

for Automotive Applications



RoHS Compliant

**Features**

- Stable oscillation by using fundamental vibration in all frequencies
- Small & low profile
- Built-in capacitor structure
- Reflow solderable

**Applications**

- Automotive
- ABS
- ECU
- Air-Bag System

**How to Order (PBRV-H,PBRV-M)**

**PBRV 15.00 H R 50 Y 000**  
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Series (PBRV: Automotive)
- ② Frequency (MHz)
- ③ Type (H, M)
- ④ Packing R: Tape & Reel  
 PBRV-H (2000 pcs./ Reel)  
 PBRV-M (3000 pcs./ Reel)  
 (Null): Bulk
- ⑤ Frequency Tolerance at 25°C

<b>10</b>	±0.1%	<b>20</b>	±0.2%
<b>30</b>	±0.3%	<b>40</b>	±0.4%
<b>50</b>	±0.5%	<b>70</b>	±0.7%

- ⑥ Operating Temperature

<b>X</b>	-40°C to 85°C	<b>Y</b>	-40°C to 125°C
<b>Z</b>	-40°C to 150°C		

- ⑦ Unique Code

**How to Order (PRQV)**

**PRQV 8.00 C R 50 10 Y 000**  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Series (PRQV: Automotive)
- ② Frequency (MHz)
- ③ Type (C)
- ④ Packing R: Tape & Reel (3000 pcs./ Reel)  
 (Null): Bulk
- ⑤ Frequency Tolerance at 25°C

<b>30</b>	±0.3%	<b>40</b>	±0.4%
<b>50</b>	±0.5%	<b>70</b>	±0.7%

- ⑥ Built-in Capacitance 10pF: 10 5pF: 05

- ⑦ Operating Temperature

<b>X</b>	-40°C to 85°C	<b>Y</b>	-40°C to 125°C
<b>Z</b>	-40°C to 150°C		

- ⑧ Unique Code

**Specifications**

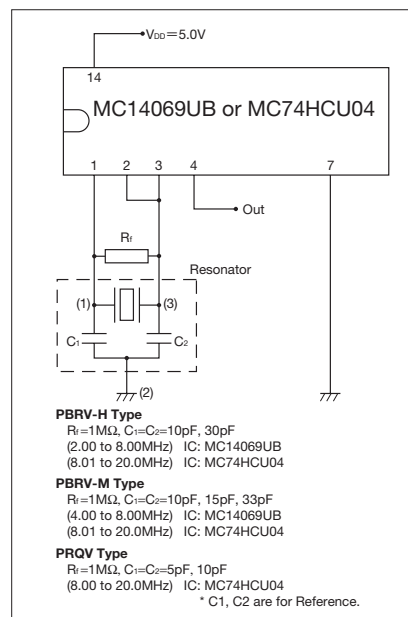
Series	Frequency Range (MHz)	Frequency Tolerance (25°C)	Temperature Stability	Operating Temperature Range (°C)
PBRV-HR	2.0 to 8.0	±0.50%	±0.30%	-40 to 125
	8.1 to 20.0	±0.50%	±0.10%	-40 to 125
PBRV-MR	8.0 to 20.0	±0.50%	±0.10%	-40 to 125
	4.0 to 10.0	±0.50%	±0.30%	-40 to 125
PRQV	8.0 to 20.0	±0.50%	±0.50%	-40 to 125

\* Please contact us for products without built-in capacitors.  
 \* Please contact us for the operating temperature range of -40 to 150°C.

Note)

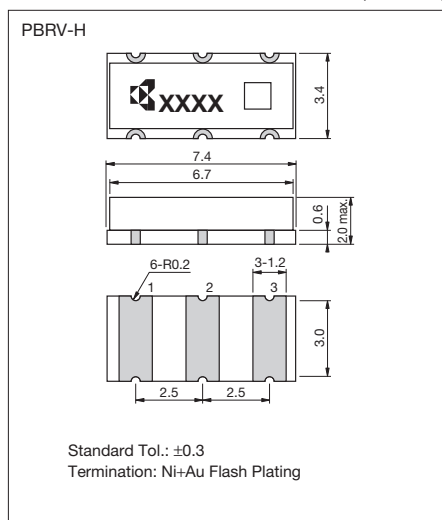
- This product includes built-in capacitors, but values may not be the most appropriate depending on IC's.
- Evaluation of circuit with IC is necessary. IC circuit matching may be referenced with
  - 1) IC data books
  - 2) List of Recommended circuits in Kyocera website.
- Please contact IC manufacturer or Kyocera when there are difficulties in finding recommended circuits.

**Test Circuit**

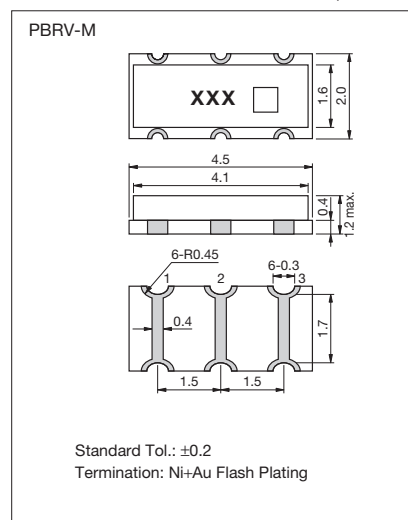


**Dimensions**

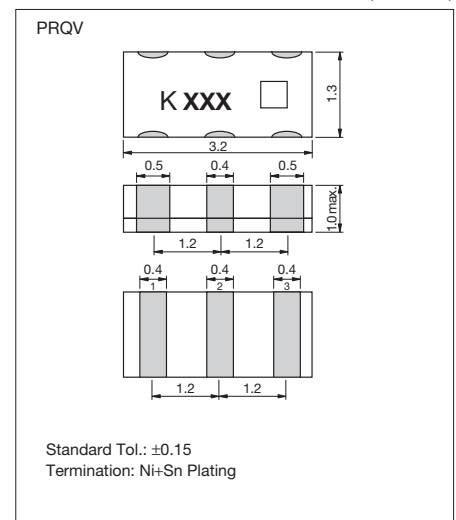
(Unit: mm)



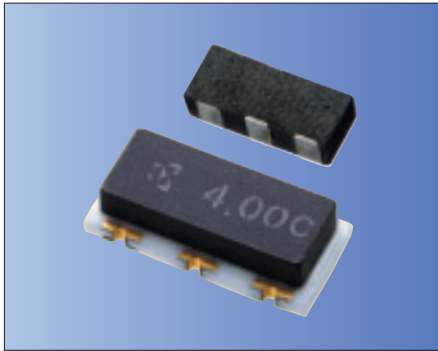
(Unit: mm)



(Unit: mm)



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**Features**

- Improved frequency tolerance suitable for CAN-BUS application
- The series are high accuracy resonators whose total tolerance is available for less than  $\pm 3000$ ppm

**How to Order (PBRV)**

**PBRV 15.00 H R 10 Y 000**  
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Series (PBRV: Automotive)
- ② Frequency (MHz)
- ③ Type (H, M)
- ④ Packing R: Tape & Reel  
 PBRV-H (2000 pcs./ Reel)  
 PBRV-M (3000 pcs./ Reel)  
 (Null): Bulk
- ⑤ Frequency Tolerance at 25°C

**10**  $\pm 0.1\%$

- ⑥ Operating Temperature

**X**  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$     **Y**  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$   
**Z**  $-40^{\circ}\text{C}$  to  $150^{\circ}\text{C}$

- ⑦ Unique Code

**How to Order (PRQV)**

**PRQV 8.00 C R 15 10 Y 000**  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Series (PRQV: Automotive)
- ② Frequency (MHz)
- ③ Type (C)
- ④ Packing R: Tape & Reel (3000 pcs./ Reel)  
 (Null): Bulk
- ⑤ Frequency Tolerance at 25°C

**15**  $\pm 0.15\%$

- ⑥ Built-in Capacitance 10pF: 10 5pF: 05

- ⑦ Operating Temperature

**X**  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$     **Y**  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$   
**Z**  $-40^{\circ}\text{C}$  to  $150^{\circ}\text{C}$

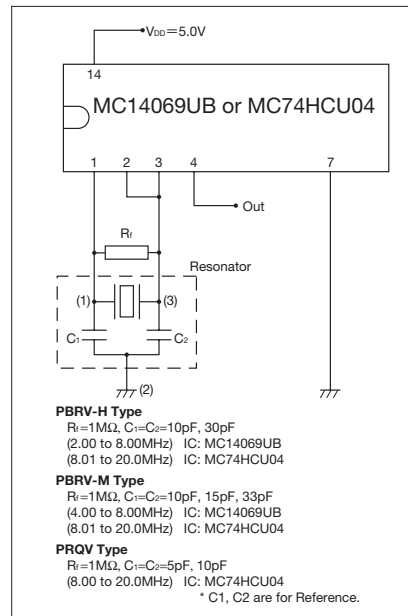
- ⑧ Unique Code

**Specifications**

Series	Frequency Range (MHz)	Frequency Tolerance Initial + Temperature	Operating Temperature Range (°C)
PBRV-HR	2.0 to 20.0	$\pm 0.25\%$	-40 to 125
PBRV-MR	4.0 to 20.0	$\pm 0.25\%$	-40 to 125
PRQV	8.0 to 20.0	$\pm 0.25\%$	-40 to 125

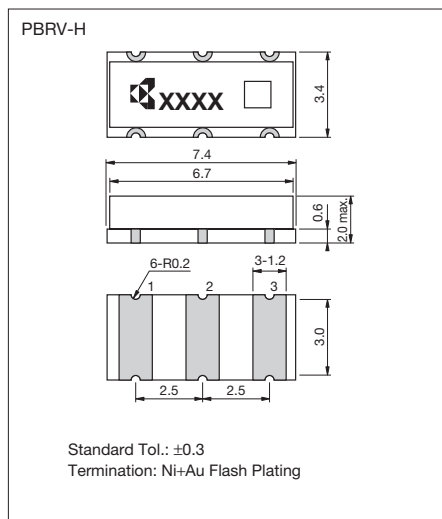
\* Please refer to the specification sheet of each product for information including detail dimensions.  
 \* Please contact us for the operating temperature range of  $-40$  to  $150^{\circ}\text{C}$ .

**Test Circuit**

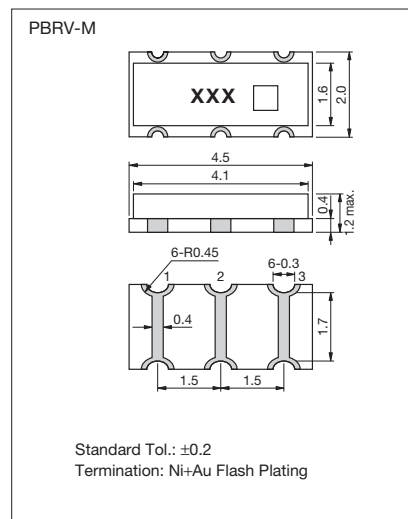


**Dimensions**

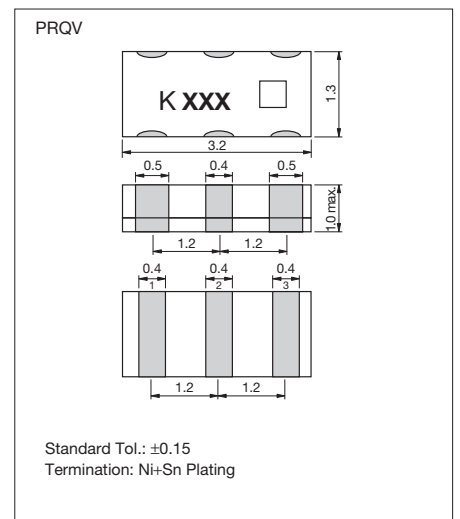
(Unit: mm)



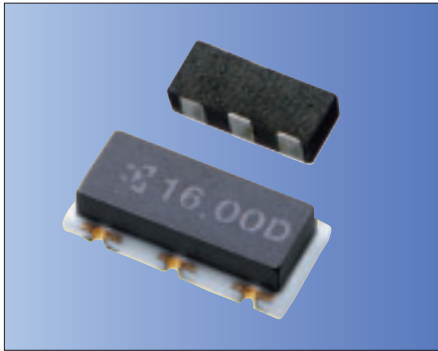
(Unit: mm)



(Unit: mm)



for Consumer Applications



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**Features**

- Stable oscillation by using fundamental vibration in all frequencies
- Small & low profile
- Built-in capacitor structure
- Reflow solderable

**How to Order (PBRC-H, PBRC-M)**

**PBRC 15.00 H R 50 X 000**  
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Series
- ② Frequency (MHz)
- ③ Type (H, M)
- ④ Packing R: Tape & Reel  
 PBRC-H (2000 pcs./ Reel)  
 PBRC-M (3000 pcs./ Reel)  
 (Null): Bulk
- ⑤ Frequency Tolerance at 25°C

<b>10</b>	±0.1%	<b>20</b>	±0.2%
<b>30</b>	±0.3%	<b>40</b>	±0.4%
<b>50</b>	±0.5%	<b>70</b>	±0.7%

- ⑥ Operating Temperature

**X** -40°C to 85°C

- ⑦ Unique Code

**How to Order (PRQC)**

**PRQC 8.00 C R 50 10 X 000**  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Series
- ② Frequency (MHz)
- ③ Type (C, S)
- ④ Packing R: Tape & Reel (3000 pcs./ Reel)  
 (Null): Bulk
- ⑤ Frequency Tolerance at 25°C

<b>30</b>	±0.3%	<b>40</b>	±0.4%
<b>50</b>	±0.5%	<b>70</b>	±0.7%

- ⑥ Built-in Capacitance 10pF: 10 5pF: 05

- ⑦ Operating Temperature

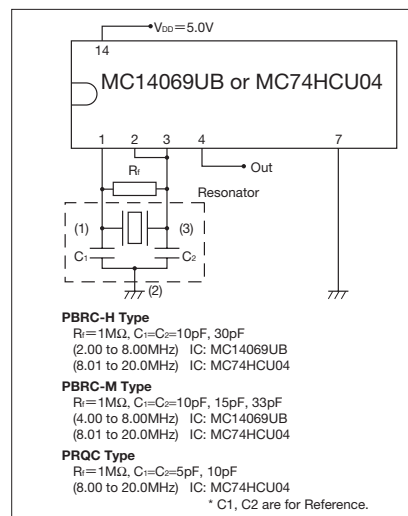
**W** -20°C to 80°C **X** -40°C to 85°C

- ⑧ Unique Code

**Specifications**

Series	Frequency Range (MHz)	Frequency Tolerance (25°C)	Temperature Stability	Operating Temperature Range (°C)
PBRC-HR	2.0 to 8.0	±0.50%	±0.30%	-40 to 85
	8.1 to 20.0	±0.50%	±0.10%	-40 to 85
PBRC-MR	8.0 to 20.0	±0.50%	±0.10%	-40 to 85
	4.0 to 10.0	±0.50%	±0.30%	-40 to 85
PRQC	10.1 to 20.0	±0.50%	±0.50%	-40 to 85
	8.0 to 20.0	±0.50%	±0.50%	-40 to 85

**Test Circuit**

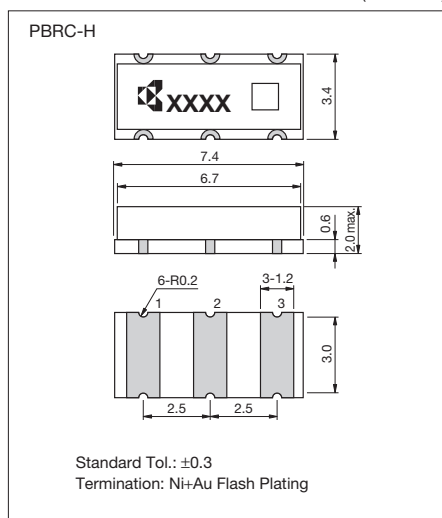


Note)

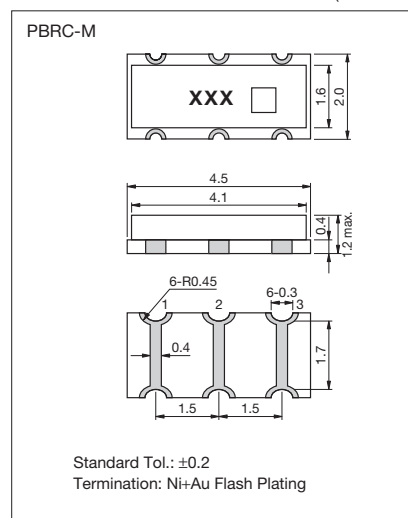
- This product includes built-in capacitors, but values may not be the most appropriate depending on IC's.
- Evaluation of circuit with IC is necessary. IC circuit matching may be referenced with
  - 1) IC data books
  - 2) List of Recommended circuits in Kyocera website.
- Please contact IC manufacturer or Kyocera when there are difficulties in finding recommended circuits.

**Dimensions**

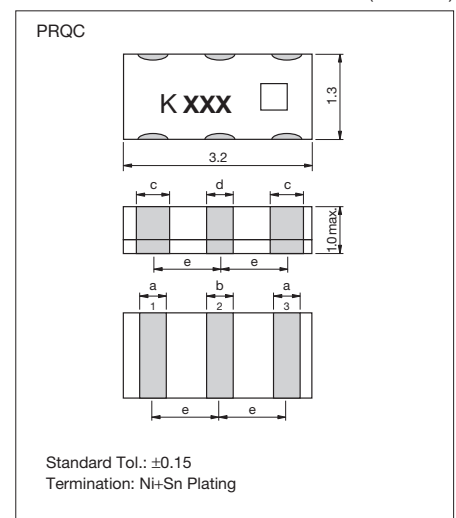
(Unit: mm)



(Unit: mm)



(Unit: mm)



(Unit: mm)

Type	Frequency (MHz)	a	b	c	d	e
<b>C</b>	8.00 to 20.00	0.4	0.4	0.5	0.4	1.2
<b>S</b>	14.00 to 20.00	0.6	0.4	0.5	0.4	0.95

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- Reflow solderable

**How to Order**

**PBRC 8.00 G R 50 X 000**  
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Series
- ② Frequency (MHz)
- ③ Type (G)
- ④ Packing R: Tape & Reel (2000 pcs./ Reel) (Null): Bulk
- ⑤ Frequency Tolerance at 25°C

<b>10</b>	±0.1%	<b>20</b>	±0.2%
<b>30</b>	±0.3%	<b>40</b>	±0.4%
<b>50</b>	±0.5%		

- ⑥ Operating Temperature

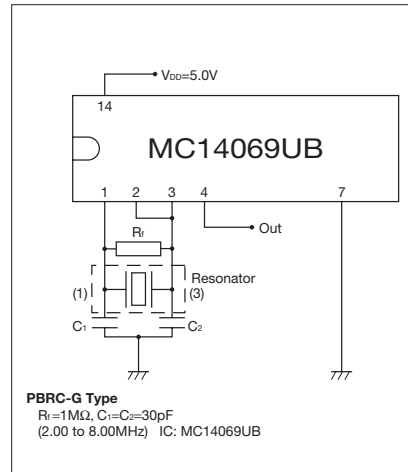
<b>X</b>	-40°C to 85°C
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- ⑦ Unique Code

**Specifications**

Series	Frequency Range (MHz)	Frequency Tolerance (25°C)	Temperature Stability	Operating Temperature Range (°C)
PBRC-GR	2.0 to 8.0	±0.50%	±0.50%	-40 to 85

**Test Circuit**

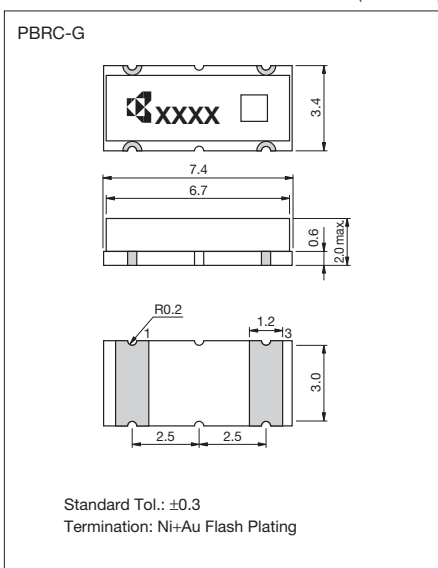


Note)

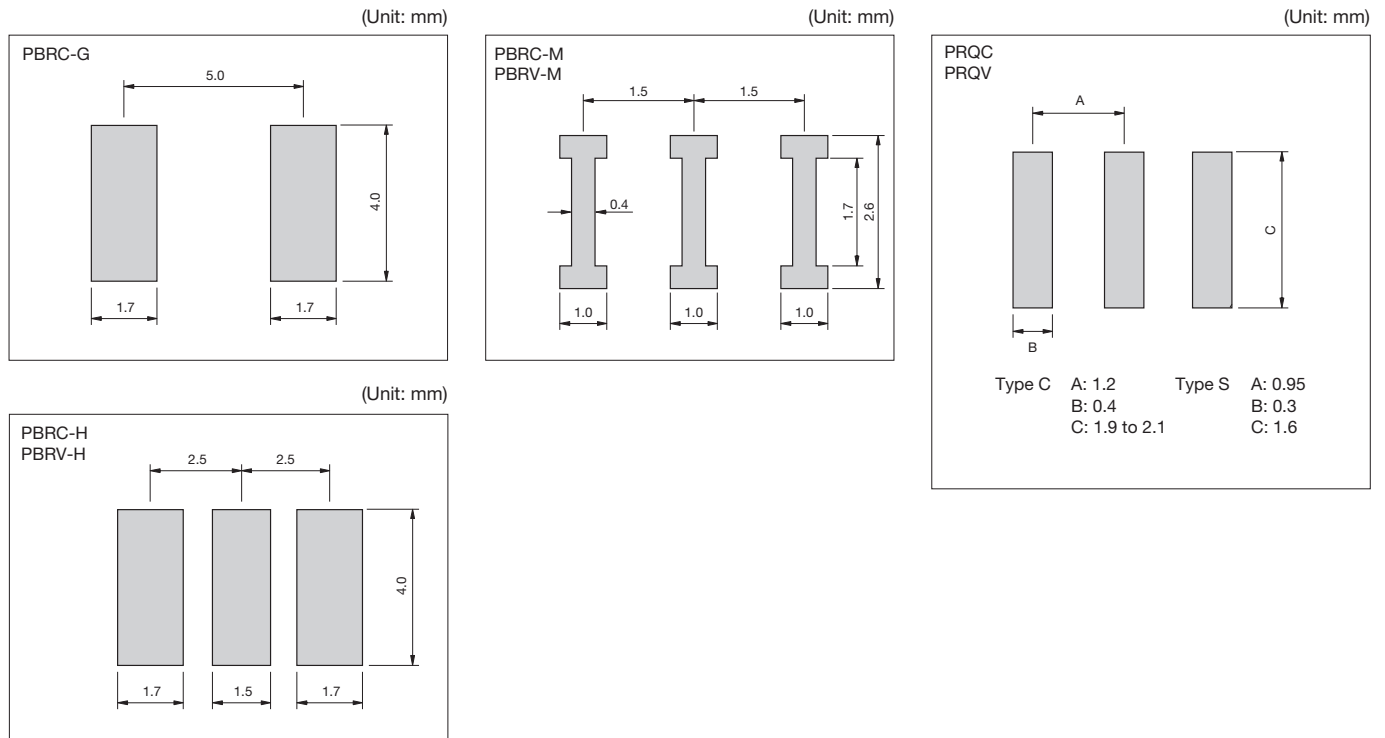
- Values of  $C_1$ ,  $C_2$  and  $R_f$  are evaluated with IC, MC14069UB, and evaluation of circuit is necessary when using other IC's.
- IC circuit matching may be referenced with
  - 1) IC data books
  - 2) List of Recommended circuits in Kyocera website.
- Please contact IC manufacturer or Kyocera when there are difficulties in finding recommended circuits.

**Dimensions**

(Unit: mm)

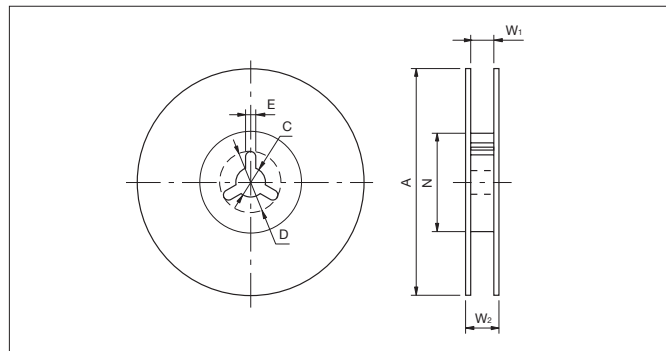


**Recommended Land Pattern**

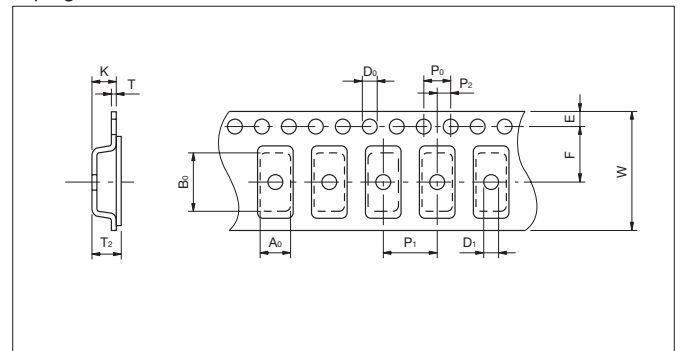


**Packaging**

Reel



Taping



Code	A	N	W <sub>1</sub>	W <sub>2</sub>	C	D	E
7.4×3.4×2.0mm	250±2.0	80±2.0	16.5 <sup>+1.1</sup> <sub>-0.0</sub>	23.6 max.	13.0±0.5	21.0±0.8	2.0±0.5
4.5×2.0×1.2mm	180 <sup>+0</sup> <sub>-3</sub>	60 <sup>+1</sup> <sub>-0</sub>	13.0±0.3	15.4±1	13.0±0.2	21.0±0.8	2.0±0.5
3.2×1.3×1.3mm	180 <sup>+0</sup> <sub>-9</sub>	50 min	9.0±0.3	12.4 max.	13.0±0.5	21.0±0.8	2.0±0.5

Code	A <sub>0</sub>	B <sub>0</sub>	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	D <sub>1</sub>	T	T <sub>2</sub>	K
7.4×3.4×2.0mm	3.80±0.1	7.80±0.1	16.00±0.3	7.50±0.1	1.75±0.1	8.00±0.1	2.0±0.1	4.00±0.1	1.50 <sup>+0.1</sup> <sub>-0.0</sub>	1.50 <sup>+0.1</sup> <sub>-0.0</sub>	0.30±0.05	2.45±0.2	2.40±0.2
4.5×2.0×1.2mm	2.20±0.1	4.70±0.1	12.00±0.2	5.5±0.05	1.75±0.1	4.00±0.1	2.0±0.05	4.00±0.1	1.50 <sup>+0.1</sup> <sub>-0.0</sub>	1.0±0.1	0.30±0.05	1.85 max.	1.80 max.
3.2×1.3×1.3mm	1.50±0.2	3.45±0.2	8.00±0.3	3.50±0.05	1.75±0.1	4.00±0.1	2.0±0.05	4.00±0.1	1.50 <sup>+0.1</sup> <sub>-0.0</sub>	1.0 <sup>+0.1</sup> <sub>-0.0</sub>	0.25±0.05	1.40 max.	1.10±0.2