



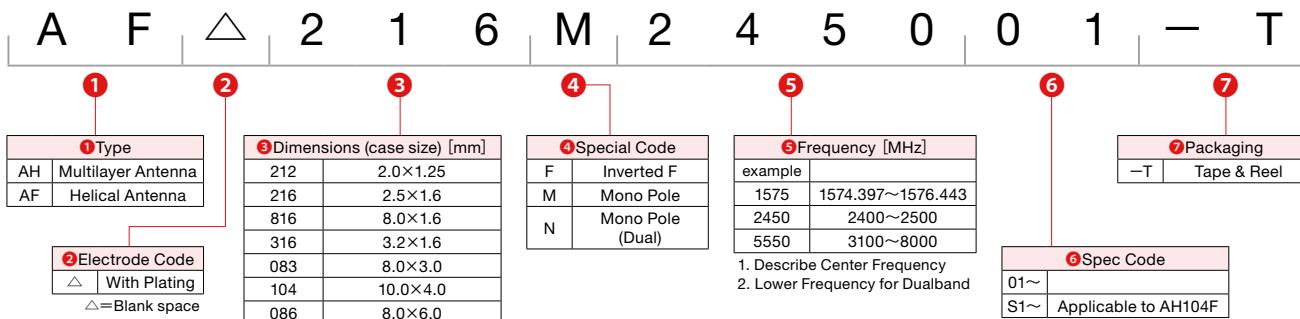
## FEATURES

- Compact and Low-profile
- Wide bandwidth and High Gain
- Stable temperature characteristics

## APPLICATIONS

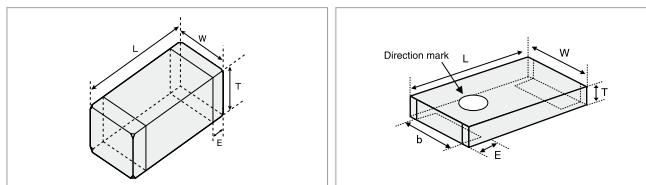
- Bluetooth®, Wireless LAN, GPS, WiMAX, ZigBee, UWB

## ORDERING CODE



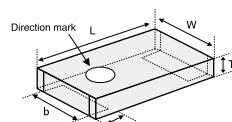
## EXTERNAL DIMENSIONS/STANDARD QUANTITY

AH 212M Type, AF 216M Type, AF 816M Type, AF 116M Type

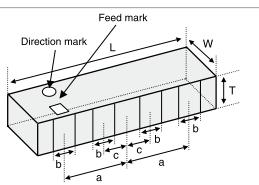


AH 316M Type

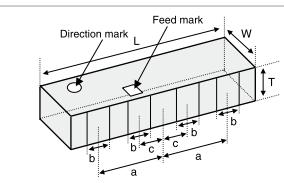
AH 083F Type



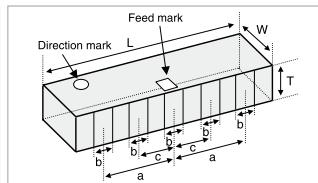
AH 083F Type



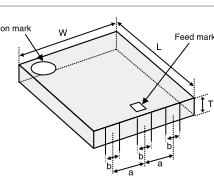
AH 104F Type



AH 104N Type



AH 086M Type



Type	L	W	T	E	a	b	c	Standard Quantity (pcs) Embossed Tape
AF 216M	$2.5 \pm 0.2$	$1.6 \pm 0.2$	$1.6 \pm 0.2$	$0.5 \pm 0.3$	—	—	—	2000
AF 816M	$8 \pm 0.2$	$1.6 \pm 0.2$	$1.6 \pm 0.2$	$0.5 \pm 0.3$	—	—	—	
AH212M	$2^{+0.3}$	$1.25 \pm 0.2$	$0.85 \pm 0.2$	$0.5 \pm 0.3$	—	—	—	4000
AH 316M	$3.2 \pm 0.15$	$1.6 \pm 0.15$	$0.5 \pm 0.1$	$0.5 \pm 0.2$	—	1.0 min.	—	3000
AH 083F	$8 \pm 0.3$	$3 \pm 0.3$	$1 \pm 0.3$	—	$3.1 \pm 0.3$	$1 \pm 0.3$	$1.15 \pm 0.3$	1000
AH 104F	$10 \pm 0.3$	$4 \pm 0.3$	$1 \pm 0.3$	—	$2.5 \pm 0.3$	$1 \pm 0.3$	$1 \pm 0.3$	2000
AH 104N	$10 \pm 0.3$	$4 \pm 0.3$	$1 \pm 0.3$	—	$3 \pm 0.3$	$0.8 \pm 0.3$	$1.5 \pm 0.3$	
AH 086M	$8 \pm 0.3$	$6 \pm 0.3$	$1 \pm 0.3$	—	$1.8 \pm 0.2$	$1 \pm 0.3$	—	1000

Unit : mm (inch)

## PART NUMBERS

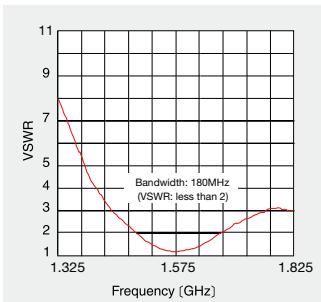
Applications	Ordering Code	External Dimensions (mm)	Center Frequency (MHz)
GPS	AF 816M157502 AH 316M157501 AF 216M245001	$8.0 \times 1.6 \times 1.6$ $3.2 \times 1.6 \times 0.5$ $2.5 \times 1.6 \times 1.6$	1575 1575 2450
W-LAN (2.4GHz) Bluetooth® WiMAX (2.5GHz) ZigBee	AH 212M245001 AH 316M245001 AH 083F245001 AH 104F2450S1 AH 104F2650S1	$2.0 \times 1.25 \times 0.85$ $3.2 \times 1.6 \times 0.5$ $8.0 \times 3.0 \times 1.0$ $10.0 \times 4.0 \times 1.0$ $10.0 \times 4.0 \times 1.0$	2450 2450 2450 2450 2650
W-LAN (2.4GHz / 5GHz)	AH 104N2450D1	$10.0 \times 4.0 \times 1.0$	2450/5400
UWB & WiMAX(3.5GHz)	AH 086M555003	$8.0 \times 6.0 \times 1.0$	5550

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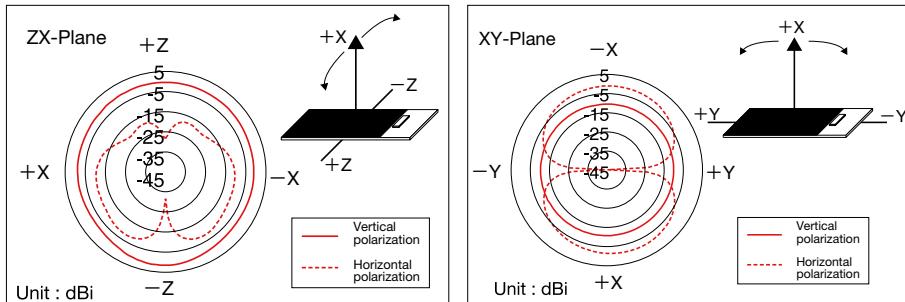
## ■ ELECTRICAL CHARACTERISTICS・TYPICAL CHARACTERISTICS

Typical Characteristics on Taiyo Yuden evaluation board

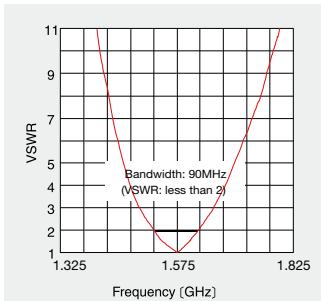
### ● AF 816M157502



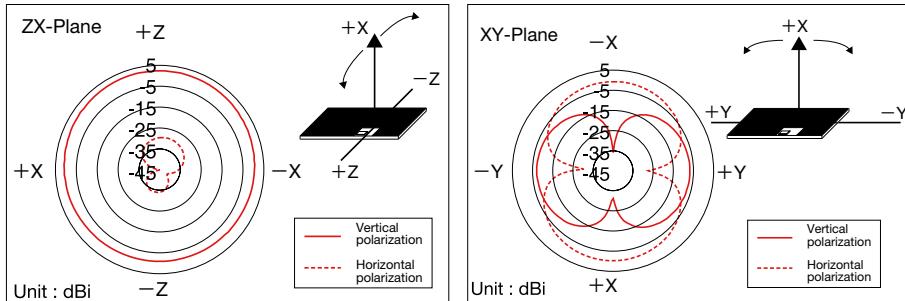
Typical characteristics of VSWR



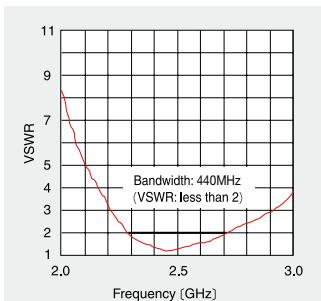
### ● AH 316M157501



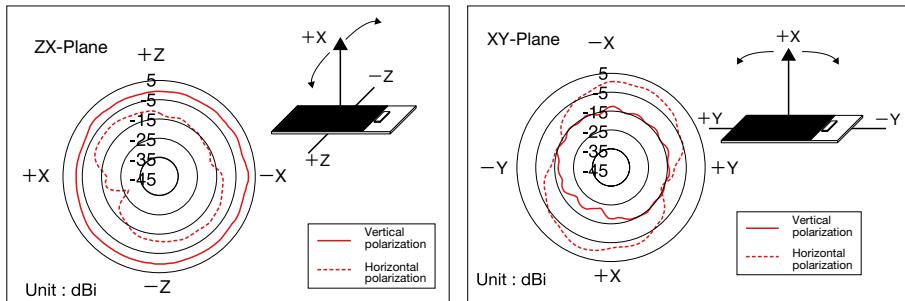
Typical characteristics of VSWR



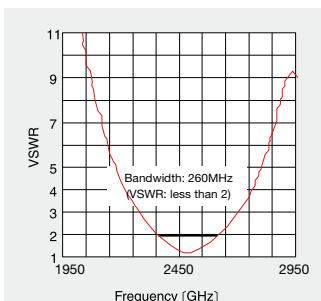
### ● AF 216M245001



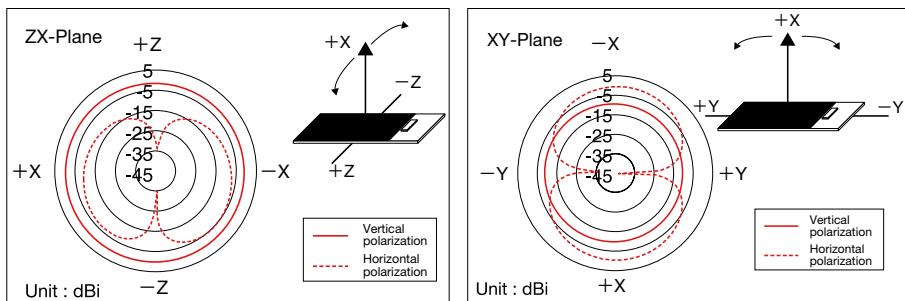
Typical characteristics of VSWR



### ● AH 212M245001



Typical characteristics of VSWR

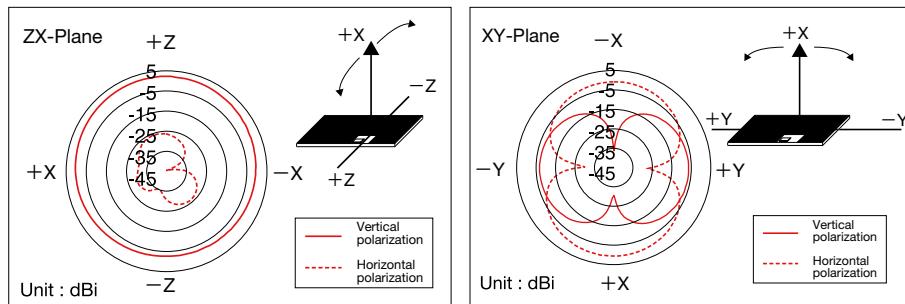
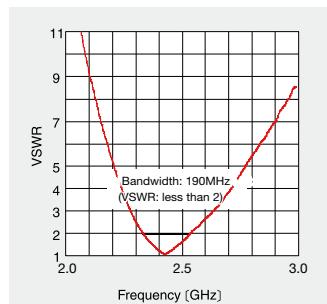


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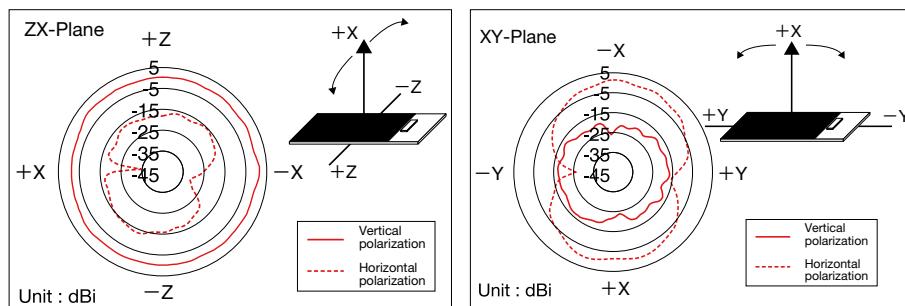
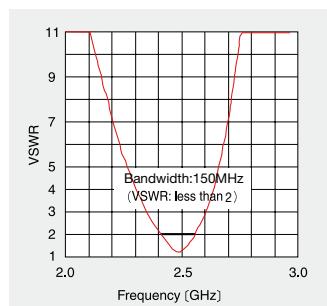
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Typical Characteristics on Taiyo Yuden evaluation board

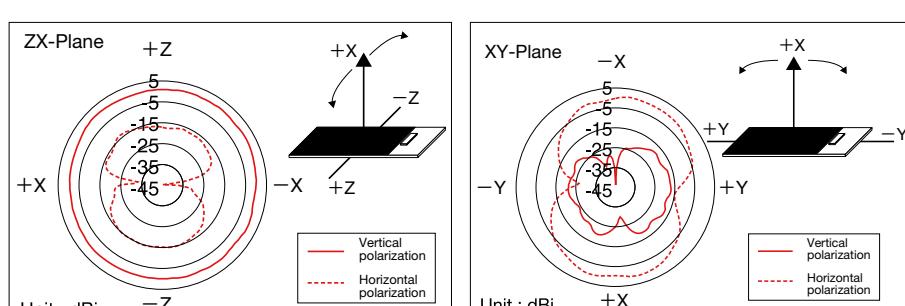
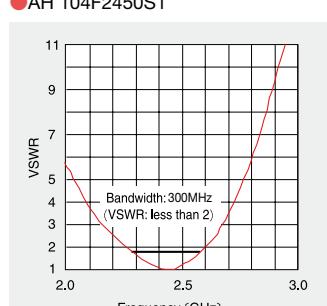
### ● AH 316M245001



### ● AH 083F245001



### ● AH 104F2450S1

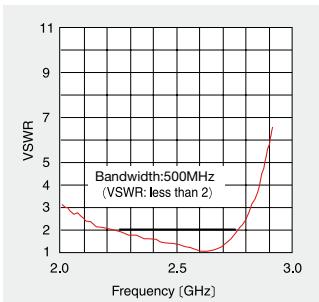


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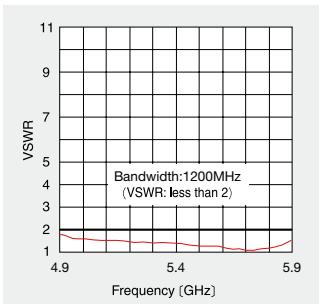
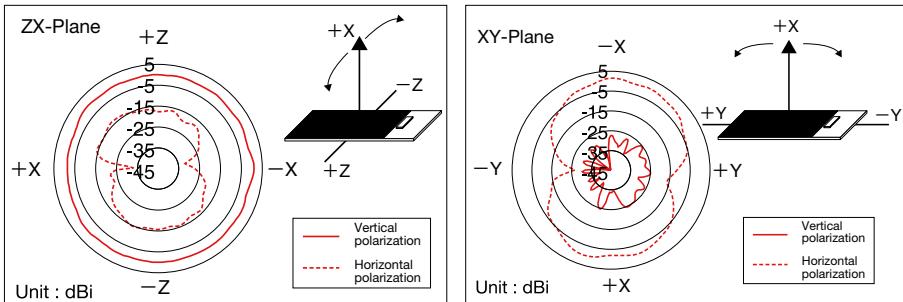
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Typical Characteristics on Taiyo Yuden evaluation board

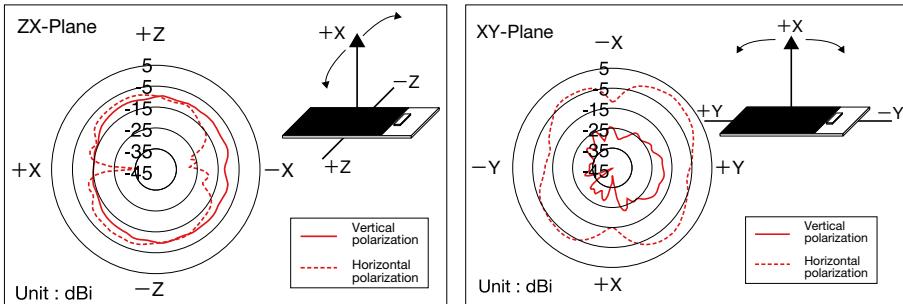
●AH 104N2450D1



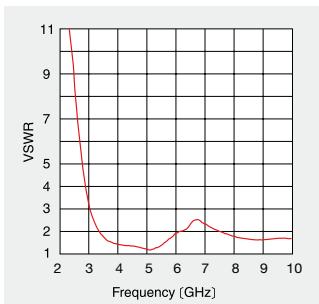
Typical characteristics of VSWR (2GHz band)



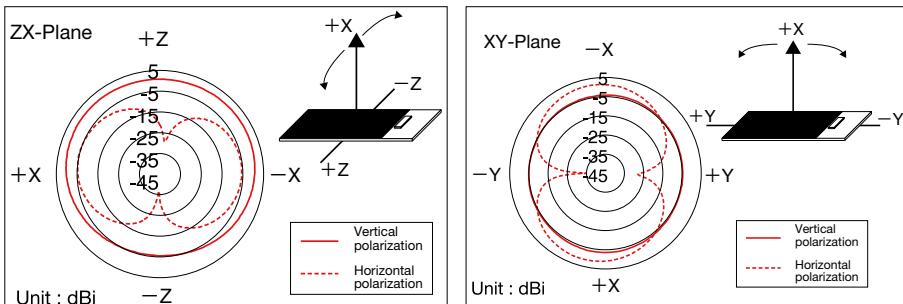
Typical characteristics of VSWR (5GHz band)



●AH 086M555003



Typical characteristics of VSWR



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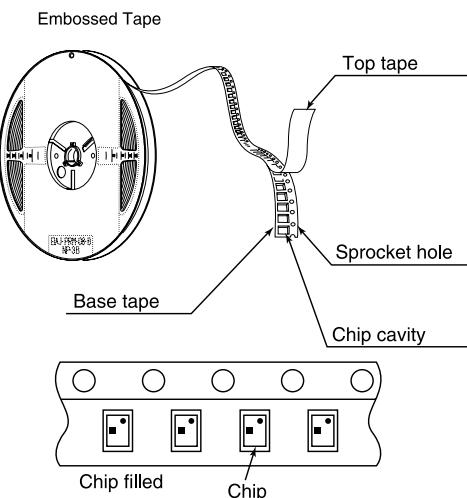
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## ■ PACKAGING

### ① Minimum Quantity

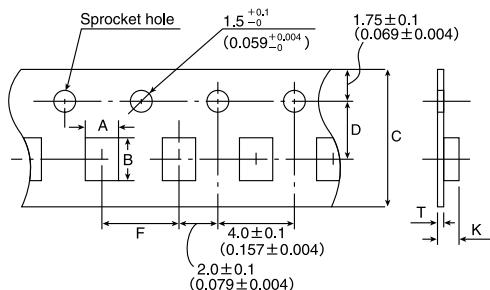
Type	Standard Quantity (pcs) Embossed Tape
AF216M, AF816M, AH104F, AH104N	2000
AH316M	3000
AH083F, AH086M	1000
AH212M	4000

### ② Tape Material

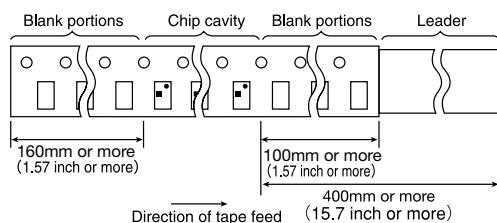


### ③ Taping Dimensions

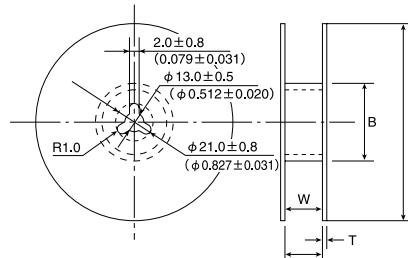
#### Embossed Tape



### ④ Leader and Blank Portion



### ⑤ Reel size

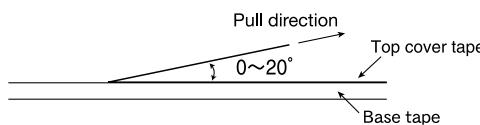


Type	A	B	W	T
AF216M, AH212M AH316M	178±2.0 (7.0±0.08)	50 min. (2.0 min.)	10.0±1.5 (0.394±0.06)	3.0 max. (0.12 max.)
AF816M AH083F	178±2.0 (7.0±0.08)	50 min. (2.0 min.)	17.0±1.0 (0.67±0.04)	2.5 max. (0.1 max.)
AH104F AH104N	330±2.0 (13.0±0.08)	100±1.0 (3.94±0.04)	25.5±1.0 (1.0±0.04)	3.0 max. (0.12 max.)
AH086M	330 ± 2.0 (13.0±0.08)	100 ± 1.0 (3.94±0.04)	17.0 ± 1.0 (0.67±0.04)	2.5 max. (0.1 max.)

Unit : mm (inch)

### ⑥ Top Tape Strength

The top tape requires a peel-off force of 0.1~0.7N in the direction of the arrow as illustrated below.



Type	Chip Cavity		Tape Widthness		Insertion Pitch	Tape Thickness MAX.	
	A	B	C	D		K	T
AF216M	1.85±0.2 (0.073±0.008)	2.75±0.2 (0.108±0.008)	8±0.2 (0.315±0.008)	3.5±0.1 (0.138±0.004)	4±0.1 (0.157±0.004)	1.95 (0.077)	0.3 (0.012)
AF816M	1.95±0.2 (0.077±0.008)	8.4±0.2 (0.331±0.008)	16±0.3 (0.630±0.012)	7.5±0.1 (0.296±0.004)	4±0.1 (0.157±0.004)	2.05 (0.081)	0.35 (0.014)
AH316M	1.9±0.2 (0.075±0.008)	3.5±0.2 (0.138±0.008)	8±0.2 (0.315±0.012)	3.5±0.1 (0.138±0.004)	4±0.1 (0.157±0.004)	0.85 (0.033)	0.3 (0.012)
AH083F	3.35±0.2 (0.132±0.008)	8.35±0.2 (0.329±0.008)	16±0.3 (0.630±0.012)	7.5±0.1 (0.295±0.004)	8±0.1 (0.315±0.004)	1.55 (0.061)	0.3 (0.012)
AH104F, AH104N	4.35±0.2 (0.171±0.008)	10.35±0.2 (0.407±0.008)	24±0.3 (0.945±0.012)	11.5±0.1 (0.435±0.004)	8±0.1 (0.315±0.004)	1.55 (0.061)	0.3 (0.012)
AH086M	6.25±0.2 (0.246±0.008)	8.26±0.2 (0.325±0.008)	16±0.3 (0.630±0.012)	7.5±0.1 (0.296±0.004)	12±0.1 (0.473±0.004)	1.3 (0.051)	0.3 (0.012)
AH212M	1.5±0.2 (0.059±0.008)	2.3±0.2 (0.091±0.008)	8±0.3 (0.315±0.012)	3.5±0.1 (0.138±0.004)	4±0.1 (0.157±0.004)	1.5 (0.059)	0.3 (0.012)

Unit : mm (inch)

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## RELIABILITY DATA

### 1. Operating Temperature Range

Specified Value	-20~+80°C
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### 2. Storage Temperature Range

Specified Value	-40~+85°C
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【Test Methods and Remarks】  
※with being taped, -20~+40°C

### 3. Solderability

Specified Value	At least 90% of immersed terminal surface is covered by new solder.
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【Test Methods and Remarks】  
Solder temperature : 230±5°C  
Duration : 3±1 sec.  
Preconditioning : Preheating at 150°C after immersion into flux.

### 4. Thermal Shock

Specified Value	Shall satisfy required VSWR value of individual specifications for each item.
-----------------	-------------------------------------------------------------------------------

【Test Methods and Remarks】  
1 hour of recovery after 10 times of 30min. immersion alternately at -40°C and 85°C of temperature, followed by evaluating electrical characteristics.

### 5. High Temperature Storage Test

Specified Value	Shall satisfy required VSWR value of individual specifications for each item.
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【Test Methods and Remarks】  
1 hour of recovery under standard condition after 96 hours recovery with 85°C of temperature, followed by evaluating electrical characteristics.

### 6. Low Temperature Storage Test

Specified Value	Shall satisfy required VSWR value of individual specifications for each item.
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【Test Methods and Remarks】  
1 hour of recovery under standard condition after 96 hours recovery with -40°C of temperature, followed by evaluating electrical characteristics.

### 7. Humidity Storage Test

Specified Value	Shall satisfy required VSWR value of individual specifications for each item.
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【Test Methods and Remarks】  
1 hour of recovery under standard condition after 96 hours recovery with 60°C of temperature, 90~95% relative humidity followed by evaluating electrical characteristics.

### 8. Resistance to Reflow

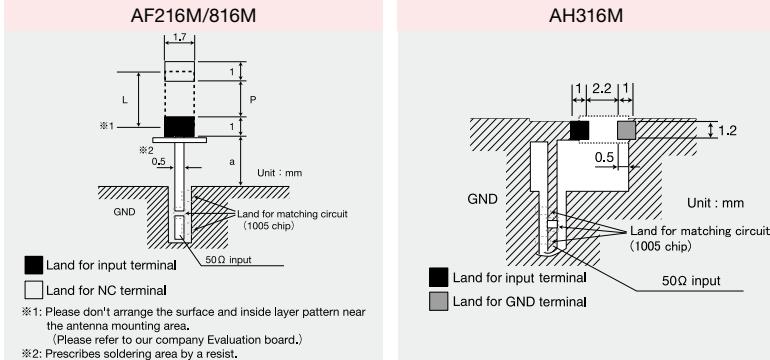
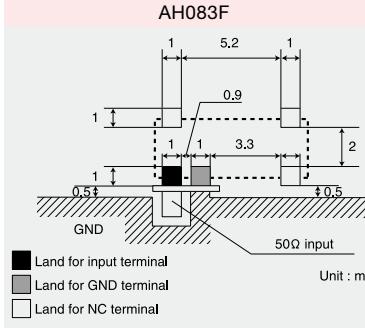
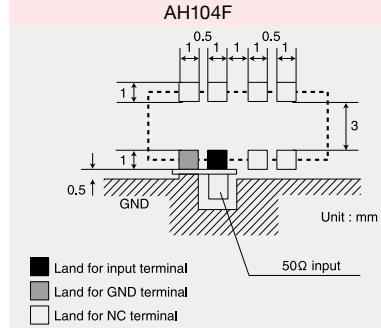
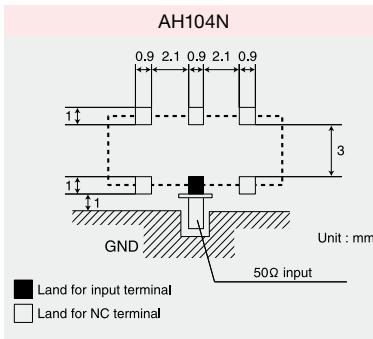
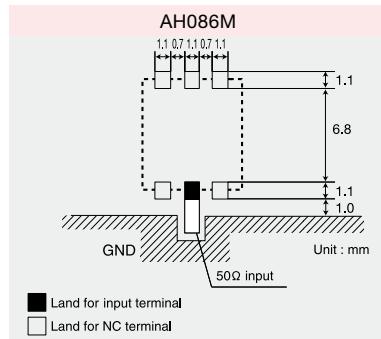
Specified Value	Shall satisfy required VSWR value of individual specifications for each item.
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【Test Methods and Remarks】  
Two times of reflow soldering by recommended profile attached, followed by evaluating electrical characteristics.

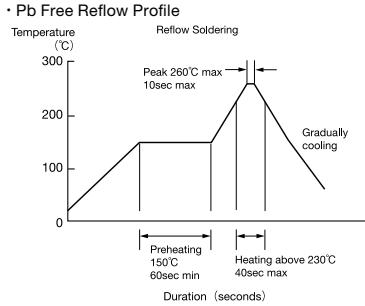
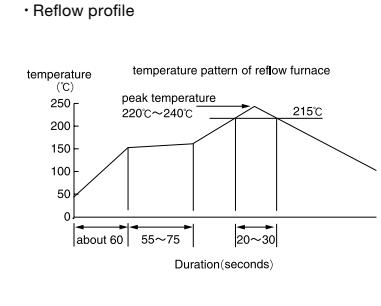
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## PRECAUTIONS

### 1. PCB Design

Precautions	<p>◆ Land pattern design Please do not arrange the surface and inside layer pattern near the antenna mounting area.</p>																								
	<p>◆ Land pattern design Land pattern dimension examples and recommended antenna land pattern</p> 																								
Technical Considerations	<table border="1"> <thead> <tr> <th>Type</th><th colspan="3">Dimensions</th></tr> <tr> <th></th><th>L</th><th>P</th><th>a</th></tr> </thead> <tbody> <tr> <td>AF216M</td><td>2.5</td><td>1.5</td><td>3</td></tr> <tr> <td>AF816M</td><td>8</td><td>7</td><td>5</td></tr> <tr> <td>AH212M</td><td>2</td><td>1</td><td>3</td></tr> <tr> <td></td><td colspan="3">Unit : mm</td></tr> </tbody> </table>	Type	Dimensions				L	P	a	AF216M	2.5	1.5	3	AF816M	8	7	5	AH212M	2	1	3		Unit : mm		
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	Unit : mm																								
																									
																									
																									
																									

### 2. Soldering

Technical Considerations	<p>◆ Conditions of Reflow soldering (for reference)</p>
	<p>• Pb Free Reflow Profile</p> 
	<p>• Reflow profile</p> 

※ Components should be preheated to within 100 to 130°C from soldering temperature.

※ Assured to be reflow soldering for 2 times.

Note : The above profiles are the maximum allowable soldering condition, therefore these profiles are not always recommended.

### 3. Storage Conditions

Precautions	<p>◆ Storage conditions</p> <ol style="list-style-type: none"> <li>The Products should not be used in the following environments :           <ul style="list-style-type: none"> <li>exposure to special gases such as (C12, NH3, SOx, NOx)</li> <li>exposure to volatile gas or inflammable gas</li> <li>exposure to a lot of dust</li> <li>exposure to water or condensation</li> <li>exposure to direct sunlight or freezing</li> </ul> </li> <li>The Products should be kept in the following conditions :           <ul style="list-style-type: none"> <li>Temperature : -10~+40°C</li> <li>Humidity : 70%RH max.</li> </ul> </li> <li>The products should be used within 6 months after delivery. In case of storage over 6 months, solderability shall be checked before actual usage.</li> </ol>
	<p>■ Please contact our offices for further details of specifications. All of the standard values listed here are subject to change without notice due to technical improvements. Therefore, please check the specifications carefully before use.</p>
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