

# SMD 915MHz SAW Filter

ABSES5AD-1E3M012M

Request Samples



Check Inventory



1.4 x 1.1 x 0.7 mm  
RoHS Compliant

## Features

- Small Form Factor 1.40 x 1.1 x 0.70 mm
- Low Insertion Loss
- Industrial Grade -40°C ~ +85°C
- Maximum Input Power: 10dBm
- RoHS Compliant

## Applications

- RF Modules
- Remote controls
- IOT equipment
- Information & Communications Devices

## Electrical Specifications

| Parameters            | Minimum | Typical | Maximum | Units | Notes                 |
|-----------------------|---------|---------|---------|-------|-----------------------|
| Center Frequency (fc) | -       | 915     | -       | MHz   | -                     |
| Insertion Loss        | -       | 1.6     | 2.6     | dB    | 902 - 928 MHz         |
| Amplitude Ripple      | -       | 0.6     | 1.5     | dB    | 902 - 928 MHz         |
| Attenuation           | 50.0    | 53.0    | -       | dB    | 0.10 - 702.00 MHz     |
|                       | 49.0    | 53.0    | -       |       | 738.00 - 764.00 MHz   |
|                       | 42.0    | 50.0    | -       |       | 820.00 - 846.00 MHz   |
|                       | 42.0    | 50.0    | -       |       | 990.00 - 1010.00 MHz  |
|                       | 49.0    | 53.0    | -       |       | 1072.00 - 1092.00 MHz |
|                       | 40.0    | 42.0    | -       |       | 1128.00 - 1804.00 MHz |
|                       | 40.0    | 42.0    | -       |       | 1804.00 - 1856.00 MHz |
|                       | 30.0    | 36.0    | -       |       | 1856.00 - 3000.00 MHz |
| Group Delay           | -       | 15      | 50      | ns    | 902 - 928 MHz         |
| VSWR                  | -       | 1.5     | 2.0     | -     | 902 - 928 MHz         |
| Input Power Level     | -       | -       | 10      | dBm   |                       |
| DC Voltage (V)        | -       | -       | 3       | V     |                       |

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## Mechanical Specifications

| Parameters    | Specifications     |
|---------------|--------------------|
| Dimension     | 1.4 x 1.1 x 0.7 mm |
| Mounting Type | SMD Mount          |

## Environmental Specifications

| Parameters                  | Specifications |
|-----------------------------|----------------|
| Operating Temperature Range | -40°C ~ +85°C  |
| Storage Temperature Range   | -40°C ~ +85°C  |
| MSL level                   | MSL 3          |
| ESD                         | N/A            |

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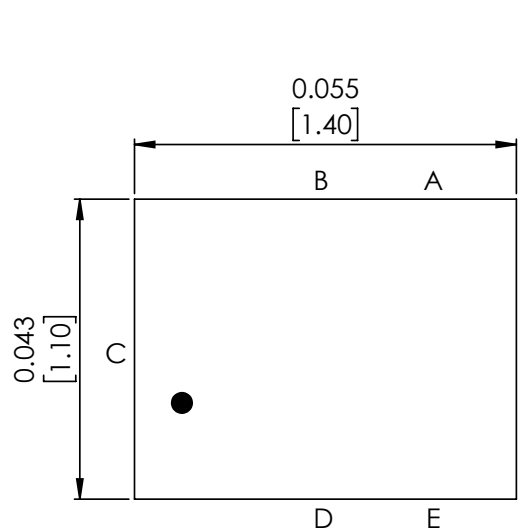


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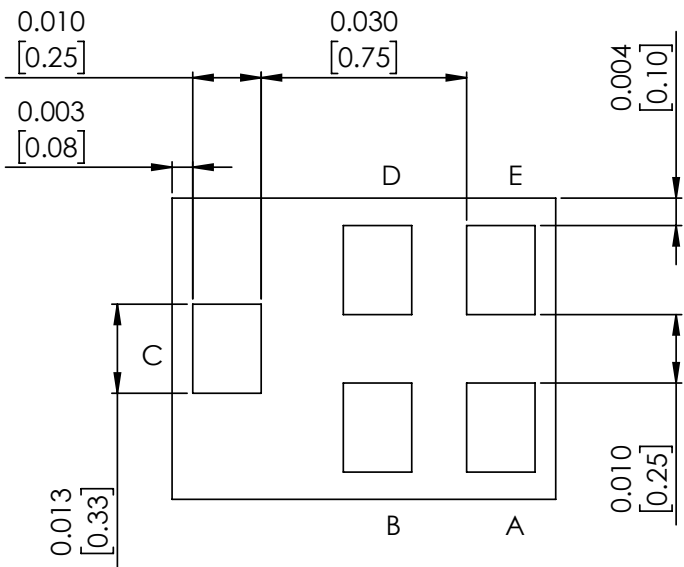


1.4 x 1.1 x 0.7 mm  
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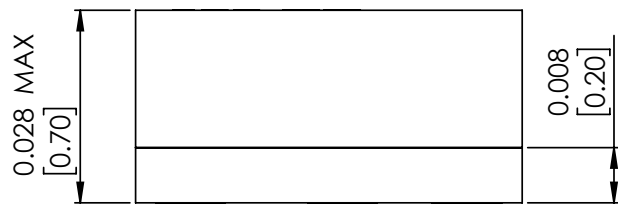
## Package Dimensions



TOP VIEW



BOTTOM VIEW



FRONT VIEW

Unit: inches [mm]

| Pin No. | Description    |
|---------|----------------|
| C       | Input          |
| A       | Output         |
| B,D     | Case Ground    |
| E       | To be Grounded |

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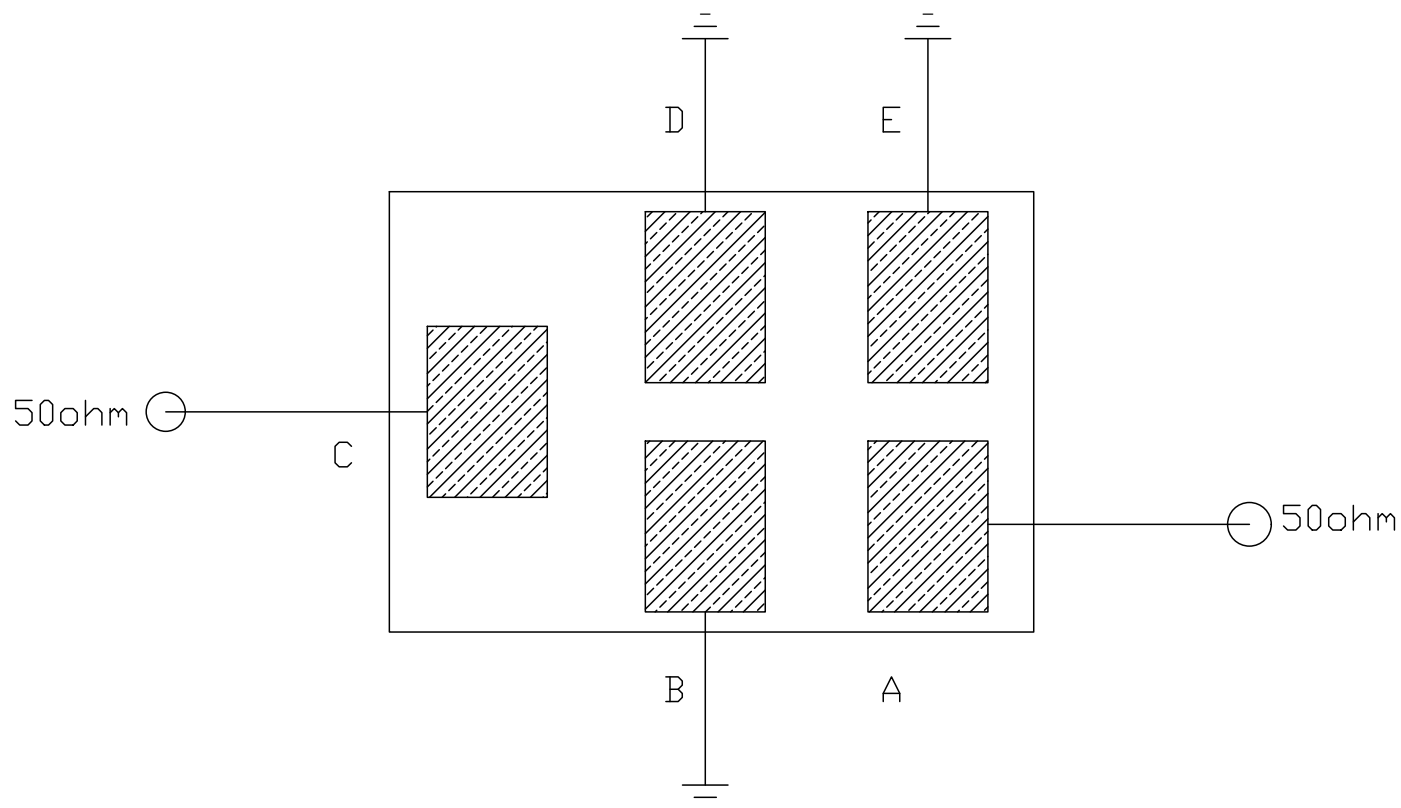


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## Measurement Circuit



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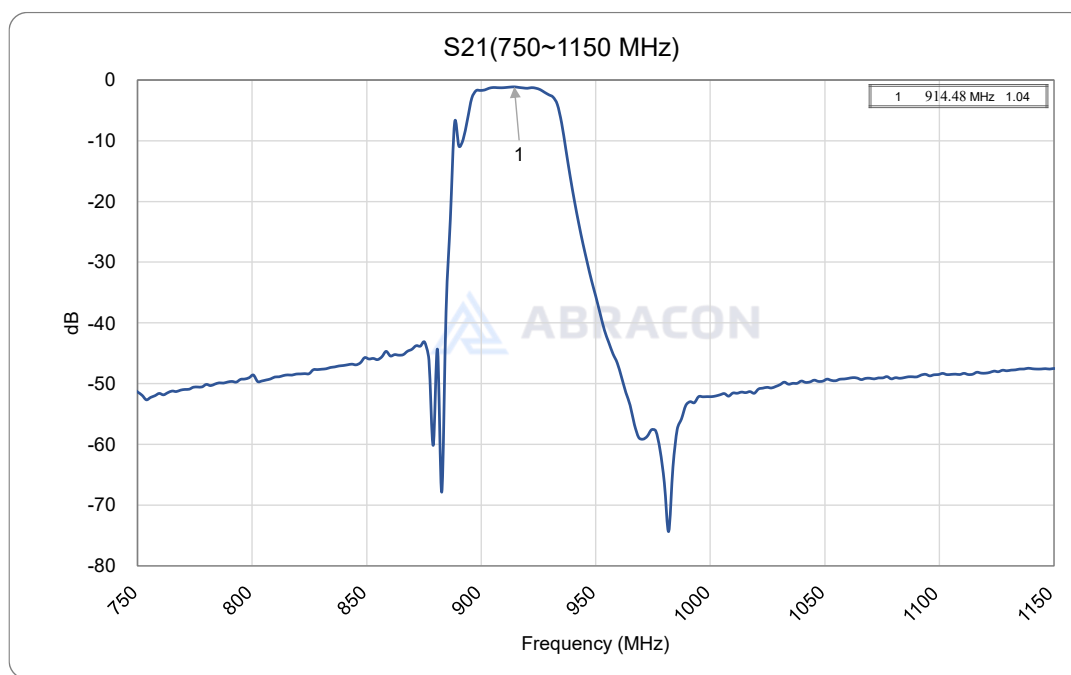
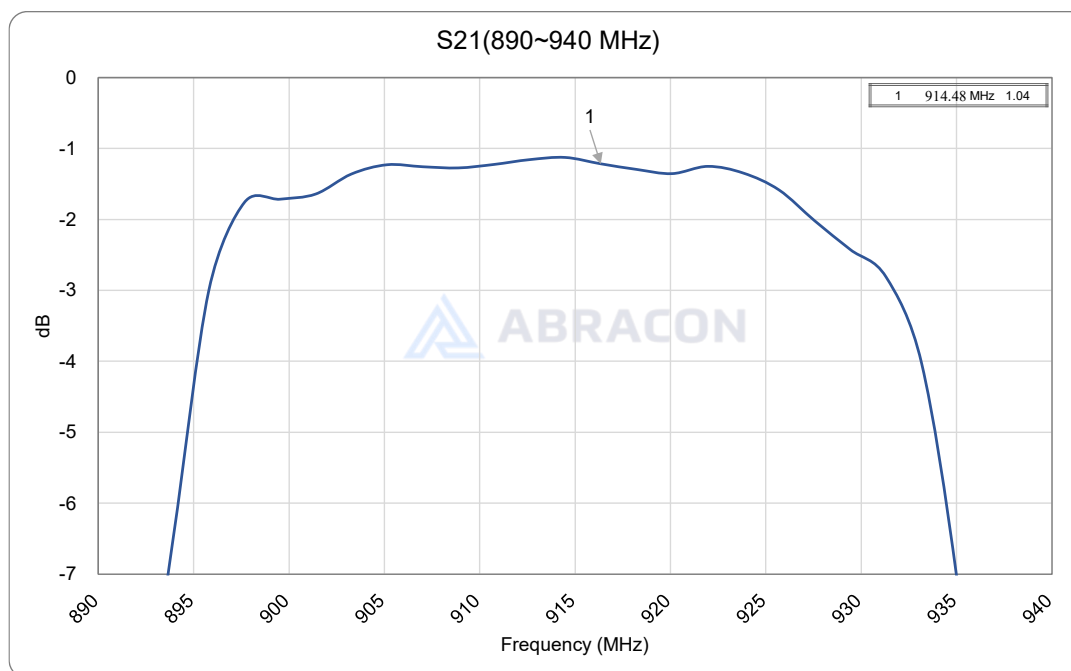
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## Frequency Characteristics

S21 narrow band



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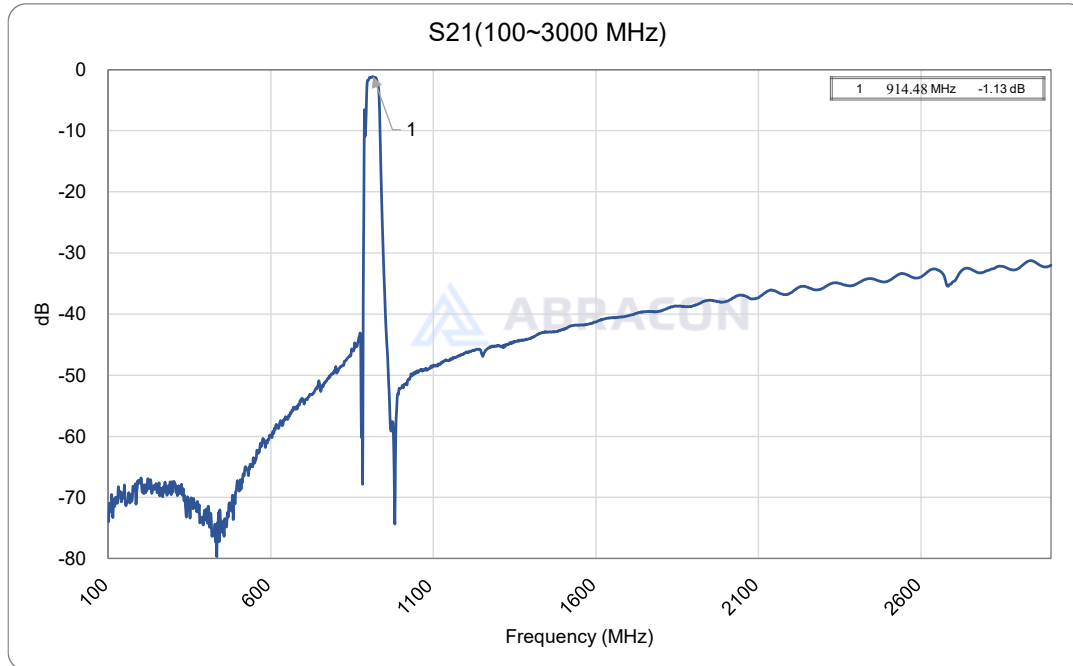


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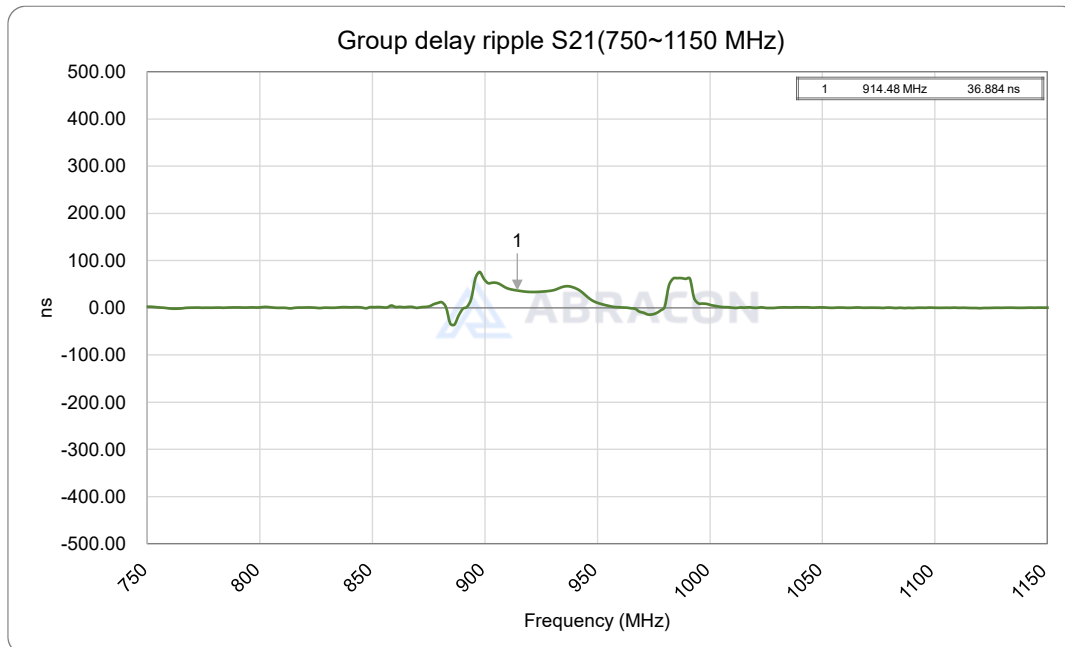


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S21 wide band



Group Delay Ripple



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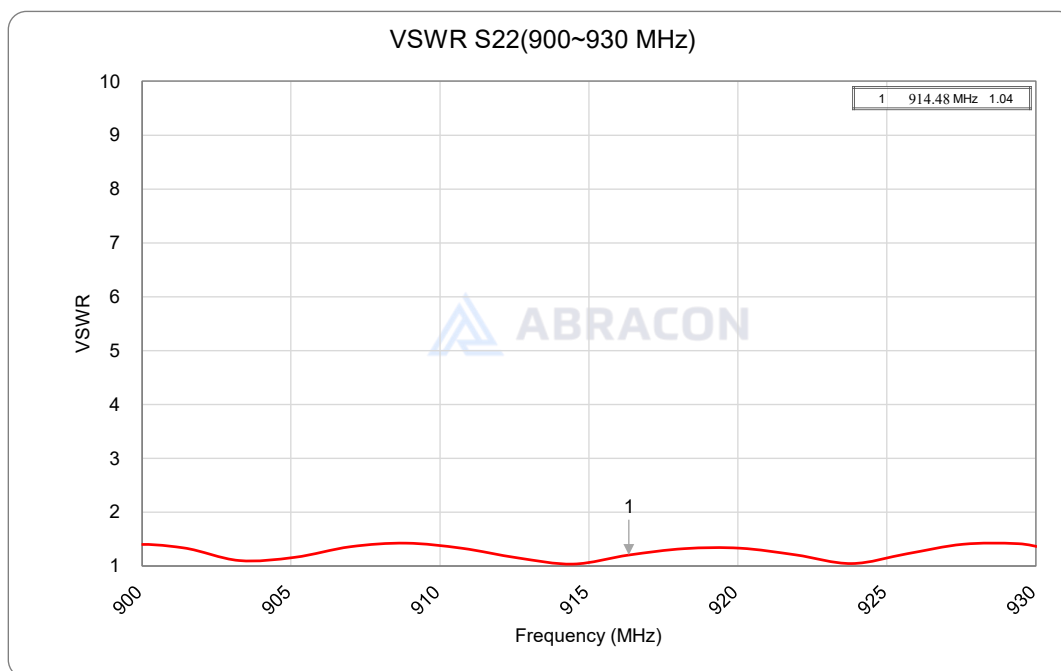
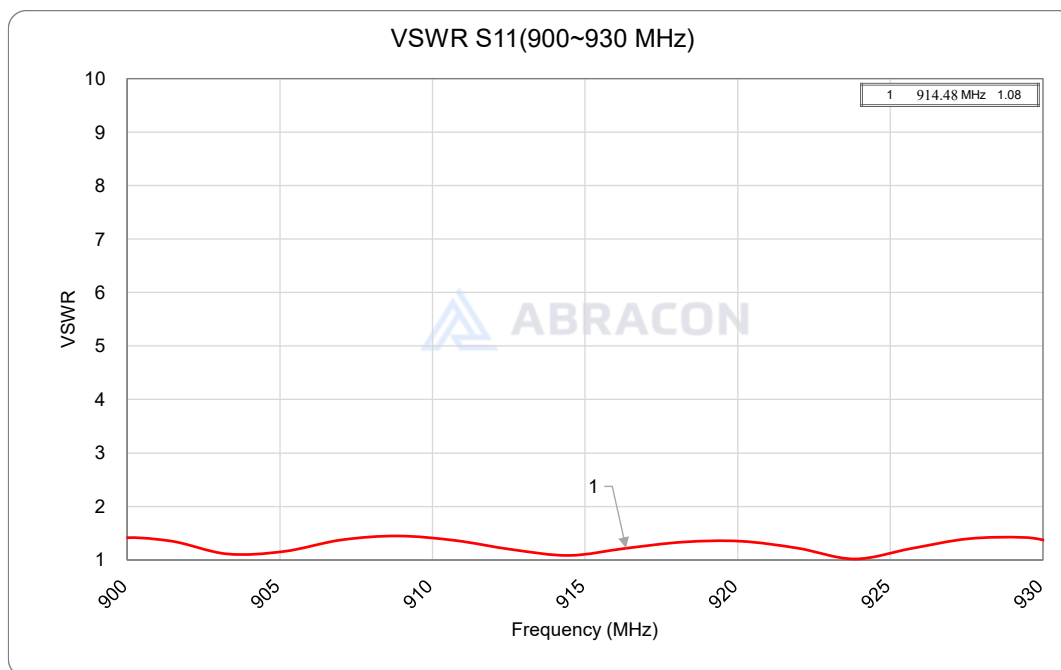


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VSWR (S11 & S22)



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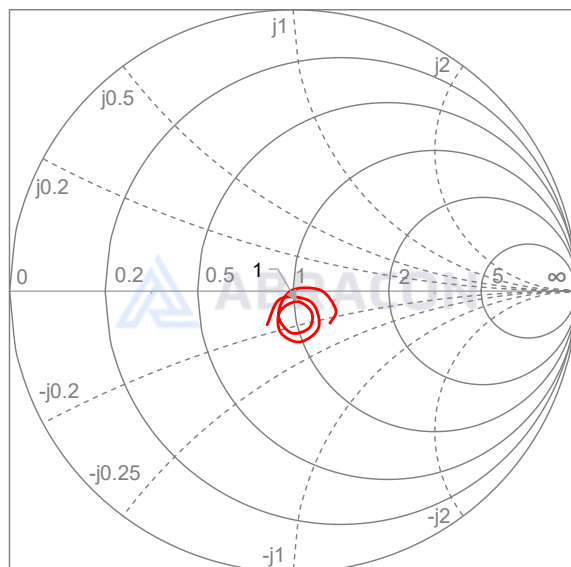
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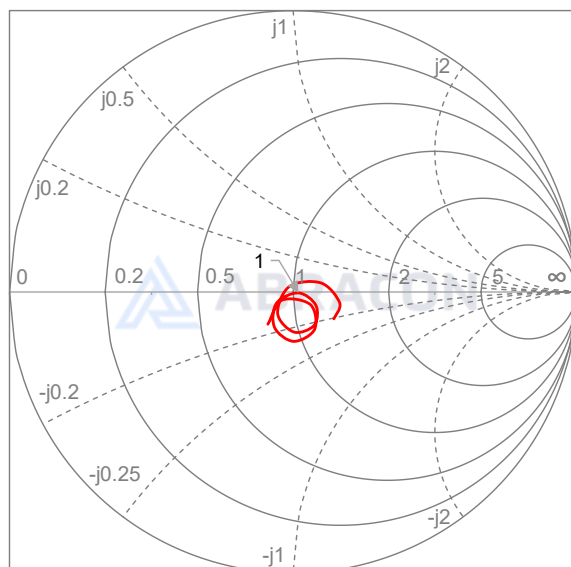
## Smith Chart (S11 & S22)

Smith chart S11 (900~930MHz)



|   |            |                  |                  |       |
|---|------------|------------------|------------------|-------|
| 1 | 914.48 MHz | 51.2334 $\Omega$ | -3.8451 $\Omega$ | 45 pF |
|---|------------|------------------|------------------|-------|

Smith chart S22 (900~930MHz)



|   |            |                  |                  |        |
|---|------------|------------------|------------------|--------|
| 1 | 914.48 MHz | 51.8932 $\Omega$ | -0.3703 $\Omega$ | 470 pF |
|---|------------|------------------|------------------|--------|



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## Reflow Profile [JEDEC J-STD-020]

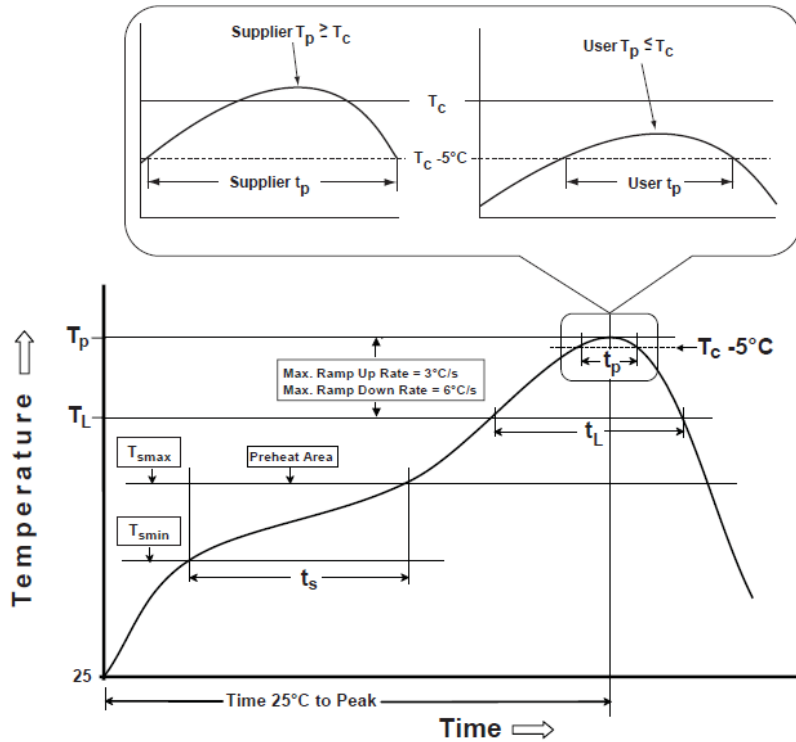


Table 1

### SnPb Eutectic Process

#### Classification Temperatures ( $T_c$ )

| Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> $\geq 350$ |
|-------------------|-----------------------------|-----------------------------------|
| <2.5 mm           | 235 °C                      | 220 °C                            |
| $\geq 2.5$ mm     | 220 °C                      | 220 °C                            |

Table 2

### Pb-Free Process

#### Classification Temperatures ( $T_c$ )

| Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> 350-2000 | Volume mm <sup>3</sup> >2000 |
|-------------------|-----------------------------|---------------------------------|------------------------------|
| <1.6 mm           | 260 °C                      | 260 °C                          | 260 °C                       |
| 1.6 mm - 2.5 mm   | 260 °C                      | 250 °C                          | 245 °C                       |
| >2.5 mm           | 250 °C                      | 245 °C                          | 245 °C                       |

| Profile Feature                                                                   | Sn-Pb Eutectic Assembly | Pb-Free Assembly |
|-----------------------------------------------------------------------------------|-------------------------|------------------|
| Preheat / soak                                                                    |                         |                  |
| Temperature minimum ( $T_{smin}$ )                                                | 100°C                   | 150°C            |
| Temperature maximum ( $T_{smax}$ )                                                | 150°C                   | 200°C            |
| Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )                                       | 60 - 120 sec.           | 60 - 120 sec.    |
| Average ramp-up rate ( $T_{smax}$ to $T_p$ )                                      | 3°C/sec. max            | 3°C/sec. max     |
| Liquidous temperature ( $T_L$ )                                                   | 183°C                   | 217°C            |
| Time at liquidous ( $t_L$ )                                                       | 60 - 150 sec.           | 60 - 150 sec.    |
| Peak package body temperature ( $T_p$ )*                                          | see Table 1             | see Table 2      |
| Time ( $t_p$ )** within 5°C of the specified classification temperature ( $T_c$ ) | 20 sec.                 | 30 sec.          |
| Ramp-down rate ( $T_p$ to $T_{smax}$ )                                            | 6°C/sec. max            | 6°C/sec. max     |
| Time 25°C to peak temperature                                                     | 6 min. max              | 8 min. max       |
| Reflow cycles                                                                     | 2 max                   | 2 max            |

\*Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

\*\*Tolerance for time at peak profile temperature ( $t_p$ ) is defined as supplier minimum and a user maximum.

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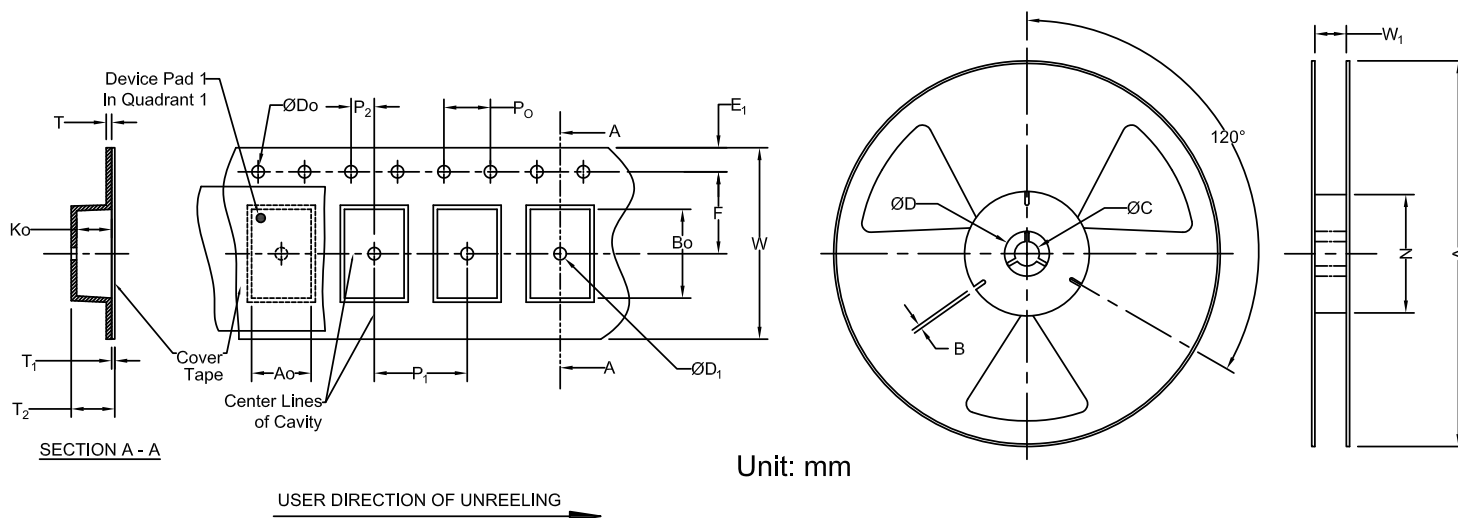


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## Packaging

### Tape & Reel (10,000 pcs / reel)

#### 1. Tape & Reel Dimension



Carrier Tape Specifications (mm)

| D0         | D1        | E1         | P0        | P2         | T          | F          | P1        | W         | A0          | B0          | K0          | Reel Qty |
|------------|-----------|------------|-----------|------------|------------|------------|-----------|-----------|-------------|-------------|-------------|----------|
| 1.50 ± 0.1 | 0.5 ± 0.1 | 1.75 ± 0.1 | 4.0 ± 0.1 | 2.0 ± 0.05 | 0.2 ± 0.03 | 3.5 ± 0.05 | 2.0 ± 0.1 | 8.0 ± 0.3 | 0.95 ± 0.05 | 1.15 ± 0.05 | 0.68 ± 0.04 | 10,000   |

Reel Specifications (mm)

| A            | W1        | N        | C          | B         |
|--------------|-----------|----------|------------|-----------|
| 178.0 ± 0.05 | 9.0 ± 0.3 | 60 ± 0.2 | 13.3 ± 0.2 | 2.2 ± 0.2 |

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