20-104) IGT3 (C20-83) - E1 (C20-104) IGT4 (C20-82) - E1 (C20-104)	W - W O - W G - W LG - W	Ignition coil (ignition signal)	Idling	Pulse generation (see waveform 6)
			Ignition switch ON	4.5 to 5.5 V
			Idling	Pulse generation (see waveform 6)
			Ignition switch ON	11 to 14 V
IGF1 (C20-81) - E1 (C20-104)	Y - W	Ignition coil (ignition confirmation signal)	Ignition switch ON	4.5 to 5.5 V
			Idling	Pulse generation (see waveform 6)
PRG (C20-49) - E01 (C20-45)	L - BR	Purge VSV	Ignition switch ON	11 to 14 V
			Idling	Pulse generation (see waveform 7)
SPD (A21-8) - E1 (C20-104)	V - W	Speed signal from combination meter	Driving at 12 mph (20 km/h)	Pulse generation (see waveform 8)
STA (A21-48) - E1 (C20-104)	BR - W	Starter signal	Cranking	11 to 14 V
STAR (C20-52) - E1 (C20-104)	O - W	Starter relay control	Ignition switch ON	Below 1.5 V
			Cranking	6.0 V or more
ACCR (A21-13) - E01 (C20-45)	G - BR	ACC (Accessory) relay control signal	Cranking	Below 1.5 V
STSW (A21-14) - E1 (C20-104)	B - W	Ignition switch signal	Ignition switch START	6.0 V or more
STP (A21-36) - E1 (C20-104)	G - W	Stop light switch	Brake pedal depressed	7.5 to 14 V
			Brake pedal released	Below 1.5 V

Symbols (Terminal No.)	Wiring Colors	Terminal Descriptions	Conditions	Specified Conditions
ST1- (A21-35) - E1 (C20-104)	Y - W	Stop light switch (opposite to STP terminal)	Ignition switch ON, Brake pedal depressed	Below 1.5 V
			Ignition switch ON, Brake pedal released	7.5 to 14 V
M+ (C20-42) - ME01 (C20-43)	G - BR	Throttle actuator	Idling with warm engine	Pulse generation (see waveform 9)
M- (C20-41) - ME01 (C20-43)	R - BR	Throttle actuator	Idling with warm engine	Pulse generation (see waveform 10)
FC (A21-7) - E01 (C20-45)	V - BR	Fuel pump control	Ignition switch ON	11 to 14 V
			Idling	Below 1.5 V
W (A21-24) - E1 (C20-104)	B - W	MIL	Ignition switch ON	Below 1.5V
			Idling	11 to 14 V
TC (A21-27) - E1 (C20-104)	P - W	Terminal TC of DLC 3	Ignition switch ON	11 to 14 V
TACH (A21-15) - E1 (C20-104)	LG - W	Engine speed	Idling	Pulse generation (see waveform 11)
VPMP (A21-42) - E1 (C20-104)	P - W	Vent valve (built into canister pump module)	Ignition switch ON	11 to 14 V
MPMP (A21-34) - E1 (C20-104)	V - W	Leak detection pump (built into canister pump module)	Leak detection pump OFF	Below 3 V
			Leak detection pump ON	11 to 14 V
VCPP (C20-70) - EPPM (C20-94)	V - O	Power source for canister pressure sensor (specific voltage)	Ignition switch ON	4.5 to 5.5 V
PPMP (C20-71) - EPPM (C20-94)	L - O	Canister pressure sensor (built into canister pump module)	Ignition switch ON	3 to 3.6 V
ELS (A21-31) - E1 (C20-104)	G - W	Electric load	Tail light switch ON	7.5 to 14 V
			Tail light switch OFF	Below 1.5 V
ELS3 (A21-33) - E1 (C20-104)	V - W	Electric load	Defogger switch ON	7.5 to 14 V
			Defogger switch OFF	Below 1.5 V
FAN (A21-21) - E1 (C20-104)	O - W	Fan No. 1 relay	Ignition switch ON	11 to 14 V
			Idling with A/C ON, or high engine coolant temperature	Below 1.5 V
FAN2 (A21-22) - E1 (C20-104)	LG - W	Fan No. 2 relay	Idling with high engine coolant temperature	Below 1.5 V
ALT (C20-50) - E1 (C20-104)	P - W	Generator	Ignition switch ON	11 to 14 V
CANH (A21-41) - E1 (C20-104)	L - W	CAN communication line	Ignition switch ON	Pulse generation (see waveform 12)
CANL (A21-49) - E1 (C20-104)	W - W	CAN communication line	Ignition switch ON	Pulse generation (see waveform 13)

ES

HINT:

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

**1. WAVEFORM 1
Camshaft timing oil control valve (OCV)**

ECM Terminal Names	Between OC1+ and OC1-
Tester Ranges	5 V/DIV, 1 msec./DIV
Conditions	Idling

