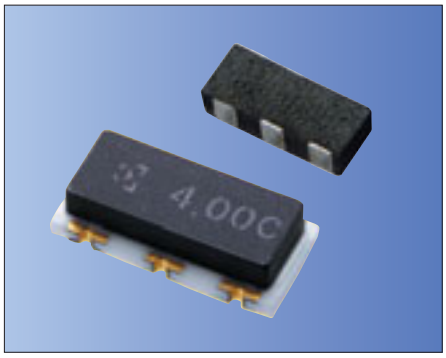
MHz Band Ceramic Chip Resonators (SMD)
PBRV/ PRQV Frequency Tight Tolerance Series

for Automotive Applications



RoHS Compliant

Features

- Improved frequency tolerance suitable for CAN-BUS application

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	±0.1%

⑥ Operating Temperature

X	−40°C to 85°C	Y	−40°C to 125°C
Z	−40°C to 150°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	±0.15%

⑥ Built-in Capacitance 10pF: 10
⑦ Operating Temperature

X	−40°C to 85°C	Y	−40°C to 125°C
Z	−40°C to 150°C		

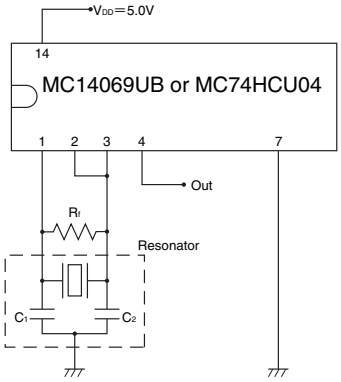
⑧ Unique Code

Specifications

Series		PBRV-H/ M		PRQV-C
Part Number		PBRV-HR/ MR 10Y □□□		PRQV-CR15□□Y□□□
Operating Temperature Range		−40 to +125°C	−40 to +125°C	−40 to +125°C
Frequency Range		4.0 to 7.9MHz	8.0 to 20.0MHz	8.0 to 20.0MHz
Frequency Tolerance	Initial+ Temperature	±0.3%	±0.2%	±0.25%
	Aging	±0.1%	±0.1%	±0.05%
Total Frequency Tolerance		±0.4%	±0.3%	±0.3%

* Please refer to the specification sheet of each product for information including detail dimensions.
* Aging characteristics is specified at 25°C for the period of 10 years.

Test Circuit



PBRV-H Type
Rf=1MΩ
C1=C2=30pF (4.00 to 8.00MHz) IC: MC14069UB
C1=C2=10pF (8.01 to 20.0MHz) IC: MC74HCU04

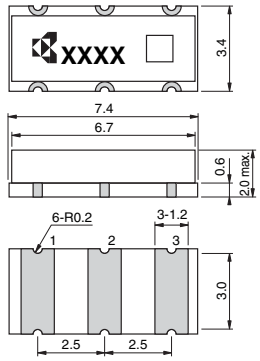
PBRV-M Type
Rf=1MΩ
C1=C2=15pF (4.00 to 8.00MHz) IC: MC14069UB
C1=C2=10pF (8.01 to 20.0MHz) IC: MC74HCU04

PRQV Type
Rf=1MΩ
C1=C2=10pF (8.00 to 20.0MHz) IC: MC74HCU04
* C1, C2 are for Reference.

Dimensions

(Unit: mm)

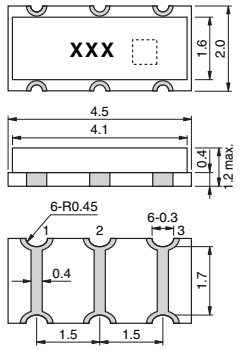
PBRV-H



Standard Tol.: ±0.3
Termination: Ni+Au Flash Plating
1. 3 Input, Output (No polarity)

(Unit: mm)

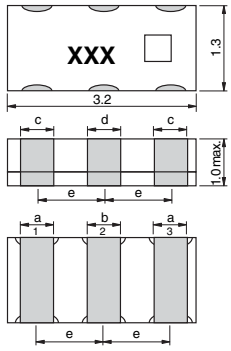
PBRV-M



Standard Tol.: ±0.2
Termination: Ni+Au Flash Plating
1. 3 Input, Output (No polarity)

(Unit: mm)

PRQV



Standard Tol.: ±0.15
Termination: Ni+Sn Plating

#	Pin #
1	Input
2	Ground
3	Output

(Unit: mm)

Type	Frequency (MHz)	a	b	c	d	e
C	8.00 to 20.00	0.4	0.4	0.6	0.4	1.2

MHz Band Ceramic Chip Resonators (SMD)
PBRC-H/ PBRC-M/ PRQC Series

for Consumer Applications

RoHS Compliant

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

10	±0.1%	20	±0.2%
30	±0.3%	40	±0.4%
50	±0.5%	70	±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

30	±0.3%	40	±0.4%
50	±0.5%	70	±0.7%

⑥ Built-in Capacitance 10pF: 10
⑦ Operating Temperature

W	–20°C to 80°C	X	–40°C to 85°C

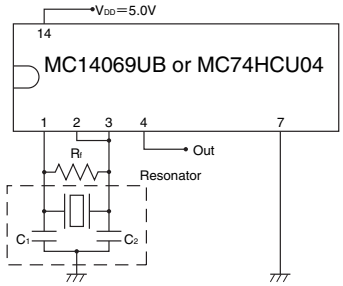
⑧ Unique Code

Specifications

Series	Frequency Range (MHz)	Frequency Tolerance (25°C)	Temperature Stability
PBRC-H	2.00 to 8.00	±0.5% (op. ±0.3%)	±0.5% (–40 to 85°C)
	8.01 to 20.0	±0.7% (op. ±0.5%)	±0.1% (–40 to 85°C)
PBRC-M	4.00 to 8.00	±0.5% (op. ±0.3%)	±0.5% (–40 to 85°C)
	8.01 to 20.0	±0.7% (op. ±0.5%)	±0.1% (–40 to 85°C)
PRQC	8.00 to 20.0	±0.5% (op. ±0.3%)	±0.5% (–40 to 85°C)

* Aging for 10 years is within ±0.3% from the initial frequency at 25°C.

Test Circuit



PBRC-H Type
Rf=1MΩ
C1=C2=30pF (2.00 to 8.00MHz) IC: MC14069UB
C1=C2=10pF (8.01 to 20.0MHz) IC: MC74HCU04

PBRC-M Type
Rf=1MΩ
C1=C2=15pF (4.00 to 8.00MHz) IC: MC14069UB
C1=C2=10pF (8.01 to 20.0MHz) IC: MC74HCU04

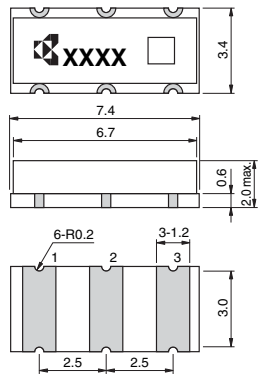
PRQC Type
Rf=1MΩ
C1=C2=10pF (8.00 to 20.0MHz) IC: MC74HCU04
* C1, C2 are for Reference.

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)

PBRC-H

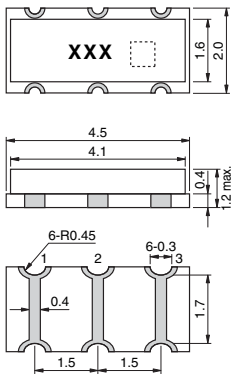


Standard Tol.: ±0.3
Termination: Ni+Au Flash Plating
1. 3 Input, Output (No polarity)

#	Pin #
1	Input
2	Ground
3	Output

(Unit: mm)

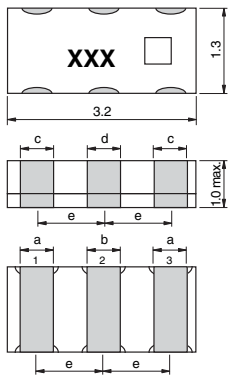
PBRC-M



Standard Tol.: ±0.2
Termination: Ni+Au Flash Plating
1. 3 Input, Output (No polarity)

(Unit: mm)

PRQC



Standard Tol.: ±0.15
Termination: Ni+Sn Plating

(Unit: mm)

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

MHz Band Ceramic Chip Resonators (SMD)
PBRC-G Series

for Consumer Applications

RoHS Compliant

Features

- Stable oscillation by using fundamental vibration in all frequencies
- Small & low profile
- 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

10	±0.1%	**20**	±0.2%
30	±0.3%	**40**	±0.4%
50	±0.5%		

⑥ Operating Temperature

X	−40°C to 85°C

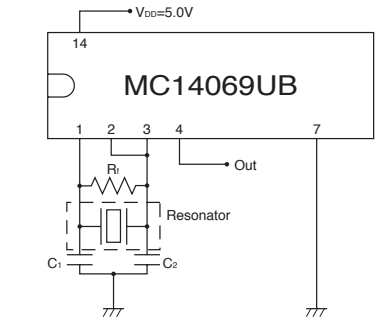
⑦ Unique Code

Specifications

Series	Frequency Range (MHz)	Frequency Tolerance (25°C)	Temperature Stability
PBRC-G	2.00 to 8.00	±0.5% (op. ±0.3%)	±0.5% (−40 to 85°C)

* Aging for 10 years is within ±0.3% from the initial frequency at 25°C.

Test Circuit



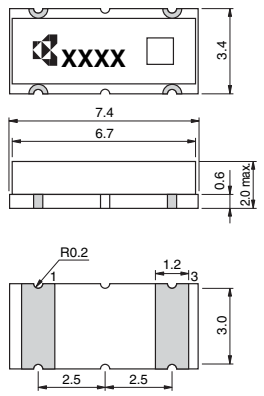
PBRC-G Type
R_f=1MΩ
C_1=C_2=30pF (2.00 to 8.00MHz) IC: MC14069UB

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)

PBRC-G

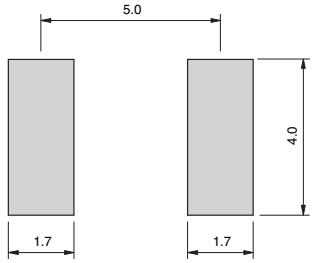


Standard Tol.: ±0.3
Termination: Ni+Au Flash Plating
1. 3 Input, Output (No polarity)

Recommended Land Pattern

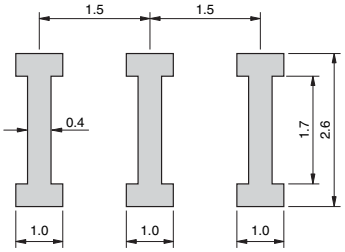
(Unit: mm)

PBRC-G



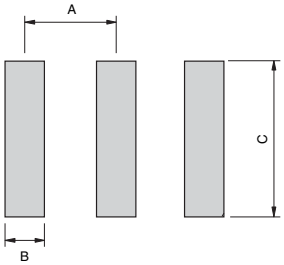
(Unit: mm)

PBRC-M
PBRV-M



(Unit: mm)

PRQC
PRQV

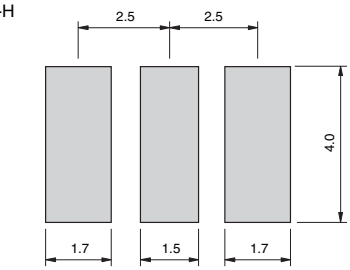


Type C A: 1.2 B: 0.4 C: 2.0

Type S A: 0.95 B: 0.3 C: 1.6

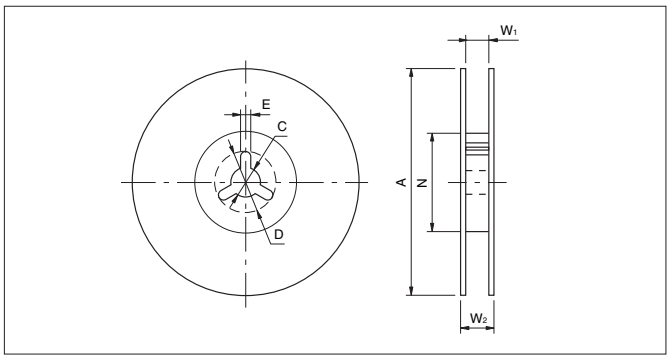
(Unit: mm)

PBRC-H
PBRV-H

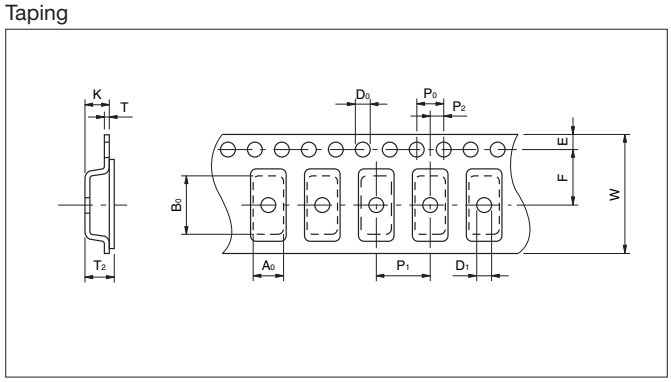


Packaging

Reel



Taping



Code	A	N	W_1	W_2	C	D	E
7.4×3.4×2.0mm	250±2.0	80±2.0	16.5 $^{+1.1}_{-0.0}$	23.6 max.	13.0±0.5	21.0±0.8	2.0±0.5
4.5×2.0×1.2mm	180 $^{+0}_{-3}$	60 $^{+1}_{-0}$	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±2	60 $^{+1}_{-0}$	9.0 $^{+1.0}_{-1.5}$	140 min.	13.0±0.2	21.0±0.8	2.0±0.5

Code	A_0	B_0	W	F	E	P_1	P_2	P_0	D_0	D_1	T	T_2	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 $^{+0.1}_{-0.0}$	1.50 $^{+0.1}_{-0.0}$	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 $^{+0.1}_{-0.0}$	1.0±0.1	0.30±0.05	1.85 max.	1.80 max.
3.2×1.3 ×1.3mm	1.50±0.1	3.40±0.1	8.00±0.2	3.50±0.05	1.75±0.1	4.00±0.1	2.0±0.05	4.00±0.1	1.50 $^{+0.1}_{-0.0}$	1.0±0.1	0.25±0.05	1.40 max.	1.10±0.05