SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
HO2S Heater Control Circuit Low Volt B1S1	P0031	Output state invalid	Circuit fault indicated	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 10 sec No intrusive CATMON test active	8 fails out of 10 samples Continuous check	DTC Type B
HO2S Heater Control Circuit High Volt B1S1	P0032	Output state invalid	Circuit fault indicated	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 10 sec No intrusive CATMON test active	8 fails out of 10 samples Continuous check	DTC Type B
HO2S Heater Control Circuit Low Volt B1S2	P0037	Output state invalid	Circuit fault indicated	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 10 sec No intrusive CATMON test active	8 fails out of 10 samples Continuous check	DTC Type B
HO2S Heater Control Circuit High Volt B1S2	P0038	Output state invalid	Circuit fault indicated	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 10 sec No intrusive CATMON test active	8 fails out of 10 samples Continuous check	DTC Type B
Pcm - Airflow Modeled By Tps Performance	P0068	Detect when measured engine airflow does not match estimated engine airflow as established by the TPS	MAP - TPS estimated MAP > 30 kPa	Engine running Engine speed > 600 RPM No throttle actuation DTCs No TPS/Vref Circuit DTCs No PCM Processor DTCs	11 counts continuous 15.6 msec/count in main processor	DTC Type A
Manifold Pressure Sensor Rationality	P0106	Detects a MAP that is stuck or out of range	Change in MAP > or < Table value	600 > RPM < 6375 Engine run time > 40 Sec Δ TCC < 1.25% Δ RPM < 50 RPM Δ IAC < 5 Counts Δ TPS < 100% Above condition met for 1.5 Sec None of the following DTC's set: 0068, 107, 108, 116, 117, 118, 120, 122, 123, 125, 128, 130, 131, 132, 133, 171, 172, 201-204, 220, 300, 336, 340, 341, 455, 442, 446, 452, 453, 496, 502, 506, 507, 601, 602, 604, 60660D, 60E, 641, 651, 700, 701, , , 062F, 1516, , 2101, 2120, 2122, 2123, 2125, 2127, 2128 2135, 2138, 2176, C101,	112/128 counts 125 msec/count Continuous check	DTC Type B
Manifold Pressure Too Low	P0107	Detects a continuous short to ground or a MAP sensor signal that is out of range low	MAP < 0.05 V (11.8 kPa)	Engine speed < 1000 RPM Or Engine speed > 1000 RPM TP > 35% Throttle area due to pedal rotation > 1.2% None of the following DTCs set: 122, 123	400/500 count 15.6 msec/count Continuous check	DTC Type A

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Manifold Pressure Too High	P0108	Detects a continuous short to voltage or a MAP sensor signal that is out of range high	MAP > .95 V (104 kPa)	TP < 40% VSS < 1 MPH Engine run time > 5 - 40 sec based on startup coolant None of the following DTCs set: 122, 123	8032/100 40 count 125 msec/count Continuous check	DTC Type A
Intake Air Temperature Sensor Shorted	P0112	Detects a continuous short to voltage or an IAT sensor signal that is out of range high	IAT < 48 counts (> 128°C)	VSS > 15 MPH Engine run time > 320 sec None of the following DTCs set: 502	50/100 counts 125 msec/count Continuous check	DTC Type B
Intake Air Temperature Sensor Open	P0113	Detects a continuous short to ground or an open in the IAT sensor signal	IAT > 253 counts (< -57°C)	VSS < 15 MPH Engine run time > 320 sec ECT > -40°C None of the following DTCs set: 117, 118, 125, 502	50/100 counts 125 msec/count Continuous check	DTC Type B
Engine Coolant Temperature Sensor Performance	P0116	Detects if the coolant sensor is reading too high	ECT is > 15°C higher than IAT after 8 hours	IAT > 15 °C Min drive time > 300 seconds Min MPH to update drive time > 25 MPH SUM and IAT difference < 5 degrees after drive time None of the following DTCs set: 112, 113, 117, 118, 125, 128, 601, 602, 604, 606, 62F, 2610	Once per ignition cycle	DTC Type B
Coolant Temperature Sensor Shorted	P0117	Detects a continuous short to voltage or an ECT sensor signal that is out of range high	ECT < 4 counts (> 138°C) (High R) Or ECT < 36 counts (> 142°C) (Low R)	Engine run time > 128 sec	50/100 counts 125 msec/count Continuous check	DTC Type B
Coolant Temperature Sensor Open	P0118	Detects a continuous short to ground or an open in the ECT sensor signal	ECT > 251 counts (< -50°C) (High R) Or ECT > 252 counts (< -71°C) (Low R)	Engine run time > 60 sec	50/100 counts 125 msec/count Continuous check	DTC Type B
Tps 1 Circuit	P0120	Detect a continuous or intermittent short or open in the TPS1 circuit	0.300 V < TPS1 < 4.68 V	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTCs No Vref DTC – P0641 None of the following DTCs set: 0122, 0123	13/28 counts or 8 counts continuous, 15.6 msec/count in main processor 85/202 counts or 62 counts continuous, 2 msec/count in motor processor	DTC Type A
Throttle Position Sensor Low	P0122	Detects if ETC TPS1 is out of range low	TPS1 < 0.300 V	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTC No Vref DTC – P0641	13/28 counts or 8 counts continuous, 15.6 msec/count in main processor 85/202 counts or 62 counts continuous, 2 msec/count in motor processor	DTC Type A
Throttle Position Sensor High	P0123	Detects a continuous or intermittent high voltage situation in TP sensor #1 circuit	Raw TPS sensor signal > 4.68V	Ignition in unlock/accessory, run or crank Ignition Voltage > 5.23 V No Vref Fault	20/40 Cts 10 Cnts Continuous 12.5 ms /Ct in the MCP	DTC Type A

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Closed Loop Engine Coolant Temperature Rationality	P0125	Detects if engine coolant temperature rises too slowly due to an ECT or cooling system fault	If actual accumulated air flow is > predicted air flow before engine coolant reaches 40°C	30 sec < engine runtime < 30 min. Min Average flow > 15 g/sec Min distance traveled > .5 miles Min MPH to update distance > 5 mph IAT > -7°C Start up ECT < 35°C None of the following DTCs set: 0068, 106,107, 108, 112, 113, 116, 117, 118, 120, 130, 131, 132, 133, 134, 171, 172, 201, 202, 203, 204, 220, 300,, 336, 442, 446, 452, 453, 480 496, 502, , 506, 507, 601, 602, 604, 606, 62F, 700, 701, 1133, , , 2135, 2120, 2138, 2125, 0496, 2176, , 2101, 1516, 0641, 0651, 060D, 060E, 2610	30 counts 1 sec/count Once per ignition cycle	DTC Type B
Thermostat Engine Coolant Temperature Rationality	P0128	Detects if engine coolant temperature rises too slowly due to an ECT or cooling system fault	If actual accumulated air flow is > predicted air flow before engine coolant reaches 80°C	30 sec < engine runtime < 30 min. Air Flow > 15 g/sec Min Average flow > 15 g/sec Min distance traveled > 0.5 miles Min MPH to update distance > 5 mph IAT > -7°C Start up ECT < 75°C None of the following DTCs set: Same as P0125	30 counts 1 sec/count Once per ignition cycle	DTC Type B
O2s 1 Closed Loop Rationality	P0130	Detects an abnormal open loop condition due to O2 sensor signal in “not ready” range.	O2 voltage stuck between 300 and 600 mV (Sensor becomes “not ready” after 6 seconds)	ECT > 70.3°C Engine run time > 200 secs 1200 RPM < Engine speed < 3400 RPM 15% < TP < 50% Partial pedal enabled Above conditions met for 2 sec None of the following DTCs set: 68,106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 171, 172, 201-204, 220, 315, 336, 442, 446, 452, 453, 455, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	90/100 counts 8 counts/sec Continuous check	DTC Type B
O2s 1 Lean	P0131	Detects an O2S 1 signal that is shorted to ground.	O2S 1 < 52 mV	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 10 sec No intrusive CATMON test active Closed Loop/Stoich 15% < TP < 50.2% MAP > 25 KPa Partial pedal enabled Above conditions met for 3.8 seconds None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 201-204, 220, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	999/1000 counts 8 counts/sec Continuous check	DTC Type B

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
O2s 1 Rich	P0132	Detects an O2S 1 signal that is shorted to voltage.	O2S1 > 946 mV while in closed loop or O2S1 > 998 mV while in open loop. (If O2S 1 > 1024 mV for 1 second straight, system goes open loop)	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 10 sec No intrusive CATMON test active Closed Loop/Stoich 15% < TP < 50.2% MAP > 25 KPa Partial pedal enabled Above conditions met for 3.8 seconds None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 201-204, 220, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	399/400 counts above 946 mV while in closed loop or 350 /4 00 counts above 998 mV while in open loop 8 counts/sec Continuous check	DTC Type B
O2s 1 Slow Response	P0133	Determines if the O2S 1 is functioning properly by checking its response time	Average O2S1 response times: R/L > 175 msec L/R > 105 msec	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 170 sec No intrusive CATMON test active 5% < TP < 60% Delta TP < 18.75% per sec 1000 RPM < Engine speed < 3500 RPM Airflow > 25 grams/second Closed Loop/Stoich Time in enable > 1.7 sec None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 201-204, 220, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	60 sec Once per trip	DTC Type B
O2s 1 Open	P0134	Detects an O2S 1 signal open circuit.	400 mV < O2S1 < 500 mV	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 30 sec No intrusive CATMON test active 15% < TP < 50% MAP > 25 kPa Partial pedal enabled Sensor predicted warm (O2 front sensor warm flag set) None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 201-204, 220, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	999/1000 counts 8 counts/sec Continuous check	DTC Type B

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
O2s 1 Heater Circuit Malfunction	P0135	Detects O2 heater current out of acceptable range.	0.3 amps < O2S1 current < 1.5 amps	ECT > 69.5°C Fuel level > 9.8% Engine run time > 60 sec No intrusive CATMON test active 11 V < system voltage < 18 V Predicted oxygen sensor temperature > 845°C None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 201-204, 220, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	198/200 counts 1 count/sec Continuous check	DTC Type B
O2s 2 Lean	P0137	Detects an O2S 2 signal that is shorted to ground.	O2S2 < 43.4 mV	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 10 sec No intrusive CATMON test active Closed Loop/Stoich 15% < TP <50.2% MAP > 25 KPa Above conditions met for 3.8 seconds None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	1199/1200 counts 8 counts/sec Continuous check	DTC Type B
O2s 2 Rich	P0138	Detects an O2S 2 signal that is shorted to voltage.	O2S2 > 1042 mV	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 10 sec No intrusive CATMON test active Closed Loop/Stoich 15% < TP < 50.2% MAP > 25 KPa Above conditions met for 3.8 seconds None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 201-204, 220, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	399/400 counts 8 counts/sec Continuous check	DTC Type B

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
O2s 2 Open	P0140	Detects an O2S 2 signal open circuit.	425 mV < O2S 2 < 473 mV	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 10 sec No intrusive CATMON test active MAP > 25 KPa 15% < TP < 50% Partial pedal enabled Sensor predicted warm (O2 front sensor warm flag set) None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 201-204, 220, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	999/1000 counts 8 counts/sec Continuous check	DTC Type B
O2s 2 Heater Circuit Malfunction	P0141	Detects O2 heater current out of acceptable range.	0.221 A < O2S2 current < 1.6 A	ECT > 69.5°C Fuel level > 9.8% No intrusive CATMON test active Engine run time > 60 sec 11 < System voltage < 18 volts Predicted oxygen sensor temperature > 805°C None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 201-204, 220, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	198/200 counts 1 count/sec Continuous check	DTC Type B
Fuel System Too Lean Bank 1	P0171	Determines if the fuel control system is in a lean condition.	The EWMA of Fuel Trim Index (FTI) samples ≥ 152 (Note: EWMA stands for "Exponentially Weighted Moving Average") Notes: 1. At least 12.5 seconds of data must accumulate on each trip before the EWMA of FTI samples is considered usable and at least 3.75 seconds of data in the current fuel trim cell must accumulate on each trip before the LTM for that cell is considered usable in the EWMA calculation.	• .DTC's P0201,202,203,204,106,107,108,112,113 ,117,118,122,123,125,131,132,133,134,1133,300, 336,341,340,455,496,442,446,452,453,481,502, 503,506,601,602,130,128,701,604,606,120,135, 220,2135,2120,2138,2125,60d,60e,0068,2101, 641,651,1516,2176,700,c073,c101,Not Set • Engine speed > 400 rpm but < 6100rpm • BARO > 70 kPa • ECT > -38°C but < 130°C • MAP > 20kPa but < 99 kPa • IAT > -38 °C but < 150°C • airflow > 1.0g/s but < 127 g/s • Vehicle speed < 82MPH • Closed Loop Fueling • Long Term Fuel Trim Learning enabled • Not in Device Control Catalyst Monitor Diagnostic Intrusive Test = Not Actiive	<u>Frequency:</u> Continuous 125 ms loop	DTC Type B

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Fuel Trim Rich	P0172	Determines if the fuel control system is in a rich condition.	The EWMA of fuel trim index (FTI) samples ≤ 85 Once the above occurs, purge is ramped off to determine if excess purge is the cause. Therefore, the following must also occur to report a failure: The EWMA of Non-purge fuel trim index (NPI)samples with purge off ≤ 115 during 2 of 3 intrusive segments. General Notes: 1. At least 12.5seconds of data must accumulate on each trip before the EWMA of FTI samples is considered usable and at least 3.75 seconds of data in the current fuel trim cell must accumulate on each trip before the FTI for that cell is considered usable in the EWMA calculation. Intrusive Notes: 1. Segments can last up to 60 seconds, and are separated by the smaller of a 20 second purge-on time or enough time to purge 6 grams of vapor. 2. A maximum of 3 completed segments are allowed for each intrusive test, and up to 30 intrusive attempts allowed per trip. 3. After an intrusive test report is completed, another intrusive test cannot occur for 300 seconds to allow sufficient time to purge excess vapors from the canister.	• .DTC's P0201,202,203,204,106,107,108,112,113 ,117,118,122,123,125,131,132,133,134,1133,300, 336,341,340,455,496,442,446,452,453,481,502, 503,506,601,602,130,128,701,604,606,120,135, 220,2135,2120,2138,2125,60d,60e,0068,2101, 641,651,1516,2176,700,c073,c101,Not Set • Engine speed > 400 rpm but < 6100rpm • BARO > 70 kPa • ECT > -38ºC but < 130°C • MAP > 20kPa but < 99 kPa • IAT > -38 °C but < 150°C • airflow > 1.0g/s but < 127 g/s • Vehicle speed < 82MPH • Closed Loop Fueling • Long Term Fuel Trim Learning enabled • Not in Device Control • Catalyst Monitor Diagnostic Intrusive Test = Not Active • Evap diagnostic is at any stage except the "tank pull down" portion of the test. Intrusive Enable Criteria • The EWMA of long term fuel trim (LTM) samples ≤ 85 • RPM > 400 • Airflow > 1.0 g/s but < 510 g/s • MAP > 20 kPa but < 99 kPa Temporary Intrusive Test Inhibit Criteria If intrusive test segment exceeds 60 consecutive seconds. (In this case, purge valve is opened for the smaller of 20 seconds or enough time to purge 6 grams vapor)	If rich fail counter is ≥ 2 before pass counter ≥ 2, diagnostic fails. Frequency: Continuous 125 ms loop	DTC Type B
Injector Circuit Problem	P0201 P0202 P0203 P0204	Monitors fuel injectors for proper electrical operation	Injector Current < 4 Amps	Engine running System voltage >11 V	1 sec Continuous check	DTC Type B
Tps 2 Circuit	P0220	Detect a continuous or intermittent short or open in the TPS2 circuit.	0.3125 V < TPS2 < 4.7 V	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTC No Vref DTC – P0651 None of the following DTCs set: 0222, 0223	11/26 counts or 8 counts continuous, 15.6 msec/count in main processor 85/202 counts or 62 counts continuous, 2 msec/count in motor processor	DTC Type A

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Throttle Position Sensor 2 Low Voltage	P0222	Detects if ETC TPS2 is out of range low	TPS2 < 0.3125 V	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTC No Vref DTC – P0651	11/26 counts or 8 counts continuous, 15.6 msec/count in main processor 85/202 counts or 62 counts continuous, 2 msec/count in motor processor	DTC Type A
Throttle Position Sensor 2 High Voltage	P0223	Detects if ETC TPS2 is out of range high	TPS2 > 4.7 V	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTC No Vref DTC – P0651	11/26 counts or 8 counts continuous, 15.6 msec/count in main processor 85/202 counts or 62 counts continuous, 2 msec/count in motor processor	DTC Type A
Random Misfire Cylinder 1 Misfire Cylinder 2 Misfire Cylinder 3 Misfire Cylinder 4 Misfire	P0300 P0301 P0302 P0303 P0304	These DTC s will determine if a random misfire or a cylinder specific misfire is occurring by monitoring crankshaft velocity.	Deceleration index Vs Engine Speed Vs Load and Camshaft Position Emission Failure Threshold = 1% Catalyst Damage Threshold = 5% through 22.5% depending on engine speed and engine load.	Engine run time > 1 engine cycle 437.5 RPM < Engine speed < 6406 RPM -7°C < ECT < 123 C If startup ECT < -7°C, then disable until ECT > 21°C. Fuel level > 10%. System voltage > 9 V. Fuel cutoff not active Power management is not active Brake torque management not active No rough road No TCS active Positive or zero torque Camshaft sensor is in sync with crank sensor None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 130, 131, 132, 133, 134, 135, 171, 172, 220, 326, 327, 336, 502, 506, 507, 601, 602, 604, 606, 641, 651, 700, 701, 1133, 1134, 315, 1516, 2101, 2120, 2125,2135, 2138, 2176, MC101, 62F, 60D, 60E The following are not currently utilized (N/A): Power Take Off is disabled –N/A. EGR Intrusive test not active – N/A. AIR Intrucive test not active – N/A Automatic transmission is not shifting – N/A. Misfire Diag is not requesting to disable TCC when transmission is in hot mode – N/A	Emission Exceedence = (5) failed 200 revolution blocks of 16. Failure reported with (1) Exceedence in 1st (16) 200 revolution block, or (4) Exceedences thereafter. 1st Catalyst Exceedence = Number of 200 revolution blocks as data supports for catalyst damage. 2nd and 3rd Catalyst Exceedence = (1) 200 revolution block with catalyst damage. Failure reported with (3) Exceedences in FTP, or (1) Exceedence outside FTP. Continuous check.	DTC Type B Emission DTC Type A Catalyst Damage
Crankshaft Position System Variation Not Learned (CASE)	P0315	Determines if the Crankshaft Position System Variation has not been learned.	Sum of compensation factors between 65404 and 65667	Manufacturers Enable Counter must be zero. None of the following DTCs set: 336, 340, 341.	0.5 Sec Once per ignition cycle.	DTC Type A

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Esc System Diagnostic	P0326	Detects a ESC System fault	Instantaneous signal < 0.01 V Or Instantaneous signal > 4.99 V	1800 RPM < Engine speed < 6400 RPM ECT > 70°C MAP > 34.8 kPa Engine run time > 20 sec 0 kPa < Vacuum < 40 kPa None of the following DTCs set: 117, 118, 122, 123, 327	60/80 counts Continuous check	DTC Type B
Esc Sensor 1	P0327	Detects a and disconnected or faulty sensor	Max voltage – Min voltage < 0.0586 V	1800 RPM < Engine speed < 6400 RPM ECT > 70°C MAP > 34.8 kPa Engine run time > 20 sec 0 kPa < Vacuum < 40 kPa None of the following DTCs set: 117, 118, 122, 123	60/80 counts Continuous check	DTC Type B
Crank Sensor Position	P0336	Detects too many resyncs in the crank sensor circuit	Resync Counter > 15 Counts	Engine running	125 ms / Count 256 Seconds Continuous check	DTC Type B
Cam Sensor 1 Missing	P0340	Detects an open / missing Cam sensor signal	No change in cam activity> 70 cycles As compared to crankshaft events	Engine running	125 ms / Count 70 cycles Continuous check	DTC Type B
Cam Sensor 1 Resync Too Often	P0341	Detects too many resyncs in the cam sensor circuit	Can Resync Counter >30 Counters	Engine running	125 ms / Count 256 Seconds Continuous Check	DTC Type B

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Catalyst Monitor	P0420	Detects a catalytic converter with unacceptable amounts of oxygen storage capabilities	Oxygen Storage Capability (OSC) Time Difference > 0.103sec OSC Time Difference = OSC Worst Pass Thresh - OSC Compensation Factor * (O2S 2 Response Time - O2S 1 Response Time) OSC Worst Pass Thresh = 1.4 sec	Engine speed ≥1000 RPM for minimum of 48 sec since end of last idle period Engine run time > 530 sec VSS < 3 MPH 465°C < Predicted catalyst temp < 675°C BARO ≥ 73.8 kPa -20.5°C < IAT < 80°C 69.5°C < ECT < 125°C System voltage > 11 V Idle time ≤ 47 sec Flow < 10 grams/second Δ IAC < 35 counts Δ Engine speed < 80 RPM -225 RPM ≤ (Engine speed–Desired speed) ≤ 225 RPM Purge duty cycle < 97% PWM Purge learn multiplier > 70% (180 counts) Short term FT deviation < 27% (35 counts) -23% < Short term FT average < +16% Test attempted this trip ≤ 12 Closed loop Fan clutch is stable Rapid Step Response Enable Criteria OSC Time Difference Step > .335 sec OSC Time Difference ≥ 0.00 sec None of the following DTCs set: 68, U101, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 130, 131, 132, 133, 134, 135, , 137, 138, 140, 141, 171, 172, 201, 202, 203, 204, 220, 300, 326, 327, 336, 340, 341, 442, 446, 452, 453, 455, 496, 502, 506, 507, 601, 602, 604, 606, 641, 651,700, 701, 1133, 1134, 1137, 1138, 1516, 2101, 2120, 2125, 2135, 2138, 2176, 060D, 060E, 062F	Maximum 1 test attempt per idle period Minimum of 1 test per trip Maximum of 6 tests per trip Maximum of 6 trips to detECT failure when Rapid Step Response is enabled 15.6 Msec/Count	DTC Type A EWMA
Evap System Small Leak Detecounted	P0442	Checks for a small leak in the fuel vapor handling system	EWMA value > 19.53 (unitless index)	BARO > 74 kPa 4°C < Startup ECT < 30°C 4°C < Startup IAT < 30°C Startup ECT – Startup IAT < 8°C 15% < Fuel level < 85% 7% < TP < 35% VSS < 137 kPH 11 V < System voltage < 18 V Purge enabled Δ Vacuum slosh < 0.112 – 0.932 inches of H_2O None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 122, 123, 125, 128, 130, 131, 132, 133, 134, 135, 220, 452, 453, 502, 601, 602, 604, 606, 641, 1133, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	Test must complete within cold test time limit = 330 sec Individual test time = 15 sec Once per trip EWMA ARL = 9	DTC Type A (Behaves as Type B)

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Evap Canister Vent Blocked	P0446	Checks for excessively high vacuum in the vapor handling system	Fuel tank vacuum < 12 inches of H_2O when the integrated vacuum timer reaches 5 integral seconds 8 sec < Canister vent test timer < 100 sec	BARO > 74 kPa 4°C < Startup ECT < 30°C 4°C < Startup IAT < 30°C Startup ECT – Startup IAT < 8°C 15% < Fuel level < 85% 7% < TP < 35% VSS < 137 kPH 11 V < System voltage < 18 V Purge enabled Δ Vacuum slosh < 0.112 – 0.932 inches of H_2O None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 122, 123, 125, 128, 130, 131, 132, 133, 134, 135, 220, 452, 453, 502,601, 602, 604, 606, 641, 1133, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	100 sec Once per trip	DTC Type A (Behaves as Type B)
Evap Tank Vacuum Sensor Low	P0452	Detects a continuous short to ground or a disconnected tank vacuum sensor	Tank vacuum transducer < 0.1 V	Engine running	25 sec Continuous check	DTC Type B
Evap Tank Vacuum Sensor High	P0453	Detects a tank vacuum sensor that is shorted to voltage	Tank vacuum transducer > 4.9 V	Engine running	25 sec Continuous check	DTC Type B
Evap System Large Leak Detecounted	P0455	Checks for adequate vacuum being held in the fuel tank when applied	Fuel tank vacuum < 10 inches of H_2O when the integrated vacuum timer reaches 30 integral seconds	BARO > 74 kPa 4°C < Startup ECT < 30°C 4°C < Startup IAT < 30°C Startup ECT – Startup IAT < 8°C 15% < Fuel level < 85% 7% < TP < 35% VSS < 137 k PH 11 V < System voltage < 18 V Purge enabled Δ Vacuum slosh < 0.112 – 0.932 inches of H_2O None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 122, 123, 125, 128, 130, 131, 132, 133, 134, 135, 220, 452, 453, 502, 601, 602, 604, 606, 641, 1133, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	Max total run time = 330 sec from purge enable Once per trip	DTC Type A (Behaves as Type B)
Fuel Level Sensor Circuit Performance	P0461	Fuel sender rationality check	Fuel level delta <1.5% after 120 miles	11 V< System voltage < 18 V	Continuous check	DTC Type C
Fuel Level Sensor Circuit Low Input	P0462	Detects a fuel sender failed to a low voltage level	Output voltage amplitude < 0.2V	11 V< System voltage < 18 V	30 secs 12.5 msec loop Continuous check	DTC Type C
Fuel Level Sensor Circuit High Input	P0463	Detects a fuel sender failed to a high voltage level	Output voltage amplitude >4.9 V	11 V< System voltage < 18 V	30 secs 12.5 msec loop Continuous check	DTC Type C
Low Speed Fan Fault	P0480	Checks commanded fan state against output to fan relay	Battery voltage > 9.5 V		50/100 Cts Continuous check	DTC Type B

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
High Speed Fan Fault	P0481	Checks commanded fan state against output to fan relay	Battery voltage > 9.5 V		50/100 Cts Continuous check	DTC Type B
Evap Purge Valve Leaking	P0496	Checks for a stuck open purge solenoid	Fuel tank vacuum > 7 inches of H_2O when the integrated vacuum timer reaches 8 integral seconds 10 sec < Purge solenoid leak timer < 120 sec	BARO > 74 kPa 4°C < Startup ECT < 30°C 4°C < Startup IAT < 30°C Startup ECT – Startup IAT < 8°C 15% < Fuel level < 85% 7% < TP < 35% VSS < 137 k PH 11 V < System voltage < 18 V 1st failure: Purge enabled 2nd failure: Purge does not need to be enabled Δ Vacuum slosh < 0.112 – 0.932 inches of H_2O None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 122, 123, 125, 128, 130, 131, 132, 133, 134, 135, 220, 452, 453, 502, 601, 602, 604, 606, 641, 1133, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	Max run time = 120 sec Once per trip	DTC Type A (Behaves as Type B)
Ecm – Vehicle Speed Performance	P0502	Detect an error in the Vehicle Speed Signal – Manual Transmission Application	Vehicle Speed < 2 mph	1700 > RPM > 3600 1.95% < TPS < 23% 80 kPa < Manifold Vacuum < 60 kPA Throttle area due to pedal rotation < 1.2%	6 seconds	DTC Type B (Manual)
Idle Control System – RPM Lower Than Expected	P0506	Detect an idle speed which is less than a delta from desired speed	Idle speed > 75 RPM below desired speed	Engine run time > 2 sec BARO > 75 kPa ECT > -40°C Commanded IAC position > 400 Steps Idle stabilized for 5 sec System voltage > 11 V None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 130, 171, 172, 201-204, 220, 222, 223, 300, 336, 442, 446, 452, 453, 455, 496, 502, 606, 641, 651, 1516, 2101, 2176	18.75 sec Continuous check	DTC Type B
Idle Control System – RPM Higher Than Expected	P0507	Detect an idle speed which is greater than a delta from desired speed	Idle speed > 150 RPM above desired speed	Engine run time > 2 sec BARO > 75 kPa ECT > -40°C Commanded IAC position < 2 steps Idle stabilized for 5 sec System voltage > 11 V None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 130, 171, 172, 201-204, 220, 222, 223, 300, 336, 442, 446, 452, 453, 455, 496, 502, 606, 641, 651, 1516, 2101, 2176	15 sec Continuous check	DTC Type A
Pcm Has Eeprom Flash Error	P0601	Checks for an incorrECT checksum or Program ID failure	Checksum detection incorrect	Ignition in unlock/accessory, run, or crank. System voltage > 5.23 V	3 counts continuous Continuous check	DTC Type A
Pcm Eeprom Not Programmed	P0602	Checks for a PCM that is not programmed	Unprogrammed EEPROM	Ignition in unlock/accessory, run, or crank. System voltage > 5.23 V	Immediately Once per key cycle	DTC Type A

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Pcm – Ram Performance Test	P0604	Indicates that PCM is unable to correctly write and read data to and from RAM	Data read does not match Data written.	Ignition in unlock/accessory, run, or crank. System voltage > 5.23 V	One occurence Check is performed at powerup and every 60 seconds thereafter	DTC Type A
Pcm - Processor Performance Check	P0606	Indicates that the PCM has detected an ETC internal processor integrity fault	Any of the following: 1. Motor processor desired throttle limiting occuring, 2. ETC software is not executed in proper order, 3. Software tasks loops exceed schedule tasks loop, 4. Loss of serial peripheral interface communication from the motor processor, 5. 1.45 msec < Average motor processor state of health toggle < 2.42 msec, 6. TPS or APPS minimum learned values fail compliment check, 7. TPS or APPS minimum learned values fail range check, 8. Main processor integrity check error occurs, 9. Motor processor integrity check error occurs, 10. Motor processor integrity check error of main processor occurs	Ignition in unlock/accessory, run, or crank. System voltage > 5.23 V	1. 99 counts continuous, 2 msec/count in the motor processor, 2. 1 count continuous, 15.6 msec/count in the main processor 3. Error > 3 counts per software tasks loops 4. 101/254 counts or 24 counts continuous or 37 counts continuous at initialization, 7.8 msec/count in main processor 5. 3 counts continuous, 62.5 msec/count 6. 13 counts continuous, 15.6 msec/count in main processor 7. 13 counts continuous;15.6 msec/count in main processor 8. 2 count continuous, check is performed at powerup and every 60 seconds thereafter 9. 2 count continuous.;15.6 msec/count in main processor 10. 1 count continuous, 15.6 msec/count in motor processor	DTC Type A
Pcm – Apps Performance Check	P060D	Any of the following: 1. Verify the PCM's ability to detect a short between the APPS1 and 2 circuits 2. Verify that the indicated accelerator pedal position calculation is correct	1. APPS2 > 1.75 V 2. | Main processor indicated APP – motor processor indicated APP | > 0.142 V	System voltage > 5.23 V No PCM processor DTCs 1. Ignition in unlock/accessory and run Not during TPS minimum learn active During intusive portion of diagnostic execution Ignition in unlock, accessory, run, or crank	1. 2 counts, 154 msec/count, immediate retest on an error performed in main processor 25 counts continuous, 15.6 msec/count in motor processor	DTC Type A

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Pcm - Tps Performance Check	P060E	Any of the following: 1. Verify the PCM's ability to detect a short between the TPS1 and TPS2 circuits 2. Verify that the throttle control system position sensor short diagnostic is functioning	1. TPS2 > 1.75 V 2. No detection of the sensor short diagnostic active state	System voltage > 5.23 V No PCM processor DTCs Ignition in unlock/accessory and run Not during TPS minimum learn active During intusive portion of diagnostic execution	1. 2 counts, 154 msec/count, immediate retest on an error performed in main processor 2. No sensor short diagnostic activity for 500 msec detected by motor processor	DTC Type A
Pcm - Eeprom General Failure	P062F	Checks for a write error	Incorrect checksum	Ignition in unlock/accessory, run, or crank. System voltage > 5.23 V	Immediately on next key up if flagged on previous key down Once at key down	DTC Type A
Pcm – V5b1 Circuit	P0641	Detect a continuous or intermittent short on the #1 5 volt sensor reference circuit	| Vref1 voltage - Vcc voltage | > 0.125 V	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTC	1. 16/32 counts or 11 counts continuous, 15.6 msec/count in main processor 2. 125/250 counts or 99 counts continuous, 2 msec/count in motor processor	DTC Type A
Pcm – V5b2 Circuit	P0651	Detect a continuous or intermittent short on the #2 5 volt sensor reference circuit	| Vref2 voltage - Vcc voltage | > 0.125 V	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTC	1. 16/32 counts or 11 counts continuous, 15.6 msec/count in main processor 2. 125/250 counts or 99 counts continuous, 2 msec/count in motor processor	DTC Type A
Transmission MIL Request Circuit	P0700	Detect the presence of a transmission fault that is stored in the TCM	Transmission fault active in TCM		Continuous check	DTC Type A
O2s 1 Not Enough Switches	P1133	Determines if the O2S 1 is functioning properly by checking the number of switches	O2S 1 Switch Numbers Slope-time method (for caculation of avg response times) L/R < 2 counts R/L < 2 counts Half-cycle method (for checking initial response to fuel change) L/R < 42 R/L < 42	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V No intrusive CATMON test active Engine run time > 170 sec 5% < TP < 60% 1000 RPM < engine speed < 3500 RPM Delta TP < 18.75% per sec Airflow > 25 grams/second Closed Loop/Stoich Time in enable > 1.7 sec None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 201-204, 220, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	60 sec Once per trip	DTC Type B

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
O2S 2 Lean In PE	P1137	Detects and O2S 2 signal which is below the range considered lean while in power enrichment	O2S 1 > 700 mV O2S 2 < 400 mV	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 10 sec No intrusive CATMON test active Vehicle operating in PE Safety fuel cut-off not active Closed Loop Sensor predicted warm (O2 rear sensor warm flag set) Above conditions met for 5 seconds None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 201-204, 220, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	76/80 counts 8 counts/sec Continuous check	DTC Type B
O2S 2 Rich In DFCO	P1138	Detects and O2S 2 signal which is above the range considered rich while in a fuel cutoff condition	O2S 2 > 647 mV	ECT > 69.5°C Fuel level > 9.8% System voltage > 11 V Engine run time > 10 sec No intrusive CATMON test active Vehicle operating in DFCO or FCO Closed Loop Sensor predicted warm (O2 rear sensor warm flag set) Above conditions met for 7 seconds None of the following DTCs set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 201-204, 220, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	76/80 counts 8 counts/sec Continuous check	DTC Type B
Pcm (Mcp) - Desired Tp To Tp Sensor Performance	P1516	Any of the following: 1. Detect a throttle positioning error 2. Detect excessive current draw on the Actuator Circuit 3. Determine if the Actuator has been miswired	1. |TP Error| >=2 % with no change in error sign, after > 5 sec stable command 2. |TP Error| >=2 % for a throttle command step change >= |2 %| 3. |TP Error| >=+7% or <= -10% for a throttle command step change >= |5%| 4. |TP Error| >=+7% or <= -10% for throttle command change >= |10 %| 5. Actuator current > 9 amps 6. TPS1 < 3.6 V	1. Ignition in run or crank Engine speed >0 RPM or engine speed = 0 RPM and not in battery saver mode Engine running or system voltage > 8.0 V No airflow actuation DTCs No throttle actuation DTCs 2. Same as 1 3. Same as 1 4. Same as 1 5. Same as 1 6. Minimum TPS learn active state	1. 249 counts continuous, 2 msec/count in motor processor 2. 249 counts continuous, 2 msec/count in motor processor 3. 99 counts continuous, 2 msec/count in motor processor 4. 149 counts continuous, 2 msec/count in motor processor 5. 49 counts continuous, 2 msec/count in motor processor 6. 99 count continuous, 2 msec/count in motor processor	DTC Type A
Output Driver 1 Fault	P1640	Detects if an output driver is shorted high or if an overtemp/overvoltage condition exists	Battery voltage > 11.0 V Low Oil/Hotlight timer is > 5 secs Open, short, overtemp/overvoltage condition detected	Accessory must be in correct commanded state	9/10 Cts. 15.6 mSec/ct. Continuos check	DTC Type B

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Output Driver 2 Fault	P1650	Detects if an output driver is shorted high or if an overtemp/overvoltage condition exists	Battery voltage > 11.0 V Low Oil/Hotlight timer is > 5 secs Open, short, overtemp/overvoltage condition detected	Accessory must be in correct commanded state	9/10 Cts. 15.6 mSec/ct. Continuos check	DTC Type B
Output Driver 4 Fault	P1670	Detects if an output driver is shorted high or if an overtemp/overvoltage condition exists	Battery voltage > 11.0 V Low Oil/Hotlight timer is > 5 secs Open, short, overtemp/overvoltage condition detected	Accessory must be in correct commanded state	9/10 Cts. 15.6 mSec/ct. Continuos check	DTC Type B
PCM (Main Processor) – TP Model To TPS Performance	P2101	Any of the following: 1. Detect a throttle positioning error 2. Detect a short on the actuator circuit 3. Determine if the actuator has been miswired	1. |TP error| > 6.5 %, [Throttle error = measured throttle position - modeled throttle position] 2. ETC ignition > 4 V during powerdown sequence check 3. TPS1 < 3.2 V	1. Ignition in run or crank Engine speed > 0 RPM or engine speed = 0 RPM and not in battery saver mode Engine Running or system voltage > 8 V No airflow actuation DTCs No throttle actuation DTCs 2. Powerdown state (Ignition voltage = 0 V) 3. Minimum TPS learn active state	1. Positive error counter: increments by 3 when TP error > 6.5%, decrements by 2 when 0% < TP error <6.5%, decrements by 5 when -6.5% <TP error< 0%, clears if TP error< -6.5% Negative error counter: increments by 3 when TP error < -6.5%, decrements by 2 when -6.5% < TP error < 0%, decrements by 5 when 0% < TP error < 6.5%, clears if TP error > 6.5% Thresholds are 39 Check runs every 15.6 msec main processor. 2. 1 count check at key on 3. 11 count continuous, 15.6 msec/count in main processor	DTC Type A
Apps 1 Circuit	P2120	Detect a continuous or intermittent short or open in the APPS1	0.800V < APPS1< 4.700 V.	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTCs No Vref DTC – P0651 None of the following DTCs set: 2122, 2123	1. 12/27 counts or 9 counts continuous, 15.6 msec/count in main processor 2. 93/210 counts or 70 counts continuous, 2 msec/count in motor processor	DTC Type A

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Apps 1 Voltage Low	P2122	Detects if APPS1 is out of range low	APPS1 < 0.800 V	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTCs No Vref DTC – P0651	1. 12/27 counts or 9 counts continuous, 15.6 msec/count in main processor 2. 3/210 counts or 70 counts continuous, 2 msec/count in motor processor	DTC Type A
Apps 1 Voltage High	P2123	Detects if APPS1 is out of range high	APPS1 > 4.700 V	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTCs No Vref DTC – P0651	1. 12/27 counts or 9 counts continuous, 15.6 msec/count in main processor 2. 93/210 counts or 70 counts continuous, 2 msec/count in motor processor	DTC Type A
Apps 2 Circuit	P2125	Detect a continuous or intermittent short or open in the APPS2	2.6500 V < APPS2 < 4.6875 V	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTCs No Vref DTC – P0641 None of the following DTCs set: 2127, 2128	1. 12/27 counts or 9 counts continuous, 15.6 msec/count in main processor 2. 93/210 counts or 70 counts continuous, 2 msec/count in motor processor	DTC Type A
Apps 2 Voltage Low	P2127	Detects if APPS2 is out of range low	APPS2 < 2.6500 V	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTCs No Vref DTC – P0641	1. 12/27 counts or 9 counts continuous, 15.6 msec/count in main processor 2. 93/210 counts or 70 counts continuous, 2 msec/count in motor processor	DTC Type A
Apps 2 Voltage High	P2128	Detects if APPS2 is out of range high	APPS2 > 4.6875 V	Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTCs No Vref DTC – P0641	1. 12/27 counts or 9 counts continuous, 15.6 msec/count in main processor 2. 93/210 counts or 70 counts continuous, 2 msec/count in motor processor	DTC Type A

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Tps 1/2 Performance	P2135	Any of the following: 1. Detect a continuous or intermittent correlation fault between TPS1 and TPS2 2. Detect an invalid minimum mechanical position correlation between TPS1 and TPS2 3. Detect a short between the TPS1 and TPS2 circuits	1. |(Raw minimum learned TPS1 voltage - raw TPS1 voltage) – (raw TPS2 voltage – raw minimum learned TPS2 voltage)| > 0.250 V at minimum throttle position with an increasing value to 0.500V at the maximum throttle position. 2. |5 V – raw learned minimum TPS2 voltage - raw learned minimum TPS1 voltage| > 0.25 V 3. Δ TPS1 < 1 V	1. Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTCs None of the following DTCs set: 0120, 0122, 0123,0220, 0222, 0223, 0641, 0651 2. Same as 1 3. Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTCs	1. 12/27 counts or 9 counts continuous, 15.6 msec/count in main processor 93/210 counts or 70 counts continuous, 2 msec/count in motor processor 2. Same as 1 3. 2 counts 154 msec/count, immediate retest on an error performed in main processor	DTC Type A
Apps 1/2 Performance	P2138	Any of the following: 1. Detect a continuous or intermittent correlation fault between APPS1 and APPS2 2. Detect an invalid minimum mechanical position correlation between APPS1 and APPS2	1. |(Raw minimum learned APPS2 voltage - raw APPS2 voltage) – (raw APPS1 voltage – raw minimum learned APPS1 voltage)| > 0.325 V at minimum accelerator position with an increasing value to 0.500 V at the maximum accelerator position. 2. |5 V – raw learned minimum APPS2 voltage - raw learned minimum APPS1 voltage| > 0.25 V 3. Δ APPS1 < 1 V	1. Ignition in unlock/accessory, run, or crank System voltage > 5.23 V No PCM processor DTCs None of the following DTCs set: 2120, 2122, 2123,2125, 2127, 2128, 0641, 0651 2. Same as 1 3. Ignition in unlock/accessory, run, or crank. System voltage > 5.23 V No PCM processor DTCs	1. 12/27 counts or 9 counts continuous, 15.6 msec/count in main processor 93/210 counts or 70 counts continuous, 2 msec/count in motor processor 2. Same as 1 3. 2 counts, 154 msec/count, immediate retest on an error performed in main processor	DTC Type A
Tps Minimum Learning	P2176	Throttle position minimum learning not completed	TPS > 0.92 V	Minimum TPS learn active state Stable throttle position reading for 40msec Ignition in run or crank None of the following DTCs set: 120, 122, 123, 220, 222 223	1.5 seconds	DTC Type A

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
Engine Off Timer	P2610	Detects if the PCM Off Timer is working	1. A failure will be reported if the following occurs 3 times: Ignition Off Time < 0 Or Ignition Off Time > 10 2. A failure will be reported if any of the following occur 8 times out of 10 tests: Time since last ignition off timer increment > 1.39375 or < 0.575 Current Ignition Off Time < Old Ignition Off Time Time between ignition off timer increments > 1. 375 Current Ignition Off Time - Old Ignition Off Time = 1	Test Run This Trip = FALSE Ignition Off Timer Enabled = TRUE -40 °C < Intake Air Temperature < 125 °C	8/10 Cts. 125 msec/ Ct.	DTC Type B

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME REQUIRED AND FREQUENCY	MIL ILLUM. TYPE
O2s 2 Post Oxygen Sensor Diagnostic (Posd)	P2A01	Detects Post O2 sensor that has insufficient range to detect degraded catalyst or to provide closed loop fuel correction	Post catalyst O2 sensor cannot achieve voltage ≥ 740 millivolts and voltage ≤ 250 millivoltsPre catalyst sensor voltage must have been above 800mV during the rich test and below 100mV during the lean test to fail.	Intrusive : Run Time > 240 sec System voltage > 11 V 3 grams/second <MAF < 18 grams/second -5% < Short term FT < +5% No short term FT resets during intrusive test 400 RPM < Engine speed < 2500 RPM 32 kPH < Vehicle speed < 113 kPH Above conditions must be met for 5 sec The following DTCs not set: 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 130, 131, 132, 137, 138, 140, 141, 171, 172, 201-204, 220, 315, 366, 442, 446, 452, 453, 455, 496, 506, 507, 601, 602, 604, 606, 641, 651, 1516, 062F, 060D, 060E, 2101, 2120, 2125, 2135, 2138, 2176	Up to 400 grams of accumulated air flow for the Lean Test and 600 grams of accumulated air flow for the Rich Test. Frequency: Once per trip	DTC Type B
CAN Number Of Controllers	U0002	Checks ECM ability to communicate	Fails if no messages for > 250msec	Ignition on > 3 sec Ignition voltage > 9 volts	Continuous check	DTC Type B
Can Bus Reset	U0073	Detects hardware bus resets	Fails if reset count > 64	Ignition on > 3 sec Ignition voltage > 9 volts	Continuous check	DTC Type B
Can Bus Error Tcm	U0101	Detects no message from TCM	Fails if no message from TCM for > 250msec	Ignition on > 3 sec Ignition voltage > 9 volts	Continuous check	DTC Type A
Can Bus Error Bcm	U0140	Detects no message from BCM	Fails if no message from BCM for > 250msec	Ignition on > 3 sec Ignition voltage > 9 volts	Continuous check	DTC Type B