SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY MALF PARAMETERS & CONDITIONS	MONITORING TIME LENGTH & DTC TYPE
Pedal Position Signal	P0120	CAN: Protocol for TCM to receive engine control inputs from Engine Control Module. CAN confirms messages are being received via BUS failure timer. CAN bits are checked for Pass/ Fail.	Throttle Position Invalid Flag = 1	8.0 < Ignition Voltage < 18.0 V CAN BUS ECU Failure ≠ 0 sec **NOTE**: Fail time = 0, DTC has failed	1.0 sec Type A
System Voltage: LOW	P0562	0 – 24 V LOW voltage with operating vehicle	Ignition Voltage ≤ 8.0 V	Engine Speed > 1200 RPM Powertrain components powered	10.0 sec Type A
System Voltage: HIGH	P0563	0 – 24 V HIGH voltage with operating vehicle	Ignition Voltage ≥ 18.0 V	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff Powertrain components powered	10 fail counts out of 12 total counts Type A
Transmission Control Module Read Only Memory	P0601	EPROM/Flash memory corruption (Incorrect program/calibrations checksum)	RAM fail count > 5	None	Immediate Type A
Transmission Control Module Not Programmed	P0602	Non-programmed ITCM (calibrations)	KbCOND_NoStartCal = TRUE	None	Immediate Type A
Transmission Control Module Long-Term Memory Reset	P0603	Wrong copy of Non-volatile Memory to RAM	Non-volatile memory (static or dynamic) checksum failure	None	Immediate Type A
Transmission Control Module Random Access Memory	P0604	RAM failure	RAM read/write failure (single word)	None	Immediate Type A
TCM Long-Term Memory Performance	P062F	NVM write error at key-down	TCM Non-Volatile Memory Incorrect flag = 1	8.0 < Ignition Voltage < 18.0 V Ignition ON	Immediate Type A

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY MALF PARAMETERS & CONDITIONS	MONITORING TIME LENGTH & DTC TYPE
Transmission Fluid Temperature Sensor Performance	P0711	0.24 - 5.0 V Fail Cases 1 & 2 Trans Temp remains constant when measurable change is expected Fail Case 3 Unrealistic change in trans temperature	Fail Case 1 -39° C. < Startup Trans Temp < 20° C. ΔTrans Temp < 2° C. TCC Slip > 120 RPM for > 300 sec cumulative Fail Case 2 129° C. < Startup Trans Temp < 149° C. ΔTrans Temp < 2° C. Fail Case 3 ΔTrans Temp > 20° C. in 200 msec	No ECT (see below) P0722, P0723, P0716, P0717 DTCs Vehicle Speed > 8.0 kph for 300 sec cumulative -39° C. < Trans Temp < 149° C. ECT > 70° C. ΔECT > 55° C. since start-up	Fail Cases 1, 2 80 sec Fail Case 3 Fail Counter > 14 within 7.0 sec Type C
Transmission Fluid Temperature Sensor Circuit: LOW Voltage	P0712	0.24 - 5.0 V Continuous Short-to-Ground in Trans Temperature Sensor or TTS circuit	Raw TTS > 150° C	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff	10.0 sec Type C
Transmission Fluid Temperature Sensor Circuit: HIGH Voltage	P0713	0.24 - 5.0 V Continuous Open in Trans Temperature Sensor or TTS circuit	Raw TTS < -39° C	No P0722, P0723, P0716, P0717 DTC 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff TCC Slip > 120 RPM > 200 sec VSS > 60 RPM for 200 sec	80.0 sec Type C
Input Speed Sensor Circuit Performance	P0716	0 - 6500 RPM Unrealistically large change in Input Speed in very short time	Input Speed change > 1000 RPM	No P0722, P0723, P0717, P0752, P0973, P0974, TPS DTCs No Engine Torque default 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff Positive ΔISS < 500 RPM for 2.0 sec ISS > 1050 for 2.0 sec 50 < Engine Torque < 1492 N-m TPS > 8.0% Vehicle Speed > 16.0 kph	3.3 sec Type B
Input Speed Sensor Circuit LOW Voltage	P0717	0 - 6500 RPM Low Input Speed with large vehicle speed	Input Speed < 100 RPM	No P0722, P0723 DTCs No Engine Torque default 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff 50 < Engine Torque < 1492 N-m Vehicle Speed > 16.0 kph	4.5 sec Type B

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY MALF PARAMETERS & CONDITIONS	MONITORING TIME LENGTH & DTC TYPE
Brake Switch Circuit: LOW Voltage	P0719	0 – 12 V OPEN Brake Switch during decelerations	Decel count = 8	The code has not passed this ignition cycle. No P0722, P0723 DTCs Increment Decel counter when: Brake Switch OFF **AND** Vehicle Speed > 32.0 kph for 6.0 sec **THEN** 8.0 < Vehicle Speed < 32.0 kph for 2.0 < Time < 6.0 sec **THEN** Vehicle Speed < 8.0 kph	Type C
Output Speed Sensor Circuti: Low Voltage	P0722	0 – 6500 RPM Low vehicle speed with large engine speed in Drive range	**Drive** 50 ≤ Engine Torque ≤ 1492 N-m Output Speed ≤ 61 RPM **Park/Neutral** 1492≤ Engine Torque ≤ 1492 N-m	No MAP, TPS (see below), P0723, P0716, P0717 DTCs No Engine Torque default Gear Selector ≠ Park/Neutral TPS > 8.0% TCC Slip > -20 RPM Trans Temp > -40° C. 1500 < Input Speed < 5000 RPM 50 < Engine Torque < 1492 N-m	4.5 sec Type B
Output Speed Sensor Circuit: Intermittent	P0723	0 – 6500 RPM Loss of vehicle speed with moving vehicle	ΔVSS > 365 RPM in Drive ranges VSS > 304 RPM (34 kph) for > 2.0 sec	No P0716, P0717, P0974 DTCs No Engine Torque default 500 < Engine Speed < 6500 RPM for 5.0 sec, not in fuel cutoff Time since Range change > 6.0 sec Positive ΔVSS, loop-to-loop, < 152 RPM for > 2.0 sec 50 < Engine Torque < 1492 N-m Positive ΔISS, loop-to-loop, < 500 RPM for > 2.0 sec	3.3 sec for Drive ranges Type B
Brake Switch Circuit: HIGH Voltage	P0724	O – 12 V CLOSED Brake Switch during accelerations	Accel count = 8	The code has not passed this ignition cycle. No P0722, P0723 DTCs Increment Accel counter when: Brake Switch ON **AND** Vehicle Speed < 8.0 kph **THEN** 8.0 < Vehicle Speed < 32.0 kph for 2.0 < Time < 6.0 sec **THEN** Vehicle Speed > 32.0 kph for 6.0 sec	The Brake is continuously on for 900 seconds Type C
Engine Speed: No Signal	P0727	0 - 6500 RPM Detects no response from CAN Bus signal for engine speed	CAN Bus Engine Speed Incorrect flag = 1	8.0 < Ignition Voltage < 18.0 V 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff CAN BUS ECU Failure ≠ 0 sec	1.0 sec Type B

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY MALF PARAMETERS & CONDITIONS	MONITORING TIME LENGTH & DTC TYPE
Torque Converter Clutch System Stuck OFF	P0741	High TCC Slip speed with TCC commanded ON	TCC Slip speed > 200 RPM Count = 2	No TPS (see below), P0722, P0723, P0716, P0717, P0742, P2761, P1887 DTCs No Engine Torque Default 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff Time since Range change > 6.0 sec 8.0 < TPS < 90% 20° C. < Trans Temp < 130° C. Commanded Gear > 1 Clutch Capacity > 65% for 5.0 sec 0.61 < Trans Ratio < 1.71 50 < Engine Torque < 1492 N-m	8.0 sec Type B
Torque Converter Clutch System Stuck ON	P0742	Lack of Torque Converter release oil pressure (Switch is closed) with TCC commanded OFF	TCC Release Switch is closed Count = 2	No TPS (see below), P2761, P1887 DTCs No Engine Torque Default 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff TCC commanded OFF Time since Range change > 6.0 sec 16.0 < Vehicle Speed < 511 kph 8.0 < TPS < 90% 0.633 < Trans Ratio < 3.16 20° C. < Trans Temp < 130° C. 50 < Engine Torque < 1492 N-m	8.0 sec Type B
1-2 Shift Solenoid Valve Performance: Stuck OFF	P0751	2-2-3-3 shift pattern	<u>Fail Case 1</u> Command Gear = 1 1.54 < Ratio < 1.71 <u>Fail Case 2</u> Command Gear = 4 0.95 < Ratio < 1.05 Count = 2	No Engine Torque Default No TPS (see below), P0722, P0723, P0716, P0717, P0973, P0974, P0976, P0977 DTCs No Engine Torque Default 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff TPS > 8.0% Vehicle Speed > 8.0 kph 20° C. < Trans Temp < 130° C. 50 < Engine Torque < 1492 N-m	<u>Fail Case 1</u> 3.0 sec <u>Fail Case 2</u> 5.0 sec Type B
1-2 Shift Solenoid Valve Performance: Stuck ON	P0752	1-1-4-4 shift pattern	<u>Fail Case 3</u> Command Gear = 2 2.81 < Ratio < 3.10 <u>Fail Case 4</u> Command Gear = 3 0.64 < Ratio < 0.71 Count = 2	See P0751	<u>Fail Case 3</u> 3.0 sec <u>Fail Case 4</u> 4.0 sec Type B

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY MALF PARAMETERS & CONDITIONS	MONITORING TIME LENGTH & DTC TYPE
2-3 Shift Solenoid Valve Performance: Stuck ON	P0756	4-3-3-4 shift pattern	Fail Case 5 Command Gear = 1 0.64 < Ratio < 1.86 Fail Case 6 Command Gear = 2 0.95 < Ratio < 1.05 Count = 2	See P0751	Fail Case 5 3.0 sec Fail Case 6 4.0 sec Type A
2-3 Shift Solenoid Valve Performance: Stuck OFF	P0757	1-2-2-1 shift pattern	Fail Case 7 40 < Engine Torque < 1492 N-m Command Gear = 3 1.54 < Ratio < 1.71 Fail Case 8 0 < Engine Torque < 1492 N-m Command Gear = 4 1.54 < Ratio < 3.10 Count = 2	No Engine Torque Default No TPS (see below), P0722, P0723, P0716, P0717, P0973, P0974, P0976, P0977 DTCs No Engine Torque Default 500 < Engine RPM < 6000 for 5.0 sec, not in fuel cutoff 8.0 < TPS < 100% 20° C. < Trans Temp < 130° C. Vehicle Speed > 8.0 kph	Fail Case 7 3.0 sec Fail Case 8 3.0 sec Type A
1-2 Shift Solenoid Control Circuit: LOW Voltage (Shift Solenoid A)	P0973	0 – 12 V Continuous Open, Short-to-Ground in SSA circuit (ODM) or SSA solenoid	Short to Ground bit = 1 **OR** Shift Solenoid 1-2 Commanded ON & Open bit = 1	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff High Side Driver 1 ON	Fail cnt = 44/50 (Total time ≈ 4.4 sec) Type B
1-2 Shift Solenoid Control Circuit: HIGH Voltage (Shift Solenoid A)	P0974	0 – 12 V Short-to-Power in SSA circuit (ODM) or SSA solenoid	SS 1-2 feedback circuit state ≠ PCM commanded state	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff Shift Solenoid 1-2 commanded ON High Side Driver 1 ON	Fail cnt = 44/50 (Total time ≈ 4.4 sec) Type B
2-3 Shift Solenoid Control Circuit: LOW Voltage (Shift Solenoid B)	P0976	0 – 12 V Continuous Open, Short-to-Ground in SSB circuit (ODM) or solenoid	Short to GND bit = 1 **OR** Shift Solenoid 2-3 Commanded ON & Open bit = 1	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff High Side Driver 2 ON	Fail count = 44 out of 50 total (Total time ≈ 4.4 sec) Type A
2-3 Shift Solenoid Control Circuit: HIGH Voltage (Shift Solenoid B)	P0977	0 - 12 V Short-to-Power in SSB circuit (ODM) or solenoid	SS 2-3 feedback circuit state ≠ PCM commanded state	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff Shift Solenoid 2-3 commanded ON High Side Driver 2 ON	Fail count = 44 out of 50 total (Total time ≈ 4.4 sec) Type A
Throttle Blade Position Signal	P1795	CAN: Protocol for TCM to receive engine control inputs from Engine Control Module. CAN confirms messages are being received via BUS failure timer. CAN bits are checked for Pass/ Fail.	Throttle Position Incorrect flag in CAN Bus = 1	8.0 < Ignition Voltage < 18.0 V CAN BUS ECU Failure ≠ 0 sec **NOTE**: Fail time = 0, DTC has failed	1.0 sec Type A

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY MALF PARAMETERS & CONDITIONS	MONITORING TIME LENGTH & DTC TYPE
Transmission Pressure Switch Assembly - Illegal Range	P1810	0 – 12 V Invalid PSA state or PSA circuit	Range = ILLEGAL	500 < Engine Speed < 6500 RPM for 5.0 sec, not at fuel cutoff	60 sec Type B
Transmission Pressure Switch Assembly: Park/Neutral with Drive Ratio	P1816	0 – 12 V Invalid PSA state or PSA circuit malfunction	PSA indicates P/N when Ratio indicates Drive	No TPS (see below), P0722, P0723, P0716, P0717, P0751, P0752, P0756, P0757, P1810, P0973, P0974, P0976, P0977 DTCs 8.0 < Ignition Voltage < 18.0 V 500 < Engine RPM < 5500 for 5.0 sec, not in fuel cutoff Output Speed $\geq$ 76 RPM TPS $\geq$ 8.0 % 50 < Engine Torque < 1492 N-m	6.3 sec Type B
Transmission Pressure Switch Assembly: Drive without Drive Ratio	P1818	0 – 12 V Invalid PSA state or PSA circuit malfunction	PSA = D4 or P/N when Ratio indicates Reverse	No TPS (see below), P0722, P0723, P0716, P0717, P0751, P0752, P0756, P0757, P1810, P1816, P0973, P0974, P0976, P0977 DTCs 8.0 < Ignition Voltage < 18.0 V 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff Output Speed $\geq$ 50 RPM TPS $\geq$ 3.0 % 20 < Engine Torque < 1492 N-m Trans Temp > 0° C when PSA = drive	2.8 sec Type B
Shift Solenoid Control Circuit: Low Voltage	P1833	0 – 12 V Continuous Open, Short-to-Ground in High Side Driver 2 circuit	High Side Driver 2 feedback circuit state $\neq$ PCM commanded state	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff High Side Driver 2 commanded ON	Fail cnt = 44/50 (Total time $\approx$ 4.4 sec) Type A
Torque Converter Clutch Release Switch Circuit	P1887	OPEN Release Switch (TCC not applied) when PCM & TCC slip speed indicate TCC is locked	Count = 2	No P0716, P0717, P0741, P0742, P2761 DTCs 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff TCC commanded ON 20° C. < Trans Temp < 130° C. -10 < TCC Slip < 60 RPM 50 < Engine Torque < 1492 N-m 103 < TCC Pressure < 827 kPa	6.0 sec Type B
Engine Torque Signal	P2637	CAN: Protocol for TCM to receive engine control inputs from Engine Control Module. CAN confirms messages are being received via BUS failure timer. CAN bits are checked for Pass/ Fail.	CAN Bus Engine Torque Incorrect flag = 1	8.0 < Ignition Voltage < 18.0 V CAN BUS ECU Failure $\neq$ 0 sec **NOTE**: Fail time = 0, code has failed	1.0 sec Type A

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY MALF PARAMETERS & CONDITIONS	MONITORING TIME LENGTH & DTC TYPE
Torque Converter Clutch Pulse Width Modulated Solenoid Control Circuit	P2761	Continuous Open or Short-to-Ground in TCC PWM circuit or TCC PWM solenoid	Every 100 msec, fail counter incremented if open or short detected	No P0741, P0742 DTCs 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff TCC Duty Cycle < 10% or > 80%	Fail count = 44 out of 50 total (Total time ≈ 4.4 sec) Type B
CAN Bus Error ECM	U0100	Communication between TCM & Engine Control Unit (ECU)	CAN Bus ECU Error flag = 1	8.0 < Ignition Voltage < 18.0 V Ignition ON	1.0 sec Type B
CAN Bus Reset Counter Overrun	U2104	CAN: A protocol for TCM to receive engine control inputs from Engine Control Module. CAN confirms messages are being received via BUS failure timer. CAN bits are checked for Pass/ Fail.	Bus reset Fail count ≥ 64	8.0 < Ignition Voltage < 18.0 V Ignition ON	Type B