

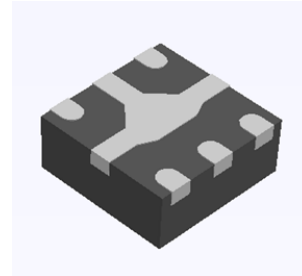
WS7872DE-6/TR

www.omnivision-group.com

0.1GHz – 7.125GHz SPDT Antenna Switch

Descriptions

The WS7872DE-6/TR is a single-pole, double-throw (SPDT) switch. The high linearity performance and low insertion loss make the device an ideal choice for WLAN applications such as 802.11 a/b/g/n. The WS7872DE-6/TR is provided in a compact Dual Flat No-lead Package (DFN) 1.0 x 1.0 mm² package.



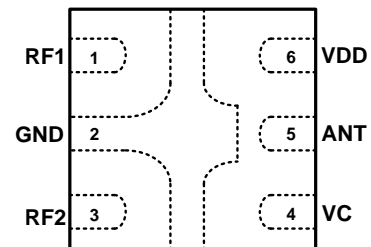
DFN 1.0X1.0-6L (Bottom view)

Features

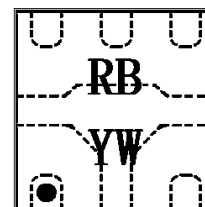
- Small, low profile package 1.0mm x 1.0mm x 0.55mm
- Working frequency up to 7.125 GHz
- Very low insertion loss
- Excellent isolation performance
- Low power consumption
- Exceptional linearity performance for WLAN application
- Low harmonic generation
- Very good ESD performance

Applications

- WLAN 802.11 a/b/g/n
- Tablets
- Other RF front-end modules



Pin configuration (Top view)



RB = Device code

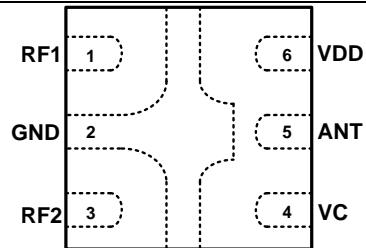
YW = Year/Week code (A~Z)

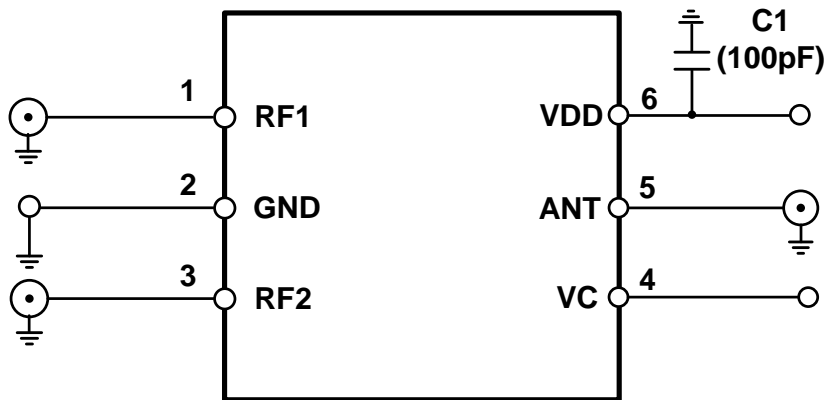
Marking(Top view)

Order information

| Device | Package | Shipping |
|---------------|----------------|----------------|
| WS7872DE-6/TR | DFN 1.0X1.0-6L | 3000/Reel&Tape |

Pinning information

| Pin | Function | Description | Transparent top view |
|-----|----------|-------------------------|--|
| 1 | RF1 | RF port 1 |  |
| 2 | GND | Ground | |
| 3 | RF2 | RF port 2 | |
| 4 | VC | Control pin | |
| 5 | ANT | RF common(antenna) port | |
| 6 | VDD | Supply voltage | |

Application information


Note: filter capacitor is needed on VDD

Recommended operating conditions

| Parameters | Conditions | Specifications | | | Unit |
|------------------------------------|-------------------|----------------|------|------|------|
| | | Min. | Typ. | Max. | |
| ESD Rating | | | | | |
| ESD All Pins | HBM, JESD22-A114 | 2000 | | | V |
| | CDM | 1000 | | | V |
| Power Supply | | | | | |
| Power Supply Voltage | Operating Voltage | 2.5 | 3.3 | 3.6 | V |
| Power Supply Current | | | 17 | | μA |
| Control Voltage | | | | | |
| Logic Control "Low" | | 0 | 0 | 0.3 | V |
| Logic Control "High" | | 1.5 | 1.8 | 3.6 | V |
| VC Current | | | | 5 | μA |
| RF Impedance | | | | | |
| RF Port Input and Output Impedance | | | 50 | | Ω |

Absolute maximum ratings

Maximum ratings are absolute ratings, exceeding only one of these values may cause irreversible damage to the integrated circuit.

| Items | Value | Unit |
|--|-----------------------|------|
| VDD Voltage | 0 to +4.0 | V |
| Control Voltage | 0 to +4.0 | V |
| Maximum Input Power @ RF ports 50Ω, CW, +25°C | 32@0.7GHz to 7.125GHz | dBm |
| Operation Temperature | -40 to +85 | °C |
| Storage Temperature | -65 to +150 | °C |

Characteristics (RF spec)

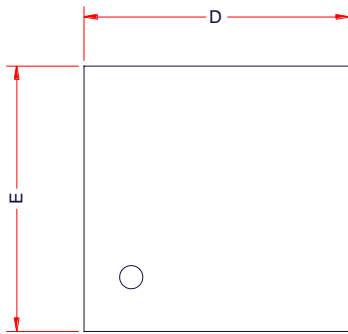
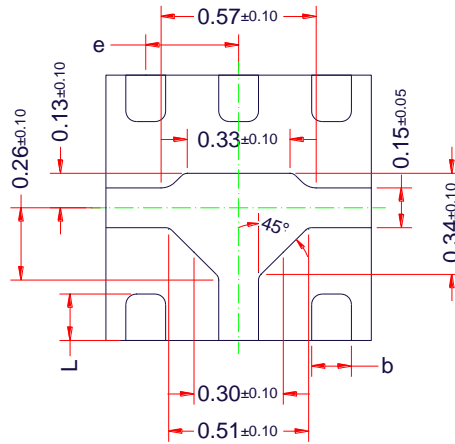
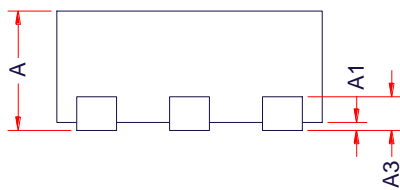
Normal test condition unless otherwise stated. All unused ports are 50Ω terminated.

V_{DD}=3.3V. V_C=1.8V. Temp=+25°C. P_{IN}=0dBm.

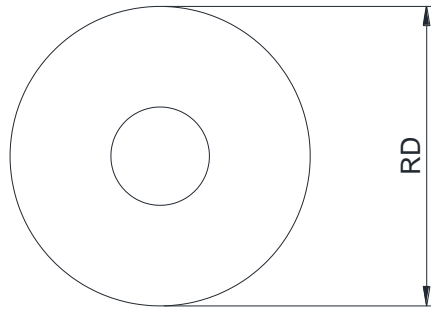
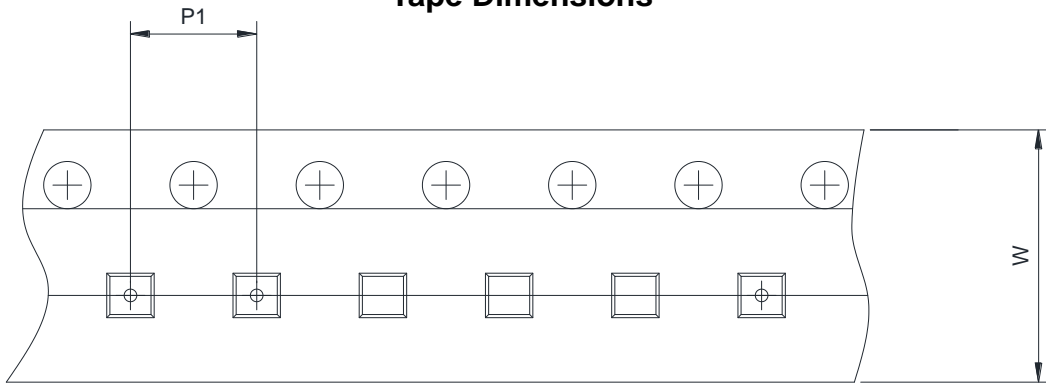
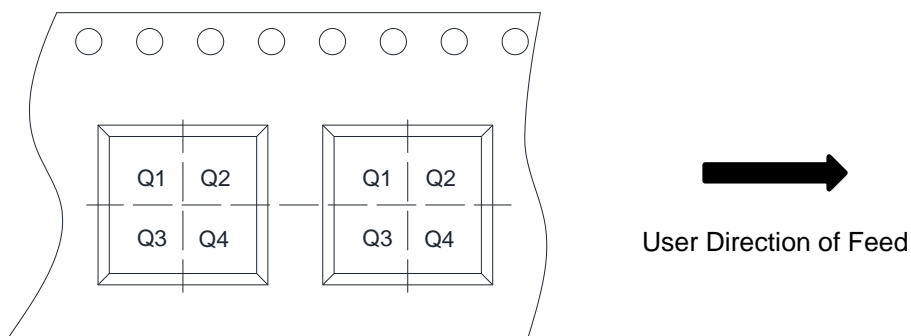
| Parameters | Conditions | Specifications | | | Unit |
|--------------------------------------|---|----------------|------|------|------|
| | | Min. | Typ. | Max. | |
| Insertion Loss (RF1/RF2) | 0.5GHz to 3.0GHz | | 0.5 | | dB |
| | 3.0GHz to 6.0GHz | | 0.7 | | |
| | 6.0GHz to 7.125GHz | | 0.75 | | |
| Input Return Loss (RF1/RF2) | 0.5GHz to 3.0GHz | | 25 | | dB |
| | 3.0GHz to 6.0GHz | | 18 | | |
| | 6.0GHz to 7.125GHz | | 15 | | |
| Isolation (ANT to RF1/RF2) | 0.5GHz to 3.0GHz | | 30 | | dB |
| | 3.0GHz to 6.0GHz | | 21 | | |
| | 6.0GHz to 7.125GHz | | 19 | | |
| Second Harmonics (RF1/RF2) | 0.5GHz to 3.0GHz, P _{IN} =+25dBm | | 89 | | dBc |
| | 3.0GHz to 7.125GHz, P _{IN} =+25dBm | | 92 | | |
| Third Harmonics (RF1/RF2) | 0.5GHz to 3.0GHz, P _{IN} =+25dBm | | 77 | | dBc |
| | 3.0GHz to 7.125GHz, P _{IN} =+25dBm | | 80 | | |
| 0.1dB Compression Point (RF1/RF2) | 0.5GHz to 7.125GHz | | 29 | | dBm |
| Startup Time | 50% of final VDD voltage to 90%/10% of final RF Power | | | 10 | μs |
| RF Path Switching Time | 50% of final VC voltage to 10%/90% of final RF Power | | 320 | 500 | ns |

Truth Table for Operation

| Mode | CTRL |
|------|------|
| RF1 | 1 |
| RF2 | 0 |

PACKAGE OUTLINE DIMENSIONS
DFN1x1-6L

TOP VIEW

BOTTOM VIEW

SIDE VIEW

| Symbol | Dimensions in Millimeters | | |
|--------|---------------------------|------|------|
| | Min. | Typ. | Max. |
| A | 0.45 | 0.50 | 0.55 |
| A1 | 0.00 | 0.02 | 0.05 |
| A3 | 0.12Ref | | |
| b | 0.10 | 0.15 | 0.20 |
| L | 0.10 | 0.17 | 0.25 |
| D | 1.00BSC | | |
| E | 1.00BSC | | |
| e | 0.35BSC | | |

TAPE AND REEL INFORMATION
Reel Dimensions

Tape Dimensions

Quadrant Assignments For PIN1 Orientation In Tape


| | | | |
|------|---|---|---|
| RD | Reel Dimension | <input checked="" type="checkbox"/> 7inch | <input type="checkbox"/> 13inch |
| W | Overall width of the carrier tape | <input checked="" type="checkbox"/> 8mm | <input type="checkbox"/> 12mm <input type="checkbox"/> 16mm |
| P1 | Pitch between successive cavity centers | <input type="checkbox"/> 2mm | <input checked="" type="checkbox"/> 4mm <input type="checkbox"/> 8mm |
| Pin1 | Pin1 Quadrant | <input checked="" type="checkbox"/> Q1 | <input type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4 |