J - PIN VOLTAGE CHARTS

1993 Toyota Celica

1993 ENGINE PERFORMANCE
Toyota Pin Voltage Charts

Celica

INTRODUCTION

Pin voltage charts are supplied to reduce diagnostic time. Checking pin voltages at the ECM determines whether it's receiving and transmitting proper voltage signals. Charts may also help determine if ECM harness is shorted or opened.

NOTE: Unless stated otherwise in testing procedures, perform all voltage tests using a Digital Volt-Ohmmeter (DVOM) with a minimum 10-megohm input impedance. Voltage readings may vary slightly due to battery condition or charging rate.

ECM LOCATION & IDENTIFICATION

ECM LOCATION TABLE

Model	Location
Celica	Bottom Center Of Dash, Under Radio

ECM PIN CONNECTOR ABBREVIATION IDENTIFICATION TABLE

Abbreviation	Function
ABS	Anti-Lock Brake ECM
ACA, ACT, ATS	A/C Amplifier
AC, AC1, A/C	A/C Compressor Or Magnetic Switch
A/D	Cruise Control Computer
AI	Air Injection Vacuum Switching Valve
AS	Air Suction Vacuum Switching Valve
BATT	Battery
BK	Brake Switch
B, +B, +B1	EFI Main Relay
CHK	Sub-Oxygen Sensor
C1	Distributor
DFG	Defogger Relay
DG	Check Connector
ECT	Electronically Controlled Transmission/Transaxle (ECT)
EGR	EGR Vacuum Switching Valve
ELS	Headlight & Defogger Relay
E1, E2, E01, E02	Engine Or Computer Ground
E11, E2, E21, E22	Sensor Ground
FC	Circuit Opening Relay
FP	Fuel Pump Relay
FPR	Fuel Pump Relay
FPU	Fuel Pressure-Up Vacuum Switching Valve
G, G1, G2	Cam Position Sensor Or Distributor
G-, G+	Cam Position Sensor Or Distributor (Crank Angle)
HT	Oxygen Sensor Heater
HT1	Oxygen Sensor Heater (Main)
HT2	Oxygen Sensor Heater (Sub)

IDL ..... Throttle Position Sensor
IGDA, IGDB ..... Ignitor
IGF ..... Ignitor
IG SW ..... Ignition Switch
IGT ..... Ignitor (Primary Trigger)
ISCC, ISCO ..... Idle Speed Control Valve
ISCV ..... A/C Idle-Up Vacuum Switching Valve
ISC1, ISC2, ISC3, ISC4 ..... Idle Speed Control Valve Or Motor
KNK, KNK1, KNK2 ..... Knock Sensor
KS ..... Airflow Meter
L ..... Neutral Start Switch Or Shift Position Switch
LP ..... Headlight Relay
L1, L2, L3, L4 ..... (1) ECT
M ..... Neutral Start Switch Or Shift Position Switch
M-REL ..... EFI Main Relay
MS ..... Engine Oil Level Sensor
N ..... Neutral Start Switch Or Shift Position Switch
N/C ..... Clutch Switch (M/T)
NE, NE-, NE+ .... Cam Position Sensor Or Distributor (RPM)
NSW ..... Neutral/Start Switch (A/T)
No. 1-4 ..... Injector
No. 10, 20 & 30 ..... Injector
OD, ODT ..... Overdrive Solenoid
OD1 ..... Overdrive Off Switch
OD2 ..... Cruise Control Computer Or Overdrive Main Switch
O/G ..... Check Connector
OIL ..... Oil Pressure Switch Or A/T Oil Temperature Warning Light
OLS ..... Engine Oil Level Sensor
OMR ..... Engine Oil Feed Motor
OMT ..... Engine Oil Feed Motor Relay
OSFC ..... Overspeed Fuel Cut
OW ..... Engine Oil Warning Light
OX, OX1, OX+ ..... Oxygen Sensor
OX2 ..... Sub-Oxygen Sensor
P ..... Shift Position Switch Or Pattern Select Switch
PS ..... Power Steering ECM
PSCT ..... Power Steering ECM
PSW ..... Throttle Position Sensor
PIM ..... Vacuum Sensor Or Turbocharger Pressure Sensor
PSW ..... Throttle Position Sensor
PWR ..... Pattern Select Switch
R ..... Neutral Start Switch Or Shift Position Switch
RSC ..... Idle Speed Control Valve
RSO ..... Idle Speed Control Valve
S ..... Neutral Start Switch Or Shift Position Switch
SL, S1, S2 ..... (1) ECT Solenoid
SPD, SPD1, SPD2 ..... Vehicle Speed Sensor
SP1, SPD1 ..... No. 1 Vehicle Speed Sensor, (1) ECT In Instrument Cluster
SP2, SPD2 ..... No. 2 Vehicle Speed Sensor, (1) ECT In Transaxle or Transmission
STA ..... Starter Signal
STP ..... Stoplight Switch
STJ ..... Cold Start Injector
S1, S2, S3, S4 ..... (1) ECT Solenoid
T, TT ..... Check Connector Or (2) DLC
THA, THA1 ..... Air Temperature Sensor
THE ..... Evaporator Temperature Sensor
THG ..... EGR Gas Temperature Sensor
THO, THO1, THO2 ..... Transmission Oil Temperature Sensor
THW ..... Coolant Temperature Sensor

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TIL  ..............................  Turbo Indicator Light
TOV  ..............  Throttle Opener Vacuum Switching Valve
TPC, TPC1  ..........................  Turbocharger Pressure
                                      Vacuum Switching Valve
TVIS  ....  Variable Induction System Vacuum Switching Valve
TWS  ..........................  Coolant Temperature Switch
T2  ....................................  Check Connector
VC  ......................  Airflow Meter, Vacuum Sensor Or
                                    Throttle Position Sensor
VCC  ............  Throttle Position Sensor Or Vacuum Sensor
VF, VF1, VF2  ............................  Check Connector
V-ISC  ........................  Auxiliary Control Valve Or
                      Idle-Up System Vacuum Switching Valve
VS  ......................................  Airflow Meter
VSV1  ..................  Air Control Vacuum Switching Valve
VSV2  ..............  Fuel Pressure-Up Vacuum Switching Valve
VTA  ............................  Throttle Position Sensor
W  ............................  Malfunction Indicator Light
2  ..........  Neutral Start Switch Or Shift Position Switch

(1) - Electronically Controlled Transmission/Transaxle (ECT).
(2) - Data Link Connector (DLC).
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PIN VOLTAGE CHARTS

ECM PIN VOLTAGE TEST

CAUTION: Perform all voltage measurements with ECM harness connector installed. Use high-impedance digital voltmeter (10,000 ohm minimum). Verify battery voltage is greater than 11 volts.

NOTE: If voltage value is not as specified, proceed to test number indicated. Tests are located in G - TESTS W/CODES article in the ENGINE PERFORMANCE section.

No.	Terminals	Condition		STD voltage (V)	TEST NO.
1	+B, +B1 – E1	IG SW ON		10 – 14	②
2	BATT – E1	–		10 – 14	①
3	IDL – E2	IG SW ON	Throttle valve open	4.5 – 5.5	⑨
	VC – E2		–	4.5 – 5.5	
	VTA – E2		Throttle valve fully closed (Throttle opener must be cancelled first)	0.1 – 1.0	
			Throttle valve fully open	3.2 – 4.2	
4	VC – E2		–	4.5 – 5.5	⑦
	VS – E2		Measuring plate fully closed	3.7 – 4.3	
			Measuring plate fully open	0.2 – 0.5	
		Idling		1.6 – 4.1	
		3,000 rpm		1.0 – 2.0	
5	No.1, No.2, No.3, No.4 – E01, E02	IG SW ON		10 – 14	⑬
6	THA – E2	IG SW ON	Intake air temp. 20°C (68°F)	1 – 3	⑥
7	THW – E2		Coolant temp. 80°C (176°F)	0.1 – 1.1	⑤
8	STA – E1	Cranking		6 – 14	⑩
9	IGT – E1	Cranking or idling		0.8 – 1.2	③
10	RSC, RSO – E1	IG SW ON	Engine ECU connectors disconnected	8 – 14	⑭
11	W – E1	No trouble ("CHECK" engine warning light off) and engine running		10 – 14	⑮
12	PIM – E2	IG SW ON		2.5 – 4.5	⑧
	VC – E2			4.5 – 5.5	
13	ACI – E1	IG SW ON	Air conditioning ON	8 – 14	⑪

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Fig. 1: ECM Pin Voltage Test (3S-GTE)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

No.	Terminals	Condition		STD voltage (V)	TEST NO.
1	+B +B1 - E1	IG SW ON		10 - 14	②
2	BATT - E1	-		10 - 14	①
3	IDL - E2	IG SW ON	Throttle valve open	10 - 14	⑨
	PSW - E2		Throttle valve fully closed	10 - 14	
4	PIM - E2	IG SW ON		3.3 - 3.9	⑦
	VCC - E2			4.5 - 5.5	
5	No.10 - E01 No.20 - E02			10 - 14	⑬
6	THA - E2	IG SW ON	Intake air temp. 20°C (68°F)	1 - 3	⑥
7	THW - E2		Coolant temp. 80°C (176°F)	2.0 - 2.8	⑤
8	STA - E1	Cranking		6 - 14	⑩
9	IGT - E1	Cranking or idling		0.7 - 1.0	③
10	W - E1	No trouble ("CHECK" engine warning light off) and engine running		10 - 14	⑮
11	A/C - E1	IG SW ON	Air conditioning ON	8 - 14	⑪

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Fig. 2: ECM Pin Voltage Test (4A-FE)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

No.	Terminals	Condition		STD voltage (V)	TEST NO.
1	+B, +B1 – E1	IG SW ON		10 – 14	②
2	BATT – E1	—		10 – 14	①
3	IDL – E2	IG SW ON	Throttle valve open	8 – 14	⑨
	VC – E2		—	4.5 – 5.5	
	VTA – E2		Throttle valve fully closed (Throttle opener must be cancelled first)	0.8 – 1.2	
			Throttle valve fully open	3.2 – 4.2	
4	PIM – E2	IG SW ON		3.3 – 3.9	⑦
	VC – E2			4.5 – 5.5	
5	No.10, No.20 – E01, E02			10 – 14	⑬
6	THA – E2	IG SW ON	Intake air temp. 20°C (68°F)	1.9 – 2.9	⑥
7	THW – E2		Coolant temp. 80°C (176°F)	0.1 – 1.1	⑤
8	STA – E1	Cranking		6 – 14	⑩
9	IGT – E1	Cranking or idling		0.8 – 1.2	③
10	ISCC, ISCO – E1	IG SW ON	Engine ECU connectors disconnected	8 – 14	⑭
11	W – E1	No trouble ("CHECK" engine warning light off) and engine running		10 – 14	⑮

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Fig. 3: ECM Pin Voltage Test (5S-FE)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

ECM WIRING HARNESS RESISTANCE TEST

CAUTION: When measuring resistance at ECM wiring harness, DO NOT touch ECM terminals with ohmmeter. Turn ignition off and unplug ECM wiring harness connector. Tester probe should be inserted into the wiring connector from the WIRING side.

Terminals	Condition	STD resistance (Ω)
IDL - E2	Throttle valve open	Infinity
	Throttle valve fully closed	2,300 or less
VTA - E2	Throttle valve fully open	3,100 - 12,100
	Throttle valve fully closed	470 - 6,100
VC - E2	-	3,900 - 9,000
VS - E2	Measuring plate fully closed	200 - 600
	Measuring plate fully open	20 - 1,200
THA - E2	Intake air temp. 20°C (68°F)	2,000 - 3,000
THW - E2	Coolant temp. 80°C (176°F)	200 - 400
G1, G2 - G⊖	Cold	125 - 190
NE - G⊖	Cold	155 - 240
RSC, RSO - +B, +B1	-	19.3 - 22.3

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Fig. 4: ECM Wiring Harness Resistance Test (3S-GTE)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Terminals	Condition	STD resistance (Ω)
IDL - E2	Throttle valve open	Infinity
	Throttle valve fully closed	0
PSW - E2	Throttle valve fully open	0
	Throttle valve fully closed	Infinity
THA - E2	Intake air temperature 20°C (68°F)	2,000 - 3,000
THW - E2	Coolant temperature 80°C (176°F)	200 - 400
G1, NE - G⊖	Cold	185 - 265

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Fig. 5: ECM Wiring Harness Resistance Test (4A-FE)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Resistance of ECU Wiring Connectors (5S-FE)

Terminals	Condition	STD resistance (Ω)
IDL – E2	Throttle valve open	Infinity
	Throttle valve fully closed (Throttle opener must be cancelled first)	2,300 or less
VTA – E2	Throttle valve fully open	2,000 – 10,200
	Throttle valve fully closed (Throttle opener must be cancelled first)	200 – 5,700
VC – E2	—	2,500 – 5,900
THA – E2	Intake air temp. 20°C (68°F)	2,000 – 3,000
THW – E2	Coolant temp. 80°C (176°F)	200 – 400
G+ – G–	Cold	185 – 265
NE+ – NE–	Cold	370 – 530
ISCC – +B ISCO – +B1	—	19.3 – 22.3

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Fig. 6: ECM Wiring Harness Resistance Test (5S-FE)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

ECM TERMINAL IDENTIFICATION

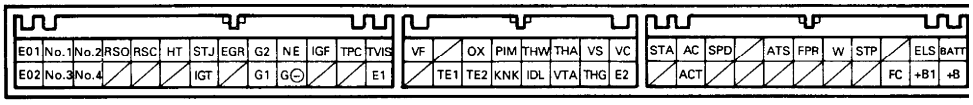

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Fig. 7: ECM Terminal ID (3S-GTE)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

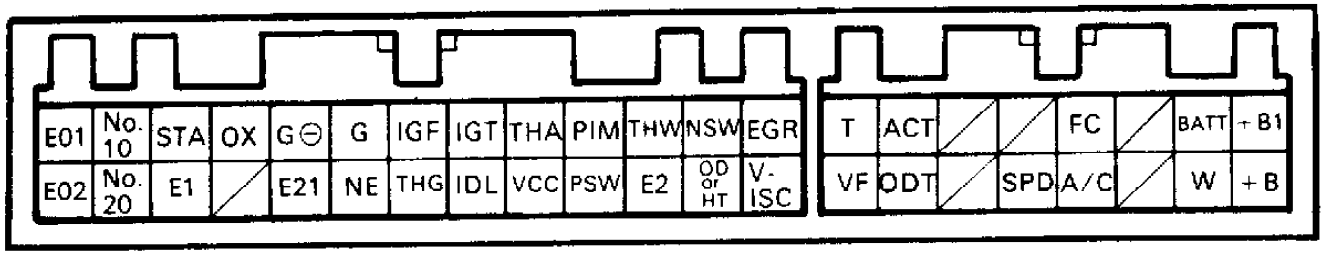

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Fig. 8: ECM Terminal ID (4A-FE)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

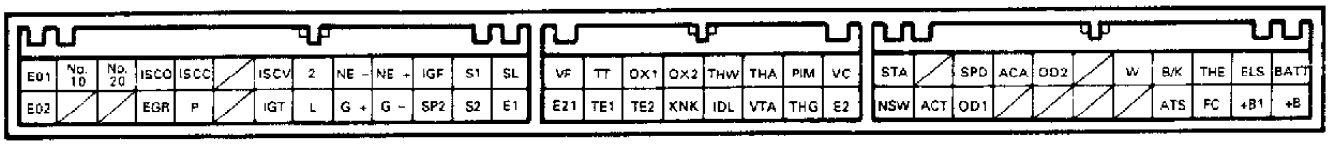

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Fig. 9: ECM Terminal ID (5S-FE Automatic Transaxle)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

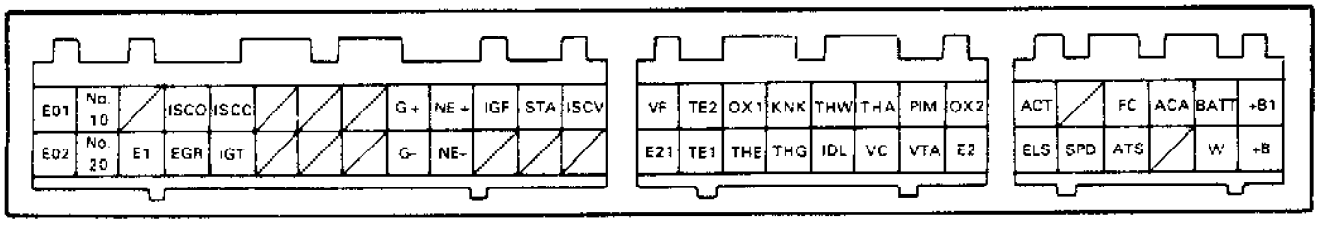

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Fig. 10: ECM Terminal (5S-FE Manual Transaxle)
Courtesy of Toyota Motor Sales, U.S.A., Inc.