

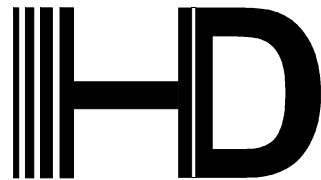
Approved by:

Checked by:

Issued by:

# ***SPECIFICATION***

**MODEL: HD F337E (F11)**



**SHOULDER ELECTRONIC LIMITED**

---

## 1. SCOPE

- 1). Haoda's production specifications reflect the typical performance in a 50 ohm single-ended system. This filter can be used in both single-ended and/or differential modes at each port. Similar performance can be achieved in source and load impedances ranging from 50 to 500 ohm.
- 2). The typical insertion loss may vary slightly depending on actual source and load impedances, matching configuration and PC board layout.
- 3). No Trilpe Transit gating required.
- 4). Inductors with  $\pm 2\%$  tolerance may be required.
- 5). In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature.

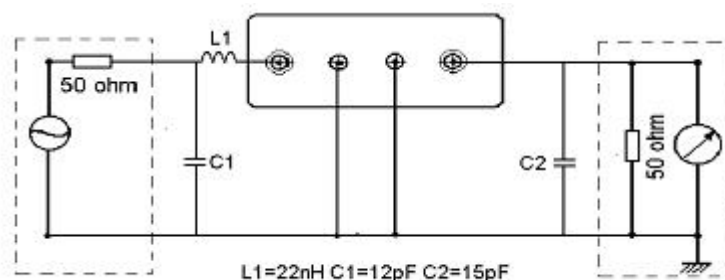
## 2. ELECTRICAL SPECIFICATION

|                       |                |
|-----------------------|----------------|
| DC Voltage VDC        | 10V            |
| AC Voltage Vpp        | 10V50Hz/60Hz   |
| Operation temperature | -20°C to +60°C |
| Storage temperature   | -45°C to +85°C |
| RF Power Dissipation  | 0dBm           |

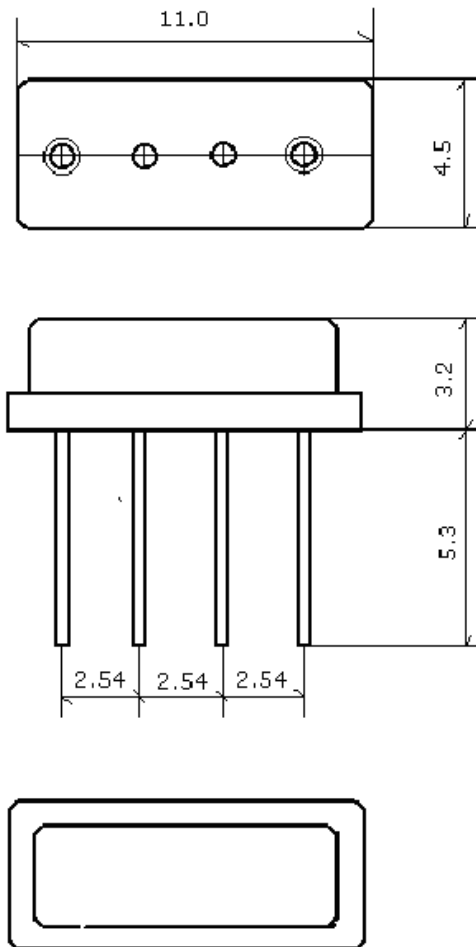
### Electronic Characteristics

| Parameter                                | Unit   | Minimum              | Typical | Maximum |
|--|--------|----------------------|---------|---------|
| Center Frequency                         | MHz    | -                    | 337.5   | -       |
| Insertion Loss                           | dB     | -                    | 8.5     | 11      |
| 3 dB Bandwidth                           | MHz    | 18                   | 22      | -       |
| Passband Ripple(over 90% of 1 dB BW)     | dB p-p | -                    | 0.6     | 1.2     |
| Group Delay Ripple                       | nsec   | -                    | 100     |         |
| Relative attenuation                     |        |                      |         |         |
| $F_0 \pm 18\text{MHz} \sim 25\text{MHz}$ | dB     | 35                   | 40      |         |
| $F_0 \pm 25\text{MHz} \sim 50\text{MHz}$ |        | 40                   | 50      |         |
| Substrate Material                       | -      | YZLiNbO <sub>3</sub> |         | -       |
| Operating Temperature Range              | °C     | -40                  | 25      | 85      |

## 3. TEST CIRCUIT



## 4. DIMENSION



## 5. ENVIRONMENTAL CHARACTERISTICS

### 5-1 High temperature exposure

Subject the device to +85°C for 16 hours. Then release the filter into the room conditions for 24 hours prior to the measurement. It shall fulfill the specifications in table 1.

### 5-2 Low temperature exposure

Subject the device to -20°C for 16 hours. Then release the device into the room conditions for 24 hours prior to the measurement. It shall fulfill the specifications in table 1.

### 5-3 Temperature cycling

Subject the device to a low temperature of -40°C for 30 minutes. Following by a high temperature of +80°C for 30 Minutes. Then release the device into the room conditions for 24 hours prior to the measurement. It shall meet the specifications in table 1.

### 5-4 Resistance to solder heat

Dip the device terminals no closer than 1.5mm into the solder bath at 260°C ±10°C for 10 ± 1 sec. Then release the device into the room conditions for 4

hours. The device shall meet the specifications in table 1.

#### 5-5 Solderability

Subject the device terminals into the solder bath at  $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for 5s, More than 95% area of the terminals must be covered with new solder. It shall meet the specifications in table 1.

#### 5-6 Mechanical shock

Drop the device randomly onto the concrete floor from the height of 1m 3 times. the device shall fulfill the specifications in table 1.

#### 5-7 Vibration

Subject the device to the vibration for 1 hour each in x,y and z axes with the amplitude of 1.5 mm at 10 to 55 Hz. The device shall fulfill the specifications in table 1.

#### 5-8 Lead fatigue

##### 5-8-1 Pulling test

Weight along with the direction of lead without an shock 1kg. The device shall satisfy all the initial Characteristics.

##### 5-8-2 Bending test

Lead shall be subject to withstand against  $90^{\circ}\text{C}$  bending with 450g weight in the direction of thickness. This operation shall be done toward both direction. The device shall show no evidence of damage and shall satisfy all the initial electrical characteristics.

## 6. REMARK

### 6.1 Static voltage

Static voltage between signal load & ground may cause deterioration & destruction of the component. Please avoid static voltage.

### 6.2 Ultrasonic cleaning

Ultrasonic vibration may cause deterioration & destruction of the component. Please avoid ultrasonic cleaning

### 6.3 Soldering

Only leads of component may be soldered. Please avoid soldering another part of component.

## 7. Packing

### 7.1 Dimensions

(1) Carrier Tape: Figure 1

(2) Reel: Figure 2

(3) The product shall be packed properly not to be damaged during transportation and storage.

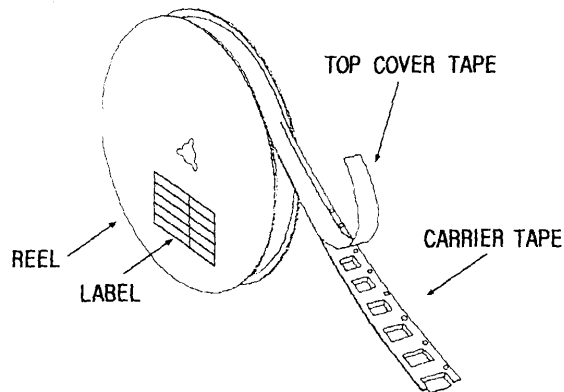
### 7.2 Reeling Quantity

1000 pcs/reel 7"

3000 pcs/reel 13"

### 7.3 Taping Structure

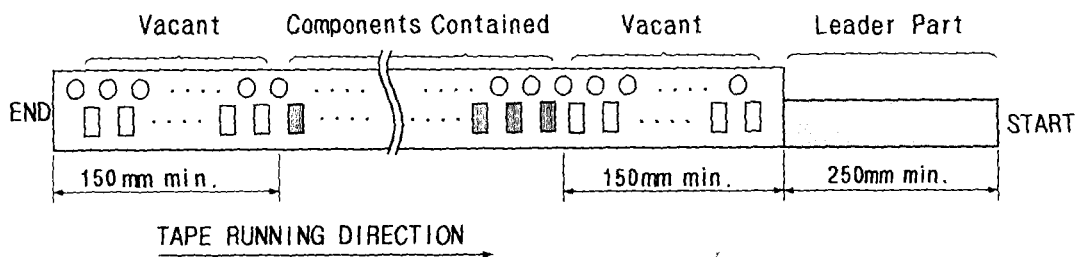
(1) The tape shall be wound around the reel in the direction shown below.



(2) Label

|                   |  |
|-------------------|--|
| Device Name       |  |
| User Product Name |  |
| Quantity          |  |
| Lot No.           |  |

(3) Leader part and vacant position specifications.



## 8. TAPE SPECIFICATIONS

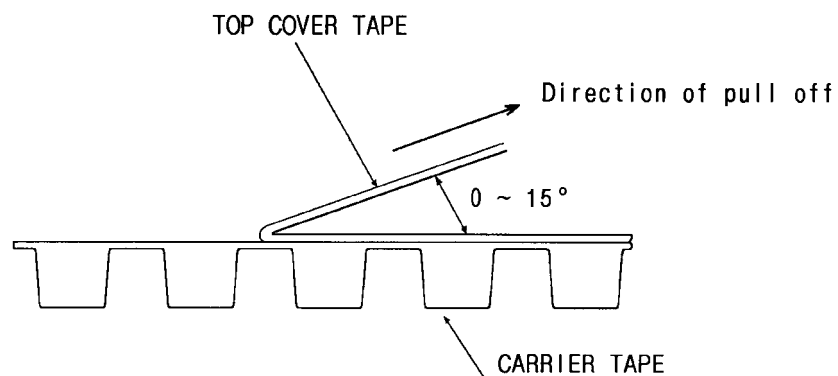
8.1 Tensile Strength of Carrier Tape: 4.4N/mm width

8.2 Top Cover Tape Adhesion (See the below figure)

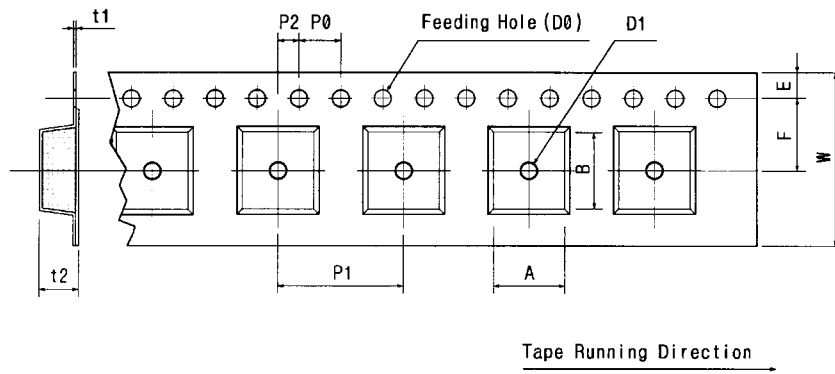
(1) pull off angle: 0~15°

(2) speed: 300mm/min.

(3) force: 20~70g



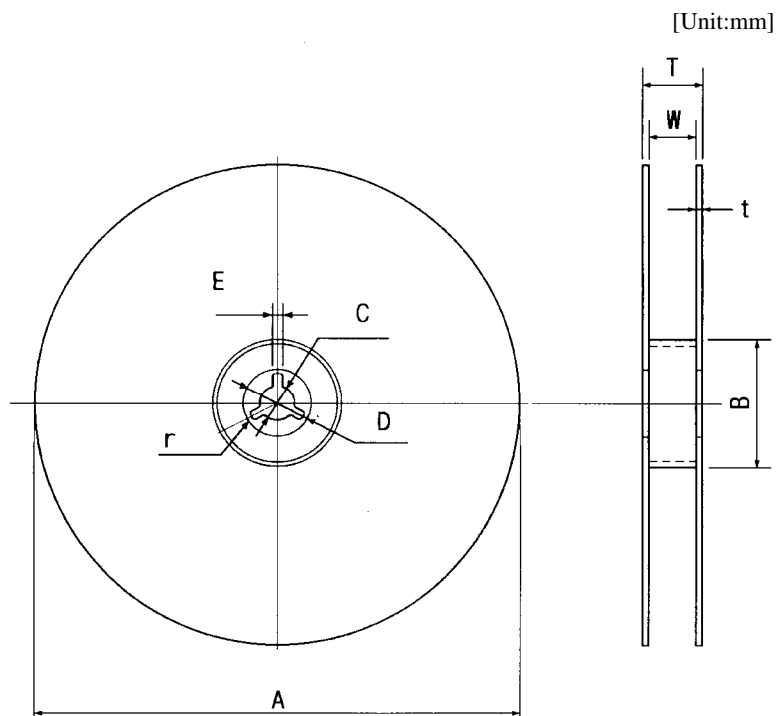
[Figure 1] Carrier Tape Dimensions



[Unit:mm]

| W            | F            | E            | P0          | P1          | P2           | D0           | D1            | t1           | t2           | A            | B            |
|--------------|--------------|--------------|-------------|-------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|
| 12.0±<br>0.3 | 5.5<br>±0.05 | 1.75±<br>0.1 | 4.0<br>±0.1 | 8.0<br>±0.1 | 2.0<br>±0.05 | ∅1.5±<br>0.1 | ∅1.0<br>±0.25 | 0.3<br>±0.05 | 2.10±<br>0.1 | 6.40±<br>0.1 | 5.20±<br>0.1 |

[Figure 2]



[Unit:mm]

| A            | B            | C           | D           | E         | W          | t         | r           |
|--------------|--------------|-------------|-------------|-----------|------------|-----------|-------------|
| ∅330<br>±1.0 | ∅100<br>±0.5 | ∅13<br>±0.5 | ∅21<br>±0.8 | 2<br>±0.5 | 13<br>±0.3 | 3<br>max. | 1.0<br>max. |