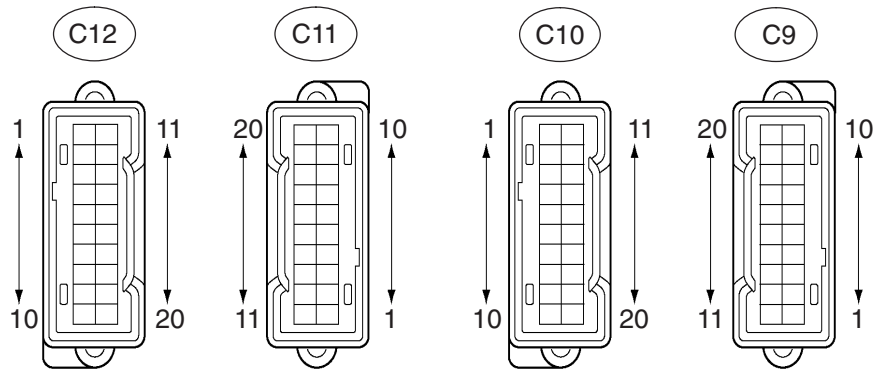
05MX8–01

TERMINALS OF ECU

1. COMBINATION METER ASSY



I43788

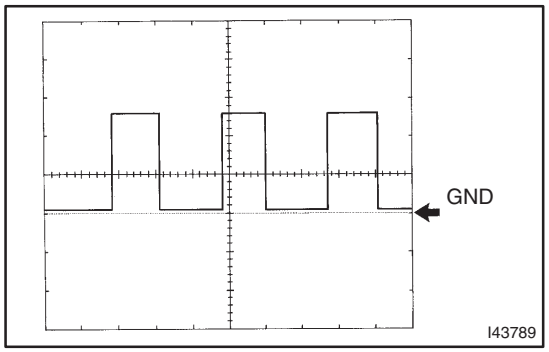
Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
AIR SUS (N) (C9–1) (*1) – Body ground	Y–B – Body ground	Auto height control signal (N)	Ignition switch ON and AIR SUS (N) indicator light OFF → ON	10 to 14 V → Below 2 V
AIR SUS (LO) (C9–2) (*1) – Body ground	BR–B – Body ground	Auto height control signal (LO)	Ignition switch ON and AIR SUS (LO) indicator light OFF → ON	10 to 14 V → Below 2 V
AIR SUS (OFF) (C9–3) (*1) – Body ground	Y–G – Body ground	Auto height control signal (OFF)	Ignition switch ON and AIR SUS (OFF) indicator light OFF → ON	10 to 14 V → Below 2 V
2nd START (C9–4) – Body ground	GR–R – Body ground	2nd START signal	Ignition switch ON and 2nd START indicator light OFF → ON	10 to 14 V → Below 2 V
A/T P (C9–6) – Body ground	G – Body ground	A/T shift condition signal	Ignition switch ON and A/T P indicator light OFF → ON	10 to 14 V → Below 2 V
A/T OIL TEMP (C9–7) – Body ground	P – Body ground	A/T oil temperature signal	Ignition switch ON and A/T OIL TEMP indicator light OFF → ON	10 to 14 V → Below 2 V
ENGINE GROUND (C9–9) – Body ground	BR – Body ground	Ground	Always	Below 1 Ω
FUEL GROUND (C9–10) – Body ground	BR – Body ground	Ground	Always	Below 1 Ω
AIR SUS (HI) (C9–11) (*1) – Body ground	Y – Body ground	Auto height control signal	Ignition switch ON and AIR SUS (HI) indicator light OFF → ON	10 to 14 V → Below 2 V
P SEAT BELT WARNING (C9–12) – Body ground	G–O – Body ground	Seat belt condition signal (Passenger side)	Ignition switch ON and Passenger side seat belt warning light OFF → ON	10 to 14 V → Below 2 V
P SEAT BELT INPUT (C9–13) – Body ground	W–L – Body ground	Seat belt condition signal (Passenger side)	Ignition switch ON and Passenger side seat belt unfastened → fastened	10 to 14 V → Below 2 V
A/C OUT (C9–14) – Body ground	B – Body ground	Accessory meter signal	Communication circuit	–
A/C IN (C9–15) – Body ground	P – Body ground	Accessory meter signal	Communication circuit	–
RHEOSTAT (TC) (C9–16) – Body ground	G–R – Body ground	Rheostat signal (Light control)	Tail switch ON and rheostat switch Max. position (TC position)	Below 1 Ω
RHEOSTAT (TR) (C9–17) – Body ground	W–G – Body ground	Rheostat signal (Light control)	Rheostat switch Min. (left side position) → Max. (right side position)	10 to 14 V → Below 2 V

A/T (L) (C9–18) – Body ground	G–R – Body ground	A/T shift condition signal (L)	Ignition switch ON and A/T (L) indicator light OFF → ON	Below 2 V → 10 to 14 V
IGN+ (C9–19) – Body ground	R–L – Body ground	Ignition switch signal	Ignition switch OFF → ON	Below 1 V → 10 to 14 V
+B (C9–20) – Body ground	R – Body ground	Battery	Always	10 to 14 V
TURN R (C10–2) – Body ground	L–Y – Body ground	Turn signal flasher (R)	Turn signal RH indicator light OFF → ON	Below 2 V → 10 to 14 V
Rr FOG (C10–3) – Body ground	W–L – Body ground	Rear fog lamp signal	Rr FOG indicator light OFF → ON	Below 2 V → 10 to 14 V
BEAM+ (C10–4) – Body ground	R–W – Body ground	Hi–beam signal	BEAM indicator light OFF → ON	Below 2 V → 10 to 14 V
BEAM– (C10–5) – Body ground	R–G – Body ground	Hi–beam signal	Always	Below 1 Ω
Fr FOG (C10–6) – Body ground	LG–B – Body ground	Front fog lamp signal	Fr FOG indicator light OFF → ON	Below 2 V → 10 to 14 V
TURN L (C10–7) – Body ground	L–B – Body ground	Turn signal flasher (L)	Turn signal LH indicator light OFF → ON	Below 2 V → 10 to 14 V
ACTIVE BRAKE (C10–8) – Body ground	B–L – Body ground	BRAKE signal	Ignition switch ON and BRAKE indicator light OFF → ON	Below 2 V → 10 to 14 V
BRAKE (C10–9) – Body ground	LG – Body ground	BRAKE signal	Ignition switch ON and BRAKE indicator light OFF → ON	10 to 14 V → Below 2 V
ABS (C10–10) – Body ground	LG–R – Body ground	ABS signal	Ignition switch ON and ABS indicator light OFF → ON	Below 2 V → 10 to 14 V
DUAL (C10–12) (*2) – Body ground	W–B – Body ground	Ground	Always	Below 1 Ω
A/T (2) (C10–13) – Body ground	L – Body ground	A/T shift condition signal (2)	Ignition switch ON and A/T (2) indicator light OFF → ON	Below 2 V → 10 to 14 V
A/T (3) (C10–14) – Body ground	G–O – Body ground	A/T shift condition signal (3)	Ignition switch ON and A/T (3) indicator light OFF → ON	Below 2 V → 10 to 14 V
A/T (4) (C10–15) – Body ground	P–L – Body ground	A/T shift condition signal (4)	Ignition switch ON and A/T (4) indicator light OFF → ON	Below 2 V → 10 to 14 V
A/T (D) (C10–16) – Body ground	B–R – Body ground	A/T shift condition signal (D)	Ignition switch ON and A/T (D) indicator light OFF → ON	Below 2 V → 10 to 14 V
A/T (N) (C10–17) – Body ground	G–W – Body ground	A/T shift condition signal (N)	Ignition switch ON and A/T (N) indicator light OFF → ON	Below 2 V → 10 to 14 V
A/T (R) (C10–18) – Body ground	R–B – Body ground	A/T shift condition signal (R) (*3)	Ignition switch ON and A/T (R) indicator light OFF → ON (*3)	Below 2 V → 10 to 14 V
		M/T shift reverse signal (*4)	Ignition switch ON and M/T shift lever is in the reverse position (*4)	10 to 14 V
A/T (P) (C10–19) – Body ground	G–B – Body ground	A/T shift condition signal (P)	Ignition switch ON and A/T (P) indicator light OFF → ON	Below 2 V → 10 to 14 V
IMMOBILIZER (C10–20) – Body ground	V–W – Body ground	IMMOBILIZER signal	IMMOBILIZER indicator light OFF → ON	Below 2 V → 10 to 14 V
TAU (D) (C11–1) (*5) – Body ground	W – Body ground	Fuel signal	Communication circuit	–
TAU (B) (C11–2) (*6) – Body ground	B–R – Body ground	Fuel signal	Ignition switch ON and Engine idle speed	Pulse generation (See wave form 3)
TAU (G) (C11–3) (*6) – Body ground	R–L – Body ground	Fuel signal	Ignition switch ON and Engine idle speed	Pulse generation (See wave form 3)
FUEL (FR) (C11–4) – Body ground	BR–R – Body ground	Fuel signal	Ignition switch ON and Fuel level is full → empty	Below 2 V → 6 V

TEMP (COMMUNICATION (C11–5)) (*7) – Body ground	P–B – Body ground	Water temperature communication signal	Ignition switch ON, engine coolant temp. 50˚C (122.0˚F) to 120˚C (248˚F)	Pulse generation (See wave form 4)
TEMP (C11–6) (*8)– Body ground	P – Body ground	Water temperature signal	Ignition switch ON, engine coolant temp. 50˚C (122.0˚F) to 120˚C (248˚F)	4 to 7 V → Below 2 V
AIR BAG (C11–8) – Body ground	B–Y – Body ground	AIR BAG signal	Ignition switch ON and SRS indicator light OFF → ON	10 to 14 V → Below 2 V
ALL DOOR INPUT (C11–9) – Body ground	V–Y – Body ground	Door condition signal (Except D door)	Door closed → open	10 to 14 V → Below 2 V
KEY IN (C11–11) – Body ground	LG–B – Body ground	KEY switch signal	Ignition switch OFF and ignition key inserted → no ignition key inserted	Below 2 V → 10 to 14 V
ST (C11–12) – Body ground	B–Y – Body ground	Starting signal	Ignition ON → START	Below 2 V → 10 to 14 V
TM IN (C11–13) – Body ground	B–W – Body ground	Tachometer signal (Input)	Ignition switch OFF → ON and Engine idle speed	Pulse generation (See wave form 2)
4P OUT (C11–14) – Body ground	V–R – Body ground	Speed signal (Output)	Ignition switch ON and turn the wheel slowly	Pulse generation (See wave form 1)
SP IN (C11–15) – Body ground	P–L – Body ground	Speed signal (Input)	Ignition switch ON and turn the wheel slowly	Pulse generation (See wave form 1)
FUEL SEDIMET (C11–16) (*9) – Body ground	L–R – Body ground	Fuel sediment signal	Ignition ON and FUEL SMT indicator light OFF → ON	10 to 14 V → Below 2 V
D SEAT BELT (C11–17) – Body ground	GR–B – Body ground	Seat belt condition signal (Driver side)	Driver seat belt warning light OFF → Blinks	Below 2 V → 10 to 14 V
OIL LEVEL (C11–18) (*10) – Body ground	W – Body ground	Engine oil level signal	Ignition switch ON and Oil level indicator light OFF → ON	Below 2 V → 10 to 14 V
D DOOR IN (C11–19) – Body ground	L–B – Body ground	D door condition signal	Driver side door is closed → open	10 to 14 V → Below 2 V
POSITION (C12–3) (*11) – Body ground	G – Body ground	POSITION signal	Ignition switch ON and POSITION indicator light OFF → ON	Below 2 V → 10 to 14 V
CRUISE (C12–4)– Body ground	LG – Body ground	CRUISE signal	Ignition switch ON and CRUISE indicator light OFF → ON	10 to 14 V → Below 2 V
GLOW (C12–5) (*7) – Body ground	Y–R – Body ground	GLOW signal	Ignition switch ON and GLOW indicator light OFF → ON	10 to 14 V → Below 2 V
CHARGE (C12–8) – Body ground	GR – Body ground	CHARGE signal	Ignition switch ON and CHARGE indicator light OFF → ON	10 to 14 V → Below 2 V
OIL PRS (C12–9) – Body ground	LG–B – Body ground	Oil pressure signal	Ignition switch ON and OIL PRS indicator light OFF → ON	10 to 14 V → Below 2 V
CHECK E/G (C12–10) – Body ground	R–B – Body ground	CHECK E/G signal	Ignition switch ON and CHECK E/G warning light OFF → ON	10 to 14 V → Below 2 V
ILL+ (C12–13) – Body ground	G – Body ground	Taillight signal (Light control)	Combination switch OFF → Tail	Below 2 V → 10 to 14 V
DAC (C12–14) – Body ground	BR–Y – Body ground	Downhill assist control signal	Ignition switch ON and DAC indicator light OFF → ON	10 to 14 V → Below 2 V
CTR DIFF LOCK (C12–15) – Body ground	G–W – Body ground	Center differential lock signal	Ignition switch ON and CTR DIFF LOCK or 4WD indicator light OFF → ON	10 to 14 V → Below 2 V
VSC TRC (C12–16) – Body ground	Y–R – Body ground	VSC TRC signal	Ignition switch ON and VSC TRC indicator light OFF → ON	10 to 14 V → Below 2 V
RR DIFF LOCK (12–17) – Body ground	LG – Body ground	RR DIFF LOCK signal	Ignition switch ON and RR DIFF LOCK indicator light OFF → ON	10 to 14 V → Below 2 V

VSC OFF (12–18) – Body ground	L–O – Body ground	VSC OFF signal	Ignition switch ON and VSC OFF indicator light OFF → ON	10 to 14 V → Below 2 V
SLIP (C12–20) – Body ground	R – Body ground	SLIP signal	Ignition switch ON and SLIP indicator light OFF → ON	10 to 14 V → Below 2 V

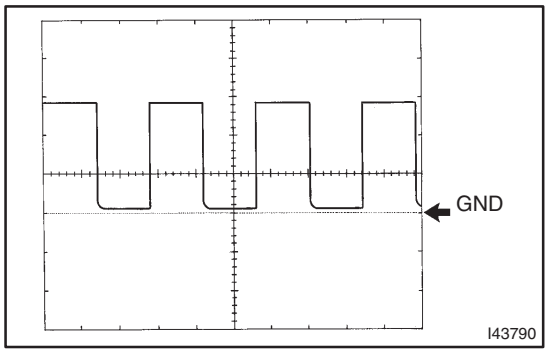
*1: w/ Auto Height Control
*2: 5 Door, w/ Sub Tank
*3: A/T
*4: 6M/T
*5: 1KZ–TE, 1KD–FTV
*6: 1GR–FE, 2TR–FE
*7: Except 1KZ–TE, 5L–E
*8: 1KZ–TE, 5L–E
*9: 1KZ–TE, 1KD–FTV, 5L–E
*10: 1KZ–TE, 1KD–FTV, 1GR–FE (Europe)
*11: Optitron, Europe LHD



Wave Form 1 (Reference): Using an oscilloscope:

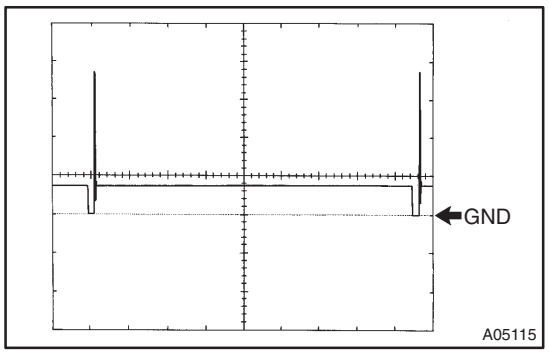
Item	Condition
Tool setting	5 V/ DIV, 200 ms/ DIV
Vehicle condition	Driving at approx. 20Km/h

HINT:
As vehicle speed increases, the cycle of the signal wave form narrows.



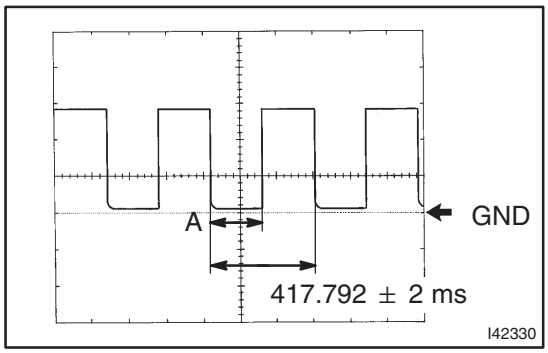
Wave Form 2 (Reference): Using an oscilloscope:

Item	Condition
Tool setting	10 V/ DIV, 20 ms/ DIV
Vehicle condition	Engine idle speed



Wave Form 3 (Reference): Using an oscilloscope:

Item	Condition
Tool setting	10 V/ DIV, 20 ms/ DIV
Vehicle condition	Engine idle speed



Wave Form 4 (Reference): Using an oscilloscope:

Item	Condition
Tool setting	5 V/DIV, 10 ms/DIV
Vehicle condition	Ignition switch ON, engine coolant temp. 50˚C (122.0˚F) to 120˚C (248˚F)

HINT:

As water temperature rises, period ”A” shown in the illustration becomes longer.

Except Middle East:

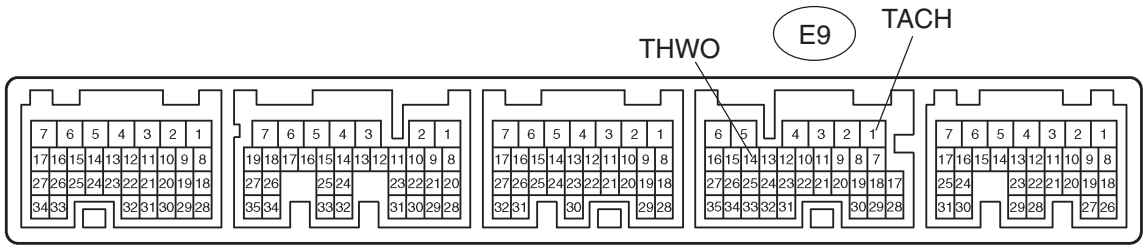
Water temperature	A
less than 50˚C (122.0˚F)	98.304 ± 2 ms
83˚C (181.4˚F)	233.472 ± 2 ms
120˚C (248.0˚F)	385.024 ± 2 ms

Middle East:

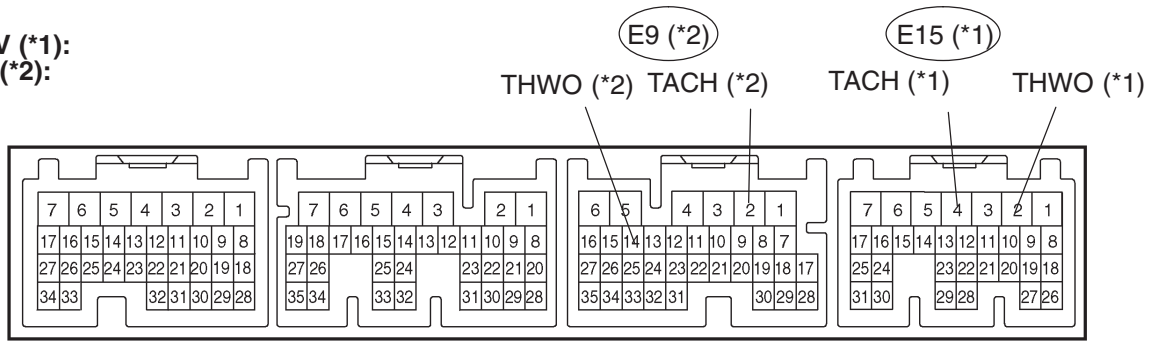
Water temperature	A
less than 70˚C (158.0˚F)	180.224 ± 2 ms
95˚C (203.0˚F)	282.624 ± 2 ms
120˚C (248.0˚F)	385.024 ± 2 ms

2. ECM

1GR–FE:



1KD–FTV (*1):
2TR–FE (*2):



Y

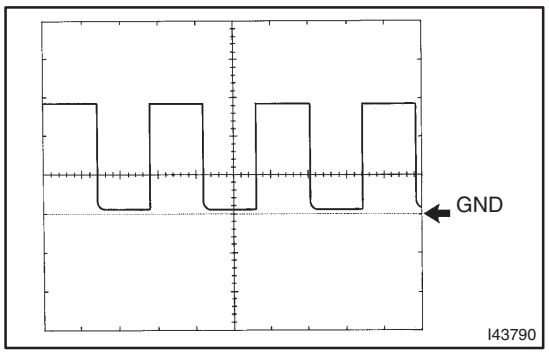
I45345

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
TACH (E9–1) – Body ground	B–W – Body ground	Tachometer signal	Ignition switch OFF → ON, Engine idle speed	Pulse generation (See wave form 1)
THWO (E9–14) – Body ground	P–B – Body ground	Water temperature signal	Ignition switch ON, engine coolant temp. 50˚C (122.0˚F) to 120˚C (248˚F)	Pulse generation (See wave form 2)

THWO (E15–2) (*1) – Body ground	P–B – Body ground	Water temperature signal	Ignition switch ON, engine coolant temp. 50°C (122.0°F) to 120°C (248°F)	Pulse generation (See wave form 2)
TACH (E15–4) (*1) – Body ground	B–W – Body ground	Tachometer signal	Ignition switch OFF → ON, Engine idle speed	Pulse generation (See wave form 1)
TACH (E9–2) (*2) – Body ground	B–W – Body ground	Tachometer signal	Ignition switch OFF → ON, Engine idle speed	Pulse generation (See wave form 1)
THWO (E9–14) (*2) – Body ground	P–B – Body ground	Water temperature signal	Ignition switch ON, engine coolant temp. 50°C (122.0°F) to 120°C (248°F)	Pulse generation (See wave form 2)

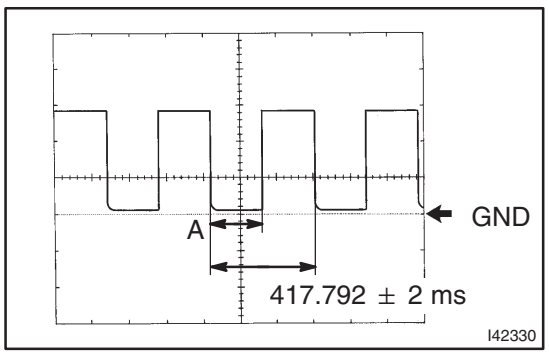
*1: 1KD–FTV

*2: 2TR–FE



Wave Form 1 (Reference): Using an oscilloscope:

Item	Condition
Tool setting	10 V/ DIV, 20 ms/ DIV
Vehicle condition	Engine idle speed



Wave Form 2 (Reference): Using an oscilloscope:

Item	Condition
Tool setting	5 V/DIV, 10 ms/DIV
Vehicle condition	Ignition switch ON, engine coolant temp. 50°C (122.0°F) to 120°C (248°F)

HINT:

As water temperature rises, period ”A” shown in the illustration becomes longer.

Except MIddle East:

Water temperature	A
less than 50°C (122.0°F)	98.304 ± 2 ms
83°C (181.4°F)	233.472 ± 2 ms
120°C (248.0°F)	385.024 ± 2 ms

Middle East:

Water temperature	A
less than 70°C (158.0°F)	180.224 ± 2 ms
95°C (203.0°F)	282.624 ± 2 ms
120°C (248.0°F)	385.024 ± 2 ms