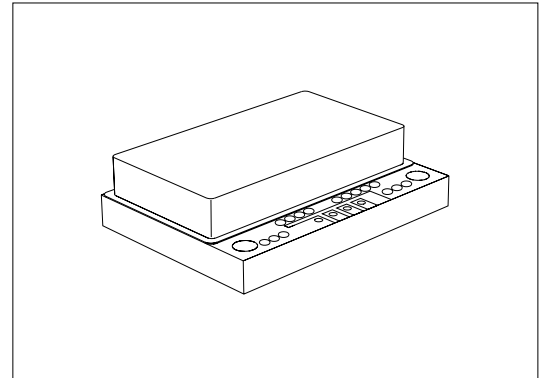


## Microwave Motion Sensor

KMY 24

### Description

The KMY 24 is a microwave radar motion sensor based on the Doppler effect. It transmits a low energy microwave radiation at 2.45 GHz which is reflected by objects. If the object is moving relative to the sensor, a Doppler shift occurs. The shifted wave is mixed with the original wave in two mixers, resulting in two output voltage signals. The phase shift between these two signals is negative or positive depending on whether the target is approaching or receding from the detector.



### Features

- High sensitivity
- Dual Mixers enabling direction detecting
- High reliability
- Low power consumption
- Low harmonic emission
- Small size
- Light weight
- Low cost

| Typ    | Marking | Ordering Code | Operating Frequency | License No.  |
|--------|---------|---------------|---------------------|--------------|
| KMY 24 | KMY 24  | Q62702-R323   | 2.45 GHz            | BZT G127520H |

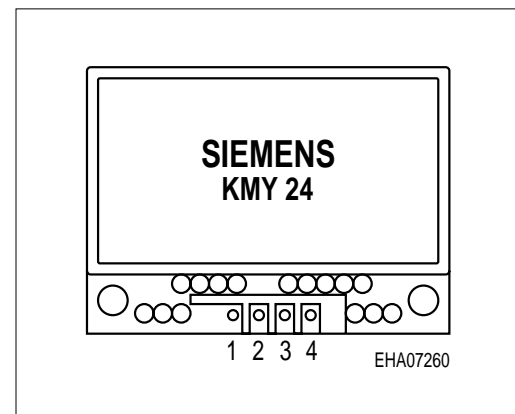
### Pin Configuration

|   |                              |
|---|------------------------------|
| 1 | $-V_S$ (GND)                 |
| 2 | $V_{D1}$ (output voltage D1) |
| 3 | $V_{D2}$ (output voltage D2) |
| 4 | $+V_S$                       |

#### Notes:

1. Solder pads must not be perforated, as this will damage, and may destroy the multilayer PC Board.
2. **Regulations on the use of High frequency devices.**

The use of high frequency devices is regulated in most countries and certain frequencies can be subject to restrictions. The use of the KMY 24 should be clarified with the respective authorities in each country to ensure compliance with the prevalent legislation.



**Absolute Maximum Ratings**

| Parameter                   | Symbol    | Limit Values  | Unit |
|-----------------------------|-----------|---------------|------|
| Operating temperature range | $T_{op}$  | - 20 ... + 60 | °C   |
| Storage temperature range   | $T_{stg}$ | - 30 ... + 80 | °C   |
| Supply voltage              | $V_S$     | 15.6          | V    |

**Electrical Characteristics**

 at  $T_A = 25\text{ °C}$ 

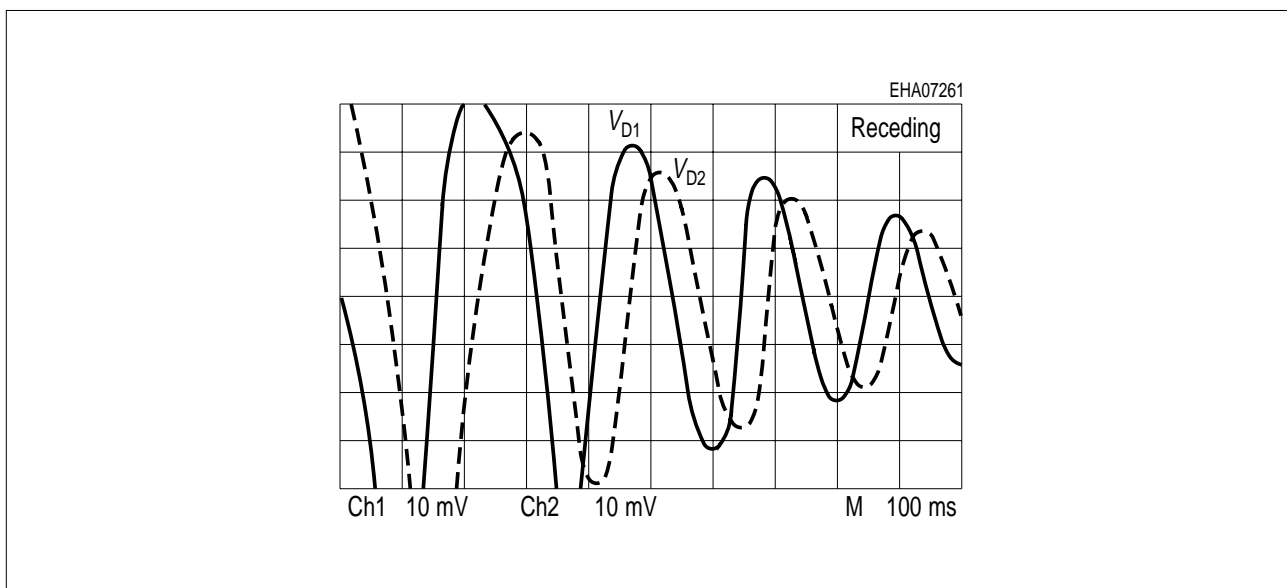
| Parameter                                    | Symbol            | Limit Values |               |      | Unit    |
|--|-------------------|--------------|---------------|------|---------|
|  |                   | min.         | typ.          | max. |         |
| Supply voltage                               | $V_S$             | 10.8         | 12            | 15.6 | V       |
| Operating frequency                          | $f_o$             | 2.40         | 2.45          | 2.48 | GHz     |
| Operating current                            | $I_{op}$          | -            | 23            | -    | mA      |
| Detecting range <sup>1)</sup>                | $r_{op}$          | -            | 5 ... 8       | -    | m       |
| Amplitude of signal 1                        | $V_{D1}$          | -            | <sup>1)</sup> | -    | mV      |
| Quotient of amplitude of 1 and 2             | $V_{D1}/V_{D2}$   | -            | 2             | -    |         |
| Phase difference                             | $\phi_2 - \phi_1$ | -            | 40 ... 120    | -    | Degrees |
| Equivalent isotropic radiated power at $f_o$ | <i>EIRP</i>       | -            | 8             | -    | dBm     |

1) The amplitude of the signal depends on the object size and its distance from the detector. Measurements taken with 5 cm high, cylindrical metallic objects, moving in circles at a distance of 1 m for example, give signal amplitudes of typically  $V_{D1} = 40\text{ mV}$ .

### Output Signal

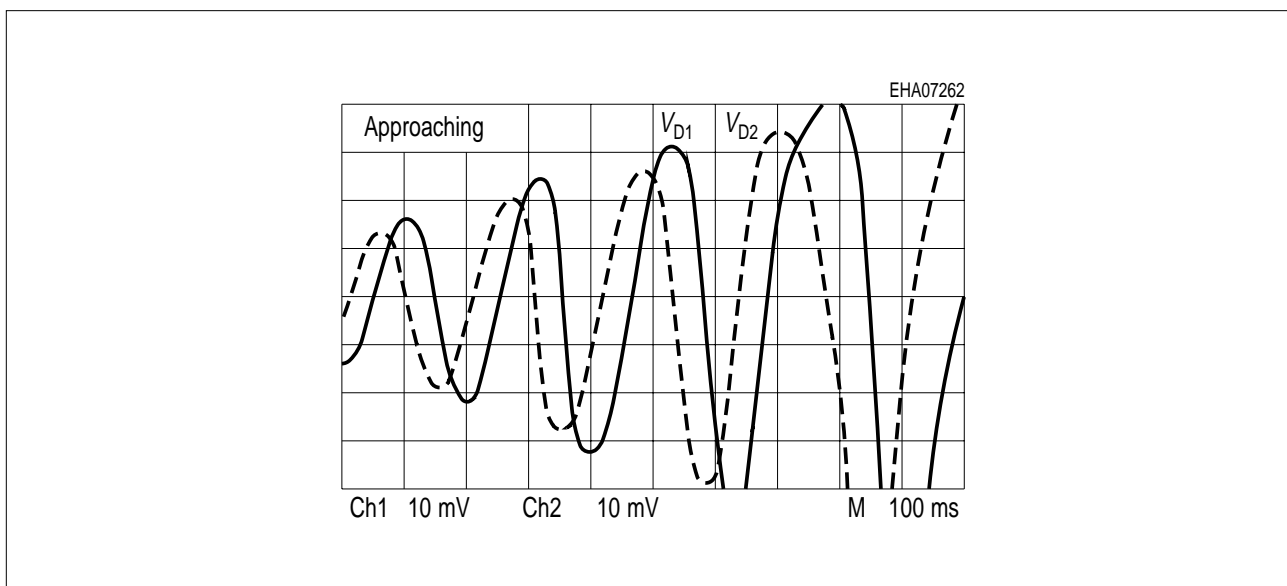
The phase difference between  $V_{D2}$  and  $V_{D1}$  is positive, if the target is receding from the detector.

$$(\varphi_1 - \varphi_2) \geq 0$$



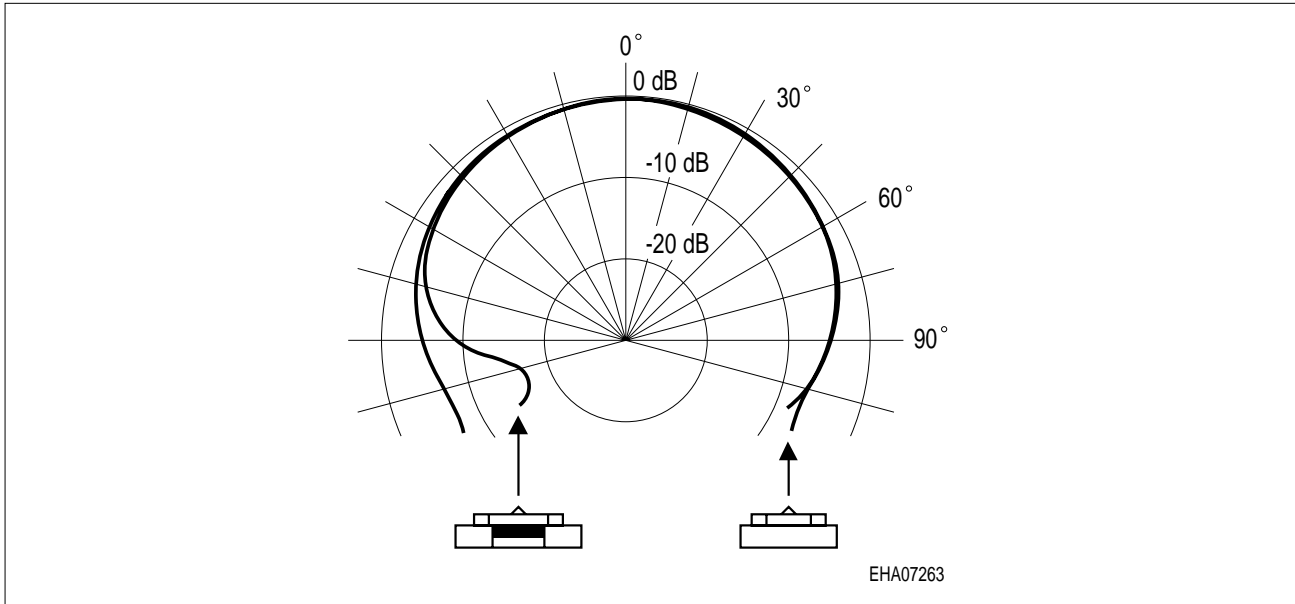
The phase difference between  $V_{D2}$  and  $V_{D1}$  is negative, if the target is approaching the detector.

$$(\varphi_1 - \varphi_2) \geq 0$$

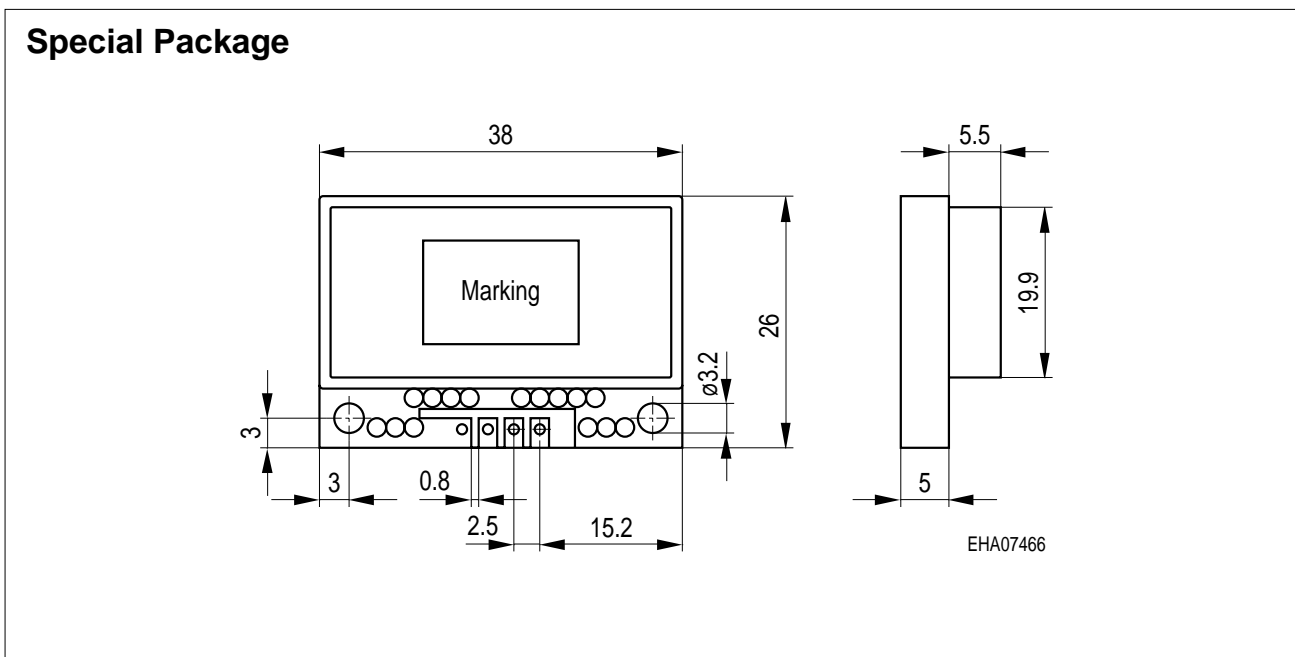


### Typical Radiation Pattern

The diagram shows the typical radiation pattern in the x-z- and y-z-planes. The z-direction is perpendicular to the patch antenna, x shows the longer and y the shorter side of the rectangular antenna.



### Package Outline



### Sorts of Packing

Package outlines for tubes, trays etc. are contained in our Data Book "Package Information".

Dimensions in mm