AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL [SKYACTIV-G 2.0, SKYACTIV-G 2.5]

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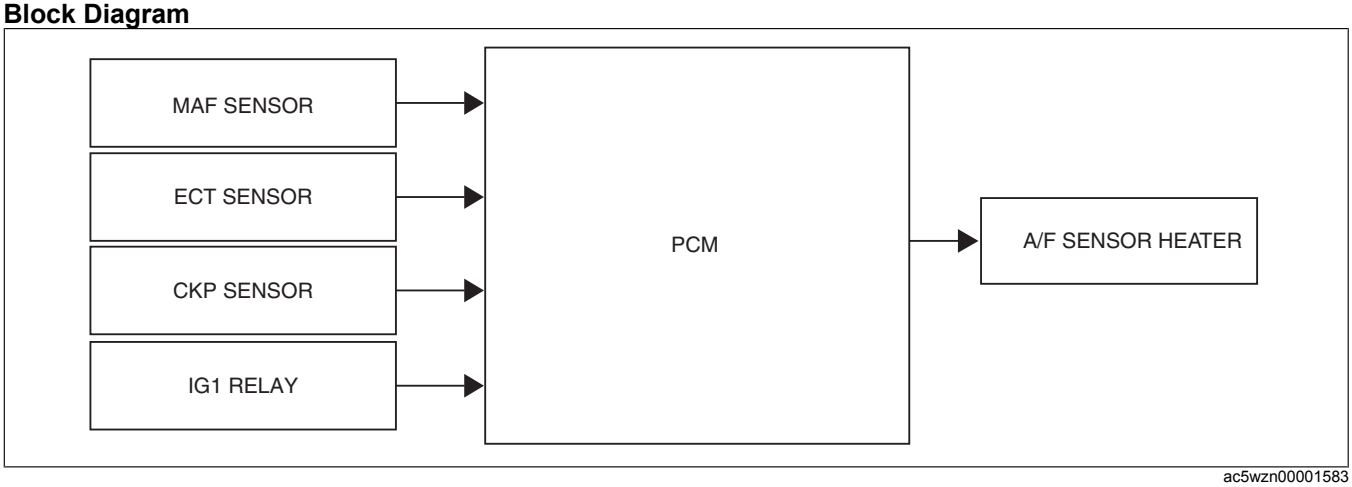
Outline

- Based on the control of the A/F sensor heater, a stabilized oxygen concentration is detected even at low exhaust temperatures, and feedback control of fuel injection even at cold engine start is made possible for improved cold temperature exhaust emission performance.
- Both emission performance and sensor protection have been improved by duty control of the heater according to engine operation conditions (exhaust gas temperature).
- A pre-heater has been adopted to prevent water, produced from the exhaust system when the engine is started, from adhering to the sensor and damaging it.

Block Diagram



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Operation

Pre-heater control

- The A/F sensor heater is operated at a duty ratio of approx. 15% within the specified time directly after the engine is started.

Normal control

- The PCM operates the A/F sensor based on the following control conditions:

Output duty ratio	Control condition
0%	• Ignition switched off • Engine stopped • Engine start (cranking)
0—100% (Duty ratio determined by measuring the element temperature by the A/F sensor heater element impedance)	• After engine warm-up (value fluctuates by battery condition, etc.)