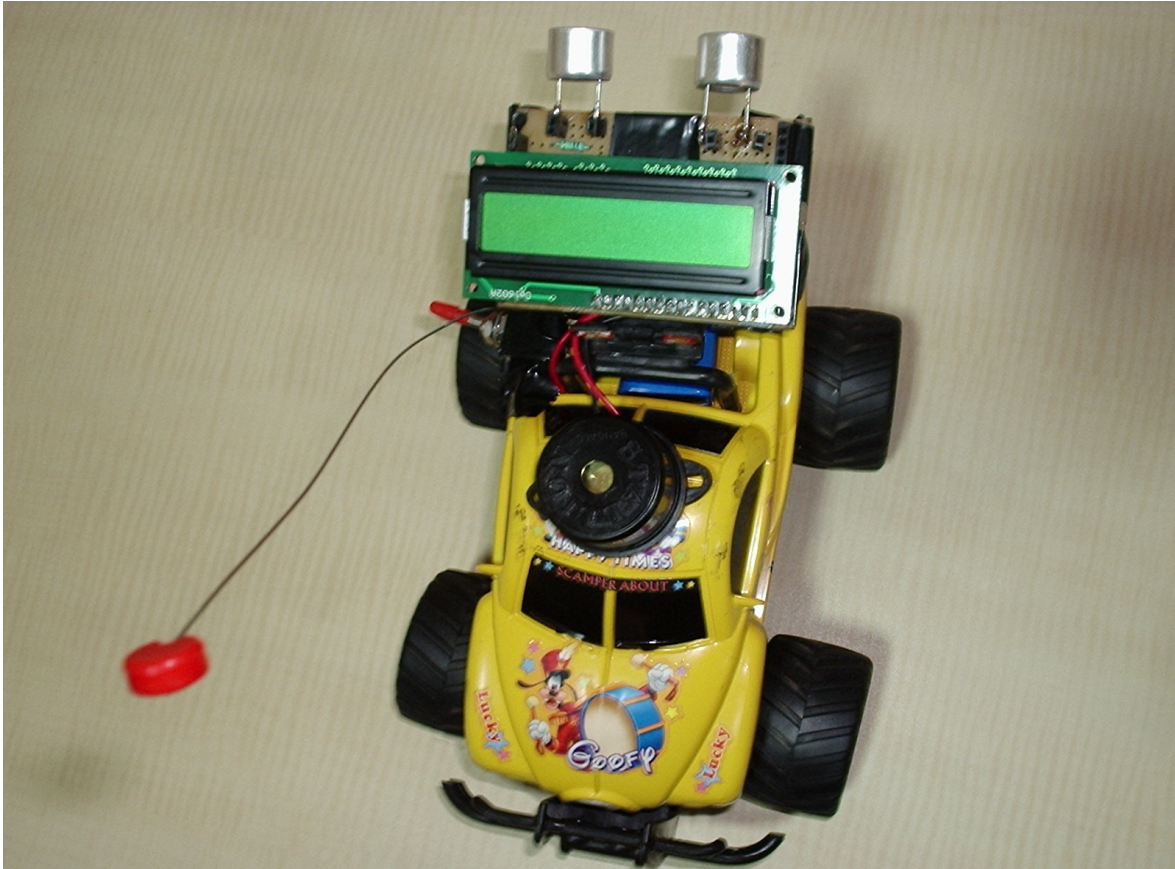


Ultrasonic Vehicle Parking Assistant



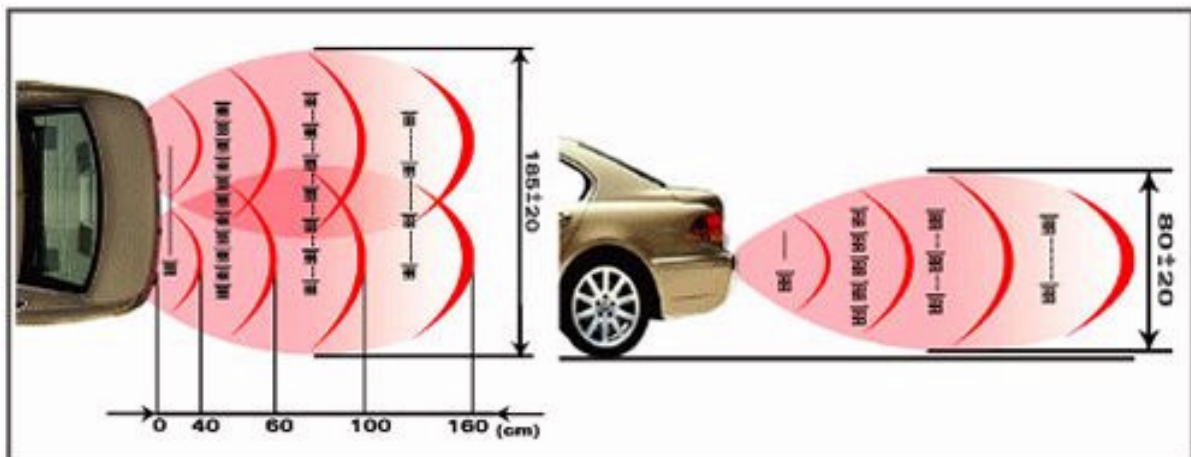
Demo Model



Overview

Parking assistant vehicle features are appearing on many of today's vehicles. The parking assistant provides increased safety especially in large cities. The main task of the parking assistant device is to track the obstacles that appear in front of, or behind, a moving vehicle. The assistant must inform the drivers of the distance to the obstacle. There are several ways to measure distance without contact. Some products have infrared light emitters and receivers that determine an object's distance by implementing the optical triangulation method.

Obstacles can be pedestrians, buildings, other vehicles, and mechanical constructions. Ultrasonic sensors are the most popular sensor for this application. Sensors of this type are reliable, can resist contamination, and are low in cost.



Features of Ultra Sonic Sensors:

- o Ultrasonic resonator frequency: 40 kHz
- o Maximum voltage $V_{\text{peak-to-peak}}$: 160V
- o Sound beam pattern into horizontal plane: 110 deg
- o Sound beam pattern into vertical plane: 45 deg
- o Minimum distance to obstacle that can be detected: 30 cm (1 foot)

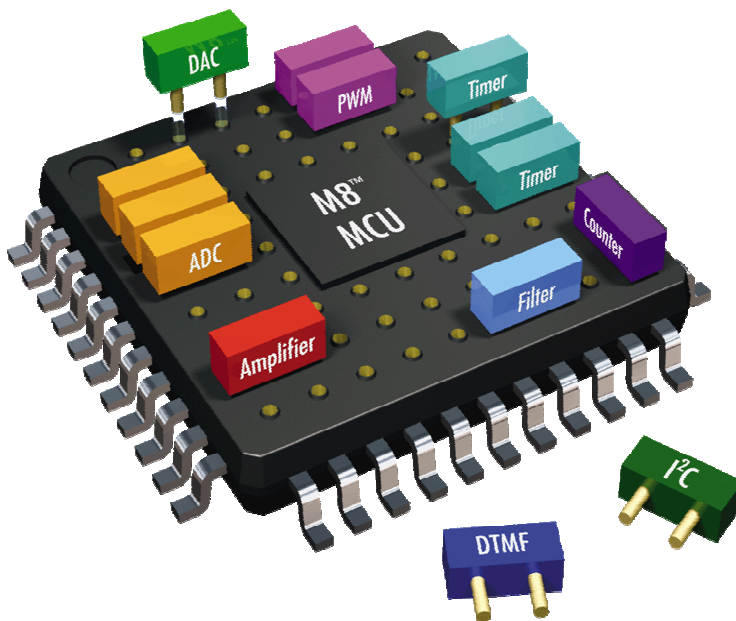
The maximum distance to an obstacle that can be detected by the parking assistant depends on shape, position, material of the obstacle, and electrical schematic design. Implementation in this application detects obstacles as distant as 2.5m (8 feet).

Scope:

The scope is to use ultrasonic waves for measuring the range of the obstacle. Ultrasonic Parking Assistant measures the amount of time it takes for a pulse of sound to travel to a particular surface and return. Then, the device calculates the distance based on the estimated speed of sound.

PSOC:

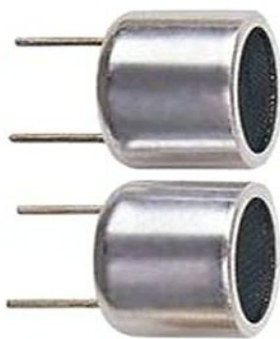
The PSoC family consists of many Mixed-Signal Array with On-Chip Controller devices. These devices are designed to replace multiple traditional MCU-based system components with one, low cost single-chip programmable device. PSoC devices include configurable blocks of analog and digital logic, as well as programmable interconnects. This flexibility allows the user to create customized peripheral configurations that match the requirements of each individual application. Additionally, a fast CPU, Flash program memory, SRAM data memory, and configurable IO are included in a range of convenient pinouts and packages.



ULTRASONIC SENSOR TRANSMITTER AND RECEIVER:

The transmitter is used to generate an ultrasonic wave, and the receiver is used to receive the reflected wave back from some objects.

Ultrasonic sensors use sound waves to detect the presence or absence of objects and are thereby not affected by colour or transparency. However they can be affected by texture. These properties make them ideal for a variety of problem solving applications such as the long range detection of clear glass and plastic as well as distance measurement, continuous fluid and granulate level control and stacking levels of items such as paper, sheet metal and wood. The most common configurations include diffuse proximity, retro-reflective and through-beam versions.





Embedded Core
IT SOLUTIONS PVT LTD

Research and Development Office

First Floor, Sri Siddaganga Complex,
B.H Road, Tumkur-572 102.
Karnataka. INDIA.
Phone : +91 816 4021402, 4021403

Corporate Office

280, 59th Cross, 17C Main, 3rd Y' Block,
Rajajinagar, Bangalore -560 010.
Karnataka. INDIA.
Phone: +91 98862 02483.