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| **Circuit Name** | **What is an IR Sensor** | **Working Principle** | **Advantages** | **Disadvantages** |
| **Infrared Sensor /IR Sensor** | An infrared sensor is an electronic device that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measure only infrared radiation, rather than emitting it that is called a passive IR sensor. Usually, in the infrared spectrum, all the objects radiate some form of thermal radiation. | The working principle of an infrared sensor is similar to the object detection sensor.This sensor includes an IR LED & an IR Photodiode, so by combining these two can be formed as a photo-coupler. IR LED is one kind of transmitter that emits IR radiations. This LED looks similar to a standard LED and the radiation which is generated by this is not visible to the human eye. Infrared receivers mainly detect the radiation using an infrared transmitter. Once it is used as the combination of an IR transmitter & receiver, then the receiver’s wavelength must equal the transmitter. Here, the transmitter is IR LED whereas the receiver is IR photodiode. The infrared photodiode is responsive to the infrared light that is generated through an infrared LED. The resistance of photo-diode & the change in output voltage is in proportion to the infrared light obtained. This is the IR sensor’s fundamental working principle. | * It provides secured communication due to line of sight or point-to-point mode of communication. * The battery used in infrared devices last for long duration due to lower power consumption. * Infrared motion sensors detect motion in daytime and nighttime reliably. * The sensor does not require any contact with the product to be sensed. * Infrared devices can measure distance to soft objects. * It provides good stability over time. * It delivers high repeatability. | * Infrared frequencies are affected by hard objects, smoke, dust, fog, sunlight etc. Hence it does not work through walls or doors. * Infrared waves at high power can damage eyes. * In monitor & control application, it can control only one device at one time. * It supports shorter range and hence it performance degrades with longer distances. * It supports lower data rate transmission. |