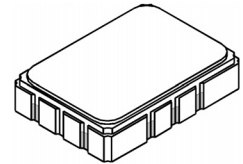


- Designed for SDARS IF Receiver
- Low Insertion Loss
- 5.0 X 7.0 mm Surface-Mount Case
- Differential or Single Ended Input and Output
- Complies with Directive 2002/95/EC (RoHS)
- Moisture Sensitivity Level: 1
- AEC-Q200 Qualified

**SF2037B-2**

**76.500 MHz  
SAW Filter**



**SMP-03**

#### Absolute Maximum Ratings

| Rating                                          | Value          | Units |
|-------------------------------------------------|----------------|-------|
| Maximum Incident Power in Passband              | +10            | dBm   |
| Max. DC voltage between any 2 terminals         | 30             | VDC   |
| Storage Temperature Range (with tape & reel)    | -40 to +85     | °C    |
| Storage Temperature Range (without tape & reel) | -50 to +125    | °C    |
| Max Soldering Profile                           | 265°C for 10 s |       |

#### Electrical Characteristics

| Characteristic                                                    | Sym              | Notes | Min                               | Typ    | Max  | Units             |
|-------------------------------------------------------------------|------------------|-------|-----------------------------------|--------|------|-------------------|
| Nominal Center Frequency                                          | $f_c$            |       |                                   | 76.500 |      | MHz               |
| Passband                                                          |                  |       |                                   |        |      |                   |
| Insertion Loss                                                    | IL               |       |                                   | 10.0   | 12.5 | dB                |
| 1dB Passband                                                      | BW <sub>1</sub>  |       | 3.8                               | 4.1    |      | MHz               |
| 15dB Bandwidth                                                    | BW <sub>15</sub> |       |                                   | 6.7    | 6.8  | MHz               |
| 30dB Bandwidth                                                    | BW <sub>30</sub> |       |                                   | 7.7    | 7.8  | MHz               |
| Amplitude Ripple over $f_c \pm 1.9$ MHz                           |                  |       |                                   | 0.5    | 1.10 | dB <sub>p-p</sub> |
| Group Delay Variation over $f_c \pm 1.9$ MHz                      | GDV              |       |                                   | 65     | 150  | ns <sub>p-p</sub> |
| Rejection                                                         |                  |       |                                   |        |      |                   |
| 50 to 70.44 MHz                                                   |                  |       | 37                                | 43     |      | dB                |
| 70.44 to 72.04 MHz                                                |                  |       | 34                                | 43     |      |                   |
| 81.26 to 82.56 MHz                                                |                  |       | 38                                | 49     |      |                   |
| 82.56 to 86.50 MHz                                                |                  |       | 39                                | 48     |      |                   |
| 86.5 to 91.50 MHz                                                 |                  |       | 41                                | 48     |      |                   |
| 91.50 to 100.000 MHz                                              |                  |       | 45                                | 58     |      |                   |
| Operating Temperature Range                                       | T <sub>A</sub>   |       | -40                               |        | +105 | °C                |
| Frequency Temperature Coefficient                                 | FTC              |       |                                   | -18    |      | ppm/°C            |
| Differential Input                                                |                  |       | 175 ohms                          |        |      |                   |
| Differential Output                                               |                  |       | 1000 ohms                         |        |      |                   |
| Case Style                                                        |                  |       | SMP-03 7 x 5 mm Nominal Footprint |        |      |                   |
| Lid Symbolization (YY=year, WW=week, S=shift, ## = Sequence Code) |                  |       | RFM SF2037B-2 YYWWS##             |        |      |                   |

#### Electrical Connections

| Connection           | Terminals  |
|----------------------|------------|
| Port 1 Hot           | 10         |
| Port 1 Ground Return | 1          |
| Port 2 Hot           | 5          |
| Port 2 Ground Return | 6          |
| Case Ground          | All Others |



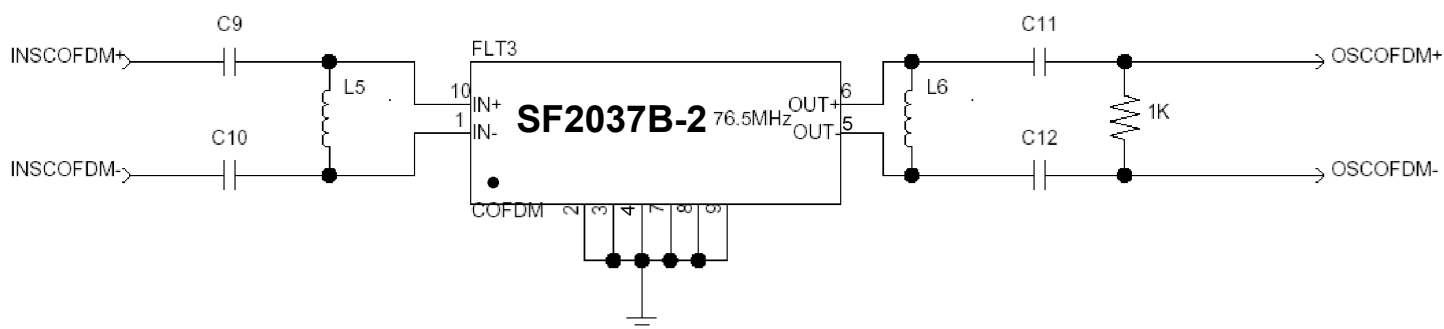
**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

**NOTES:**

1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.
3. RoHS compliant from the first date of manufacture.

**Matching Circuit and Matching Component Values Used in G3 Sirius Radios**

(Refer to Sirius Radio G3 Chipset Application Note, Doc. #RX000104-B, Sec. 4.2.4)

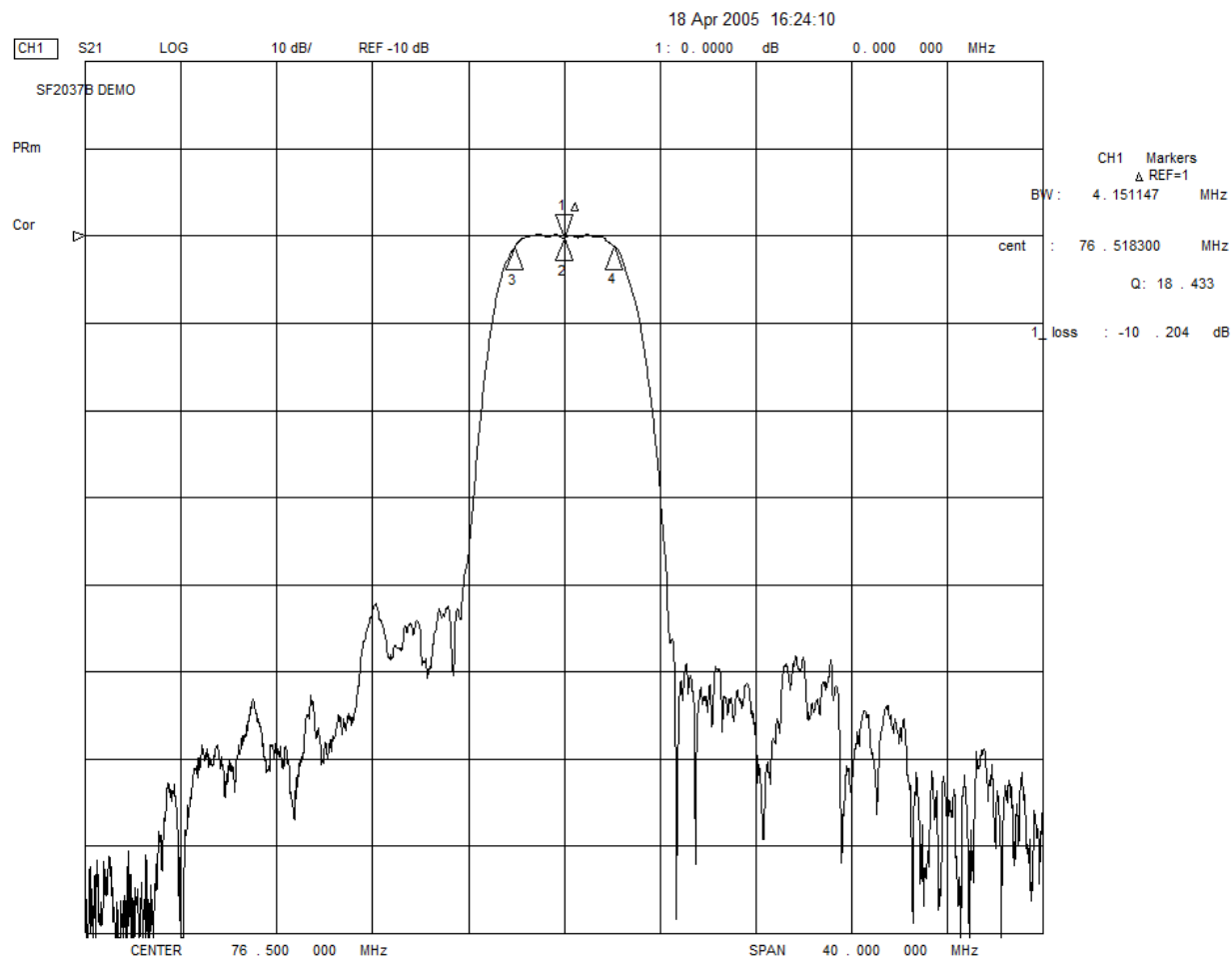
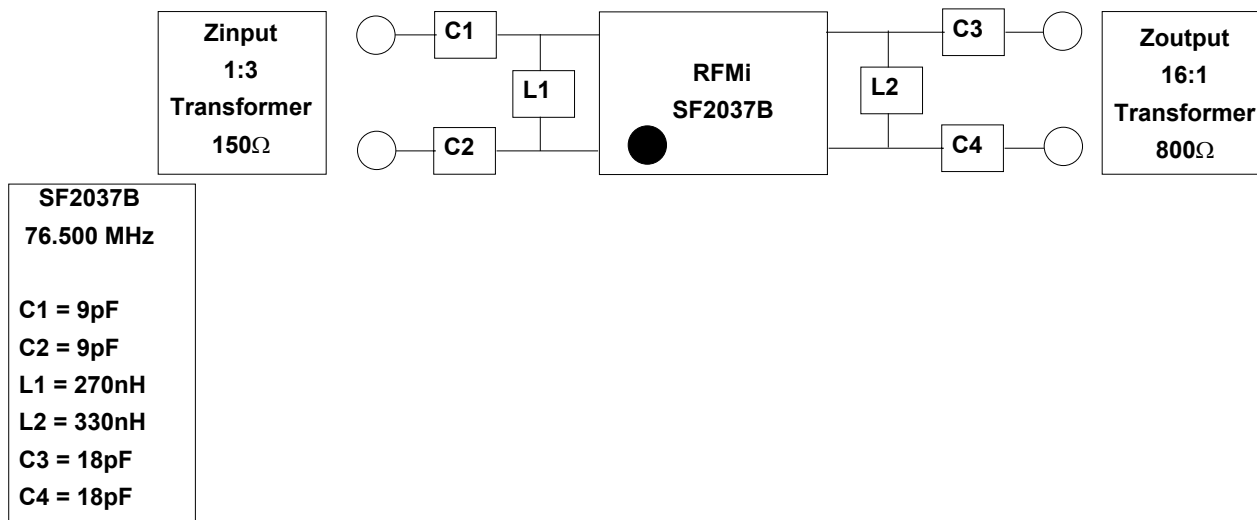


**COFDM Narrowband SAW Matching Circuit**

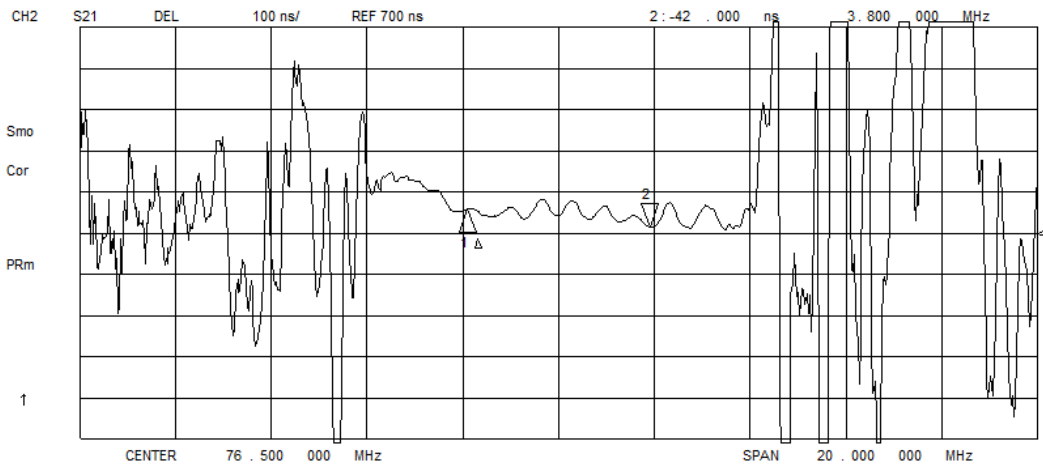
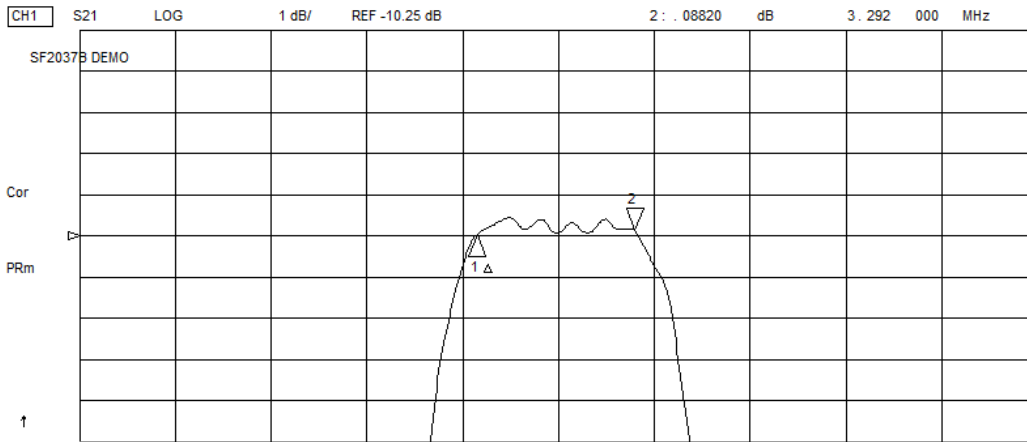
**COFDM Narrowband SAW Matching Values**

| Reference Designator | Value  |
|----------------------|--------|
| C9                   | 10 pF  |
| C10                  | 10 pF  |
| L5                   | 270 nH |
| L6                   | 390 nH |
| C11                  | 100 pF |
| C12                  | 100 pF |

## Matching Circuit and Matching Component Values Used on Filter Demo Board



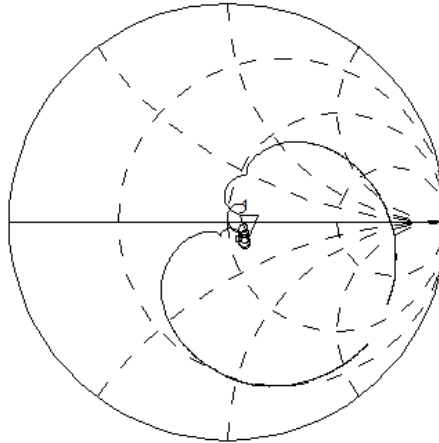
18 Apr 2005 16:18:31



18 Apr 2005 16:28:43  
 CH1 S11 1 UFS 1: 59.928  $\angle$  -9.8086  $\angle$  212.11 pF 76.500 000 MHz  
 SF2037B DEMO

Cor

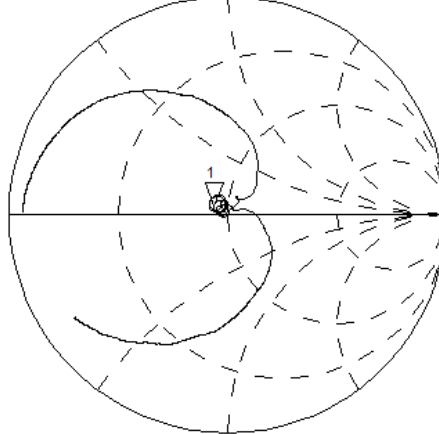
PRm



CH2 S22 1 UFS 1: 43.949  $\angle$  3.1992  $\angle$  6.6558 nH 76.500 000 MHz

Cor

PRm



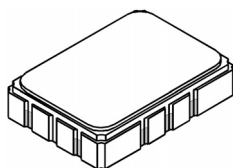
CENTER 76.500 000 MHz

SPAN 40.000 000 MHz

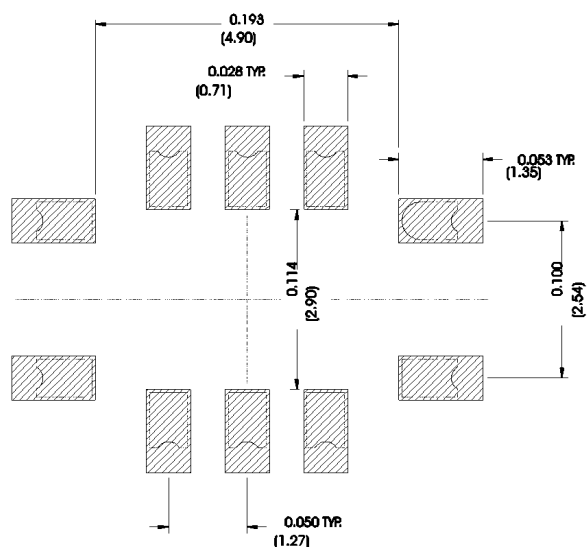
# SMP-03 Case

## 10-Terminal Ceramic Surface-Mount Case

### 7 x 5 mm Nominal Footprint



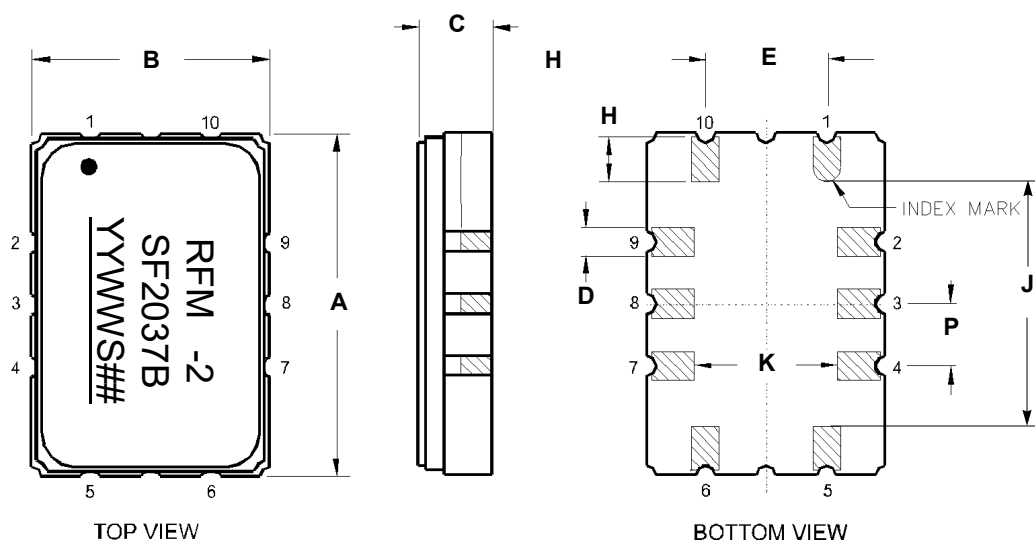
#### Recommended PCB Footprint



| Case Dimensions |      |      |      |        |       |       |
|-----------------|------|------|------|--------|-------|-------|
| Dimension       | mm   |      |      | Inches |       |       |
|                 | Min  | Nom  | Max  | Min    | Nom   | Max   |
| A               | 6.80 | 7.00 | 7.20 | 0.268  | 0.276 | 0.283 |
| B               | 4.80 | 5.00 | 5.20 | 0.189  | 0.197 | 0.205 |
| C               |      | 1.65 | 2.00 |        | 0.065 | 0.079 |
| D               | .47  | 0.60 | .73  | 0.019  | 0.024 | 0.029 |
| E               | 2.41 | 2.54 | 2.67 | 0.095  | 0.100 | 0.105 |
| H               | 0.87 | 1.0  | 1.13 | 0.034  | 0.039 | 0.044 |
| J               | 4.87 | 5.00 | 5.13 | 0.192  | 0.197 | 0.202 |
| K               | 2.87 | 3.00 | 3.13 | 0.113  | 0.118 | 0.123 |
| P               | 1.14 | 1.27 | 1.40 | 0.045  | 0.050 | 0.055 |

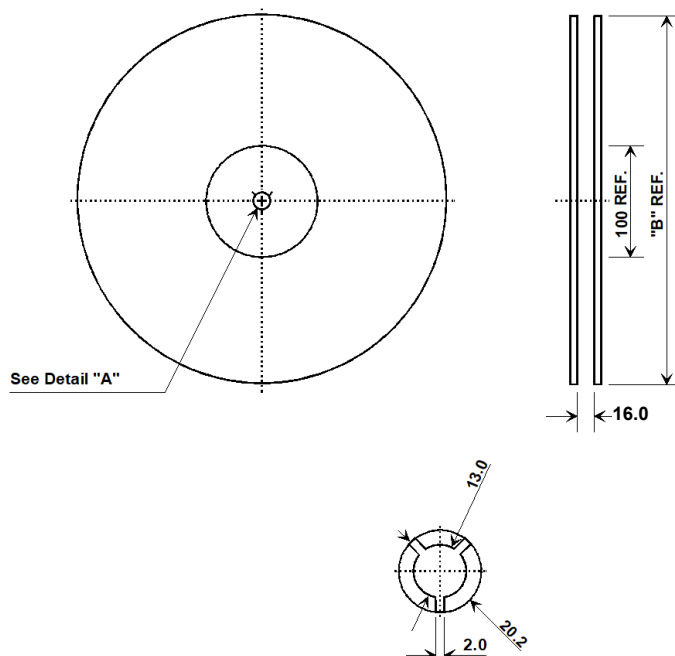
| Materials              |                                                                                  |
|------------------------|----------------------------------------------------------------------------------|
| Solder Pad Termination | Au plating 30 - 60 ulnches (76.2-152 uM) over 80-200 ulnches (203-508 uM) Ni.    |
| Lid                    | Fe-Ni-Co Alloy Electroless Nickel Plate (8-11% Phosphorus) 100-200 ulnches Thick |
| Body                   | Al <sub>2</sub> O <sub>3</sub> Ceramic                                           |

| Electrical Connections |                  |                  |
|------------------------|------------------|------------------|
| Connection             |                  | Terminals        |
| Port 1                 | Input or Return  | 10               |
|                        | Return or Input  | 1                |
| Port 2                 | Output or Return | 5                |
|                        | Return or Output | 6                |
| Ground                 |                  | All others       |
| Single Ended Operation |                  | Return is ground |
| Differential Operation |                  | Return is hot    |



## Tape and Reel Specifications

Tape and Reel Standard per ANSI/EIA-481

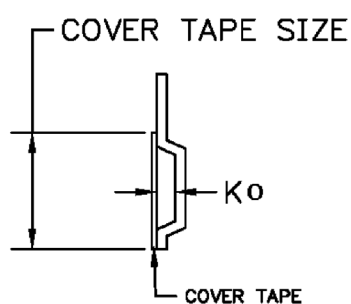


| "B" Nominal Size |             | Quantity Per Reel |
|------------------|-------------|-------------------|
| Inches           | millimeters |                   |
| 7                | 178         | 500               |
| 13               | 330         | 2000              |

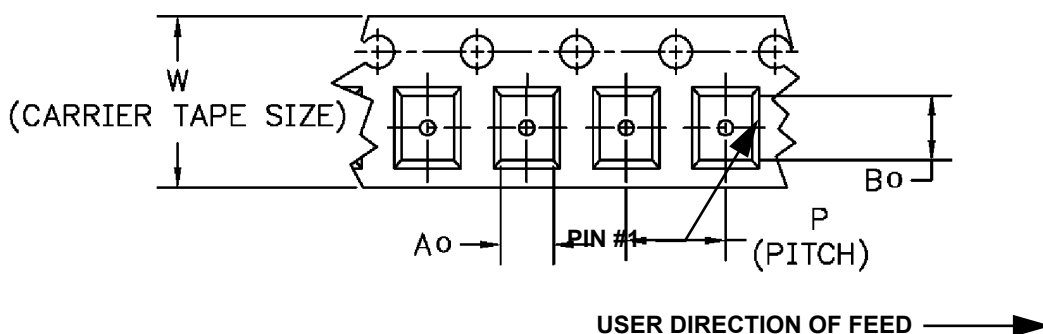
## Product Reflow/ESD

|                                    |      |         |
|------------------------------------|------|---------|
| Reflow Peak Temperature            | 265  | °C      |
| Reflow Peak Time                   | 10   | Seconds |
| Liquidus 217 Temperature/Time      | 110  | Seconds |
| Over Liquidus 230 Temperature/Time | 70   | Seconds |
| Reflow Condition                   | SMT  |         |
| Class Level HBM                    | 2    |         |
| HBM(V)                             | 2000 | HBM(V)  |
| MM(V)                              | N/A  | MM(V)   |
| CDM(V)                             | 2000 | CDM(V)  |

## COMPONENT ORIENTATION and DIMENSIONS

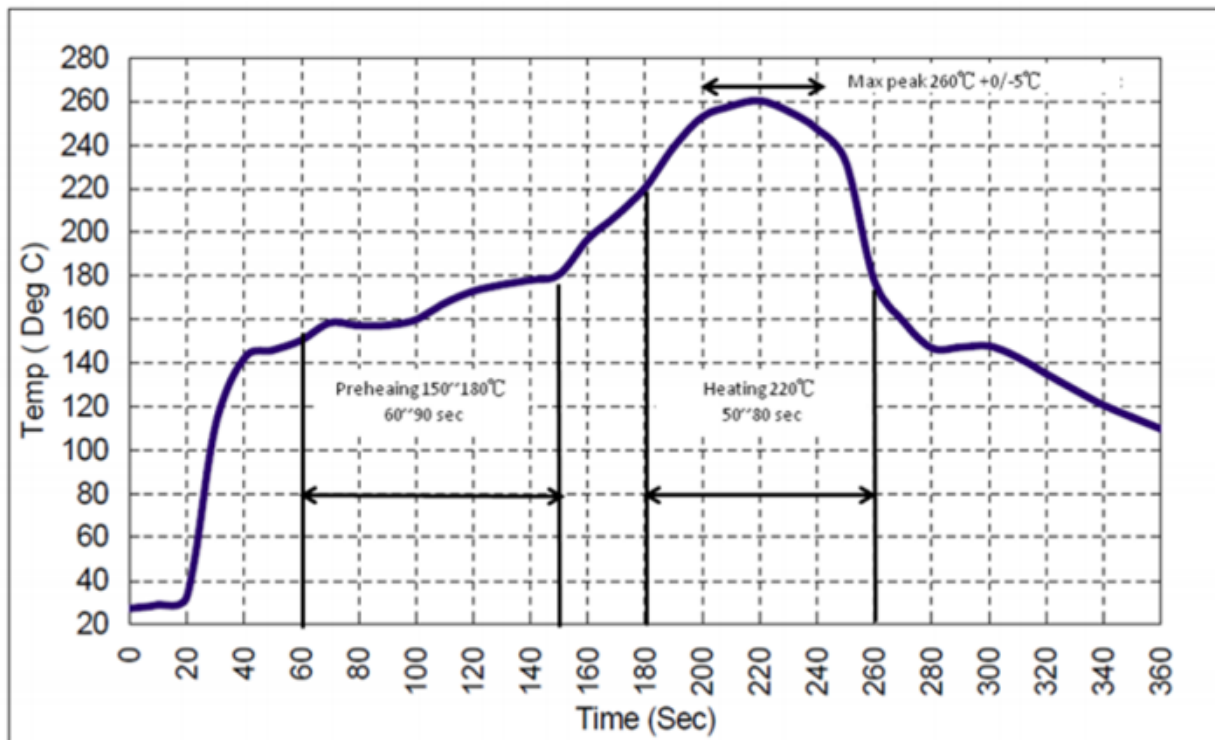


| Carrier Tape Dimensions |         |
|-------------------------|---------|
| Ao                      | 5.5 mm  |
| Bo                      | 7.5 mm  |
| Ko                      | 2.0 mm  |
| Pitch                   | 8.0 mm  |
| W                       | 16.0 mm |



## Recommended Reflow Profile

1. Preheating shall be fixed at 150~180°C for 60~90 seconds.
2. Ascending time to preheating temperature 150°C shall be 30 seconds min.
3. Heating shall be fixed at 220°C for 50~80 seconds and at 260°C+0/-5°C peak (10 seconds).
4. Time: 5 times maximum.



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