- DTC: P052A Cold start camshaft position timing over-advanced (Bank 1)
- DTC: P052B Cold start camshaft timing over-retarded (Bank 1)
- DTC: P052C Cold start camshaft timing over-advanced (Bank 2)
- DTC: P052D Cold start camshaft timing over-retarded (Bank 2)
- Monitor execution: Continuous
- Monitor sequence: None
- Monitoring duration: 5 seconds

COLD START EMISSION REDUCTION MONITOR > COLD START EMISSION REDUCTION SYSTEM MONITOR

The PCM uses the cold start emission reduction system monitor to calculate the actual catalyst warm up temperature during a cold start. The actual catalyst warm up temperature calculation uses measured engine speed, measured air mass and commanded spark timing inputs to the PCM. The PCM then compares the actual temperature to the expected catalyst temperature. The expected catalyst temperature calculation uses desired engine speed, desired air mass and desired spark timing inputs to the PCM. The difference between the actual and expected temperatures is reflected in a ratio. This ratio is a measure of how much loss of catalyst heating occurred over the period of time and when compared with a calibrated threshold it helps the PCM to determine if the cold start emission reduction system is working correctly. This ratio correlates to tailpipe emissions, and a malfunction indicator lamp (MIL) illuminates and a DTC sets when the calibrated threshold is exceeded. The monitor is disabled if a concern is present in any of the sensors or systems used for expected catalyst temperature model calculation.

COLD START EMISSION REDUCTION MONITOR > COLD START EMISSION REDUCTION SYSTEM MONITOR > COLD START EMISSION REDUCTION SYSTEM MONITOR OPERATION

- DTC: P050E Cold start engine exhaust temperature too low
- Monitor execution: Once per driving cycle, during the first 15 seconds of a cold start
- Monitor sequence: None
- Monitoring duration: Data gathering occurs during the first 15 seconds of a cold start. The decision to set P050E is made 300 seconds after start. This delay gives time for other diagnostics (for example, misfire monitor) to determine if another DTC should set instead of P050E.

COLD START EMISSION REDUCTION MONITOR > COLD START EMISSION REDUCTION SYSTEM MONITOR > COLD START EMISSION REDUCTION SYSTEM MONITOR ENTRY CONDITIONS