Package : VQFN

< A tablie of contents >

1. Structure and materials

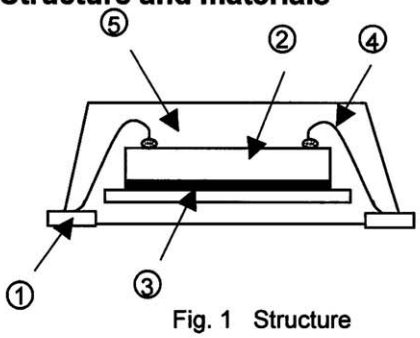


Fig. 1 Structure

No.	Item	Materials
①	Lead Frame	Cu-Alloy (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)

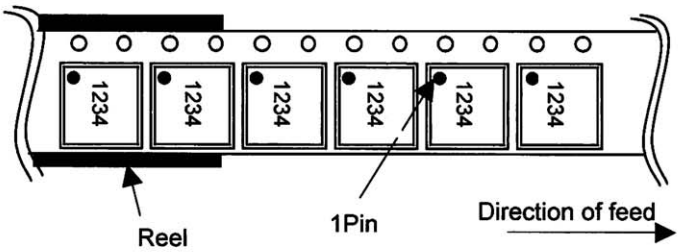


Fig. 2 Typical Tape and Reel configuration

2. 2. Tape and Reel specification

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

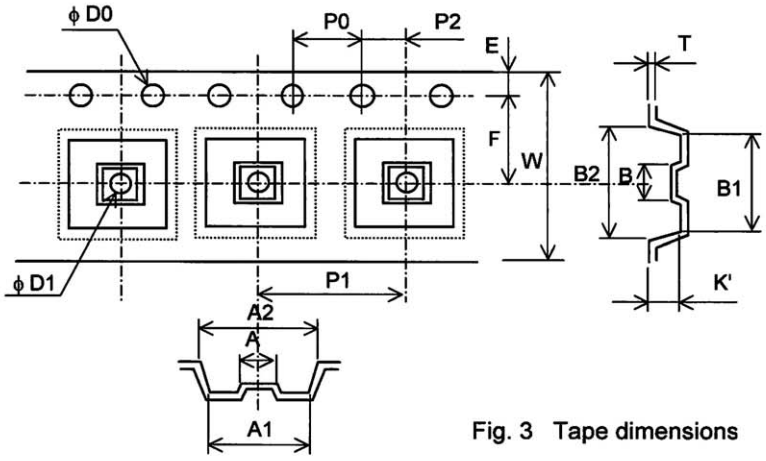


Fig. 3 Tape dimensions

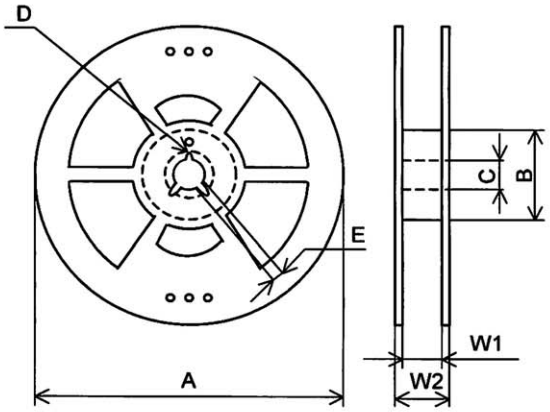


Fig. 4 Reel dimensions

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

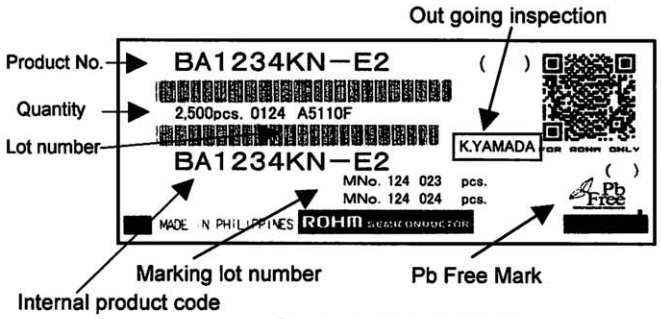


Fig. 5 Label example

2. 5. Packing style

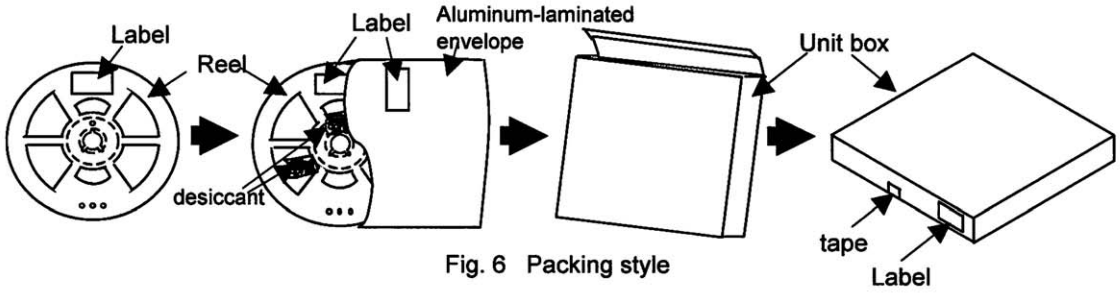
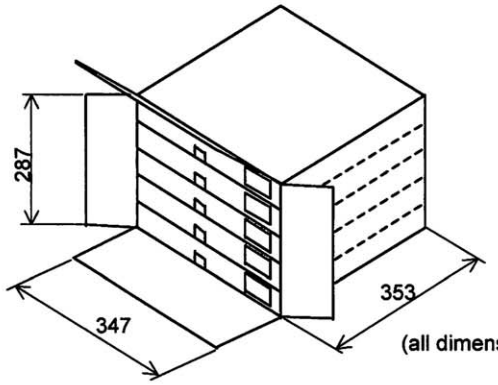


Fig. 6 Packing style

2. 6. Shipping style

5 unit boxes or less per shipping box



(all dimensions in mm)

2. 7. Packing materials

Item	Material
Embossed carrier tape	PS
Cover tape	PET + PE
Reel	PS
Desiccant	Silicagel
Envelope	Aluminume-laminated
Unit box	Cardboard
Shipping box	Cardboard

Fig. 7 Shipping box dimensions and Shipping style

2. 8. Others

2. 8. 1. Peelback strength

Cover tape peelback strength is 0.2 to 0.7N.

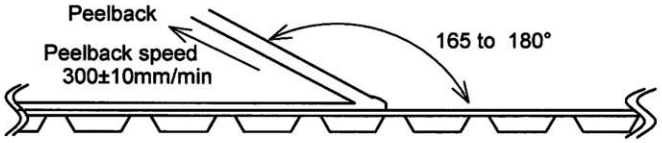


Fig. 8 Test method

2. 8. 2. Missing Ics
(1) No consecutive dropouts.
(2) A maximun 0.1% of specified number of products in each packing may be missing.

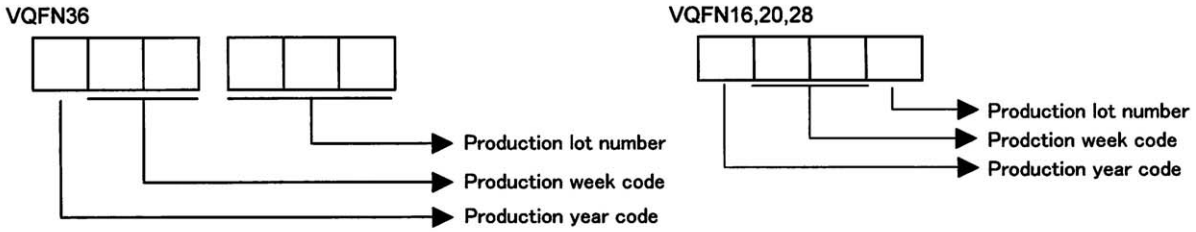
3. Storage conditions

3. 1. Storage environment
Recommended storage conditions are as follows :
-Temperature : 5 to 30°C
-Humidity : 40 to 70% RH

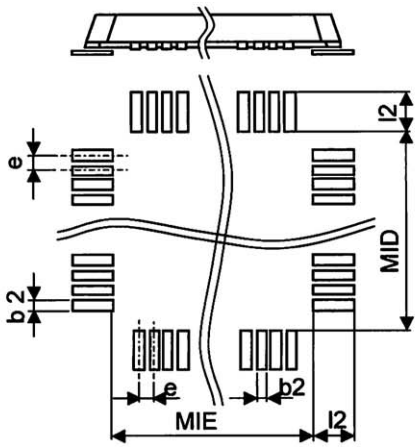
3. 2. Storage period
-Specified storage period : 1 year

3.3.Specified storage period until soldering
Dry process before mounting is necessary in the following two case.
1.After the package is opened , the product is left unused over 168 hours.
2.Before the package is opened , the product is left in the package unused over 1year.
Please excute dry processing in a reel state with 60℃ for 72 hours.
At this time, peelback strength of cover tape become 0.2N -0.9N.
Case of transferring to heatproof container such as trays, excute dry processing with 125℃ for 24 hours.
In addition, the dry processing should be max, 2 times due to influence on the product's solderability.

4. Marking lot number



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



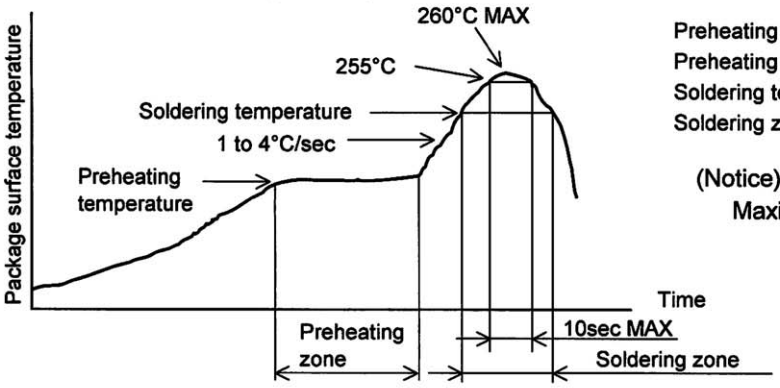
(all dimensions in mm)

Package	Land pitch e	Land space MIE	Land space MID	Land length ≥ l2	Land width b2
VQFN16,20	0.5	2.6	2.6	1.10	0.25
VQFN28	0.5	3.6	3.6	1.10	0.25
VQFN36	0.5	4.6	4.6	1.10	0.25

• The lead toe and lead side fillet may not be achieved because of non-lead packeges.

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. The wave soldering method is not supported.

< Tape dimensions >

Package	Quantity (pcs)	Tape dimensions (all dimensions in mm)															
		A	B	A1	B1	A2	B2	D0	D1	E	F	K'	P0	P1	P2	T	W
VQFN16	2500	2.1	2.1	4.46	4.46	4.63	4.63	ϕ1.5	ϕ1.0	1.75	5.5	1.6	4.0	8.0	2.0	0.3	12.0
VQFN20	2500	2.1	2.1	4.46	4.46	4.63	4.63	ϕ1.5	ϕ1.0	1.75	5.5	1.6	4.0	8.0	2.0	0.3	12.0
VQFN28	2500	3.1	3.1	5.46	5.46	5.63	5.63	ϕ1.5	ϕ1.5	1.75	5.5	1.6	4.0	8.0	2.0	0.3	12.0
VQFN36	2500	4.1	4.1	6.46	6.46	6.63	6.63	ϕ1.5	ϕ1.5	1.75	5.5	1.6	4.0	8.0	2.0	0.3	12.0
Tolerance		±0.2	±0.2	±0.1	±0.1	±0.2	±0.2	$^{+0.1}_{-0}$	$^{+0.1}_{-0}$	±0.1	±0.1	±0.2	±0.1	±0.1	±0.1	±0.05	±0.3

< Reel dimensions >

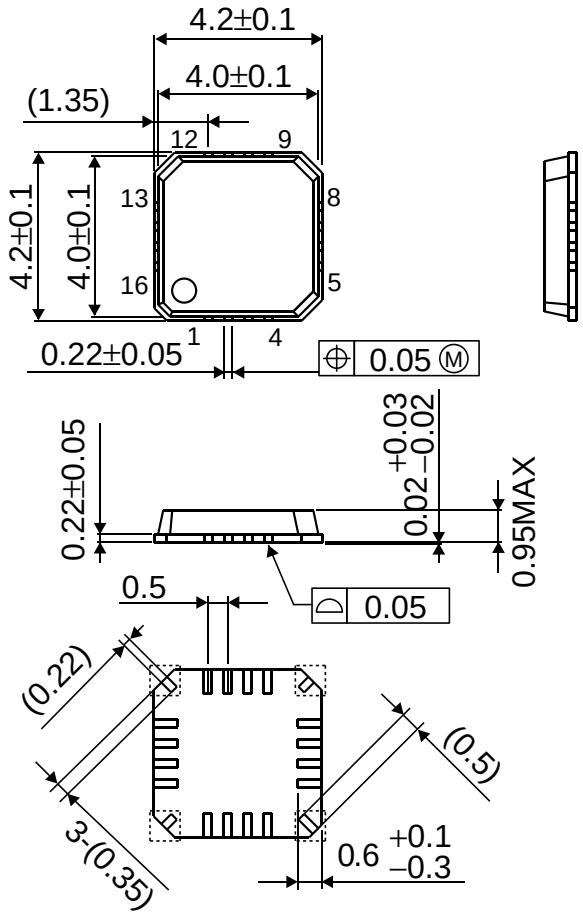
Package	Reel dimensions (all dimensions in mm)						
	A	B	C	D	E	W1	W2
VQFN16	ϕ330	50	13.0	20.2	1.5	13.4	17.4
VQFN20	ϕ330	50	13.0	20.2	1.5	13.4	17.4
VQFN28	ϕ330	50	13.0	20.2	1.5	13.4	17.4
VQFN36	ϕ330	50	13.0	20.2	1.5	13.4	17.4
Tolerance	-	MIN	±0.2	MIN	MIN	±1.0	±1.0

< Dehydrated weight >

Dehydrated weight dimensions in g
0.03
0.04
0.05
0.08

Package Dimensions

VQFN16

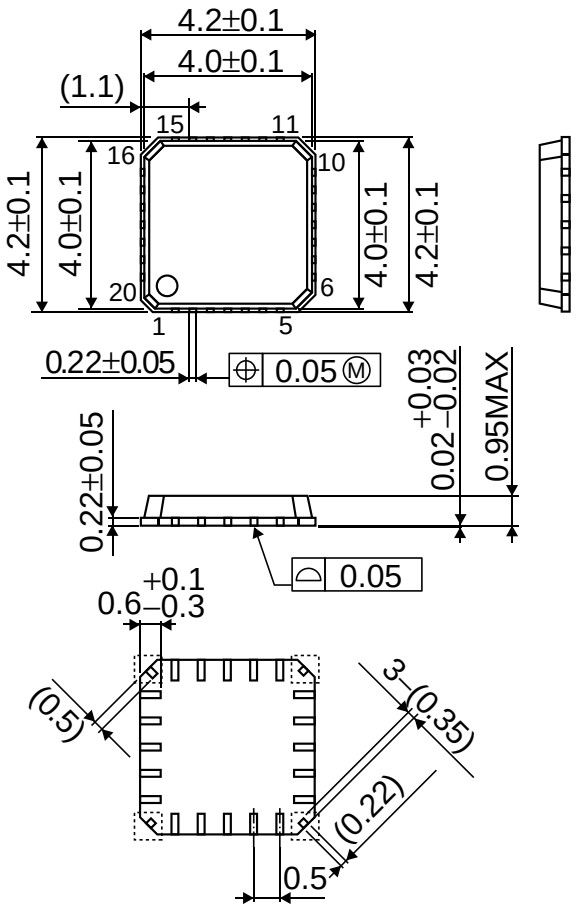


Notice :
Do not use the dotted line area for soldering

(Unit : mm)

Package Dimensions

VQFN20

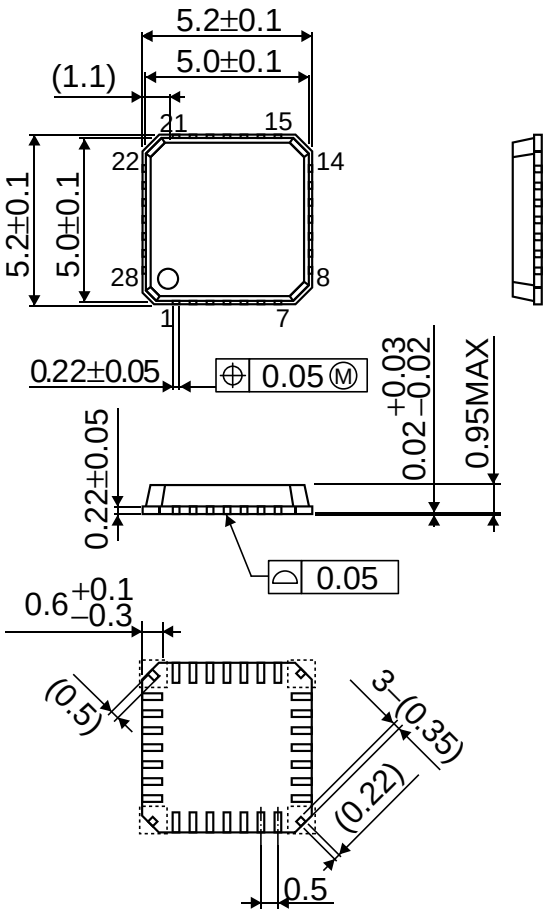


Notice :
Do not use the dotted line area
for soldering

(Unit : mm)

Package Dimensions

VQFN28

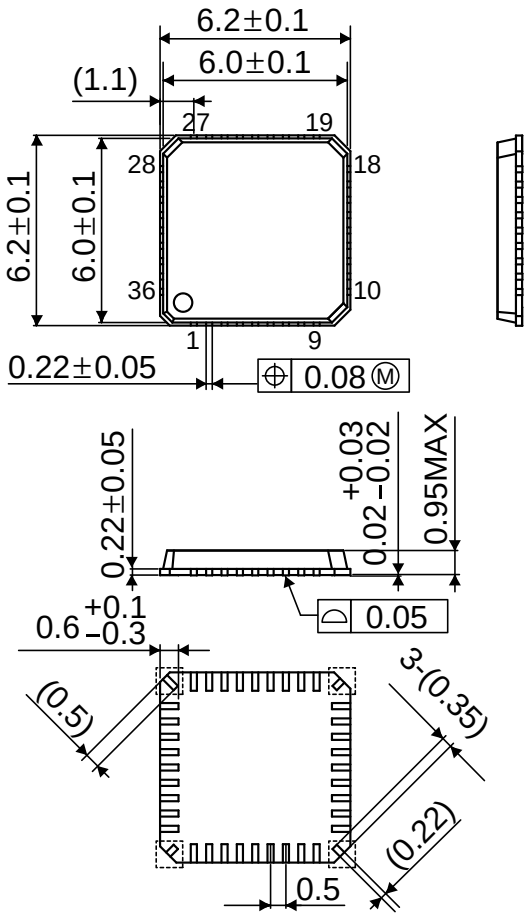


Notice :
Do not use the dotted line area
for soldering

(Unit : mm)

Package Dimensions

VQFN36



Notice :
Do not use the dotted line area
for soldering

(Unit : mm)

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