

This document was prepared in the following main sections (worksheets) for MY12 ERF5 Diagnostics in Group 7

Section 1 : S1-C202_CalculatedP2635

Contains information for all C202-ERFS applications within 12OBDG7 with calculated thresholds for DTC P2635
VPPC and Engines with ERF5 in Group 7

- GMT355 Engine RPOs LLR 2.9L PFI I-5, LLV 3.7L PFI I-6, LH9 5.3L PFI V-8,
- GMT610 Engine RPO LMF 5.3L PFI V-8
- GMT9xx Body Style Codes 06, 36
Engine RPOs LC9 5.3L PFI V-8, LMG 5.3L PFI V-8, L94 6.2L PFI V-8
- GMX226, GMX322 Engine RPO LSA 6.2L Supercharged PFI V-8

Section 2 : S2-C202_MappedP2635

Contains information for all C202-ERFS applications within 12OBDG7 with mapped thresholds for DTC P2635
VPPC and Engines with ERF5 in Group 7

- GMT9xx Body Style Codes 03,43,53
Engine RPOs L20 4.8L PFI V-8, LC9 5.3L PFI V-8, LMG 5.3L PFI V-8, L9H 6.2L PFI V-8

Section 3 : S3-C101_Common

Contains information that is common to all C101-ERFS applications within 12OBDG7
VPPC and Engines with ERF5 in Group 7

- GMX511_521 Engine RPOs L99 6.2L PFI V-8, LS3 6.2L PFI V-8, LSA 6.2L Supercharged PFI V-8
- Z1LC Police Engine RPO L77 6.0L PFI V-8

Section 4 : S4-C201_Common

Contains information that is common to all C201-ERFS applications within 12OBDG7
VPPC and Engine with ERF5 in Group 7

- GMX245 Engine RPO LS9 6.2L Supercharged PFI V-8

12 OBDG07 FSCM Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Fuel Rail Pressure (FRP) Sensor Performance (rationality)	P018B	This DTC detects a fuel pressure sensor response stuck within the normal operating range	Absolute value of change in fuel pressure as sensed during intrusive test.	<= 30 kPa	1. FRP Circuit Low DTC (P018C) 2. FRP Circuit High DTC (P018D) 3. FuelPump Circuit Low DTC (P0231) 4. FuelPump Circuit High DTC (P0232) 5. FuelPump Circuit Open DTC (P023F) 6. Reference Voltage DTC (P0641) 7. Fuel Pump Control Module Driver Over-temperature DTC's (P064A, P1255) 8. Control Module Internal Performance DTC (P0606) 9. Engine run time	not active not active not active not active not active not active not active not active >=5 seconds	Frequency: Continuous; 12.5 ms loop. 60 seconds between intrusive tests that pass Intrusive test requested if fuel system is clamped for >= 5 seconds or fuel pressure error variance <= typically (0.3 to 0.6) (calculated over a 2.5sec period); otherwise report pass Duration of intrusive test is fueling related (5 to 12 seconds). Intrusive test is run when fuel flow is below Max allowed fuel flow rate (Typical values in the range of 11 to 50 g/s)	DTC Type A 1 trip

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					10. Emissions fuel level (PPEI \$3FB) AND Engine Run Time 11. Fuel pump control 12. Fuel pump control state 13. Engine fuel flow 14. ECM fuel control system failure (PPEI \$1ED)	not low > 30 sec enabled normal or FRP Rationality control > 0.047 g/s failure has not occurred		
Fuel Rail Pressure (FRP) Sensor Circuit Low Voltage	P018C	This DTC detects if the fuel pressure sensor circuit is shorted to low	FRP sensor voltage	< 0.14 V	Ignition	Run or Crank	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Rail Pressure (FRP) Sensor Circuit High Voltage	P018D	This DTC detects if the fuel pressure sensor circuit is shorted to high	FRP sensor voltage	> 4.86 V	Ignition	Run or Crank	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Control Circuit Low Voltage	P0231	This DTC detects if the fuel pump control circuit is shorted to low	Fuel Pump Current	> 14.48A	Ignition OR HS Comm OR Fuel Pump Control AND Ignition Run/Crank Voltage	Run or Crank enabled enabled 9V < voltage < 32V	72 test failures in 80 test samples if Fuel Pump Current <100A 3 test failures in 15 test samples if Fuel Pump Current >=100A 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Control Circuit High Voltage	P0232	This DTC detects if the fuel pump control circuit is shorted to high	Voltage measured at fuel pump circuit	> 3.86 V	Commanded fuel pump output	0% duty cycle (off)	36 test failures in 40 test samples; 1 sample/12.5ms	DTC Type A 1 trip

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					Fuel pump control enable Time that above conditions are met	False >=4.0 seconds	Pass/Fail determination made only once per trip	
Fuel Pump Control Circuit (Open)	P023F	This DTC detects if the fuel pump control circuit is open	Fuel Pump Current AND Fuel Pump Duty Cycle	<=0.5A > 20%	Ignition OR HS Comm OR Fuel Pump Control AND Ignition Run/Crank voltage	Run or Crank Enabled Enabled 9V <voltage< 32V	72 test failures in 80 test samples; 1 sample/12.5ms	DTC Type A 1 trip
Fuel System Control Module Enable Control Circuit	P025A	This DTC detects if there is a fault in the fuel pump control enable circuit	PPEI (PPEI (Powertrain Platform Electrical Interface) Fuel System Request (\$1ED)	≠ Fuel Pump Control Module Enable Control Circuit	Ignition AND PPEI Fuel System Request (\$1ED)	Run or Crank Valid	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Control Module Read Only Memory (ROM)	P0601	This DTC will be stored if any software or calibration check sum is incorrect	Calculated Checksum (CRC16)	≠ stored checksum for any of the parts (boot, software, application calibration, system calibration)	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	1 failure if it occurs during the first ROM test of the ignition cycle, otherwise 5 failures Frequency: Runs continuously in the background	DTC Type A 1 trip
Control Module Not Programmed	P0602	Indicates that the FSCM needs to be programmed	This DTC is set via calibration, when KeMEMD_b_NoStartCal	TRUE	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	Runs once at power up	DTC Type A 1 trip

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Control Module Long Term Memory Reset	P0603	Non-volatile memory checksum error at controller power-up	Checksum at power-up	≠ checksum at power-down	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	1 failure Frequency: Once at power-up	DTC Type A 1 trip
Control Module Random Access Memory (RAM)	P0604	Indicates that control module is unable to correctly write and read data to and from RAM	Data read	≠ Data written	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	1 failure if it occurs during the first RAM test of the ignition cycle, otherwise 5 failures Frequency: Runs continuously in the background.	DTC Type A 1 trip
Control Module Internal Performance 1. Main Processor Configuration Register Test 2. Processor clock test	P0606	This DTC indicates the FSCM has detected an internal processor fault or external watchdog fault (PID 2032 can tell what causes the fault.)	1. For all I/O configuration register faults: •Register contents 2. For Processor Clock Fault: •EE latch flag in EEPROM. OR	Incorrect value. 0x5A5A	Ignition OR HS Comm OR Fuel Pump Control 1. For all I/O configuration register faults: •KeMEMD_b_ProcFltCfgRegEn bl	Run or Crank enabled enabled TRUE	Tests 1 and 2 1 failure Frequency: Continuously (12.5ms) Test 3 3 failures out of 15 samples 1 sample/12.5 ms	DTC Type A 1 trip

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
3. External watchdog test			<ul style="list-style-type: none"> RAM latch flag. 3. For External Watchdog Fault: <ul style="list-style-type: none"> Software control of fuel pump driver 	0x5A Control Lost	2. For Processor Clock Fault: •KeMEMD_b_ProcFitCLKDiagEnbl 3. For External Watchdog Fault: •KeFRPD_b_FPExtWDogDiagEnbl 3. For External Watchdog Fault: •Control Module ROM(P0601) 3. For External Watchdog Fault: •Control Module RAM(P0604)	TRUE TRUE not active not active		
Control Module Long Term Memory (EEPROM) Performance	P062F	Indicates that the NVM Error flag has not been cleared	Last EEPROM write	Did not complete	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	1 test failure Once on controller power-up	DTC Type A 1 trip
5Volt Reference Circuit (Short High/Low/Out of Range)	P0641	Detects continuous short or out of range on the #1 5V sensor reference circuit	Reference voltage AND Output OR Reference voltage AND Output OR Reference voltage AND Output	>= 0.5V inactive >= 5.5V active <= 4.5V active	Ignition	Run or Crank	15 failures out of 20 samples 1 sample/12.5 ms	DTC Type A 1 trip

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			OR Reference voltage	> 102.5% nominal (i.e., 5.125V) OR <97.5% nominal (i.e., 4.875V)				
Fuel Pump Control Module - Driver Over- temperature 1	P064A	This DTC detects if an internal fuel pump driver overtemperature condition exists under normal operating conditions (Tier 1 supplier Continental responsibility)	Module Range of Operation AND Fuel pump driver Temp	1. Module is within Acceptable Operation Range (Motorola's responsibility - FSCM is in normal operating range for module voltage versus PWM duty cycle. Linear range from 100% @ 12.5V to 70% @ 18V.) > 190C	Ignition OR HS Comm OR Fuel Pump Control AND Ignition Run / Crank KeFRPD_b_FPOverTempDiagE nbl	Run or Crank Enabled Enabled 9V<voltage<32V TRUE	3 failures out of 15 samples 1 sample/12.5 ms	DTC Type B 2 trips
Fuel Pump Control Module - Driver Over- temperature 2	P1255	This DTC detects if an internal fuel pump driver overtemperature condition exists under extreme operating conditions (GM's responsibility)	Module Range of Operation AND Fuel pump driver Temp	Outside normal range (FSCM is NOT in normal operating range for module voltage versus PWM duty cycle. Linear range from 100% @ 12.5V to 70% @ 18V.) > 190C	Ignition OR HS Comm OR Fuel Pump Control AND Ignition Run / Crank KeFRPD_b_FPOverTempDiagE nbl	Run or Crank Enabled Enabled 9V<voltage<32V TRUE	3 failures out of 15 samples 1 sample/12.5 ms	DTC Type B 2 trips
Ignition 1 Switch Circuit Low Voltage	P2534	This DTC detects if the Ignition1 Switch circuit is shorted to low or open	Ignition 1 voltage	<= 6 V	Engine	Running	180 failures out of 200 samples 1 sample/25.0 ms	DTC Type A 1 trip

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Fuel Pump Flow Performance (rationality)	P2635	This DTC detects degradation in the performance of the SIDI electronic return-less fuel system	Filtered fuel rail pressure error	<= Low Threshold (function of desired fuel rail pressure and fuel flow rate. 15% of resultant Target Pressure) OR >= High Threshold (function of desired fuel rail pressure and fuel flow rate. 15% of resultant Target Pressure) (See Supporting Tables tab)	1. FRP Circuit Low DTC (P018C)	not active	Filtered fuel rail pressure error Time Constant = 12.5 seconds Frequency: Continuous 12.5 ms loop	DTC Type B 2 trips
					2. FRP Circuit High DTC (P018D)	not active		
					3. Fuel Pressure Sensor Performance DTC (P018B)	not active		
					4. FuelPump Circuit Low DTC (P0231)	not active		
					5. FuelPump Circuit High DTC (P0232)	not active		
					6. FuelPump Circuit Open DTC (P023F)	not active		
					7. Reference Voltage DTC (P0641)	not active		
					8. Fuel Pump Control Module Driver Over-temperature DTC's (P064A, P1255)	not active		
					9. Control Module Internal Performance DTC (P0606)	not active		
					10. An ECM fuel control system failure (PPEI \$1ED)	has not occurred		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					11. The Barometric pressure (PPEI \$4C1) signal	valid (for absolute fuel pressure sensor)		
					12. Engine run time	>= 30 seconds		
					13. Emissions fuel level (PPEI \$3FB) AND Engine Run Time	not low > 30 sec		
					14. Fuel pump control	enabled		
					15. Fuel pump control state	normal		
					16. Battery Voltage	11V<=voltage=<32V		
					17. Fuel flow rate (See Supporting Tables tab)	> 0.047 g/s AND <= Max allowed fuel flow rate as a function of desired rail pressure & Vbatt (Typical values in the range of 11 to 50 g/s)		
					18. Fuel Pressure Control System	Is not responding to an over-pressurization due to pressure build during DFCO or a decreasing desired pressure command.		
Control Module Communication Bus "A" Off	U0073	Detects that a CAN serial data bus shorted condition has occurred to force the CAN device driver to enter a bus-off state	Bus Status	Off	Power mode	Run/Crank	5 failures out of 5 samples (5 seconds)	DTC Type B 2 trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Lost Communication With ECM/PCM "A"	U0100	Detects that CAN serial data communication has been lost with the ECM	Message \$0C9	Undetected	1. Power mode 2. Ignition Run/Crank Voltage 3. U0073	Run/Crank 11V<=voltage=<32V not active	12 failures out of 12 samples (12 seconds)	DTC Type B 2 trips

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FSCM S1-C202 Support Tables

P2635 Fuel Pump Performance Maximum Fuel Flow map (grams / second)

X-axis= Desired Fuel Pressure (kiloPascals)
Y-axis= Battery voltage (volts)

	200	250	300	350	400	450	500	550	600
4.5	42.70313	42.70313	42.70313	42.70313	42.70313	41.52344	37.66406	33.89063	30.19531
6	42.70313	42.70313	42.70313	42.70313	42.70313	41.52344	37.66406	33.89063	30.19531
7.5	42.70313	42.70313	42.70313	42.70313	42.70313	41.52344	37.66406	33.89063	30.19531
9	42.70313	42.70313	42.70313	42.70313	42.70313	41.52344	37.66406	33.89063	30.19531
10.5	42.70313	42.70313	42.70313	42.70313	42.70313	41.52344	37.66406	33.89063	30.19531
12	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.26563
13.5	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
15	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
16.5	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
18	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
19.5	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
21	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
22.5	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
24	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
25.5	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
27	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
28.5	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313

P2635 Fuel Injector curve (grams / second)

X-axis= Fuel Pressure (kiloPascals)

128	148	168	188	208	228	248	268	288	308	328	348	368
3.550049	3.784668	4.019043	4.253662	4.488281	4.7229	4.939941	5.130859	5.321533	5.512695	5.693604	5.860352	6.026855
388	408	428	448	468	488	508	528	548	568	588	608	628
6.193848	6.355957	6.51001	6.660645	6.807373	6.944824	7.070801	7.197266	7.323242	7.449219	7.575439	7.70166	7.827637
648	668	688	708	728	748	768						
7.953857	7.999878	7.999878	7.999878	7.999878	7.999878	7.999878						

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FSCM S1-C202 Support Tables

P2635 Maximum Engine Intake Boost curve (kiloPascals)

X-axis= barometric pressure (kiloPascals)

40	50	60	70	80	90	100	110	120
0	0	0	0	0	0	0	0	0

P2635 Minimum Fuel Injector Pulse Width curve (seconds)

X-axis= engine speed (revolutions / minute)

0	512	1024	1536	2048	2560	3072	3584	4096	4608	5120	5632	6144
0.632813	0.632813	0.632813	0.632813	0.632813	0.632813	0.632813	0.632813	0.632813	0.632813	0.632813	0.632813	0.632813
6656	7168	6656	7168	7680	8192							
0.632813	0.632813	0.632813	0.632813	0.632813	0.632813							

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Fuel Rail Pressure (FRP) Sensor Performance (rationality)	P018B	This DTC detects a fuel pressure sensor response stuck within the normal operating range	Absolute value of change in fuel pressure as sensed during intrusive test.	<= 30 kPa	1. FRP Circuit Low DTC (P018C) 2. FRP Circuit High DTC (P018D) 3. FuelPump Circuit Low DTC (P0231) 4. FuelPump Circuit High DTC (P0232) 5. FuelPump Circuit Open DTC (P023F) 6. Reference Voltage DTC (P0641) 7. Fuel Pump Control Module Driver Over-temperature DTC's (P064A, P1255) 8. Control Module Internal Performance DTC (P0606)	not active not active not active not active not active not active not active	Frequency: Continuous; 12.5 ms loop. 60 seconds between intrusive tests that pass Intrusive test requested if fuel system is clamped for >= 5 seconds or fuel pressure error variance <= typically (0.3 to 0.6) (calculated over a 2.5sec period); otherwise report pass Duration of intrusive test is fueling related (5 to 12 seconds). Intrusive test is run when fuel flow is below Max allowed fuel flow rate (Typical values in the range of 11 to 50 g/s)	DTC Type A 1 trip

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					9. Engine run time 10. Emissions fuel level (PPEI \$3FB) AND Engine Run Time 11. Fuel pump control 12. Fuel pump control state 13. Engine fuel flow 14. ECM fuel control system failure (PPEI \$1ED)	>=5 seconds not low > 30 sec enabled normal or FRP Rationality control > 0.047 g/s failure has not occurred		
Fuel Rail Pressure (FRP) Sensor Circuit Low Voltage	P018C	This DTC detects if the fuel pressure sensor circuit is shorted to low	FRP sensor voltage	< 0.14 V			72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Rail Pressure (FRP) Sensor Circuit High Voltage	P018D	This DTC detects if the fuel pressure sensor circuit is shorted to high	FRP sensor voltage	> 4.86 V			72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Control Circuit Low Voltage	P0231	This DTC detects if the fuel pump control circuit is shorted to low	Fuel Pump Current	> 14.48A			72 test failures in 80 test samples if Fuel Pump Current <100A 3 test failures in 15 test samples if Fuel Pump Current >=100A 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Control Circuit High Voltage	P0232	This DTC detects if the fuel pump control circuit is shorted to high	Voltage measured at fuel pump circuit	> 3.86 V			36 test failures in 40 test samples; 1 sample/12.5ms	DTC Type A 1 trip

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					Fuel pump control enable Time that above conditions are met	False >=4.0 seconds	Pass/Fail determination made only once per trip	
Fuel Pump Control Circuit (Open)	P023F	This DTC detects if the fuel pump control circuit is open	Fuel Pump Current AND Fuel Pump Duty Cycle	<=0.5A > 20%	Ignition OR HS Comm OR Fuel Pump Control AND Ignition Run/Crank voltage	Run or Crank Enabled Enabled 9V <voltage< 32V	72 test failures in 80 test samples; 1 sample/12.5ms	DTC Type A 1 trip
Fuel System Control Module Enable Control Circuit	P025A	This DTC detects if there is a fault in the fuel pump control enable circuit	PPEI (PPEI (Powertrain Platform Electrical Interface) Fuel System Request (\$1ED)	≠ Fuel Pump Control Module Enable Control Circuit	Ignition AND PPEI Fuel System Request (\$1ED)	Run or Crank Valid	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Control Module Read Only Memory (ROM)	P0601	This DTC will be stored if any software or calibration check sum is incorrect	Calculated Checksum (CRC16)	≠ stored checksum for any of the parts (boot, software, application calibration, system calibration)	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	1 failure if it occurs during the first ROM test of the ignition cycle, otherwise 5 failures Frequency: Runs continuously in the background	DTC Type A 1 trip
Control Module Not Programmed	P0602	Indicates that the FSCM needs to be programmed	This DTC is set via calibration, when KeMEMD_b_NoStartCal	TRUE	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	Runs once at power up	DTC Type A 1 trip

12 OBDG07 FSCM Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Control Module Long Term Memory Reset	P0603	Non-volatile memory checksum error at controller power-up	Checksum at power-up	≠ checksum at power- down	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	1 failure Frequency: Once at power-up	DTC Type A 1 trip
Control Module Random Access Memory (RAM)	P0604	Indicates that control module is unable to correctly write and read data to and from RAM	Data read	≠ Data written	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	1 failure if it occurs during the first RAM test of the ignition cycle, otherwise 5 failures Frequency: Runs continuously in the background.	DTC Type A 1 trip
Control Module Internal Performance 1. Main Processor Configuration Register Test	P0606	This DTC indicates the FSCM has detected an internal processor fault or external watchdog fault (PID 2032 can tell what causes the fault.)	1. For all I/O configuration register faults: •Register contents	Incorrect value.	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	Tests 1 and 2 1 failure Frequency: Continuously (12.5ms)	DTC Type A 1 trip

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
2. Processor clock test 3. External watchdog test			2. For Processor Clock Fault: •EE latch flag in EEPROM. OR • RAM latch flag. 3. For External Watchdog Fault: • Software control of fuel pump driver	0x5A5A 0x5A Control Lost	1. For all I/O configuration register faults: •KeMEMD_b_ProcFitCfgRegEn bl 2. For Processor Clock Fault: •KeMEMD_b_ProcFitCLKDiagE nbl 3. For External Watchdog Fault: •KeFRPD_b_FPExtWDogDiagE nbl 3. For External Watchdog Fault: •Control Module ROM(P0601) 3. For External Watchdog Fault: •Control Module RAM(P0604)	TRUE TRUE TRUE not active not active	Test 3 3 failures out of 15 samples 1 sample/12.5 ms	
Control Module Long Term Memory (EEPROM) Performance	P062F	Indicates that the NVM Error flag has not been cleared	Last EEPROM write	Did not complete	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	1 test failure Once on controller power-up	DTC Type A 1 trip
5Volt Reference Circuit (Short High/Low/Out of Range)	P0641	Detects continuous short or out of range on the #1 5V sensor reference circuit	Reference voltage AND Output OR Reference voltage AND Output	>= 0.5V inactive >= 5.5V active	Ignition	Run or Crank	15 failures out of 20 samples 1 sample/12.5 ms	DTC Type A 1 trip

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			OR Reference voltage AND Output	<= 4.5V active				
			OR Reference voltage	> 102.5% nominal (i.e., 5.125V) OR <97.5% nominal (i.e., 4.875V)				
Fuel Pump Control Module - Driver Over- temperature 1	P064A	This DTC detects if an internal fuel pump driver overtemperature condition exists under normal operating conditions (Tier 1 supplier Continental responsibility)	Module Range of Operation AND Fuel pump driver Temp	1. Module is within Acceptable Operation Range (Motorola's responsibility - FSCM is in normal operating range for module voltage versus PWM duty cycle. Linear range from 100% @ 12.5V to 70% @ 18V.) > 190C	Ignition OR HS Comm OR Fuel Pump Control AND Ignition Run / Crank KeFRPD_b_FPOverTempDiag Enbl	Run or Crank Enabled Enabled 9V<voltage<32V TRUE	3 failures out of 15 samples 1 sample/12.5 ms	DTC Type B 2 trips
Fuel Pump Control Module - Driver Over- temperature 2	P1255	This DTC detects if an internal fuel pump driver overtemperature condition exists under extreme operating conditions (GM's responsibility)	Module Range of Operation AND Fuel pump driver Temp	Outside normal range (FSCM is NOT in normal operating range for module voltage versus PWM duty cycle. Linear range from 100% @ 12.5V to 70% @ 18V.) > 190C	Ignition OR HS Comm OR Fuel Pump Control AND Ignition Run / Crank KeFRPD_b_FPOverTempDiag Enbl	Run or Crank Enabled Enabled 9V<voltage<32V TRUE	3 failures out of 15 samples 1 sample/12.5 ms	DTC Type B 2 trips
			AND Fuel pump driver Temp	> 190C	KeFRPD_b_FPOverTempDiag Enbl	TRUE		

12 OBDG07 FSCM Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Ignition 1 Switch Circuit Low Voltage	P2534	This DTC detects if the Ignition1 Switch circuit is shorted to low or open	Ignition 1 voltage	<= 6 V	Engine	Running	180 failures out of 200 samples 1 sample/25.0 ms	DTC Type A 1 trip
Fuel Pump Flow Performance (rationality)	P2635	This DTC detects degradation in the performance of the SIDI electronic return- less fuel system	Filtered fuel rail pressure error	<= Low Threshold (function of desired fuel rail pressure and fuel flow rate. 15% of resultant Target Pressure) OR >= High Threshold (function of desired fuel rail pressure and fuel flow rate. 15% of resultant Target Pressure) (See Supporting Tables tab)	1. FRP Circuit Low DTC (P018C)	not active	Filtered fuel rail pressure error Time Constant = 12.5 seconds Frequency: Continuous 12.5 ms loop	DTC Type B 2 trips
					2. FRP Circuit High DTC (P018D)	not active		
					3. Fuel Pressure Sensor Performance DTC (P018B)	not active		
					4. FuelPump Circuit Low DTC (P0231)	not active		
					5. FuelPump Circuit High DTC (P0232)	not active		
					6. FuelPump Circuit Open DTC (P023F)	not active		
					7. Reference Voltage DTC (P0641)	not active		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					8. Fuel Pump Control Module Driver Over-temperature DTC's (P064A, P1255)	not active		
					9. Control Module Internal Performance DTC (P0606)	not active		
					10. An ECM fuel control system failure (PPEI \$1ED)	has not occurred		
					11. The Barometric pressure (PPEI \$4C1) signal	valid (for absolute fuel pressure sensor)		
					12. Engine run time	>= 30 seconds		
					13. Emissions fuel level (PPEI \$3FB) AND Engine Run Time	not low > 30 sec		
					14. Fuel pump control	enabled		
					15. Fuel pump control state	normal		
					16. Battery Voltage	11V<=voltage=<32V		
					17. Fuel flow rate (See Supporting Tables tab)	> 0.047 g/s AND <= Max allowed fuel flow rate as a function of desired rail pressure & Vbatt (Typical values in the range of 11 to 50 g/s)		
					18. Fuel Pressure Control System	Is not responding to an over-pressurization due to pressure build during DFCO or a decreasing desired pressure command.		
Control Module Communication Bus "A" Off	U0073	Detects that a CAN serial data bus shorted condition has occurred to force the CAN device driver to enter a bus-off state	Bus Status	Off	Power mode	Run/Crank	5 failures out of 5 samples (5 seconds)	DTC Type B 2 trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Lost Communication With ECM/PCM "A"	U0100	Detects that CAN serial data communication has been lost with the ECM	Message \$0C9	Undetected	1. Power mode 2. Ignition Run/Crank Voltage 3. U0073	Run/Crank 11V<=voltage=<32V not active	12 failures out of 12 samples (12 seconds)	DTC Type B 2 trips

FSCM S2-C202 Support Tables

P2635 Fuel Pump Performance Maximum Fuel Flow map (grams / s)

X-axis= Desired Fuel Pressure (kiloPascals)
Y-axis= Battery voltage (volts)

	200	250	300	350	400	450	500	550	600
4.5	42.70313	42.70313	42.70313	42.15625	39.57813	37.07813	34.65625	32.29688	30.01563
6	42.70313	42.70313	42.70313	42.15625	39.57813	37.07813	34.65625	32.29688	30.01563
7.5	42.70313	42.70313	42.70313	42.15625	39.57813	37.07813	34.65625	32.29688	30.01563
9	42.70313	42.70313	42.70313	42.15625	39.57813	37.07813	34.65625	32.29688	30.01563
10.5	42.70313	42.70313	42.70313	42.15625	39.57813	37.07813	34.65625	32.29688	30.01563
12	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	41.45313	39.03906
13.5	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
15	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
16.5	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
18	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
19.5	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
21	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
22.5	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
24	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
25.5	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
27	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313
28.5	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313	42.70313

FSCM S2-C202 Support Tables

P2635 Fuel Pump Performance Filtered Pressure Error Fault Threshold High map (kiloPascals)

X-axis= Target Fuel Pressure (kiloPascals)
Y-axis= Fuel Flow (grams / s)

	200	250	300	350	400	450	500	550	600
0	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
1.5	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
3	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
4.5	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
6	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
7.5	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
9	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
10.5	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
12	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
13.5	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
15	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
16.5	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
18	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
19.5	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
21	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
22.5	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
24	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
25.5	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
27	55.5	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
28.5	43.9375	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
30	31.9375	69.375	83.25	97.125	111	124.875	138.75	152.625	166.5
31.5	19.5	54.92188	83.25	97.125	111	124.875	138.75	152.625	166.5
33	19.5	39.92188	83.25	97.125	111	124.875	138.75	152.625	166.5
34.5	19.5	24.375	65.90625	97.125	111	124.875	138.75	152.625	166.5
36	19.5	24.375	47.89063	97.125	111	124.875	138.75	152.625	166.5
37.5	19.5	24.375	29.25	76.90625	111	124.875	138.75	152.625	166.5
39	19.5	24.375	29.25	55.875	75.45313	111.1875	149.3281	175.3125	191.25
40.5	19.5	24.375	29.25	34.125	39.89063	97.5	159.8906	198	216
42	19.5	24.375	29.25	34.125	39.89063	97.5	159.8906	198	216
43.5	19.5	24.375	29.25	34.125	39.89063	97.5	159.8906	198	216
45	19.5	24.375	29.25	34.125	39.89063	97.5	159.8906	198	216
46.5	19.5	24.375	29.25	34.125	39.89063	97.5	159.8906	198	216
48	19.5	24.375	29.25	34.125	39.89063	97.5	159.8906	198	216

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FSCM S2-C202 Support Tables

P2635 Fuel Pump Performance Filtered Pressure Error Fault RePass Threshold High map (kiloPascals)

X-axis= Target Fuel Pressure (kiloPascals)
Y-axis= Fuel Flow (grams / s)

	200	250	300	350	400	450	500	550	600
0	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
1.5	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
3	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
4.5	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
6	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
7.5	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
9	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
10.5	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
12	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
13.5	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
15	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
16.5	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
18	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
19.5	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
21	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
22.5	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
24	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
25.5	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
27	47.57813	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
28.5	36.01563	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
30	24.01563	59.46875	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
31.5	11.57813	45.03125	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
33	11.57813	30.01563	71.375	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
34.5	11.57813	14.46875	54.03125	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
36	11.57813	14.46875	36.01563	83.26563	95.15625	107.0625	118.9531	130.8438	142.7344
37.5	11.57813	14.46875	17.375	63.03125	95.15625	107.0625	118.9531	130.8438	142.7344
39	11.57813	14.46875	17.375	42.01563	59.60938	93.375	129.5156	153.5313	167.4844
40.5	11.57813	14.46875	17.375	20.26563	24.04688	79.6875	140.0938	176.2188	192.2344
42	11.57813	14.46875	17.375	20.26563	24.04688	79.6875	140.0938	176.2188	192.2344
43.5	11.57813	14.46875	17.375	20.26563	24.04688	79.6875	140.0938	176.2188	192.2344
45	11.57813	14.46875	17.375	20.26563	24.04688	79.6875	140.0938	176.2188	192.2344
46.5	11.57813	14.46875	17.375	20.26563	24.04688	79.6875	140.0938	176.2188	192.2344
48	11.57813	14.46875	17.375	20.26563	24.04688	79.6875	140.0938	176.2188	192.2344

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FSCM S2-C202 Support Tables

P2635 Fuel Pump Performance Filtered Pressure Error Fault Threshold Low map (kiloPascals)

X-axis= Target Fuel Pressure (kiloPascals)
Y-axis= Fuel Flow (grams / s)

	200	250	300	350	400	450	500	550	600
0	-34.5625	-34.5625	-34.5625	-31.4688	-28.4063	-28.4063	-28.4063	-28.4063	-28.4063
1.5	-63	-63	-63	-73.5	-84	-84	-84	-84	-84
3	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
4.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
6	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
7.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
9	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
10.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
12	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
13.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
15	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
16.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
18	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
19.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
21	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
22.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
24	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
25.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
27	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
28.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
30	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
31.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
33	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
34.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
36	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
37.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
39	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
40.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
42	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
43.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
45	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
46.5	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5
48	-64.5	-80.625	-96.75	-112.875	-129	-145.125	-161.25	-177.375	-193.5

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FSCM S2-C202 Support Tables

P2635 Fuel Pump Performance Filtered Pressure Error Fault RePass Threshold Low map (kiloPascals)

X-axis= Target Fuel Pressure (kiloPascals)
Y-axis= Fuel Flow (grams / s)

	200	250	300	350	400	450	500	550	600
0	-16.875	-16.875	-16.875	-14.4375	-12	-12	-12	-12	-12
1.5	-49.9063	-49.9063	-49.9063	-58.25	-66.5625	-66.5625	-66.5625	-66.5625	-66.5625
3	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
4.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
6	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
7.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
9	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
10.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
12	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
13.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
15	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
16.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
18	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
19.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
21	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
22.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
24	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
25.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
27	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
28.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
30	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
31.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
33	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
34.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
36	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
37.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
39	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
40.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
42	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
43.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
45	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
46.5	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125
48	-55.375	-69.2188	-83.0625	-96.9063	-110.75	-124.594	-138.438	-152.281	-166.125

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Fuel Rail Pressure (FRP) Sensor Performance (rationality)	P018B	This DTC detects a fuel pressure sensor response stuck within the normal operating range	Absolute value of fuel pressure change as sensed during intrusive test.	<= 30 kPa	1. FRP Circuit Low DTC (P018C) 2. FRP Circuit High DTC (P018D) 3. FuelPump Circuit Low DTC (P0231) 4. FuelPump Circuit High DTC (P0232) 5. FuelPump Circuit Open DTC (P023F) 6. Reference Voltage DTC (P0641) 7. Fuel Pump Control Module Driver Over-temperature DTC (P064A) 8. Control Module Internal Performance DTC (P0606) 9. Engine run time 10. Emissions fuel level (PPEI \$3FB) 11. Fuel pump control 12. Fuel pump control state	not active not active not active not active not active not active not active not active >=5 seconds not low enabled normal or FRP Rationality control	<u>Frequency:</u> Continuous; 12.5 ms loop. 60 seconds between intrusive tests that pass Intrusive test requested if fuel system is clamped for >= 5 seconds or fuel pressure error variance <= typically (0.3 to 0.6) (calculated over a 2.5sec period); otherwise report pass Duration of intrusive test is fueling related (5 to 12 seconds). Intrusive test is run when fuel flow is below Max allowed fuel flow rate (Typical values in the range of 11 to 50 g/s)	DTC Type A 1 trip

12 OBDG07 FSCM Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					13. Engine fuel flow 14. ECM fuel control system failure (PPEI \$1ED)	> 0.047 g/s failure has not occurred		
Fuel Rail Pressure (FRP) Sensor Circuit Low Voltage	P018C	This DTC detects if the fuel pressure sensor circuit is shorted low	FRP sensor voltage	< 0.14 V	Ignition	Run or Crank	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Rail Pressure (FRP) Sensor Circuit High Voltage	P018D	This DTC detects if the fuel pressure sensor circuit is shorted high	FRP sensor voltage	> 4.86 V	Ignition	Run or Crank	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Control Circuit Low Voltage	P0231	This DTC detects if the fuel pump control circuit is shorted to low	Fuel Pump Current	> 14.48A	Ignition OR HS Comm OR Fuel Pump Control AND Ignition Run/Crank Voltage	Run or Crank enabled enabled 9V < voltage < 32V	72 test failures in 80 test samples if Fuel Pump Current <100A 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Control Circuit High Voltage	P0232	This DTC detects if the fuel pump control circuit is shorted to high	Voltage measured at fuel pump circuit	> 3.86 V	Commanded fuel pump output Fuel pump control enable Time that above conditions are met	0% duty cycle (off) False >=4.0 seconds	36 test failures in 40 test samples; 1 sample/12.5ms Pass/Fail determination made only once per trip	DTC Type A 1 trip
Fuel Pump Control Circuit (Open)	P023F	This DTC detects if the fuel pump control circuit is open	Fuel Pump Current AND Fuel Pump Duty Cycle	<=0.5A >20%	Ignition OR HS Comm OR	Run or Crank enabled	72 test failures in 80 test samples; 1 sample/12.5ms	DTC Type A 1 trip

12 OBDG07 FSCM Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					Fuel Pump Control AND Ignition Run/Crank Voltage	enabled 9V < voltage < 32V		
Fuel System Control Module Enable Control Circuit	P025A	This DTC detects if there is a fault in the fuel pump control enable circuit	PPEI (PPEI (Powertrain Platform Electrical Interface) Fuel System Request (\$1ED)	≠ Fuel Pump Control Module Enable Control Circuit		Run or Crank valid	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Control Module Read Only Memory (ROM)	P0601	This DTC will be stored if any software or calibration check sum is incorrect	Calculated Checksum (CRC16)	≠ stored checksum for any of the parts (boot, software, application calibration, system calibration)		Run or Crank enabled enabled	1 failure if it occurs during the first ROM test of the ignition cycle, otherwise 5 failures Frequency: Runs continuously in the background	DTC Type A 1 trip
Control Module Not Programmed	P0602	Indicates that the FSCM needs to be programmed	This DTC is set via calibration, when KeMEMD_b_NoStartCal	= TRUE		Run or Crank enabled enabled	Runs once at power up	DTC Type A 1 trip
Control Module Long Term Memory Reset	P0603	Non-volatile memory checksum error at controller power-up	Checksum at power-up	≠ checksum at power-down		Run or Crank enabled	1 failure Frequency: Once at power-up	DTC Type A 1 trip

12 OBDG07 FSCM Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					Fuel Pump Control	enabled		
Control Module Random Access Memory (RAM)	P0604	Indicates that control module is unable to correctly write and read data to and from RAM	Data read	≠ Data written			1 failure if it occurs during the first RAM test of the ignition cycle, otherwise 5 failures	DTC Type A 1 trip
					Ignition OR HS Comm	Run or Crank enabled	Frequency: Runs continuously in the background.	
					OR Fuel Pump Control	enabled		
Control Module Internal Performance 1. Main Processor Configuration Register Test 2. Processor clock test 3. External watchdog test	P0606	This DTC indicates the FSCM has detected an internal processor fault or external watchdog fault (PID 2032 discriminates the source of the fault)	1. For all I/O configuration register faults: •Register contents 2. For Processor Clock Fault: •EE latch flag in EEPROM. OR • RAM latch flag. 3. For External Watchdog Fault: • Software control of fuel pump driver	Incorrect value. 0x5A5A 0x5A Control Lost	Ignition OR HS Comm OR Fuel Pump Control 1. For all I/O configuration register faults: •KeMEMD_b_ProcFitCfgRegEn bl 2. For Processor Clock Fault: •KeMEMD_b_ProcFitCLKDiagE nbl 3. For External Watchdog Fault: •KeFRPD_b_FPExtWDogDiagE nbl	Run or Crank enabled enabled TRUE TRUE TRUE	Tests 1 and 2 1 failure Frequency: Continuously (12.5ms) Test 3 3 failures out of 15 samples 1 sample/12.5 ms	DTC Type A 1 trip

12 OBDG07 FSCM Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					3. For External Watchdog Fault: •Control Module ROM(P0601) 3. For External Watchdog Fault: •Control Module RAM(P0604)	not active not active		
Control Module Long Term Memory (EEPROM) Performance	P062F	Indicates that the NVM Error flag has not been cleared	Last EEPROM write	Did not complete	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	1 test failure Once on controller power up	DTC Type A 1 trip
5Volt Reference Circuit (Short High/Low/Out of Range)	P0641	Detects continuous short or out of range on the #1 5V sensor reference circuit	Reference voltage AND Output OR Reference voltage AND Output OR Reference voltage AND Output	>= 0.5V inactive >= 5.5V active <= 4.5V active	Ignition	Run or Crank	15 failures out of 20 samples 1 sample/12.5 ms	DTC Type A 1 trip
			OR Reference voltage	> 105% nominal (i.e., 5.25V) OR <95% nominal (i.e., 4.75V)				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Fuel Pump Control Module - Driver Over-temperature 1	P064A	This DTC detects if an internal fuel pump driver overtemperature condition exists under normal operating conditions	Pump Driver Temp	> 150C	Ignition OR HS Comm OR Fuel Pump Control KeFRPD_b_FPOverTempDiagE nbl Ignition Run/Crank	Run or Crank enabled enabled TRUE 9V<voltage<32V	3 failures out of 15 samples 1 sample/12.5 ms	DTC Type B 2 trips
Ignition 1 Switch Circuit Low Voltage	P2534	This DTC detects if the Ignition1 Switch circuit is shorted to low or open	Ignition 1 voltage	<= 6 V	Engine	Running	180 failures out of 200 samples 1 sample/25.0 ms	DTC Type A 1 trip
Fuel Pump Flow Performance (rationality)	P2635	This DTC detects degradation in the performance of the SID1 electronic return-less fuel system	Filtered fuel rail pressure error	<= Low Threshold (function of desired fuel rail pressure and fuel flow rate. 15% of resultant Target Pressure) OR >= High Threshold (function of desired fuel rail pressure and fuel flow rate. 15% of resultant Target Pressure) (See Supporting Tables tab)	1. FRP Circuit Low DTC (P018C)	not active	Filtered fuel rail pressure error Time Constant = 12.5 seconds Frequency: Continuous 12.5 ms loop	DTC Type B 2 trips

12 OBDG07 FSCM Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					2. FRP Circuit High DTC (P018D)	not active		
					3. Fuel Rail Pressure Sensor Performance DTC (P018B)	not active		
					4. FuelPump Circuit Low DTC (P0231)	not active		
					5. FuelPump Circuit High DTC (P0232)	not active		
					6. FuelPump Circuit Open DTC (P023F)	not active		
					7. Reference Voltage DTC (P0641)	not active		
					8. Fuel Pump Control Module Driver Over-temperature DTC's (P064A)	not active		
					9. Control Module Internal Performance DTC (P0606)	not active		
					10. An ECM fuel control system failure (PPEI \$1ED)	has not occurred		
					11. The Barometric pressure (PPEI \$4C1) signal	valid (for absolute fuel pressure sensor)		
					12. Engine run time	>= 30 seconds		
					13. Emissions fuel level (PPEI \$3FB)	not low		
					14. Fuel pump control	enabled		
					15. Fuel pump control state	normal		
					16. Battery Voltage	11V<=voltage=<32V		
					17. Fuel flow rate (See Supporting Tables tab)	> 0.047 g/s AND <= Max allowed fuel flow rate as a function of desired rail pressure & Vbatt (Typical values in the range of 11 to 50 g/s)		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					18. Fuel Pressure Control System	Is not responding to an over-pressurization due to pressure build during DFCO or a decreasing desired pressure command.		
Control Module Communication Bus "A" Off	U0073	Detects that a CAN serial data bus shorted condition has occurred to force the CAN device driver to enter a bus-off state	Bus Status	Off	Power mode	Run/Crank	5 failures out of 5 samples (5 seconds)	DTC Type B 2 trips
Lost Communication With ECM/PCM "A"	U0100	Detects that CAN serial data communication has been lost with the ECM	Message \$0C9	Undetected	1. Power mode 2. Ignition Run/Crank Voltage 3. U0073	Run/Crank 11V<voltage<32V not active	12 failures out of 12 samples (12 seconds)	DTC Type B 2 trips

FSCM S3-C101 Support Tables

P2635 Fuel Pump Performance Maximum Fuel Flow map (grams / second)

X-axis= Desired Fuel Pressure (kiloPascals)
Y-axis= Battery voltage (volts)

	200	250	300	350	400	450	500	550	600
4.5	31.21875	31.21875	31.21875	30.10156	25.42188	21.23438	17.47656	14.07031	10.97656
6	31.21875	31.21875	31.21875	30.10156	25.42188	21.23438	17.47656	14.07031	10.97656
7.5	31.21875	31.21875	31.21875	30.10156	25.42188	21.23438	17.47656	14.07031	10.97656
9	31.21875	31.21875	31.21875	30.10156	25.42188	21.23438	17.47656	14.07031	10.97656
10.5	31.21875	31.21875	31.21875	30.10156	25.42188	21.23438	17.47656	14.07031	10.97656
12	31.21875	31.21875	31.21875	31.21875	31.21875	29.36719	25.19531	21.42188	17.99219
13.5	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	28.78906	25.02344
15	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875
16.5	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875
18	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875
19.5	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875
21	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875
22.5	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875
24	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875
25.5	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875
27	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875
28.5	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875	31.21875

P2635 Fuel Injector curve (grams / second)

X-axis= Fuel Pressure (kiloPascals)

128	148	168	188	208	228	248	268	288	308	328	348	368
2.974365	3.154785	3.325439	3.487793	3.642822	3.791626	3.934692	4.072876	4.206421	4.335815	4.461548	4.583862	4.702881
388	408	428	448	468	488	508	528	548	568	588	608	628
4.819092	4.932495	5.043335	5.151733	5.258057	5.362183	5.464233	5.564575	5.663086	5.759888	5.855103	5.94873	6.041016
648	668	688	708	728	748	768						
6.131836	6.221313	6.30957	6.396606	6.482544	6.567261	6.650879						

FSCM S3-C101 Support Tables

P2635 Maximum Engine Intake Boost curve (kiloPascals)

X-axis= barometric pressure (kiloPascals)

40	50	60	70	80	90	100	110	120
0	0	0	0	0	0	0	0	0

P2635 Minimum Fuel Injector Pulse Width curve (seconds)

X-axis= engine speed (revolutions / minute)

0	512	1024	1536	2048	2560	3072	3584	4096	4608	5120	5632	6144
0	0.796875	0.796875	0.796875	0.796875	0.796875	0.796875	0.796875	0.796875	0.796875	0.796875	0.796875	0.796875
6656	7168	7680	8192									
0.796875	0.796875	0.796875	0.796875									

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Fuel Rail Pressure (FRP) Sensor Performance (Rationality)	P0191	This DTC detects if the fuel pressure sensor is stuck within the normal operating range	Absolute value of change in fuel pressure as sensed during intrusive test.	<= 30 kPa	<ol style="list-style-type: none"> 1. FRP Circuit Low DTC (P0192) 2. FRP Circuit High DTC (P0193) 3. Fuel Pump Driver Ignition Circuit DTC (P129D) 4. Fuel Pump Circuit Frequency Out of Range (P129F) 5. Fuel Pump Circuit DC Low DTC (P12A0) 6. Fuel Pump Circuit DC High DTC (P12A1) 7. Fuel Pump Circuit Rationality DTC (P12A2) 8. Fuel Pump Enable Circuit Low DTC (P12A4) 9. Fuel Pump Enable Circuit High DTC (P12A5) 10. Fuel Pump Enable Circuit Rationality DTC (P12A6) 11. Fuel Pump Output Circuit DTC (P12A7) 12. Reference Voltage DTC (P0641) 13. Reference Voltage DTC (P06A6) 	not active not active not active not active not active not active not active not active not active not active not active not active not active not active	Frequency: Continuous; 12.5 ms loop. 60 seconds between intrusive tests that pass Intrusive test requested if fuel system is clamped for >= 5 seconds or fuel pressure error variance <= typically (0.3 to 0.6) (calculated over a 2.5sec period); otherwise report pass Duration of intrusive test is fueling related (5 to 12 seconds). Intrusive test is run when fuel flow is < 21.445 g/s	DTC Type A 1 trip

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					14. Fuel Pump Control Module Driver Over-temperature DTC's (P1255) 15. Control Module Internal Performance DTC (P0606) 16. Engine run time 17. Emissions fuel level (PPEI \$3FB) 18. Fuel pump control 19. Fuel pump control state 20. Engine fuel flow 21. ECM fuel control system failure (PPEI \$1ED)	not active not active >=5 seconds not low enabled normal or FRP Rationality control > 0.047 g/s failure has not occurred		
Fuel Rail Pressure (FRP) Sensor Circuit Low Voltage	P0192	This DTC detects if the fuel pressure sensor circuit is shorted to low	FRP sensor voltage	< 0.1 V	Ignition	Run or Crank	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Rail Pressure (FRP) Sensor Circuit High Voltage	P0193	This DTC detects if the fuel pressure sensor circuit is shorted to high	FRP sensor voltage	> 4.9 V	Ignition	Run or Crank	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel System Control Module Enable Control Circuit	P025A	This DTC detects if there is a fault in the fuel pump control enable circuit	PPEI (PPEI (Powertrain Platform Electrical Interface) Fuel System Request (\$1ED)	≠ Fuel Pump Control Module Enable Control Circuit	Ignition AND PPEI Fuel System Request (\$1ED)	Run or Crank valid	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Control Module Read Only Memory (ROM)	P0601	This DTC will be stored if any software or calibration checksum is incorrect	Calculated Checksum (CRC16)	≠ stored checksum for any of the parts (boot, software, application calibration, system calibration)	Ignition OR HS Comm	Run or Crank enabled	1 failure if it occurs during the first ROM test of the ignition cycle, otherwise 5 failures Frequency: Runs continuously in the background	DTC Type A 1 trip

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					OR Fuel Pump Control	enabled		
Control Module Not Programmed	P0602	Indicates that the FSCM needs to be programmed	This DTC is set via calibration, when KeMEMD_b_NoStartCal	TRUE	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	Runs once at power up	DTC Type A 1 trip
Control Module Long Term Memory Reset	P0603	Non-volatile memory checksum error at controller power-up	Checksum at power-up	≠ checksum at power-down	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	1 failure Frequency: Once at power-up	DTC Type A 1 trip
Control Module Random Access Memory (RAM)	P0604	Indicates that control module is unable to correctly write and read data to and from RAM	Data read	≠ Data written	Ignition OR HS Comm OR Fuel Pump Control	Run or Crank enabled enabled	1 failure if it occurs during the first RAM test of the ignition cycle, otherwise 5 failures Frequency: Runs continuously in the background.	DTC Type A 1 trip
Control Module Internal Performance 1. Main Processor Configuration Register Test	P0606	This DTC indicates the FSCM has detected an internal processor fault or external watchdog fault (PID 2032 can tell what causes the fault.)	1. For all I/O configuration register faults: •Register contents	Incorrect value.	Ignition OR	Run or Crank	Tests 1 and 2 1 failure Frequency: Continuously (12.5ms)	DTC Type A 1 trip

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<p>2. Processor clock test</p> <p>3. External watchdog test</p>			<p>2. For Processor Clock Fault: •EE latch flag in EEPROM. OR • RAM latch flag.</p> <p>3. For External Watchdog Fault: • Software control of fuel pump driver</p>	<p>0x5A5A 0x5A</p> <p>Control Lost</p>	<p>HS Comm OR Fuel Pump Control</p> <p>1. For all I/O configuration register faults: •KeMEMD_b_ProcFitCfgRegEnbl</p> <p>2. For Processor Clock Fault: •KeMEMD_b_ProcFitCLKDiagEnbl</p> <p>3. For External Watchdog Fault: •KeFRPD_b_FPExtWDogDiagEnbl</p> <p>3. For External Watchdog Fault: •Control Module ROM(P0601)</p> <p>3. For External Watchdog Fault: •Control Module RAM(P0604)</p>	<p>enabled</p> <p>enabled</p> <p>TRUE</p> <p>TRUE</p> <p>TRUE</p> <p>not active</p> <p>not active</p>	<p>Test 3 3 failures out of 15 samples</p> <p>1 sample/12.5 ms</p>	
<p>Control Module Long Term Memory (EEPROM) Performance</p>	<p>P062F</p>	<p>Indicates that the NVM Error flag has not been cleared</p>	<p>Last EEPROM write</p>	<p>Did not complete</p>	<p>Ignition OR HS Comm OR Fuel Pump Control</p>	<p>Run or Crank</p> <p>enabled</p> <p>enabled</p>	<p>1 test failure Once on controller power-up</p>	<p>DTC Type A 1 trip</p>
<p>5 Volt Reference Circuit (Short High/Low)</p>	<p>P0641</p>	<p>Detects a continuous short on the #1 5V sensor reference circuit</p>	<p>Reference voltage AND Output OR Reference voltage AND Output OR Reference voltage AND</p>	<p>>= 0.5V . inactive >= 5.5V active <= 4.5V</p>	<p>Ignition</p>	<p>Run or Crank</p>	<p>15 failures out of 20 samples</p> <p>1 sample/12.5 ms</p>	<p>DTC Type A 1 trip</p>

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			Output	active				
5 Volt Reference Circuit (Out of Range)	P06A6	Detects that the #1 5 V sensor reference circuit is out of range	Reference voltage	> 102.5% nominal (i.e. 5.125V) OR < 97.5% nominal (i.e. 4.875V)	Ignition	Run or Crank	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Control Module - Driver Over-temperature 2	P1255	This DTC detects if an fuel pump driver overtemperature condition exists under extreme operating conditions	Module Range of Operation AND Driver Temp	Outside normal range (FSCM is NOT in normal operating range for module voltage versus PWM duty cycle.) > 130C	Ignition OR HS Comm OR Fuel Pump Control KeFRPD_b_FPOverTempDiagEnbl Ignition Run/Crank	Run or Crank enabled enabled TRUE 9V<voltage<18V	3 failures out of 15 samples 1 sample/12.5 ms	DTC Type B 2 trips
Fuel Pump Driver Control Module Ignition 1 Switch Circuit Low Voltage	P129D	This DTC detects if the Ignition1 Switch circuit is shorted to low or open	Ignition 1 voltage	<= 6 V	Engine	Running	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Driver Control Module PWM Control Circuit Frequency	P129F	This DTC detects if there is a fault in the fuel pump control PWM circuit frequency	PWM Frequency	<384 Hz or >416Hz	Ignition	Run or Crank	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Driver Control Module PWM Control Circuit Duty Cycle Low	P12A0	This DTC detects if there is a Low Duty Cycle fault in the fuel pump control PWM circuit	PWM Duty Cycle	< 5%	Ignition	Run or Crank	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip

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Fuel Pump Driver Control Module PWM Control Circuit Duty Cycle High	P12A1	This DTC detects if there is a High Duty Cycle fault in the fuel pump control PWM circuit	PWM Duty Cycle	>95%		Ignition	Run or Crank	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Driver Control Module PWM Control Circuit Rationality	P12A2	This DTC detects if there is a rationality fault in the fuel pump control PWM circuit	Absolute Value of (Duty Cycle Feedback - Duty Cycle Commanded)	> 5%		Ignition	Run or Crank	180 failures out of 200 samples; 1 sample/12.5ms	DTC Type B 2 trips
Fuel Pump Driver Control Module Enable Control Circuit	P12A4	This DTC detects if there is a Low fault in the fuel pump control enable circuit	Enable Circuit Voltage	< 2.0 Volts		Ignition	Run or Crank	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Driver Control Module Enable Control Circuit	P12A5	This DTC detects if there is a high fault in the fuel pump control enable circuit	Enable Circuit Voltage	> 2.0 Volts		Ignition	Run or Crank	72 failures out of 80 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Driver Control Module Enable Control Circuit	P12A6	This DTC detects if there is a rationality fault in the fuel pump control enable circuit	Enable Circuit Feedback	Enable Feedback <> Enable Command		Ignition	Run or Crank	180 failures out of 200 samples; 1 sample/12.5ms	DTC Type A 1 trip
Fuel Pump Pump Driver Phase U-V-W Circuit	P12A7	This DTC detects if there is a fault in the fuel pump Output Phase Circuit	Phase 1, 2, or 3 Output	Transition through 1 to 4 volt region		Ignition	Run or Crank	Diagnostic runs continuously in the background	DTC Type A 1 trip
Fuel Pump Driver Control Module Read Only Memory (ROM)	P164B	This DTC will be stored if any software or calibration checksum is incorrect	Calculated Checksum	≠ stored checksum for firmware		Ignition	Run or Crank	Diagnostic runs continuously in the background	DTC Type A 1 trip

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							Diagnostic reports a fault if 1 failure occurs on the first pass.	
Fuel Pump Driver Control Module Random Access Memory (RAM)	P164C	Indicates that control module is unable to correctly write and read data to and from RAM	Data read	≠ Data written	Ignition	Run or Crank	Diagnostic runs continuously in the background Diagnostic reports a fault if 1 failure occurs on the first pass.	DTC Type A 1 trip
Ignition 1 Switch Circuit Low Voltage	P2534	This DTC detects if the Ignition1 Switch circuit is shorted to low or open	Ignition 1 voltage	<= 6 V	Engine	Running	144 failures out of 160 samples 1 sample/12.5 ms	DTC Type A 1 trip
Fuel Pump Flow Performance	P2635	This DTC detects degradation in the performance of the PFI electronic return-less fuel system	Filtered fuel rail pressure error	<= Low Threshold (function of desired fuel rail pressure and fuel flow rate. 15% of resultant Target Pressure in the range of -10.4 to -167.7 kPa.) . OR <= High Threshold (function of desired fuel rail pressure and fuel flow rate. 15% of resultant Target Pressure in the range of +11.7 to +144.3 kPa.) .	1. FRP Circuit Low DTC (P0192) 2. FRP Circuit High DTC (P0193) 3. Fuel Rail Pressure Sensor Performance DTC (P0191) 4. Fuel Pump Driver Ignition Circuit DTC (P129D) 5. Fuel Pump Circuit Frequency Out of Range (P129F)	not active not active not active not active not active	Filtered fuel rail pressure error Time Constant = 12.5 seconds Frequency: Continuous 100 ms loop	DTC Type B 2 trips

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6. Fuel Pump Circuit DC Low DTC (P12A0)	not active
7. Fuel Pump Circuit DC High DTC (P12A1)	not active
8. Fuel Pump Circuit Rationality DTC (P12A2)	not active
9. Fuel Pump Enable Circuit Low DTC (P12A4)	not active
10. Fuel Pump Enable Circuit High DTC (P12A5)	not active
11. Fuel Pump Enable Circuit Rationality DTC (P12A6)	not active
12. Fuel Pump Output Circuit DTC (P12A7)	not active
13. Reference Voltage DTC (P0641)	not active
14. Reference Voltage DTC (P06A6)	not active
15. Fuel Pump Control Module Driver Over-temperature DTC's (P1255)	not active
16. Control Module Internal Performance DTC (P0606)	not active
17. An ECM fuel control system failure (PPEI \$1ED)	has not occurred
18. The Barometric pressure (PPEI \$4C1) signal	valid (for absolute fuel pressure sensor)
19. Engine run time	>= 30 seconds
20. Emissions fuel level (PPEI \$3FB)	not low
21. Fuel pump control	enabled
22. Fuel pump control state	normal
23. Battery Voltage	11V<=voltage=<18V
24. Fuel flow rate	> 0.047 g/s AND <= Max allowed fuel flow rate as a function of desired rail pressure & Vbatt (Typical values in the range of 51 to 58 g/s)
25. Fuel Pressure Control System	Is not responding to an over-pressurization due to pressure build during DFCO or a decreasing desired pressure command.

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S4-C201 SECTION
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Control Module Communication Bus "A" Off	U0073	Detects that a CAN serial data bus shorted condition has occurred to force the CAN device driver to enter a bus-off state	Bus Status	Off	1. Power mode	Run/Crank	5 failures out of 5 samples (5 seconds)	DTC Type B 2 trips
Lost Communication With ECM/PCM "A"	U0100	Detects that CAN serial data communication has been lost with the ECM	Message \$0C9	Undetected	1. Power mode 2. Ignition Run/Crank Voltage 3. U0073	Run/Crank (11 – 18 V) not active	12 failures out of 12 samples (12 seconds)	DTC Type B 2 trips
Control Module Communication Bus "A" Off	U1802	Detects that a CAN serial data bus shorted condition has occurred to force the CAN device driver to enter a bus-off state	Bus Status	Off	1. Power mode	Run/Crank	5 test failures in 5 samples (5 seconds)	DTC Type B 2 trips

FSCM S4-C201 Support Tables

P2635 Fuel Pump Performance Maximum Fuel Flow map (grams / second)

X-axis= Desired Fuel Pressure (kiloPascals)
Y-axis= Battery voltage (volts)

	200	250	300	350	400	450	500	550	600
4.5	58	58	58	58	58	58	58	57.24219	51.14844
6	58	58	58	58	58	58	58	57.24219	51.14844
7.5	58	58	58	58	58	58	58	57.24219	51.14844
9	58	58	58	58	58	58	58	57.24219	51.14844
10.5	58	58	58	58	58	58	58	57.24219	51.14844
12	58	58	58	58	58	58	58	58	58
13.5	58	58	58	58	58	58	58	58	58
15	58	58	58	58	58	58	58	58	58
16.5	58	58	58	58	58	58	58	58	58
18	58	58	58	58	58	58	58	58	58
19.5	58	58	58	58	58	58	58	58	58
21	58	58	58	58	58	58	58	58	58
22.5	58	58	58	58	58	58	58	58	58
24	58	58	58	58	58	58	58	58	58
25.5	58	58	58	58	58	58	58	58	58
27	58	58	58	58	58	58	58	58	58
28.5	58	58	58	58	58	58	58	58	58

P2635 Fuel Injector curve (grams / second)

X-axis= Fuel Pressure (kiloPascals)

128	148	168	188	208	228	248	268	288	308	328	348	368
3.7948	4.014771	4.222412	4.419434	4.6073	4.787109	4.959961	5.126343	5.287109	5.442749	5.593628	5.740234	5.882935
388	408	428	448	468	488	508	528	548	568	588	608	628
6.021851	6.157349	6.289795	6.419189	6.545776	6.6698	6.79126	6.910522	7.027588	7.142456	7.255371	7.366455	7.475708
648	668	688	708	728	748	768						
7.583252	7.689209	7.793579	7.896362	7.997803	7.999878	7.999878						

FSCM S4-C201 Support Tables

P2635 Maximum Engine Intake Boost curve (kiloPascals)

X-axis= barometric pressure (kiloPascals)

40	50	60	70	80	90	100	110	120
61.01563	64.58984	68.09375	71.39063	74.35547	76.84766	78.73438	80	80

P2635 Minimum Fuel Injector Pulse Width curve (seconds)

X-axis= engine speed (revolutions / minute)

0	512	1024	1536	2048	2560	3072	3584	4096	4608	5120	5632	6144
0.875	0.875	0.875	0.96875	1.085938	1.234375	1.304688	1.351563	1.351563	1.351563	1.351563	1.351563	1.351563

6656	7168	7680	8192
1.351563	1.351563	1.351563	1.351563