

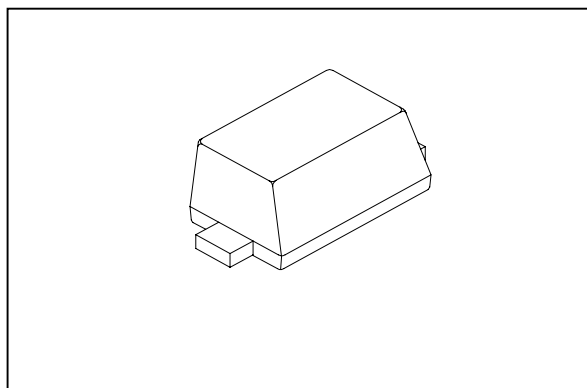
## Variable Capacitance Diode

### Description

The 1W404 is a variable capacitance diode contained for electronic tuning of wide-band CATV tuners using a super-small-miniature flat package (SSVC).

### Features

- Super-small-miniature flat package
- Low series resistance       $0.65\Omega$     Max    ( $f = 470\text{MHz}$ )
- Large capacitance ratio      11.5    Typ    ( $C_2/C_{25}$ )
- Small leakage current       $10\text{nA}$     Max    ( $V_R = 28\text{V}$ )
- Capacitance deviation within 2 %



### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

- Reverse voltage       $V_R$       34      V
- Operating temperature     $T_{opr}$      $-20 \sim +75^\circ\text{C}$
- Storage temperature       $T_{stg}$      $-65 \sim +150^\circ\text{C}$

### Applications

Electronic tuning of wide-band CATV tuners

### Structure

Silicon epitaxial planar type diode

### Electrical Characteristics

( $T_a = 25^\circ\text{C}$ )

| Item                                      | Symbol          | Conditions                                                                 | Min.  | Typ.         | Max.  | Unit     |
|-------------------------------------------|-----------------|----------------------------------------------------------------------------|-------|--------------|-------|----------|
| Reverse voltage                           | $V_R$           | $I_R = 1\mu\text{A}$                                                       | 34    |              |       | V        |
| Reverse current                           | $I_R$           | $V_R = 28\text{V}$                                                         |       |              | 10    | nA       |
| Diode capacitance                         | $C_2$           | $V_R = 2\text{V}, f = 1\text{MHz}$                                         | 29.50 |              | 33.50 | pF       |
|                                           | $C_{25}$        | $V_R = 25\text{V}, f = 1\text{MHz}$                                        | 2.60  |              | 2.90  | pF       |
| Capacitance ratio                         | $C_2/C_{25}$    |                                                                            | 11.0  | 11.5         |       |          |
|                                           | $C_{25}/C_{28}$ |                                                                            | 1.03  |              |       |          |
| Series resistance                         | $r_s$           | $C_D = 14\text{pF}, f = 470\text{MHz}$<br>Tester : 4191A<br>Tester : 4291B |       | 0.58<br>0.61 | 0.65  | $\Omega$ |
| Capacitance deviation in a matching group | $\Delta C$      | $V_R = 2 \sim 25\text{V}, f = 1\text{MHz}$                                 |       |              | 2.0   | %        |

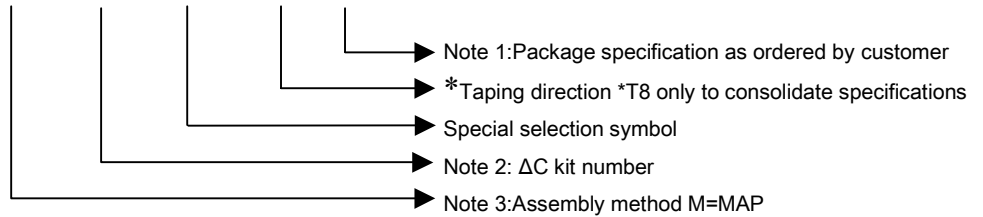
$\Delta C$  : The capacitance deviation of continuous 20 pcs of 1W404 is ranged within 2% in any place of the taping package.

TWPEC reserves the right to change products and specifications without prior notice. This information does not convey any license by any implication or otherwise under any patents or other right. Application circuits shown, if any, are typical examples illustrating the operation of the devices. TWPEC cannot assume responsibility for any problems arising out of the use of these circuits.

## Product Name and Package Specification for the 1W404

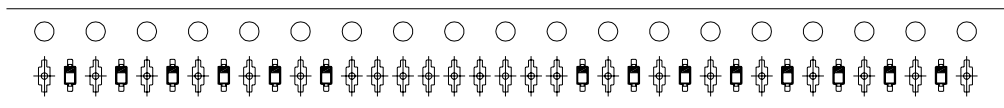
According to the classification number for the combination of capacitance deviations (hereafter  $\Delta C$ ), assembly method and automatic mounting equipment section, the following product names are assigned.

1W404 - M 020 A - T8 A

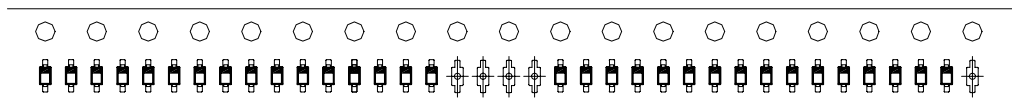


Note 1) In taping packaging of products groups according to the  $\Delta C$  classification, products must be divided according to the group. If taping is performed without grouping into categories, products from two different groups may be mounted on the same tuner, so that  $\Delta C$  cannot be assured during tuning, making tuning defective.

A: The SSVC (4000 pieces/reel) product is put on the taping reel with every other empty section for SSVC .and 9 empty sections are to be provided at each ranking section for SSVC 4000pieces/reel.



E: The SSVC (8000 pieces/reel) product is put on the taping reel with every other empty section for SSVC .and 4 empty sections are to be provided at each ranking section for SSVC 8000pieces/reel.



Note 2)  $\Delta C$  kit number

When taping each group, taping is performed in kit number multiples.

001; Incomplete kit ( $\Delta C$  not guaranteed)

004; 4 kits

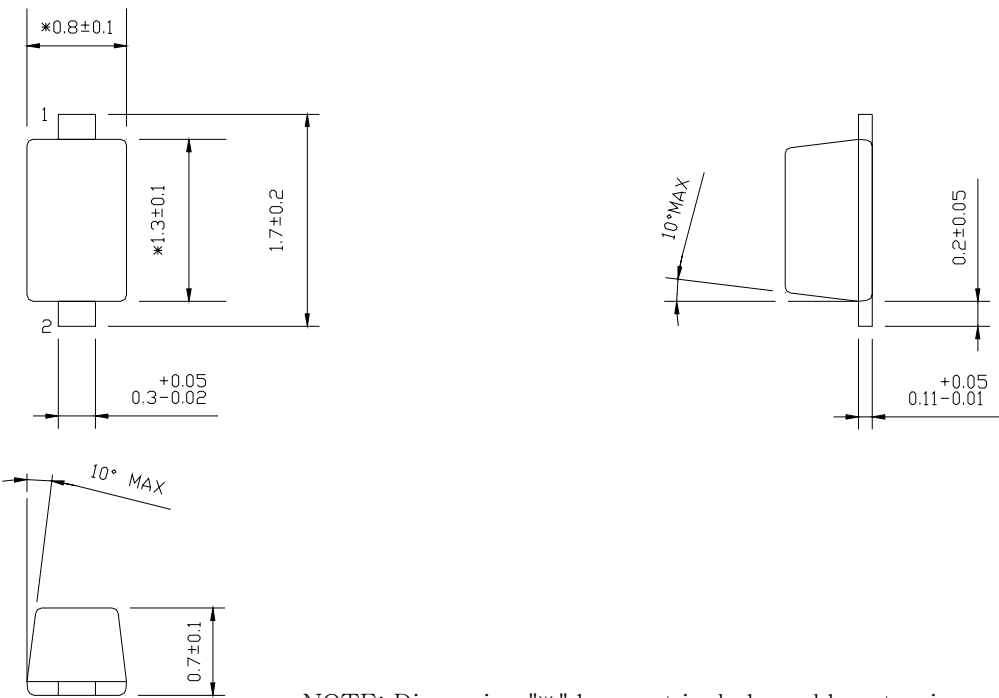
020; 20 kits

Recommended kit number; 4 and 20

Other) Minimum number of kits per group is 240 (60 or more at the beginning of the carrier tape). Up to 9 ranks for SSVC 4000pieces/reel, and 12 ranks for SSVC 8000 pieces/reel.

Note 3) “MAP” is the method where the neighboring chips are assembled continuously in order to enhance the concentration of the capacitance deviation in a matching group.

Package outline Unit: mm



NOTE: Dimension "\*" does not include mold protrusion

|            |       |
|------------|-------|
| TWPEC CODE | T-290 |
| EIAJ CODE  | —     |
| JEDEC CODE | —     |

|                  |                |
|------------------|----------------|
| PACKAGE MATERIAL | EPOXY RESIN    |
| LEAD TREATMENT   | SOLDER PALTING |
| LEAD MATERIAL    | COPPER         |
| PACKAGE WEIGHT   | 0.002g         |

MARKING



- 1: Cathode
- 2: Anode

