2005 2.2L (L61) used in: **Grand Am, Saturn** L-series**, VUE, Sunfire, Cavalier, Chevrolet Classic**
4.2L (LL8) used in: **light duty trucks**

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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
Cam Shaft Position Actuator Control	P0013	Detects an open or shorted control circuit by monitoring the driver fault line	Fault in the VCP control circuit is detected	Engine running Failure is present 0.25 seconds of 2 seconds	2/16 counts 125 msec /count Continuous check	DTC Type B
VCP System Performance VCP = variable cam phaser	P0014	Detects a VCP system error by comparing desired and actual VCP position through all operating ranges of VCP control	Actual position/desired position delta is greater than 3.5 degrees when VCP is commanded and stabilization time (based on oil temp model) of 2-6 secounds is met Stabalization time min: 2sec = -16°C Stabalization time max: 6 sec = 152°C	Engine speed > 1200 RPM VCP is commanded VCP commanded position is stable within 0.9 degrees for 1 second	90/100 counts 125 msec/count Continuous check when VCP is commanded	DTC Type B
VCP Crank/Cam Correlation Error	P0017	Detects out of range base engine cam timing	Crank degrees as compared to cam degrees is > 74.7 degrees or < 56.7 degrees	VCP commanded to 0 for 16 sec Engine running	20/30 counts 125 msec/count Continuous check	DTC Type B
O2 Sensor 1, Heater Resistance	P0053	Detects heater circuit resistence out of acceptable range for an RCOHT learn	Resistance < nominal res – 1.4 ohms Or Resistance > nominal res + 2.4 ohms (Nominal resistance is a function of temperature. Nominal resistance at 20 deg C is 3.8 ohms.)	-20°C < Start up ECT < 40°C Shutdown ECT – Startup ECT > 60°C ECT – IAT < 10°C Engine run time > 0 sec None of the following DTCs set: 112, 113, 117, 118	Once per “cold” start Runs in less than 1 sec after engine start	DTC Type B
O2 Sensor 2, Heater Resistance	P0054	Detects heater circuit resistence out of acceptable range for an RCOHT learn	Resistance < nominal res – 3.9 ohms Or Resistance > nominal res + 7.0 ohms (Nominal resistance is a function of temperature. Nominal resistance at 20 deg C is 13.5 ohms.)	-20°C < Start up ECT < 40°C Shutdown ECT – Startup ECT > 60°C ECT – IAT < 10°C Engine run time > 0 sec None of the following DTCs set: 112, 113, 117, 118	Once per “cold” start Runs in less than 1 sec after engine start	DTC Type B

2005 2.2L (L61) used in: **Grand Am, Saturn** L-series**, VUE, Sunfire, Cavalier, Chevrolet Classic**
4.2L (LL8) used in: **light duty trucks**

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 - 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 > Engine speed > 6375 RPM Engine run time > 40 sec Δ TCC < 2.5% Δ Engine speed < 50 RPM Above condition met for 1.5 sec None of the following DTCs set: 68, 107, 108, 117, 118, 120, 122, 123, 125, 128, 130, 131, 132, 171, 172, 201-206, 220, 300, 335, 336, 340, 341, 442, 446, 452, 453, 455, 496, 502, 507, 60D, 60E, 641, 651, 740, 741, 742, 1516, 2101, 2120, 2125, 2135, 2138, 2761	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 (11.2 kPa)	Engine speed < 1000 RPM Or Engine speed > 1000 RPM TP > 28% 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
Manifold Pressure Too High	P0108	Detects a continuous short to voltage or a MAP sensor signal that is out of range high	MAP > 4.21 V (90 kPa)	TP < 15% VSS < 1 MPH Engine run time > 20 - 60 sec None of the following DTCs set: 122, 123	80/100 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, 503	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, 503	50/100 counts 125 msec/count Continuous check	DTC Type B

2005 2.2L (L61) used in: **Grand Am, Saturn** L-series**, VUE, Sunfire, Cavalier, Chevrolet Classic**
4.2L (LL8) used in: **light duty trucks**

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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
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	0.275 V < TPS1 < 4.67 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 < 0.275 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 if ETC TPS1 is out of range high	TPS1 > 4.67 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 the motor processor	DTC Type A

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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	Coolant temperature < 40°C when total airflow ≥ a calculation (based on start-up coolant temperature, minimum IAT, engine run time)	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: 105, 107, 108, 112, 113, 116, 117, 118, 122, 123 ,130, 131, 132, 133, 171, 172, 201, 202, 203, 204, 205, 206, 300, 335, 351, -356, 420, 440, 442, 446, 452, 453, 502, 503, 601, 602, 604, 606, 60D, 60E, 1120, 1220, 1221, 1275, 1271, 1280, 1441, 1481, 1482, 1484, 1512, 1514, 1515, 1516, 1635, 1639	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	Coolant temperature < 85°C when total airflow ≥ a calculation (based on start-up coolant temperature, minimum IAT, engine run time)	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 < 80°C None of the following DTCs set: 105, 107, 108, 112, 113, 116, 117, 118, 122, 123 ,130, 131, 132, 133, 171, 172, 201, 202, 203, 204, 205, 206, 300-306, 335, 351, -356, 420, 440, 442, 446, 452, 453, 502, 503, 601, 602, 604, 606, 60D, 60E, 1120, 1220, 1221, 1275, 1271, 1280, 1441, 1481, 1482, 1484, 1512, 1514, 1515, 1516, 1635, 1639	30 counts 1 sec/count Once per ignition cycle	DTC Type B

2005 2.2L (L61) used in: **Grand Am, Saturn** L-series**, VUE, Sunfire, Cavalier, Chevrolet Classic**
4.2L (LL8) used in: **light duty trucks**

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 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, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 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, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 2101, 2120, 2125, 2135, 2138, 2176	999/1000 counts 8 counts/sec Continuous check	DTC Type B

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 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 > 165 msec L/R > 125msec	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, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 2101, 2120, 2125, 2135, 2138, 2176	90 sec Once per trip	DTC Type B

2005 2.2L (L61) used in: **Grand Am, Saturn** L-series**, VUE, Sunfire, Cavalier, Chevrolet Classic**
4.2L (LL8) used in: **light duty trucks**

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 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, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 2101, 2120, 2125, 2135, 2138, 2176	999/1000 counts 8 counts/sec Continuous check	DTC Type B
O2S 1 Heater Circuit Malfunction	P0135	Detects O2 heater current out of acceptable range.	0.8 amps < O2S1 current < 3 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, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 2101, 2120, 2125, 2135, 2138, 2176	198/200 counts 1 count/sec Continuous check	DTC Type B

2005 2.2L (L61) used in: **Grand Am, Saturn** L-series**, VUE, Sunfire, Cavalier, Chevrolet Classic**
4.2L (LL8) used in: **light duty trucks**

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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	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, 60D, 60E, 641, 651, 1516, 1621, , 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, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 2101, 2120, 2125, 2135, 2138, 2176	399/400 counts 8 counts/sec Continuous check	DTC Type B

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 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, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 2101, 2120, 2125, 2135, 2138, 2176	198/200 counts 1 count/sec Continuous check	DTC Type B

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 Lean	P0171	Monitors fuel control system for a lean failure	Fuel Trim Index > 146	Closed loop No interferring diagnostics in progress BARO > 70 kPa 60°C < ECT < 125°C -25°C < IAT < 150°C MAP > 26 kPa 400 RPM < Engine speed < 5850 RPM VSS < 82 MPH Fuel level > 10% None of the following DTCs set: 13, 14, 17, 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 130, 131, 132, 133, 134, 135, 201-206, 220, 300, 326, 327, 332, 335, 336, 341, 446, 483,496, 502, 503, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1133, 1516, 2101, 2120, 2125, 2135, 2138, 2176	Continuous check	DTC Type B
Fuel Trim Rich	P0172	Monitors fuel control system for a rich failure	Fuel Trim Index < 59	Closed loop No interferring diagnostics in progress BARO > 70 kPa 60°C < ECT < 125°C -25°C < IAT < 150°C MAP > 26 kPa 400 RPM < Engine speed < 5850 RPM VSS < 82 MPH None of the following DTCs set: 13, 14, 17, 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 130, 131, 132, 133, 134, 135, 201-206, 220, 300, 326, 327, 332, 335, 336, 341, 446, 483,496, 502, 503, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1133, 1516, 2101, 2120, 2125, 2135, 2138, 2176	Continuous check	DTC Type B
Injector Circuit Problem	P0201 P0202 P0203 P0204 P0205 P0206	Monitors fuel injectors for proper electrical operation	Injector Current < 4 Amps	Engine running System voltage >11 V	1 sec Continuous check	DTC Type B

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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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
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

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4.2L (LL8) used in: **light duty trucks**

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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
Random Misfire Cylinder 1 Misfire Cylinder 2 Misfire Cylinder 3 Misfire Cylinder 4 Misfire Cylinder 5 Misfire Cylinder 6 Misfire	P0300 P0301 P0302 P0303 P0304 P0305 P0306	These DTCs 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 = 1.0% Catalyst Damage Threshold = 5.0%-14.6%, depending on engine speed and engine load.	Engine run time > 1 engine cycle 438 RPM < Engine speed < 6250 RPM -7°C < ECT < 125°C. If start up ECT < -7°C, then disable until ECT > 21°C. Fuel level > 4% System voltage > 9 V Fuel cutoff not active Power management is not active Brake torque management not active No ABS rough road No ABS or TCS active Positive or zero torque Camshaft sensor is in sync with crank sensor + Throttle position Δ < 95% - Throttle position Δ < 95% Abuse mode not active Misfire diag is not requesting to disable TCC when transmission is in hot mode. None of the following DTCs set: 13, 14, 17, 68, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 130, 131, 132, 133, 134, 171, 172, 220, 315, 326, 327, 332, 335, 336, 483, 502, 503, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 740, 742, 1133, 1516, 1621, 2101, 2120, 2125, 2135, 2138, 2176 The following are not currently utilized (N/A): Power Take Off is disabled –N/A EGR Intrusive test not active – N/A Automatic transmission is not shifting – 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 damaging
Crankshaft Position System Variation Not Learned (CASE)	P0315	Determines if the Crankshaft Position System Variation has not been learned.	Sum of compensation factors between 98172 and 98435.	Manufacturers Enable Counter must be zero. None of the following DTCs: 335, 336, 340, 341.	0.5 sec. Once per ignition cycle	DTC Type A

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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	2000 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	2000 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
ESC Sensor 2	P0332	Detects a and disconnected or faulty sensor	Max voltage – Min voltage < 0.0586 V	2000 RPM < Engine speed < 6400 RPM ECT > 70°C MAP > 34.8 kPa Engine run time > 20 sec 0 kPa < Vacuum < 40kPa None of the following DTCs set: 117, 118, 122, 123	60/80 counts Continuous check	DTC Type B
Crankshaft Position Sensor Missing	P0335	Detects an open/ missing crank sensor signal	Signal missing for 1 of 2 events	Engine running	125 msec/count Continuous check	DTC Type B
Crank Sensor Resync Too Often	P0336	Detects too many resyncs in the crank sensor circuit	Crank resync counter > 15 counts	Engine running	125 msec/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 after 30 cycles as compared to crankshaft events	Engine running	125 msec/count 30 cycles Continuous check	DTC Type B
Cam Sensor 1 Resync Too Often	P0341	Detects too many resyncs in the cam sensor circuit	Cam resync counter > 30 counts	Engine running	125 msec/count 256 seconds Continuous check	DTC Type B

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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
Secondary AIR Injection System	P0410	Detects secondary air system failures	Passive Part 1: Cold (Startup ETC < 9.5°C): Lean ratio < 0.4 or Rich ratio > 0.4 Hot (Startup ETC > 9.5°C): Lean ratio < 0.5 or Rich ratio > 0.4 Passive Part 2: Rich samples (> 650 mV) < 10 in 10 sec Active: Lean time < 1 second during 3.125 second active test compared to O2 voltage threshold of 52 mV during 2 attemps	AIR system commanded on >20 sec 4.25°C < IAT < 150.5°C 2.75°C < ECT < 114.5°C System voltage > 11 V Engine load < 30 kPa TP Δ < 10% Passive specific: Engine run time > 5 sec A/F > 8 Start up ECT < 50°C Active specific: Engine speed ≥ 1000 RPM Engine run time > 200 sec Accumulated flow > 200 counts Long term FT memory cell of 16, 17 Fuel injector pulse width > 0.5 msec 110 < Short term FT <138 Stabilization time > 0.5 seconds None of the following DTCs set: 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 128, 130, 131, 132, 133, 134, 135, 171, 172, 201-206, 300, 335, 336, 340, 341, 442, 446, 496,506, 507, 601, 602, 604, 606, 1133, 1621	Passive: Any key cycle when AIR system is commanded on (30 sec test time) Active: When Passive test fails or is inconclusive (3.125 sec test time, max of 2 attempts)	DTC Type B

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 > 0.23 sec OSC Time Difference = OSC Worst Pass Thresh - OSC Compensation Factor * (O2S 2 Response Time - O2S 1 Response Time) OSC Worst Pass Thresh = 3.0 sec	Engine speed ≥ 850 RPM for minimum of 40 sec since end of last idle period Engine run time > 600 sec VSS < 4.5 MPH 465°C < Predicted catalyst temp < 650°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 < 11.0 grams/second Δ IAC < 20 counts Δ Engine speed < 80 RPM -75 RPM ≤ (Engine speed–Desired speed) ≤ 150 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% O2S 1 rich to lean and lean to rich transitions (450 mV switch point) ≥ 4 Test attempted this trip ≤ 12 Closed loop Fan clutch is stable A/C clutch is stable Rapid Step Response Enable Criteria OSC Time Difference Step > 0.74 sec OSC Time Difference ≥ 0.00 sec None of the following DTCs set: 53, 54, 68, 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, 205, 206, 220, 300, 326, 327, 332 , 335, 336, 340, 341, 442, 446, 452, 453, 455, 496, 502, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651,1133, 1137, 1138, 1516, 1621, 2101, 2120, 2125, 2135, 2138, 2176 , 2A01	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

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 System Small Leak Detected	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 < 85 MPH 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, 503, 601, 602, 604, 606, 60D, 60E, 641, 1133, 1516, 1621, 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)
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 < 85 MPH 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, 503, 601, 602, 604, 606, 60D, 60E, 641, 1133, 1516, 1621, 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

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 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 Detected	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 < 85 MPH 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, 503, 601, 602, 604, 606, 60D, 60E, 641, 1133, 1516, 1621, 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 1 Performance	P0461	Detects a stuck in range fuel level sensor	Fuel level sensor change of < 1.6% in 120 miles	Engine running 9 V < System voltage <18 V None of the following DTCs set: P0462, P0463	Continuous check	DTC Type C
Fuel Level Sensor 1 Low Voltage	P0462	Detects if the fuel level sensor is out of range low	Fuel level sensor < 9 counts	Engine running	Continuous check 30 sec	DTC Type C
Fuel Level Sensor 1 HighVoltage	P0463	Detects if the fuel level sensor is out of range high	Fuel level sensor > 250 counts	Engine running	Continuous check 30 sec	DTC Type C
EV Fan Control Circuit Fault	P0480	Monitors the control circuit for the EV fan	Fault on the EV fan control circuit is detected	Engine Running 9 V < System voltage < 18 V None of the following DTCs set: P0562	50/100 counts 125 msec/count	DTC Type B

2005 2.2L (L61) used in: **Grand Am, Saturn** L-series**, VUE, Sunfire, Cavalier, Chevrolet Classic**
4.2L (LL8) used in: **light duty trucks**

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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
EV Fan Performance	P0483	Detects an EV Fan that is not operating close enough to the desired fan RPM when EV fan is requested	EV fan speed error > 1000 RPM	Engine Running EV fan commanded System voltage > 8.5 V IAT > -7°C Engine speed < 3200 RPM Δ Engine speed < 256 RPM for 5 sec	800/1000 counts 125 msec/count	DTC Type B
EV Fan Lockup	P0493	Detects an EV fan that is mechanically locked	EV fan is detected as being locked up	Engine running Engine speed > 4500 RPM EV fan speed > 6500 RPM	2 counts 1 sec/count	DTC Type A
EV Fan Speed Too High	P0495	Detects an EV fan that is turning too fast when EV Fan is not requested	EV fan speed > 1600 RPM	1280 < Engine Speed < 3200 Engine Running EV fan not commanded System voltage > 8.5 V IAT > -7°C Engine speed > 1800 RPM for 120 seconds	800/1000 counts 125 msec/count	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 < 85 MPH 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, 503, 601, 602, 604, 606, 60D, 60E, 641, 1133, 1516, 1621, 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 (L61)	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)

2005 2.2L (L61) used in: **Grand Am, Saturn** L-series**, VUE, Sunfire, Cavalier, Chevrolet Classic**
4.2L (LL8) used in: **light duty trucks**

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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
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, 16, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 130, 171, 172, 201-206, 220, 222, 223, 300, 336, 442, 446, 452, 453, 455, 496, 502, 503, 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, 16, 106, 107, 108, 112, 113, 117, 118, 120, 122, 123, 125, 130, 171, 172, 201-206, 220, 222, 223, 300, 336, 442, 446, 452, 453, 455, 496, 502, 503, 606, 641, 651, 1516, 2101, 2176	15 sec Continuous check	DTC Type A
EV Fan Speed Input Circuit	P0526	Detects a continuous short or open in the EV fan speed Input circuit(s)	No EV fan speed input activity is detected	Engine Running System voltage > 8.5 Volts	90/100 counts 125 msec/count	DTC Type B
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

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 – 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 > 2.05 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 2. Ignition in unlock, accessory, run, or crank	1. 2 counts, 154 msec/count, immediate retest on an error performed in main processor 2. 25 counts continuous, 15.6 msec/count in motor processor	DTC Type A
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 – 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

2005 2.2L (L61) used in: **Grand Am, Saturn** L-series**, VUE, Sunfire, Cavalier, Chevrolet Classic**
4.2L (LL8) used in: **light duty trucks**

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 – 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 (L61)	P0700	Detect the presence of a transmission fault that is stored in the TCM	1) Transmission fault active in TCM		Continuous check	DTC Type A
ECM - Transmission System Range / Performance (L61)	P0701	Detect an error in the Transmission Control Module Serial Data to the ECM	2) Loss of Communication from the TCM OR, 3) Invalid serial data from the TCM OR, 4) Loss of the State of Health Message form the TCM OR, 5) Active Vehicle Speed Malf in the TCM OR, 6) Other Active Malf in the TCM that requires ECM intervention	1&2) Ignition in Unlock/Accessory, Run, or Crank. Engine Run Time > 1 second Ignition voltage > 9 V 3) Ignition voltage > 9 V Ignition On Time > 3 seconds 4&5) Ignition in Unlock/Accessory, Run, or Crank Valid TCM Message	1&2) 1 second continuous 4&5) 3/10 Cnts 1 Cnt / message 4&5) 1Cnt 1 Cnt / message	DTC Type A

2005 2.2L (L61) used in: **Grand Am, Saturn** L-series**, VUE, Sunfire, Cavalier, Chevrolet Classic**
4.2L (LL8) used in: **light duty trucks**

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 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 < 3 counts R/L < 3 counts Half-cycle method (for checking initial response to fuel change) L/R < 60 R/L < 60	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, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 2101, 2120, 2125, 2135, 2138, 2176	90 sec Once per trip	DTC Type B
O2S 1 Switching Ratio (L61)	P1134	Determines if the O2S1 is functioning prperly by check the average switch time ratio R-L/L-R	O2S1 Switch Ratio 0 < ratio < 16	Engine run time > 200 sec Percent throttle rotation between 5% & 40% RPM between 1000 & 3500 Q113CNT > 20 Delta TPS < 800 % per sec Evap > 35.5% PWM ECT > 69.5°C PLM > 0 Fuel > 9.9% Engine operating in Closed Loop Time in enable > 0.75 sec None of the following DTC's set: 105, 107, 108, 112, 113, 117, 118, 122, 123, 125, 201, 202, 203, 204, 300-304, 336, 440, 441, 442, 446, 452, 453, 506, 507, 601, 602, 1621	60 sec Once an ignition cycle	DTC Type B

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 O2S 2 < 400	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, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 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	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, 201-206, 220, 300-306, 315, 336, 442, 446, 452, 453, 455, 483, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 2101, 2120, 2125, 2135, 2138, 2176	76/80 counts 8 counts/sec Continuous check	DTC Type B
Misfire Detected - Rough Road Data Not Available	P1380	This diagnostic detects if the ABS controller is indicating a fault. When this occurs, misfire will STILL run.	ABS controller sends a message to PCM indicating that a failure has occurred in the ABS module	• VSS ≥ 5 MPH • Engine Speed ≤ 7968 RPM • MAP ≤ 104 KPA	40 failures out of 50 samples	DTC Type C

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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
ABS System Rough Road Detection Communication Fault	P1381	This diagnostic detects if the rough road information is no longer being received from the ABS module. When this occurs, misfire will STILL run.	Serial data messages are lost for 2.5 seconds	• VSS ≥ 5 MPH • Engine Speed ≤ 7968 RPM • MAP ≤ 104 KPA	20 failures out of 50 samples	DTC Type C
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
PCM - EEPROM General Failure	P1621	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
Output Driver 1 Fault (L61)	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
Output Driver 2 Fault (L61)	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 check Cts. 15.6 mSec/ct. Continuos	DTC Type B

2005 2.2L (L61) used in: **Grand Am, Saturn** L-series**, VUE, Sunfire, Cavalier, Chevrolet Classic**
4.2L (LL8) used in: **light duty trucks**

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 4 Fault (L61)	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	0.625 V < APPS1< 4.6875 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

2005 2.2L (L61) used in: **Grand Am, Saturn** L-series**, VUE, Sunfire, Cavalier, Chevrolet Classic**
4.2L (LL8) used in: **light duty trucks**

ENGINE DIAGNOSTIC PARAMETERS

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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 < 0.625 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 1 Voltage High	P2123	Detects if APPS1 is out of range high	APPS1 > 4.6875 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	0.3125 V < APPS2 < 4.375 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 < 0.3125 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

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 2 Voltage High	P2128	Detects if APPS2 is out of range high	APPS2 > 4.375 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
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)| > 0.193 V at minimum throttle position with an increasing value to 0.386 V 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

ENGINE DIAGNOSTIC PARAMETERS

2005file2.doc

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 1/2 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 3. Detect a short between the APPS1 and APPS2 circuits	1. |(Raw minimum learned APPS2 voltage - raw APPS2 voltage) – (raw APPS1 voltage – raw minimum learned APPS1 voltage)| > 0.142 V at minimum accelerator position with an increasing value to 0.284 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

ENGINE DIAGNOSTIC PARAMETERS

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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	300 mV < O2S2 < 750 mV Pre-catalyst sensor voltage must have been above 600 mV for post sensor to fail stage 2 rich test and below 300 mV for post sensor to fail stage 2 lean test	Stage 1 (Passive portion): Engine run time > 2 sec Stage 2 (Intrusive portion): Stage 1 enabled time > 720 sec Stage 1 not passed System voltage > 11 V 15 grams/second <MAF < 100 grams/second -20% < Short term FT < +20% No short term FT resets during intrusive test 1000 RPM < Engine speed < 5000 RPM 20 MPH < Vehicle speed < 80 MPH Above conditions must be met for 1 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, 201-206, 220, 300-306, 315, 366, 442, 446, 452, 453, 455, 496, 506, 507, 601, 602, 604, 606, 60D, 60E, 641, 651, 1516, 1621, 2101, 2120, 2125, 2135, 2138, 2176	Stage 1 (Passive portion): Once per trip Stage 2 (Intrusive portion): Lean test - 10 sec Rich test - 10 sec Once per trip	DTC Type B
CAN number of controllers (L61)	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 (L61)	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 (L61)	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 (L61)	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