

## Package : QFP

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### 1. Structure and materials

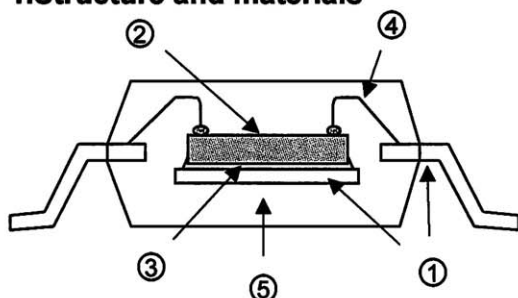


Fig. 1 Structure

No.	Item	Materials
①	Lead Frame	Alpy 42 (External lead : Pb free solder plating)
②	Die	Silicon
③	Die Attach	Ag Paste
④	Wire	Au
⑤	Molding	Epoxy Resin

### 2. Tape and Reel information

#### 2. 1. Packing specification

Tape	Embossed carrier tape(with dry pack)
Quantity	See the table on page 4/4
Direction of feed	E2 (See Fig. 2)

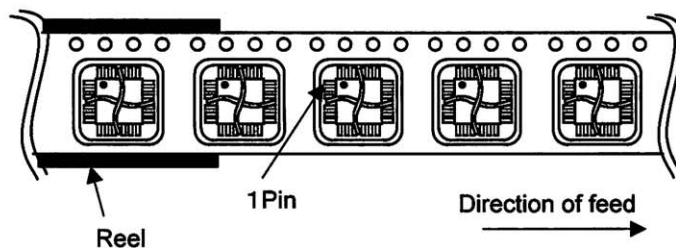


Fig. 2 Typical Tape and Reel configuration

#### 2. 2. Tape and Reel specification

##### 2. 2. 1. Tape and reel dimensions ( See the table on page 4/4 )

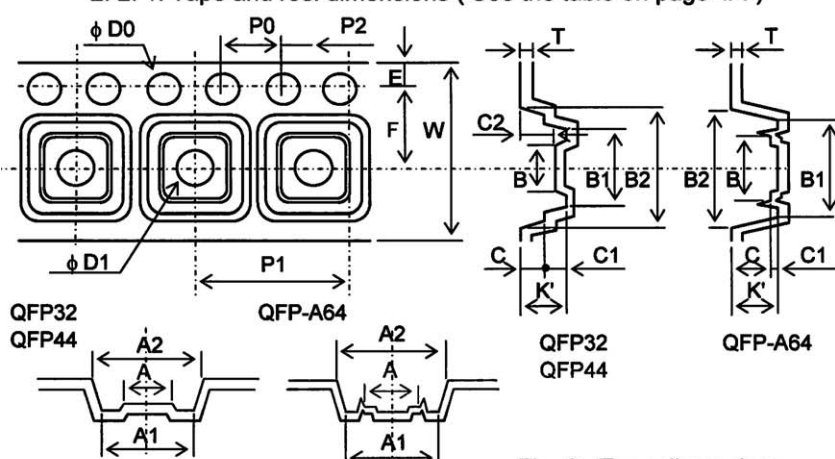


Fig. 3 Tape dimensions

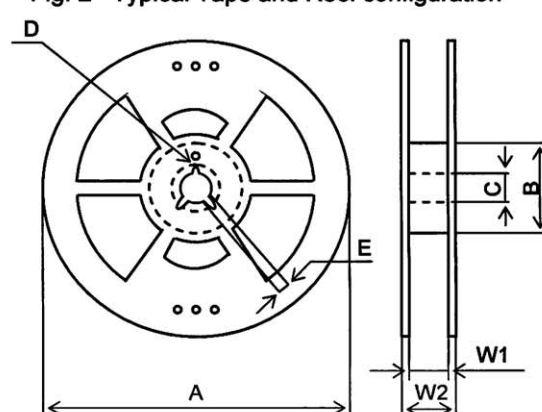


Fig. 4 Reel dimensions

## 2. 3. Leader and Trailer

### 2. 3. 1. Leader

No component pockets are 40 pockets or more.

### 2. 3. 2. Trailer

No component pockets are 10 pockets or more.

Tape is free from reel.

## 2. 4. Label for Reel and Box

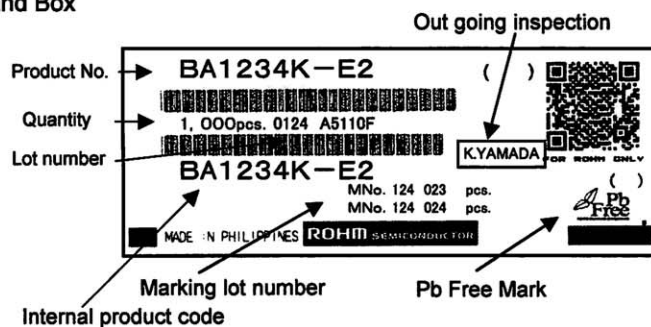


Fig. 5 Label example

## 2. 5. Packing style

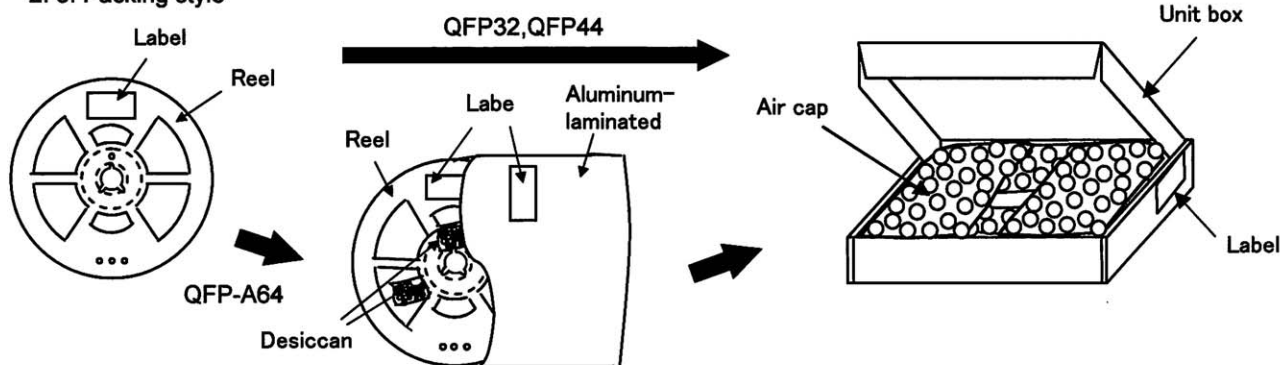


Fig. 6 Packing style

## 2. 6. Shipping style

5 unit boxes or less per shipping box

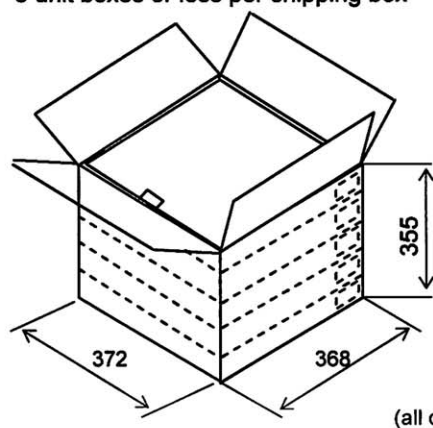


Fig. 7 Shipping box dimensions and Shipping style

## 2. 7. Packing materials

Item	Material
Embossed carrier tape	PS
Cover tape	PET + PE
Reel	PS
*1 Desiccant	Silicagel
*1 Envelope	Aluminum-laminated
Air cap	Polyethylene
Unit box	Cardboard
Shipping box	Cardboard

\*Please obey the indication of top side in a shipping box.

\*1: QFP-A64

## 2. 8. Others

### 2. 8. 1. Peelback strength

Cover tape peelback strength is 0.2 to 0.7N.

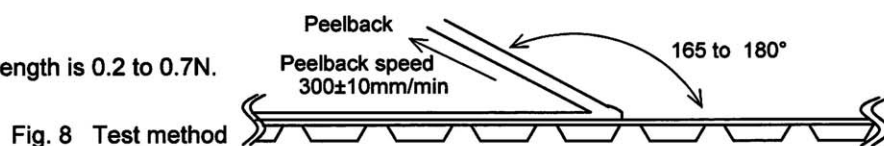


Fig. 8 Test method

## 2. 8. 2. Missing lcs

- (1) No consecutive dropouts.
- (2) A maximum 0.1% of specified number of products in each packing may be missing.

## 3. Storage conditions

### 3. 1. Storage environment

Recommended storage conditions are as follows :

- Temperature : 5 to 30°C
- Humidity : 40 to 70% RH

### 3. 2. Storage period

- Specified storage period : 1 year

### 3.3. Specified storage period until soldering

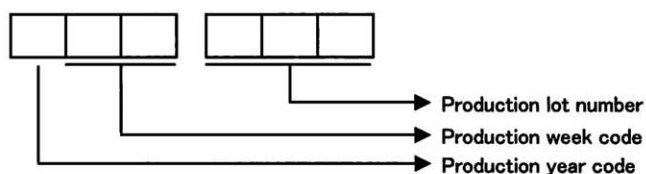
Regarding the dry packed packages , assemble package within 168hours , after dry pack is opened .

If the storage period has expired , the products must be baked 125°C for 24hours.

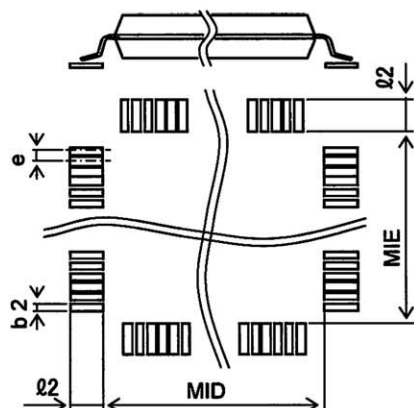
Maximum 2times baking for keeping solderability.

Execute baking by 60°C/48hours while put in the embossed tape.

## 4. Marking lot number



## 5. Footprint dimensions (Optimize footprint dimensions to the board design and soldering condition)

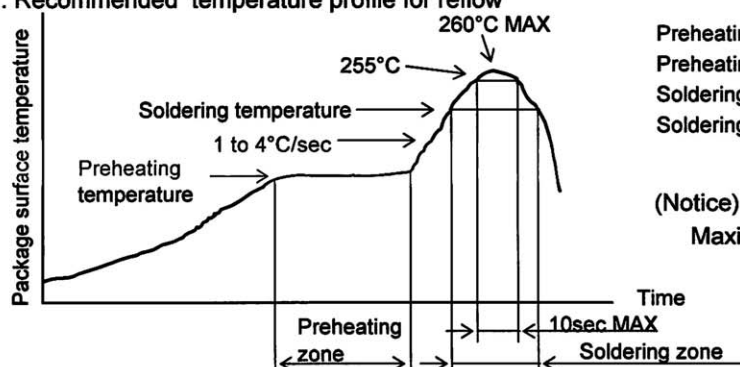


(all dimensions in mm)

Package	Land pitch e	Land space		Land length	Land width
		MID	MIE	≥l2	b2
QFP32	0.80	7.40	7.40	1.10	0.50
QFP44	0.80	10.80	10.80	1.90	0.50
QFP-A64	0.80	14.60	14.60	1.20	0.50

## 6. Soldering conditions

### 6. 1. Recommended temperature profile for reflow



Preheating temperature ; 130°C to 190°C

Preheating zone ; 120sec MAX

Soldering temperature ; 220°C to 230°C

Soldering zone ; 60sec MAX

(Notice)

Maximum 2-times soldering



## 6. 2. Recommended condition for wave soldering

Process	Conditions	
	Temperature	Time
Preheating	120°C to 150°C	60sec MAX
Soldering	260°C ± 3°C	12sec MAX

(Notice) Soldering time is provided for total soldering time in case of dual wave soldering.

## 6. 2. 1. Notes for wave soldering

- (1) Do not use other soldering methods with wave soldering.
- (2) Recommend to clean the board to eliminate flux, solder waste, and other impurities for reliability, after soldering.
- (3) Optimize soldering condition to prevent solder bridging.

## 6. 3. Recommended condition for solder iron

Recommended condition for solder iron

-Solder iron temperature : 380°C or less

-Mounting time : 4sec or less

## &lt; Tape dimensions &gt;

Package	Quantity (pcs)	Tape dimensions (all dimensions in mm)										
		A	A1	A2	B	B1	B2	C	C1	C2	D0	D1
QFP32	1500	6.0	9.5	9.8	6.0	9.5	10.8	0.8	1.4	1.7	φ1.5	φ1.6
QFP44	1000	9.0	14.45	14.9	9.0	14.5	14.9	—	—	2.2	φ1.5	φ2.0
QFP-A64	500	13.35	17.4	17.8	13.35	17.4	17.8	2.8	1.5	—	φ1.5	φ2.0
Tolerance		—	±0.1	±0.1	—	±0.1	±0.1	—	—	±0.1	$\begin{smallmatrix} +0.1 \\ -0 \end{smallmatrix}$	$\begin{smallmatrix} +0.1 \\ -0 \end{smallmatrix}$

Package	Tape dimensions (all dimensions in mm)							
	E	F	K'	P0	P1	P2	T	W
QFP32	1.75	7.5	2.2	4.0	12.0	2.0	0.3	16.0
QFP44	1.75	11.5	2.4	4.0	16.0	2.0	0.3	24.0
QFP-A64	1.75	11.5	3.3	4.0	24.0	2.0	0.3	24.0
Tolerance		±0.1	±0.1	±0.1	±0.1	±0.1	±0.05	±0.3

## &lt; Reel dimensions &gt;

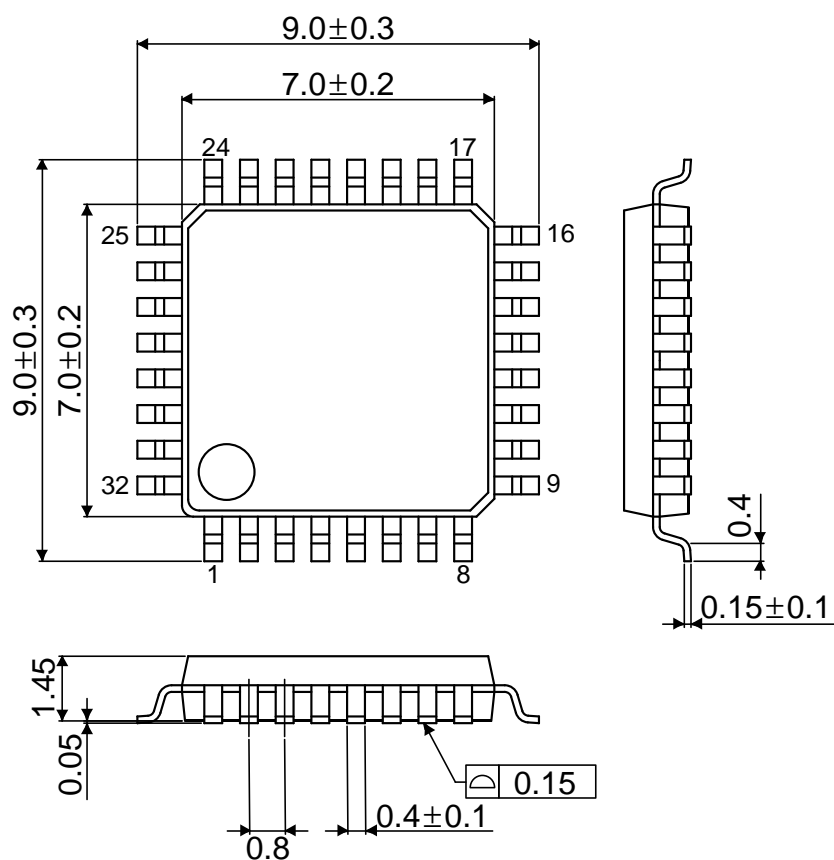
Package	Reel dimensions (all dimensions in mm)						
	A	B	C	D	E	W1	W2
QFP32	φ330	φ80	φ13.0	φ20.2	1.5	17.5	22.5
QFP44	φ330	φ100	φ13.0	φ20.2	1.5	25.5	30.5
QFP-A64	φ330	φ100	φ13.0	φ20.2	1.5	25.5	30.5
Tolerance		—	±0.2	MIN	MIN	±1.0	MAX

## &lt; Dehydrated weight &gt;

Dehydrated weight dimensions in g
0.20
0.57
1.23

# Package Dimensions

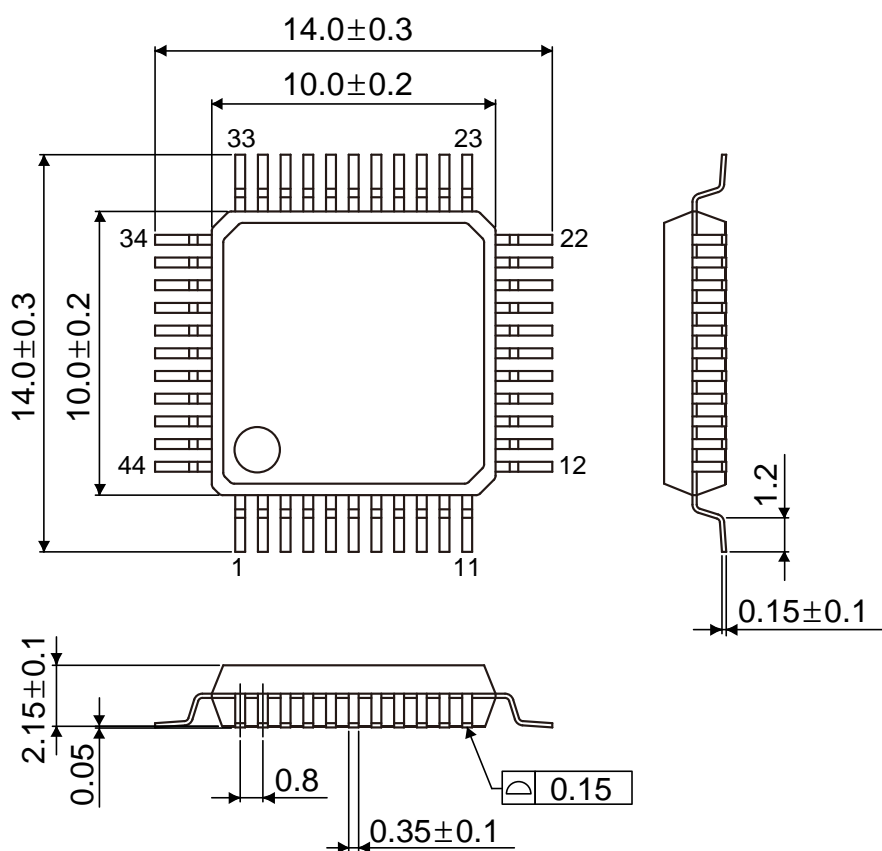
QFP32



(Unit : mm)

# Package Dimensions

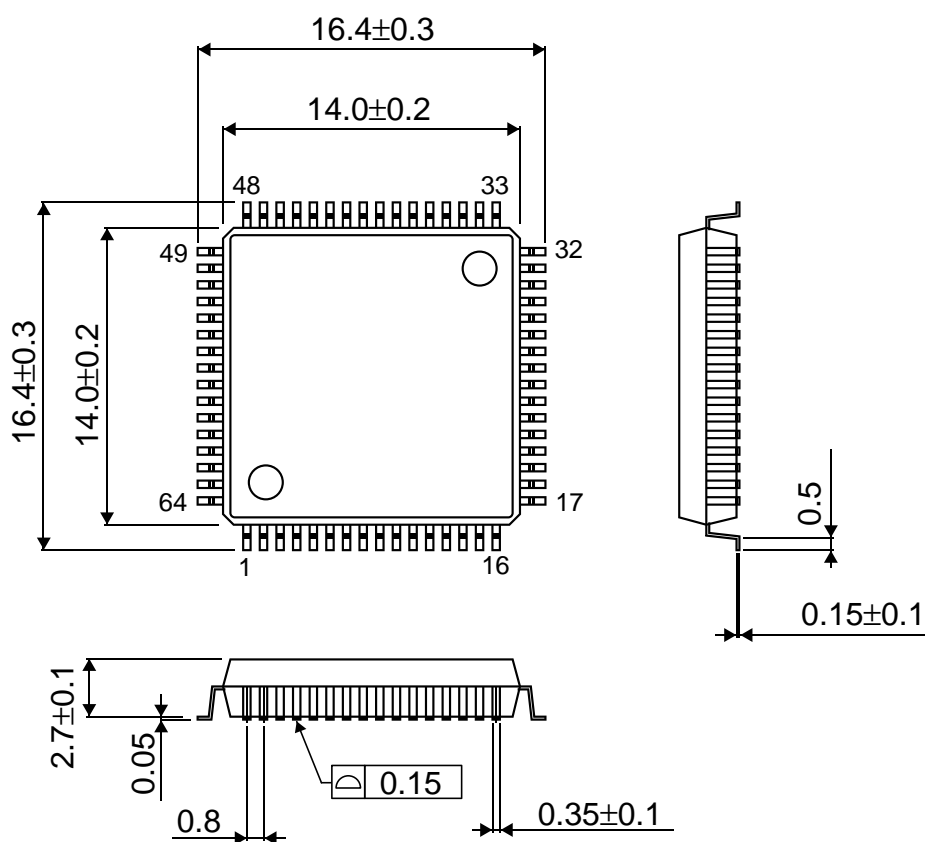
## QFP44



(Unit : mm)

# Package Dimensions

QFP-A64



(Unit : mm)

## Notes

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