

2013 HYUNDAI SONATA L4-2.4L

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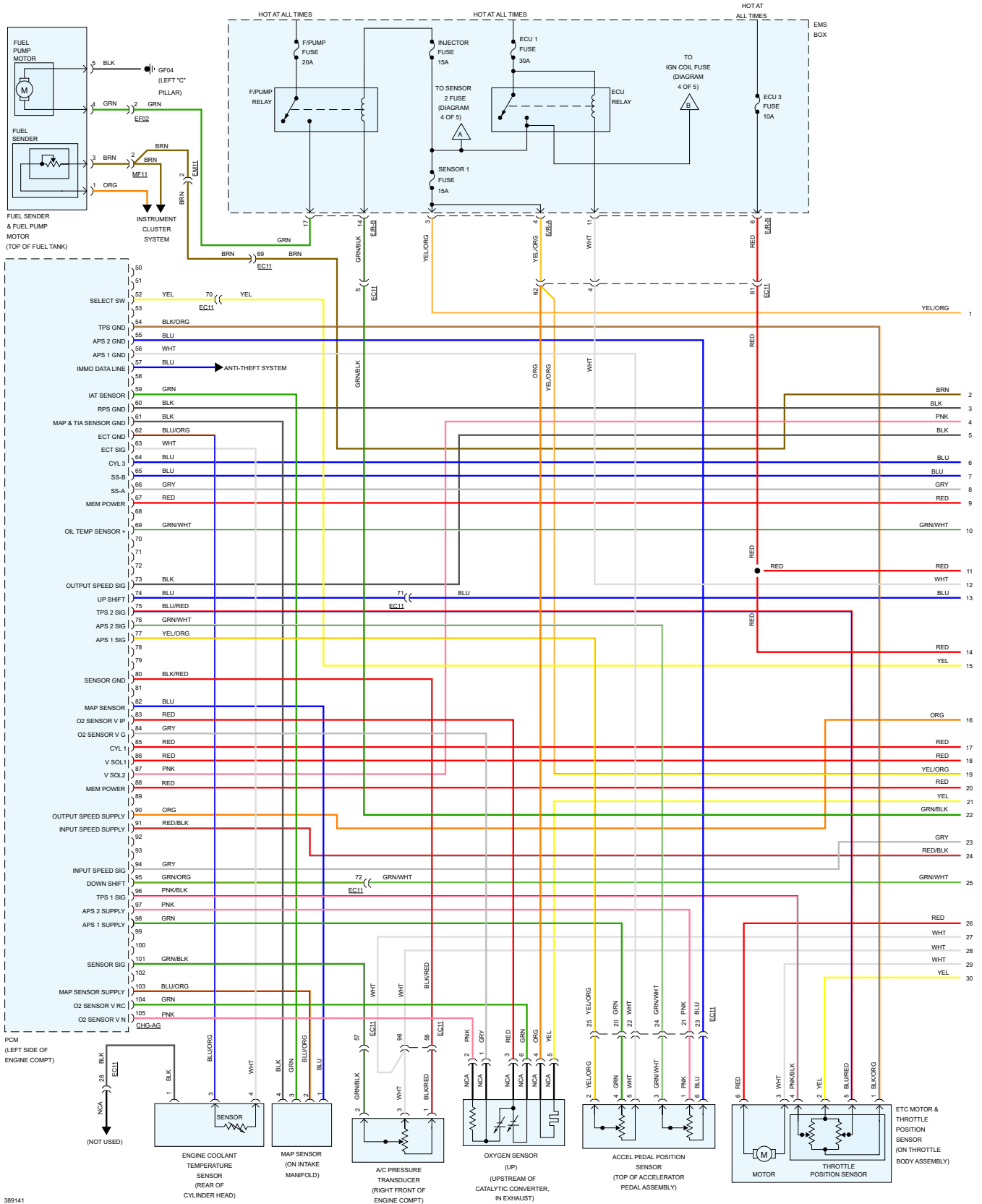
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2013 HYUNDAI SONATA L4-2.4L ENGINE CONTROL MODULE

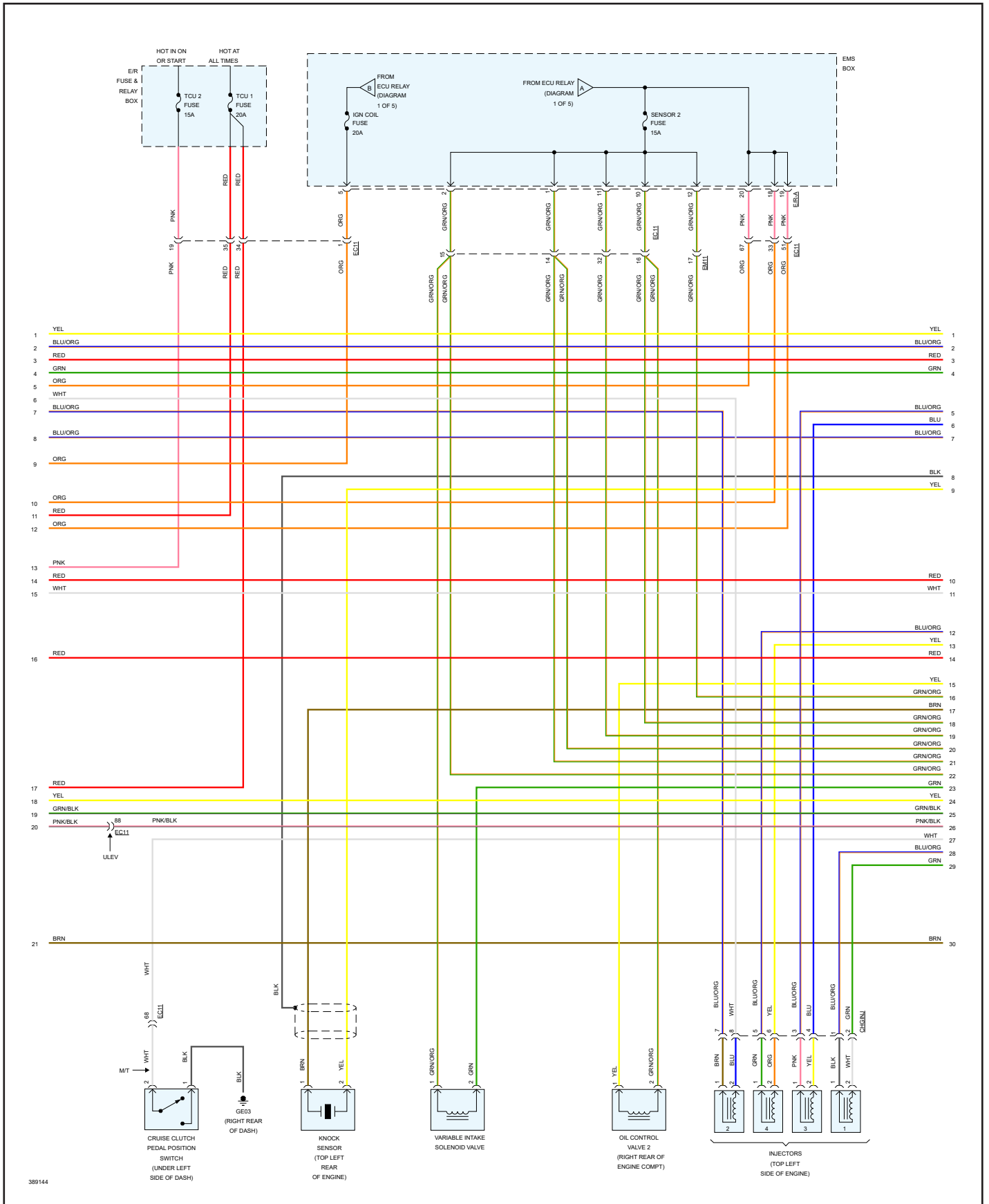


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2013 HYUNDAI SONATA L4-2.4L ENGINE CONTROL MODULE

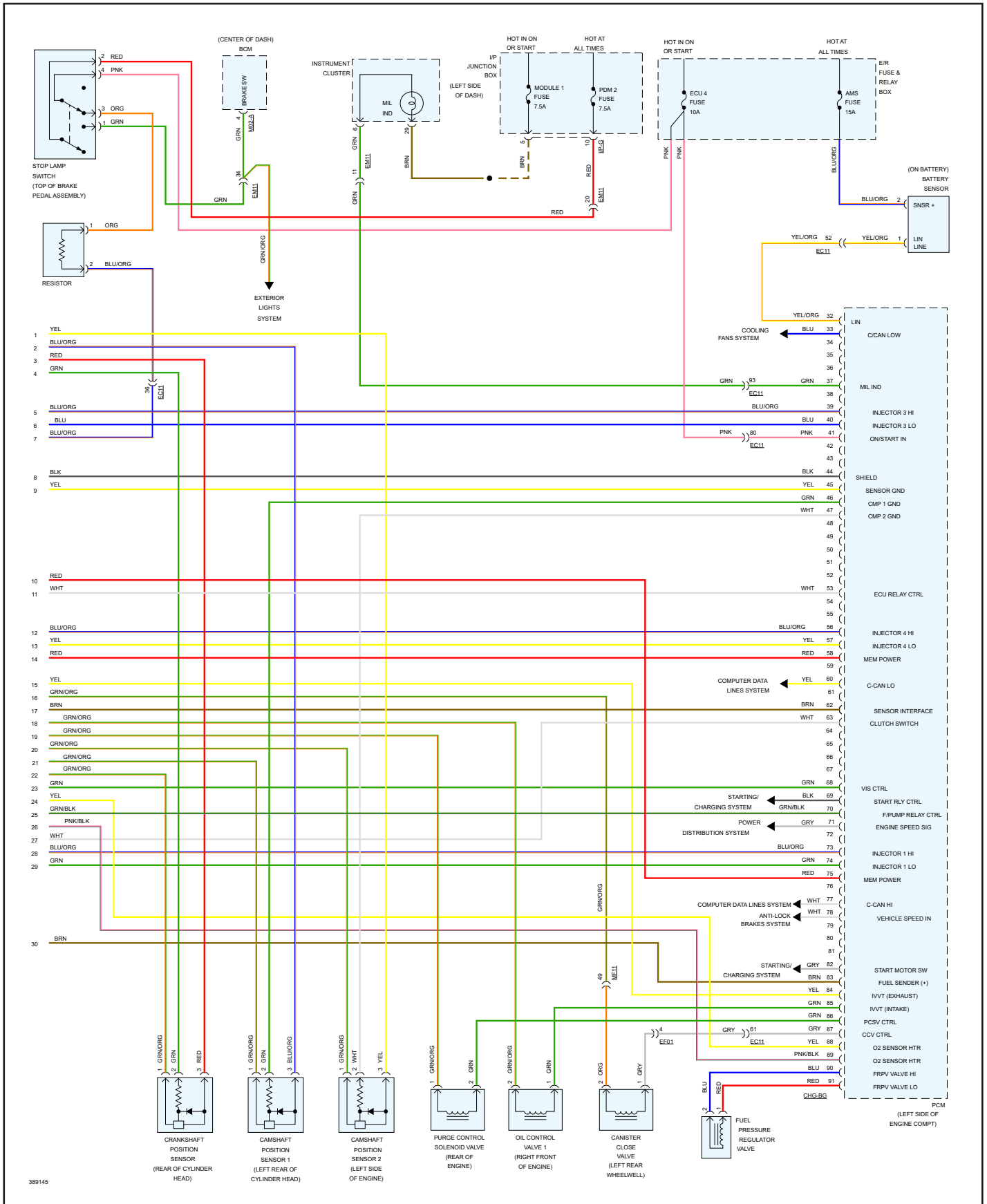


2013 HYUNDAI SONATA L4-2.4L ENGINE CONTROL MODULE

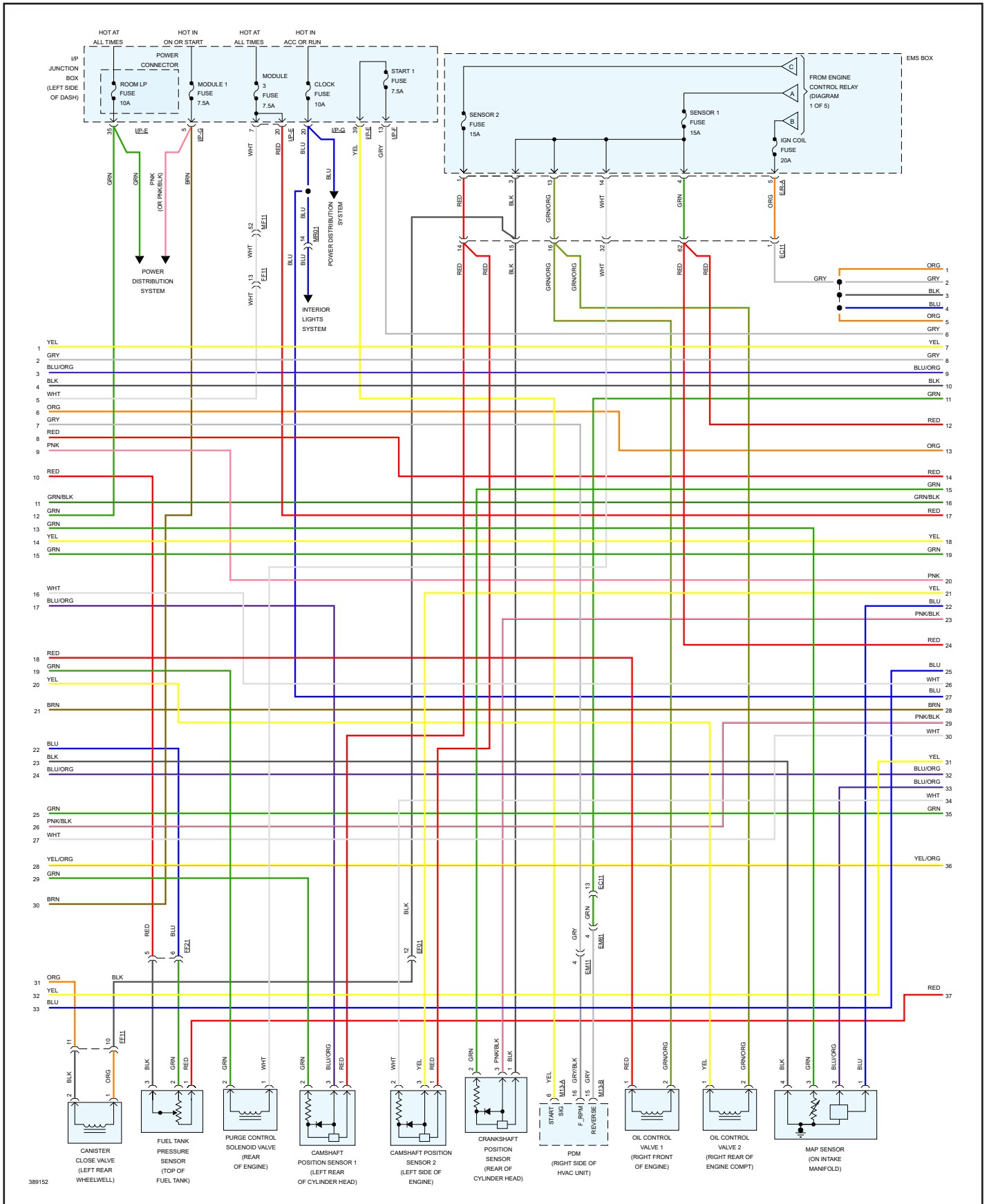


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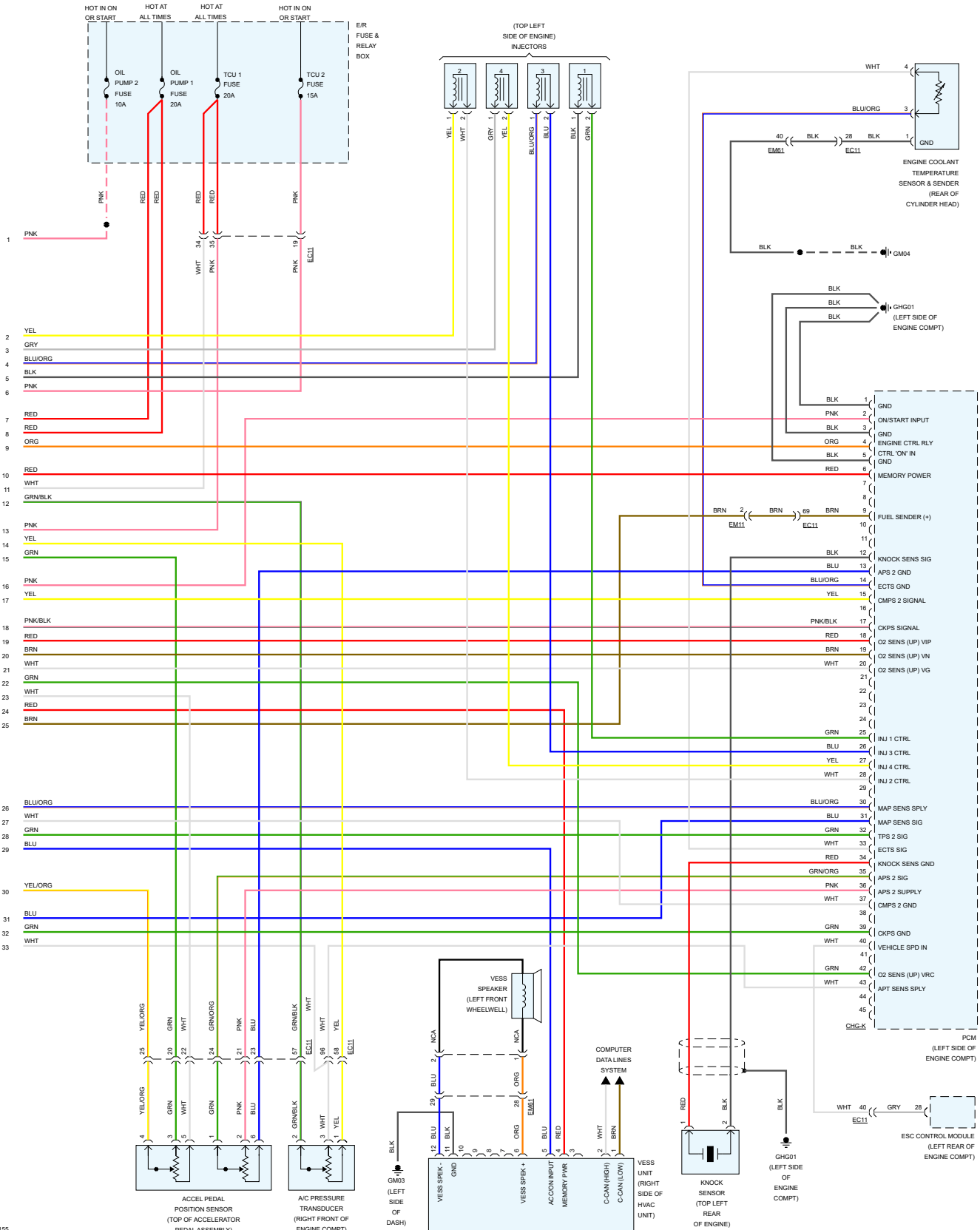


2013 HYUNDAI SONATA L4-2.4L ENGINE CONTROLS - MFI CONTROL CIRCUIT



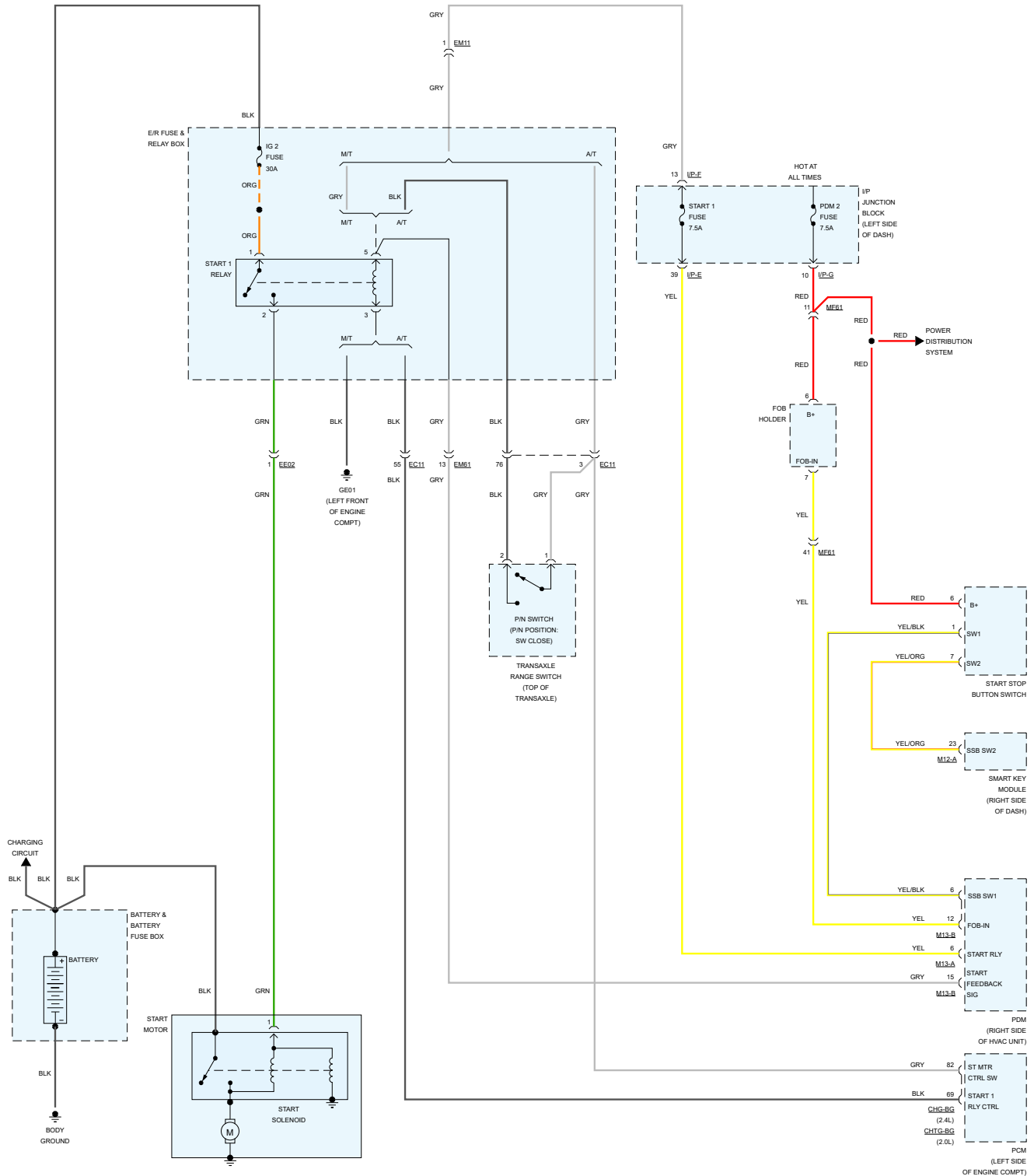
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2013 HYUNDAI SONATA L4-2.4L ENGINE CONTROLS - MFI CONTROL CIRCUIT



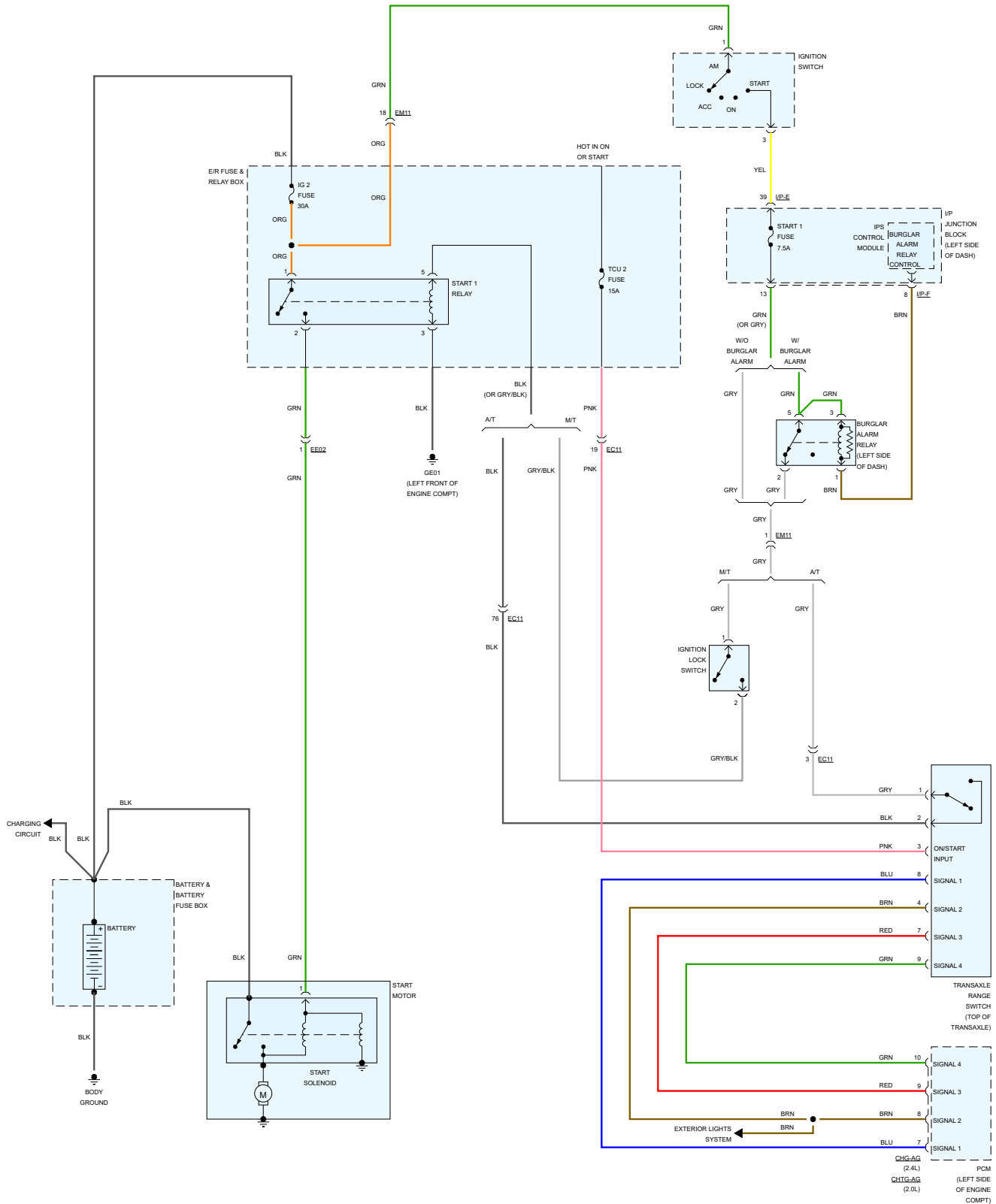
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2013 HYUNDAI SONATA L4-2.4L STARTING CHARGING - STARTING CIRCUIT (W/SMART KEY)



387778

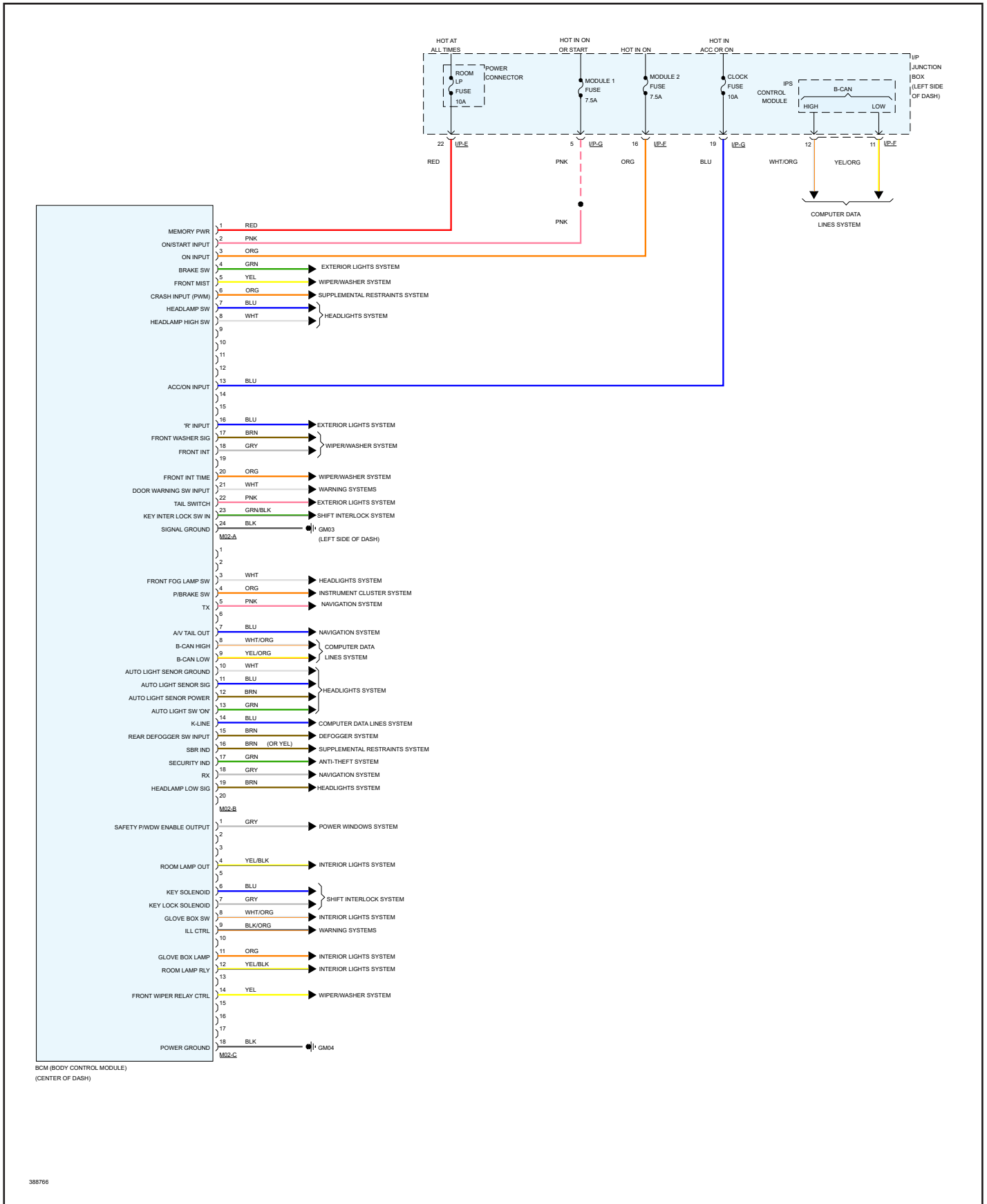
2013 HYUNDAI SONATA L4-2.4L STARTING CHARGING - STARTING CIRCUIT (W/O SMART KEY)



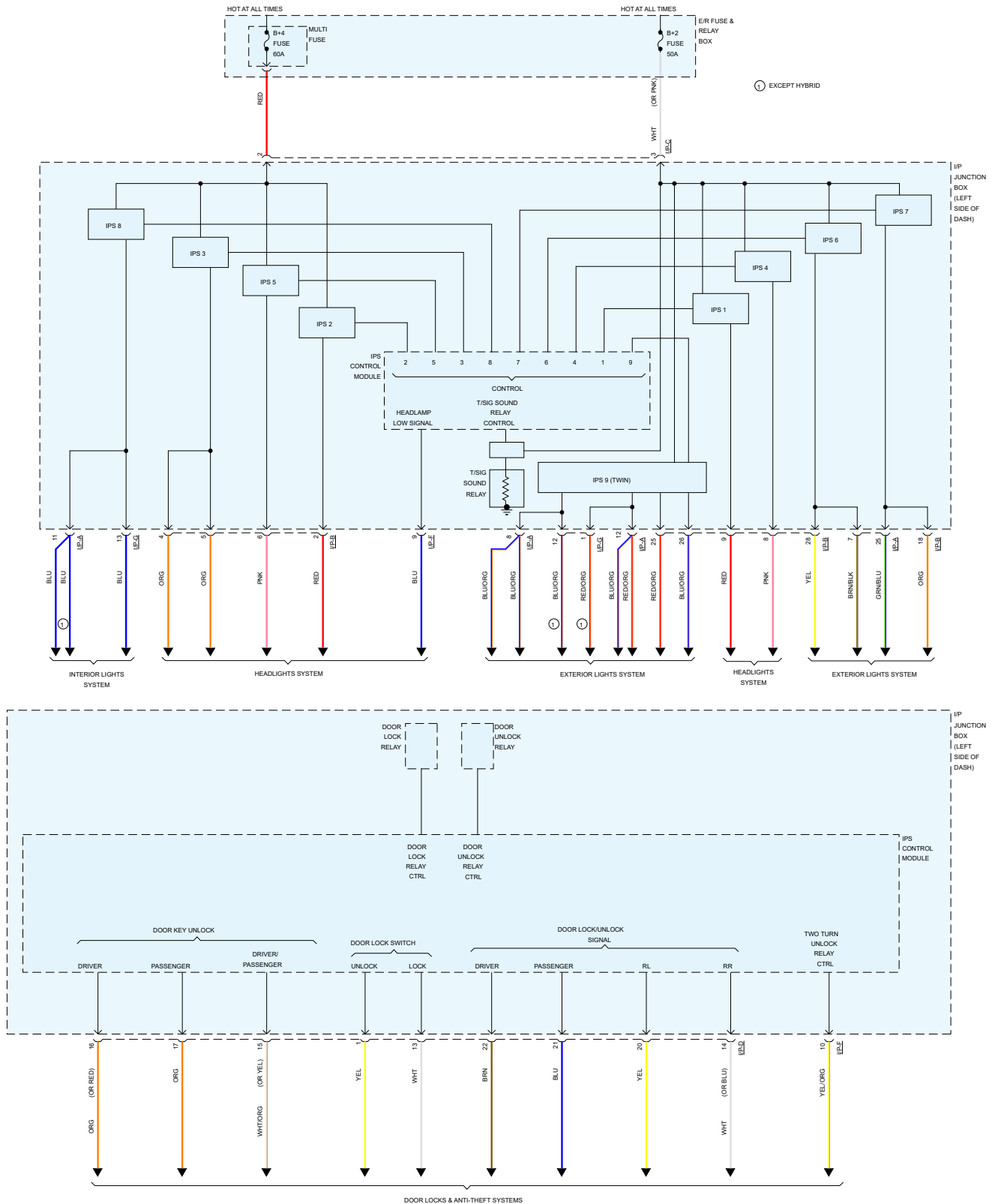
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2013 HYUNDAI SONATA L4-2.4L

BODY COMPUTER - BODY CONTROL MODULE CIRCUIT (EXCEPT HYBRID)



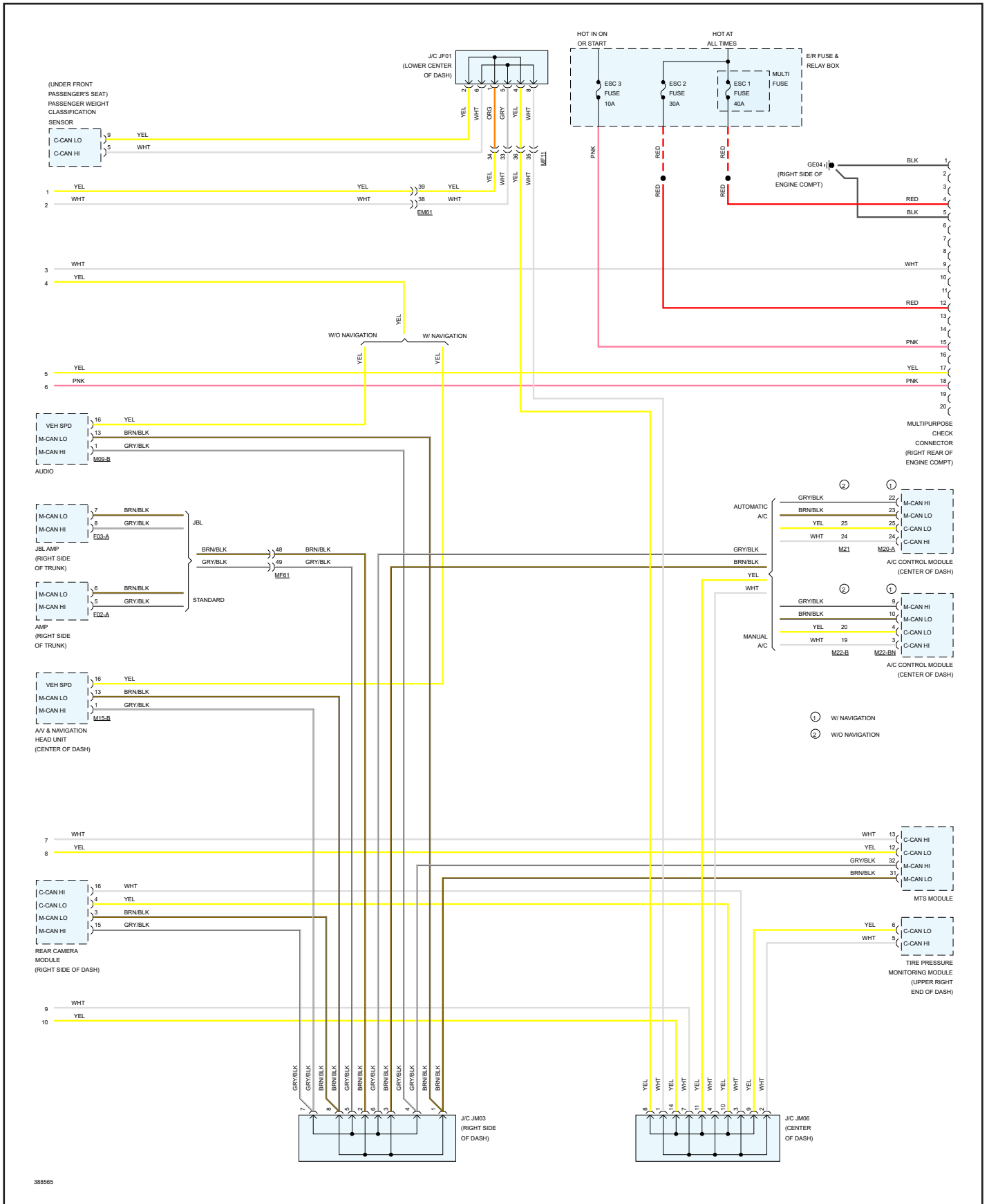
2013 HYUNDAI SONATA L4-2.4L BODY COMPUTER - IPS CONTROL MODULE CIRCUIT



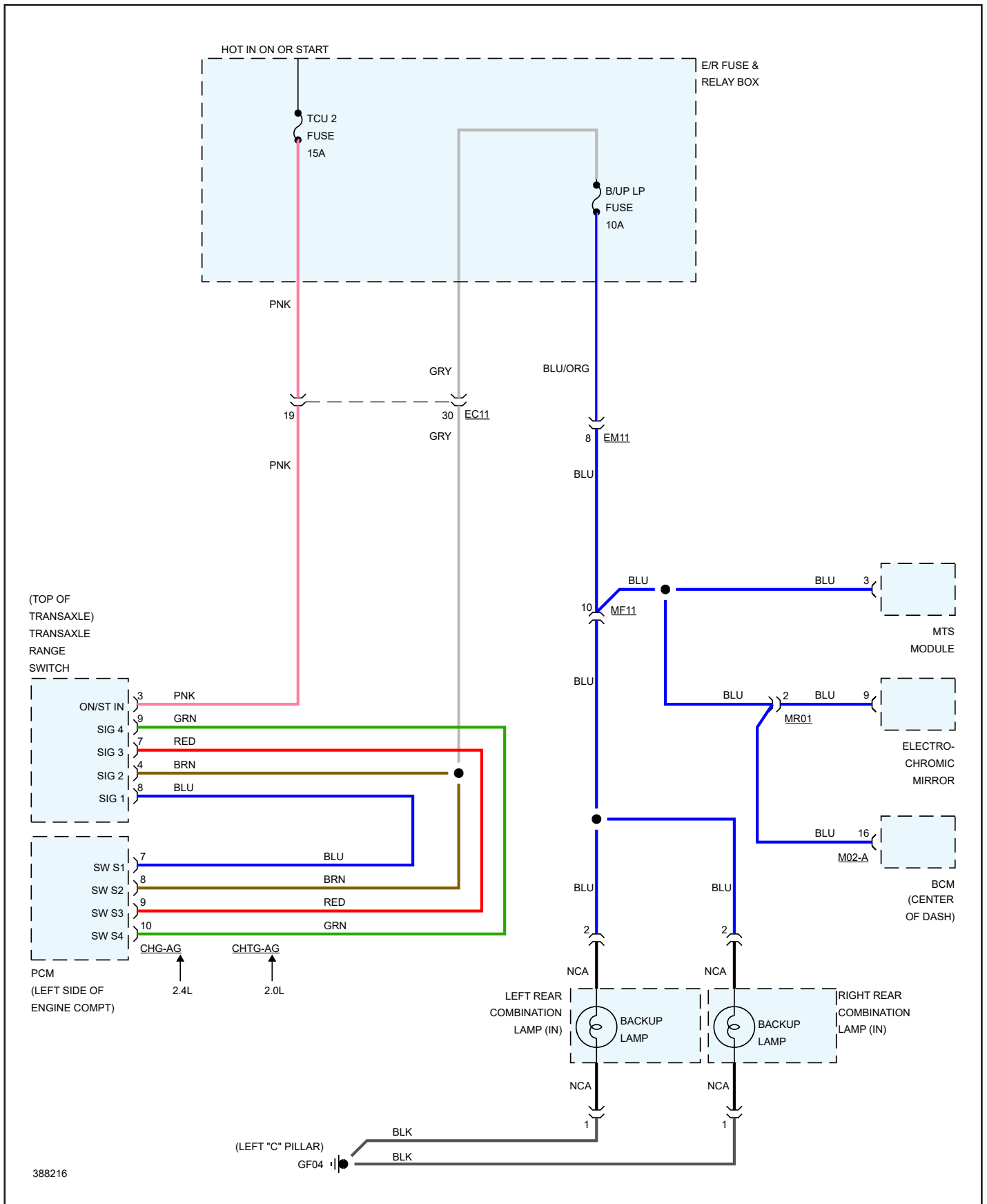
2013 HYUNDAI SONATA L4-2.4L COMPUTER DATA LINES - EXCEPT HYBRID



2013 HYUNDAI SONATA L4-2.4L COMPUTER DATA LINES - EXCEPT HYBRID



2013 HYUNDAI SONATA L4-2.4L EXTERIOR LIGHTS - BACKUP LAMPS CIRCUIT (EXCEPT HYBRID)



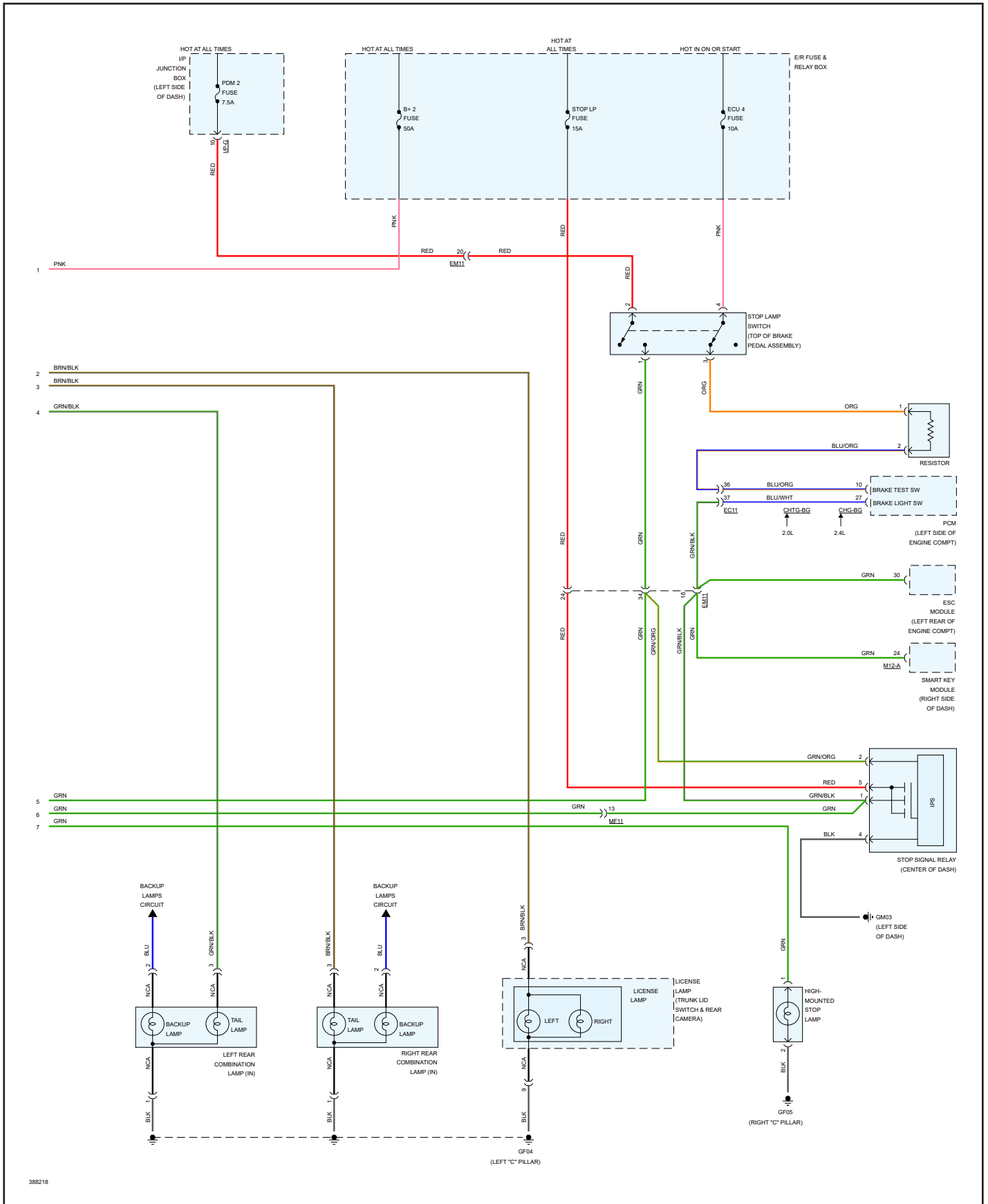
388216

2013 HYUNDAI SONATA L4-2.4L

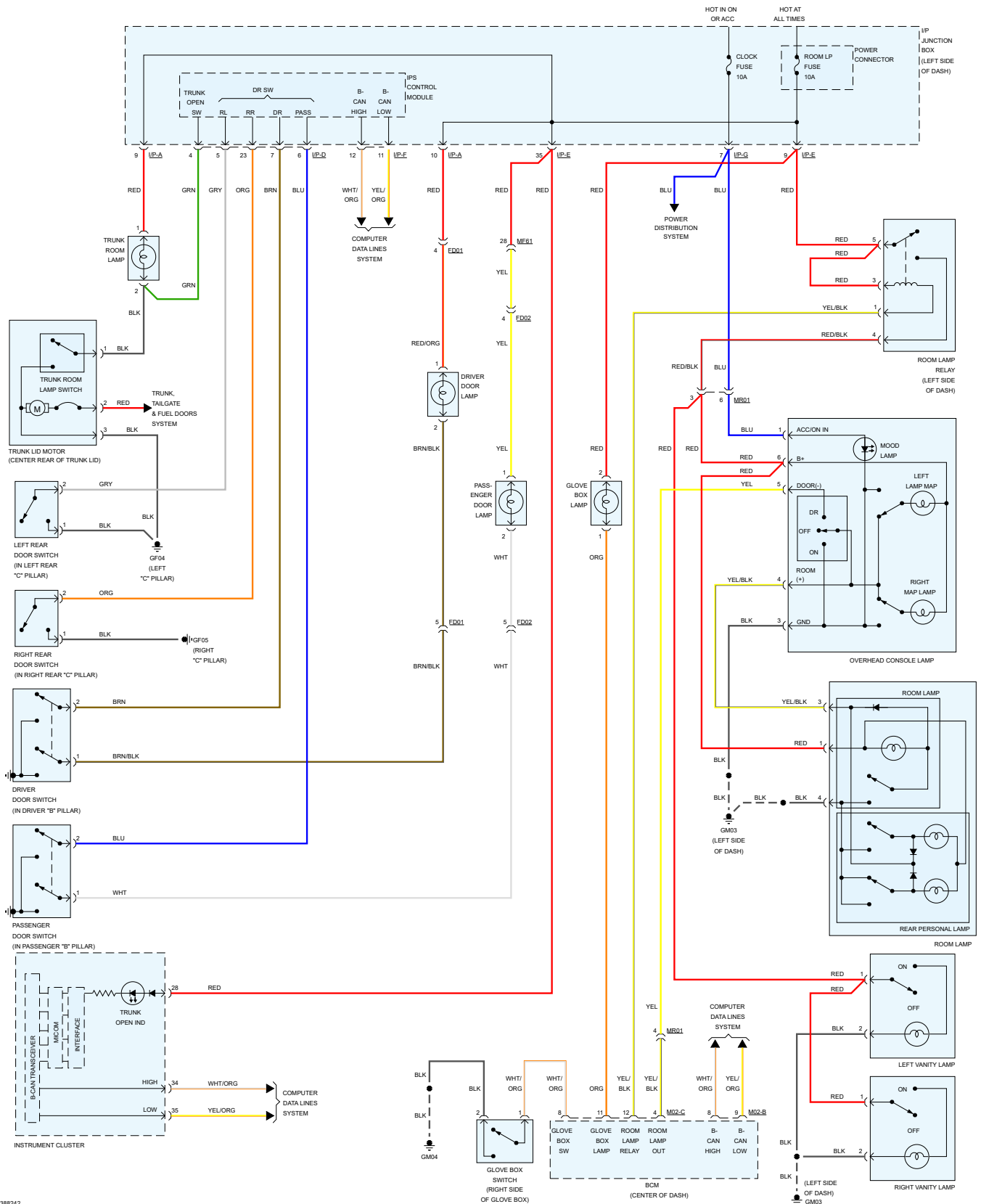
EXTERIOR LIGHTS - EXTERIOR LAMPS CIRCUIT (EXCEPT HYBRID)



2013 HYUNDAI SONATA L4-2.4L EXTERIOR LIGHTS - EXTERIOR LAMPS CIRCUIT (EXCEPT HYBRID)

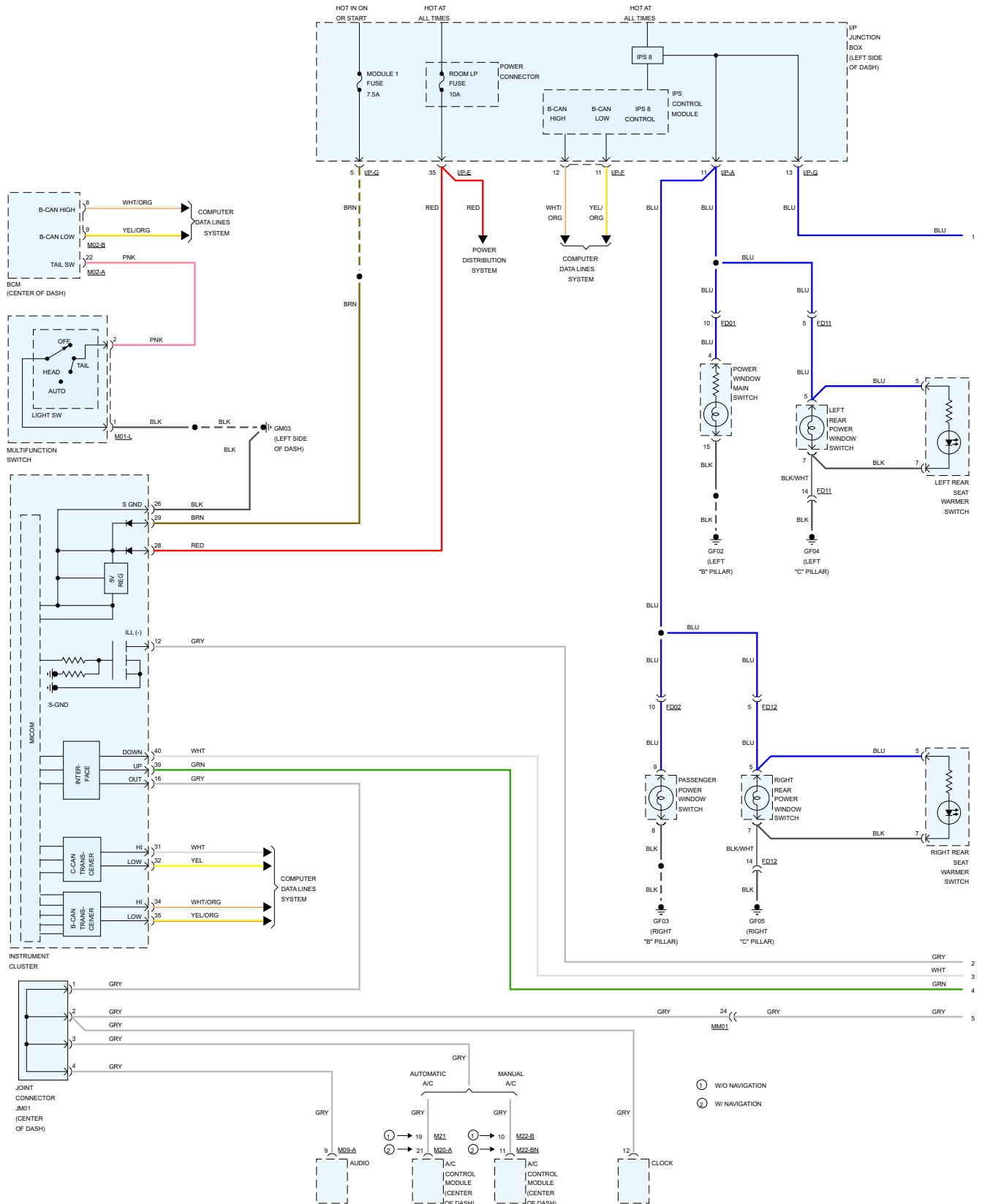


2013 HYUNDAI SONATA L4-2.4L INTERIOR LIGHTS - COURTESY LAMPS CIRCUIT (EXCEPT HYBRID)



388242

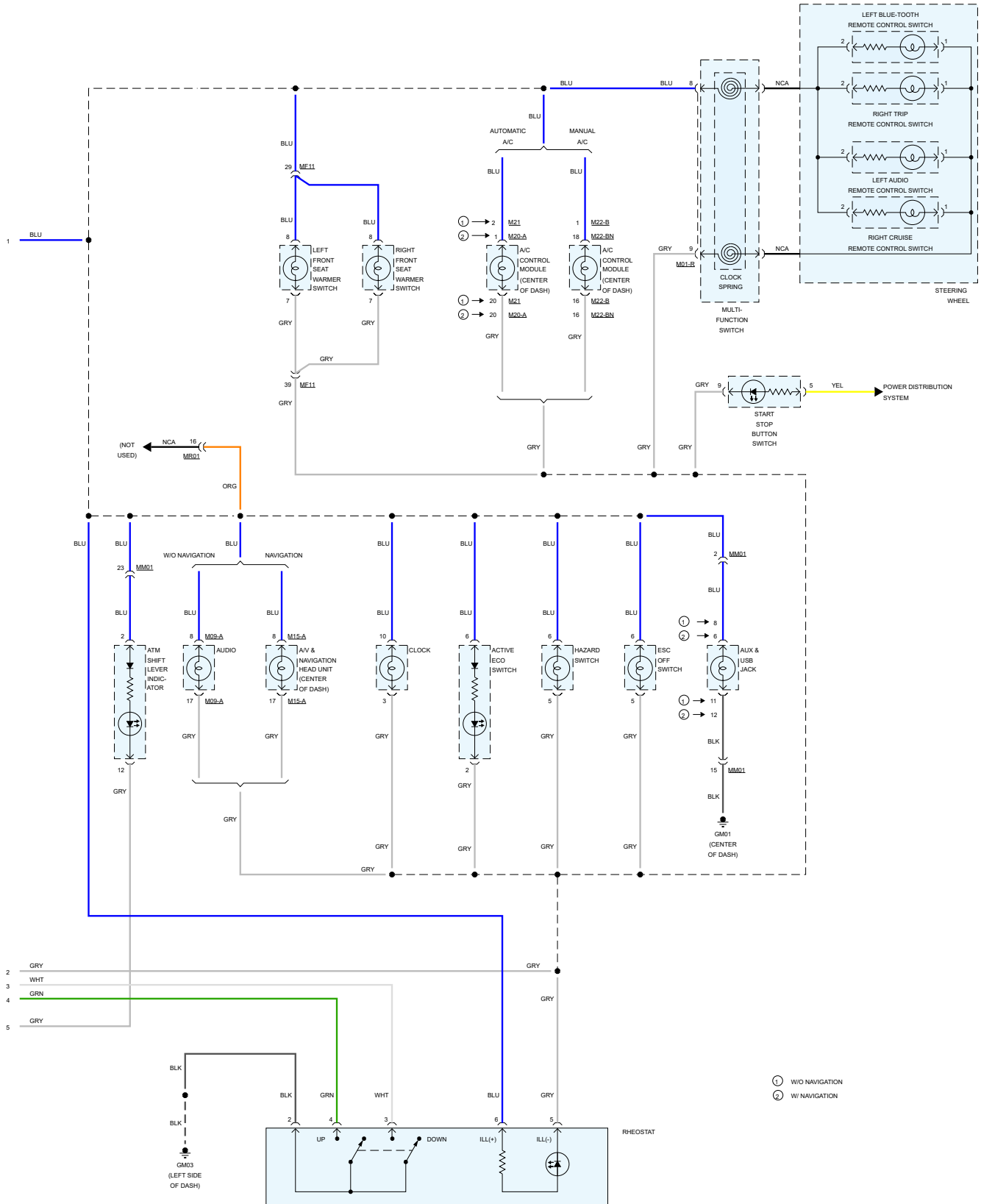
2013 HYUNDAI SONATA L4-2.4L INTERIOR LIGHTS - INSTRUMENT ILLUMINATION CIRCUIT (EXCEPT HYBRID)



386243

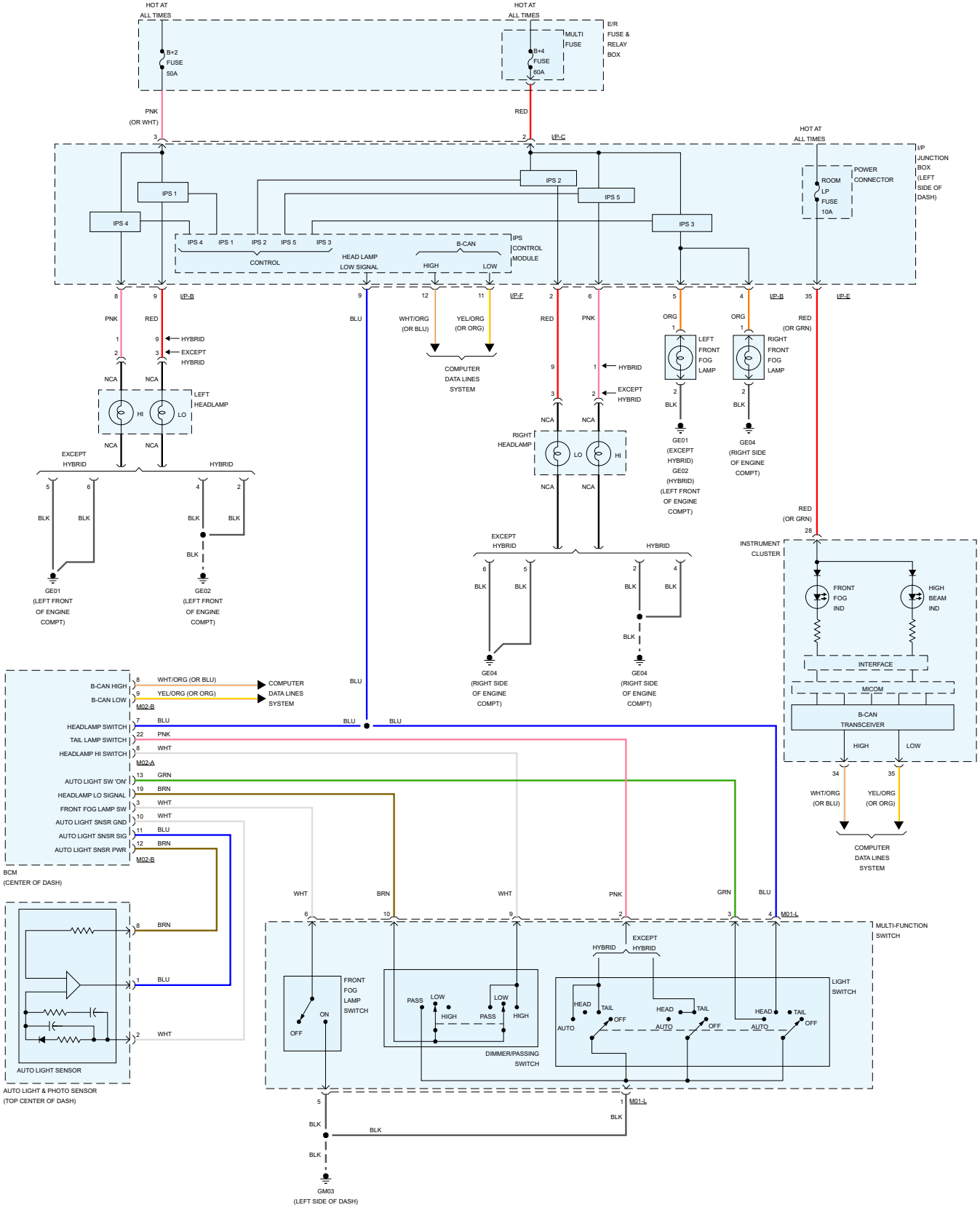
2013 HYUNDAI SONATA L4-2.4L

INTERIOR LIGHTS - INSTRUMENT ILLUMINATION CIRCUIT (EXCEPT HYBRID)



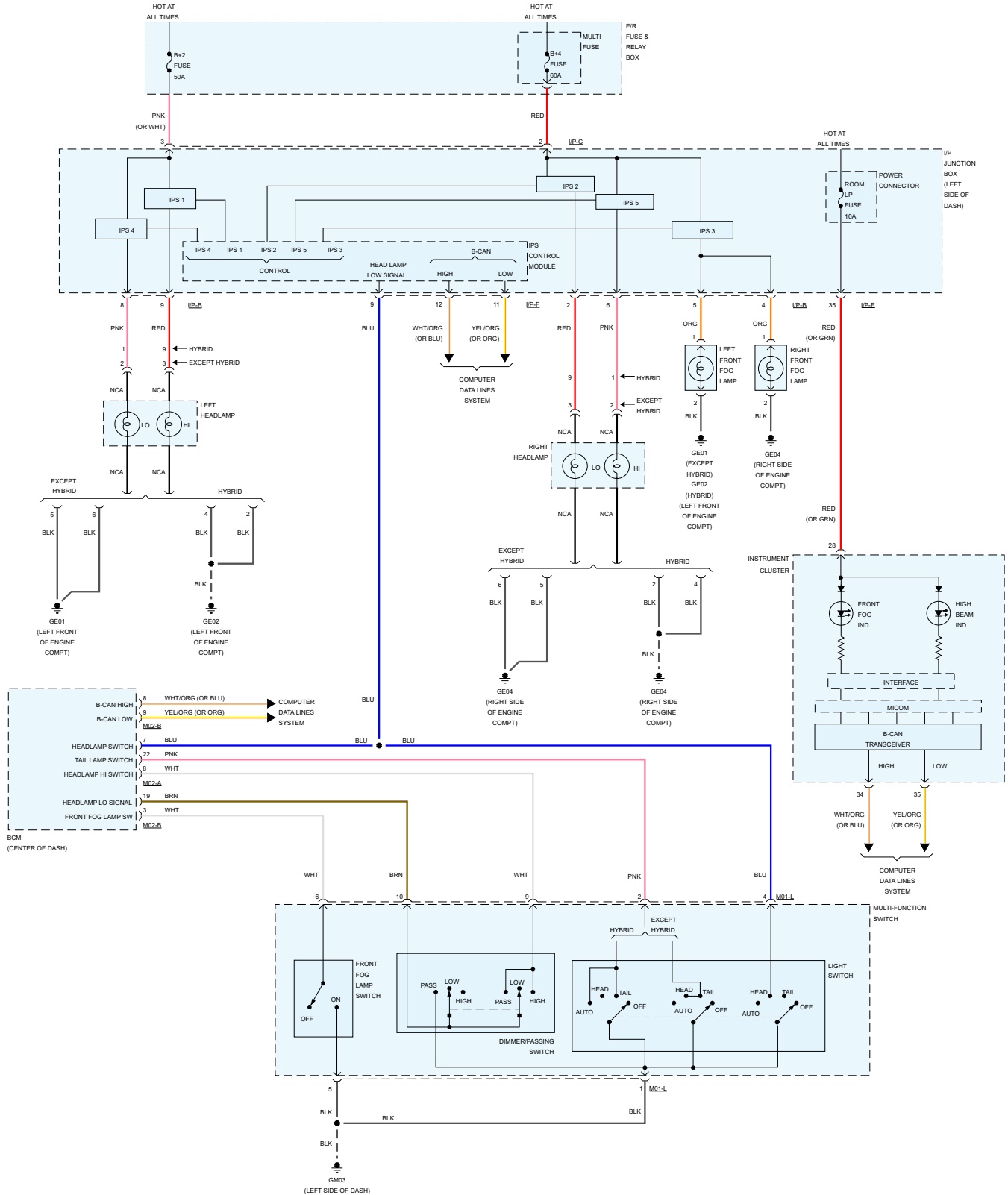
388244

2013 HYUNDAI SONATA L4-2.4L HEADLIGHTS - AUTOLAMPS CIRCUIT



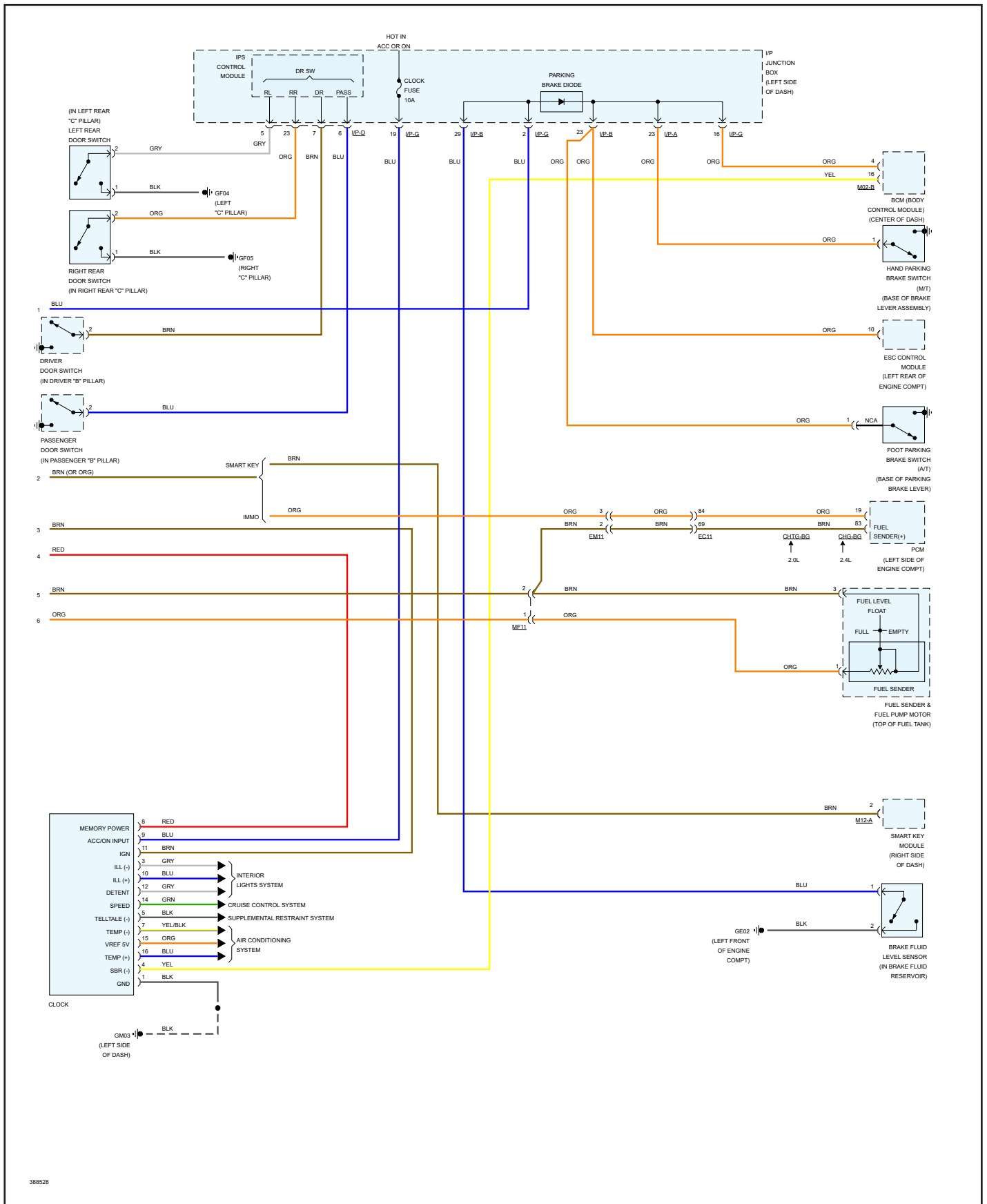
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2013 HYUNDAI SONATA L4-2.4L HEADLIGHTS - HEADLAMPS CIRCUIT



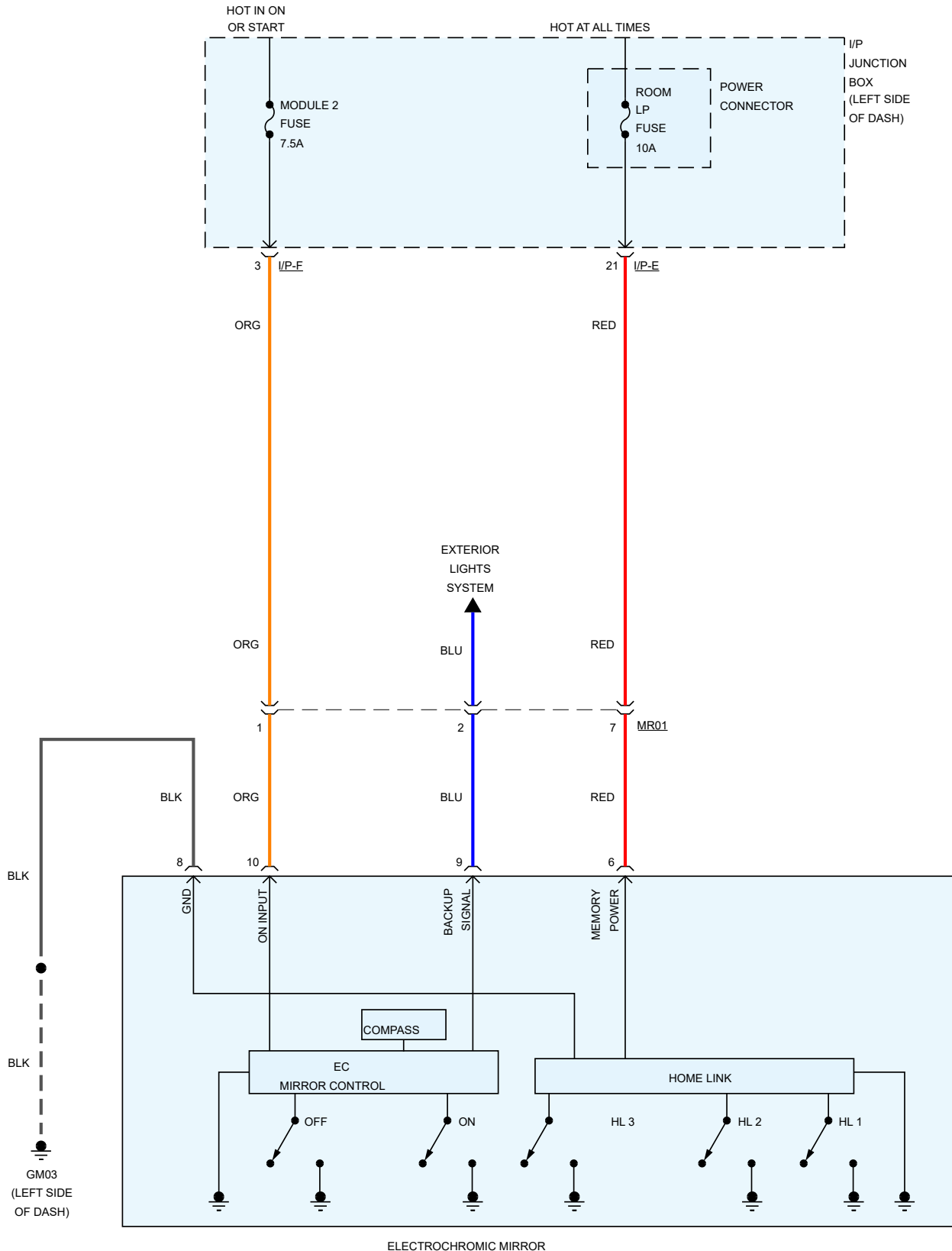
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2013 HYUNDAI SONATA L4-2.4L INSTRUMENT CLUSTER - EXCEPT HYBRID



2013 HYUNDAI SONATA L4-2.4L

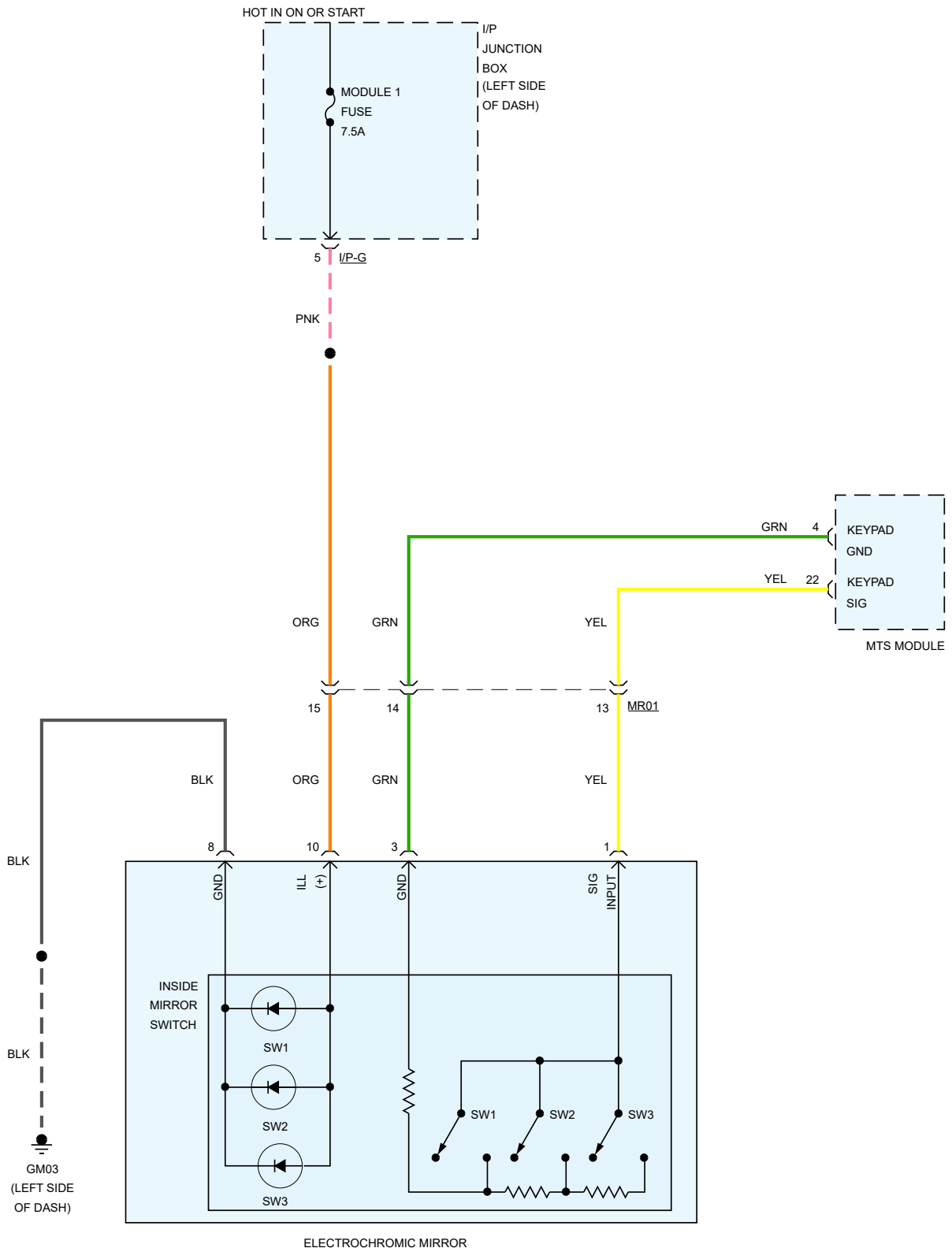
MIRRORS - ELECTROCHROMIC MIRROR CIRCUIT (EXCEPT HYBRID W/HOME LINK)



388027

2013 HYUNDAI SONATA L4-2.4L

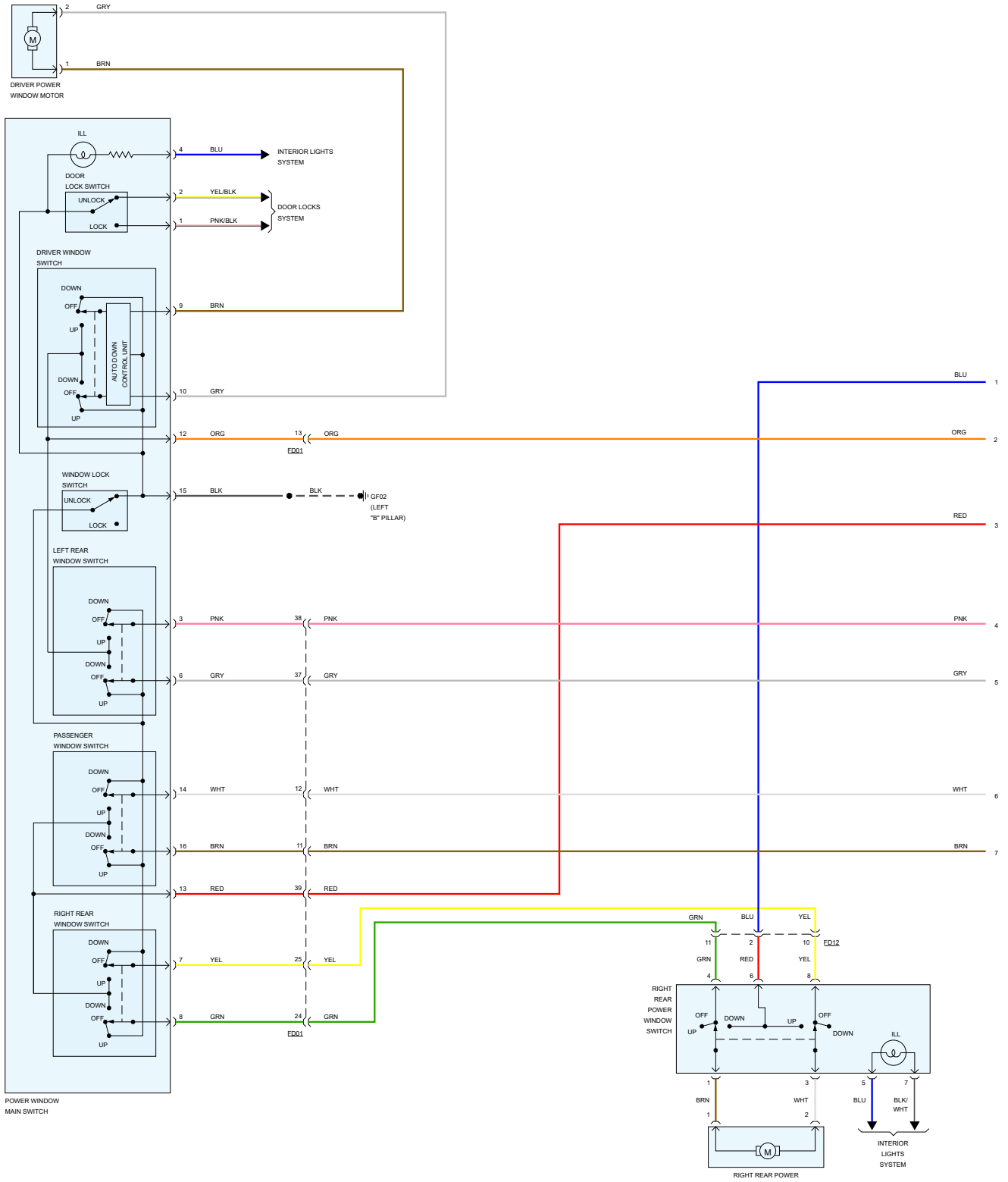
MIRRORS - ELECTROCHROMIC MIRROR CIRCUIT (EXCEPT HYBRID W/TMU)



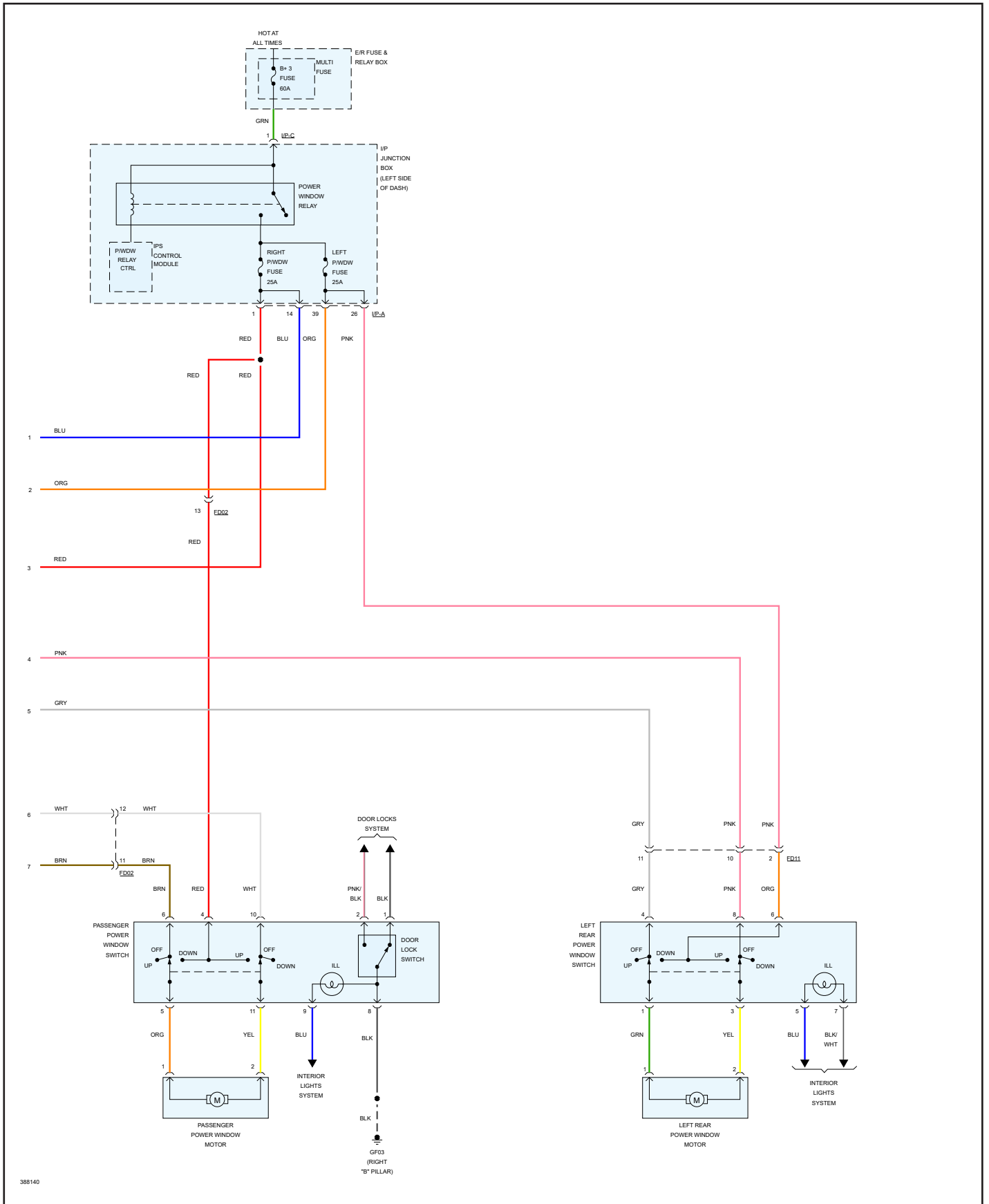
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2013 HYUNDAI SONATA L4-2.4L

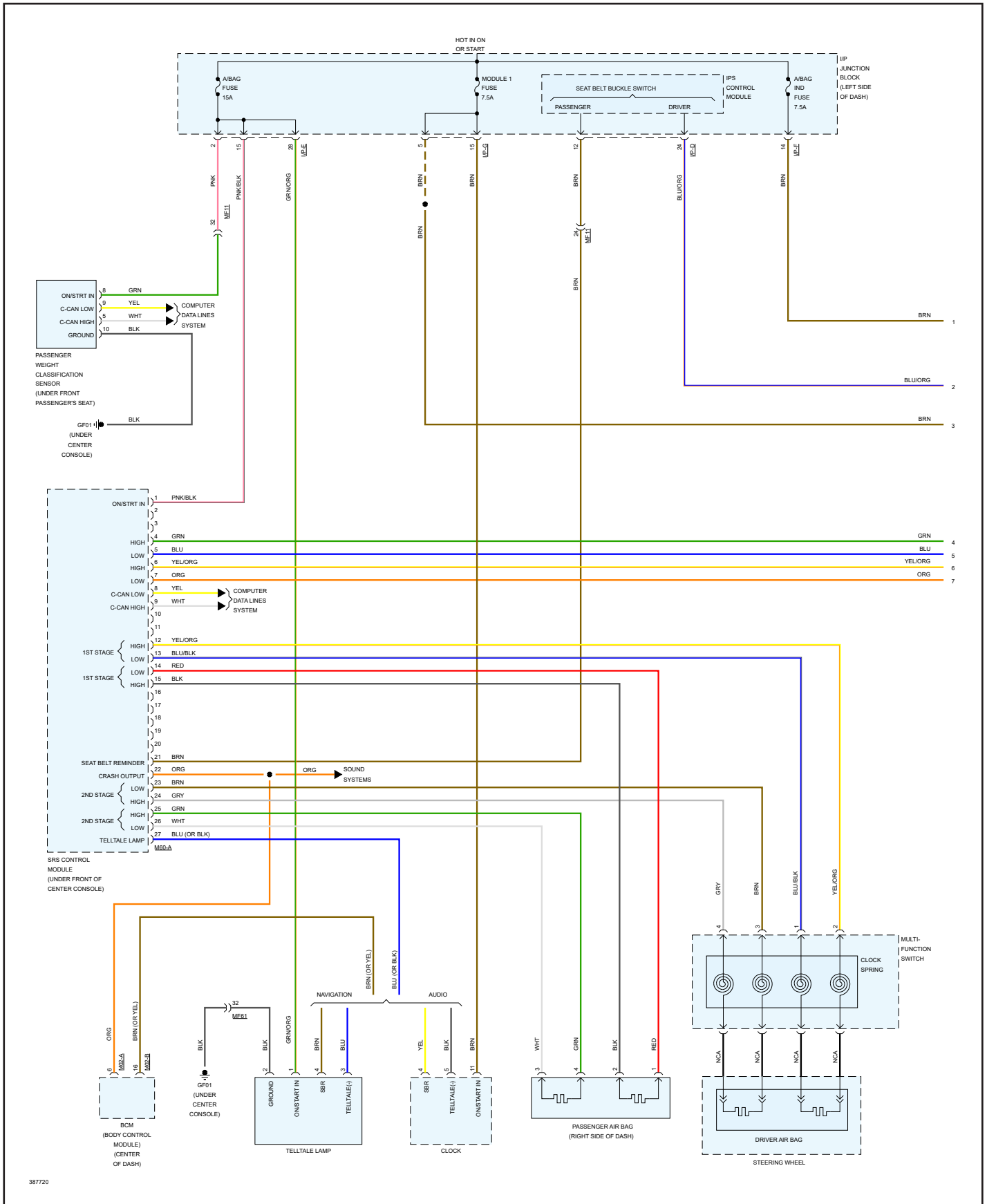
POWER WINDOWS - EXCEPT HYBRID W/O SAFETY POWER WINDOWS



2013 HYUNDAI SONATA L4-2.4L POWER WINDOWS - EXCEPT HYBRID W/O SAFETY POWER WINDOWS

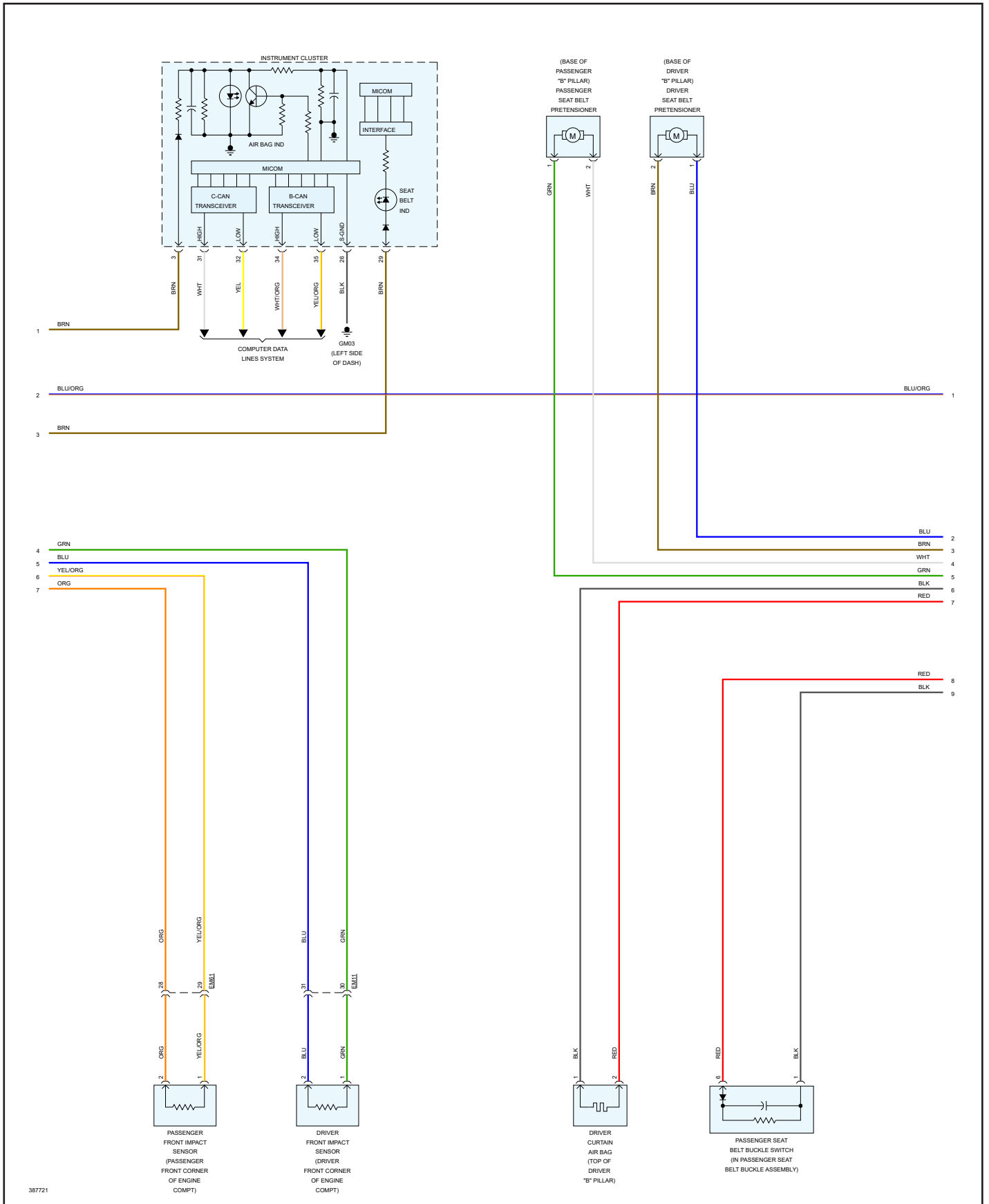


2013 HYUNDAI SONATA L4-2.4L SUPPLEMENTAL RESTRAINTS - EXCEPT HYBRID

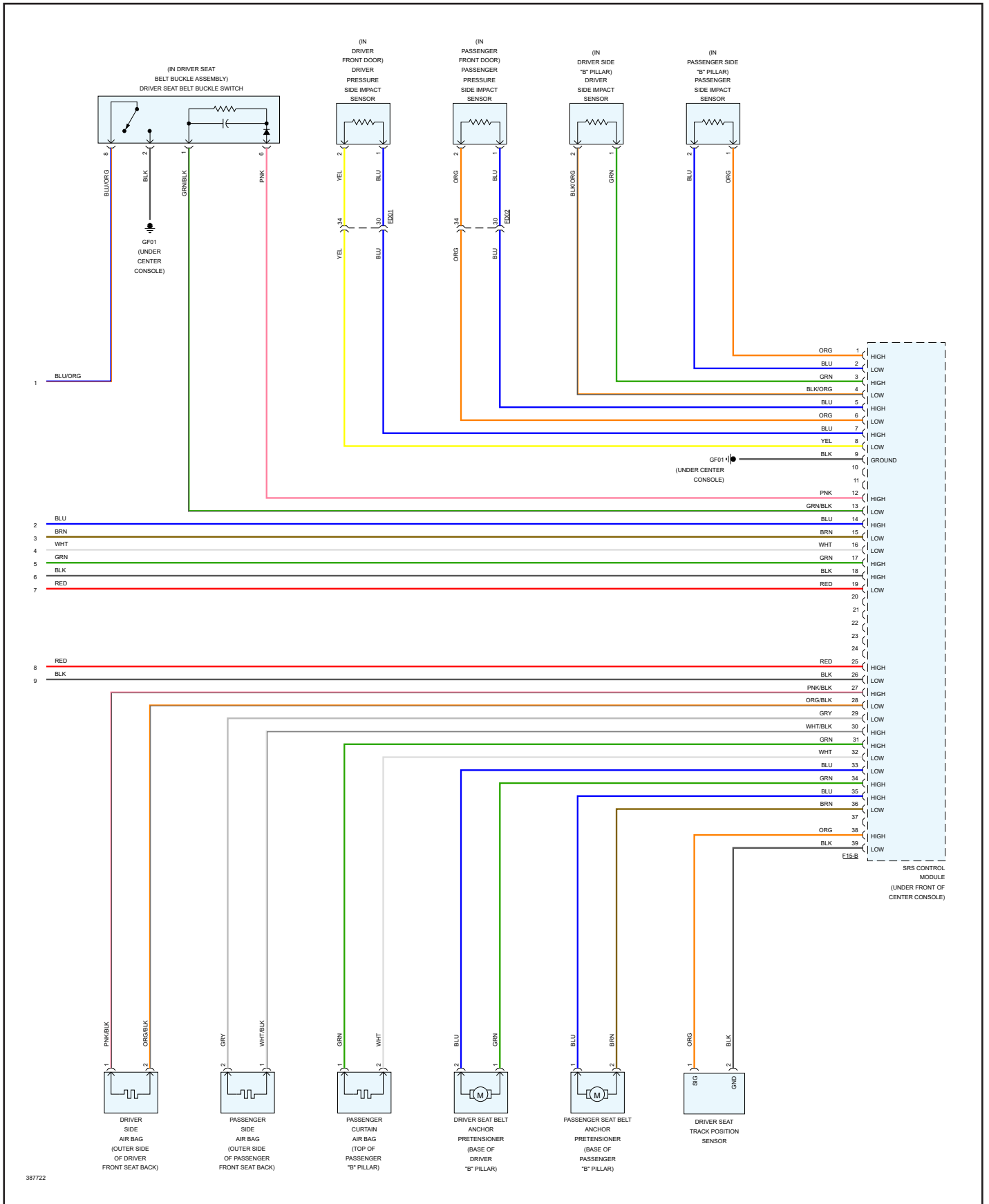


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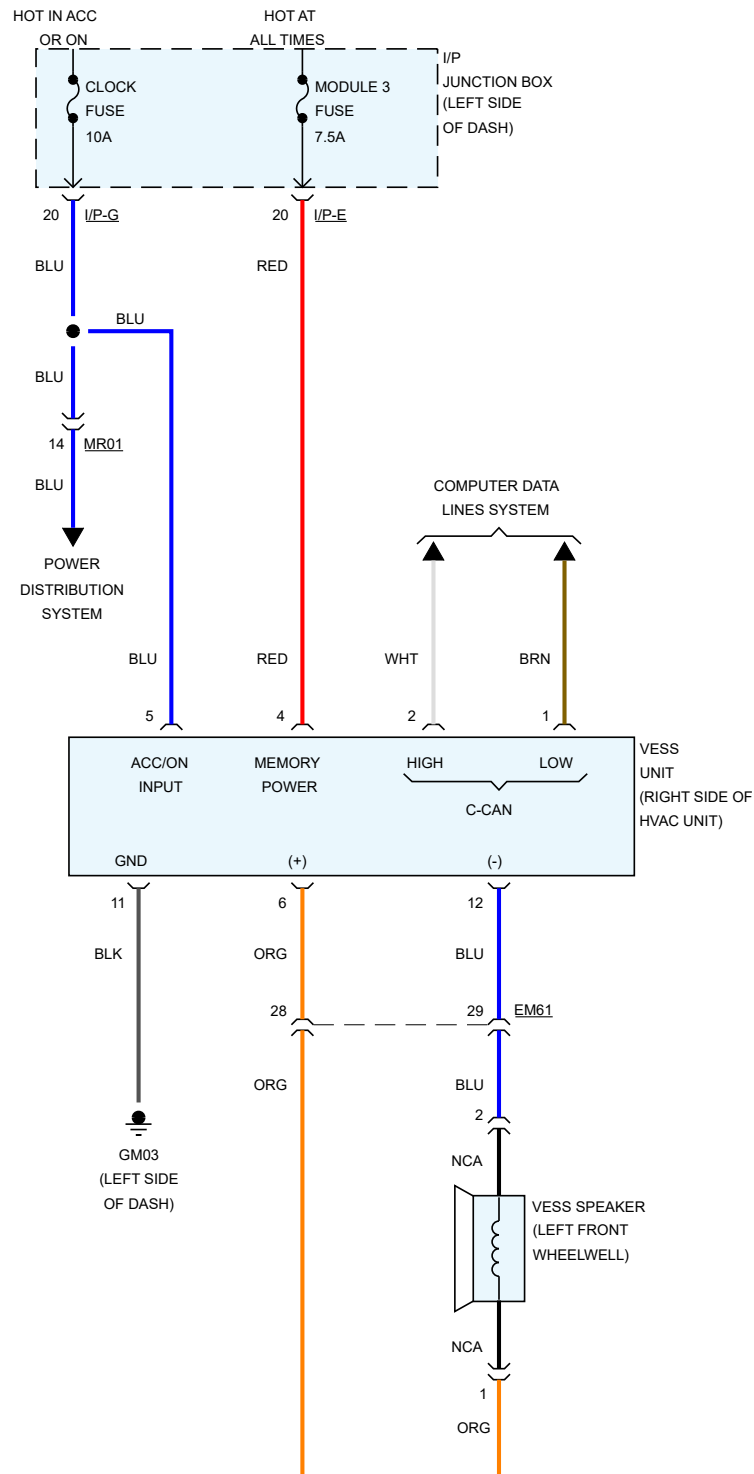
2013 HYUNDAI SONATA L4-2.4L SUPPLEMENTAL RESTRAINTS - EXCEPT HYBRID



2013 HYUNDAI SONATA L4-2.4L SUPPLEMENTAL RESTRAINTS - EXCEPT HYBRID



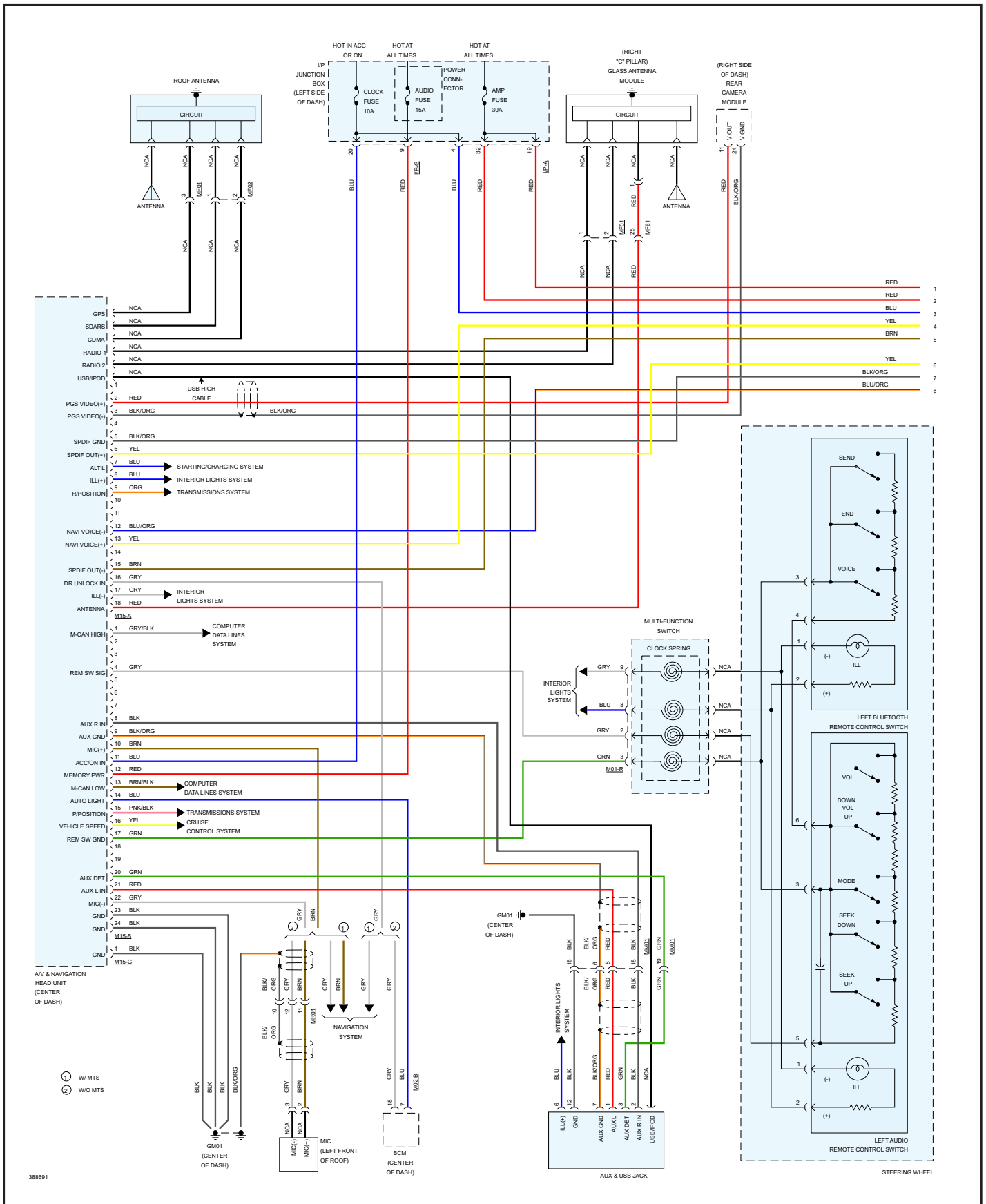
2013 HYUNDAI SONATA L4-2.4L SAFETY SYSTEMS - VIRTUAL ENGINE SOUND SYSTEM



389162

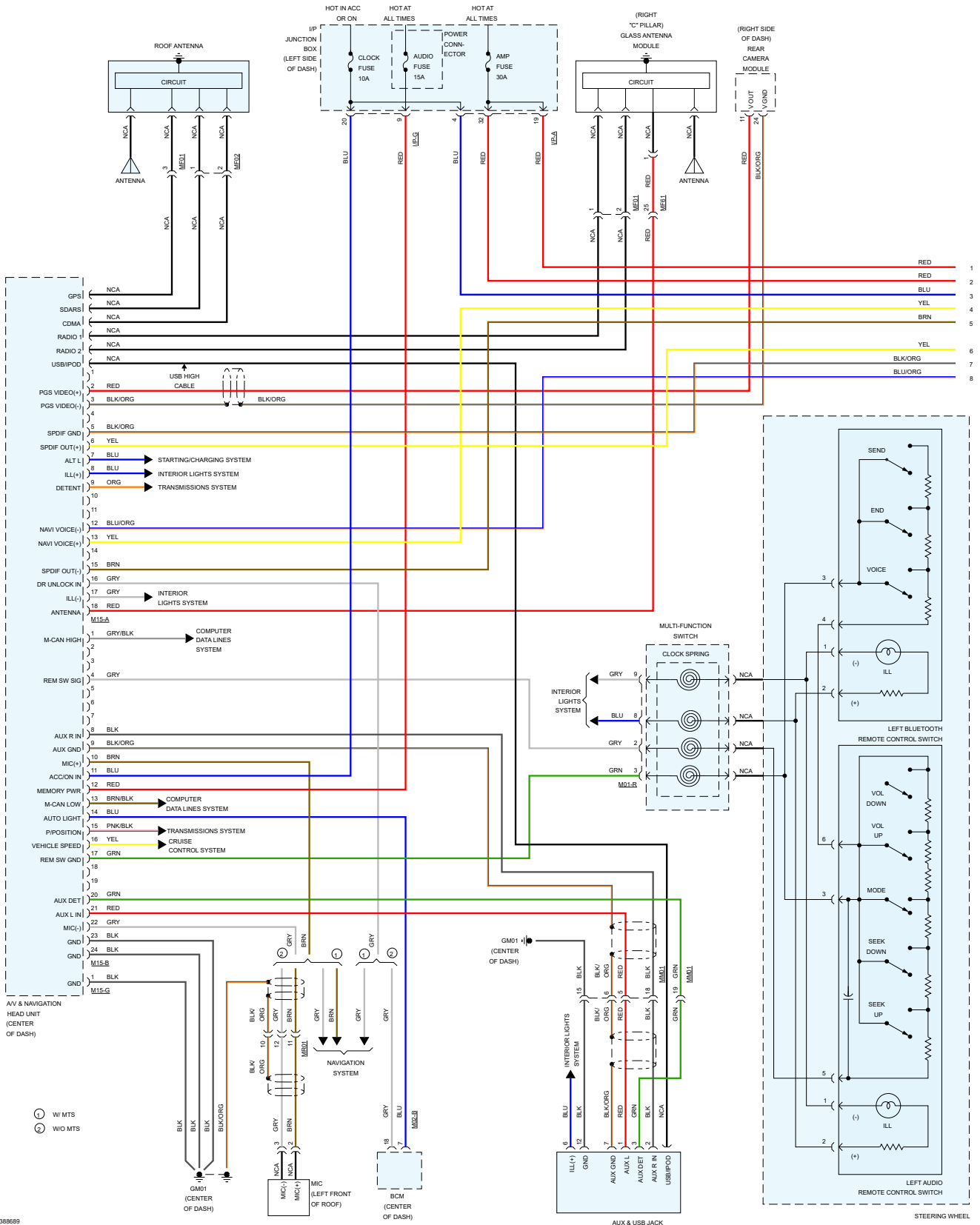
2013 HYUNDAI SONATA L4-2.4L

SOUND SYSTEMS - EXCEPT HYBRID W/NAVIGATION & W/JBL AMPLIFIER



2013 HYUNDAI SONATA L4-2.4L

SOUND SYSTEMS - EXCEPT HYBRID W/NAVIGATION & W/STANDARD AMPLIFIER

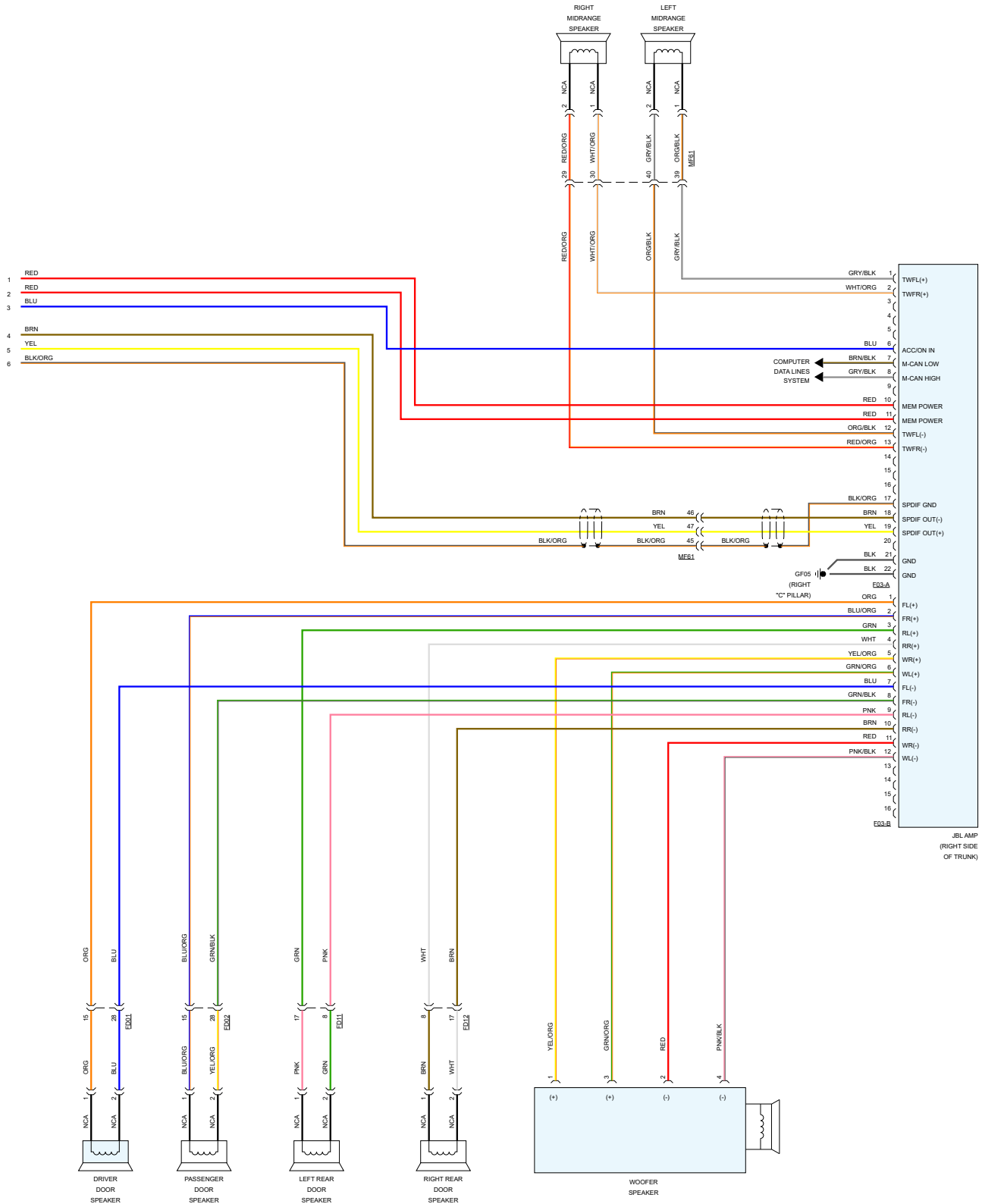


SOUND SYSTEMS - EXCEPT HYBRID W/O NAVIGATION & W/JBL AMPLIFIER



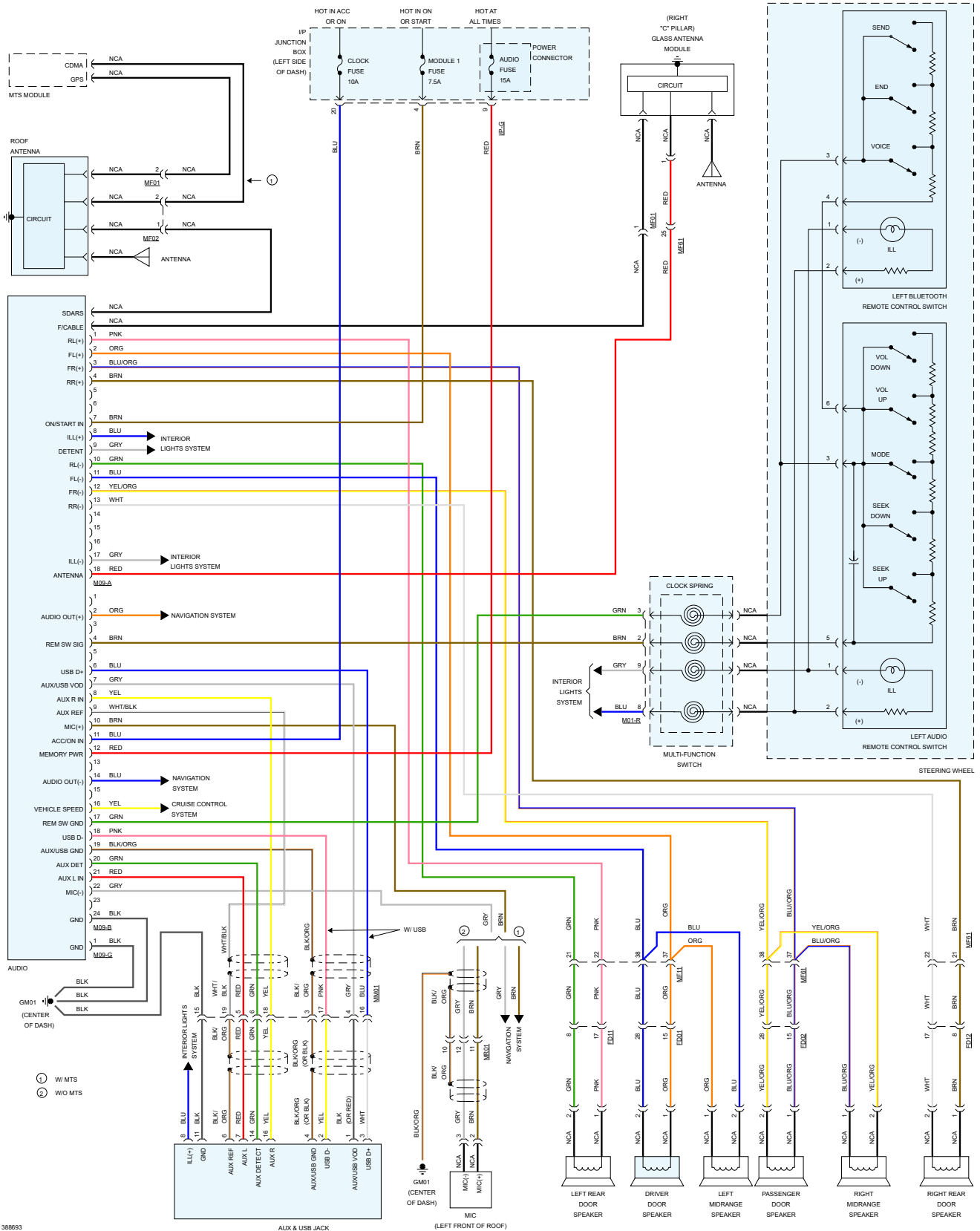
2013 HYUNDAI SONATA L4-2.4L

SOUND SYSTEMS - EXCEPT HYBRID W/O NAVIGATION & W/JBL AMPLIFIER

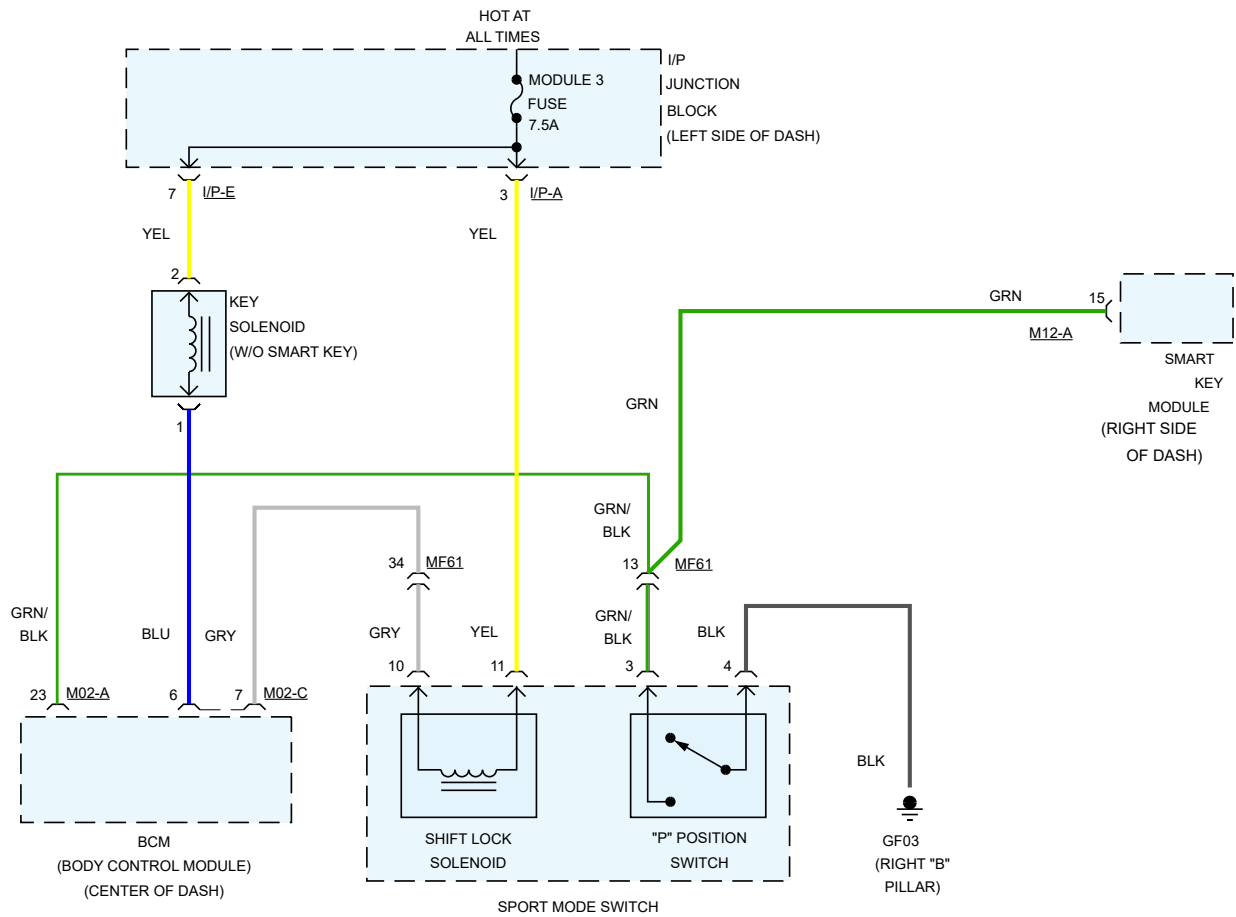


2013 HYUNDAI SONATA L4-2.4L

SOUND SYSTEMS - EXCEPT HYBRID W/O NAVIGATION W/O STANDARD AMPLIFIER & JBL AMPLIFIER

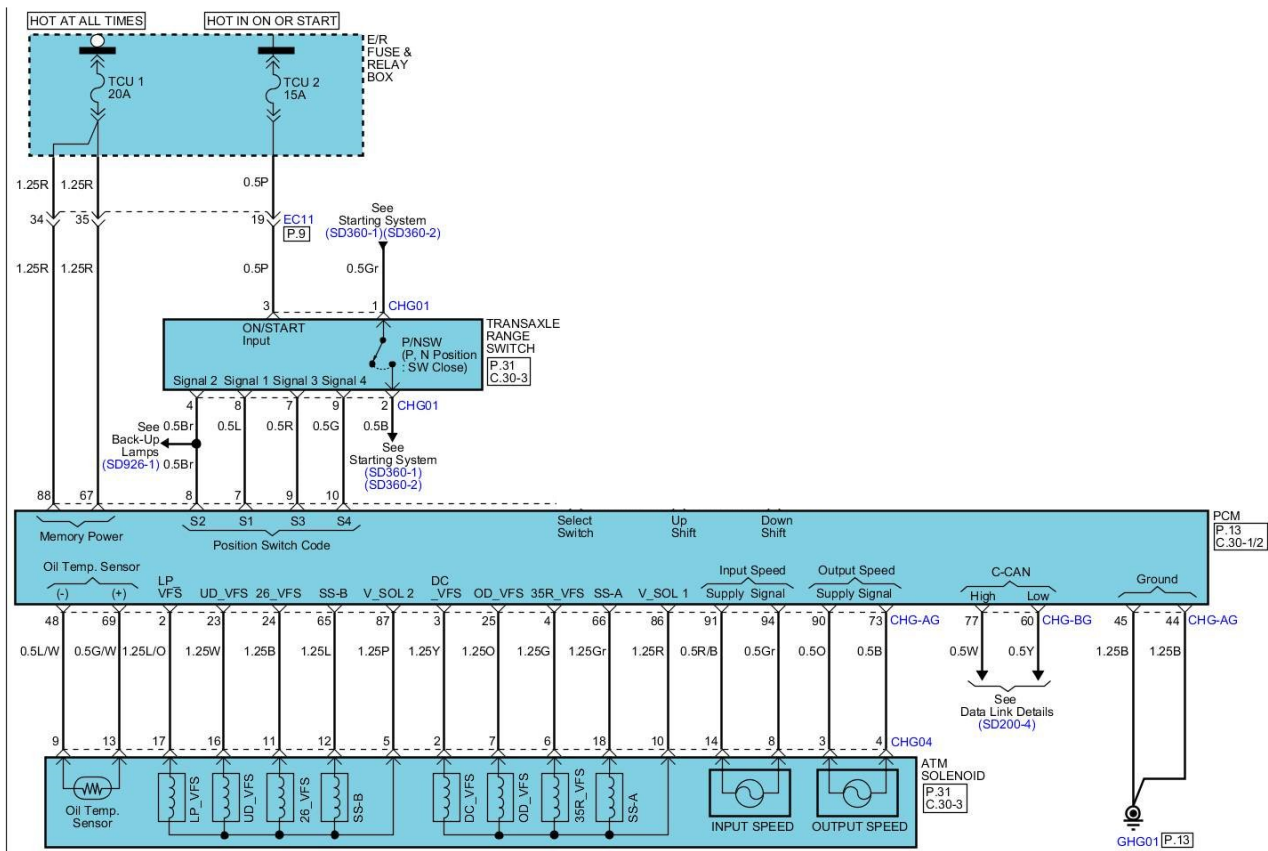


2013 HYUNDAI SONATA L4-2.4L SHIFT INTERLOCK - EXCEPT HYBRID

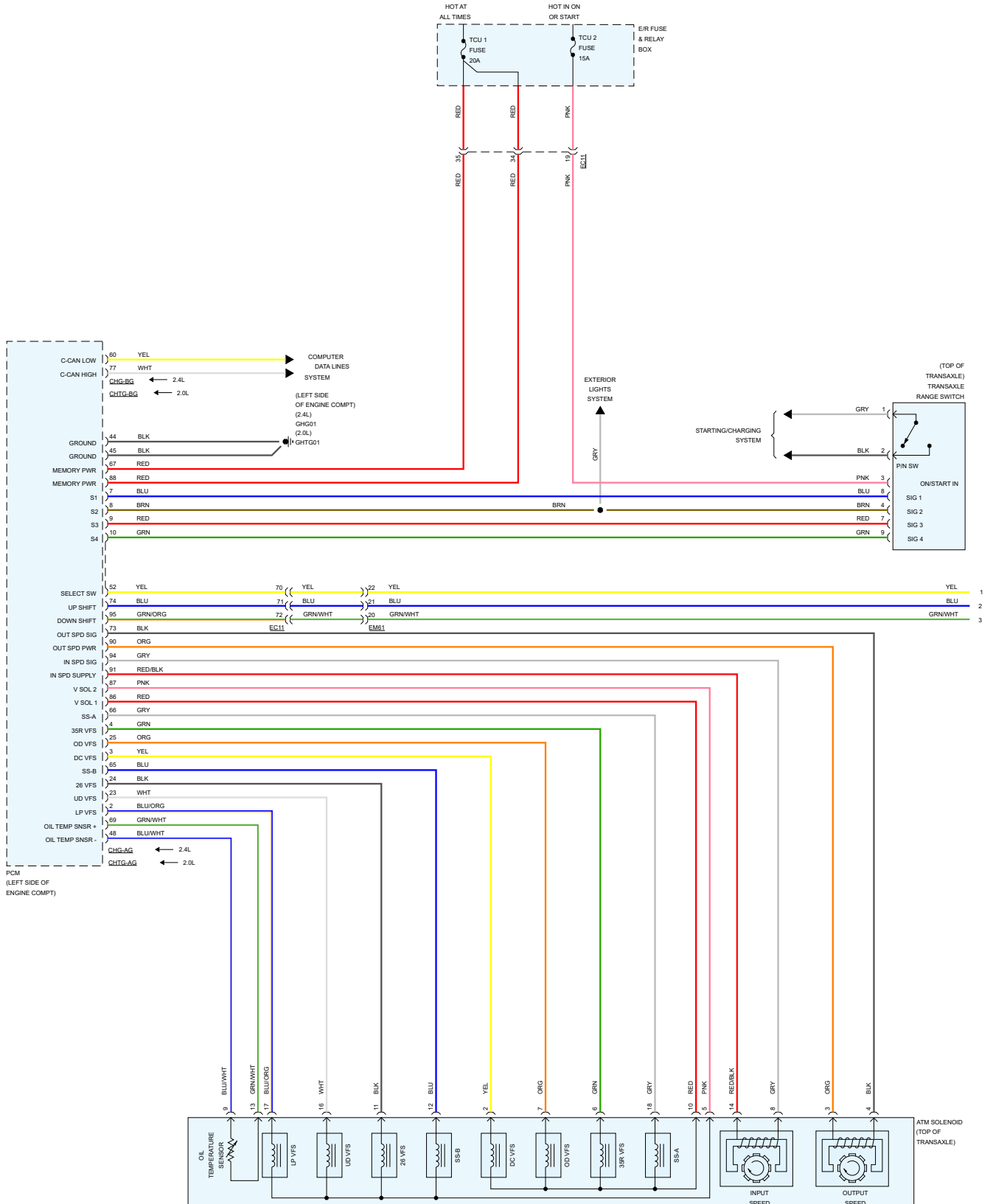


387697

2013 HYUNDAI SONATA L4-2.4L TRANSAXLE RANGE SWITCH

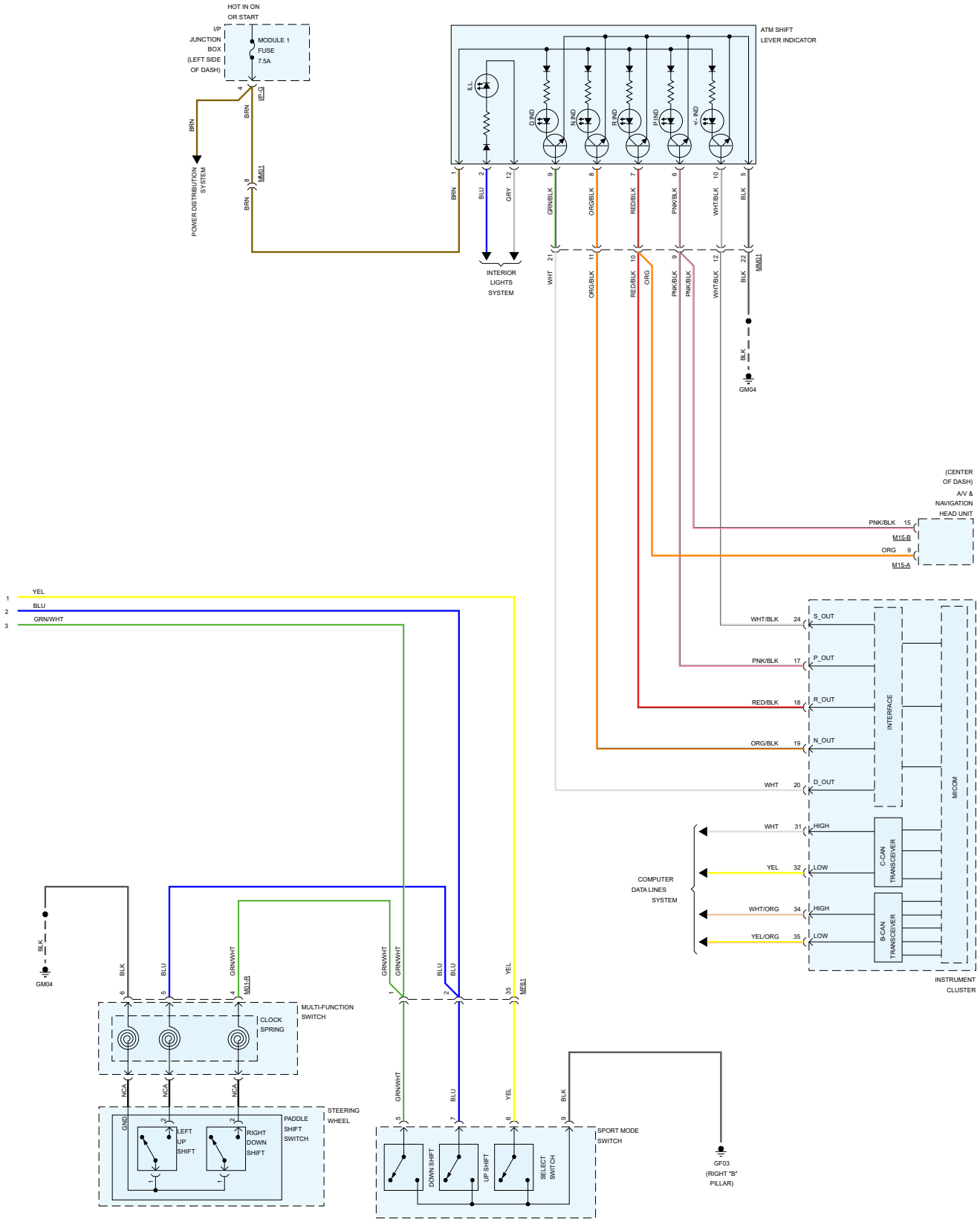


2013 HYUNDAI SONATA L4-2.4L TRANSMISSIONS - EXCEPT HYBRID



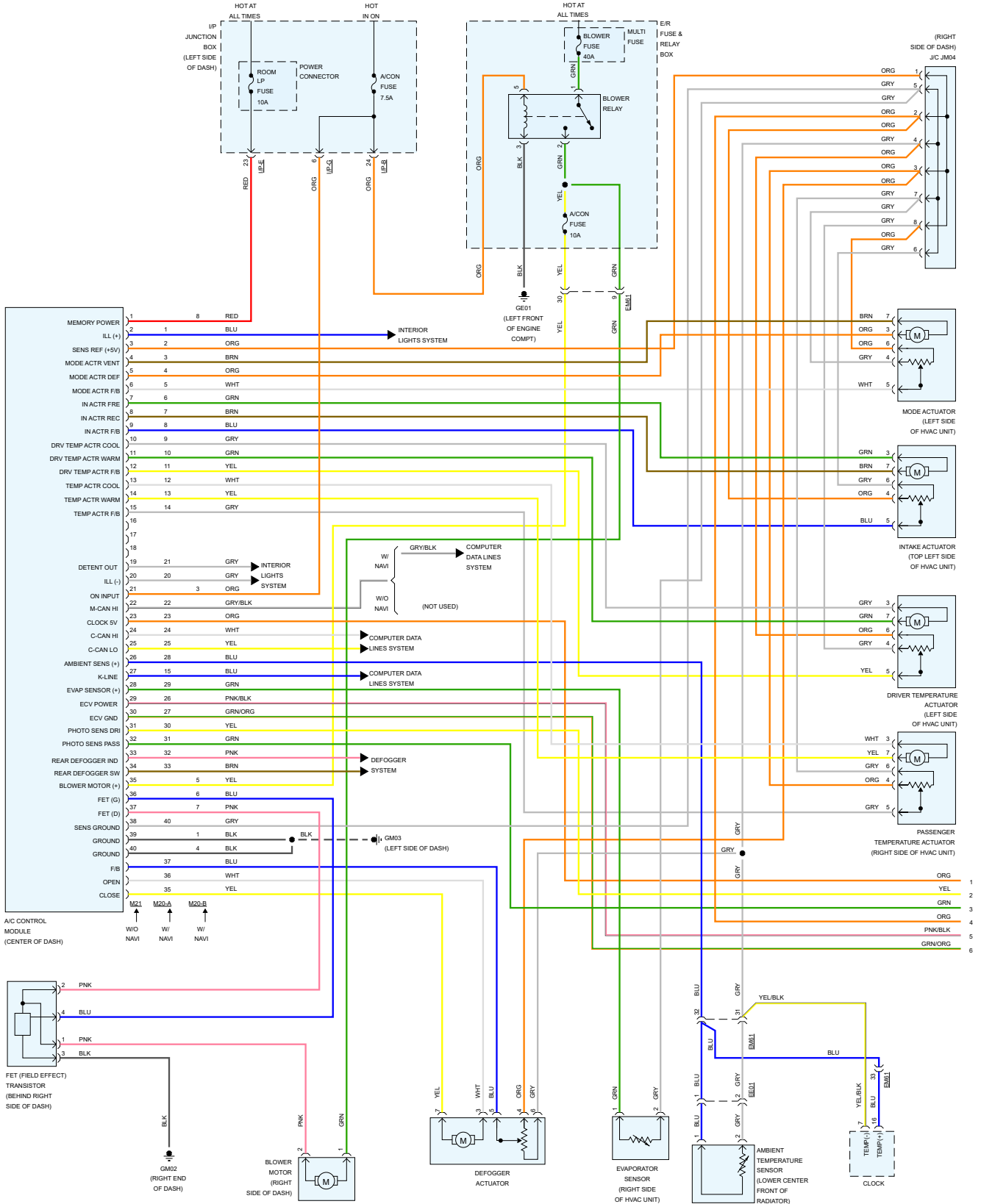
389420

2013 HYUNDAI SONATA L4-2.4L TRANSMISSIONS - EXCEPT HYBRID



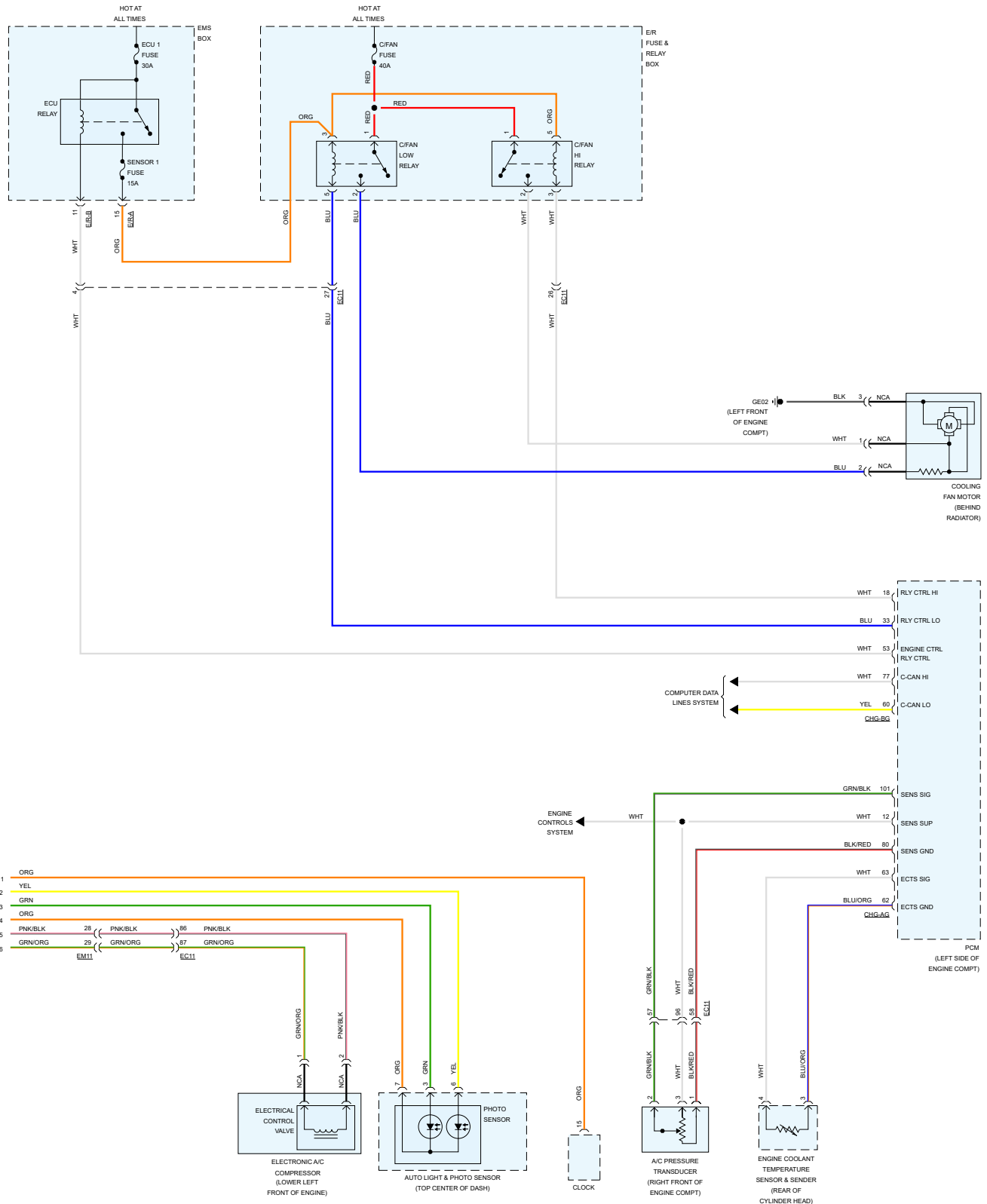
389421

2013 HYUNDAI SONATA L4-2.4L AIR CONDITIONING - AUTOMATIC A/C CIRCUIT (EXCEPT HYBRID)



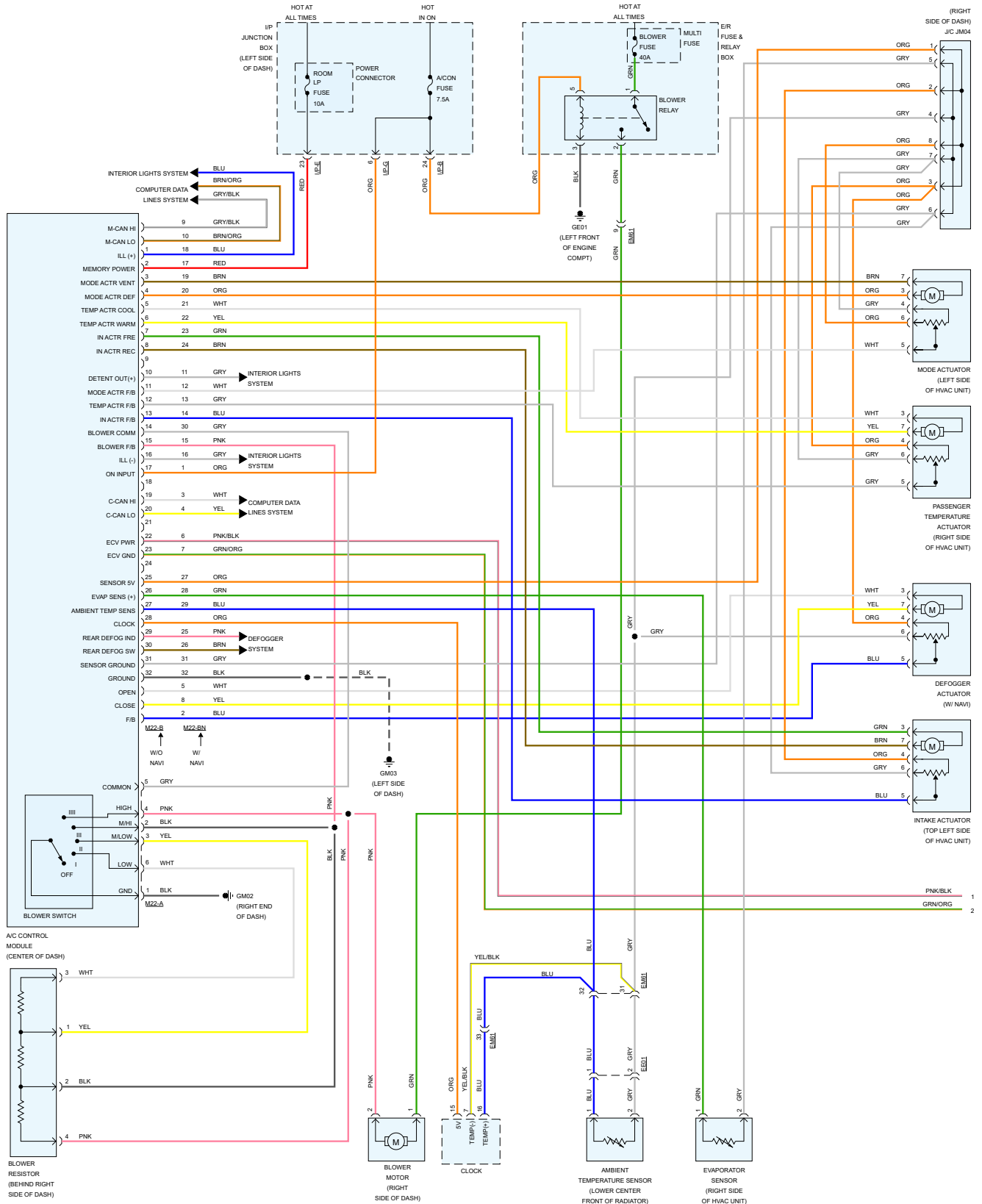
2013 HYUNDAI SONATA L4-2.4L

AIR CONDITIONING - AUTOMATIC A/C CIRCUIT (EXCEPT HYBRID)



387570

2013 HYUNDAI SONATA L4-2.4L AIR CONDITIONING - MANUAL A/C CIRCUIT

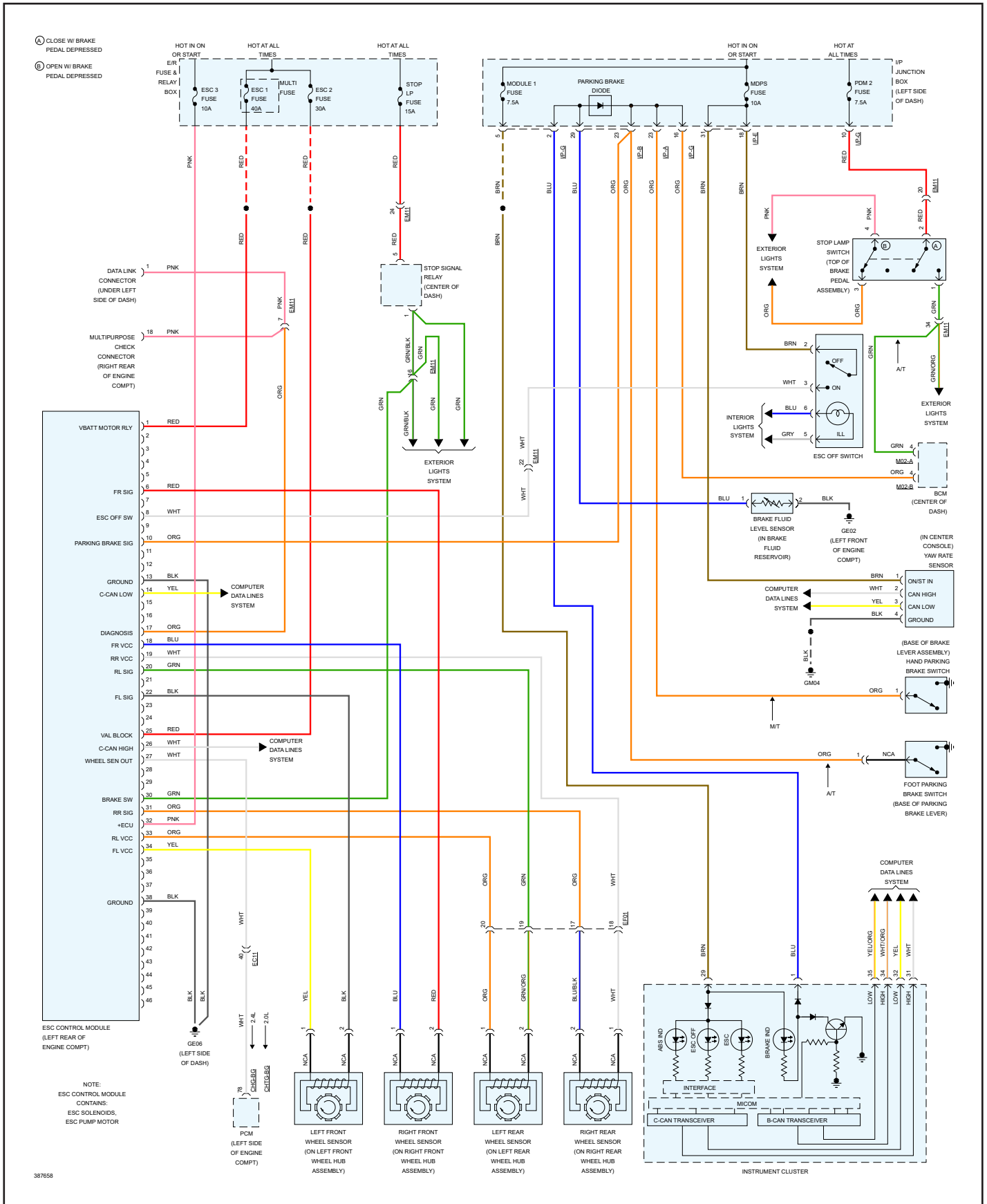


387573

2013 HYUNDAI SONATA L4-2.4L AIR CONDITIONING - MANUAL A/C CIRCUIT

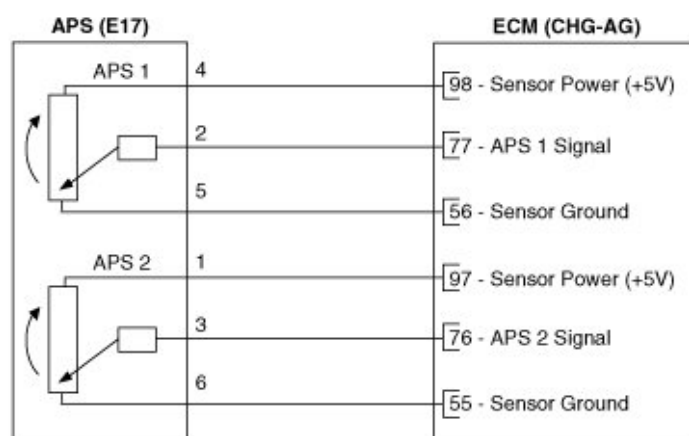


2013 HYUNDAI SONATA L4-2.4L ANTI-LOCK BRAKES - EXCEPT HYBRID



2013 HYUNDAI SONATA L4-2.4L ACCELERATOR PEDAL POSITION SENSOR

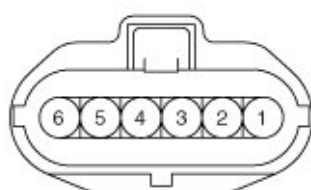
[Circuit Diagram]



[Connection Information]

Terminal	Connected to	Function
1	ECM CHG-AG (97)	APS 2 Sensor Power (+5V)
2	ECM CHG-AG (77)	APS 1 Signal
3	ECM CHG-AG (76)	APS 2 Signal
4	ECM CHG-AG (98)	APS 1 Sensor Power (+5V)
5	ECM CHG-AG (56)	APS 1 Sensor Ground
6	ECM CHG-AG (55)	APS 2 Sensor Ground

[Harness Connector]



**E17
APS**

105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85
84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

CHG-AG

91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58
57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24
23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											

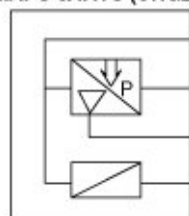
**CHG-BG
ECM**

2013 HYUNDAI SONATA L4-2.4L

AIR TEMPERATURE SENSOR

[Circuit Diagram]

MAPS & IATS (CHG25)



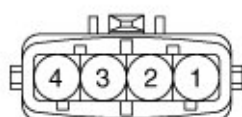
ECM (CHG-AG)



[Connection Information]

Terminal	Connected to	Function
1	ECM CHG-AG (82)	MAPS Signal
2	ECM CHG-AG (103)	Sensor Power (+5V)
3	ECM CHG-AG (59)	Sensor Ground
4	ECM CHG-AG (61)	IATS Signal

[Harness Connector]



CHG25
MAPS & IATS

105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85
84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

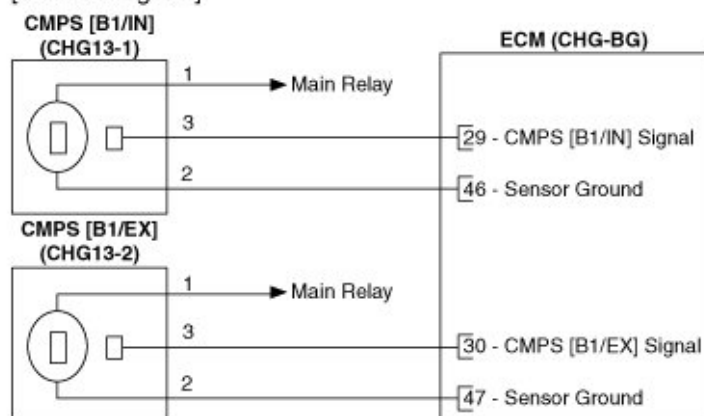
CHG-AG

91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	6	5
74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	4	3
57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	2	1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24		
23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7		

CHG-BG
ECM

2013 HYUNDAI SONATA L4-2.4L CAMSHAFT POSITION SENSOR

[Circuit Diagram]



[Connection Information]

CMPS [B1/IN] (CHG13-1)

Terminal	Connected to	Function
1	Main Relay	Battery Power (B+)
2	ECM CHG-BG (46)	Sensor Ground
3	ECM CHG-BG (29)	CMPS [B1/IN] Signal

CMPS [B1/EX] (CHG13-2)

Terminal	Connected to	Function
1	Main Relay	Battery Power (B+)
2	ECM CHG-BG (47)	Sensor Ground
3	ECM CHG-BG (30)	CMPS [B1/EX] Signal

[Harness Connector]



CHG13-1
CMPS [B1/IN]



CHG13-2
CMPS [B1/EX]

105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85
84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

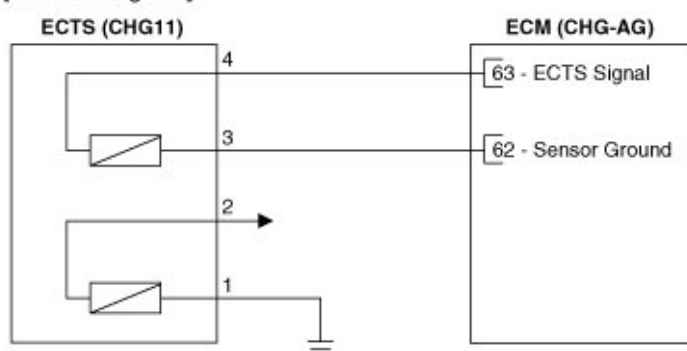
CHG-AG

91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58
57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24
23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											

CHG-BG
ECM

2013 HYUNDAI SONATA L4-2.4L COOLANT TEMPERATURE SENSOR

[Circuit Diagram]



[Harness Connector]



CHG11
ECTS

[Connection Information]

Terminal	Connected to	Function
1	Chassis Ground	Sensor Ground
2	-	-
3	ECM CHG-AG (62)	Sensor Ground
4	ECM CHG-AG (63)	ECTS Signal

105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85
84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

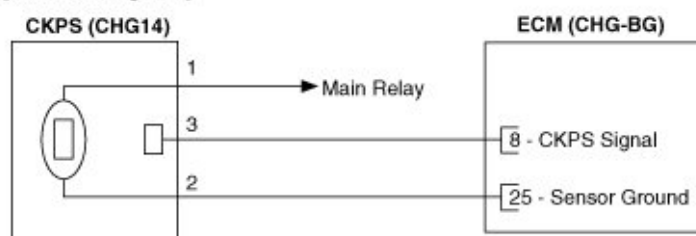
CHG-AG

91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
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CHG-BG
ECM

2013 HYUNDAI SONATA L4-2.4L CRANKSHAFT POSITION SENSOR

[Circuit Diagram]



[Connection Information]

Terminal	Connected to	Function
1	Main Relay	Battery Power (B+)
2	ECM CHG-BG (25)	CKPS Signal
3	ECM CHG-BG (8)	Sensor Ground

[Harness Connector]



CHG14
CKPS

105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85
84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

CHG-AG

91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	6	5
74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	4	3
57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	2	1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24		
23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7		

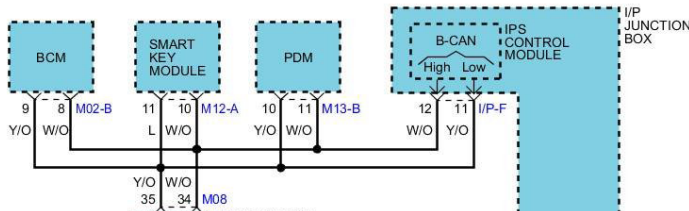
CHG-BG
ECM

2013 HYUNDAI SONATA L4-2.4L DATA LINK CONNECTOR

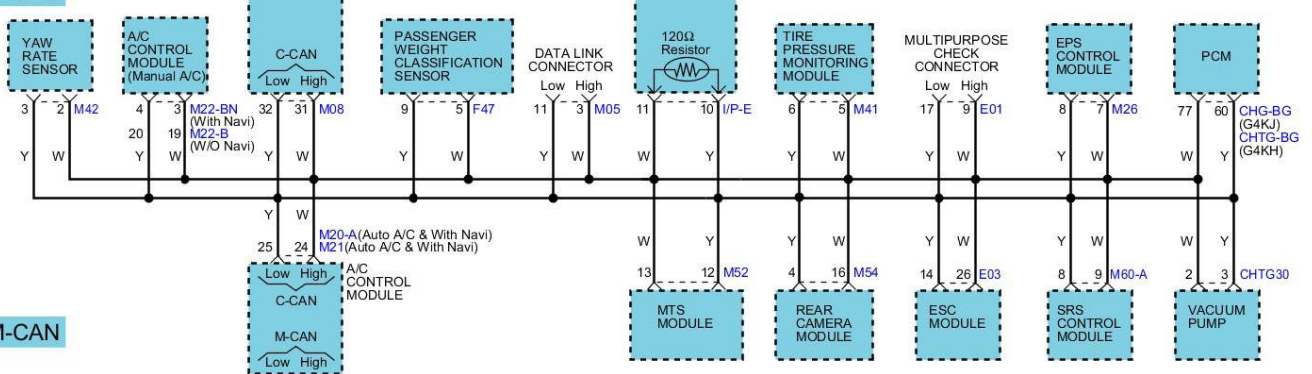
Data Link Details (1)

SD200-1

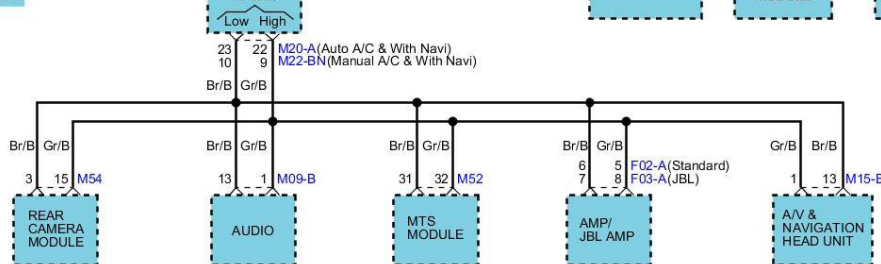
B-CAN



C-CAN



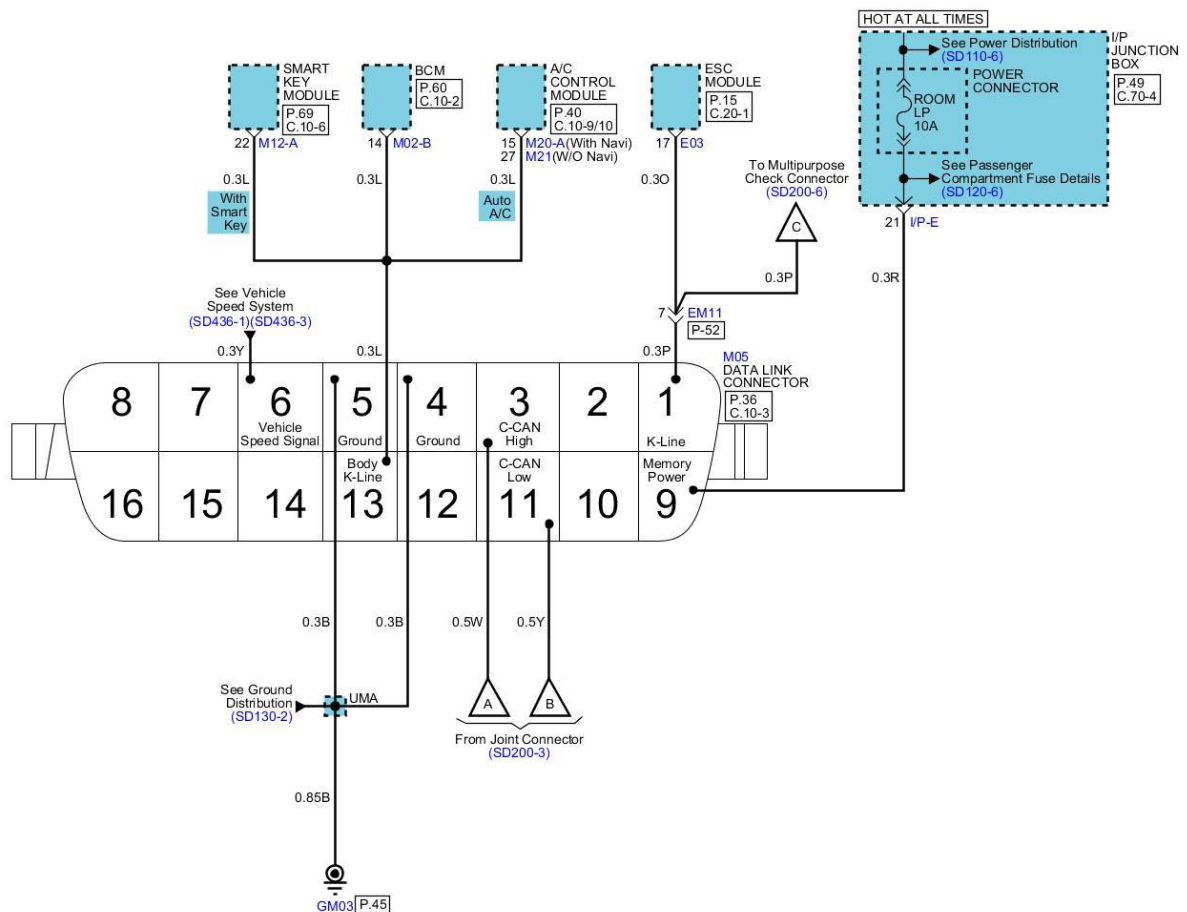
M-CAN



2013 HYUNDAI SONATA L4-2.4L DATA LINK CONNECTOR

Data Link Details (2)

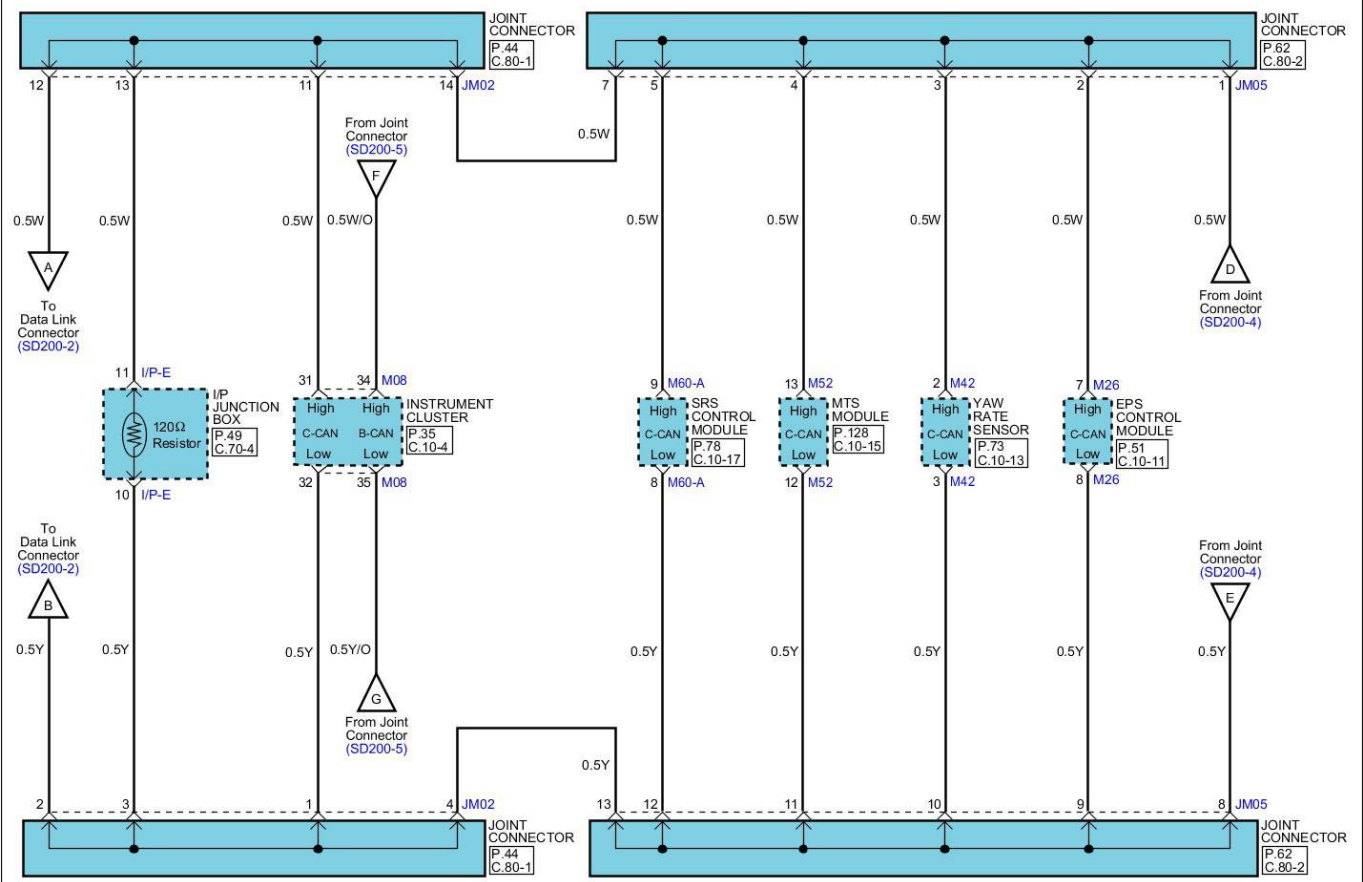
SD200-2



2013 HYUNDAI SONATA L4-2.4L DATA LINK CONNECTOR

Data Link Details (3)

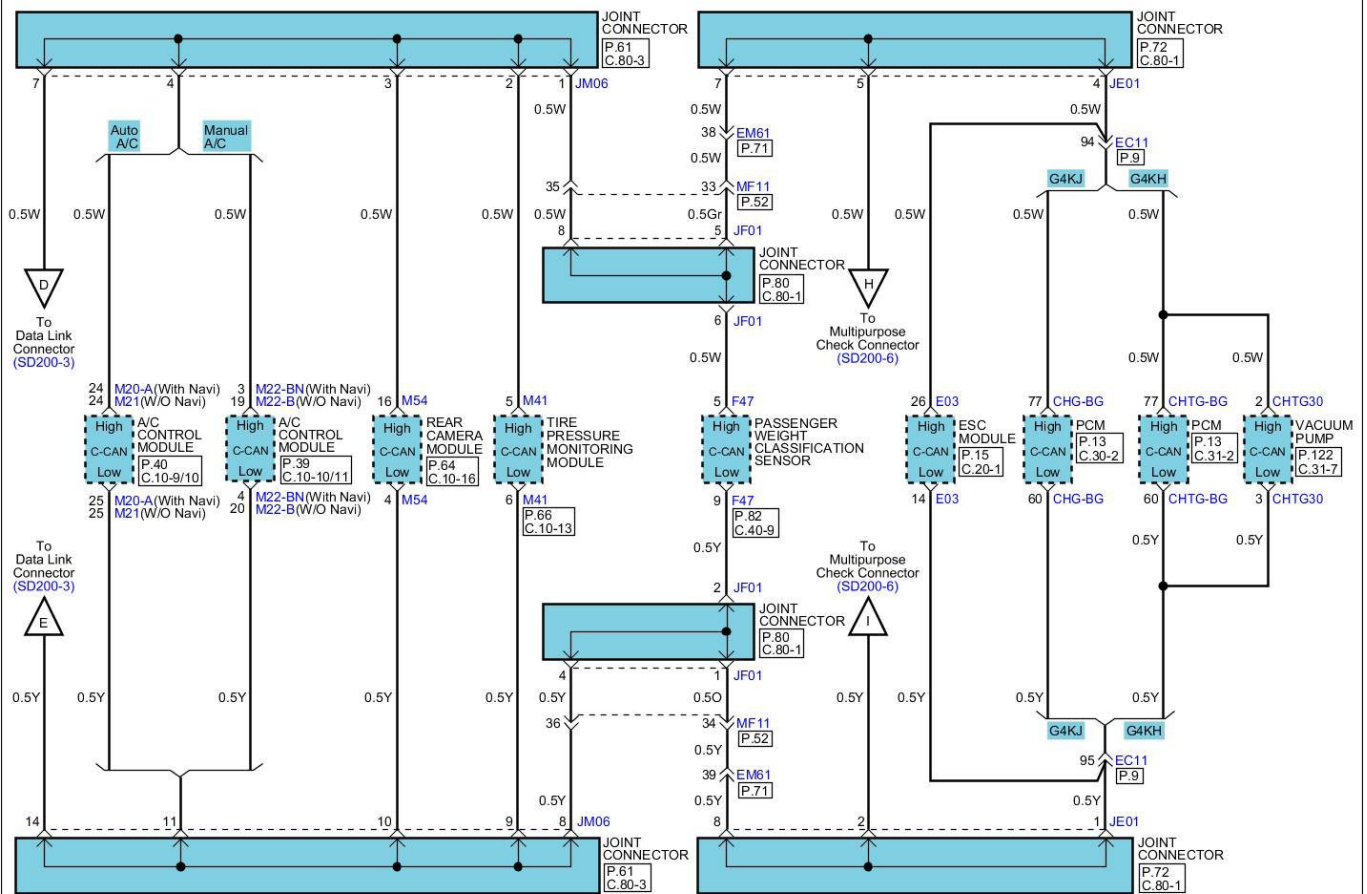
SD200-3



2013 HYUNDAI SONATA L4-2.4L DATA LINK CONNECTOR

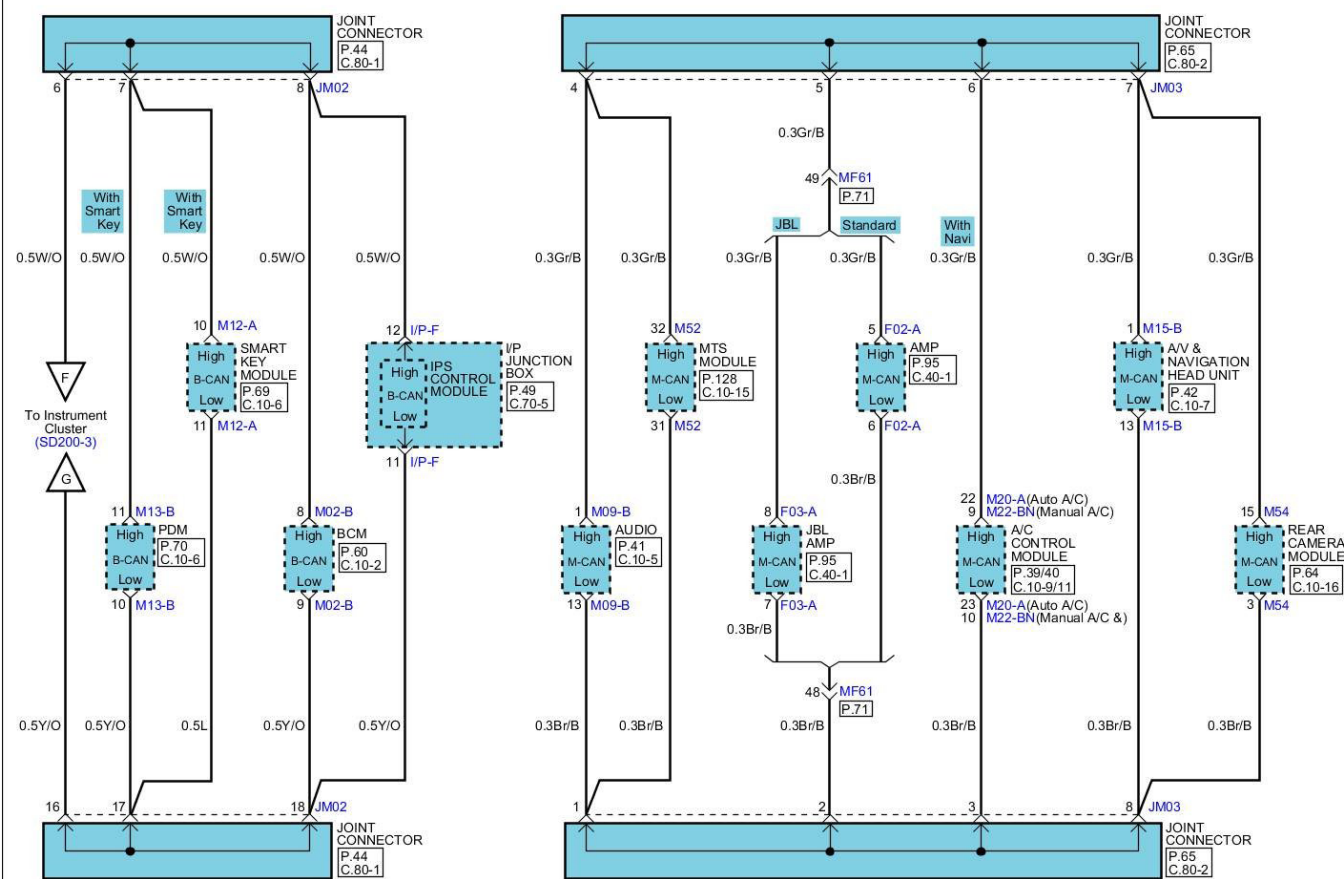
Data Link Details (4)

SD200-4



DATA LINK CONNECTOR

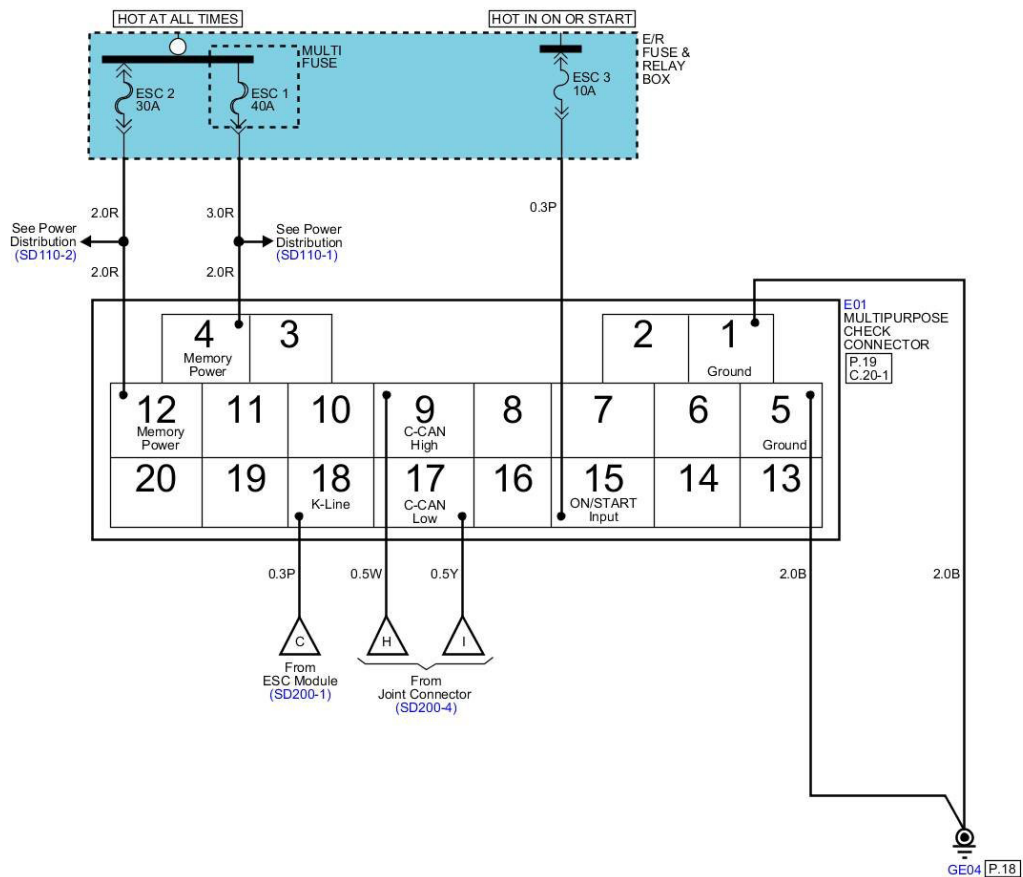
SD200-5



2013 HYUNDAI SONATA L4-2.4L DATA LINK CONNECTOR

Data Link Details (6)

SD200-6



2013 HYUNDAI SONATA L4-2.4L FUSE & RELAY

Fuse & Relay Information (1)

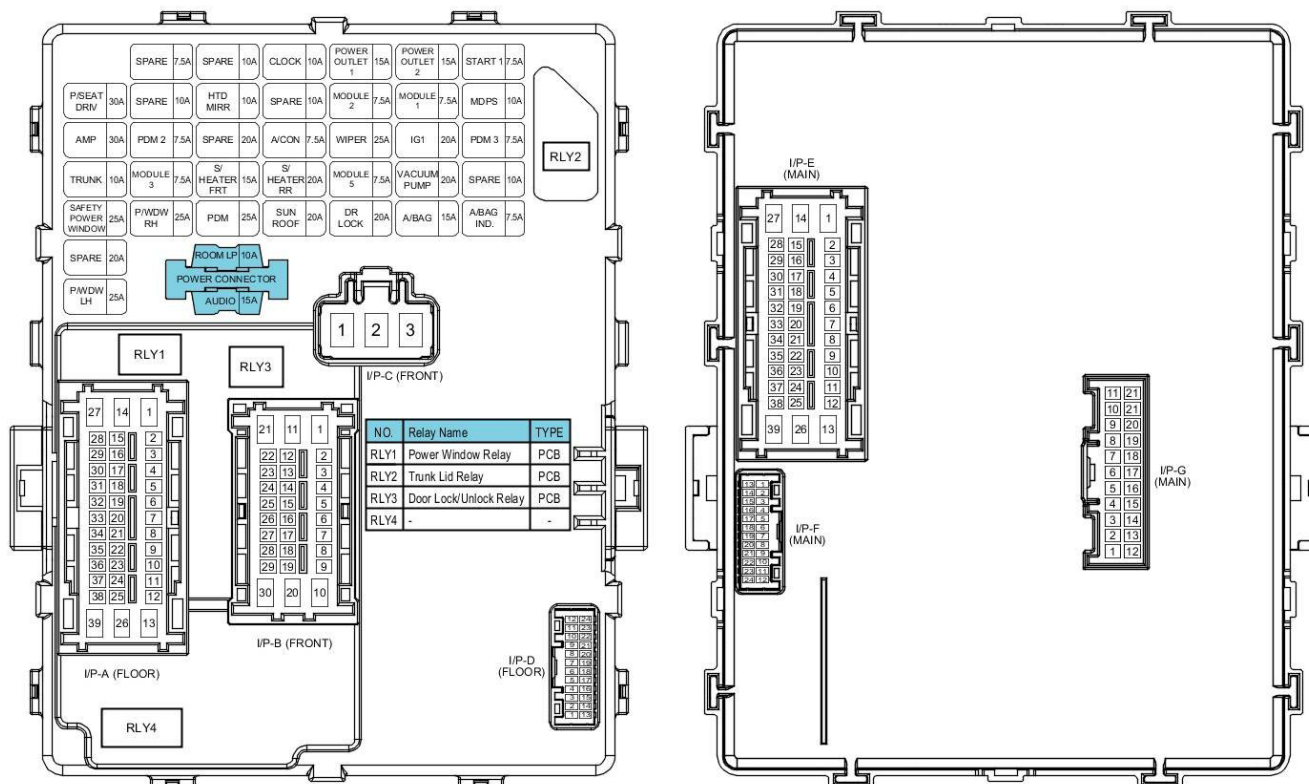
SD100-1

I/P JUNCTION BOX

LAYOUT

<FRONT>

<REAR>



※ USE THE DESIGNATED FUSE AND RELAY ONLY

2013 HYUNDAI SONATA L4-2.4L

FUSE & RELAY

Fuse & Relay Information (2)

SD100-2

Circuit (I/P Junction Box)

No.	Fuse Name	(A)	Circuit Protected
1	P/SEAT DRIV	30A	Driver Manual Switch
2	AMP	30A	AMP, JBL AMP
3	TRUNK	10A	Trunk Lid Relay, Fuel Filler Door & Trunk Lid Switch
4	SAFETY POWER WINDOW	25A	Safety Power Window Module
5	SPARE	20A	-
6	P/WDW LH	25A	Power Window Main Switch, Rear Power Window Switch LH
7	SPARE	7.5A	-
8	SPARE	10A	-
9	PDM 2	7.5A	FOB Holder, Start Stop Button Switch, PDM, Smart Key Module, Stop Lamp Switch
10	MODULE 3	7.5A	Key Solenoid, Sport Mode Switch, MTS Module
11	P/WDW RH	25A	Power Window Main Switch, Passenger Power Window Switch, Rear Power Window Switch RH
12	SPARE	10A	-
13	HTD MIRR	10A	Driver/Passenger Power Outside Mirror
14	SPARE	20A	-
15	S/HEATER FRT	15A	Driver/Passenger Seat Warmer Module
16	PDM	25A	PDM
17	ROOM LP POWER CONNECTOR	10A	Instrument Cluster, Driver/Passenger Door Lamp, Ignition Key ILL. & Door Warning Switch, BCM, Tire Pressure Monitoring Module, Clock, A/C Control Module, Room Lamp Relay, Glove Box Lamp, Data Link Connector, Auto Light & Photo Sensor, Electro Chromic Mirror, RF Receiver, Trunk Room Lamp
18	AUDIO POWER CONNECTOR	15A	Audio, A/V & Navigation Head Unit
19	CLOCK	10A	BCM, Clock, MTS Module, Smart Key Module, PDM, Audio, Power Outside Mirror Switch, AMP, JBL AMP, Overhead Console Lamp, Rear Camera Module, A/V & Navigation Head Unit

No.	Fuse Name	(A)	Circuit Protected
20	SPARE	10A	-
21	A/CON	7.5A	E/R Fuse & Relay Box(Blower Relay), A/C Control Module
22	S/HEATER RR	20A	Rear Seat Warmer Switch LH/RH
23	SUN ROOF	20A	Sunroof Motor, Panorama Sunroof Motor
24	POWER OUTLET 1	15A	Front Power Outlet #1
25	MODULE 2	7.5A	BCM, Rear Camera Module, Electro Chromic Mirror, Sunroof Motor, Panorama Sunroof Motor
26	WIPER	25A	E/R Fuse & Relay Box(Wiper Relay), Front Wiper Motor, Multifunction Switch(Wiper)
27	MODULE 5	7.5A	PDM
28	DR LOCK	20A	Door Lock/Unlock Relay, Two Turn Unrock Relay
29	POWER OUTLET 2	15A	Front Power Outlet #2
30	MODULE 1	7.5A	Instrument Cluster(ON/START Input), Clock, Electro Chromic Mirror, Audio, ATM Lever Indicator, Driver/Passenger Seat Warmer Module, BCM, Tire Pressure Monitoring Module, Active Eco Switch
31	IG 1	20A	E/R Fuse & Relay Box (Fuse - ESC 3 10A, ECU 4 10A, B/UP LP 10A, TCU 2 10A)
32	VACUUM PUMP	20A	Vacuum Switch, Vacuum Pump
33	A/BAG	15A	SRS Control Module, Telltale Lamp, Passenger Weight Classification Sensor
34	START 1	7.5A	W/O Smart Key - Ignition Lock Switch, Burglar Alarm Relay, E/R Fuse & Relay Box (Start 1 Relay) With Smart Key - PDM
35	MDPS	10A	Yaw Rate Sensor, ESC Off Switch, EPS Control Module
36	PDM 3	7.5A	PDM, Smart Key Module
37	SPARE	10A	-
38	A/BAG IND.	7.5A	Instrument Cluster(IND.)

✘ USE THE DESIGNATED FUSE AND RELAY ONLY

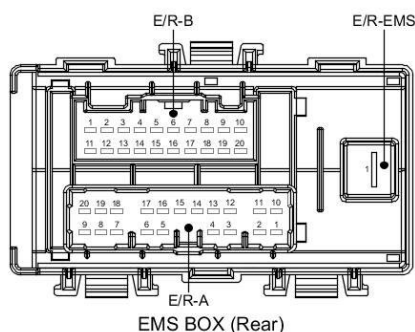
2013 HYUNDAI SONATA L4-2.4L FUSE & RELAY

Fuse & Relay Information (3)

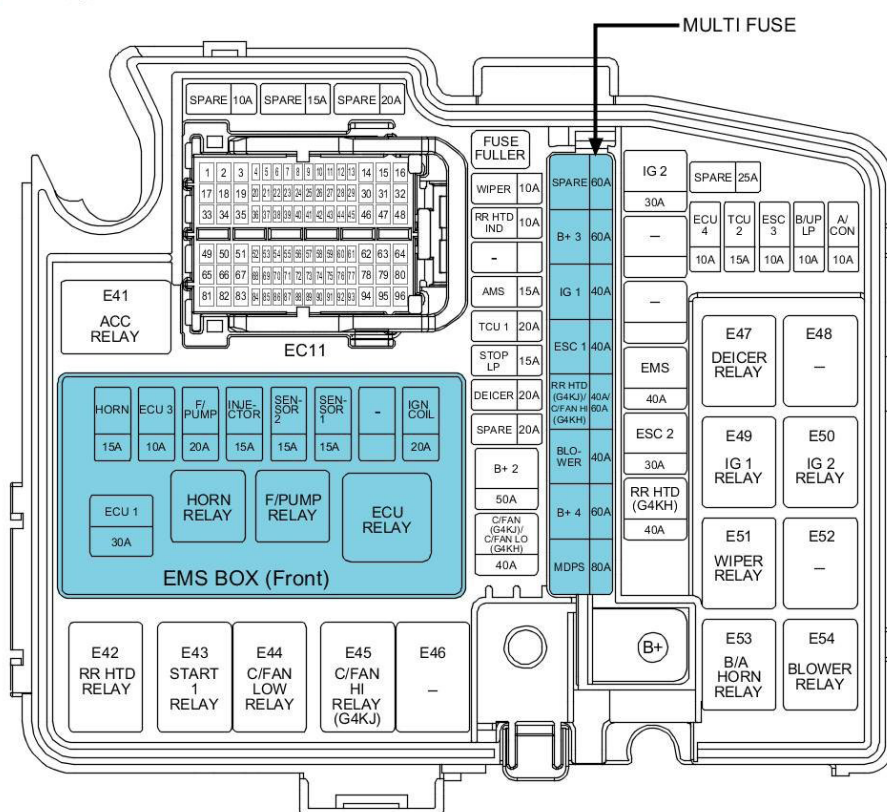
SD100-3

E/R FUSE & RELAY BOX LAYOUT

Relay No.	Relay Name	Type
E41	ACC Relay	PLUG MICRO
E42	RR HTD Relay	PLUG MICRO
E43	Start 1 Relay	PLUG MICRO
E44	C/Fan Lo Relay	PLUG MICRO
E45	C/Fan Hi Relay	PLUG MICRO
E46	-	-
E47	Deicer Relay	PLUG MICRO
E48	-	-
E49	IG1 Relay	PLUG MICRO
E50	IG2 Relay	PLUG MICRO
E51	Wiper Relay	PLUG MICRO
E52	-	-
E53	B/A Horn Relay	PLUG MICRO
E54	Blower Relay	PLUG MICRO
EMS BOX	RLY.1 Horn Relay	PLUG MINI
	RLY.2 F/Pump Relay	PLUG MICRO
	RLY.3 ECU Relay	PLUG MICRO



✳ USE THE DESIGNATED FUSE AND RELAY ONLY



2013 HYUNDAI SONATA L4-2.4L

FUSE & RELAY

Fuse & Relay Information (4)

SD100-4

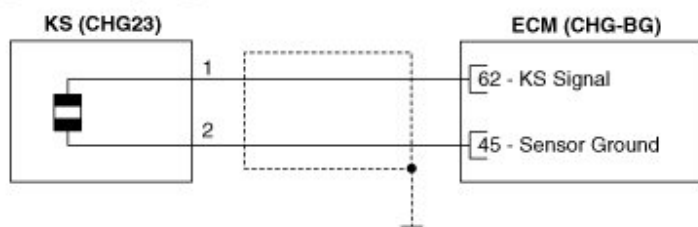
Circuit

Fuse Name	(A)	Circuit Protected
MULTI FUSE	B+ 3	60A
	IG 1	40A
	ESC 1	40A
	RR HTD (G4KJ)/ C/FAN HI (G4KH)	40A/ 60A
	BLOWER	40A
	B+ 4	60A
FUSE	MDPS	80A
	A/CON	10A
	B/UP LP	10A
	ESC 3	10A
	TCU 2	15A
	ECU 4	10A
	IG 2	30A
	EMS	40A
	ESC 2	30A
	WIPER	10A
	RR HTD IND	10A
	AMS	15A
	TCU 1	20A
	STOP LP	15A
	DEICER	20A
	B+ 2	50A
	C/FAN (G4KJ)/ C/FAN LO (G4KH)	40A
	IGN COIL	20A
	SENSOR 1	15A
	SENSOR 2	15A
	INJECTOR	15A
	F/PUMP	20A
	ECU 3	10A
	HORN	15A
	ECU 1	30A
	RR HTD	40A

✂ USE THE DESIGNATED FUSE AND RELAY ONLY.

2013 HYUNDAI SONATA L4-2.4L KNOCK SENSOR

[Circuit Diagram]



[Connection Information]

Terminal	Connected to	Function
1	ECM CHG-BG (62)	KS Signal
2	ECM CHG-BG (45)	Sensor Ground

[Harness Connector]



CHG23
Knock Sensor

105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85
84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

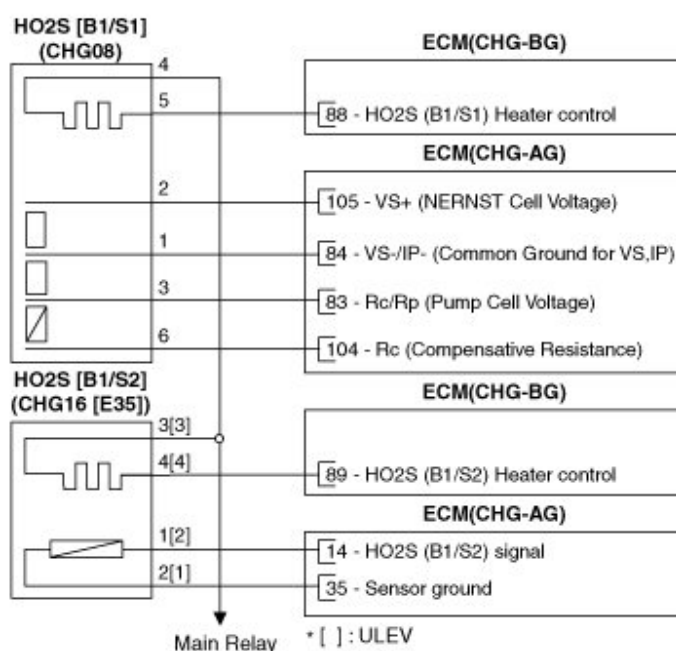
CHG-AG

91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
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CHG-BG
ECM

2013 HYUNDAI SONATA L4-2.4L OXYGEN SENSOR

[Circuit Diagram]



[Connection Information]

HO2S [B1/S1] (CHG08)

Terminal	Connected to	Function
1	ECM CHG-AG (84)	VS-/IP- (Common Ground for VS,IP)
2	ECM CHG-AG (105)	VS+ (NERNST Cell Voltage)
3	ECM CHG-AG (83)	R _c /R _p (Pump Cell Voltage)
4	Main Relay	Power Supply (B+)
5	ECM CHG-BG (88)	Heater control
6	ECM CHG-AG (104)	R _c (Compensative Resistance)

HO2S [B1/S2] (CHG16 [E35])

Terminal	Connected to	Function
1[2]	ECM CHG-AG (14)	HO2S (B1/S2) Signal
2[1]	ECM CHG-AG (35)	Sensor Ground
3[3]	Main Relay	Power Supply (B+)
4[4]	ECM CHG-BG (89)	Heater control

* [] : ULEV

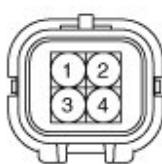
[Harness Connector]



CHG08
HO2S [B1/S1]



CHG16 (SULEV)
HO2S [B1/S2]



E35 (ULEV)
HO2S [B1/S2]

105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85
84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

CHG-AG

91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	6	5
74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	4	3
57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	2	1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24		
23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7		

CHG-BG ECM

2013 HYUNDAI SONATA L4-2.4L PIN-OUT ENGINE CONTROL MODULE

105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85
84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Connector [CHG-AG]

91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
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Connector [CHG-BG]

2013 HYUNDAI SONATA L4-2.4L

PIN-OUT ENGINE CONTROL MODULE

Pin No.	Description	Connected to
1	Ignition Coil (Cylinder #2) control output	Ignition Coil (Cylinder #2)
2	-	
3	-	
4	-	
5	ETC Motor [+] control output	ETC Motor
6	ETC Motor [-] control output	ETC Motor
7	-	
8	-	
9	-	
10	-	
11	-	
12	Sensor power (+5V)	Rail Pressure Sensor (RPS)
		A/C Pressure Transducer (APT)
		Power Steering Pressure Sensor (PSPS)
		Fuel Tank Pressure Sensor (FTPS)
13	-	
14	Heated Oxygen Sensor (HO2S) [Bank 1/Sensor 2] signal input	Heated Oxygen Sensor (HO2S) [Bank 1/Sensor 2]
15	-	
16	-	
17	-	
18	-	
19	-	
20	Fuel Tank Pressure Sensor (FTPS) signal input	Fuel Tank Pressure Sensor (FTPS)
21	-	
22	Ignition Coil (Cylinder #4) control output	Ignition Coil (Cylinder #4)
23	-	
24	-	
25	-	
26	-	
27	-	
28	-	
29	-	
30	-	
31	-	
32	-	
33	Sensor power (+5V)	Throttle Position Sensor (TPS) 1,2
34	-	
35	Sensor ground	Heated Oxygen Sensor (HO2S) [Bank 1/Sensor 2]
36	Ground	Cruise Control Switch
37	-	
38	-	
39	Rail Pressure Sensor (RPS) signal input	Rail Pressure Sensor (RPS)
40	-	

2013 HYUNDAI SONATA L4-2.4L

PIN-OUT ENGINE CONTROL MODULE

41	Sensor ground	Fuel Tank Pressure Sensor (FTPS)
42	-	
43	Shield	Ignition Coil (Cylinder #1,2,3,4)
44	-	
45	-	
46	-	
47	-	
48	-	
49	-	
50	-	
51	-	
52	-	
53	-	
54	Sensor ground	Throttle Position Sensor (TPS) 1,2
55	Sensor ground	Accelerator Position Sensor (APS) 2
56	Sensor ground	Accelerator Position Sensor (APS) 1
57	Immobilizer communication line	Smart Key Control Module [With Button Engine Start System]
		Immobilizer Control Module [Without Button Engine Start System]
58	-	
59	Intake Air Temperature Sensor (IATS) signal input	Intake Air Temperature Sensor (IATS)
60	Sensor ground	Rail Pressure Sensor (RPS)
61	Sensor ground	Manifold Absolute Pressure Sensor (MAPS)
		Intake Air Temperature Sensor (IATS)
62	Sensor ground	Engine Coolant Temperature Sensor (ECTS)
63	Engine Coolant Temperature Sensor (ECTS) signal input	Engine Coolant Temperature Sensor (ECTS)
64	Ignition Coil (Cylinder #3) control output	Ignition Coil (Cylinder #3)
65	-	
66	-	
67	-	
68	-	
69	-	
70	-	
71	-	
72	-	
73	-	
74	-	
75	Throttle Position Sensor (TPS) 2 signal input	Throttle Position Sensor (TPS) 2
76	Accelerator Position Sensor (APS) 2 signal input	Accelerator Position Sensor (APS) 2
77	Accelerator Position Sensor (APS) 1 signal input	Accelerator Position Sensor (APS) 1
78	-	
79	-	
80	Sensor ground	A/C Pressure Transducer (APT)
81	-	
82	Manifold Absolute Pressure Sensor (MAPS) signal input	Manifold Absolute Pressure Sensor (MAPS)

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PIN-OUT ENGINE CONTROL MODULE

83	Rc/Rp (Pump Cell Voltage)	Heated Oxygen Sensor [Bank 1/Sensor 1]
84	VS-/IP- (Common Ground for VS, IP)	Heated Oxygen Sensor [Bank 1/Sensor 1]
85	Ignition Coil (Cylinder #1) control output	Ignition Coil (Cylinder #1)
86	-	
87	-	
88	-	
89	-	
90	-	
91	-	
92	-	
93	-	
94	-	
95	-	
96	Throttle Position Sensor (TPS) 1 signal input	Throttle Position Sensor (TPS) 1
97	Sensor power (+5V)	Accelerator Position Sensor (APS) 2
98	Sensor power (+5V)	Accelerator Position Sensor (APS) 1
99	-	
100	-	
101	A/C Pressure Transducer (APT) signal input	A/C Pressure Transducer (APT)
102	-	
103	Sensor power (+5V)	Manifold Absolute Pressure Sensor (MAPS)
104	Rc (Compensative Resistance)	Heated Oxygen Sensor [Bank 1/Sensor 1]
105	VS+ (NERNST Cell Voltage)	Heated Oxygen Sensor [Bank 1/Sensor 1]

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PIN-OUT ENGINE CONTROL MODULE

Pin No.	Description	Connected to
1	ECM ground	Chassis ground
2	ECM ground	Chassis ground
3	Battery power (B+)	Main Relay
4	ECM ground	Chassis ground
5	Battery power (B+)	Main Relay
6	Battery power (B+)	Main Relay
7	-	
8	Crankshaft Position Sensor (CKPS) signal input	Crankshaft Position Sensor (CKPS)
9	-	
10	Brake Switch 2 signal input	Brake Switch
11	-	
12	-	
13	-	
14	-	
15	Electrical load signal input	Alternator
16	Alternator PWM signal output	Alternator
17	-	
18	Cooling Fan Relay [High] control output	Cooling Fan Relay [High]
19	Immobilizer Lamp control output	Immobilizer Lamp [Without Button Engine Start System]
20	-	
21	-	
22	Injector (Cylinder #2) [High] control output	Injector (Cylinder #2)
23	Injector (Cylinder #2) [Low] control output	Injector (Cylinder #2)
24	-	
25	Sensor ground	Crankshaft Position Sensor (CKPS)
26	-	
27	Brake Switch 1 signal input	Brake Switch
28	-	
29	Camshaft Position Sensor (CMPS) [Bank 1/Intake] signal input	Camshaft Position Sensor (CMPS) [Bank 1/Intake]
30	Camshaft Position Sensor (CMPS) [Bank 1/Exhaust] signal input	Camshaft Position Sensor (CMPS) [Bank 1/Exhaust]
31	-	
32	LIN communication signal input	Battery Sensor
33	Cooling Fan Relay [Low] control output	Cooling Fan Relay [Low]
34	-	
35	-	
36	-	
37	Malfunction Indicator Lamp (MIL) control output	Malfunction Indicator Lamp (MIL)
38	-	
39	Injector (Cylinder #3) [High] control output	Injector (Cylinder #3)
40	Injector (Cylinder #3) [Low] control output	Injector (Cylinder #3)
41	Battery power (B+)	Ignition Switch
42	-	

2013 HYUNDAI SONATA L4-2.4L

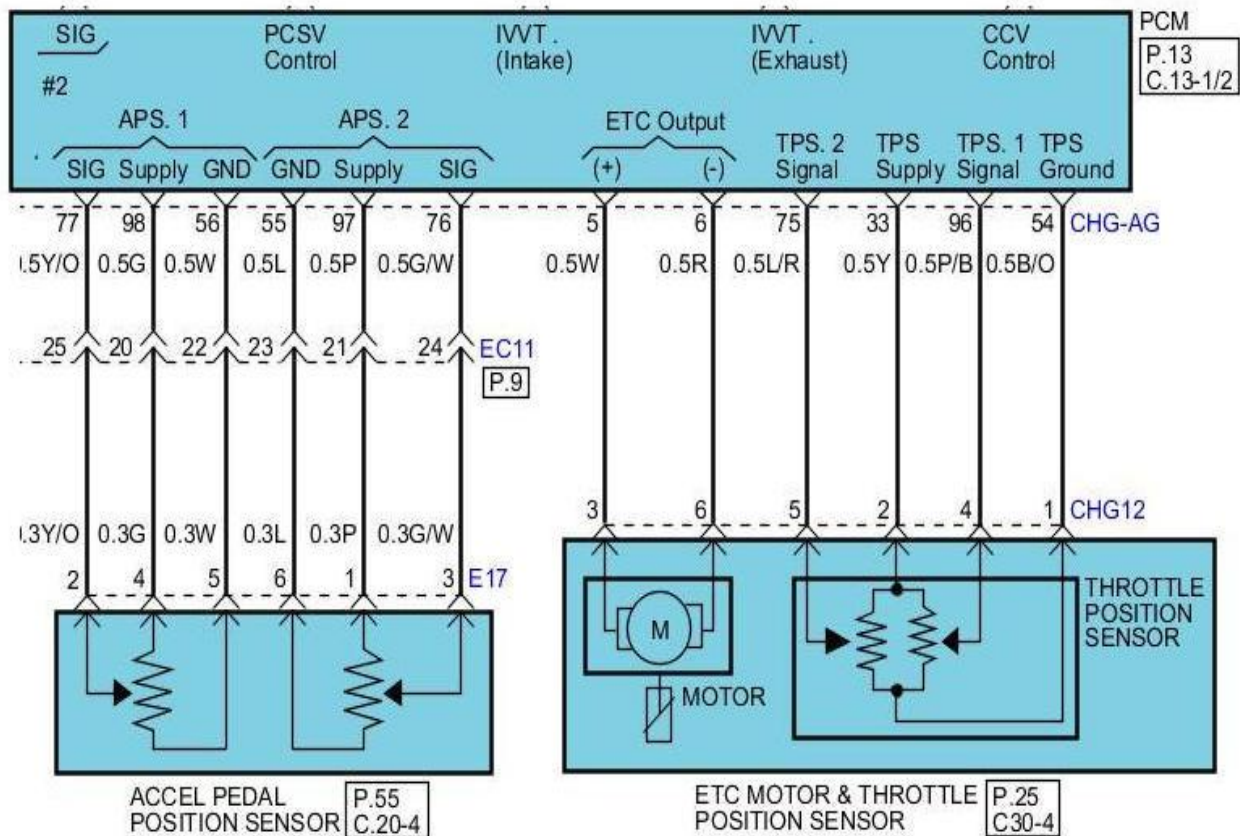
PIN-OUT ENGINE CONTROL MODULE

43	-	
44	Sensor shield	Knock Sensor (KS)
45	Sensor ground	Knock Sensor (KS)
46	Sensor ground	Camshaft Position Sensor (CMPS) [Bank 1/Intake]
47	Sensor ground	Camshaft Position Sensor (CMPS) [Bank 1/Exhaust]
48	-	
49	-	
50	-	
51	-	
52	-	
53	Main Relay control output	Main Relay
54	-	
55	-	
56	Injector (Cylinder #4) [High] control output	Injector (Cylinder #4)
57	Injector (Cylinder #4) [Low] control output	Injector (Cylinder #4)
58	Battery power (B+)	Battery
59	-	
60	CAN [Low]	Other control module, Data Link Connector (DLC), Multi-Purpose Check Connector
61	-	
62	Knock Sensor (KS) signal input	Knock Sensor (KS)
63	Clutch Switch signal input	Clutch Switch [M/T]
64	-	
65	-	
66	-	
67	-	
68	Variable Intake Solenoid (VIS) Valve control output	Variable Intake Solenoid (VIS) Valve
69	Starter Relay control output	Starter Relay [With Button Engine Start System]
70	Fuel Pump Relay control output	Fuel Pump Relay
71	Engine speed signal output	Power Distribution Module (PDM)
72	-	
73	Injector (Cylinder #1) [High] control output	Injector (Cylinder #1)
74	Injector (Cylinder #1) [Low] control output	Injector (Cylinder #1)
75	Battery power (B+)	Battery
76	-	
77	CAN [High]	Other control module, Data Link Connector (DLC), Multi-Purpose Check Connector
78	Vehicle speed signal input	ABS/ESC Control Unit [With ABS/ESC]
79	-	
80	-	
81	-	
82	Starter Control Switch signal input	Starter Control Switch [With Button Engine Start System]
83	-	
84	CVVT Oil Control Valve (OCV) [Bank 1/Exhaust] control output	CVVT Oil Control Valve (OCV) [Bank 1/Exhaust]
85	CVVT Oil Control Valve (OCV) [Bank 1/Intake] control output	CVVT Oil Control Valve (OCV) [Bank 1/Intake]

2013 HYUNDAI SONATA L4-2.4L PIN-OUT ENGINE CONTROL MODULE

86	Purge Control Solenoid Valve (PCSV) control output	Purge Control Solenoid Valve (PCSV)
87	Canister Close Valve (CCV) control output	Canister Close Valve (CCV)
88	Heated Oxygen Sensor (HO2S) [Bank 1/Sensor 1] Heater control output	Heated Oxygen Sensor (HO2S) [Bank 1/Sensor 1]
89	Heated Oxygen Sensor (HO2S) [Bank 1/Sensor 2] Heater control output	Heated Oxygen Sensor (HO2S) [Bank 1/Sensor 2]
90	Fuel Pressure Regulator Valve [High] control output	Fuel Pressure Regulator Valve
91	Fuel Pressure Regulator Valve [Low] control output	Fuel Pressure Regulator Valve

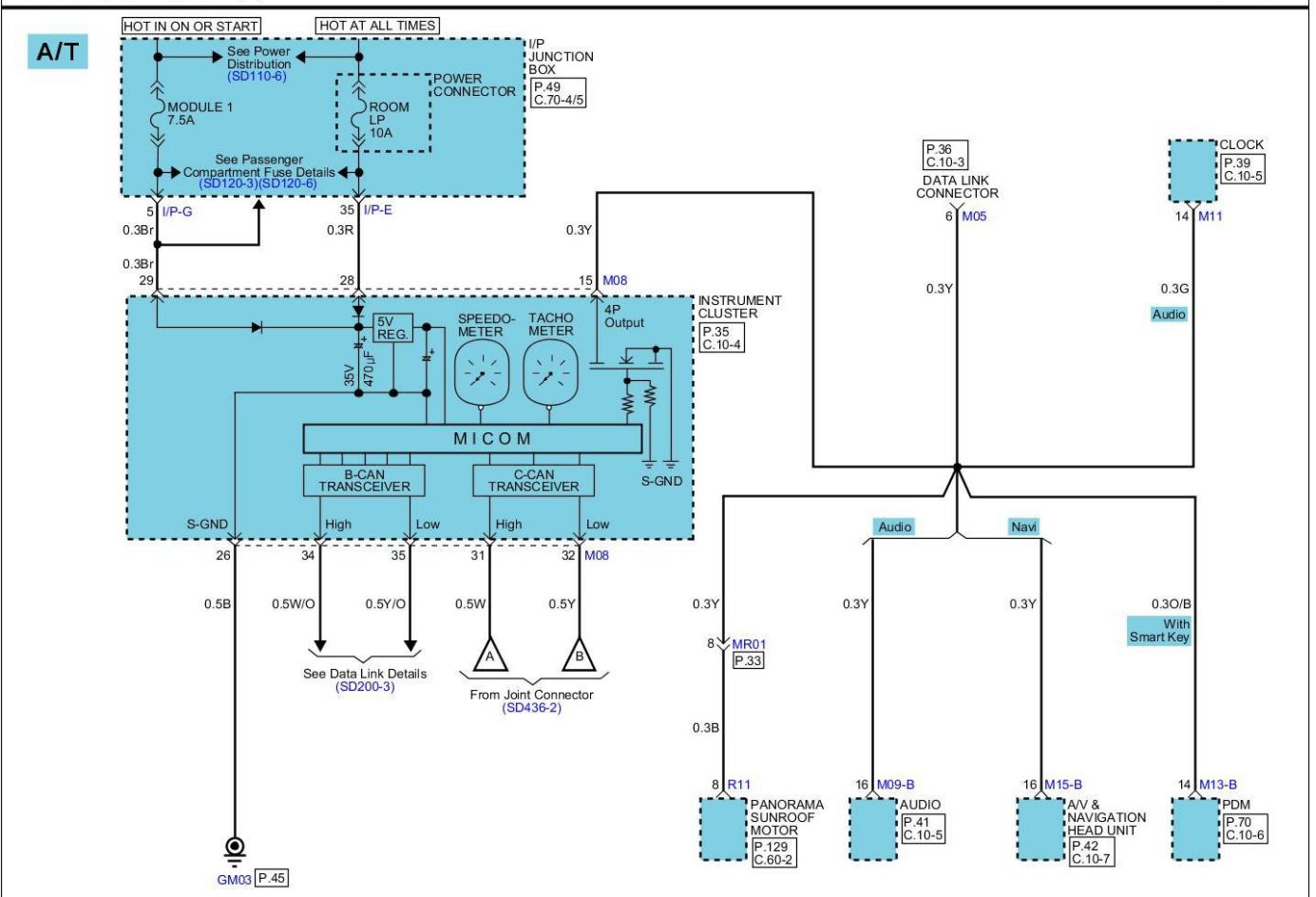
2013 HYUNDAI SONATA L4-2.4L THROTTLE POSITION SENSOR



2013 HYUNDAI SONATA L4-2.4L VEHICLE SPEED SENSOR

Vehicle Speed System (1)

SD436-1

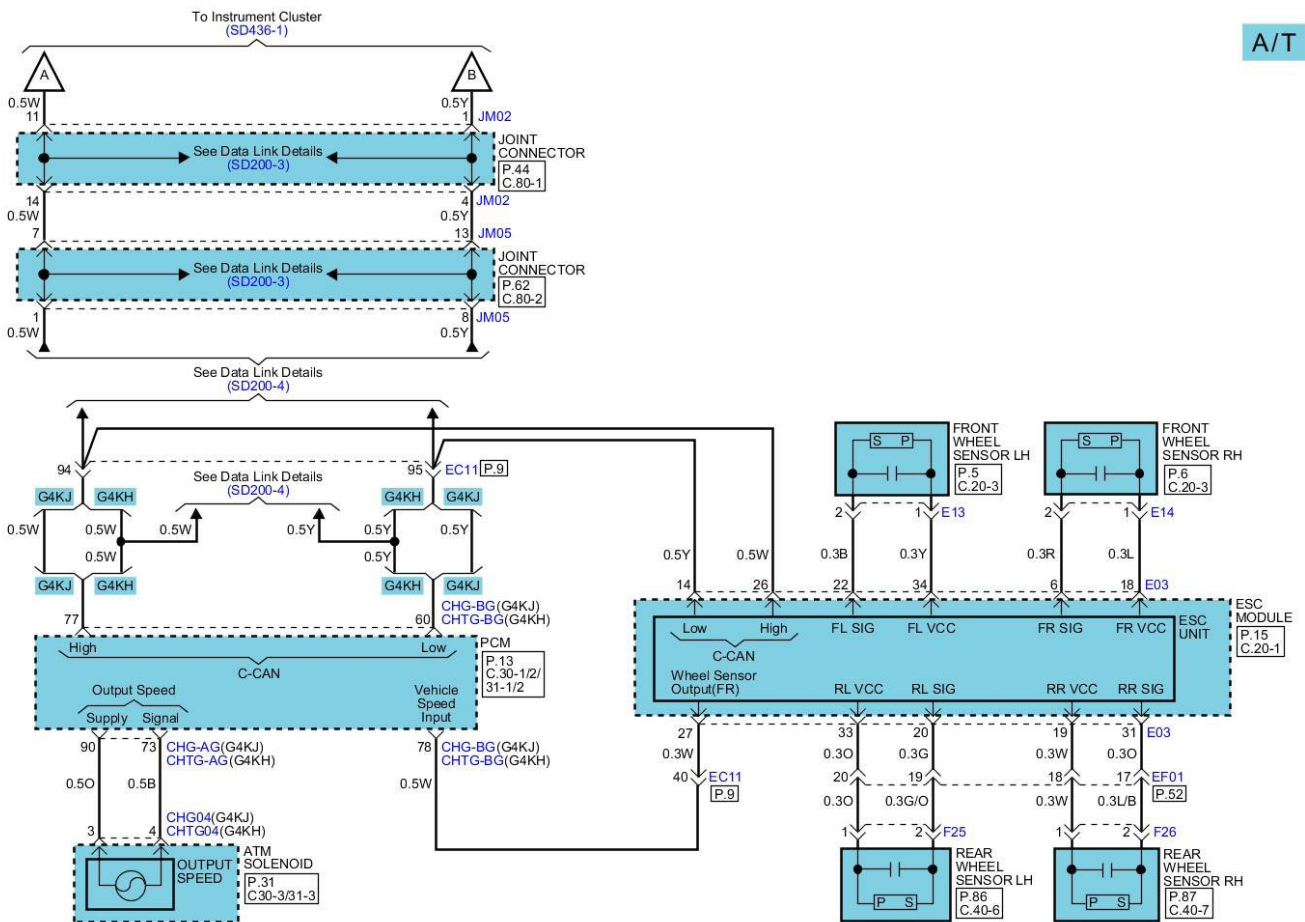


2013 HYUNDAI SONATA L4-2.4L VEHICLE SPEED SENSOR

Vehicle Speed System (2)

SD436-2

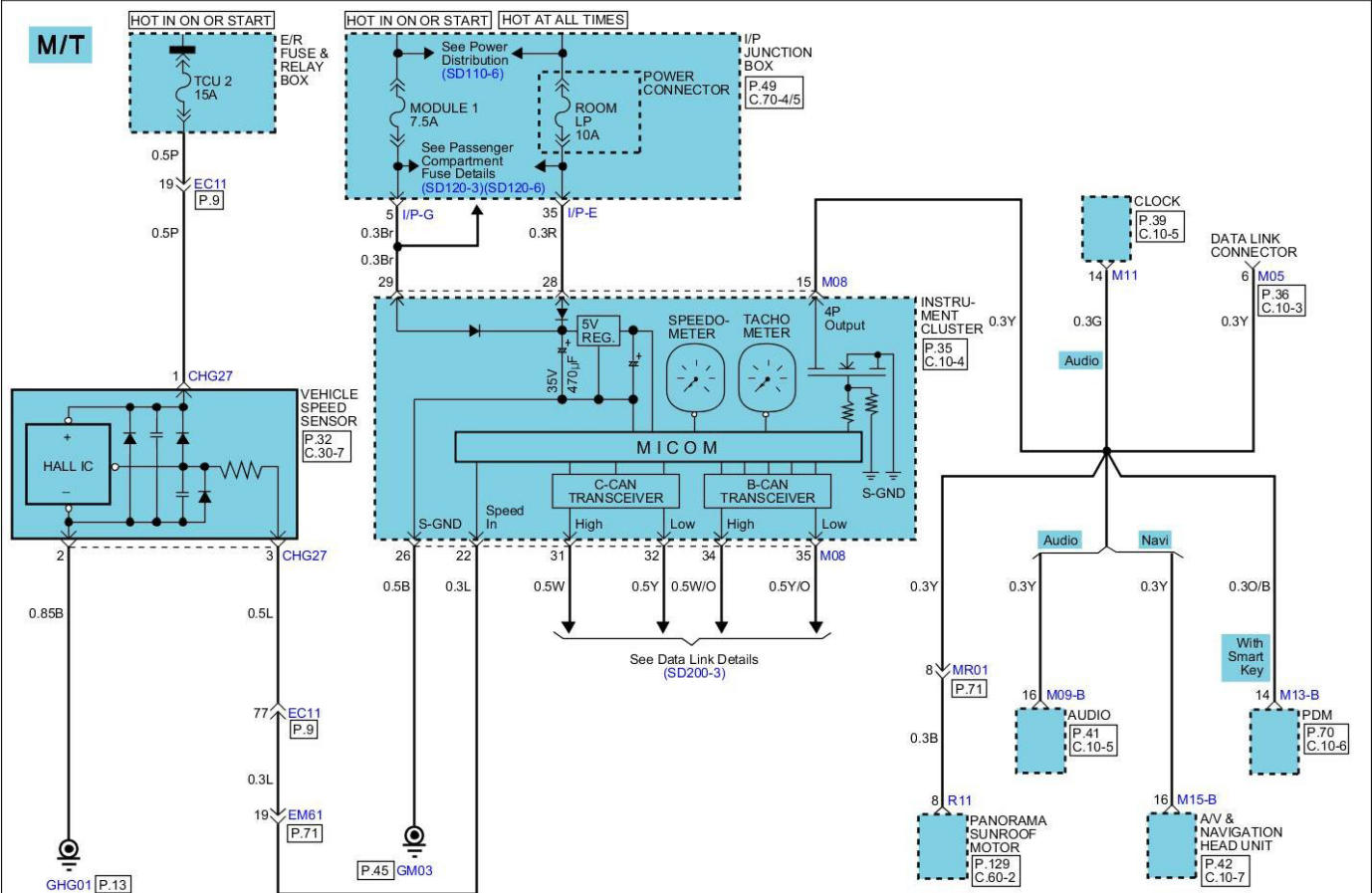
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2013 HYUNDAI SONATA L4-2.4L VEHICLE SPEED SENSOR

Vehicle Speed System (3)

SD436-3



2013 HYUNDAI SONATA L4-2.4L

GLOSSARY OF TERMS

MODELOS DE AUTOS

CC: DESCAPOTABLE O CONVERTIBLE COUPE

GL: GRAN LUJO

GLS: GRAN LUJO SÚPER

GLX: GRAN LUJO EXTRA

GT: GRAND TOURING O GRAN TURISMO

GTI: GRAN TURISMO DE INYECCION

GTS: GRAN TURISMO DEPORTIVO

GTX: GRAN TURISMO EXCLUSIVO

ST: TECNOLOGIAS DEPORTIVA

SS: MODELO SÚPER DEPORTIVO

MÓDULO DE CONTROL

ABS: SISTEMA ANTIBLOQUEO DE FRENOS

BCM: MÓDULO DE CONTROL DEL CUERPO

ECM: MÓDULO DE CONTROL DEL MOTOR

ECU: UNIDAD DE CONTROL DEL MOTOR

ESP: CONTROL ELECTRÓNICO DE ESTABILIDAD

PCM: MÓDULO DE CONTROL DEL TREN DE POTENCIA

PIM: MÓDULO DE INTERFAZ DEL TREN MOTRIZ

SRS: SISTEMA DE SEGURIDAD SUPLEMENTARIO

TCM: MÓDULO DE CONTROL DE LA TRANSMISIÓN

VCM: MÓDULO DE CONTROL DEL VEHICULO

FICM: MÓDULO DE CONTROL DEL INYECTOR DE COMBUSTIBLE

MOTOR

OHC: ÁRBOL DE LEVAS EN CULATA

SOCH: UN SOLO ÁRBOL DE LEVAS

DOCH: DOBLE ÁRBOL DE LEVAS

OHV: MOTOR DE 4 TIEMPOS DE VÁLVULAS EN LA CABEZA

SV: MOTOR DE 4 TIEMPOS DE VÁLVULAS LATERALES

SENSORES

CKP: SENSOR DE POSICIÓN DEL CIGUEÑAL

CMP: SENSOR DE POSICIÓN DE ÁRBOL DE LEVAS

ECT: SENSOR DE TEMPERATURA DEL REFRIGERANTE

EGT: SENSOR DE TEMPERATURA DEL GAS DE ESCAPE

IAT: SENSOR DE TEMPERATURA DE AIRE DE ENTRADA

KS: SENSOR DE DETONACIÓN

MAF: SENSOR DE FLUJO DE MASA DE AIRE

MAP: SENSOR DE PRESIÓN ABSOLUTA DEL MULTIPLE DE ADMISIÓN

O2: SENSOR DE OXYGENO

OPS: SENSOR DE PRESIÓN DE ACEITE

TPS: SENSOR DE POSICIÓN DEL ACELERAODR

TRS: SENSOR DE RANGO DE LA TRANSMISION

TSS: SENSOR DE VELOCIDAD DE LA TRANSMISIÓN

VSS: SENSOR DE VELOCIDAD DEL VEHÍCULO

2013 HYUNDAI SONATA L4-2.4L

GLOSSARY OF TERMS

SISTEMA DE TRACCIÓN

2WD: SISTEMA DE TRACCIÓN EN 2 RUEDAS

4WD: TRACCIÓN 4X4 CONECTABLE

AWD: TRACCIÓN EN LAS 4 RUEDAS PERMANENTE

FWD: TRACCIÓN DELANTERA

RWD: TRACCIÓN TRASERA

4X4: TRACCIÓN EN LAS 4 RUEDAS

ASR: SISTEMA DE CONTROL DE TRACCIÓN

QUATTRO: TRACCIÓN PERMANENTE A LAS CUATRO RUEDAS (TERMINO COMUNMENTE USADO EN AUTOS AUDI)

SISTEMAS

A/C: AIRE ACONDICIONADO

AC: CORRIENTE ALTERNA

EGR: RECIRCULACIÓN DE GASES DE ESCAPE

EVAP: SISTEMA DE CONTROL DE EMISIONES EVAPORATIVAS

VVT: SISTEMA DE DISTRIBUCIÓN VARIABLE

SISTEMA DE INYECCIÓN

COMMON-RAIL: SISTEMA ELECTRÓNICO DE INYECCIÓN DE COMBUSTIBLE PARA MOTORES DIESEL

HPI: MOTORES DE GASOLINA DE INYECCIÓN DIRECTA

JTD: MOTORES DIÉSEL DE INYECCIÓN DIRECTA CON "COMMO RAIL"

EFI: INYECCIÓN ELECTRÓNICA DE GASOLINA

TSI: INYECCIÓN ESTRATIFICADA CON TURBOCARGADOR (MOTORES A GASOLINA)

TD: MOTORES TURBO DIÉSEL

TDI: MOTOR TURBO DIÉSEL CON INYECCIÓN DIRECTA (TIPO DE INYECCIÓN COMUNMENTE USADA POR VOLKSWAGEN)

FSI: INYECCIÓN ESTRATIFICADA DE GASOLINA

TFSI: INYECCIÓN ESTRATIFICADA DE GASOLINA CON TURBO

HDI: INYECCIÓN DIÉSEL DE ALTA PRESIÓN

SISTEMA DE TRANSMISIÓN

A/T: TRANSMISIÓN AUTOMÁTICA

M/T: TRANSMISIÓN MANUAL

CVT: TRANSMISIÓN CONTINUAMENTE VARIABLE

SISTEMA DE CILINDROS Y VÁLVULAS

L4: MOTOR DE 4 CILINDROS EN LINEA

L6: MOTOR DE 6 CILINDROS EN LINEA

V2: MOTOR DE 2 CILINDROS EN POSICIÓN V

V6: MOTOR 6 CILINDROS EN POSICIÓN V

V8: MOTOR DE 8 CILINDROS EN POSICIÓN V

V10: MOTOR DE 10 CILINDROS EN POSICIÓN V

V12: MOTOR DE 12 CILINDROS EN POSICIÓN V

20VT: 20 VÁLVULAS TURBO

CVVT: SINCRONIZACIÓN DE VALVULAS CONTINUAMENTE VARIABLE