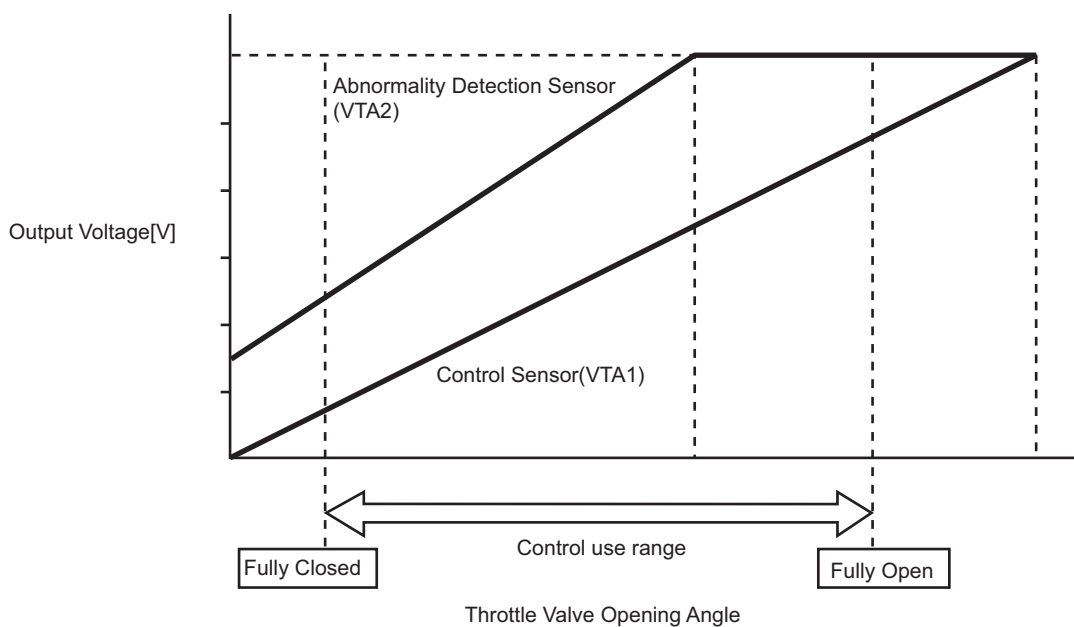
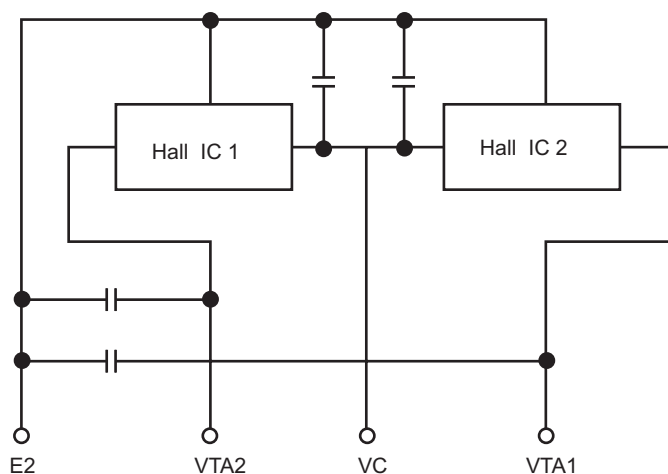


## Throttle Position Sensor

- A no-contact throttle position sensor is used. This sensor uses a Hall element, which can output the intensity of the magnetic field in the form of electrical signals. This is accomplished through the use of the Hall effect\*1, which can attain output voltage linearly in proportion to the position of the throttle valve.
- When the position of the throttle valve changes, the angle of the magnetic field changes in relation to the current (VC → E2) applied in the Hall element. Therefore, the intensity of the magnetic field that is perpendicular to the applied current changes. Then, the resulting changes in the VTA1 and VTA2 terminal voltage are sent to the engine ECU in the form of a throttle valve position signal. Furthermore, this sensor comprises two (main, sub) sensor circuits with different output characteristics to ensure reliability.



**Fail Safe**

- The throttle position sensor comprises two (main, sub) sensor circuits, to detect the throttle position. In case of an abnormal condition in the signal, the engine ECU switches to the failsafe driving mode.

**Failure Detection**

The throttle position sensor comprises two (main, sub) sensor circuits. If a malfunction occurs in either one of the sensor circuits, the engine ECU detects the abnormal signal voltage difference between these two sensor circuits, cuts off the current to the throttle control motor, and switches to the limp mode. Then, the force of the return spring causes the throttle valve to return and stay at the prescribed opening. At this time, the vehicle can be driven in the limp mode while the engine output is regulated through the control of the fuel injection and ignition timing in accordance with the accelerator opening.

