

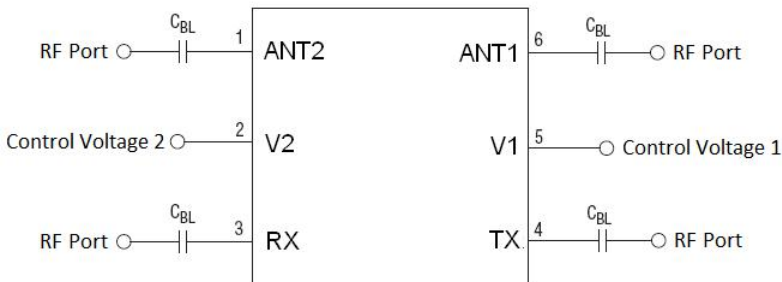
2017.05 Rev2

DESCRIPTION

The SW438 is a DPDT GaAs switch, and designed for 0.1 to 6GHz , dual-band wireless LAN applications . The switch can be used for two voltage inputs (V1 and V2). Depending on the logic voltage level applied to the control pins, the ANT1 and ANT2 pins connect to one of two switched RF outputs (RX or TX) diversity function in a variety of wireless communication systems.

The SW438 is housed in a miniature 1.5 x 1.5 (mm), 6-pin, DFN leadless package (Pb free), and features low insertion loss, high isolation and high linearity, particularly suitable for GSM/3G/LTE/WLAN applications where high power switching is required.

Pin Assignment



DC blocking capacitors are necessary for all RF ports.

The typical value of C_{BL} is 22pF for >2.4GHz application.

Logic Control Table

| V1 | V2 | ANT1- TX | ANT1- RX | ANT2- TX | ANT2- RX |
|------------|------------|----------|----------|----------|----------|
| V_{HIGH} | V_{LOW} | OFF | ON | ON | OFF |
| V_{LOW} | V_{HIGH} | ON | OFF | OFF | ON |

NOTE: High = +2V to +5V, Low = +0V to +0.2V

Any state other than described in this Table places the switch into an undefined state.

An undefined state will not damage the device

KEY FEATURES

- Insertion loss: 0.6dB @ 2.4GHz
0.8dB @ 5.8GHz
- Isolation: 27dB @ 2.4GHz
23dB @ 5.8GHz
- High P-1dB:30dBm@3.3V
- DFN 1.5mmX1.5mm—6 Pin
- Lead-Free and RoHS compliant
- Support 1.8V, 3.3V and 5V control voltage

Pin Details

| Pin No. | Name | Description |
|---------|------|-------------------|
| 1 | ANT2 | Antenna port 2 |
| 2 | V2 | Control voltage 2 |
| 3 | RX | Receive port |
| 4 | TX | Transmit port |
| 5 | V1 | Control voltage 1 |
| 6 | ANT1 | Antenna port 1 |

Electrical Characteristics for +3.3V Control Voltages

Logic High = 3.3V; Logic Low = 0V; TA = 25°C; unless otherwise noted.

| Parameter | Specification | | | Units | Notes |
|-----------------|---------------|------|-----|-------|---|
| | Min | Typ. | Max | | |
| Insertion Loss | | 0.4 | 0.6 | dB | DC – 1GHz 1 – 3GHz 3 – 5GHz 2.4 – 2.5GHz 4.9 – 5.9GHz |
| | | 0.6 | 0.8 | | |
| | | 0.7 | 0.9 | | |
| | | 0.6 | 0.8 | | |
| | | 0.8 | 1.0 | | |
| Isolation | | 32 | | dB | DC – 1GHz 1 – 3GHz 3 – 5GHz 2.4 – 2.5GHz 4.9 – 5.9GHz |
| | 24 | 27 | | | |
| | 22 | 24 | | | |
| | 24 | 27 | | | |
| | 21 | 23 | | | |
| Input/Output RL | | 15 | | dB | DC – 6GHz |
| P1dB | | | | dBm | 0.5-6GHz V _{LOW} =0V, V _{HIGH} =5V V _{LOW} =0V, V _{HIGH} =3.3V V _{LOW} =0V, V _{HIGH} =1.8V |
| | | 31 | | | |
| | | 30 | | | |
| IIP3 | | 46 | | dBm | $\Delta F = 1\text{MHz}$, PIN = +20 dBm/tone @0.5 -6GHz |
| | | 21 | | | |
| Switching Time | | 100 | | ns | 10/90% or 90/10% RF 50% CLT to 90/10% RF |
| | | 100 | | | |
| Control Current | 0 | | 0.2 | V | V _{LOW} 10uA control current V _{HIGH} 100uA control current |
| | 1.8 | | 5 | | |

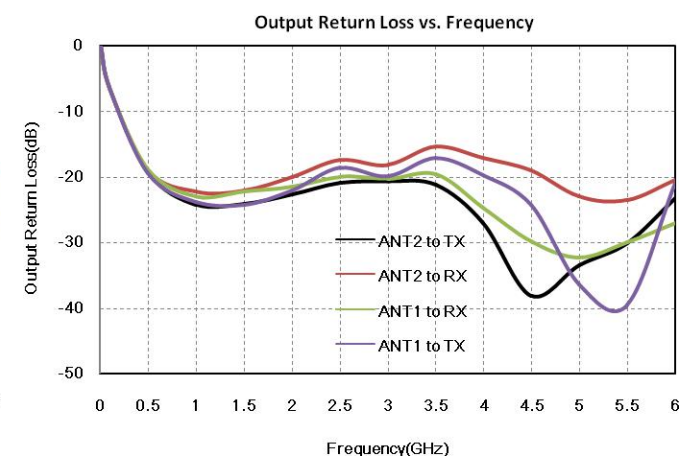
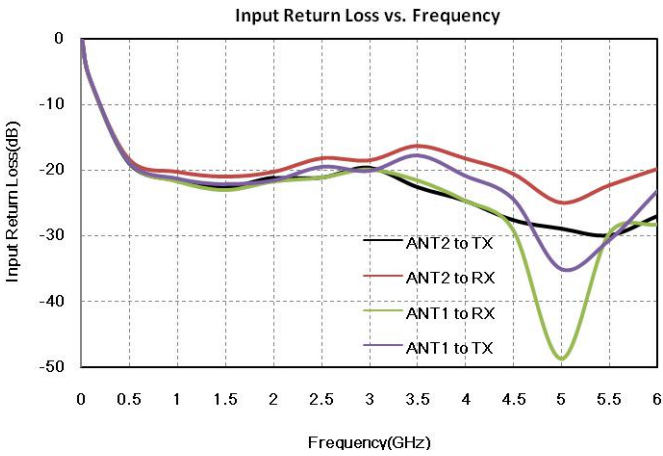
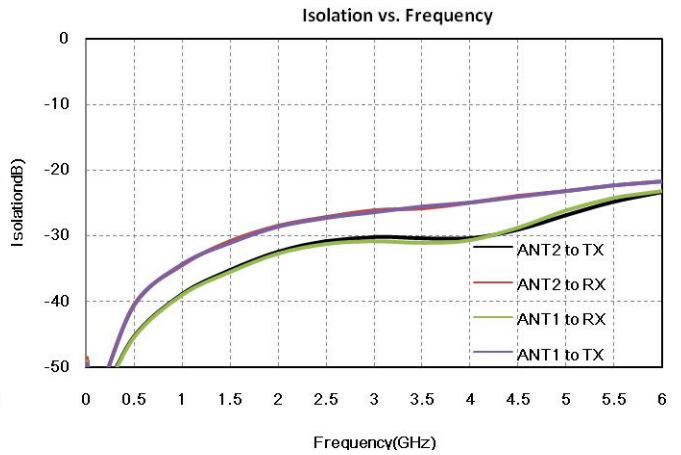
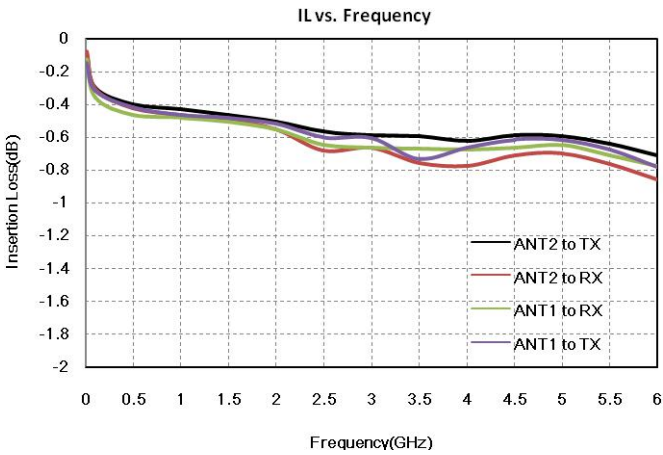
Note: Insertion Loss and Isolation are measured from RFC to RF1, RF2

Absolute Maximum Ratings

| Parameter | Rating | Unit |
|-------------------------------|--------------|------|
| DC Power Supply For Collector | +6 | V |
| RF Input Power 0.5 - 6GHz | +35 | dBm |
| Operating Ambient Temperature | -40 to +125 | °C |
| Storage Temperature | -60 to +150 | °C |
| MSL | LEVEL 1 | |
| ESD | HBM Class 1A | |

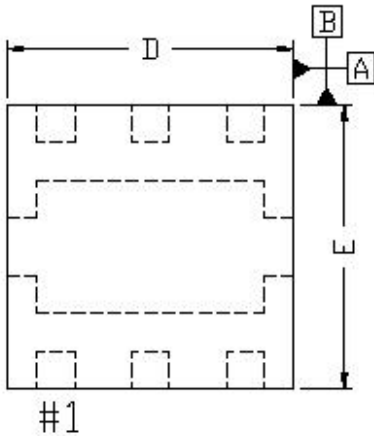
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Typical Characteristic Chart (0, +3.3V)

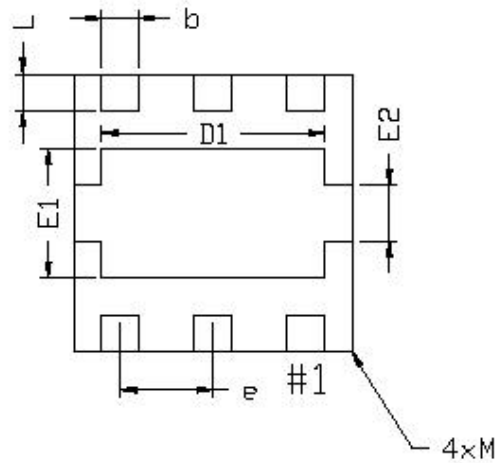


Package Outline

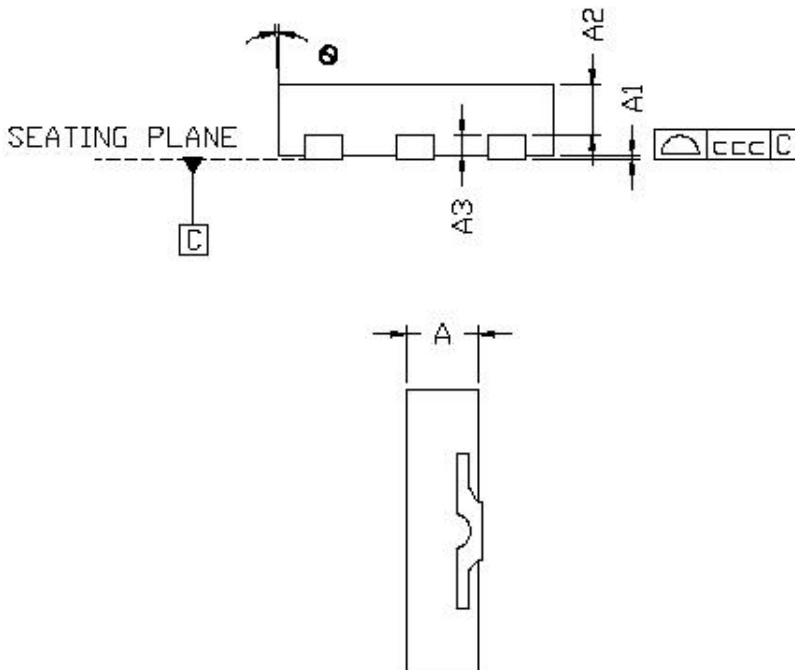
Top View



Bottom View



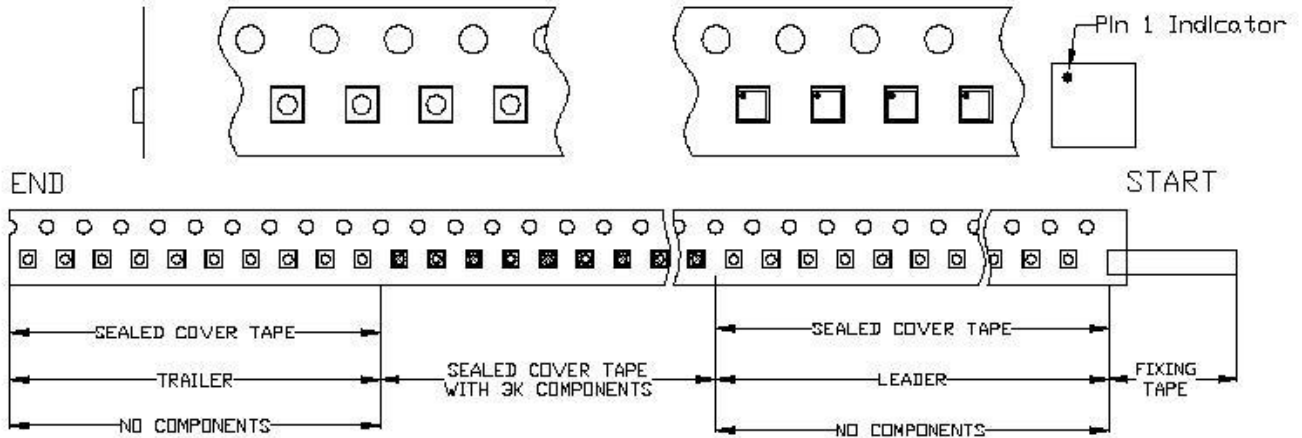
Side View



| Symbol | Dimensions in Millimeters | | |
|--------|---------------------------|----------|-------|
| | MIN | NOM | MAX |
| A | 0.35 | --- | 0.40 |
| A1 | 0.00 | --- | 0.05 |
| A2 | 0.223 | --- | 0.273 |
| A3 | --- | 0.127REF | --- |
| b | 0.15 | 0.20 | 0.25 |
| D | 1.45 | 1.50 | 1.55 |
| D1 | --- | 1.2BSC | --- |
| E | 1.45 | 1.50 | 1.55 |
| E1 | --- | 0.70BSC | --- |
| E2 | --- | 0.30BSC | --- |
| e | --- | 0.50BSC | --- |
| L | 0.15 | 0.20 | 0.25 |
| ⌀ | -12 | --- | 0 |
| ccc | --- | 0.08 | --- |
| M | --- | --- | 0.05 |
| Burr | 0.00 | 0.03 | 0.06 |

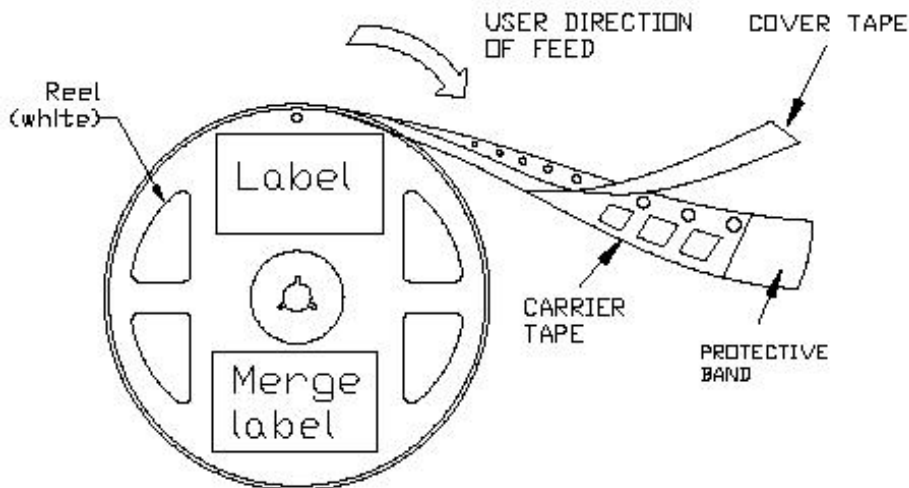
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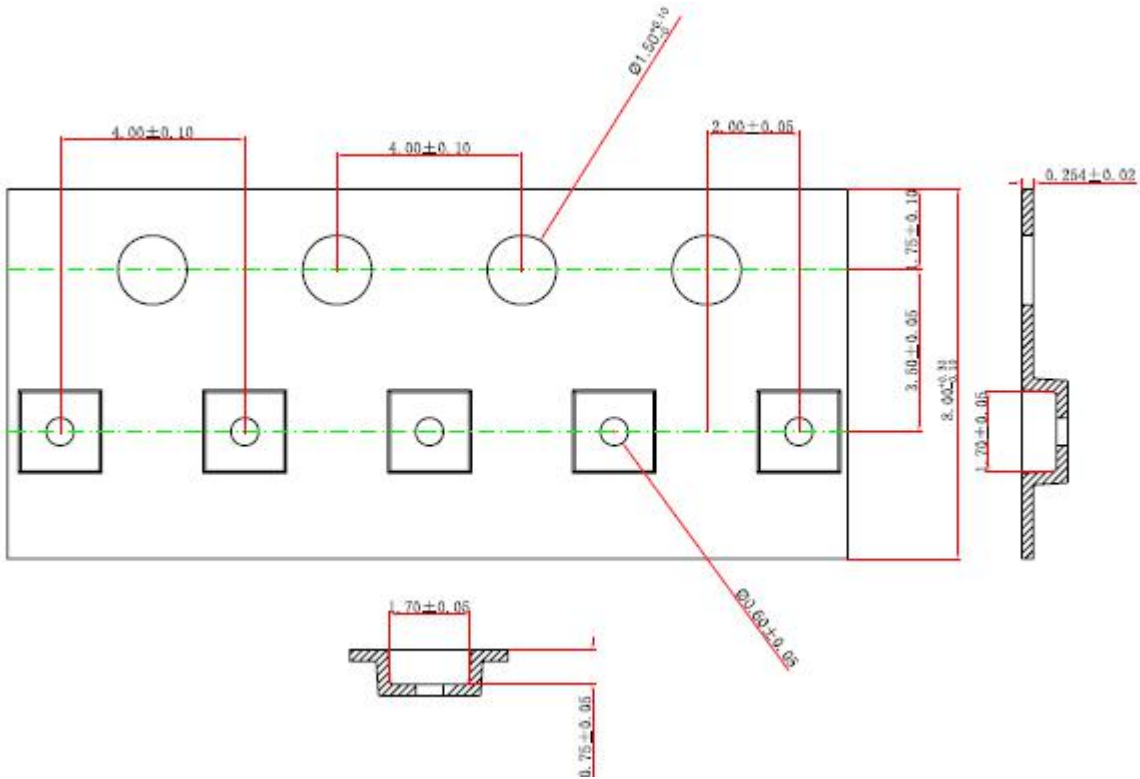
Packing




| ITEM | | SPECIFICATION (mm)(minimum) |
|---------------------------|--------------------------------|-----------------------------|
| LEADER | COVER TAPE WITH EMPTY CAVITIES | 840(210格) |
| TRAILER | COVER TAPE WITH EMPTY CAVITIES | 400(100格) |
| FIXING TAPE | | 100 |
| PROTECTIVE BAND (t=1.0mm) | | 1200 |

| PKG TYPE | Tape Width (mm) | Reel Size | Devices Per Reel |
|------------------------|-----------------|-----------|------------------|
| SV30X30W 15x15x1.55-8L | 8 | 7" | 3000 |





NOTES:

1. ALL DIMS IN mm.
2. COVER TAPE WIDTH: 5.50 ± 0.10
3. MOLD# DFN1.5 × 1.5 × 0.5
4. 10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ± 0.20 MAX.
5. CAMBER NOT TO EXCEED 1 MM IN 100 MM
6. THE DIRECTION OF VIEW: 

The product is designed and manufactured for consumer application only and is not intended for any application listed below which requires especially high reliability for the prevention of such defect which could lead to personal injury, death, physical or environmental damage.

- Aircraft equipment.
- Aerospace equipment.
- Undersea equipment.
- Medical equipment.
- Life-saving or life-sustaining applications
- Transportation equipment (vehicles, trains, ships, etc.).
- Traffic signal equipment.
- Disaster prevention / crime prevention equipment.
- Application of similar complexity and/ or reliability requirements to the applications listed in the above.