KAMAYA OHM

Spec. No.:

RMPC-K-HTS-0001 /3

Date:

2020.3.13

Data sheet

Title: FIXED THICK FILM CHIP RESISTORS;

RECTANGULAR TYPE AND Pb<100ppm

Style: RMPC04,06,10,16,20,32,35

RoHS COMPLIANCE ITEM Halogen and Antimony Free

Note: •Stock conditions

Temperature: $+5^{\circ}\text{C} \sim +35^{\circ}\text{C}$ Relative humidity: $25\% \sim 75\%$

The period of guarantee: Within 2 year from shipmen t by the company.

Solderability shall be satisfied.

- Product specification contained in this data sheet are subject to change at any time without notice
- •If you have any questions or a Purchasing Specification for any quality Agreement is necessary, please contact our sales staff.



Hokkaido Research Center Approval by: T. Sannomiya Drawing by: M. Shibuya

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Style

Title: FIXED THICK FILM CHIP RESISTORS; RECTANGULAR TYPE AND Pb<100ppm

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1. Scope

1.1 This specification covers the detail requirements for fixed thick film chip resistors; rectangular type, style of RMPC04, 06, 10, 16, 20, 32, 35.

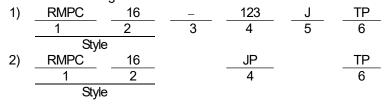
1.2 Applicable documents

JIS C 5201–1: 2011, JIS C 5201–8: 2014, JIS C 5201–8–1: 2014 IEC60115–1: 2008, IEC60115–8: 2009, IEC60115–8–1: 2014 EIAJ RC-2134C-2010

2. Classification

Type designation shall be the following form.

(Example)



- 1 Fixed thick film chip resistors; rectangular type & Pb<100ppm
- 2 Dimension
- 3 Temperature coefficient of resistance

–(Dash)	Standard

4 Rated resistance

123	E24 Series, 3 digit,	Ex. 123> 12kΩ,
1000	E96 Series, 4 digit,	Ex. 1000>100Ω
		1022> 10.2kΩ
JP	Chip jumper	

5 Tolerance on rated resistance

F	±1%
J	±5%

6 Packaging form

99		
В	Bulk (loose package)	
PA	Press pocket taping	
TH	Paper taping	
TP		
TE	Embossed taping	

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3. Rating

3.1 The ratings shall be in accordance with Table–1.

Table-1(1)

Style	Rated dissipation (W)	res	re coefficient of istance (10-6 / °C)	Rated resistance range (Ω)	Preferred number series for resistors	Tolerance on rated resistance
			±200	100~1M	E24, E96	F(±1%)
RMPC04	0.03	Standard	+600~0	10~97.6	E24, E90	F(±1%)
RIVIPC04	0.03	Staritiaru	±200	100~1M	E24	1/+50/>
			+600~0	10~91	⊏24	J(±5%)
			±200	100~1M		
			+600~0	10~97.6	E24, 96	F(±1%)
RMPC06	0.05	Standard	+800~-100	1~9.76		
RIVIECOO	0.03	Stariuaru	±200	100~10M		
			+600~0	10~91	E24	J(±5%)
			+800~-100	1~9.1		
			±200	100~1M		
			+500~-200	10~97.6	E24, 96	F(±1%)
RMPC10	0.063	Standard	+800~-100	1~9.76		
RIVIPCIU	0.003	Starituaru	±200	100~10M		
			+500~-200	10~91	E24	J(±5%)
			+800~-100	1~9.1		
		0.1 Standard	±200	100~1M	E24, 96	F(±1%)
			+500~-200	10~97.6		
RMPC16	0.1		+800~-100	1~9.76		
RIVIPCIO	0.1		±200	100~10M	E24	J(±5%)
			+500~-200	10~91		
			+800~-100	1~9.1		
			±200	100~1M		
			+500~-200	10~97.6	E24, 96	F(±1%)
RMPC20	0.125	Standard	+800~-100	1~9.76		
KIVIPC20	0.125	Stariuaru	±200	100~10M		
			+500~-200	10~91	E24	J(±5%)
			+800~-100	1~9.1		
			±200	100~1M		
			+500~-200	10~97.6	E24, 96	F(±1%)
RMPC32	0.25	Standard	+800~-100	1~9.76		, ,
RIVIPU32	0.25	Standard	±200	100~10M		
!		+500~-200	10~91	E24	J(±5%)	
			+800~-100	1~9.1	 .	
			±200	100~1M		
			+500~-200	10~97.6	E24, 96	F(±1%)
DMDCOE	0.22	Cton dowd	+800~-100	1~9.76		
RMPC35	0.33	Standard	±200	100~10M	E24	J(±5%)
			+500~-200	10~91		
			+800~-100	1~9.1		, - ,

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Table-1(2)

Style	Limiting element voltage (V)	Insulation voltage (V)	Category temperature range (°C)
RMPC04	15	50	
RMPC06	25	30	
RMPC10	50	100	
RMPC16	50	100	<i>–</i> 55∼+125
RMPC20	150		
RMPC32	200	500	
RMPC35	200		

Note. Rated current of chip jumper: RMPC04: 0.5(A), RMPC06,10,16: 1(A), RMPC20,32,35: 2(A)

Note. Resistance value of chip jumper: $50 \text{ m}\Omega$ max.

3.2 Climatic category

55/125/56 Lower category temperature -55 °C
Upper category temperature +125 °C
Duration of the damp heat, steady state test 56days

3.3 Stability class

5% Limits for change of resistance:

-for long-term tests \pm (5%+0.1Ω) Chip jumper: 50 mΩ max. -for short-term tests \pm (1%+0.05Ω) Chip jumper: 50 mΩ max.

3.4 Derating

The derated values of dissipation (or current rating in case of chip jumper) at temperature in excess of 70 °C shall be as indicated by the following curve.

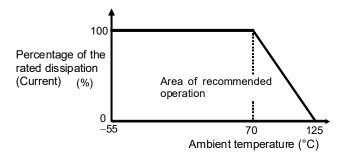


Figure-1 Derating curve

3.5 Rated voltage

d. c. or a. c. r. m. s. voltage calculated from the square root of the product of the rated resistance and the rated dissipation.

E : Rated voltage (V)

E =
$$\bigvee$$
 P · R

P : Rated dissipation (W)

R : Rated resistance (Ω)

Limiting element voltage can only be applied to resistors when the resistance value is equal to or higher than the critical resistance value.

At high value of resistance, the rated voltage may not be applicable.

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4. Packaging form

The standard packaging form shall be in accordance with Table-2.

Table-2

Symbol	Packaging form		Standard packaging quantity / units	Application
В	Bulk (loose package)		1,000 pcs.	RMPC04,06,10,16,20,32,35
DΛ	Press pocket taping	One width One pitches	20,000 pcs.	RMPC04
PA	(paper taping)	8mm width, 2mm pitches	15,000 pcs.	RMPC06
TH	Paper taping	8mm width, 2mm pitches	10,000 pcs.	RMPC10
TP	Paper taping	8mm width, 4mm pitches	5,000 pcs.	RMPC16,20,32
TE	Embossed taping	8mm width, 4mm pitches	4,000 pcs.	RMPC35

5. Dimensions

5.1 The resistor shall be of the design and physical dimensions in accordance with Figure-2 and Table-3.

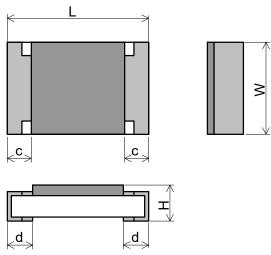


Figure-2

Table–3 Unit: mm

Style	L	W	Н	С	d
RMPC04	0.4±0.02	0.2±0.02	0.13±0.02	0.08±0.03	0.1±0.03
RMPC06	0.6±0.03	0.3±0.03	0.23±0.03	0.1±0.05	0.15±0.05
RMPC10	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1	0.25_0.10
RMPC16	1.6±0.1	0.8_0.05	0.45±0.10	0.3±0.1	0.3±0.1
RMPC20	2.0±0.1	1.25±0.10	0.55±0.10	0.4±0.2	0.4±0.2
RMPC32	3.1±0.1	1.6±0.15	0.55±0.10	0.5±0.25	0.5±0.25
RMPC35	3.1±0.15	2.5±0.15	0.55±0.15	0.5±0.25	0.5±0.25

5.2 Net weight (Reference)

- 5 (,
Style	Net weight(mg)
RMPC04	0.035
RMPC06	0.16
RMPC10	0.6
RMPC16	2
RMPC20	5
RMPC32	9
RMPC35	16

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6. Marking

The Rated resistance of RMPC04,06,10 should not be marked.

6.1 RMPC16,20,32,35

The nominal resistance shall be marked in 3 digits or 4 digits and marked on over coat side.

• RMPC20,32,35: E24 series: 3 digits, E96 series: 4 digits

In case of the resistance value that E96 overlaps with E24, It is marked by either.

• The Rated resistance of RMPC16 should not be marked in 4 digits.

Marking example	Contents	Application
123	12×10 ³ $[\Omega] \rightarrow$ 12 $[k\Omega]$	RMPC16,20,32,35
2R2	2.2 [Ω]	Less than 10Ω of RMPC16,20,32,35
5623	$562\times10^{3} [\Omega] \rightarrow 562[k\Omega]$	RMPC20,32,35
12R7	12.7 [Ω]	RMPC20,32,.35

6.2 Marking example of Jumper Chip

Marking example	Contents	Application
0	JP	RMPC16,20,32
000	JF	RMPC35

7. Performance

7.1 The standard condition for tests shall be in accordance with Sub-clause 4.2, JIS C 5201-1: 2011.

7.2 The performance shall be satisfied in Table-4.

Table-4(1)

No.	Test items	Condition of test (JIS C 5201–1)	Performance requirements
1	Visual examination	Sub-clause 4.4.1	As in 4.4.1
		Checked by visual examination.	The marking shall be legible, as checked by visual examination.
2	Dimension	Sub-clause 4.4.2	As specified in Table-3 of this specification.
	Resistance	Sub-clause 4.5	As in 4.5.2 The resistance value shall correspond with the rated resistance taking into account the specified tolerance. Chip jumper: $50m\Omega$ max.
3	Voltage proof	Sub-clause 4.7 Method: 4.6.1.4(See Figure-3) Test voltage: Alternating voltage with a peak value of 1.42 times the insulation voltage. Duration: 60 s ± 5 s Insulation resistance Test voltage: Insulation voltage Duration: 1 min.	No breakdown or flash over $R \geq 1 \ G \ \Omega$
4	Solderability	Sub-clause 4.17 Without ageing Flux: The resistors shall be immersed in a non-activated soldering flux for 2s. Bath temperature: 235 °C ± 5 °C Immersion time: 2 s ± 0.5 s	As in 4.17.4.5 The terminations shall be covered with a smooth and bright solder coating.



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Table-4(2)

No	Test items	Condition of test (JIS C 5201–1)	Performance requirements	
5	Mounting	Sub-clause 4.31		
		Substrate material: Epoxide woven glass		
	Overload	Sub-clause 4.13		
	(in the mounted state)	The applied voltage shall be 2.5 times the		
		rated voltage or twice the limiting element		
		voltage, whichever is the less severe.		
		Duration: 2 s		
		Visual examination	No visible damage	
		Resistance	$\Delta R \le \pm (1\% + 0.05\Omega)$	
			Chip jumper: $50m\Omega$ max.	
	Solvent resistance of the	Sub-clause 4.30	Legible marking	
	marking	Solvent: 2-propanol		
		Solvent temperature: 23 °C ± 5 °C		
		Method 1		
		Rubbing material: cotton wool		
		Without recovery		
6	Mounting	Sub-clause 4.31		
		Substrate material: Epoxide woven glass		
	Bound strength of the end face	Sub-clause 4.33		
	plating	Bent value: 3 mm		
		Resistance	$\Delta R \le \pm (1\% + 0.05\Omega)$	
			Chip jumper: $50 \text{m}\Omega$ max.	
	Final measurements	Sub-clause 4.33.6	No visible damage	
		Visual examination		
7	Resistance to soldering heat	Sub-clause 4.18		
		Solder temperature: 260 °C ± 5 °C		
		Immersion time: 10 s ± 0.5 s		
		Visual examination	As in 4.18.3.4	
			No sign of damage such as cracks.	
		Resistance	$\Delta R \le \pm (1\% + 0.05\Omega)$	
			Chip jumper: $50 \text{m}\Omega$ max.	
	Component solvent resistance	Sub-clause 4.29		
		Solvent: 2-propanol		
		Solvent temperature: 23 °C ± 5 °C		
		Method 2		
		Recovery: 48 h		
		Visual examination	No visible damage	
		Resistance	$\Delta R \le \pm (1\% + 0.05\Omega)$	
			Chip jumper: $50m\Omega$ max.	

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Table-4(3)

No	Test items	Condition of test (JIS C 5201–1)	Performance requirements	
8	Mounting	Sub-clause 4.31		
		Substrate material: Epoxide woven glass		
Adhesion Sub-cla		Sub-clause 4.32		
	Force: 3N			
		(RMPC04: 2N, RMPC06: 3N)		
		Duration: 10 s ± 1 s	No visible damage	
	Rapid change temperature	Visual examination		
		Sub-clause 4.19		
		Lower category temperature: -55 °C		
		Upper category temperature: +125 °C		
		Duration of exposure at each temperature: 30		
		min.		
		Number of cycles: 5 cycles.	No visible damage	
		Visual examination	$\Delta R \le \pm (1\% + 0.05\Omega)$	
		Resistance	Chip jumper: $50 \text{m}\Omega$ max.	
9	Climatic sequence	Sub-clause 4.23		
	–Dry heat	Sub-clause 4.23.2		
		Test temperature: +125 °C		
	Duration: 16 h Duration: 16 h Sub-clause 4.23.3			
		Test method: 2		
First cycle Test temperature: 55 °C		Test temperature: 55 °C		
	[Severity(2)]			
	-Cold Sub-clause 4.23.4			
		Test temperature –55 °C		
	Duration: 2h			
	–Damp heat, cycle	Sub-clause 4.23.6		
(12+12hour cycle) Test method: 2		Test method: 2		
Remaining cycle Test temperature: 55 °C		Test temperature: 55 °C		
	[Severity (2)]			
	D.C. load Number of cycles: 5 cycles Sub-clause 4.23.7			
		The applied voltage shall be the rated voltage		
		or the limiting element voltage whichever is		
		the smaller.		
		Duration: 1 min.	No visible damage	
		Visual examination	$\Delta R \le \pm (5\% + 0.1\Omega)$	
		Resistance	Chip jumper: $50m\Omega$ max.	
			Onip jumper. 30ms max.	

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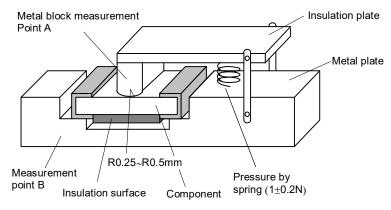
Table-4(4)

Table-4(4)							
No	Test items	Condition of test (JIS C 5201–1)	Performance requirements				
10	Mounting	Sub-clause 4.31					
		Substrate material: Epoxide woven glass					
	Endurance at 70 °C	Sub-clause 4.25.1					
		Ambient temperature: 70 °C ± 2 °C					
		Duration: 1000 h					
		The voltage shall be applied in cycles of 1.5 h					
		on and 0.5 h.					
		The applied voltage shall be the rated voltage					
		or the limiting element voltage whichever is the smaller.					
		Examination at 48 h , 500 h and					
		1000 h:					
		Visual examination	No visible damage				
		Resistance	$\Delta R \le \pm (5\% + 0.1\Omega)$				
			Chip jumper: 50mΩ max.				
11	Mounting	Sub-clause 4.31					
		Substrate material: Epoxide woven glass Test substrate: Figure–3					
		lest substrate. Figure-3					
	Variation of resistance with	Sub-clause 4.8	As in Table–1				
	temperature	_55 °C / +20 °C					
		+20 °C / +125°C					
12	Mounting	Sub-clause 4.31					
		Substrate material: Epoxide woven glass					
	Damp heat, steady state	Sub-clause 4.24					
		Ambient temperature: 40 °C ± 2 °C					
		Relative humidity: 93 +2/3 %					
a) 1s b) 2r ap		a) 1st group: without voltage applied.					
		b) 2nd group: The d. c. voltage shall be					
		applied continuously.					
		The voltage shall be accordance with					
		Sub-clause 4.24.2.1 b). without polarizing voltage					
		[4.24.2.1, c)]					
		Visual examination	No visible damage				
			Legible marking				
		Resistance	$\Delta R \le \pm (5\% + 0.1\Omega)$ Chip jumper: $50m\Omega$ max.				
13	Dimensions (detail)	Sub-clause 4.4.3	As in Table–3				
	Mounting	Sub-clause 4.31					
		Substrate material: Epoxide woven glass					
	Endurance at upper category	TSub-clause 4.25.3					
	temperature	Ambient temperature:125 °C ± 2 °C					
		Duration: 1000 h					
		Examination at 48 h, 500 h and 1000 h:					
		Visual examination	No visible damage				
		Resistance	$\Delta R \leq \pm (5\% + 0.1\Omega)$				
			Chip jumper: $50 \text{m}\Omega$ max.				

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- RMPC10,16,20,32,35

· RMPC04,06



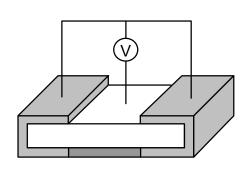


Figure-3

8. Taping

- 8.1 Applicable documents JIS C 0806-3: 2014, EIAJ ET-7200C: 2010
- 8.2 Taping dimensions
- 8.2.1 Press pocket taping (Paper taping, 8mm width, 2mm pitches)

Taping dimensions shall be in accordance with Figure-4 and Table-5.

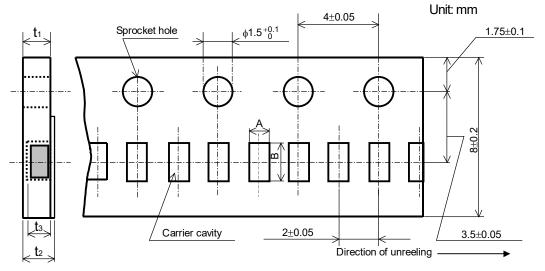


Figure-4

Table–5				Unit: mm	
Style	Α	В	t 1	t ₂	t ₃
RMPC04	0.24±0.03	0.45±0.03	0.31±0.03	0.36±0.03	0.15±0.02
RMPC06	0.37±0.05	0.67±0.05	0.42±0.03	0.45±0.05	0.27±0.02

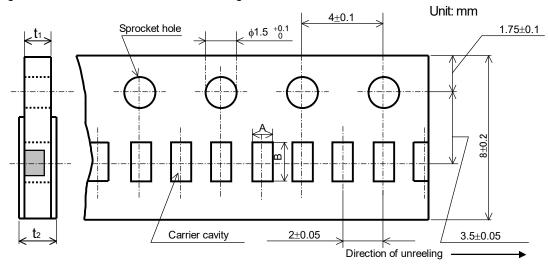
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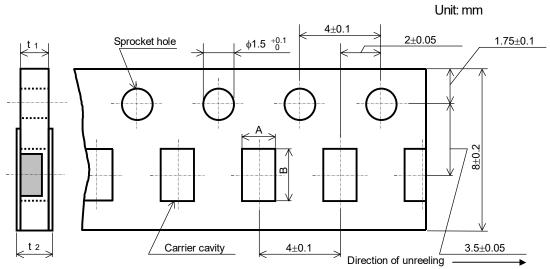
8.2.2 Paper taping (8mm width, 2mm pitches)

Taping dimensions shall be in accordance with Figure-5 and Table-6.



8.2.3 Paper taping (8mm width, 4mm pitches)

Taping dimensions shall be in accordance with Figure-6 and Table-7.



Figure–6

Table–7				Unit: mm
Style	Α	В	t 1	t 2
RMPC16	1.15±0.15	1.9±0.2	0.6±0.1	0.8max.
RMPC20	1.65±0.15	2.5±0.2	0.8±0.1	1.0may
RMPC32	2.00±0.15	3.6±0.2	U.O±U. I	1.0max.

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8.2.4 Embossed taping dimensions shall be in accordance with Figure-7 and Table-8.

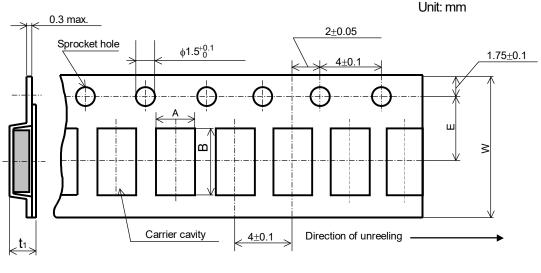
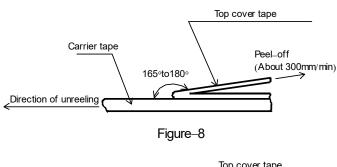


Figure-7

Table-8					Unit: mm
Style	Α	В	W	E	t 1
RMPC35	2.85±0.20	3.5±0.2	8.0±0.2	3.5±0.05	1.0±0.2

- 1). The cover tapes shall not cover the sprocket holes.
- 2). Tapes in adjacent layers shall not stick together in the packing.
- 3). Components shall not stick to the carrier tape or to the cover tape.
- 4). Pitch tolerance over any 10 pitches ±0.2mm.
- 5). The peel strength of the top cover tape shall be with in 0.1N to 0.5N on the test method as shown in the following RMPC04,06: Figure–8, RMPC10,16,20,32: Figure–9, RMPC35: Figure–10.
- 6). When the tape is bent with the minimum radius for 25 mm the tape shall not be damaged and the components shall maintain their position and orientation in the tape.
- In no case shall there be two or more consecutive components missing.
 The maximum number of missing components shall be one or 0.1%, whichever is greater.
- 8). The resistors shall be faced to upward at the over coating side in the carrier cavity.



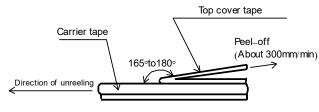
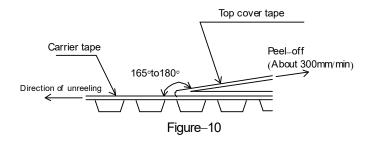


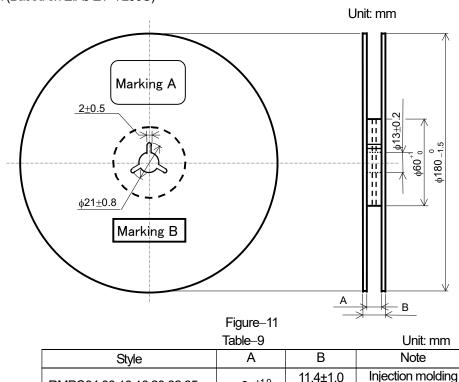
Figure-9

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8.3 Reel dimension

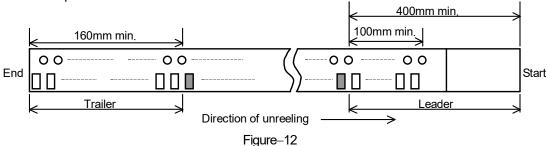
Reel dimensions shall be in accordance with the following Figure–11 and Table–9. Plastic reel (Based on EIAJ ET–7200C)



RMPC04,06,10,16,20,32,35 9 +1.0 11.4±1.0 Injection molding 13±1.0 Vacuum forming

Note: Marking label shall be marked on a place of Marking A or two place of marking A and B.

8.4 Leader and trailer tape.



Product specification contained in this specification are subject to change at any time without notice.

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9. Marking on package

The label of a minimum package shall be legibly marked with follows.

- 9.1 Marking A
 - (1) Classification

(Style, Temperature coefficient of resistance, Rated resistance, Tolerance on rated resistance, Packaging form)

- (2) Quantity (3) Lot number (4) Manufacturer's name or trade mark (5) Others
- 9.2 Marking B (KAMAYA Control label)

单击下面可查看定价,库存,交付和生命周期等信息

>>Kamaya(釜屋电机)