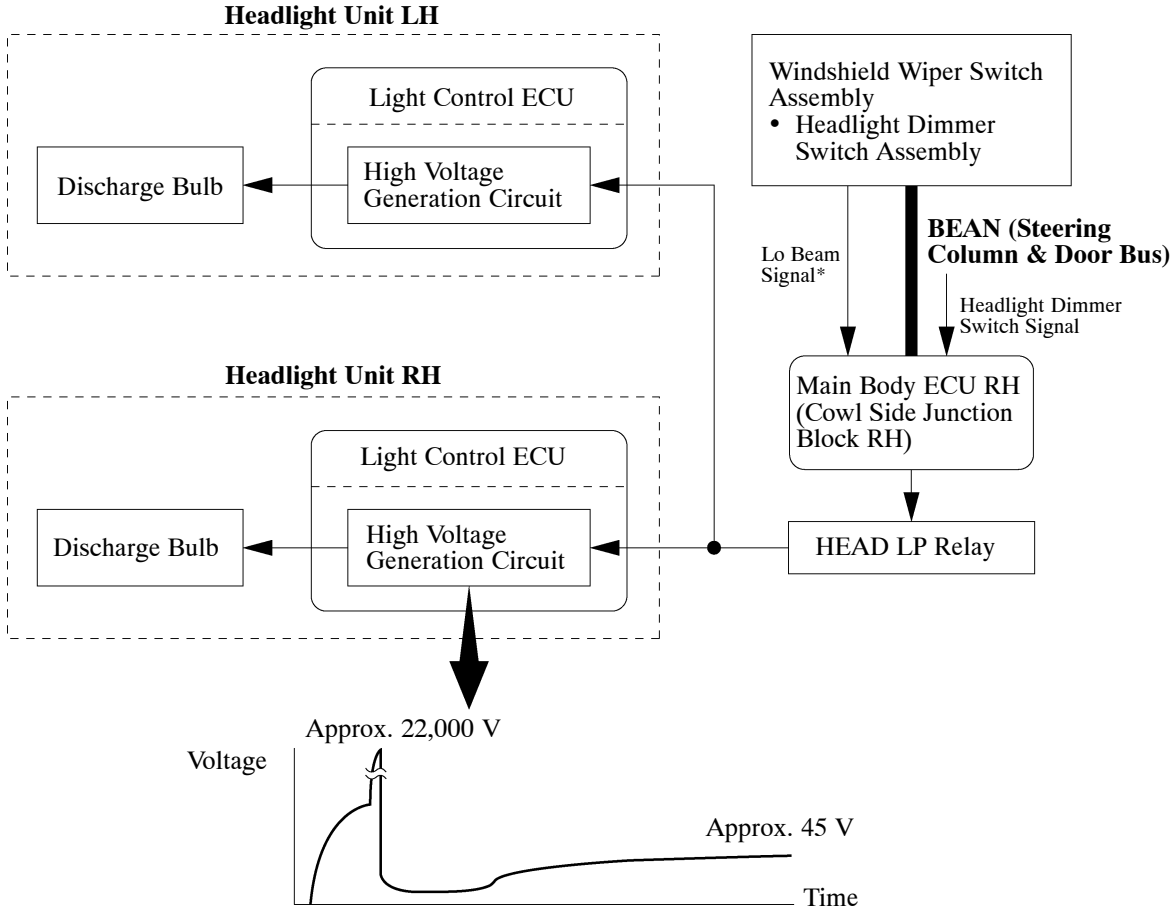
■HID HEADLIGHT SYSTEM

1. General

The HID (High Intensity Discharge) headlight system uses a metal halide bulb as its light source for the Lo beam. Discharge bulbs are superior to halogen bulbs.

- Discharge bulbs have the following features.
  - The light emitted by the bulb is close in color to sunlight. The light shines ahead over a broader area and further forward, increasing the area visible to the driver.
  - Less power is consumed.
- This system consists of discharge bulbs and light control ECUs.
- The light control ECUs transform the voltage that is input from the battery to a high voltage of up to 22,000 V and applies it to the discharge bulbs in order to illuminate them.
- A fail-safe function is provided as a countermeasure against the high voltage that is generated in case a problem occurs in the headlight system.

▶ System Diagram ◀



*: Backup headlight on signal

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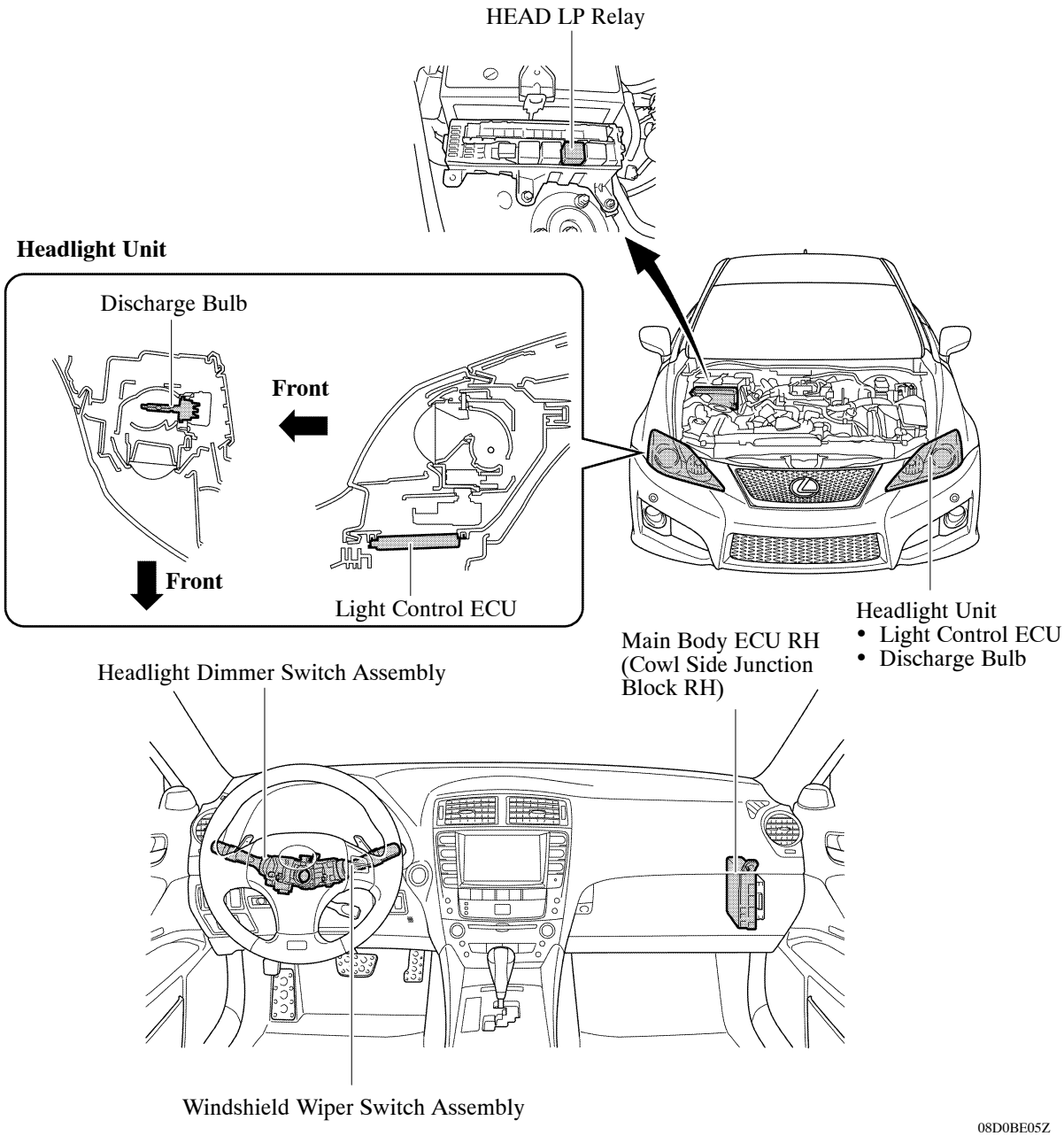
2. Layout of Main Components



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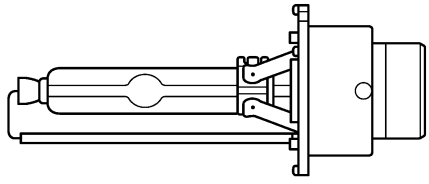
3. Discharge Bulb

Instead of the filament contained in an incandescent bulb, a discharge bulb contains an arc tube, which is filled with xenon gas and metal halide.



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4. Fail-safe Function

The light control ECU executes the fail-safe actions listed below in accordance with the problem that has been detected.

Problem	Outline
Detection of Abnormal Input Voltage	If the voltage that is input to light control ECU deviates from the normal operating voltage (9-16 volts), the light control ECU stops illuminating the headlights. It resumes illuminating the headlights once the voltage reverts to the operating voltage range. However, if the input voltage decreases after the headlights have illuminated, the headlights will remain illuminated until the input voltage is insufficient to light the bulbs.
Detection of Abnormal Output (Open Circuit or Short Circuit) or Flashing Bulb	If an abnormal condition (open or short) occurs in the voltage that is output by light control ECU, or if the bulb flashes, the light control ECU stops illuminating the headlight and will maintain this state until the power is reinstated. Power is reinstated by turning the headlight dimmer switch assembly to off and back on.
Detection of Bulb Open	If a bulb is not inserted in its socket, the light control ECU stops generating high voltage until the bulb is inserted correctly and the power is reinstated. Power is reinstated by turning the headlight dimmer switch assembly to off and back on or turning the engine switch off and back on (IG).

5. Precautions for HID Headlight System

- Never connect a tester to measure the high voltage socket an HID headlight, as this may lead to a serious accident because of high voltage. When the HID headlights illuminate, a high voltage (approximately 22,000 V) is applied momentarily to the bulb sockets. This voltage could lead to a serious accident.
- Whenever inspecting the HID headlight system, make sure water or rain is not present, the headlight dimmer switch assembly is off, the battery terminal is removed, and the connector of the light control ECU is disconnected in order to prevent electric shock.
- Do not operate an HID headlight unless assembly has been fully completed. Never attempt to operate the system without bulbs installed.
- Do not operate the HID headlight using a power source other than that of the vehicle.
- When there is a defect on the HID headlight or any shock has been applied to it, replace the light with a new one.
- Do not touch the glass portion of a bulb with bare hands. A discharge bulb reaches a high temperature when it is illuminated. For this reason, the life of the bulb could be shortened if any oil comes in contact with the glass portion of the bulb.