ASKEY AP6275S WiFi+BT Combo Module User Manual

Contents

ASKEY AP6275S WiFi+BT Combo Module

overview

Product Name	WIFI+BT Combo Module
Brand Name	ASKEY
Model Name	AP6275S
Rating Voltage:	DC 3.3V
Frequency Range:	2.4GHz: 2.400 GHz ~ 2.4835 GHz (2.4GHz ISM Band) 5GHz: 5.15~5.35GHz, 5.47~5.725GHz, 5.725~5.85GHz (5GHz UNII Band)
Channels	2.4GHz: Ch1 ~ Ch11 5.15~5.35 GHz: Ch36 ~ Ch64 5.47~5.725GHz: Ch100 ~ Ch142 5.725~5.85GHz: Ch149 ~ Ch165
Antenna Type:	PIFA antenna
Hardware version:	V01
Software Version:	Android 10

Product Features

IEEE 802.11 Key Feature

- Lead Free design which is compliant with ROHS requirements.
- TX and RX low-density parity check (LDPC) support for improved range and power efficiency.
- Dual-stream spatial multiplexing up to 1200 Mbps data rate.
- 20, 40, 80 MHz channels with optional SGI (1024 QAM modulation)
- Real simultaneous dual-band
- Client MU-MIMO
- Supports standard SDIO v3.0, compatible with SDIO v2.0 HOST interfaces.

Bluetooth Key Feature

- BT host digital interface:
  - HCI UART (up to 4 Mbps)
  - PCM for audio data
- Complies with Bluetooth Core Specification Version 5.0 with provisions for supporting future specifications. With Bluetooth Class 1 or Class2 transmitter operation.
- Supports extended synchronous connections (eSCO), for enhanced voice quality by allowing for retransmission of dropped packets.
- Adaptive frequency hopping (AFH) for reducing radio frequency interference. A simplified block diagram of the module is depicted in the figure above.

Wi-Fi RF Specification

2.4GHz RF Specification

Frequency Range:	802.11b/g/n-HT20/ax-HE20: 2412 ~ 2462MHz
Channel Number:	802.11b/g/n-HT20/ax-HE20: 11
Type of Modulation:	802.11b: DSSS 802.11g/n: OFDM 802.11ax: OFDMA

5GHz RF Specification

Frequency Range:	For 802.11a/n-HT20/ac-VHT20/ax-HE20: 5180~5240MHz, 5260~5320MHz, 5500~5720MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40/ax-HE40: 5190~5230MHz, 5270~5310MHz, 5510~5710MHz, 5755~5795MHz For 802.11ac-VHT80/ax-HE80: 5210MHz, 5290MHz, 5530MHz, 5610MHz, 5690MHz, 5775MHz
Type of Modulation:	802.11a/n/ac: OFDM 802.11ax: OFDMA

Note: The frequencies that fall in the 5600MHz to 5650MHz band will not be used in Canada.

Bluetooth RF Specification

Operating Frequency:	2402~2480MHz
Channel Number:	BR/EDR: 79 BLE: 40
Type of modulation:	GFSK, Pi/4 DQPSK, 8DPSK

External clock reference

External LPO signal characteristics

Parameter	Specification	Units
Nominal input frequency	32.768	kHz
Frequency accuracy	+/-25	ppm
Duty cycle	30 - 70	%
Input signal amplitude	1.8±0.09	V
Signal type	Square-wave or sine-wave	-
Input impedance	>100k <5	Ω pF
Clock jitter (integrated over 300Hz – 15KHz)	<1	Hz
Output high voltage	0.7Vio - Vio	V

External 37.4MHz X'TAL characteristics

Parameter	Specification	Units
Nominal frequency - F0	37.4	MHz
Frequency Tolerance - Δ F / F 0 (At 25℃ +/- 3℃)	+/- 10	ppm
Operation Temperature Range - Topr	-30 ~ + 85	℃
Freq. Stability(over operating temperature) - TC Ref. to 25℃	+/- 10	ppm
Load capacitance - CL	18	pF
Equivalent Series Resistance – ESR	Max. 60	Ω
Drive Level - DL	Typ. 50, Max. 100	uW
Insulation resistance – IR At 100Vdc	Min. 500	MΩ

U.S. FCC Statement

FCC ID: H8N-AP6275S

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Canada (IC) Notices
IC: 1353A-AP6275S
CAN ICES-003(B) / NMB-003(B)
This device complies with Industry Canada license-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Caution:
The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

OEM Integration Instruction

Important Notice to OEM integrators 1. This module is limited to OEM installation ONLY. 2. This module is limited to installation in mobile or fixed applications, according to Part 2.1091(b). 3. The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations 4. For FCC Part 15.31 (h) and (k): The host manufacturer is responsible for additional testing to verify compliance as a composite system. When testing the host device for compliance with Part 15 Subpart B, the host manufacturer is required to show compliance with Part 15 Subpart B while the transmitter module(s) are installed and operating. The modules should be transmitting, and the evaluation should confirm that the module's intentional emissions are compliant (i.e. fundamental and out of band emissions). The host manufacturer must verify that there are no additional unintentional emissions other than what is permitted in Part 15 Subpart B or emissions are complaint with the transmitter(s) rule(s). The Grantee will provide guidance to the host manufacturer for Part 15 B requirements if needed.

IMPORTANT NOTE
Notice that any deviation(s) from the defined parameters of the antenna, as described by the instructions, require that the host product manufacturer must notify to Askey that they wish to change the antenna trace design. In this case, a Class II permissive change application is required to be filed by the USI, or the host manufacturer can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.

End Product Labeling
When the module is installed in the host device, the FCC/IC label must be visible through a window on the final device or it must be visible when an access panel, door or cover is easily re-moved. If not, a second label must be placed on the outside of the final device that contains the following text: "Contains Transmitter Module FCC ID: H8N-AP6275S or Contains FCC ID: H8N-AP6275S". The FCC ID/IC Certification Number can be used only when all FCC/IC compliance requirements are met.

Antenna

1. The antenna must be installed such that 20 cm is maintained between the antenna and users.

2. The transmitter module may not be co-located with any other transmitter or antenna.

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC/IC authorization is no longer considered valid, and the FCC ID/IC Certification Number cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC/IC authorization. To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, maximum antenna gain (including cable loss) must not exceed.

Antenna Specification

Antenna Type	Frequency Band (GHz)	TX Paths	Per Chain Max Antenna Gain (dBi)		CDD Directional Gain (dBi)	
			Ant 0	Ant 1	For Power	For PSD
Wi-Fi Internal Antenna						
PIFA	2412 ~ 2462	2	2.1	1.9	2.1	5.11
	5180 ~ 5240	2	4.2	1.9	4.2	7.21
	5260 ~ 5320	2	3.8	3.0	3.8	6.81
	5500 ~ 5720	2	3.8	2.9	3.8	6.81
	5745 ~ 5825	2	3.4	2.3	3.4	6.41
Bluetooth Internal Antenna						
PIFA	2402 ~ 2480	1	1.9		—	

Manual Information to the End User
The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.

List of applicable FCC rules

This module has been tested and found to comply with part 15 requirements for Modular Approval. The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuity), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B
compliance testing with the modular transmitter installed.

1. List of applicable FCC rules. KDB 996369 D03, Section 2.2 Complies with FCC Part 15.247 & Part 15.407.
2. Summarize the specific operational use conditions. KDB 996369 D03, Section 2.3 Refer to Antenna specification.
3. Limited Module Procedures. KDB 996369 D03, Section 2.4 This module is approved as single module.
4. Trace antenna designs. KDB 996369 D03, Section 2.5 Refer to Antenna specification.
5. RF exposure considerations. KDB 996369 D03, Section 2.6 The antennas used for this transmitter must be

installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

6. Antennas. KDB 996369 D03, Section 2.7 Refer to Antenna specification.
7. Label and compliance information. KDB 996369 D03, Section 2.8 Refer label file.

This device is intended only for OEM integrators under the following conditions: (For module device use)

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna.

As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

Industry Canada Statement
This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Radiation Exposure Statement
This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

This device is intended only for OEM integrators under the following conditions: (For module device use)

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna. As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

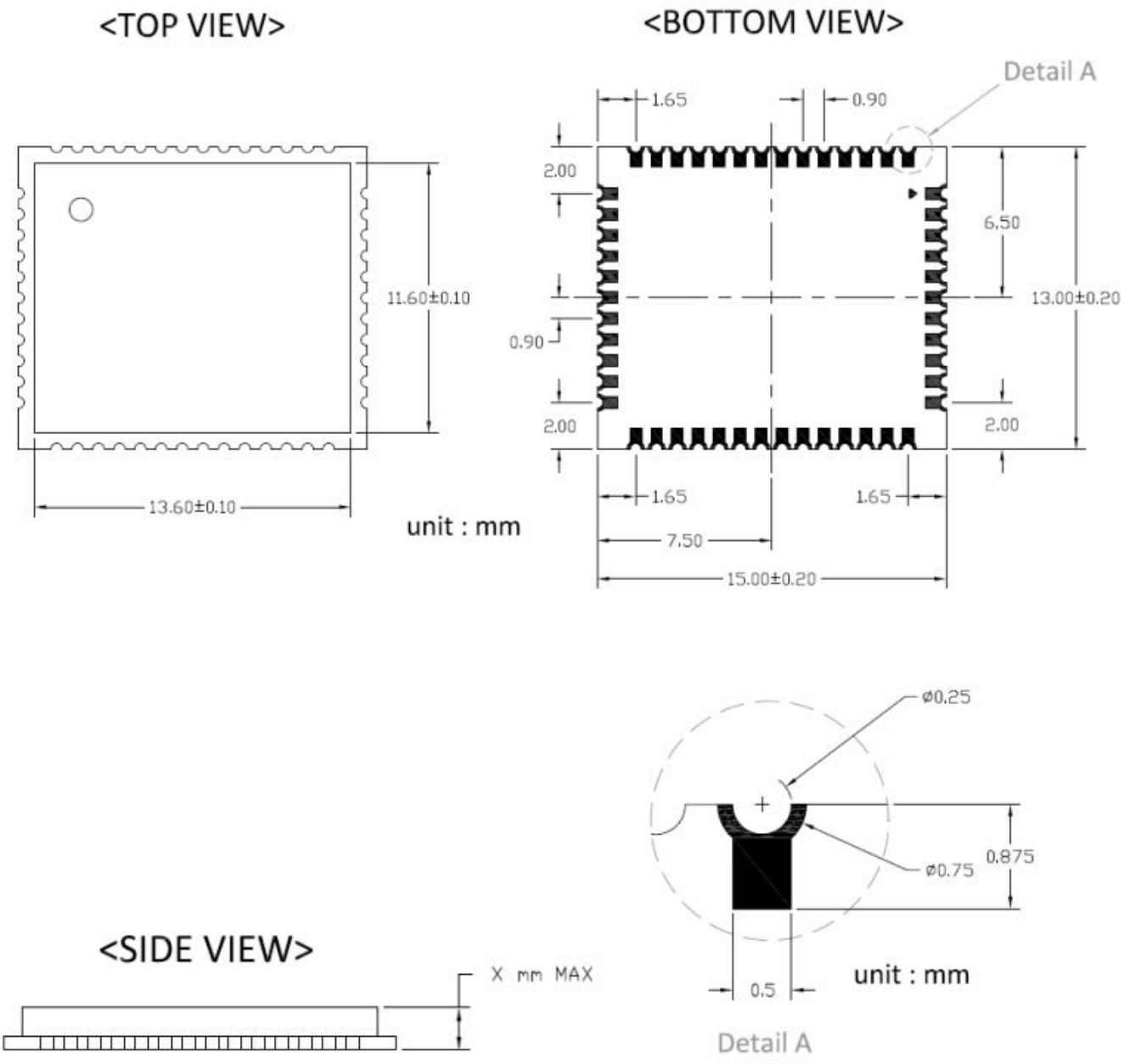
IMPORTANT NOTE
In the event that these conditions cannot be met (for example certain laptop configurations or colocation with another transmitter), then the Canada authorization is no longer considered valid, and the IC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate Canada authorization.

End Product Labeling
This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains IC: 1353A-AP6275S".

Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.
The end user manual shall include all required regulatory information/warning as show in this manual.

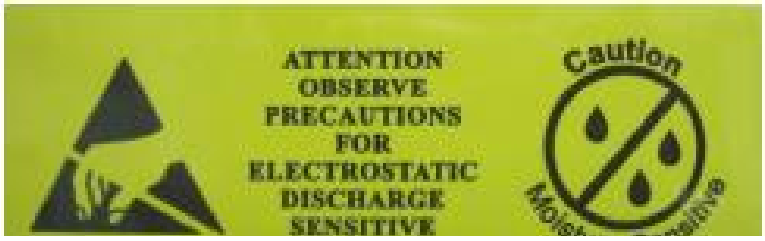
Dimensions



Note, X = 1.55mm

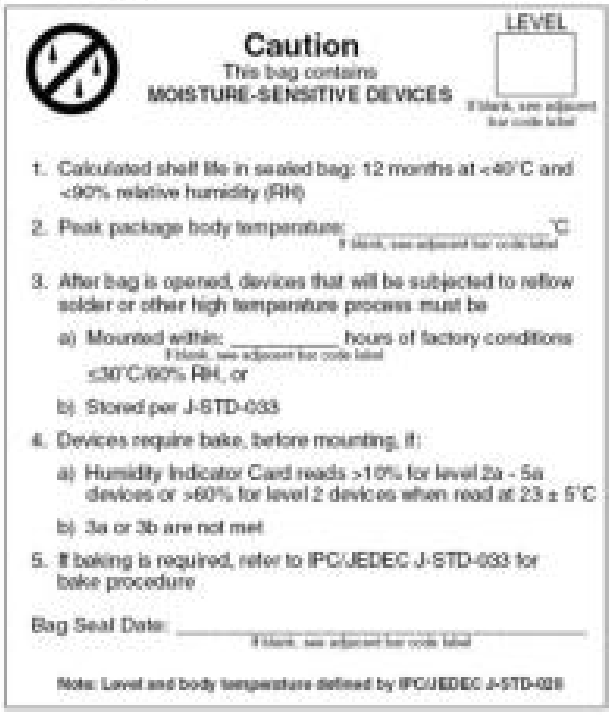
Label

Label A→ Anti-static and humidity notice



DEVICES

Label B→ MSL caution / Storage Condition



Caution
This bag contains
MOISTURE-SENSITIVE DEVICES

LEVEL

If blank, see adjacent bar code label

1. Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH)
2. Peak package body temperature: _____ °C
   If blank, see adjacent bar code label
3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must be
   a) Mounted within: _____ hours of factory conditions
      If blank, see adjacent bar code label
      ≤30°C/60% RH, or
   b) Stored per J-STD-033
4. Devices require bake, before mounting, if:
   a) Humidity Indicator Card reads >10% for level 2a - 5a devices or >60% for level 2 devices when read at 23 ± 5°C
   b) 3a or 3b are not met
5. If baking is required, refer to IPC/JEDEC J-STD-033 for bake procedure

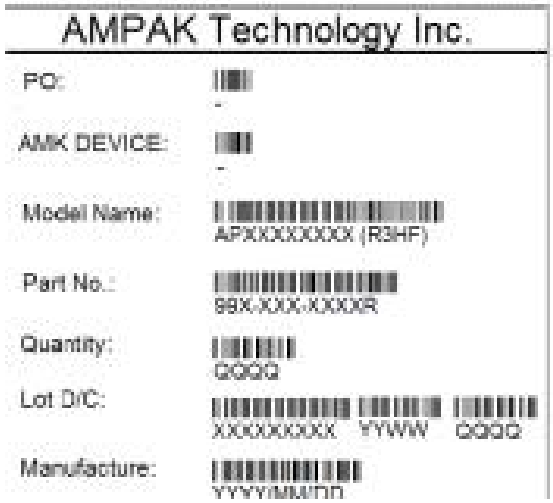
Bag Seal Date: _____
If blank, see adjacent bar code label

Note: Level and body temperature defined by IPC/JEDEC J-STD-020

Label C→ Inner box label .

PO:	
AMK DEVICE:	
PKG S/N:	9PKGYYMMDDNNNNN
Model Name:	APXXXXXXXX (R3HF)
P/N:	99X-XXX-XXXXR
Quantity:	QQQQ
Date Code:	YYWW
Lot Code:	XXXXXXXXX

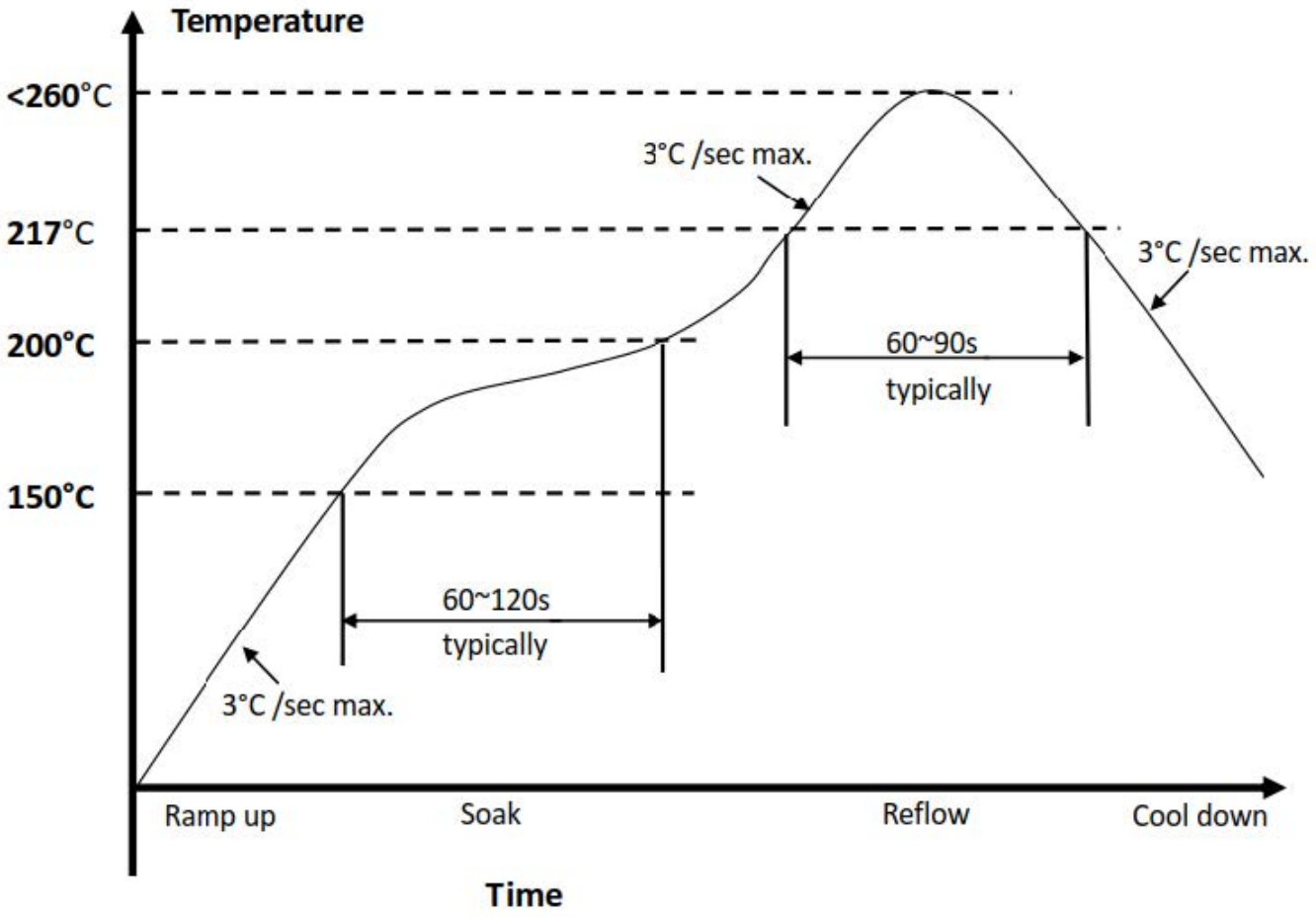
Label D→ Carton box label .



AMPAK Technology Inc.

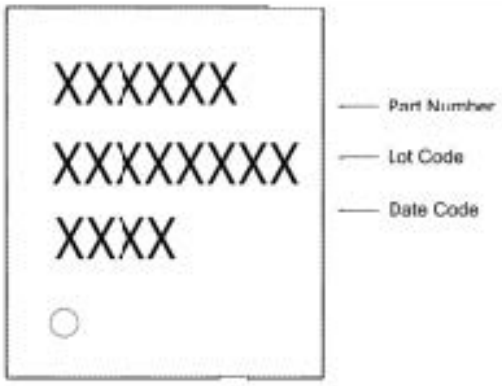
PO:	
AMK DEVICE:	
Model Name:	APXXXXXXXX (R3HF)
Part No.:	99X-XXX-XXXXR
Quantity:	QQQQ
Lot D/C:	XXXXXXXXX YYWW QQQQ
Manufacture:	YYYYMMDD

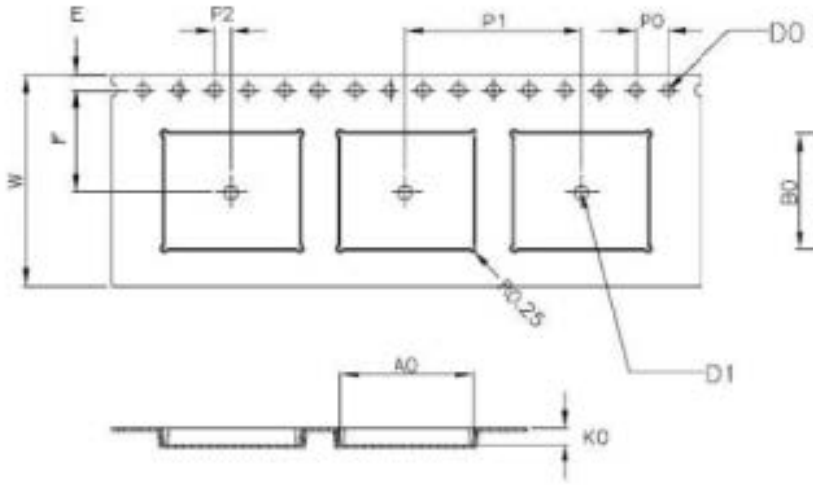
Recommended Reflow Profile



1. Referred to IPC/JEDEC standard
2. Peak Temperature : <260°C(Time within 5°C of actual Peak Temperature 20-40 seconds)
3. Cycle of Reflow : 2 times max.
4. Adding Nitrogen (N2) to implement 2000ppm or less of oxygen concentration during reflow process is recommended.
5. If the shelf time is exceeded, be sure baking step to remove the moisture from the component

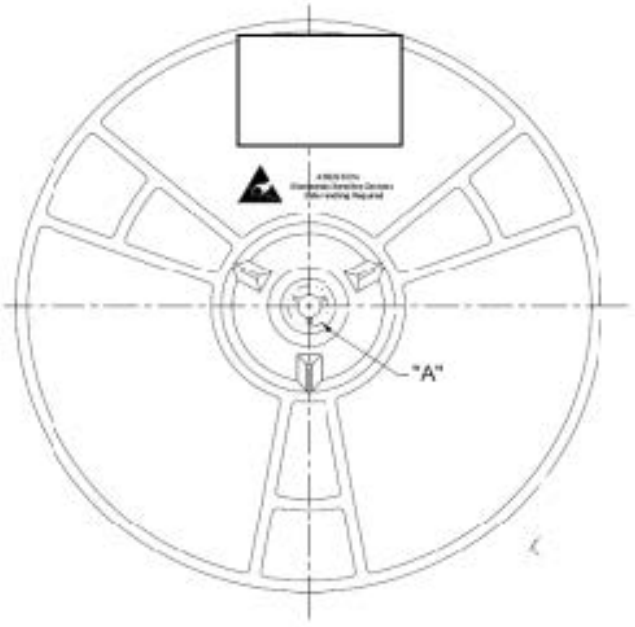
Package Information

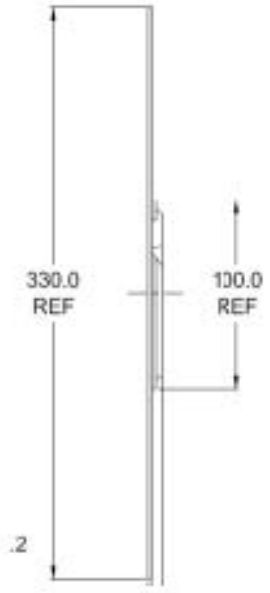


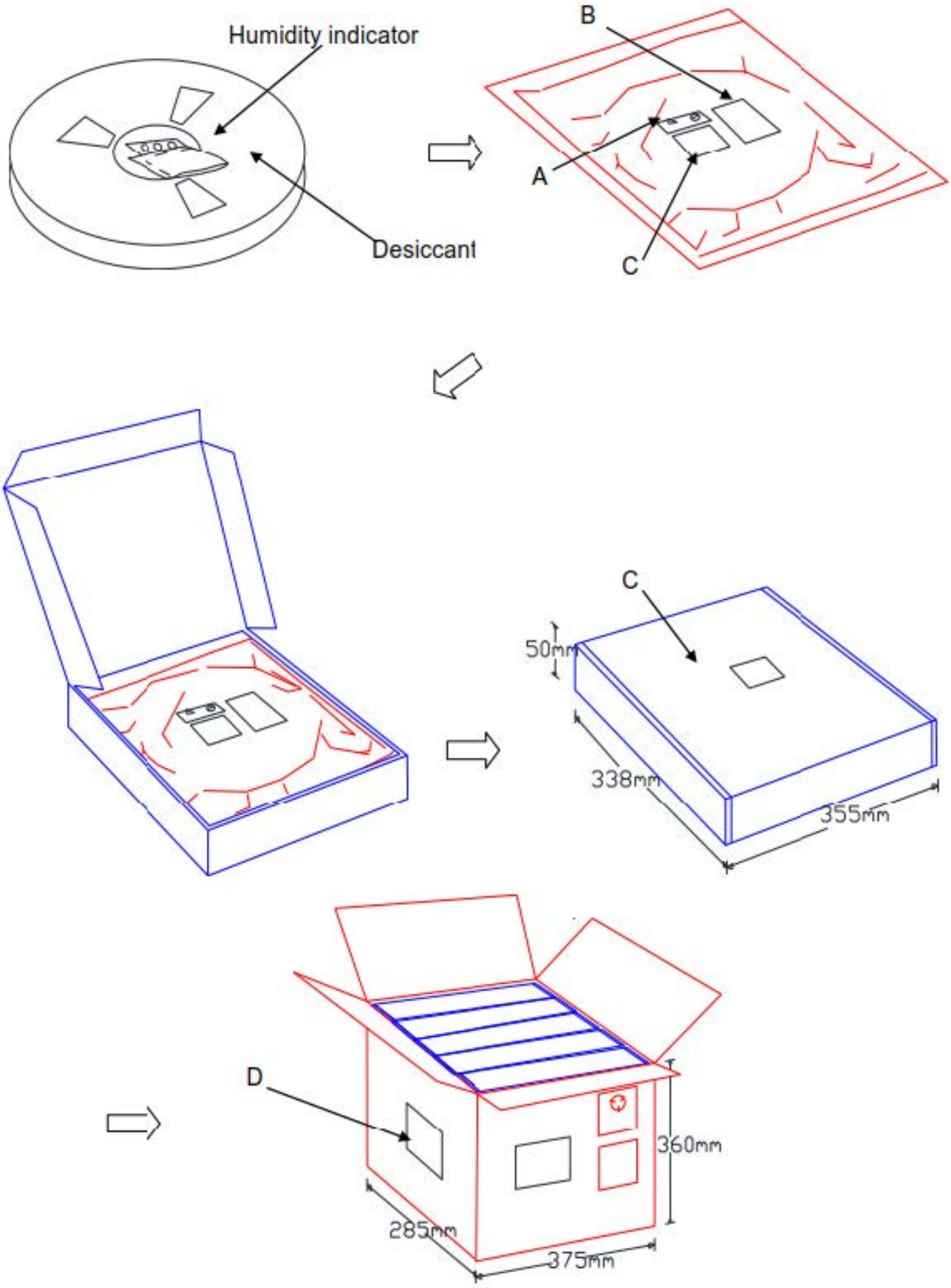


W	24.00±0.30
A0	15.30±0.10
B0	13.30±0.10
K0	2.00±0.10
E	1.75±0.10
F	11.50±0.10
P0	4.00±0.10
P1	20.00±0.10
P2	2.00±0.10
D0	1.50 $^{+0.10}_{-0.00}$
D1	ø1.50MIN

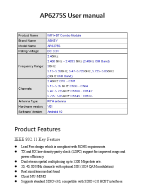
1. 10 sprocket hole pitch cumulative tolerance ±0.20.
2. Carrier camber is within 1 mm in 250 mm.
3. Material : Black Conductive Polystyrene Alloy.
4. All dimensions meet EIA-481-D requirements.
5. Thickness: 0.30±0.05mm.
6. Component load per 13”reel : 1000 pcs







Documents / Resources


AP6275S User manual

Product Features

ASKEY AP6275S WiFi+BT Combo Module [pdf] User Manual
AP6275S, H8N-AP6275S, H8NAP6275S, AP6275S WiFi BT Combo Module, WiFi BT Combo Module