

### *GaAs 2bit Control High Power SP4T Switch for 0.8~3.0GHz*

□ **Applications**

Cell, PCS, AWS,W-CDMA, TD-SCDMA, WiMAX  
and other RF applications.

□ **Features**

- Positive Voltage Control ..... +1.3Vmin.
- Low Insertion Loss ..... 0.30dBtyp. @1.0GHz
- High Isolation ..... 28.0dBtyp. @1.0GHz
- Small / Thin Package ..... 16 pin Leadless Package (3mm×3mm×0.55mm|max,RoHS Compliant)
- MSL ..... 3

□ **Absolute Maximum Ratings**

| Symbol  | Parameter              | Conditions                                | Rating      | Unit |
|---------|------------------------|---|-------------|------|
| VDD     | Control Voltage        | Ta = 25°C                                 | 2.5 to 4.0  | V    |
| VCTL(H) | Control Voltage (High) | Ta = 25°C, VCTL ≤ VDD                     | 1.3 to 4.0  | V    |
| VCTL(L) | Control Voltage (Low)  |   | -0.2 to 0.4 | V    |
| Pin     | RF Input Power         | Ta = 25°C<br>VCTL(H) = 1.8V, VCTL(L) = 0V | +36.0       | dBm  |
| Top     | Operating Temperature  | -   | -40 to 85   | °C   |
| Tstg    | Storage Temperature    | -   | -55 to 150  | °C   |

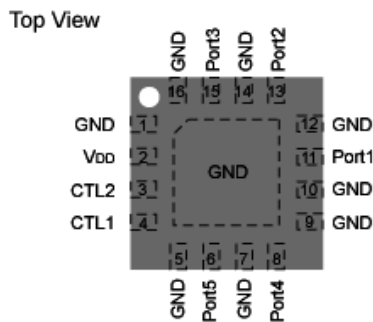
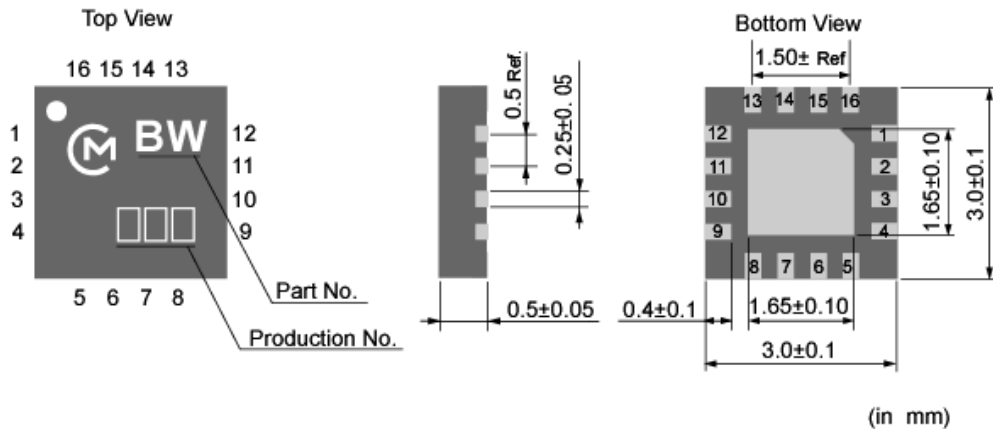
□ **Electrical Specifications (Ta=25°C, VDD=2.6V, VCTL(H)=1.8V, VCTL(L)=0V)**

| Symbol                | Parameter                             | Conditions   | Min. | Typ. | Max. | Unit |
|-----------------------|---------------------------------------|--------------|------|------|------|------|
| I <sub>DD</sub>       | Current Consumption                   | Either State | -    | 200  | 400  | μA   |
| f <sub>0</sub>        | Operation Frequency                   | -            | 0.8  | -    | 3.0  | GHz  |
| IL                    | Insertion Loss<br>(Port1-Port2,3,4,5) | 0.8~1.0GHz   | -    | 0.30 | 0.50 | dB   |
|                       |                                       | 1.0~2.0GHz   | -    | 0.40 | 0.60 | dB   |
|                       |                                       | 2.0~3.0GHz   | -    | 0.50 | 0.70 | dB   |
| ISO                   | Isolation<br>(Port1-Port2,3,4,5)      | 0.8~1.0GHz   | 25.0 | 28.0 | -    | dB   |
|                       |                                       | 1.0~2.0GHz   | 20.0 | 23.0 | -    | dB   |
|                       |                                       | 2.0~3.0GHz   | 17.0 | 20.0 | -    | dB   |
| P <sub>in 0.5dB</sub> | Input Power for 0.5dB Compression     | 2.0GHz       | 33.0 | 36   | -    | dBm  |

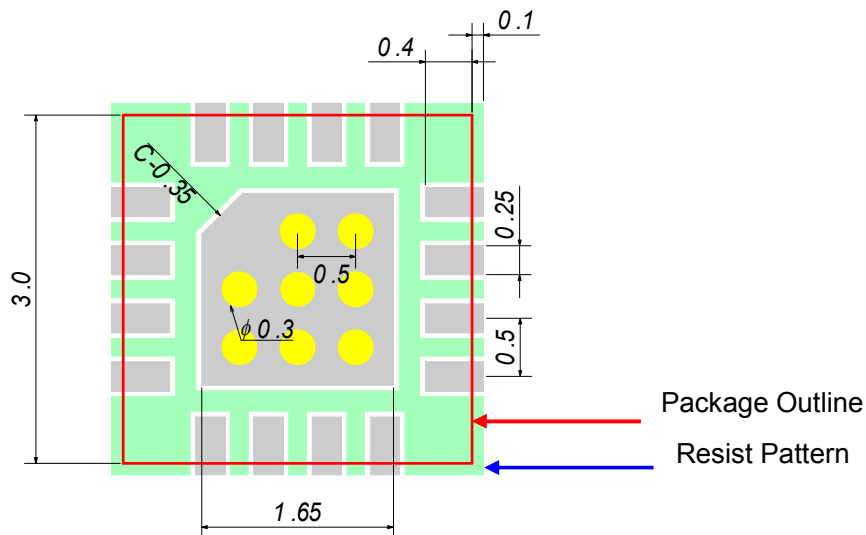
□ **Linearity Measurement Data (Ta=25°C, VDD=2.6V, VCTL(H)=1.8V, VCTL(L)=0V)**

| Symbol | Parameter  | Conditions  | Typ. | Unit |
|--------|--|---|------|------|
| IIP2   | Input 2nd Order Intercept Point<br>(Port1-Port2,3,4,5) | Cell Band:881MHz<br>f <sub>1</sub> =837MHz, P <sub>in</sub> =26dBm<br>f <sub>2</sub> =1718MHz, P <sub>in</sub> =-20dBm(Jammer)  | 116  | dBm  |
|        |  | PCS Band:1965MHz<br>f <sub>1</sub> =1885MHz, P <sub>in</sub> =26dBm<br>f <sub>2</sub> =3850MHz, P <sub>in</sub> =-20dBm(Jammer)   | 108  | dBm  |
|        |  | UMTS/AWS Band:2132MHz<br>f <sub>1</sub> =1733MHz, P <sub>in</sub> =26dBm<br>f <sub>2</sub> =3865MHz, P <sub>in</sub> =-20dBm(Jammer)  | 108  | dBm  |
| TBR    | Triple Beat Rate<br>(Port1-Port2,3,4,5)                | Cell Band:880MHz<br>f <sub>1</sub> =835MHz, P <sub>in</sub> =21.5dBm<br>f <sub>2</sub> =836MHz, P <sub>in</sub> =21.5dBm<br>f <sub>3</sub> =881MHz, P <sub>in</sub> =-30dBm(Jammer)         | 88   | dBc  |
|        |  | PCS Band:1959MHz<br>f <sub>1</sub> =1880MHz, P <sub>in</sub> =21.5dBm<br>f <sub>2</sub> =1881MHz, P <sub>in</sub> =21.5dBm<br>f <sub>3</sub> =1960MHz, P <sub>in</sub> =-30dBm(Jammer)      | 85   | dBc  |
|        |  | UMTS/AWS Band:2131MHz<br>f <sub>1</sub> =1732MHz, P <sub>in</sub> =13.5dBm<br>f <sub>2</sub> =1733MHz, P <sub>in</sub> =13.5dBm<br>f <sub>3</sub> =2132MHz, P <sub>in</sub> =-30dBm(Jammer) | 97   | dBc  |

□ Package Outline and Pin Connections



□ Land Pattern

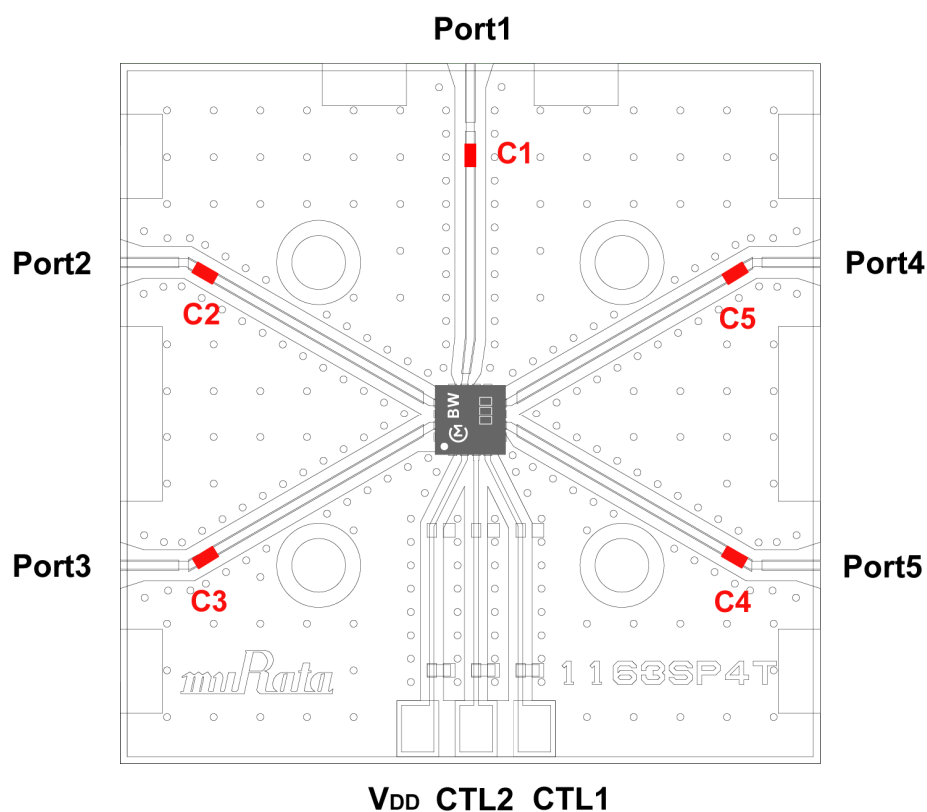


□ **Truth Table**

| Path        | VDD | CTL1 | CTL2 |
|-------------|-----|------|------|
| Port1-Port2 | H   | L    | L    |
| Port1-Port3 | H   | H    | L    |
| Port1-Port4 | H   | L    | H    |
| Port1-Port5 | H   | H    | H    |

H: 2.5 to 4.0V(VDD), 1.3 to VDD(CTL)  
L: 0V

□ **Evaluation Board**



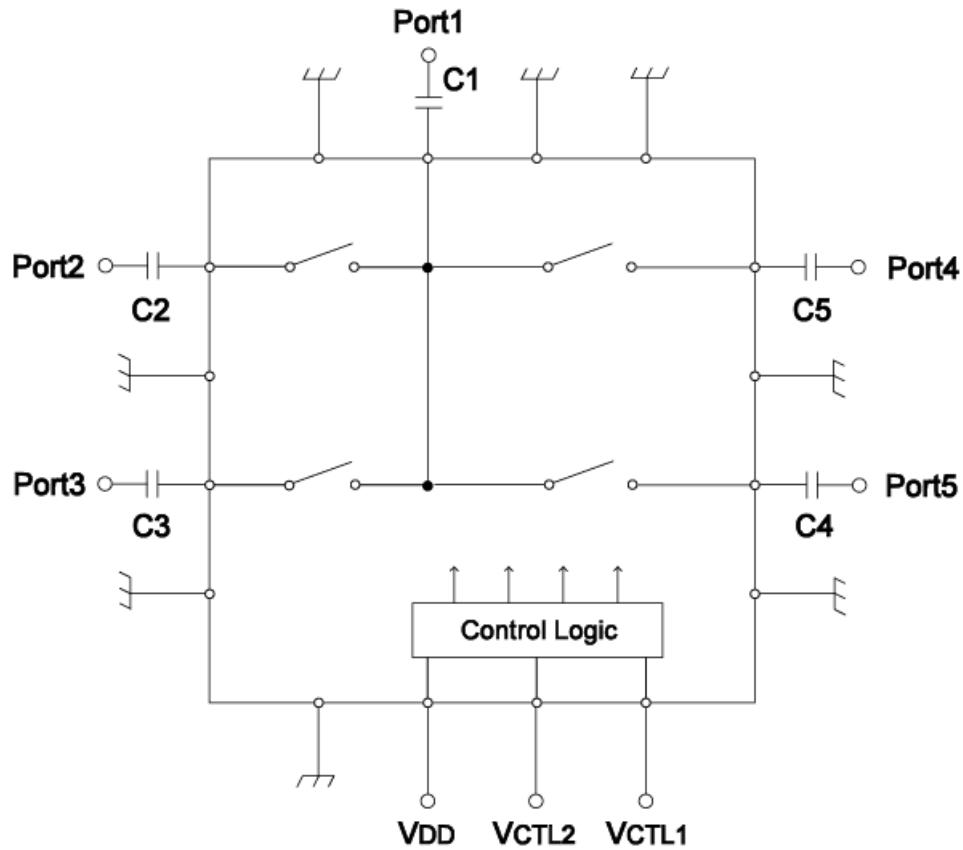
**Parts List**

| Part No. | Products       | Value |
|----------|----------------|-------|
| C1-C5    | GRM155(Murata) | 47 pF |

**Substrate**

Transmission Line: 50Ω  
Material :FR4 ( $\epsilon_r = 4.4$ )  
Size : 30mm x 30mm  
Thickness : 0.2mm + Dummy 0.4mm

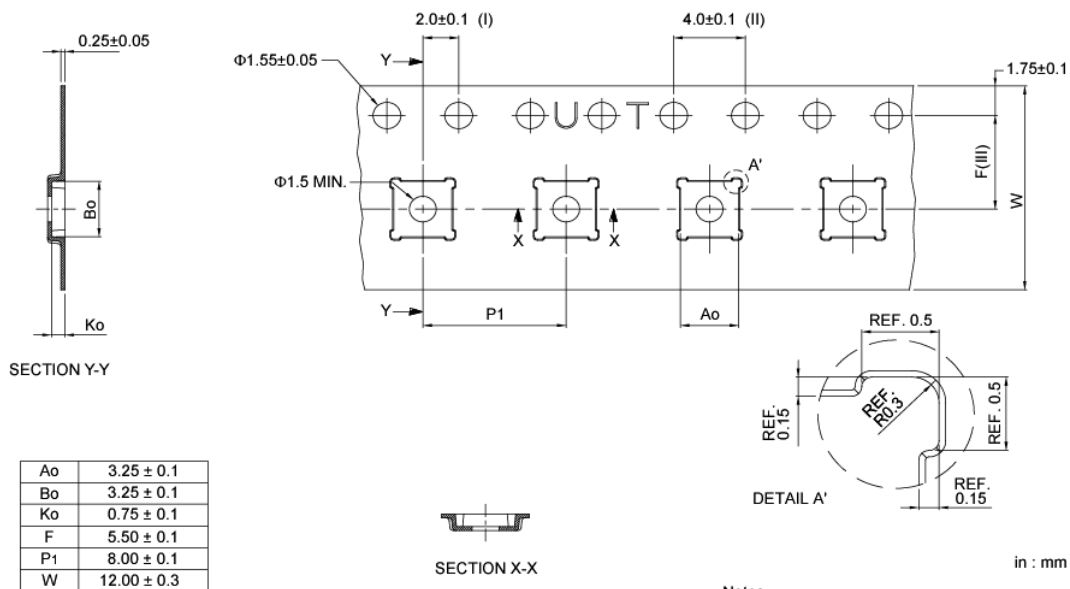
□ **Evaluation Circuit**



\*Note: C1,C2,C3,C4,C5: must be supplied as DC blocking cap.

### □ Taping Specification

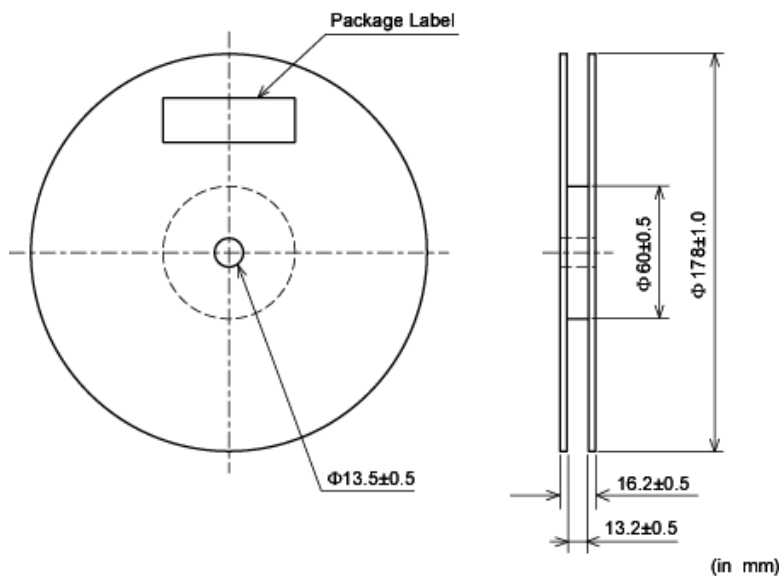
#### Tape Dimensions



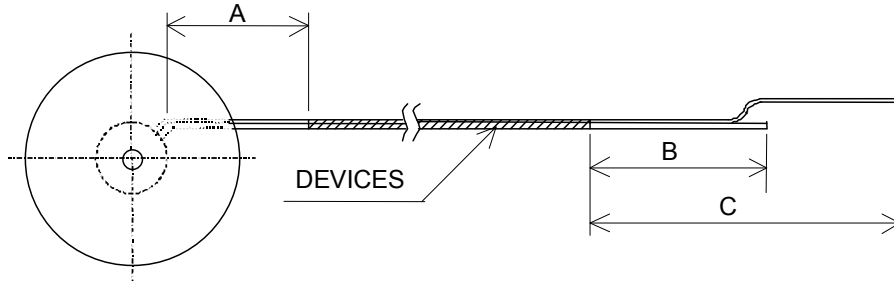
Notes:

- (I) Measured from centerline of sprocket hole to centerline of pocket.
- (II) Cumulative tolerance of 10 sprocket hole is ±0.20.
- (III) Measured from centerline of sprocket hole to centerline of pocket.
- (IV) Material: Conductive Polystyrene.

#### Reel Dimensions

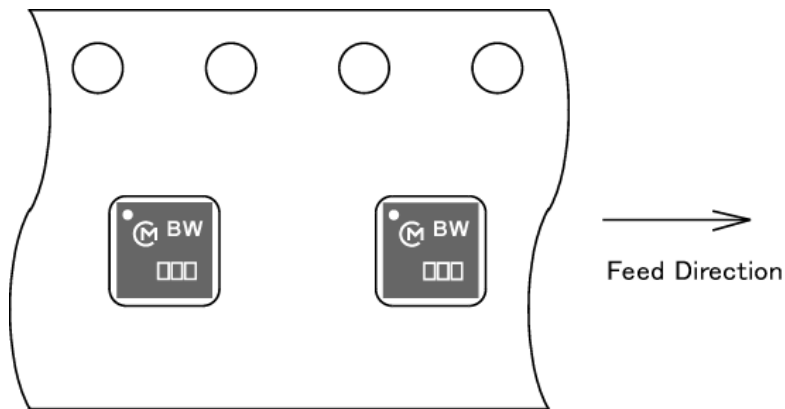


Leader and Trailer Dimensions



| Symbol | Items                      | Ratings (mm) |
|--------|----------------------------|--------------|
| A      | Trailer                    | 160 ~        |
| B      | Leader with empty cavities | 100 ~        |
| C      | Leader                     | 400 ~        |

Device Dimensions



Packing Unit  
2000pcs / reel



**CAUTION -Limitation of Applications-**

The product is designed and manufactured for consumer application only and is not available for any application listed below which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property.

- Aircraft equipment.
- Aerospace equipment.
- Undersea equipment.
- Medical equipment.
- 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.