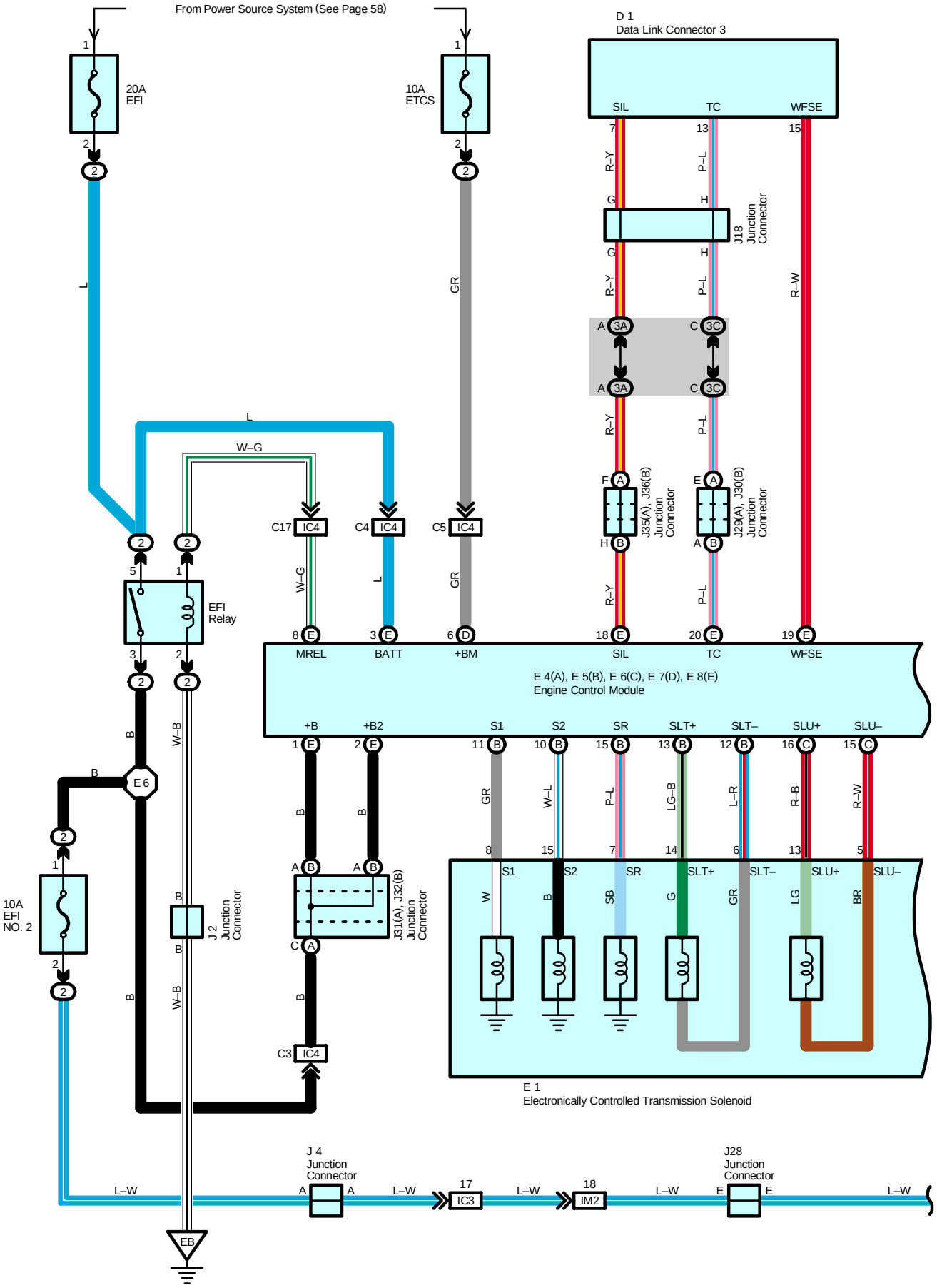
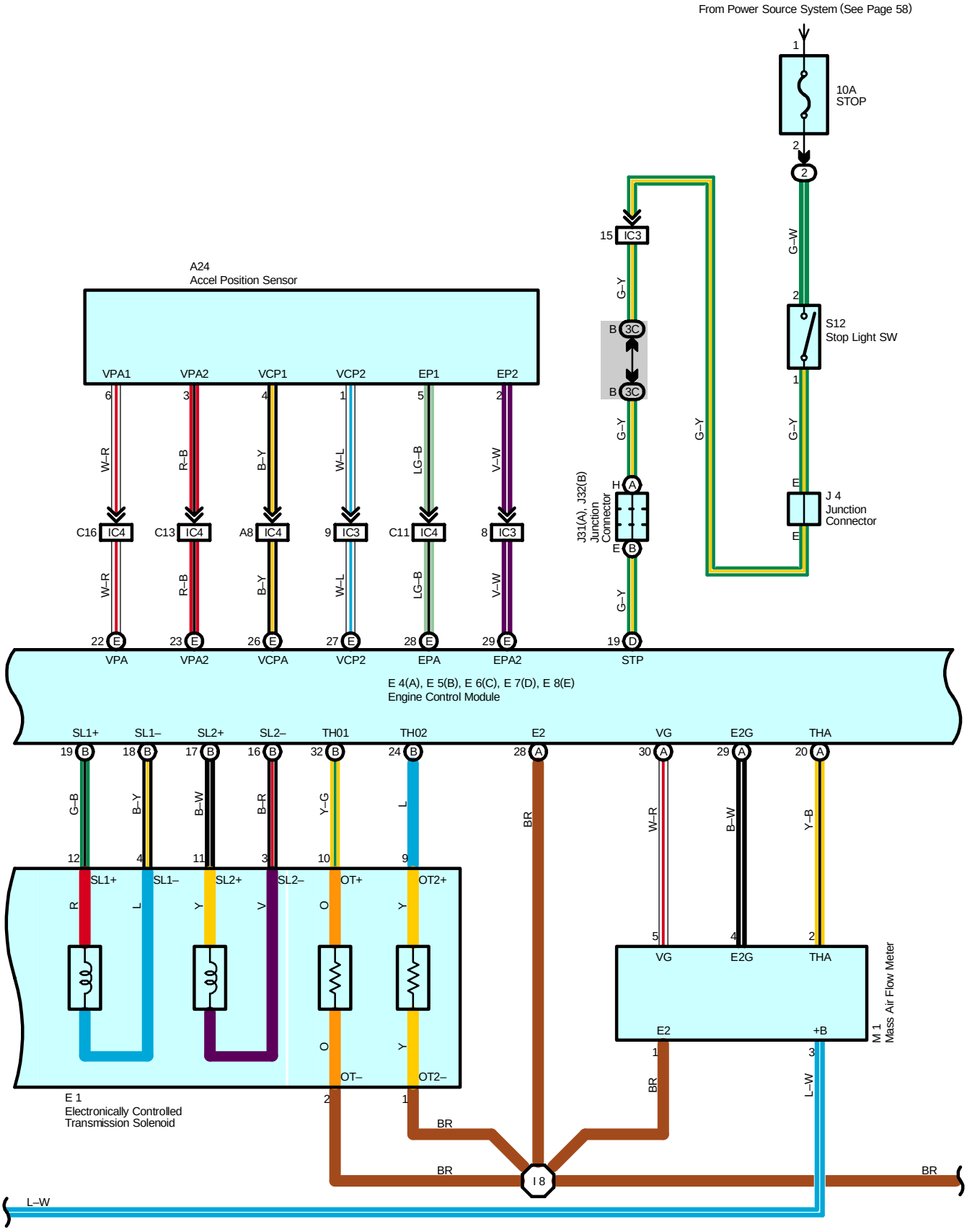
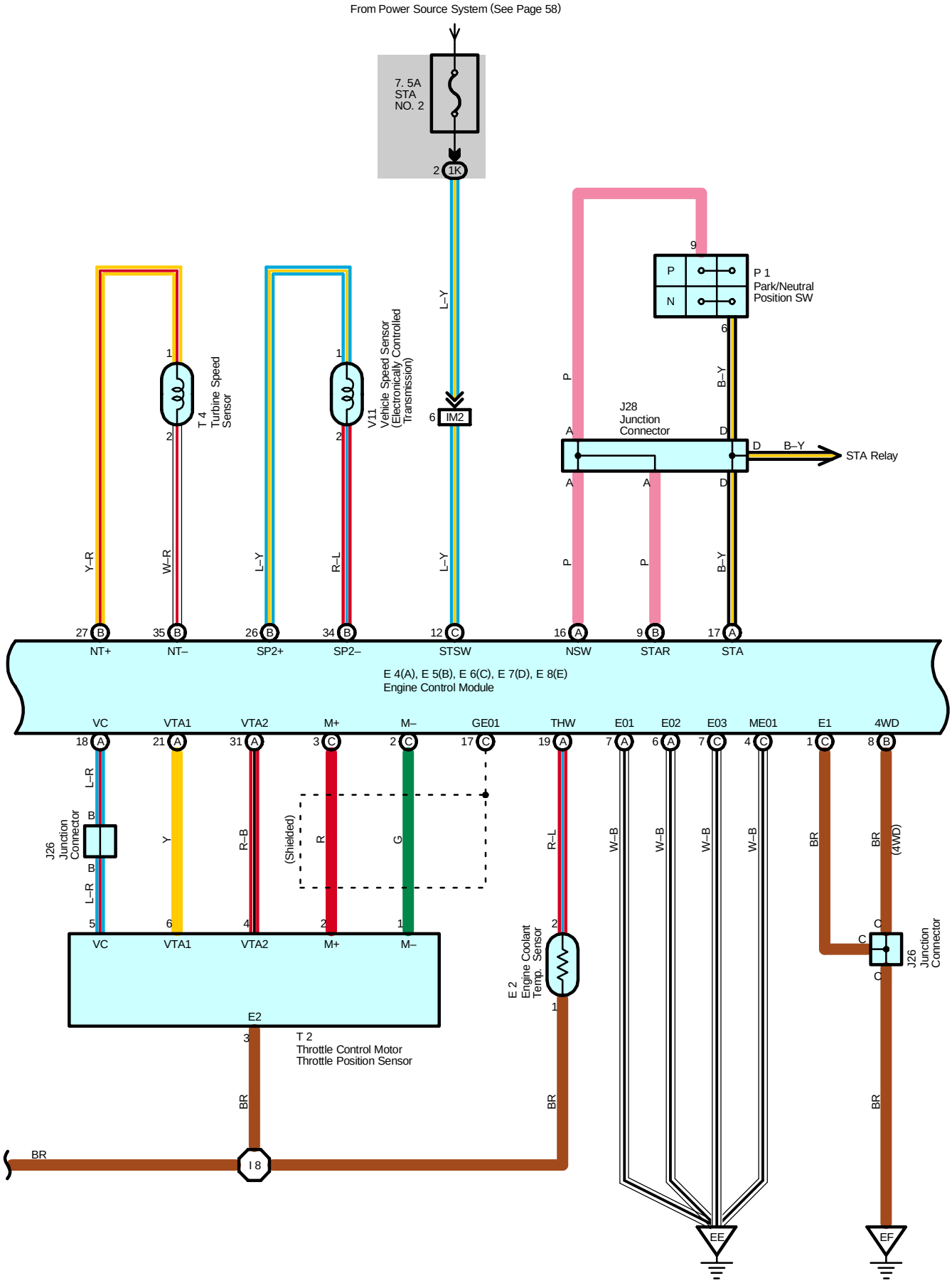
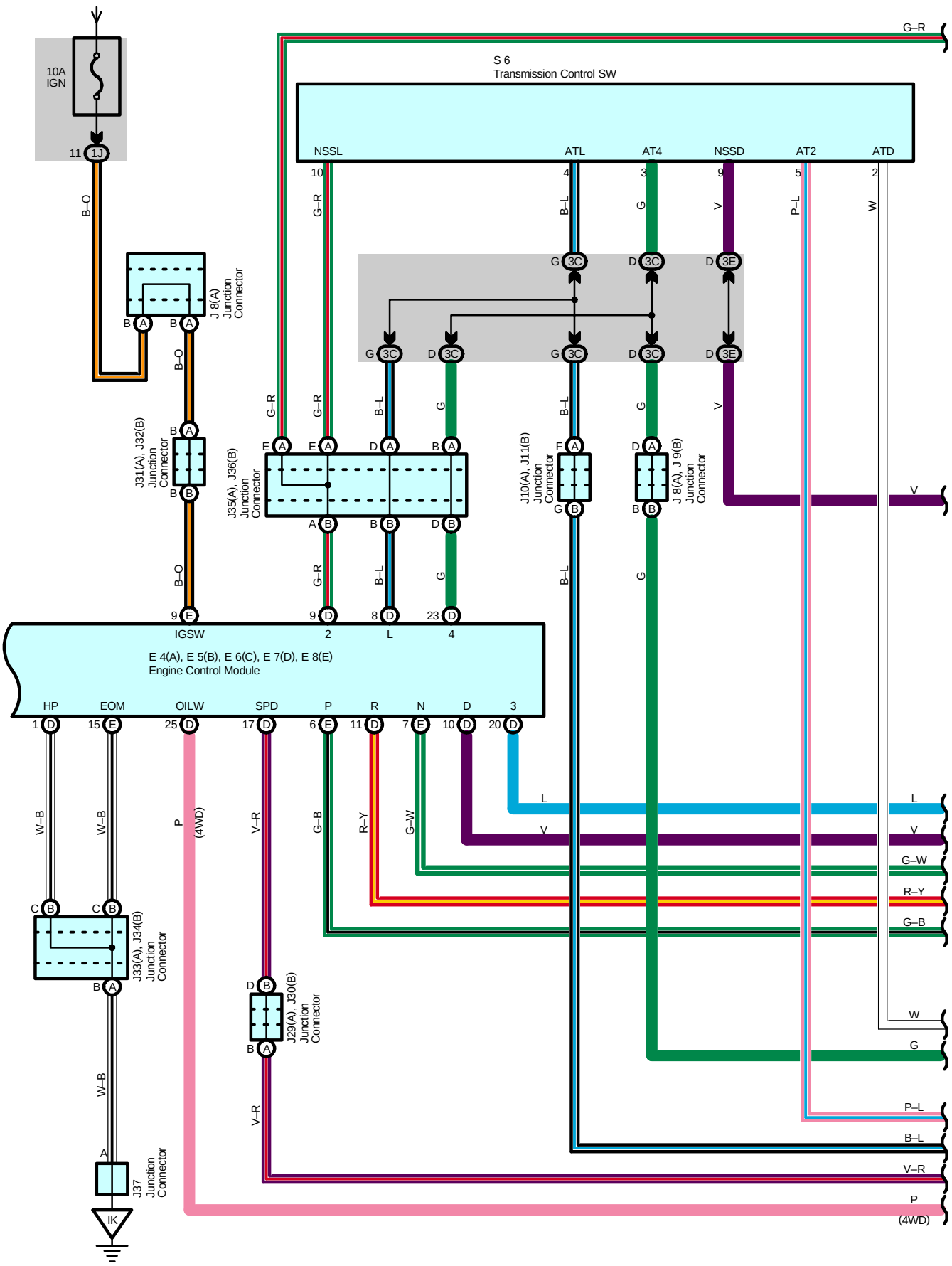
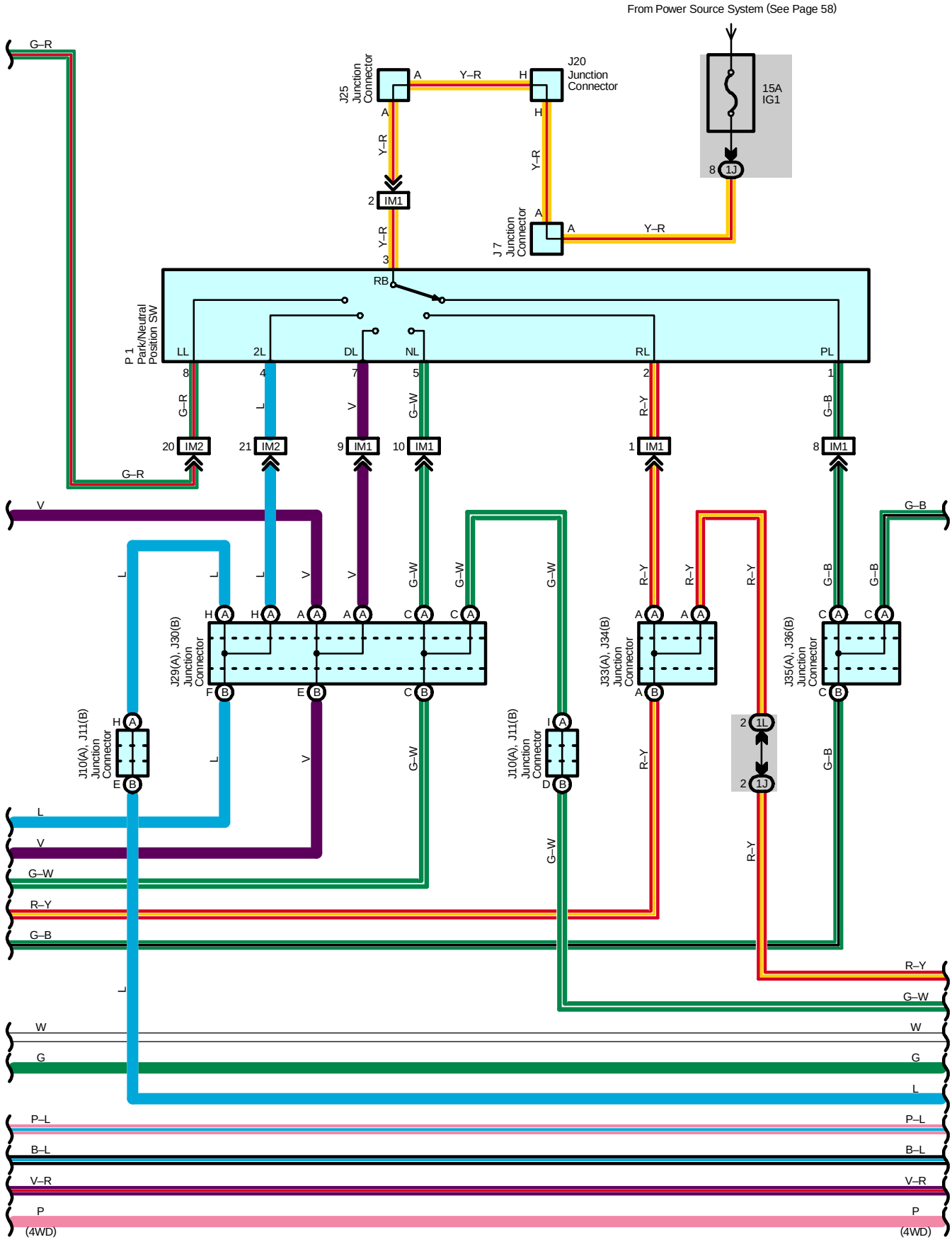

From Power Source System (See Page 58)
20A EFI
10A ETCS
D 1
Data Link Connector 3
SIL
TC
WFSE
J18 Junction Connector
J35(A), J36(B) Junction Connector
J29(A), J30(B) Junction Connector
EFI Relay
MREL
BATT
+BM
E 4(A), E 5(B), E 6(C), E 7(D), E 8(E)
Engine Control Module
+B
+B2
S1
S2
SR
SLT+
SLT–
SLU+
SLU–
E 6
10A EFI NO. 2
J 2 Junction Connector
J31(A), J32(B) Junction Connector
E 1
Electronically Controlled Transmission Solenoid
J 4 Junction Connector
J28 Junction Connector
IC3
IM2
EB

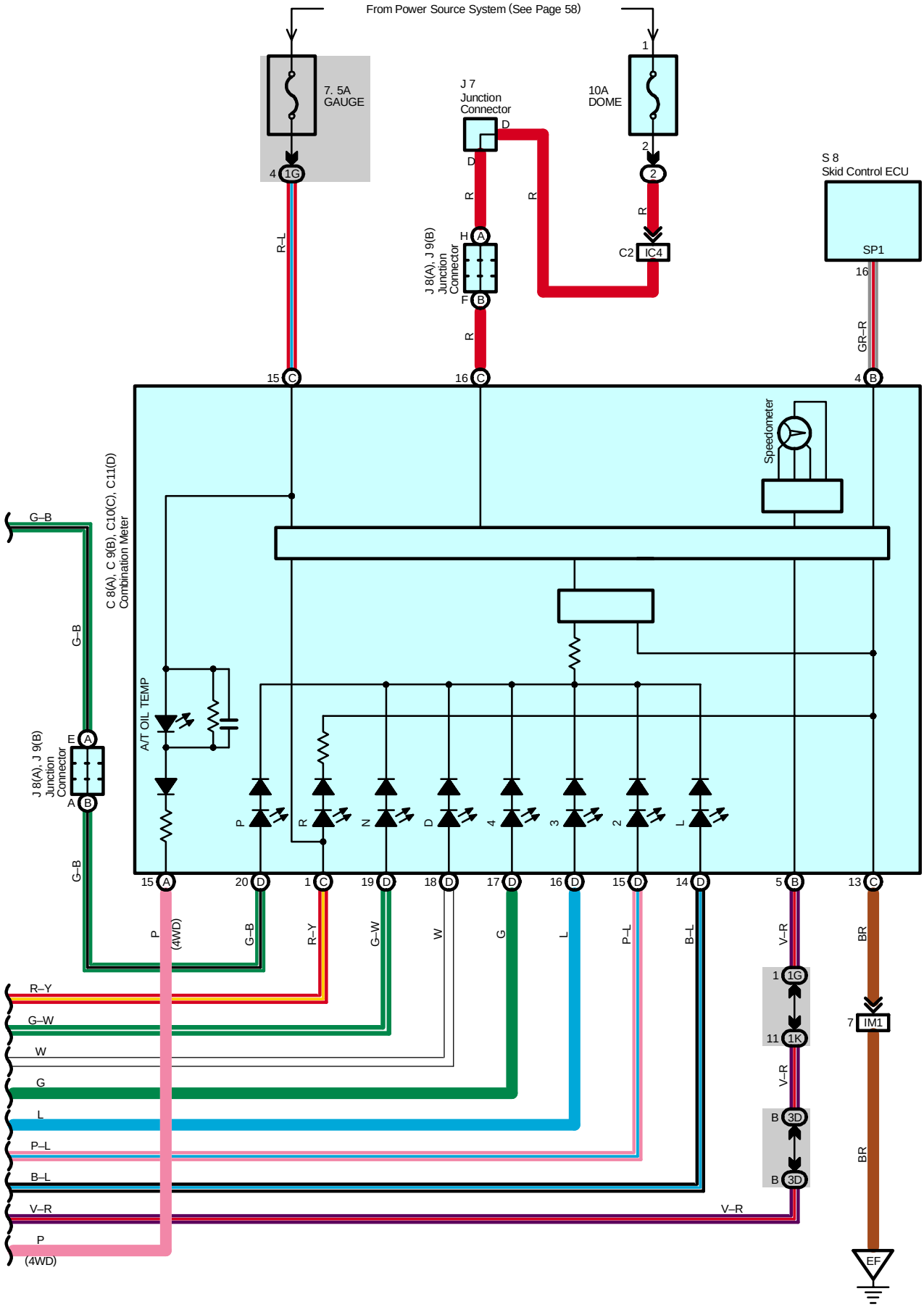

From Power Source System (See Page 58)
10A
STOP
S12
Stop Light SW
J 4
Junction
Connector
J31(A), J32(B)
Junction
Connector
A24
Accel Position Sensor
VPA1
VPA2
VCP1
VCP2
EP1
EP2
C16 IC4
C13 IC4
A8 IC4
9 IC3
C11 IC4
8 IC3
15 IC3
VPA
VPA2
VCPA
VCP2
EPA
EPA2
STP
E 4(A), E 5(B), E 6(C), E 7(D), E 8(E)
Engine Control Module
SL1+
SL1–
SL2+
SL2–
TH01
TH02
E2
VG
E2G
THA
OT+
OT–
OT2+
OT2–
E 1
Electronically Controlled
Transmission Solenoid
M 1
Mass Air Flow Meter
I 8
G–W
G–Y
W–R
R–B
B–Y
W–L
LG–B
V–W
G–B
B–W
B–R
Y–G
L
BR
Y–B
L–W
R
Y
V
O


From Power Source System (See Page 58)
7. 5A
STA
NO. 2
2
1K
L–Y
6
IM2
9
P
N
P 1
Park/Neutral
Position SW
6
B–Y
P
J28
Junction
Connector
A
D
D
B–Y
STA Relay
A
A
D
P
P
B–Y
1
T 4
Turbine Speed
Sensor
2
1
V11
Vehicle Speed Sensor
(Electronically Controlled
Transmission)
2
Y–R
W–R
L–Y
R–L
L–Y
27 B
NT+
35 B
NT–
26 B
SP2+
34 B
SP2–
12 C
STSW
16 A
NSW
9 B
STAR
17 A
STA
E 4(A), E 5(B), E 6(C), E 7(D), E 8(E)
Engine Control Module
VC
VTA1
VTA2
M+
M–
GE01
THW
E01
E02
E03
ME01
E1
4WD
18 A
21 A
31 A
3 C
2 C
17 C
19 A
7 A
6 A
7 C
4 C
1 C
8 B
L–R
B
J26
Junction
Connector
B
L–R
5
6
4
2
1
Y
R–B
(Shielded)
R
G
R–L
W–B
W–B
W–B
W–B
BR
BR
(4WD)
C
C
C
J26
Junction
Connector
VC
VTA1
VTA2
M+
M–
E2
3
T 2
Throttle Control Motor
Throttle Position Sensor
E 2
Engine Coolant
Temp. Sensor
2
1
BR
BR
BR
BR
BR
I 8
EE
EF

From Power Source System (See Page 58)




From Power Source System (See Page 58)
15A
IG1
8 1J
J20
Junction
Connector
J25
Junction
Connector
J 7
Junction
Connector
Y–R
2 IM1
3
RB
P 1
Park/Neutral
Position SW
LL
2L
DL
NL
RL
PL
G–R
L
V
G–W
R–Y
G–B
20 IM2
21 IM2
9 IM1
10 IM1
1 IM1
8 IM1
J29(A), J30(B)
Junction
Connector
J33(A), J34(B)
Junction
Connector
J35(A), J36(B)
Junction
Connector
J10(A), J11(B)
Junction
Connector
2 1L
2 1J
W
G
P–L
B–L
V–R
P
(4WD)


From Power Source System (See Page 58)
7. 5A
GAUGE
4 1G
R–L
15 C
J 7
Junction
Connector
D
D
R
R
H A
J 8(A), J 9(B)
Junction
Connector
F B
R
16 C
1
10A
DOME
2
2
R
C2 IC4
S 8
Skid Control ECU
SP1
16
GR–R
4 B
Speedometer
C 8(A), C 9(B), C10(C), C11(D)
Combination Meter
G–B
G–B
J 8(A), J 9(B)
Junction
Connector
E A
A B
G–B
A/T OIL TEMP
P
R
N
D
4
3
2
L
15 A
20 D
1 C
19 D
18 D
17 D
16 D
15 D
14 D
5 B
13 C
P
(4WD)
G–B
R–Y
G–W
W
G
L
P–L
B–L
V–R
BR
1 1G
11 1K
V–R
B 3D
B 3D
7 IM1
BR
EF
R–Y
G–W
W
G
L
P–L
B–L
V–R
V–R
P
(4WD)

System Outline

Previous automatic transmissions have selected each gear shift using mechanically controlled throttle hydraulic pressure, governor hydraulic pressure and lock–up hydraulic pressure. The electronically controlled transmission, however, electrically controls the line pressure, throttle pressure, lock–up pressure and accumulator pressure etc. through the solenoid valve. The electronically controlled transmission is a system which precisely controls gear shift timing and lock–up timing in response to the vehicle's driving conditions and the engine condition detected by various sensors. It makes smooth driving possible by shift selection for each gear which is the most appropriate to the driving conditions at that time, and by preventing downing, squat and gear shift shock when starting off.

1. Gear Shift Operation

When driving, the engine warm up condition is input as a signal to TERMINAL THW of the engine control module from the engine coolant temp. sensor and the vehicle speed signal from vehicle speed sensor is input to TERMINAL SP2+ of the engine control module. At the same time, the throttle valve opening signal from the throttle position sensor is input to TERMINALS VTA1 and VTA2 of the engine control module as throttle angle signal.
Based on these signals, the engine control module selects the best shift position for the driving conditions and sends current to the electronically controlled transmission solenoid.

2. Line Hydraulic Pressure Control

The engine control module adjusts the line hydraulic pressure to the optimal level by controlling TERMINAL SLT+ of the module according to the engine torque data. This realizes the smooth gear shifting.

3. High Response Gear Shifting Control

The engine control module performs the high response engine torque up control to control the ignition–timing lag as well as opening the electronic throttle when shifting down. By doing this, the gear shifting is performed in a short period of time. Moreover, the engine control module uses the orifice switching control, which optimizes the speed of applying and reducing the hydraulic pressure. And it realizes the fine shifting condition by applying and reducing hydraulic pressure slowly when the gear shifting shock is important and quickly when the high response is required.

4. Clutch Hydraulic Pressure Control

The engine control module controls the clutch operation in the optimal timing and with the best hydraulic pressure according to the engine torque data and the number of the clutch revolution

5. Lock–Up and Flexible Lock–Up Control

The engine control module carries out the lock–up control by controlling the TERMINAL SLU+ of the module according to the shift position, vehicle speed, throttle opening degree and running conditions. The engine control module also steadily keeps applying the lock–up clutch a delicate slippage to improve the transmission efficiency (Fuel efficiency) of the torque converter.

6. Stop Light SW Circuit

If the brake pedal is depressed (Stop light SW on) when driving in lock–up condition, a signal is input to TERMINAL STP of the engine control module. The engine control module operates and cuts the current to the solenoid to release lock–up.

7. AI–Shift Control

The engine control module judges whether the road is downslope or upslope by detecting the throttle opening degree or the vehicle's speed. Moreover it can expect the winding roads by detecting the turning condition of the vehicle. The engine control module keeps unnecessary shifting up from the fourth gear from operating and carries out the automatic shifting down to the third gear in order to control the vehicle running according to the road conditions. The engine control module also reads the driver's intention during driving from his (her) accelerating operation and the running conditions of the vehicle. As a result of that, ideal shifting patters for each driver are automatically selected without any switching operations.

Service Hints

E4 (A), E5 (B), E6 (C), E7 (D), E8 (E) Engine Control Module

(E) 9–Ground : Approx. 12 volts with the ignition SW at ON position
(D) 6, (E) 3–Ground : Always approx. 12 volts
(C)12–Ground : Approx. 12 volts with the ignition SW at ST position
(D)19–Ground : Approx. 12 volts with the brake pedal depressed
(A) 6, (A) 7, (B) 8, (C) 1, (C) 4, (C) 7, (D) 1, (E) 15–Ground : Always continuity

P1 Park/Neutral Position SW

3–1 : Closed with the shift lever in P position
3–2 : Closed with the shift lever in R position
3–5 : Closed with the shift lever in N position
3–7 : Closed with the shift lever in D position or 4 position
3–4 : Closed with the shift lever in 3 position
3–8 : Closed with the shift lever in 2 position or L position

: Parts Location

Code	See Page	Code	See Page	Code	See Page
A24	36	J4	38	J32 B	38
C8 A	37	J7	38	J33 A	38
C9 B	37	J8 A	38	J34 B	38
C10 C	37	J9 B	38	J35 A	38
C11 D	37	J10 A	38	J36 B	38
D1	37	J11 B	38	J37	38
E1	32 (2UZ–FE)	J18	38	M1	33 (2UZ–FE)
E2	32 (2UZ–FE)	J20	38	P1	33 (2UZ–FE)
E4 A	37	J25	38	S6	39
E5 B	37	J26	38	S8	39
E6 C	37	J28	38	S12	39
E7 D	37	J29 A	38	T2	33 (2UZ–FE)
E8 E	37	J30 B	38	T4	33 (2UZ–FE)
J2	33 (2UZ–FE)	J31 A	38	V11	33 (2UZ–FE)

: Relay Blocks

Code	See Page	Relay Blocks (Relay Block Location)
2	22	Engine Room R/B (Engine Compartment Left)

: Junction Block and Wire Harness Connector

Code	See Page	Junction Block and Wire Harness (Connector Location)
1G	25	Instrument Panel Wire and Driver Side J/B (Lower Finish Panel)
1J		
1K		
1L		
3A	28	Instrument Panel Wire and Center J/B (Instrument Panel Brace RH)
3C		
3D		
3E		

: Connector Joining Wire Harness and Wire Harness

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
IC3	48	Instrument Panel Wire and Engine Room Main Wire (Left Kick Panel)
IC4		
IM1	52	Engine Wire and Instrument Panel Wire (Right Side of Blower Unit)
IM2		

: Ground Points

Code	See Page	Ground Points Location
EB	44 (2UZ–FE)	Front Left Fender
EE	44 (2UZ–FE)	Rear Side of Right Bank Cylinder Block
EF	44 (2UZ–FE)	Rear Side of Left Bank Cylinder Block
IK	48	Right Kick Panel

: Splice Points

Code	See Page	Wire Harness with Splice Points	Code	See Page	Wire Harness with Splice Points
E6	44 (2UZ–FE)	Engine Room Main Wire	I8	50	Engine Wire