# 2.4 GHz Wi-Fi/BL Patch Antenna



**APAKN2504-S2448**

Request Samples | Check Inventory

**25.0 x 25.0 x 4.0mm**
**RoHS Compliant**
**MSL Level = N/A**

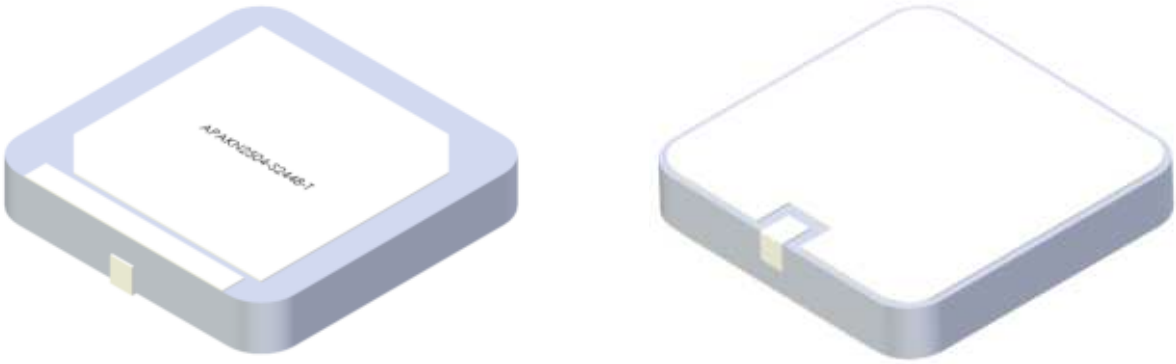
## Features

- Directional Radiation Pattern
- RHCP Polarization
- Peak Gain: ≥ 5.2 dBic
- VSWR < 2.0
- Efficiency: ≥ 80%
- Compact & Low-Profile
- RoHS Compliant

## Applications

- Bluetooth®/ ZigBee® / Thread/ Matter
- Wi-Fi 4/5 (802.11b/g/n/ac)
- Unmanned Aerial Vehicle (UAV)
- BLE/Wi-Fi Enabled Access Control

## Product Image



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## Electrical Specification

| Parameters | Typ. | Units | Note |
|---|---|---|---|
| **Antenna** | | | |
| Frequency | 2400-2500 | - | |
| VSWR | < 2.0 | - | |
| Polarization | RHCP | - | (Right Hand Circular Polarization) |
| Nominal Impedance | 50 | Ω | |
| Peak Gain | > 5.2 | dBic | On 70mm×70mm ground plane |
| Efficiency | > 80 | % | |

## Mechanical Specification

| Parameter | Specification |
|---|---|
| Antenna Dimension | 25.0 x 25.0 x 4.0mm |
| Mounting Type | Surface Mount |

## Environmental Specification

| Parameter | Specification |
|---|---|
| Operating Temperature | -40ºC to +85ºC |
| Storage Temperature | -40ºC to +105ºC |
| RoHS Compliance | Yes |

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## Ordering Information

| Part Number | Description |
|---|---|
| APAKN2504-S2448 | 2.4 GHz Wi-Fi/BL Patch Antenna on Cut Tape |
| APAKN2504-S2448-T | 2.4 GHz Wi-Fi/BL Patch Antenna on Tray (50 pcs per tray) |
| APAKN2504-S2448-T1 | 2.4 GHz Wi-Fi/BL Patch Antenna on Tape & Reel (400 pcs per plastic reel) |
| APAKN2504-S2448-EVB | 2.4 GHz Wi-Fi/BL Patch Antenna Evaluation Board |

Note: Other options not listed may be available upon request via Abracon online support

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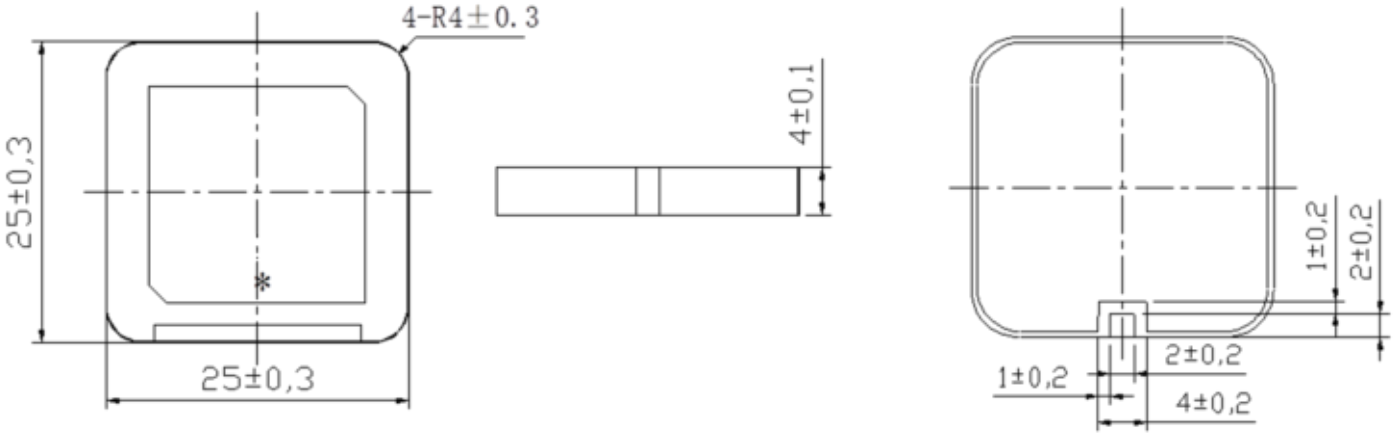


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## Product Dimensions




*Unit: mm*

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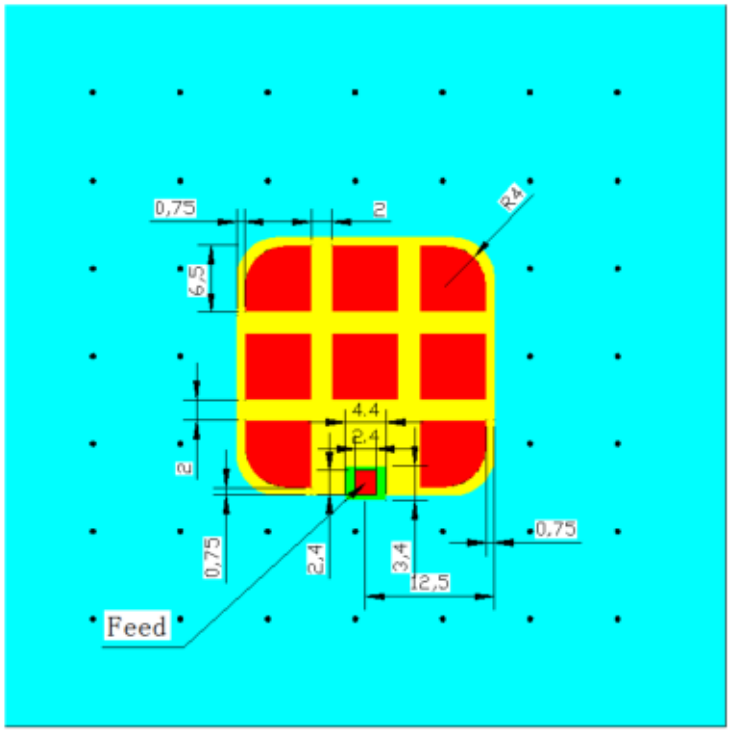


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## Land Pattern




Via Thru Hole

Solder Pattern

No Ground

Solder Mask

Ground

*Unit: mm*

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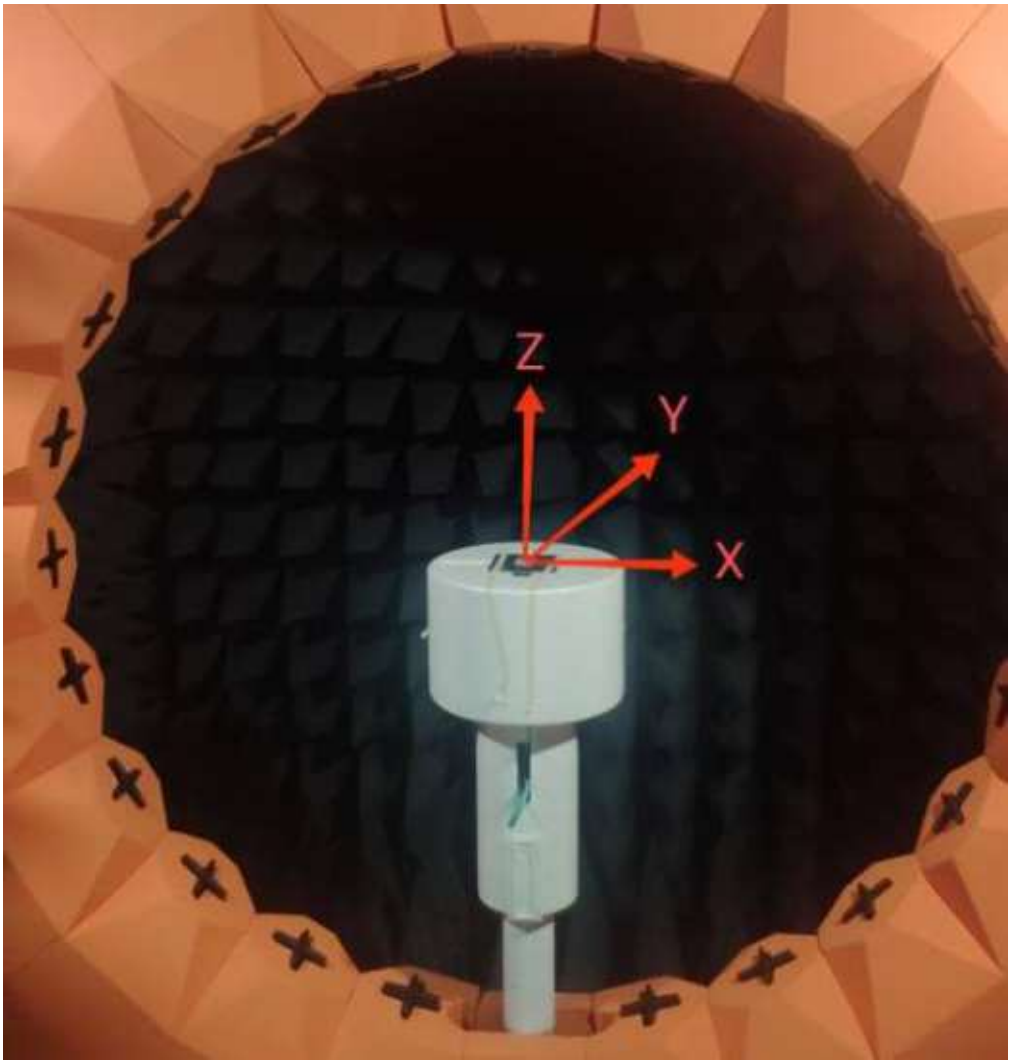


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## Measurement Setup




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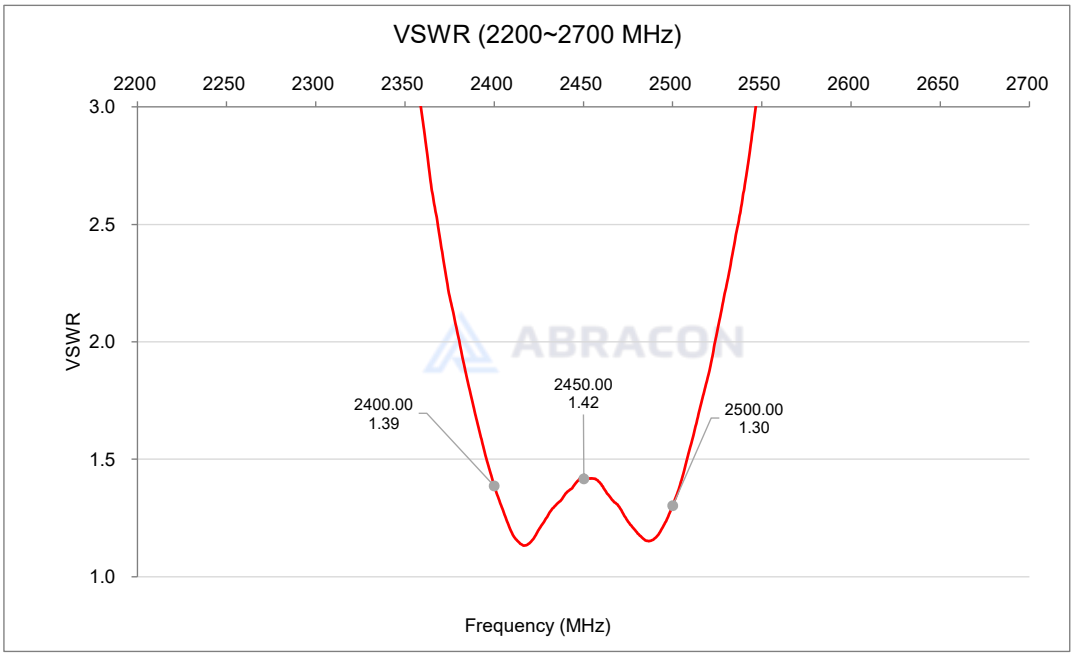


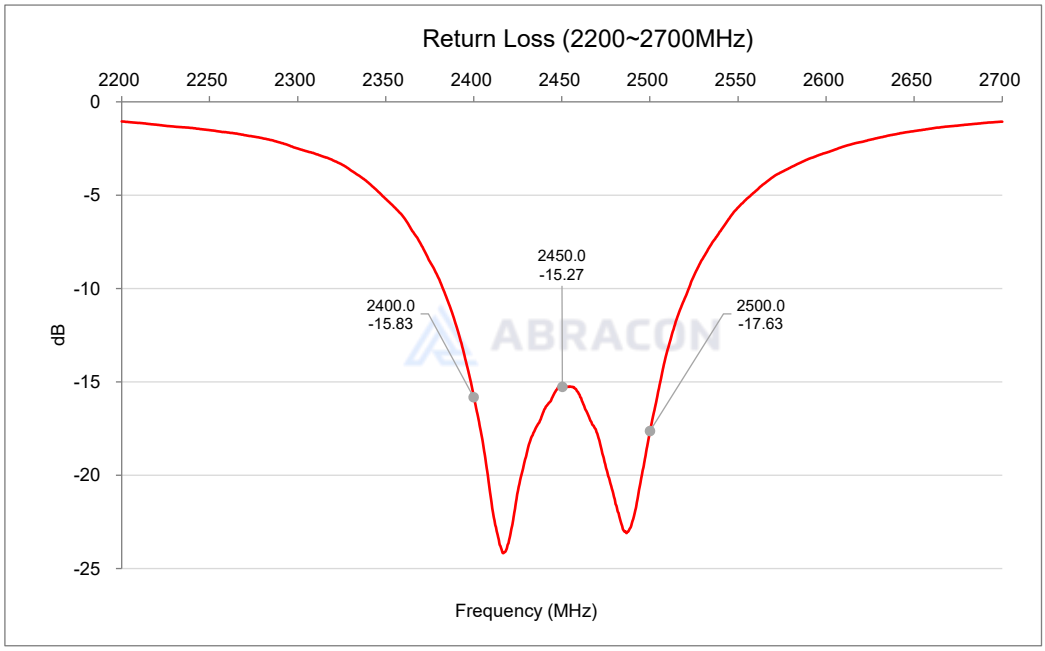
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## Reflection Characteristics – Return Loss & VSWR





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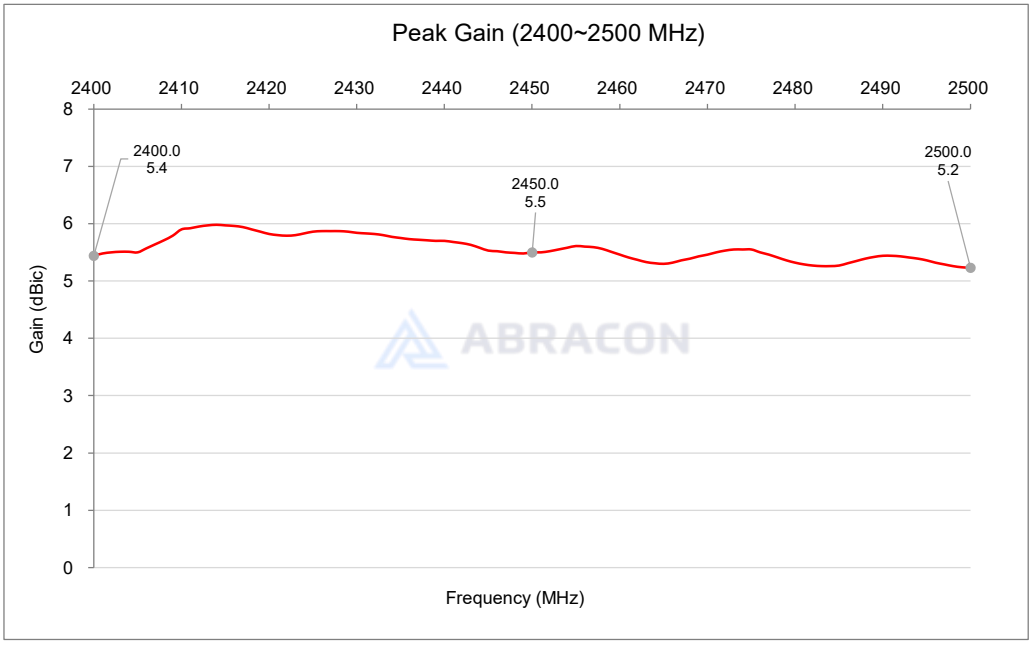


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## Radiation Characteristics – Peak Gain



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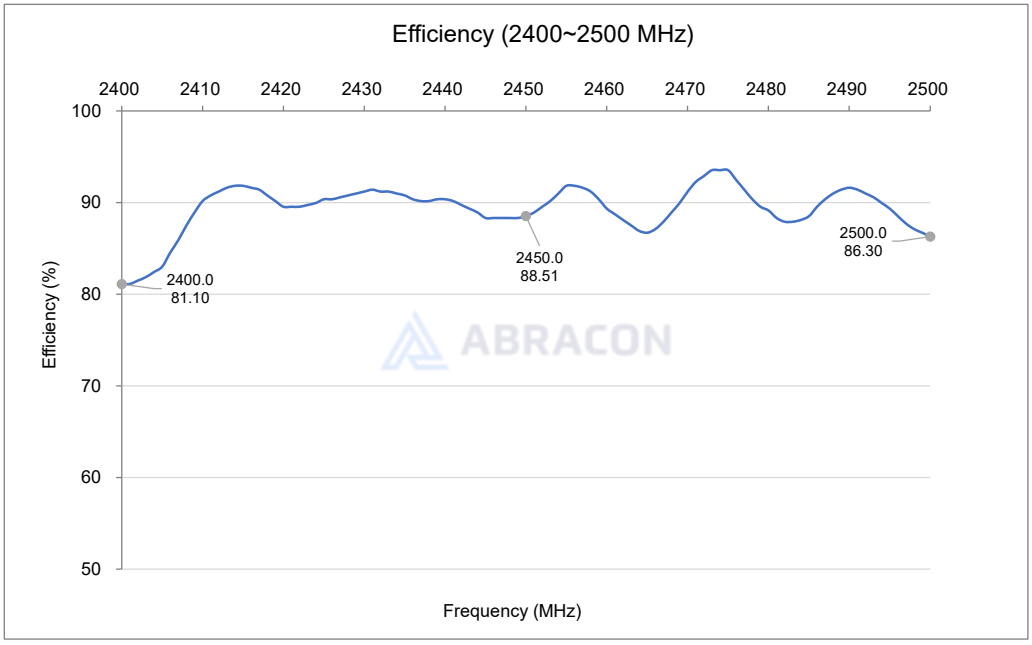


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## Radiation Characteristics – Total Efficiency (%)




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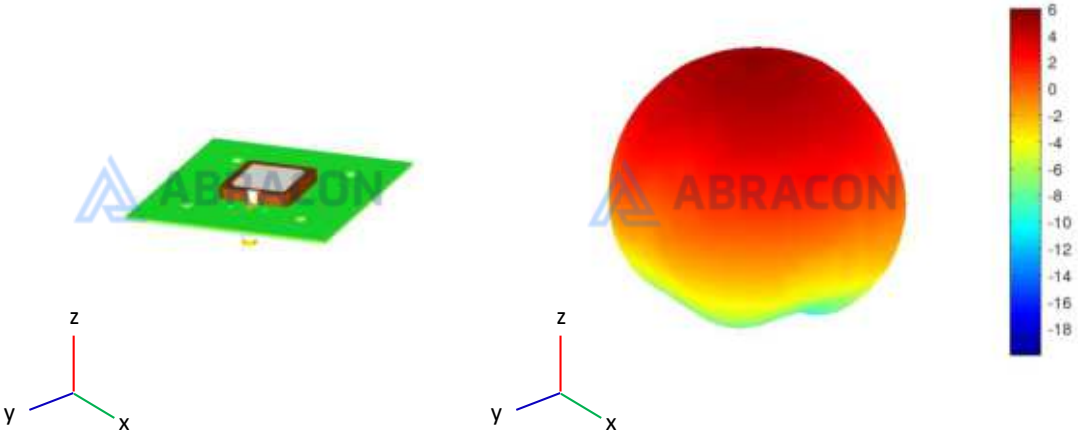
**APAKN2504-S2448**

Request Samples | Check Inventory

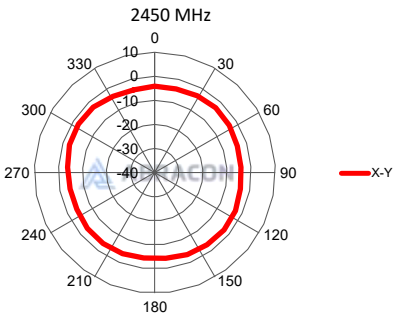
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**RoHS Compliant**
**MSL Level = N/A**

## Radiation Characteristics – 3D & 2D Pattern

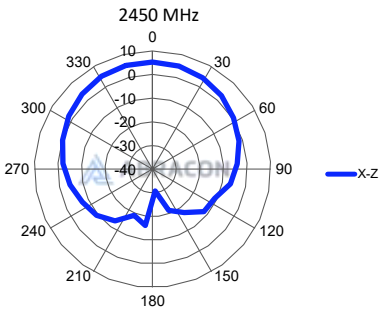
2450MHz



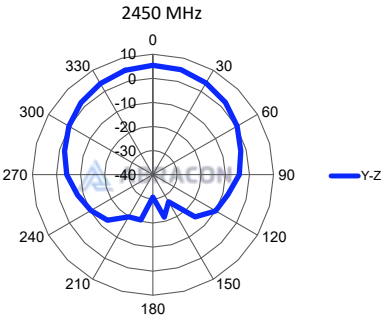

XY plane




XZ plane




YZ plane




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

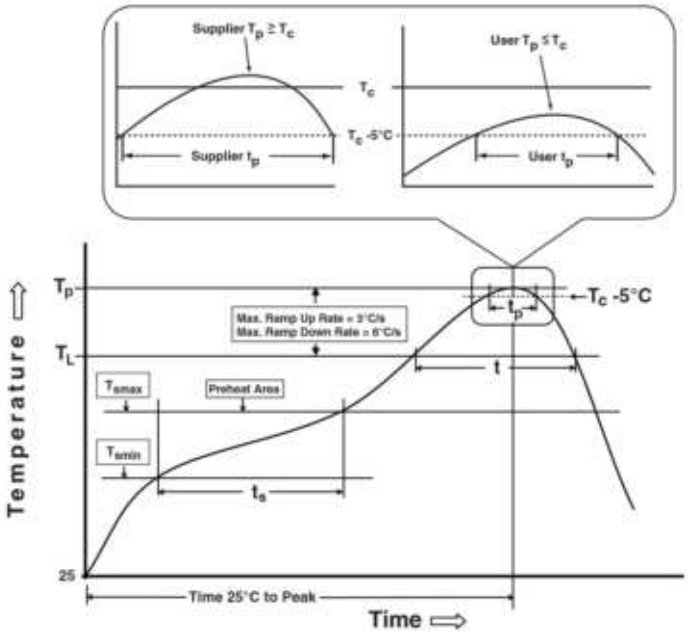



**Table 1**

| SnPb Eutectic Process Classification Temperatures ($T_c$) | | |
|---|---|---|
| **Package Thickness** | **Volume mm³ <350** | **Volume mm³ ≧350** |
| <2.5mm | 235°C | 220°C |
| ≧2.5mm | 220°C | 220°C |

**Table 2**

| Pb-Free Process Classification Temperatures ($T_c$) | | | |
|---|---|---|---|
| **Package Thickness** | **Volume mm³ <350** | **Volume mm³ 350-2000** | **Volume mm³ >2000** |
| <1.6mm | 260°C | 260°C | 260°C |
| 1.6mm - 2.5mm | 260°C | 250°C | 245°C |
| >2.5mm | 250°C | 245°C | 245°C |

| Profile Feature | Sn-Pb Eutectic Assembly | Pb-Free Assembly |
|---|---|---|
| Preheat / soak | | |
| Temperature minimum ($T_{smin}$) | 100°C | 130°C |
| Temperature maximum ($T_{smax}$) | 150°C | 175°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 a supplier minimum and a user maximum.


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## Packaging

**I. APAKN2504-S2448-T**

1. 50 pcs per package base
2. 5 package bases /inner box
3. 4 inner boxes/carton
4. 1000 pcs per carton

Dimension of the carton: 370 x 370 x 170 mm

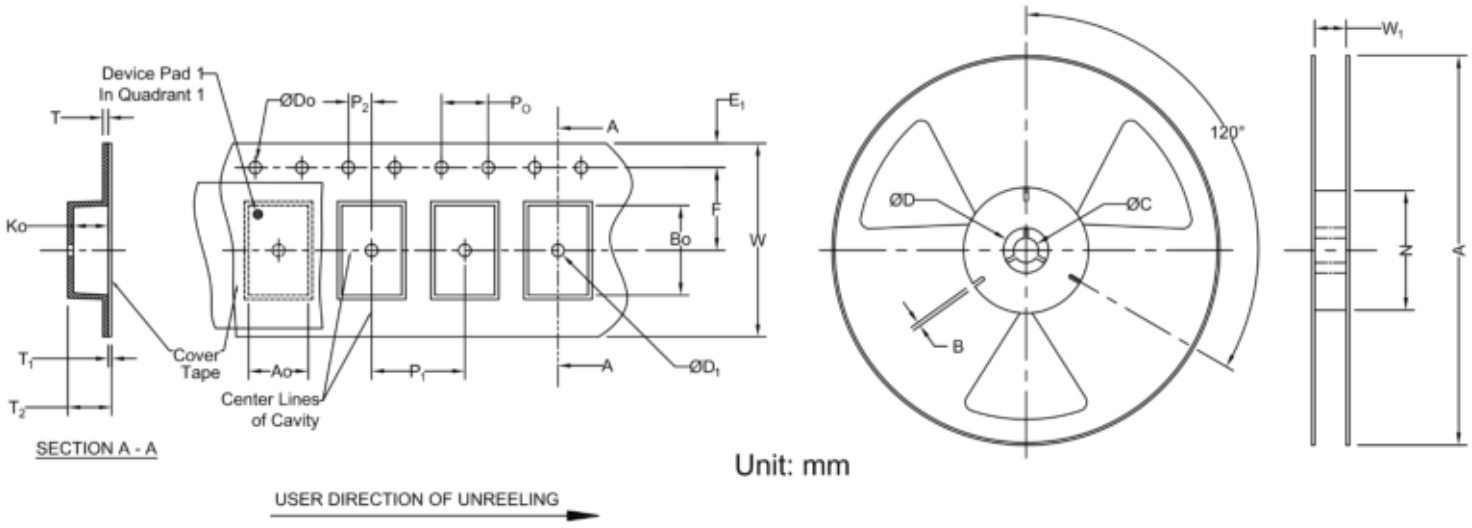
**II. APAKN2504-S2448-T1**

400 pcs per reel

1 reel per inner box

2 inner box per package

Dimension of the inner box: 340 x 340 x 56 mm




| Carrier Tape Specifications (mm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Do | $D_1$ | $E_1$ | $P_0$ | $P_2$ | T | F | $P_1$ | W | $A_0$ | $B_0$ | $K_0$ | Reel Qty |
| 1.50 ± 0.1 | 2.00 ± 0.1 | 1.75 ± 0.1 | 4.0 ± 0.1 | 2.0 ± 0.10 | 0.4± 0.05 | 20.2 ± 0.15 | 32.0 ± 0.1 | 44.0 ±0.3 | 25.4 ± 0.1 | 25.4 ± 0.1 | 4.2 ± 0.2 | 400 |

| Reel Specifications (mm) | | | | |
|---|---|---|---|---|
| A | $W_1$ | N | C | D |
| 330 ± 5.0 | 44.5 ± 2.0 | 80 ± 5.0 | 13.5 ± 5.0 | 21.0 ± 1.0 |

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