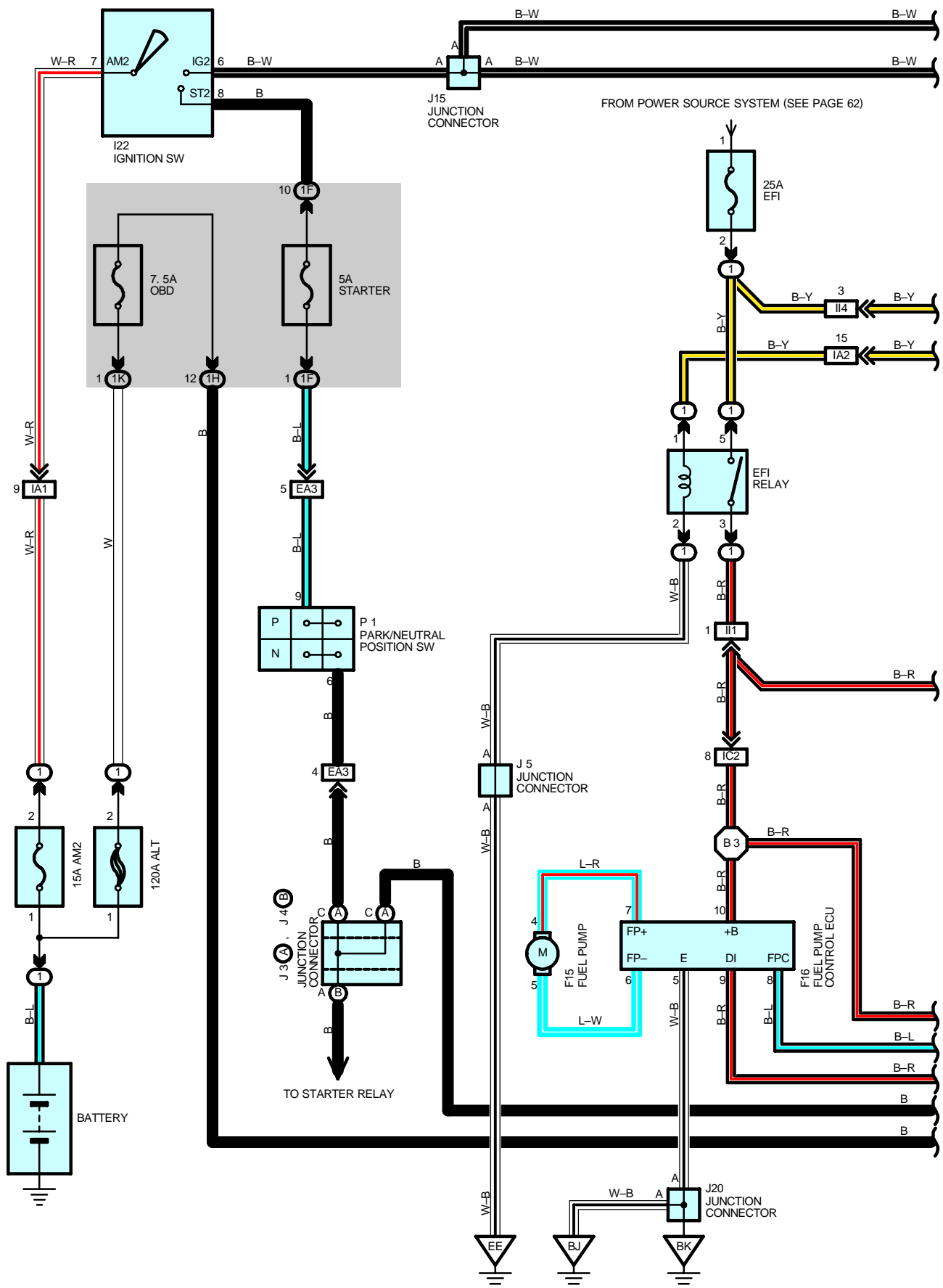
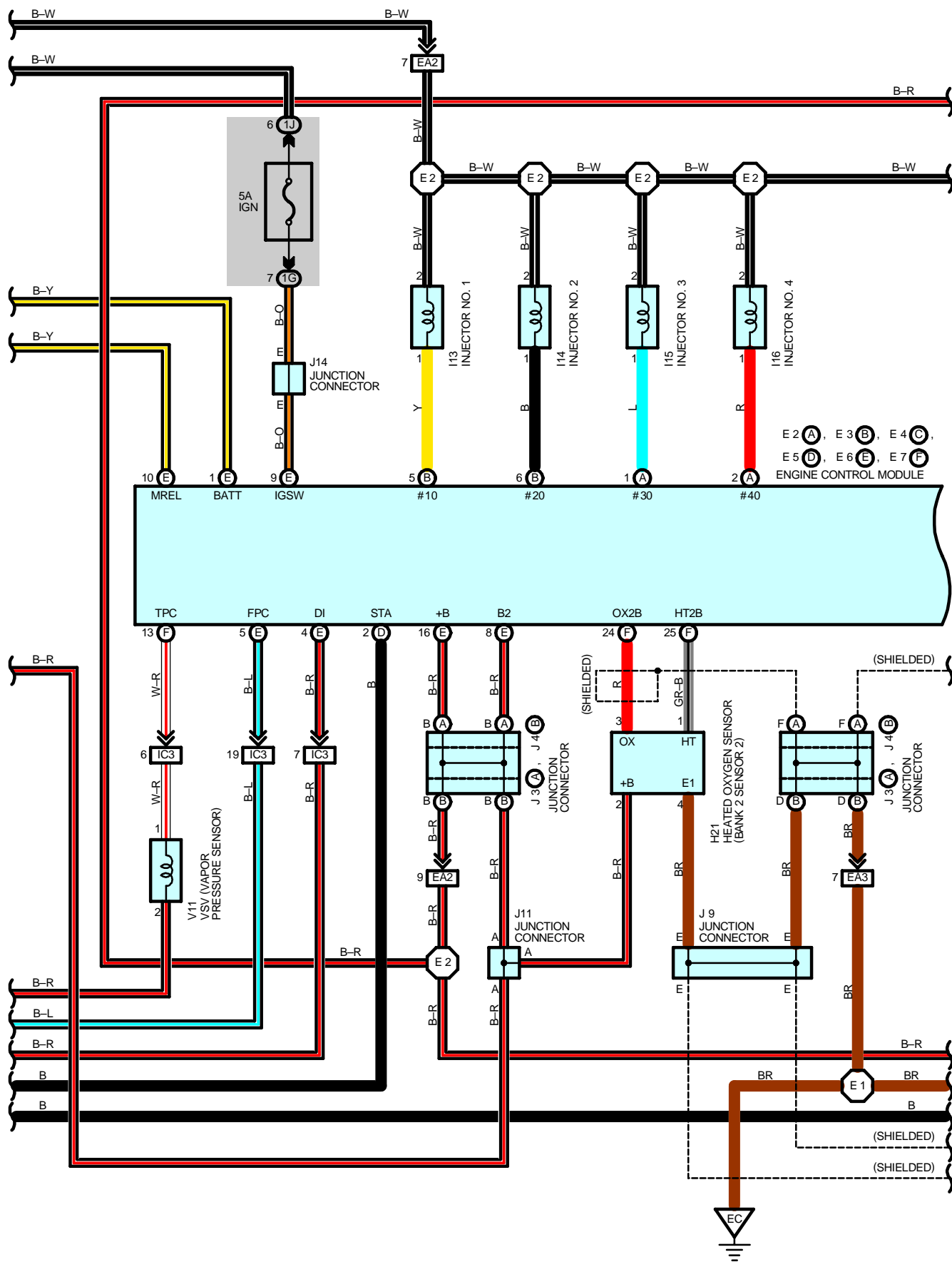
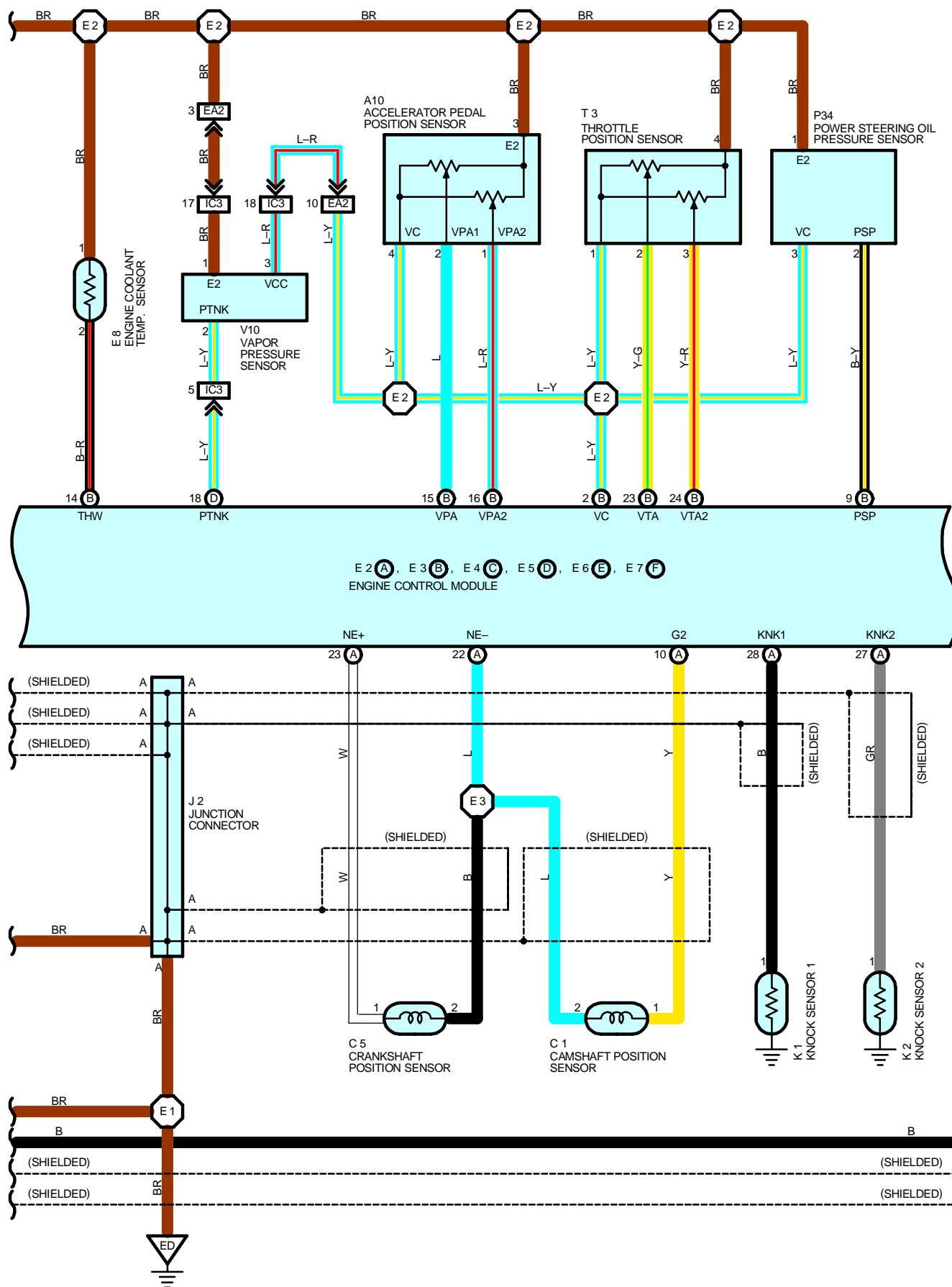


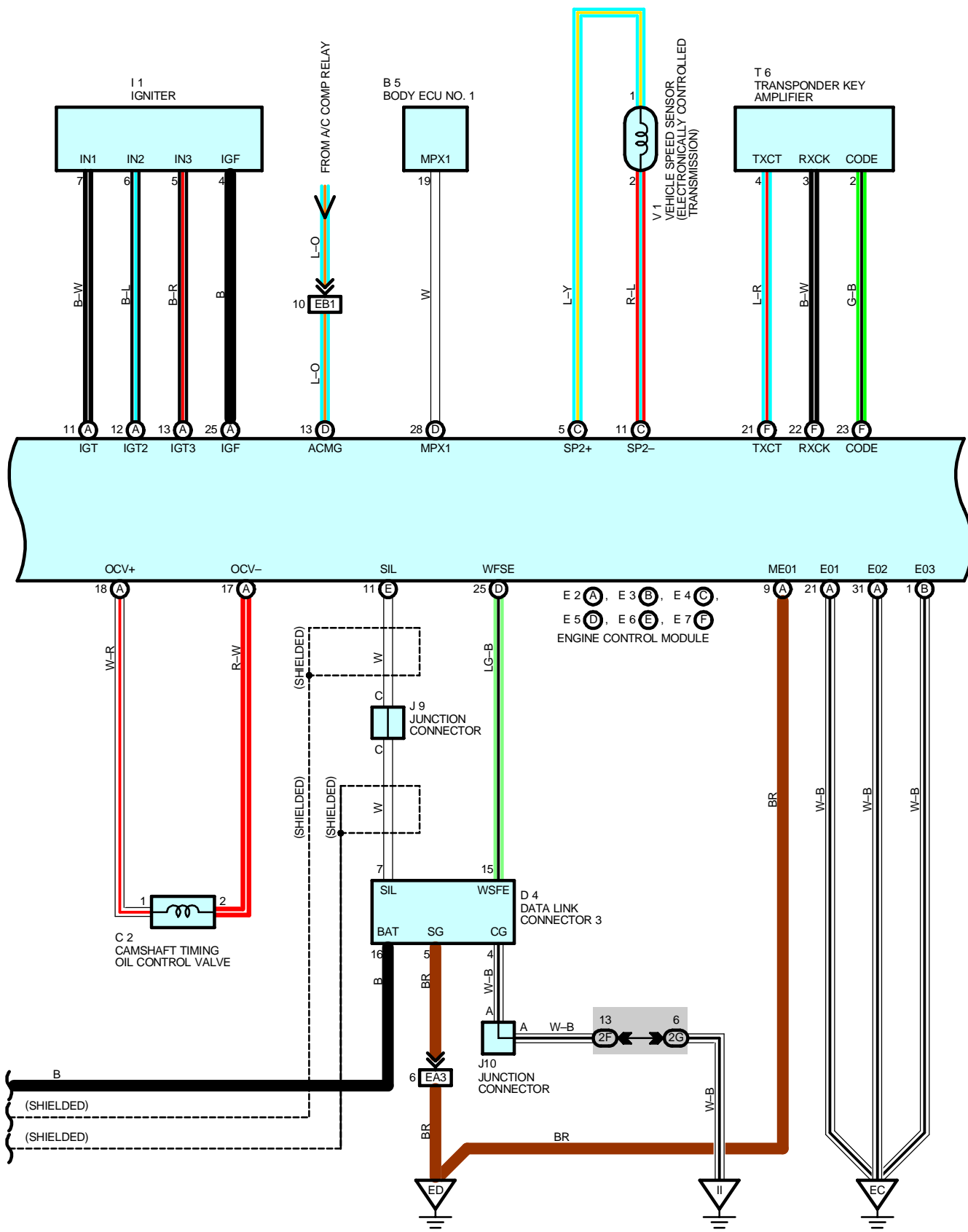
ENGINE CONTROL (2JZ-GE)

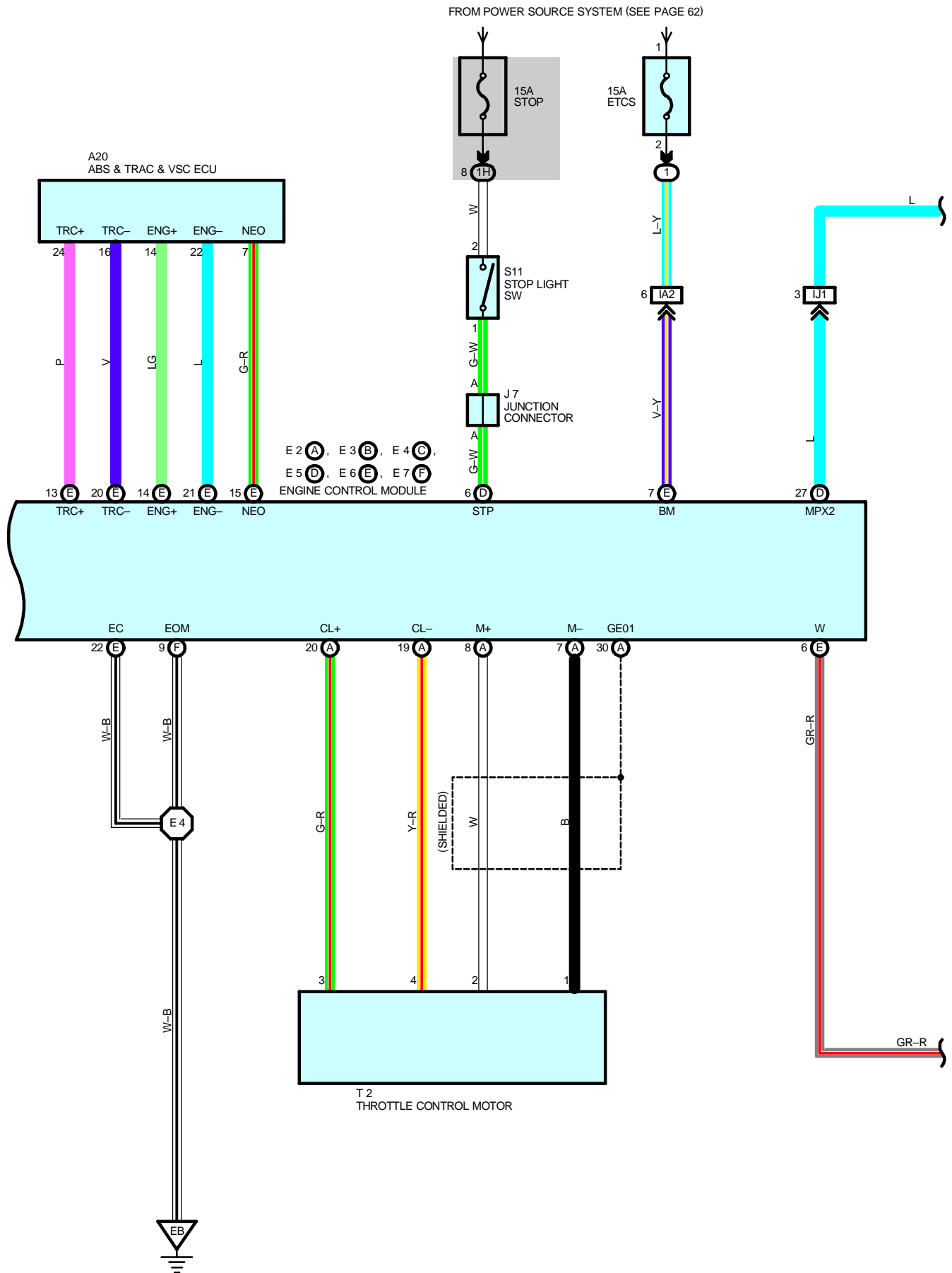




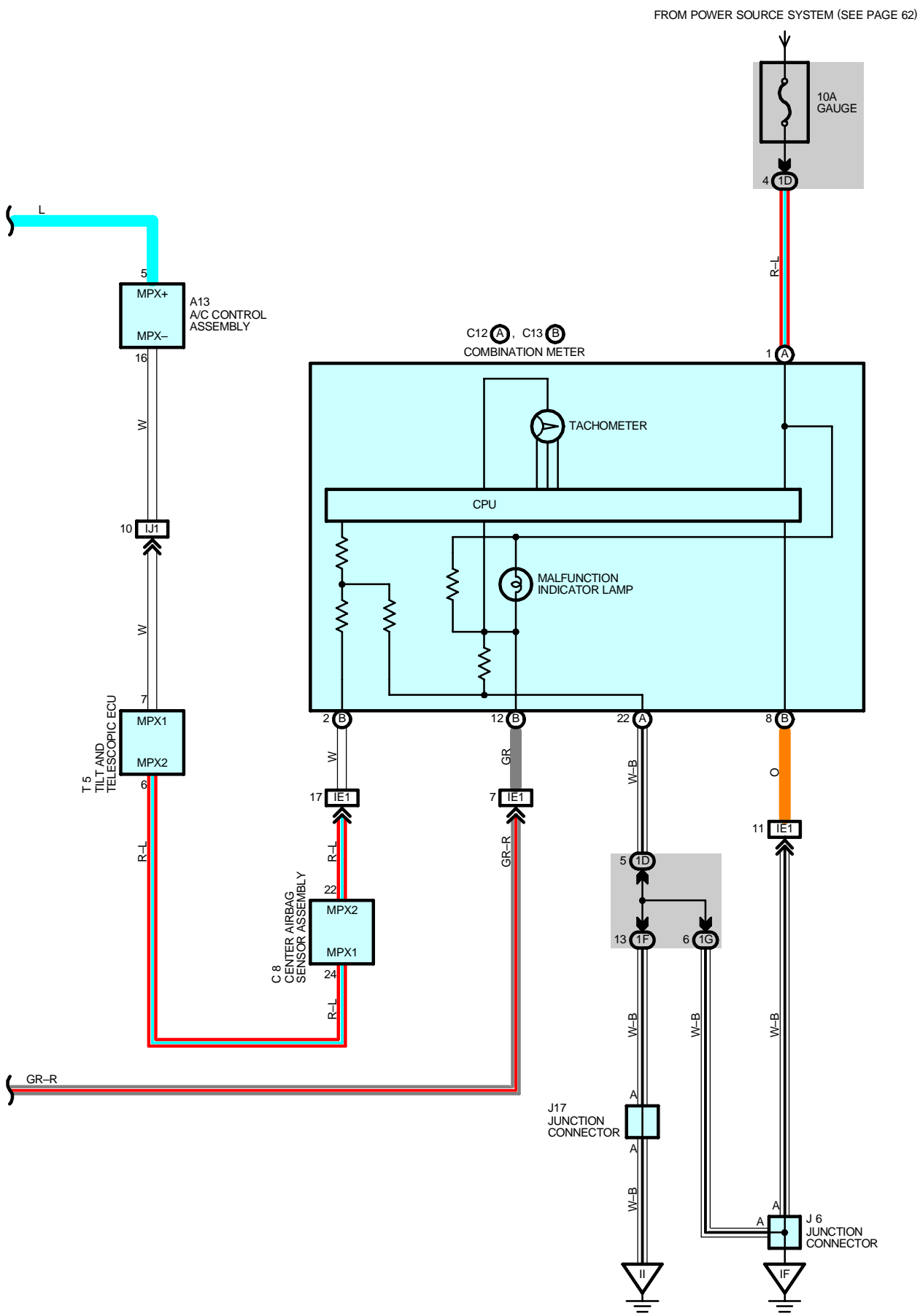


ENGINE CONTROL (2JZ-GE)





ENGINE CONTROL (2JZ-GE)



SYSTEM OUTLINE

The engine control system utilizes a microcomputer and maintains overall control of the engine, transmission etc. An outline of the engine control is given here.

1. INPUT SIGNALS

(1) Engine coolant temp. signal circuit

The engine coolant temp. sensor detects the engine coolant temp. and has a built-in thermister with a resistance, which varies according to the engine coolant temp. The engine coolant temp. is input into TERMINAL THW of the engine control module as a control signal.

(2) Intake air temp. signal circuit

The intake air temp. sensor is installed in the mass air flow meter and detects the intake air temp. which is input as a control signal to TERMINAL THA of the engine control module.

(3) Oxygen density signal circuit

The oxygen density in the exhaust emission is detected by the heated oxygen sensors and input as a control signal to TERMINALS OX1A, OX2A, OX1B and OX2B of the engine control module.

(4) RPM signal circuit

Camshaft position is detected by the camshaft position sensor and its signal is input to TERMINAL G2 of the engine control module as a control signal.

Also, engine RPM is detected by the crankshaft position sensor and is input as a control signal to TERMINAL NE+.

(5) Throttle position signal circuit

The throttle position sensor detects the throttle valve opening angle as a control signal, which is input into TERMINAL VTA of the engine control module.

(6) Vehicle speed circuit

The vehicle speed sensor (Electronically controlled transmission) detects the vehicle speed and inputs a control signal to TERMINAL SP2+ of the engine control module.

(7) Battery signal circuit

Voltage is constantly applied to TERMINAL BATT of the engine control module. With the ignition SW turned on, the voltage for engine control module start-up power supply is applied to TERMINALS +B, B2 of the engine control module via the EFI relay.

The current flowing through the IGN fuse flows to TERMINAL IGSW of the engine control module.

Voltage is constantly applied to TERMINAL BM of the engine control module.

(8) Intake air volume signal circuit

Intake air volume is detected by the mass air flow meter and the signal is input to TERMINAL VG of the engine control module as a control signal.

(9) Stop light SW signal circuit

The stop light SW is used to detect whether the vehicle is braking or not and the signal is input into TERMINAL STP of the engine control module as a control signal.

(10) Starter signal circuit

To confirm whether the engine is cranking, the voltage is applied to the starter motor during cranking is detected and the signal is input into TERMINAL STA of the engine control module as a control signal.

(11) Engine knock signal circuit

Engine knocking is detected by knock sensors and the signal is input into TERMINALS KNC1 and KNC2 as a control signal.

ENGINE CONTROL (2JZ-GE)

2. CONTROL SYSTEM

* SFI system

The SFI system monitors the engine condition through the signals input from each sensor (Input signals from (1) to (11) etc.) to the engine control module. And the control signal is output to TERMINALS #10, #20, #30, #40, #50 and #60 of the engine control module to operate the injector (Inject the fuel). The SFI system controls the fuel injection operation by the engine control module in response to the driving conditions.

* ESA system

The ESA system monitors the engine condition through the signals input to the engine control module from each sensor (Input signals from (1), (2), (4), to (11) etc.). The best ignition timing is decided according to this data and the memorized data in the engine control module and the control signal is output to TERMINALS IGT, IGT2, IGT3. This signal controls the igniter to provide the best ignition timing for the driving conditions.

* Heated oxygen sensor heater control system

The heated oxygen sensor heater control system turns the heater on when the intake air volume is low (Temp. of exhaust emissions is low), and warms up the oxygen sensors to improve detection performance of the sensors. The engine control module evaluates the signals from each sensor (Input signals from (1), (2), (4), (7), to (9) etc.), and outputs current to TERMINALS HT1A, HT2A, HT1B and HT2B to control the heater.

* Fuel pump control system

The engine control module outputs current to TERMINAL FPC and controls the fuel pump control ECU and fuel pump drive speed in response to the driving conditions.

* ACIS

ACIS includes a valve in the bulkhead separating the surge tank into two parts. This valve is opened and closed in accordance with the driving conditions to control the intake manifold length in two stages for increased engine output in all ranges from low to high speeds.

* ETCS-i

The ETCS-i controls the engine output at its optimal level corresponding to the opening of the accel. pedal under all driving conditions.

* MPX

The MPX communicates with the combination meter, A/C control assembly, as well as body ECU of the multiplex communication system

3. DIAGNOSIS SYSTEM

With the diagnosis system, when there is a malfunction in the engine control module signal system, the malfunctioning system is recorded in the memory. The malfunctioning system can be found by reading the code displayed by the malfunction indicator lamp.

4. FAIL-SAFE SYSTEM

When a malfunction has occurred in any system, if there is a possibility of engine trouble being caused by continued control based on the signals from that system, the fail-safe system either controls the system by using data (Standard values) recorded in the engine control module memory or else stops the engine.

SERVICE HINTS

EFI RELAY

5-3 : Closed with ignition SW at **ON** or **ST** position

E8 ENGINE COOLANT TEMP. SENSOR

1-2 : Approx. **15.0 kΩ** (**-20°C**, **-4°F**)

Approx. **2.45 kΩ** (**20°C**, **68°F**)

Approx. **0.32 kΩ** (**80°C**, **176°F**)

Approx. **0.14 kΩ** (**110°C**, **230°F**)

E2 (A), E3 (B), E5 (D), E6 (E) ENGINE CONTROL MODULE

BATT-GROUND : Always approx. **12** volts

BM-GROUND : Always approx. **12** volts

IGSW-GROUND : Approx. **12** volts with ignition SW at **ON** or **ST** position

+B, B2-GROUND : Approx. **12** volts with ignition SW at **ON** or **ST** position

VC-GROUND : **4.5-5.5** volts with ignition SW on

VTA2-GROUND : **2.0-2.9** volts with ignition SW on and throttle valve fully closed

4.6-5.0 volts with ignition SW on and throttle valve fully opened

VTA-GROUND : **0.4-1.0** volts with ignition SW on and throttle valve fully closed

3.2-4.8 volts with ignition SW on and throttle valve fully opened

VPA-GROUND : **0.25-0.9** volts with ignition SW at on and accelerator fully closed

3.2-4.8 volts with ignition SW at on and accelerator fully opened

VPA2-GROUND : **1.8-2.7** volts with ignition SW at on and accelerator fully closed

4.7-5.0 volts with ignition SW at on and accelerator fully opened

THA-GROUND : **0.5-3.4** volts with idling, intake air temp. **20°C** (**68°F**)

THW-GROUND : **0.2-1.0** volts with idling, coolant temp. **80°C** (**176°F**)

STA-GROUND : **6.0** volts or more with cranking

TC-GROUND : **9.0-14.0** volts with ignition SW on

W-GROUND : **9.0-14.0** volts with idling

0-3.0 volts with ignition SW on

ACMG-GROUND : **0-1.5** volts with A/C SW on (at idling)

7.5-14.0 volts with A/C SW off and throttle valve fully open

#10, #20, #30, #40, #50, #60-GROUND : **9.0-14.0** volts with ignition SW on pulse generation with idling

I13, I14, I15, I16, I17, I18 INJECTOR NO.1, NO.2, NO.3, NO.4, NO.5, NO.6

1-2 : **13.4-14.2 Ω**

○ : PARTS LOCATION

Code	See Page	Code	See Page	Code	See Page
A10	40 (2JZ-GE)	H12	40 (2JZ-GE)	J14	43
A13	42	H13	40 (2JZ-GE)	J15	43
A20	42	H14	40 (2JZ-GE)	J17	43
B5	42	H21	42	J20	44
C1	40 (2JZ-GE)	I1	41 (2JZ-GE)	K1	41 (2JZ-GE)
C2	40 (2JZ-GE)	I13	41 (2JZ-GE)	K2	41 (2JZ-GE)
C5	40 (2JZ-GE)	I14	41 (2JZ-GE)	M1	41 (2JZ-GE)
C8	42	I15	41 (2JZ-GE)	P1	41 (2JZ-GE)
C12	A 42	I16	41 (2JZ-GE)	P34	41 (2JZ-GE)
C13	B 42	I17	41 (2JZ-GE)	S11	43
D1	40 (2JZ-GE)	I18	41 (2JZ-GE)	T2	41 (2JZ-GE)
D4	42	I22	43	T3	41 (2JZ-GE)
E2	A 40 (2JZ-GE)	J2	41 (2JZ-GE)	T5	43
E3	B 40 (2JZ-GE)	J3	A 41 (2JZ-GE)	T6	43
E4	C 40 (2JZ-GE)	J4	B 41 (2JZ-GE)	V1	41 (2JZ-GE)
E5	D 40 (2JZ-GE)	J5	41 (2JZ-GE)	V2	41 (2JZ-GE)
E6	E 40 (2JZ-GE)	J6	43	V3	41 (2JZ-GE)
E7	F 40 (2JZ-GE)	J7	43	V10	45
E8	40 (2JZ-GE)	J9	43	V11	45
F15	44	J10	43	V12	41 (2JZ-GE)
F16	44	J11	43		

ENGINE CONTROL (2JZ-GE)

: RELAY BLOCKS

Code	See Page	Relay Blocks (Relay Block Location)
1	24	Engine Room No.1 R/B (Engine Compartment Right)

: JUNCTION BLOCK AND WIRE HARNESS CONNECTOR

Code	See Page	Junction Block and Wire Harness (Connector Location)
1D	28	Instrument Panel Wire and Driver Side J/B (Left Kick Panel)
1F	28	Cowl Wire and Driver Side J/B (Left Kick Panel)
1G	29	
1H		
1J		
1K	28	
2F	30	Cowl Wire and Passenger Side J/B (Right Kick Panel)
2G	31	

: CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
EA1	50 (2JZ-GE)	Engine Wire and Cowl Wire (Inside of the ECU Box)
EA2		
EA3		
EA4		
EB1	50 (2JZ-GE)	Cowl Wire and Relay Block Wire (Inside of the Engine Room No.3 R/B)
IA1	52	Engine Room Main Wire and Cowl Wire (Near the Driver Side J/B)
IA2		
IC2	52	Floor No.2 Wire and Cowl Wire (Left Kick Panel)
IC3		
IE1	52	Instrument Panel Wire and Cowl Wire (Left Side of the Steering Column)
II1	52	Engine Room Main Wire and Cowl Wire (Near the Passenger Side R/B)
II4		
IJ1	54	Instrument Panel Wire and Cowl Wire (Left Side of the Blower Unit)

: GROUND POINTS

Code	See Page	Ground Points Location
EB	50 (2JZ-GE)	Left Fender
EC	50 (2JZ-GE)	Front Side of the Intake Manifold
ED	50 (2JZ-GE)	Rear Side of the Intake Manifold
EE	50 (2JZ-GE)	Under the ABS & TRAC & VSC Actuator
IF	52	Left Kick Panel
II	52	Right Side of the Cowl Panel
BJ	56	Rear Floor Partition Panel LH
BK	56	Quarter Panel LH

: SPLICE POINTS

Code	See Page	Wire Harness with Splice Points	Code	See Page	Wire Harness with Splice Points
E1	50 (2JZ-GE)	Engine Wire	E4	50 (2JZ-GE)	Cowl Wire
E2			B3	56	Floor No.2 Wire
E3					

