



ENGINE CONTROL (2JZ-GTE)

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. WHICH 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 SENSOR SIDE AND INPUT AS A CONTROL SIGNAL TO **TERMINAL OX1, OXS** OF THE ENGINE CONTROL MODULE.

(4) RPM SIGNAL CIRCUIT

CRANKSHAFT POSITION IS DETECTED BY THE CRANKSHAFT POSITION SENSOR. CRANKSHAFT POSITION IS INPUT AS A CONTROL SIGNAL TO **TERMINAL NE** OF THE ENGINE CONTROL MODULE.

(5) THROTTLE POSITION SIGNAL CIRCUIT

THE THROTTLE POSITION SENSOR DETECTS THE THROTTLE VALVE OPENING ANGLE AS A CONTROL SIGNAL, WHICH IS INPUT INTO **TERMINAL VTA1** OF THE ENGINE CONTROL MODULE. WHEN THE VALVE IS COMPLETELY CLOSED, THE CONTROL SIGNAL IS INPUT INTO **TERMINAL IDL1**.

(6) VEHICLE SPEED CIRCUIT

THE VEHICLE SPEED IS DETECTED BY VEHICLE SPEED SENSOR NO. 1 INSTALLED IN THE TRANSMISSION AND THE SIGNAL IS INPUT TO **TERMINAL SP1** OF THE ENGINE CONTROL MODULE VIA THE COMBINATION METER.

(7) NEUTRAL POSITION SIGNAL CIRCUIT

THE PARK/NEUTRAL POSITION SW DETECTS WHETHER THE SHIFT POSITION IS IN "N" AND "P" OR NOT, AND THE SIGNAL IS INPUT INTO **TERMINAL NSW** OF THE ENGINE CONTROL MODULE.

(8) A/C SW SIGNAL CIRCUIT

THE OPERATING VOLTAGE OF THE A/C MAGNETIC CLUTCH IS DETECTED AND THE SIGNAL IS INPUT INTO **TERMINAL ACMG** OF ENGINE CONTROL MODULE AS A CONTROL SIGNAL.

(9) 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 **TERMINAL +B** OF THE ENGINE CONTROL MODULE VIA EFI MAIN RELAY.

THE CURRENT FLOWING THROUGH THE **IGN** FUSE FLOWS TO **TERMINAL IGSW** OF THE ENGINE CONTROL MODULE.

(10) 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.

(11) 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.

(12) STARTER SIGNAL CIRCUIT

TO CONFIRM WHETHER THE ENGINE IS CRANKING THE VOLTAGE APPLIED TO THE STARTER MOTOR DURING CRANKING IS DETECTED AND THE SIGNAL IS INPUT IN **TERMINAL STA** OF THE ENGINE CONTROL MODULE AS A CONTROL SIGNAL.

(13) ENGINE KNOCK SIGNAL CIRCUIT

ENGINE KNOCKING IS DETECTED BY KNOCK SENSOR FRONT AND REAR SIDE AND THE SIGNAL IS INPUT **TERMINALS KNK1** AND **KNK2** AS A CONTROL SIGNAL.

2. CONTROL SYSTEM

* SEQUENTIAL MULTIPOINT FUEL INJECTION SYSTEM

THE SEQUENTIAL MULTIPOINT FUEL INJECTION SYSTEM MONITORS THE ENGINE CONDITION THROUGH THE SIGNALS INPUT FROM EACH SENSOR (INPUT SIGNALS FROM (1) TO (13) ETC.) TO THE ENGINE CONTROL MODULE. THE BEST FUEL INJECTION TIMING IS DECIDED BASED ON THIS DATA AND THE PROGRAM MEMORIZED BY 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 SEQUENTIAL MULTIPOINT FUEL INJECTION SYSTEM PRODUCES CONTROLS OF 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 (13) 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 IGT1, IGT2, IGT3, IGT4, IGT5 AND IGT6** THESE SIGNALS CONTROL THE IGNITER TO PROVIDE THE BEST IGNITION TIMING FOR THE DRIVING CONDITIONS.

* HEATED OXYGEN SENSOR HEATER CONTROL SYSTEM

THE MAIN HEATED OXYGEN SENSOR, SUB 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 SENSOR TO IMPROVE DETECTION PERFORMANCE OF THE SENSOR. THE ENGINE CONTROL MODULE EVALUATES THE SIGNALS FROM EACH SENSOR (INPUT SIGNALS FROM (1), (2), (4), (9) TO (11) ETC.), AND OUTPUTS CURRENT TO **TERMINALS HT1, HTS** TO CONTROL THE HEATER

* IDLE AIR CONTROL SYSTEM

THE IDLE AIR CONTROL SYSTEM (STEP MOTOR TYPE) INCREASES THE ENGINE SPEED AND PROVIDES IDLING STABILITY FOR FAST IDLE-UP WHEN THE ENGINE IS COLD, AND WHEN THE IDLE SPEED HAS DROPPED DUE TO ELECTRICAL LOAD AND SO ON. THE ENGINE CONTROL MODULE EVALUATES THE SIGNALS FROM EACH SENSOR (INPUT SIGNALS FROM (1), (4), (5), (8), (9), (11) ETC.), OUTPUTS CURRENT TO **TERMINALS ISC1, ISC2, ISC3 AND ISC4** TO CONTROL THE IDLE AIR CONTROL VALVE.

* EGR CONTROL SYSTEM

THE EGR CONTROL SYSTEM DETECTS THE SIGNAL FROM EACH SENSOR (INPUT SIGNALS FROM (1), (4), (9), (10) ETC.), AND OUTPUTS CURRENT TO **TERMINAL EGR** TO CONTROL THE EGR VALVE.

* FUEL PUMP CONTROL SYSTEM

THE ENGINE CONTROL MODULE OUTPUTS CURRENT TO **TERMINAL FPC** AND CONTROLS THE FUEL PUMP ECU AND FUEL PUMP DRIVE SPEED IN RESPONSE TO THE DRIVING CONDITIONS

3. DIAGNOSIS SYSTEM

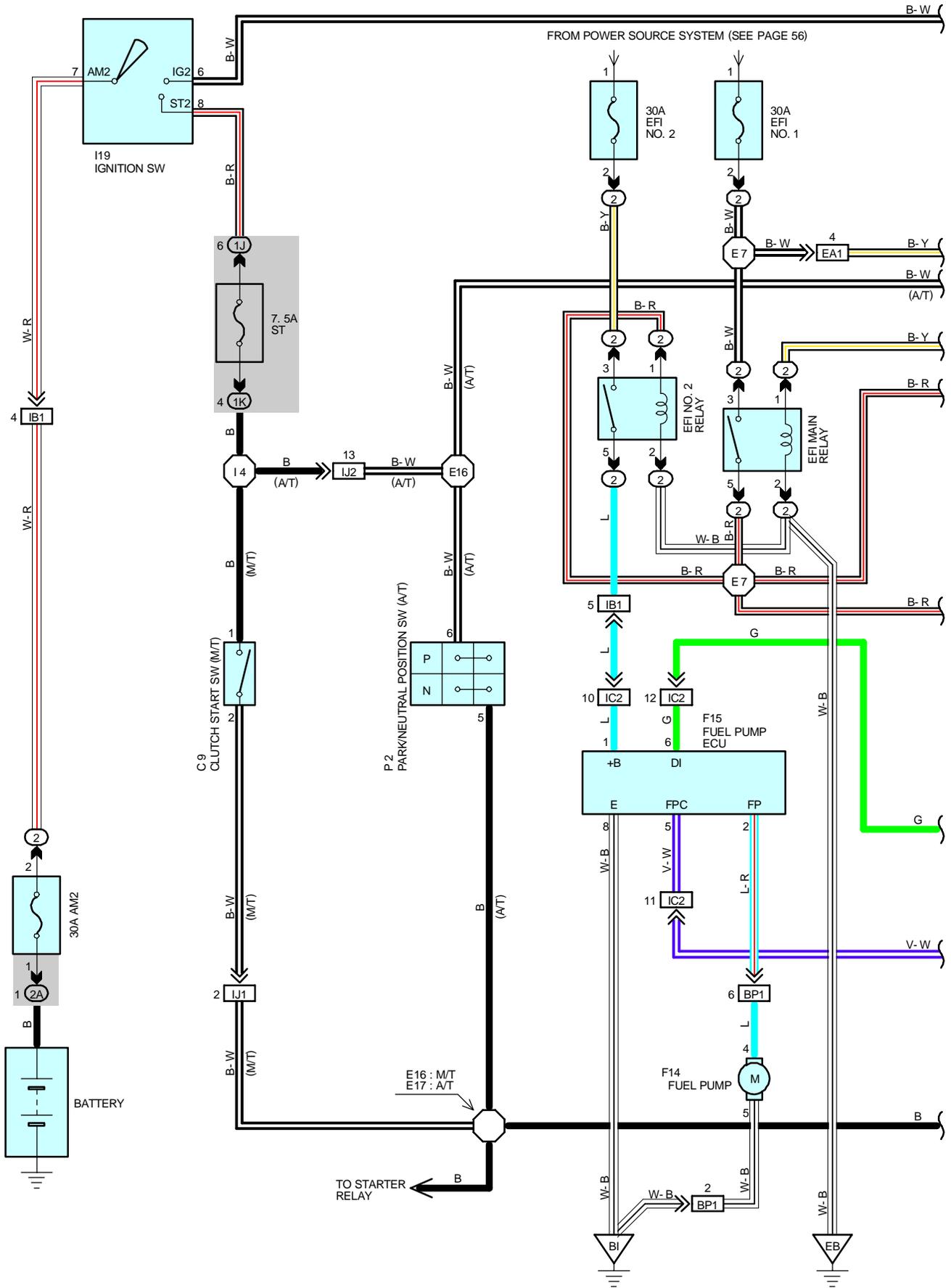
WITH THE DIAGNOSIS SYSTEM, WHEN THERE IS A MALFUNCTION IN THE ENGINE CONTROL MODULE SIGNAL SYSTEM, THE MALFUNCTIONING SYSTEM IS RECORDED IN THE MEMORY. THE MALFUNCTIONING SYSTEM CAN BE FOUND BY READING THE CODE DISPLAYED BY THE MALFUNCTION INDICATOR LAMP.

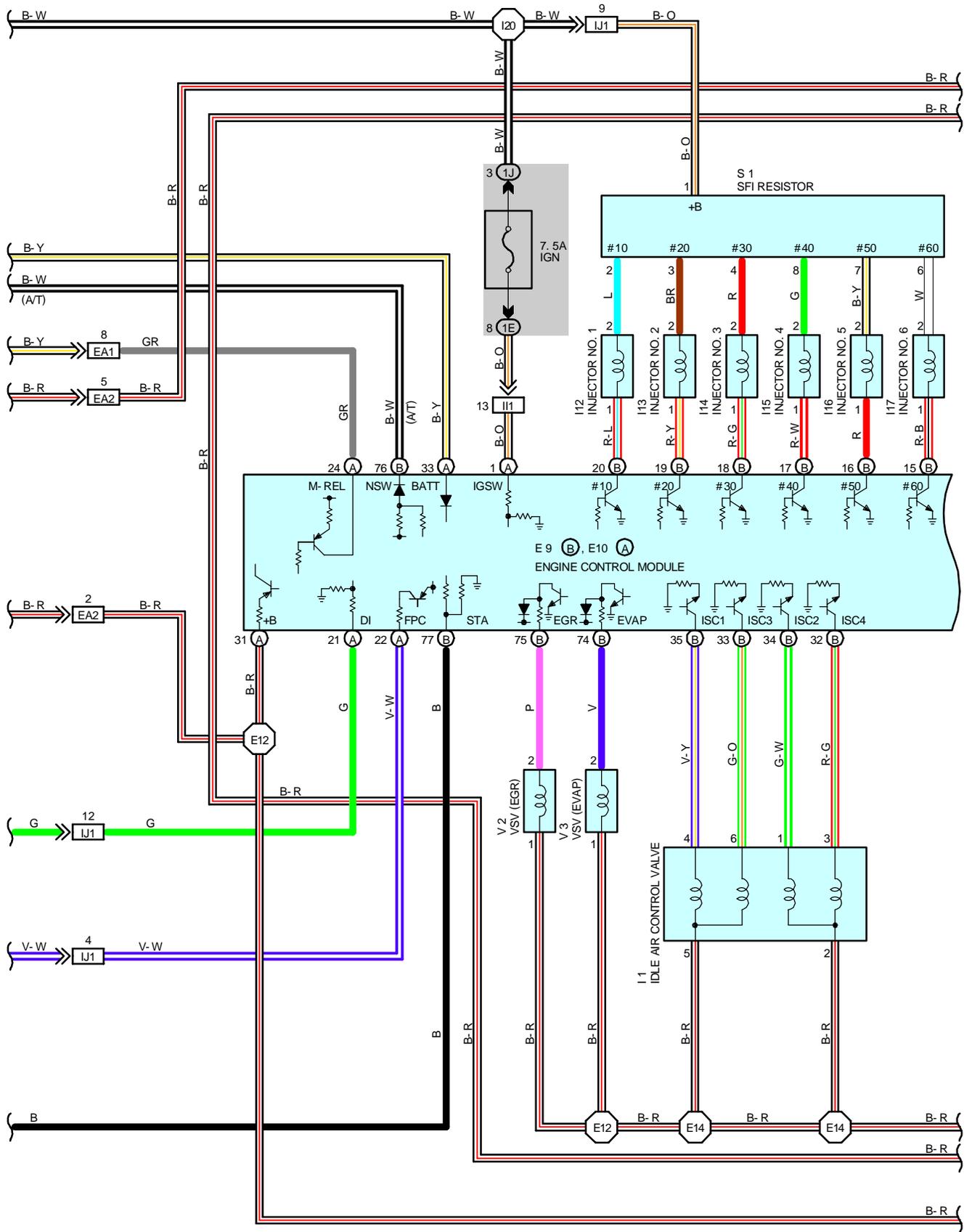
4. FAIL-SAFE SYSTEM

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.



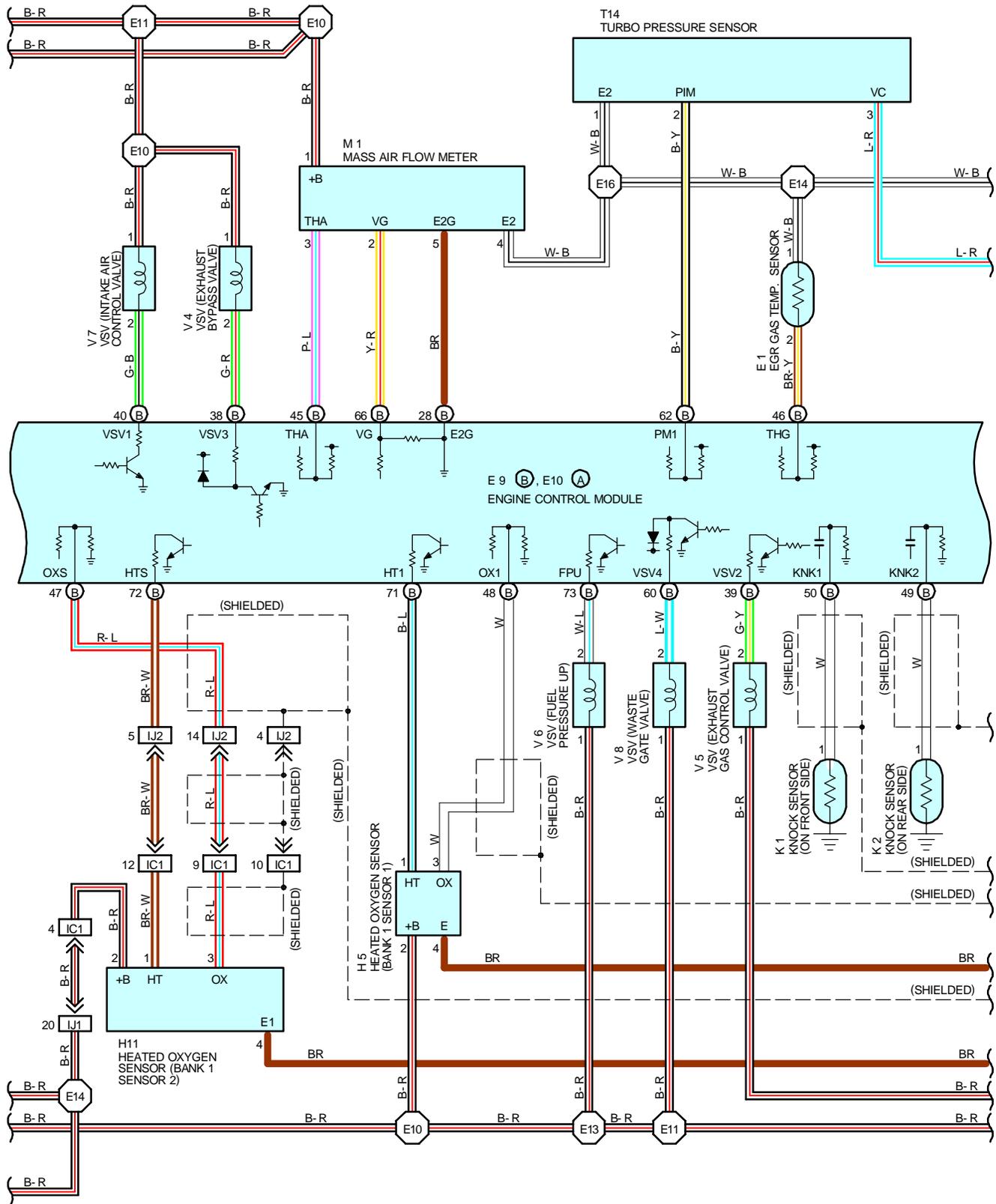
ENGINE CONTROL (2JZ-GTE)

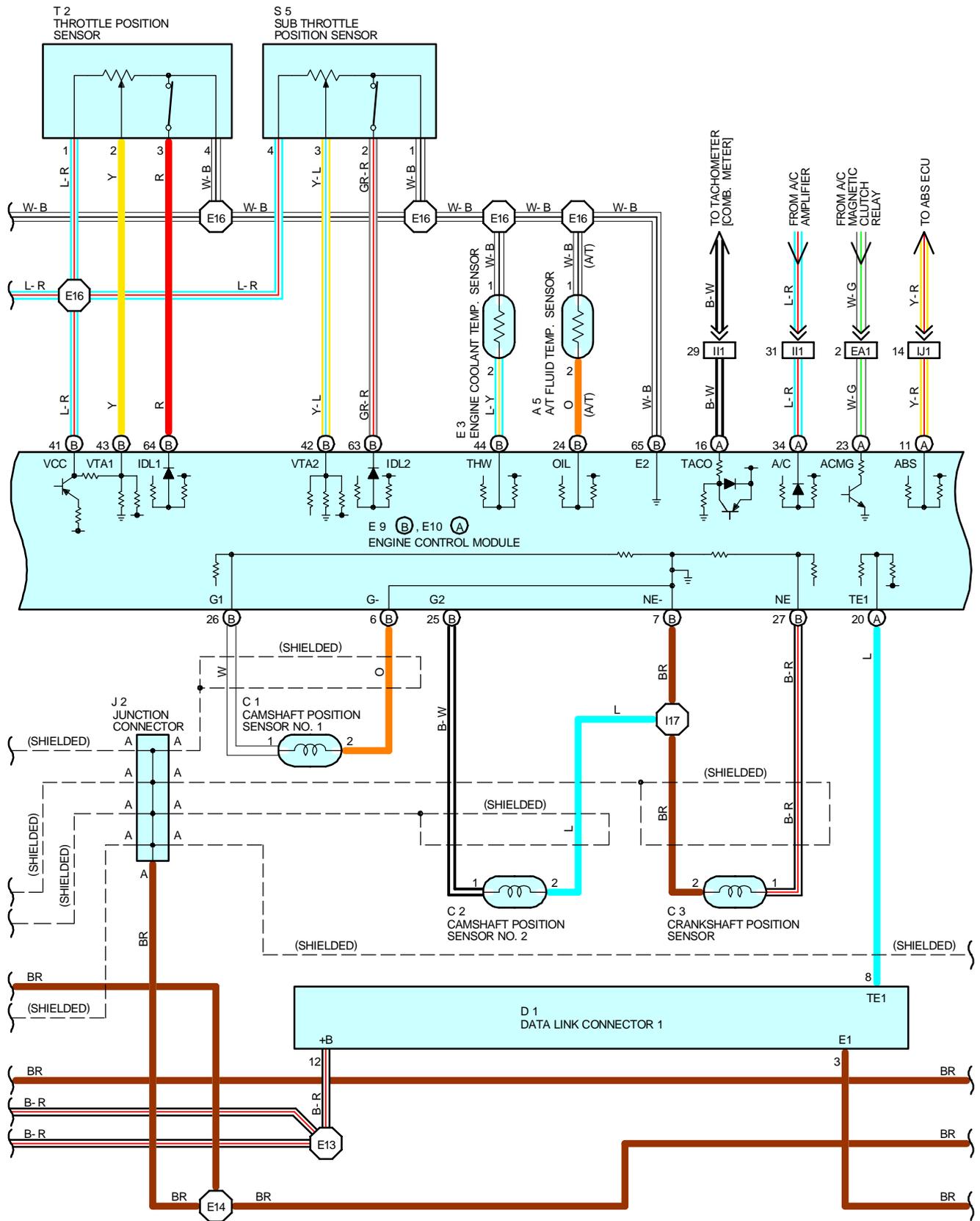






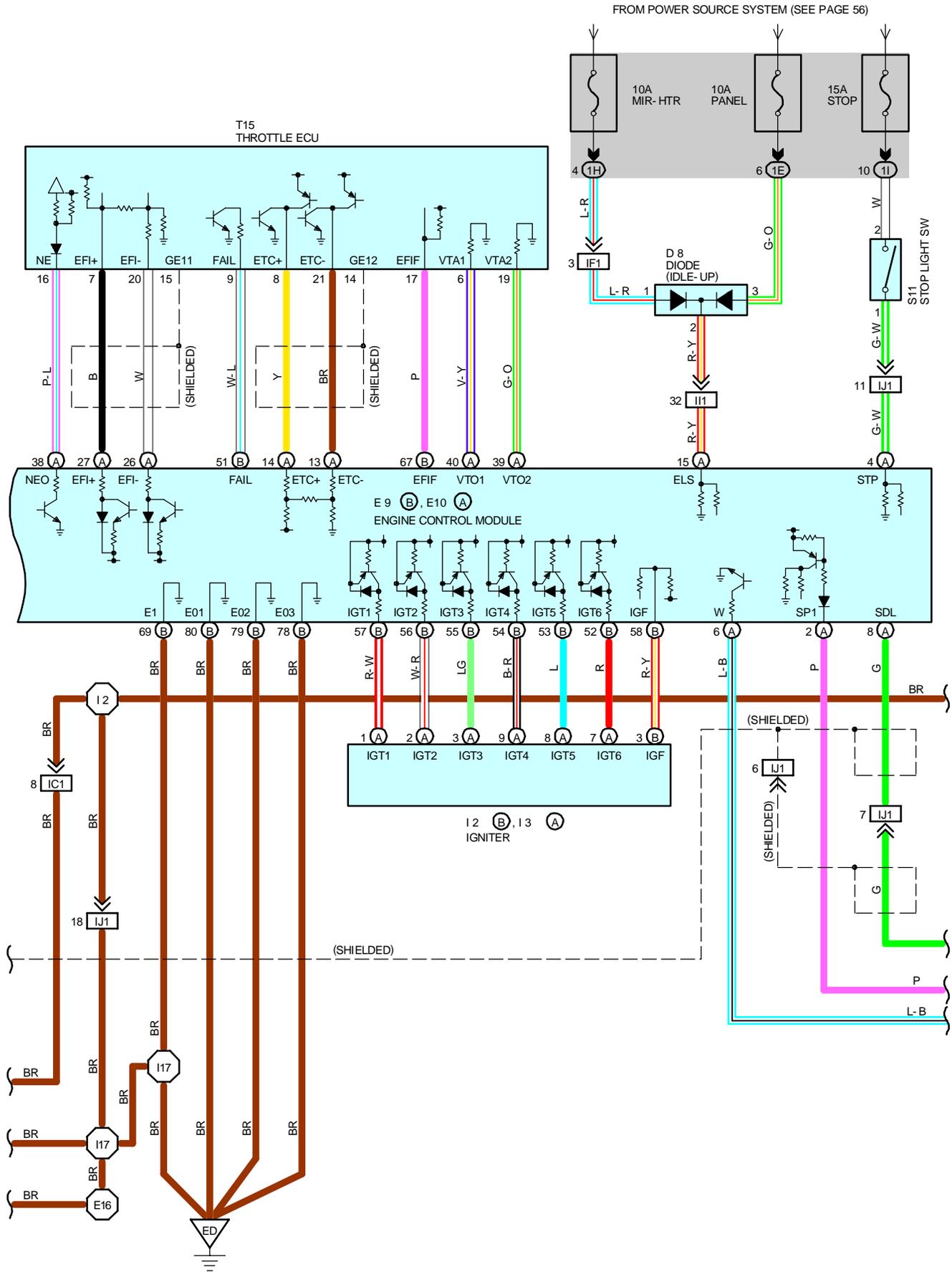
ENGINE CONTROL (2JZ-GTE)



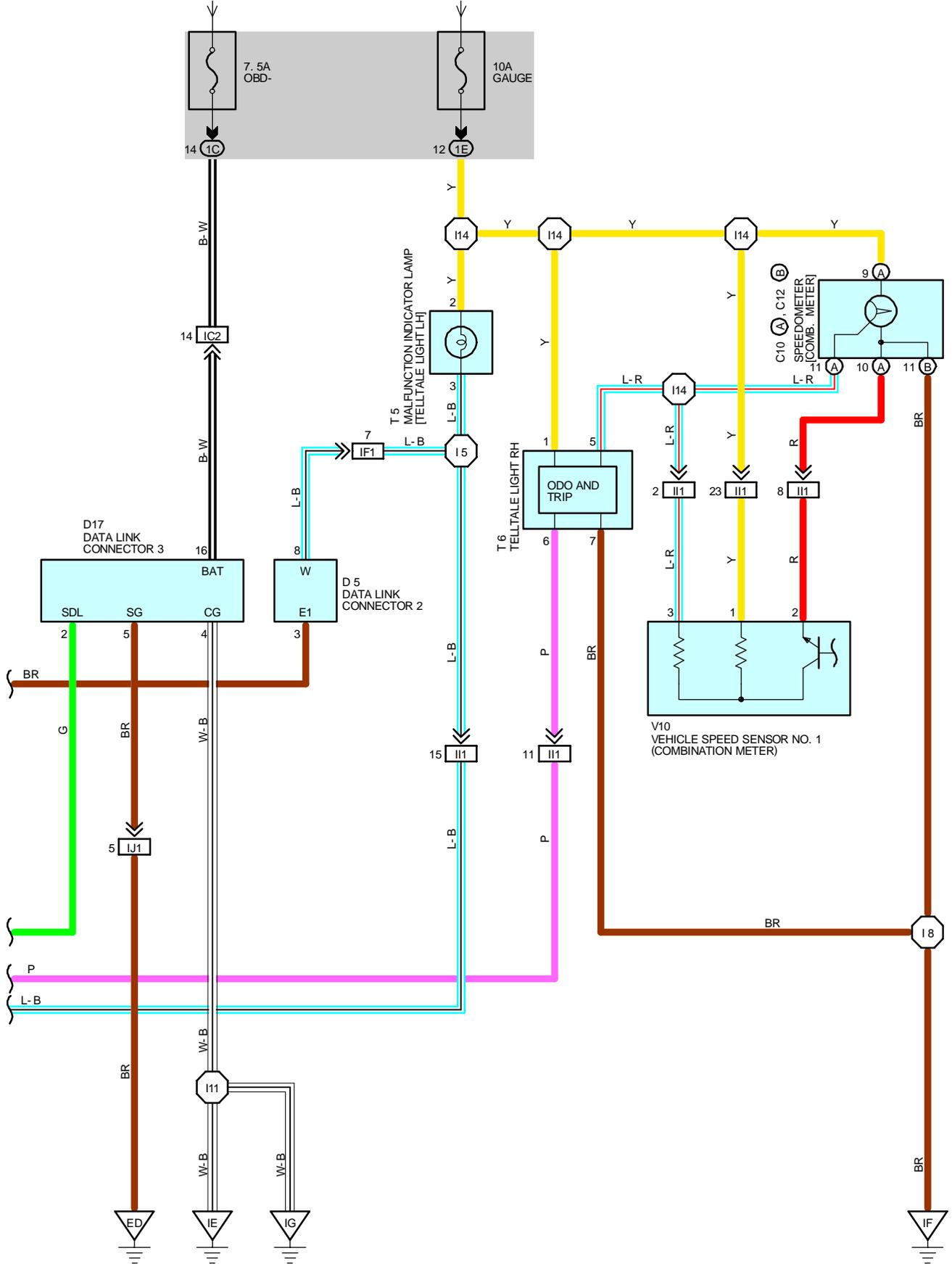




ENGINE CONTROL (2JZ-GTE)



FROM POWER SOURCE SYSTEM (SEE PAGE 56)





ENGINE CONTROL (2JZ-GTE)

SERVICE HINTS

EFI MAIN RELAY

②3-②5 : CLOSED WITH THE IGNITION SW AT **ON** POSITION

EFI NO. 2 RELAY

②3-②5 : CLOSED WITH THE IGNITION SW AT **ON** POSITION

E3 ENGINE COOLANT TEMP. SENSOR

- 1-2 : **10-20** K Ω (-20 °C, -4 °F)
- 4-7** K Ω (0 °C, 32 °F)
- 2-3** K Ω (20 °C, 68 °F)
- 0.9-1.3** K Ω (40 °C, 104 °F)
- 0.4-0.7** K Ω (60 °C, 140 °F)
- 0.2-0.4** K Ω (80 °C, 176 °F)

I1 IDLE AIR CONTROL VALVE

- 1, 3-2 : APPROX. **10-30** Ω
- 4, 6-5 : APPROX. **10-30** Ω

I12, I13, I14, I15, I16, I17 INJECTOR

- 1-2 : APPROX. **13.8** Ω

T2 THROTTLE POSITION SENSOR

- 1-4 : APPROX. **4-9** K Ω
- 1-3 : **3.3-10.0** K Ω WITH THROTTLE VALVE FULLY **OPENED** POSITION
- 0.2-0.8** K Ω WITH CLEARANCE BETWEEN LEVER AND STOP SCREW **0** MM (**0** IN.)
- 1-2 : **0-2.3** K Ω WITH CLEARANCE BETWEEN LEVER AND STOP SCREW **0.45** MM (**0.0177** IN.)
- INFINITY WITH CLEARANCE BETWEEN LEVER AND STOP SCREW **0.55** MM (**0.0216** IN.)

E9 (B), E10 (A) ENGINE CONTROL MODULE

(VOLTAGE AT ENGINE CONTROL MODULE WIRING CONNECTORS)

- BATT-E1 : ALWAYS **9-14** VOLTS
- IGSW-E1 : **9-14** VOLTS WITH THE IGNITION SW ON
- M-REL-E : **9-14** VOLTS WITH THE IGNITION SW ON
- +B-E1 : **9-14** VOLTS WITH THE IGNITION SW ON
- IDL1-E2 : **9-14** VOLTS WITH THE IGNITION SW ON AND THE THROTTLE VALVE FULLY OPEN
- 0-1.5** VOLTS WITH THE IGNITION SW ON AND THE THROTTLE VALVE FULLY CLOSED
- VTA1-E2 : **0.3-0.8** VOLTS WITH THE IGNITION SW ON AND THE THROTTLE VALVE FULLY CLOSED
- 3.2-4.9** VOLTS WITH THE IGNITION SW ON AND THE THROTTLE VALVE OPEN
- THA-E2 : **0.5-3.4** VOLTS WITH THE IGNITION SW ON AND THE INTAKE AIR TEMP. **20 °C (68 °F)**
- THW-E2 : **0.2-1.0** VOLTS WITH THE IGNITION SW ON AND THE COOLANT TEMP. **80 °C (176 °F)**
- STA-E1 : **6-14** VOLTS WITH THE ENGINE CRANKING
- W-E1 : **9-14** VOLTS WITH ENGINE IDLING
- IGF-E1 : PULSE GENERATION (ENGINE IDLING)
- NSW-E1 : **0-3** VOLTS WITH THE IGNITION SW ON AND THE SHIFT LEVER **P** OR **N** POSITION
- 9-14** VOLTS WITH THE IGNITION SW ON AND THE SHIFT LEVER EXCEPT **P** OR **N** POSITION
- SP1 : PULSE GENERATION
- TE1-E1 : **9-14** VOLTS WITH THE IGNITION SW ON
- A/C-E1 : **0-1.5** VOLTS WITH THE IGNITION SW ON AND THE A/C OFF
- 7.5-14** VOLTS WITH THE IGNITION SW ON AND THE A/C ON
- ELS-E1 : **9-14** VOLTS WITH THE TAILLIGHT ON, DEFOGGER ON
- 0-1.5** VOLTS WITH THE TAILLIGHT OFF, DEFOGGER OFF
- STP-E1 : **7.5-14** VOLTS WITH THE STOP LIGHT SW ON (BRAKE PEDAL DEPRESSED)
- 0-1.5** VOLTS WITH THE STOP LIGHT SW OFF
- ISC1, ISC2, ISC3, ISC4-E1 : PULSE GENERATION (ENGINE IDLING)
- #10, #20, #30, #40, #50, #60-E01, E02 : PULSE GENERATION (ENGINE IDLING)

(RESISTANCE OF ENGINE CONTROL MODULE WIRING CONNECTORS)

- IDL1-E2 : INFINITY WITH THE THROTTLE VALVE OPEN
- 0-2.3** K Ω WITH THE THROTTLE VALVE FULLY CLOSED
- VTA1-E2 : **3.3** K Ω - **10.0** K Ω WITH THE THROTTLE VALVE FULLY OPEN
- 200** Ω - **800** Ω WITH THE THROTTLE VALVE FULLY CLOSED
- VCC-E2 : **4** K Ω - **9** K Ω
- THA-E2 : **2** K Ω - **3** K Ω WITH THE INTAKE AIR TEMP. **20 °C (68 °F)**
- THW-E2 : **200** Ω - **400** Ω WITH THE COOLANT TEMP. **80 °C (176 °F)**
- ISC1, ISC2, ISC3, ISC4- +B : **10-30** Ω
- #10, #20, #30, #40, #50, #60- +B : **13.2-14.2** Ω

○ : PARTS LOCATION

CODE	SEE PAGE	CODE	SEE PAGE	CODE	SEE PAGE
A5	24 (2JZ-GTE)	H5	24	S1	25
C1	24	H11	29	S5	25
C2	24	I1	25 (2JZ-GTE)	S11	29
C3	24 (2JZ-GTE)	I2	B 25	T2	25 (2JZ-GTE)
C9	28	I3	A 25	T5	29
C10	A 28	I12	25 (2JZ-GTE)	T6	29
C12	B 28	I13	25 (2JZ-GTE)	T14	25
D1	24 (2JZ-GTE)	I14	25 (2JZ-GTE)	T15	29
D5	28	I15	25 (2JZ-GTE)	V2	25 (2JZ-GTE)
D8	28	I16	25 (2JZ-GTE)	V3	25 (2JZ-GTE)
D17	28	I17	25 (2JZ-GTE)	V4	25
E1	24 (2JZ-GTE)	I19	29	V5	25
E3	24 (2JZ-GTE)	J2	29	V6	25 (2JZ-GTE)
E9	B 29	K1	25 (2JZ-GTE)	V7	25
E10	A 29	K2	25 (2JZ-GTE)	V8	25
F14	30	M1	25	V10	25 (2JZ-GTE)
F15	30	P2	25 (2JZ-GTE)		

○ : RELAY BLOCKS

CODE	SEE PAGE	RELAY BLOCKS (RELAY BLOCK LOCATION)
2	22	R/B NO. 2 (ENGINE COMPARTMENT LEFT)

○ : JUNCTION BLOCK AND WIRE HARNESS CONNECTOR

CODE	SEE PAGE	JUNCTION BLOCK AND WIRE HARNESS (CONNECTOR LOCATION)
1C	20	FLOOR NO. 2 WIRE AND J/B NO. 1 (LEFT KICK PANEL)
1E	20	INSTRUMENT PANEL WIRE AND J/B NO. 1 (LEFT KICK PANEL)
1H	20	COWL WIRE AND J/B NO. 1 (LEFT KICK PANEL)
1I		
1J		
1K		
2A	22	BATTERY AND J/B NO. 2 (ENGINE COMPARTMENT LEFT)

□ : CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

CODE	SEE PAGE	JOINING WIRE HARNESS AND WIRE HARNESS (CONNECTOR LOCATION)
EA1	32 (2JZ-GTE)	ENGINE WIRE AND ENGINE ROOM MAIN WIRE (NEAR THE R/B NO. 2)
EA2	32	
IB1	36	ENGINE ROOM MAIN WIRE AND COWL WIRE (LEFT KICK PANEL)
IC1	36	FLOOR NO. 2 WIRE AND COWL WIRE (LEFT KICK PANEL)
IC2		
IF1	36	INSTRUMENT PANEL WIRE AND COWL WIRE (INSTRUMENT PANEL REINFORCEMENT LH)
II1	38	ENGINE WIRE AND INSTRUMENT PANEL WIRE (RIGHT KICK PANEL)
IJ1	38	ENGINE WIRE AND COWL WIRE (RIGHT KICK PANEL)
IJ2		
BP1	40	FUEL GAUGE WIRE AND FLOOR NO. 2 WIRE (LUGGAGE ROOM FRONT LH)

▽ : GROUND POINTS

CODE	SEE PAGE	GROUND POINTS LOCATION
EB	32 (2JZ-GTE)	FRONT SIDE OF LEFT FENDER
ED	32 (2JZ-GTE)	REAR SIDE OF INTAKE MANIFOLD
IE	36	LEFT KICK PANEL
IF		
IG	36	RIGHT KICK PANEL
BI	40	LEFT QUARTER PILLAR

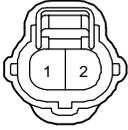
○ : SPLICE POINTS

CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS	CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS
E7	32	ENGINE ROOM MAIN WIRE	I2	38	COWL WIRE
E10	32	ENGINE WIRE	I4	38	INSTRUMENT PANEL WIRE
E11			I5	38	INSTRUMENT PANEL WIRE
E12			I8	38	INSTRUMENT PANEL WIRE
E13			I11	38	COWL WIRE
E14			I14	38	INSTRUMENT PANEL WIRE
E16			I17	38	ENGINE WIRE
E17			I20	38	COWL WIRE



ENGINE CONTROL (2JZ-GTE)

A 5 GRAY



C 1 BLACK



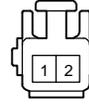
C 2 BLACK



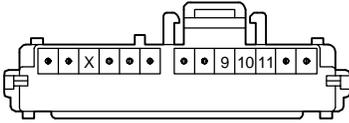
C 3 DARK GRAY



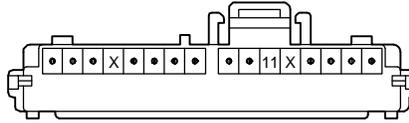
C 9



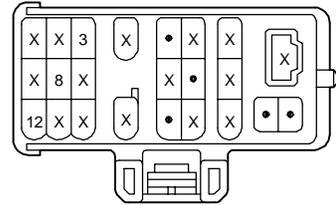
C10 (A) BLUE



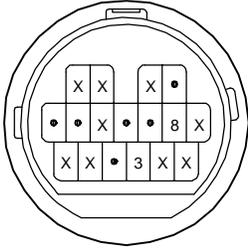
C12 (B)



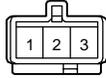
D 1 BLACK



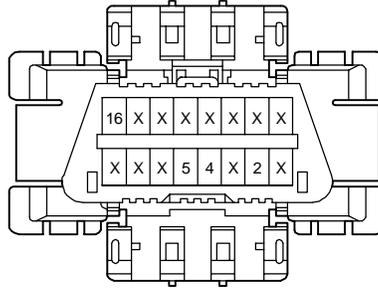
D 5 DARK GRAY



D 8 ORANGE



D17



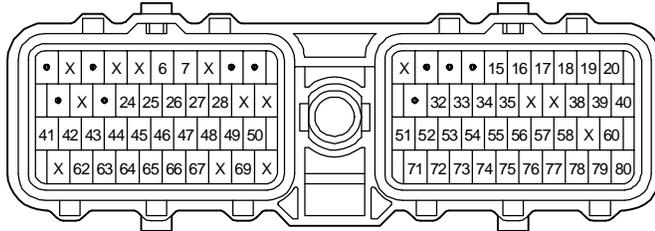
E 1 DARK GRAY



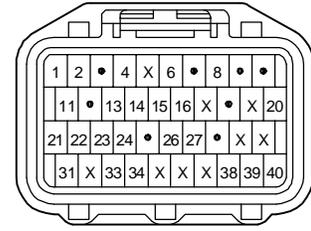
E 3 DARK GRAY



E 9 (B) DARK GRAY



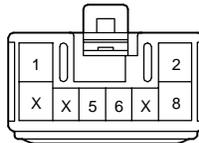
E10 (A) DARK GRAY



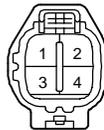
F14 DARK GRAY



F15 BLACK



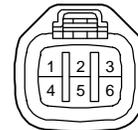
H 5 DARK GRAY



H11 GRAY



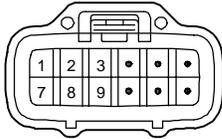
I 1 BLACK



I 2 (B) BLACK



I 3 (A) BLACK



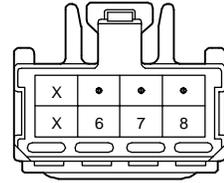
I12, I14, I16 DARK GRAY



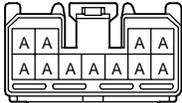
I13, I15, I17 BROWN



I19



J2

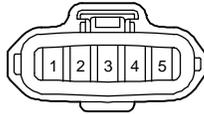


(HINT : SEE PAGE 7)

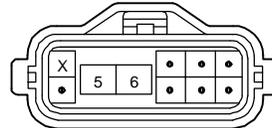
K 1, K 2 DARK GRAY



M 1 BLACK



P 2 GRAY



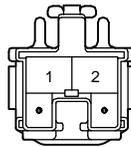
S 1 DARK GRAY



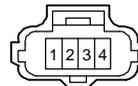
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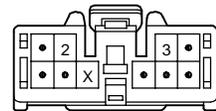
S 11 BLUE



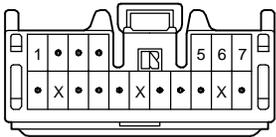
T 2 BLACK



T 5



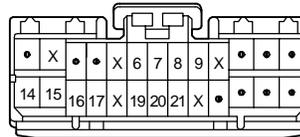
T 6



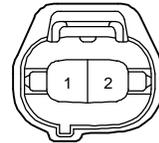
T 14 BLACK



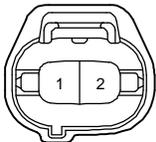
T 15



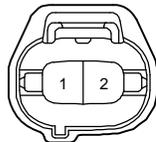
V 2 BLACK



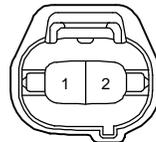
V 3 BROWN



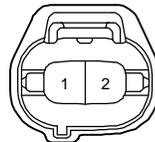
V 4 BLUE



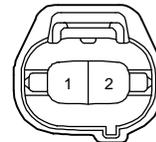
V 5 BLACK



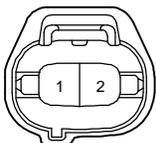
V 6 BLUE



V 7 BLACK



V 8 BLUE



V 10 BLACK

