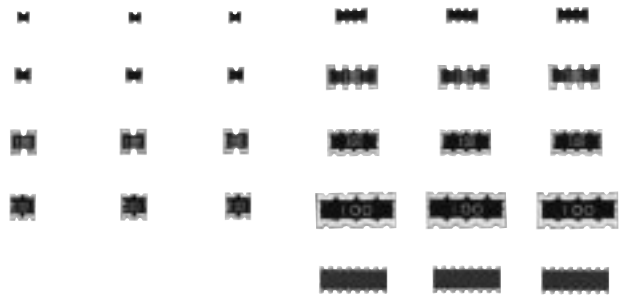
Chip Resistor Array

Type: **EXB1:0201x2**
EXB2:0402x2, 0402x4, 0402x8
EXB3:0603x2, 0603x4
EXBV:0603x2, 0603x4
EXBS:0805x4



■ Features

- High density
  - 2 resistors in 0.8 mm × 0.6 mm size (14V, Convex Terminal)
  - 2 resistors in 1.0 mm × 1.0 mm size (24V, Convex Terminal)
  - 2 resistors in 1.6 mm × 1.6 mm size (34V, Convex Terminal)
  - 2 resistors in 1.6 mm × 1.6 mm size (V4V, Concave Terminal)
  - 4 resistors in 2.0 mm × 1.0 mm size (28V, Convex Terminal)
  - 4 resistors in 3.2 mm × 1.6 mm size (38V, Convex Terminal)
  - 4 resistors in 3.2 mm × 1.6 mm size (V8V, Concave Terminal)
  - 4 resistors in 5.08 mm × 2.2 mm size (S8V, Concave Terminal)
  - 8 resistors in 3.8 mm × 1.6 mm size (2HV, Convex Terminal)
- Improvement of placement efficiency
  Placement efficiency of Chip Resistor Array is two or four or eight times of the flat type chip resistor
- Approved under the ISO 9001 system

■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11
E	X	B	V	8	V	4	7	2	J	V

Product Code
Thick Film Chip Resistor Networks

Chip Resistor Array Type: inches	
1	0201×2
2	0402×2, 0402×4, 0402×8
3	0603×2, 0603×4
V	0603×2, 0603×4
S	0805×4

No. of Terminal	
4	4 Terminal
8	8 Terminal
H	16 Terminal

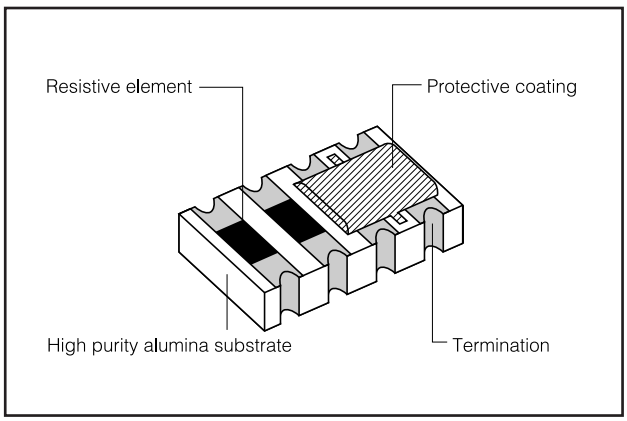
Schematics	
V	Isolated type

Resistance Value
The first two digits are significant figures of resistance value and the third one denotes the number of zeros following. Jumper is expressed by R00 Example: 222: 2.2 kΩ

Resistance Tolerance	
G	±2 %
J	±5 %
0	Jumper

Packaging Methods	
Code	Packaging
Nil	Embossed taping (Only S8V type)
V	Punched (Paper) taping 4 mm pitch
X	Punched (Paper) taping 2 mm pitch (Only 14V, 24V, 28V type)

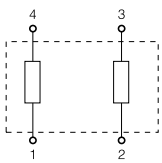
■ Construction (Example : EXBV8V)



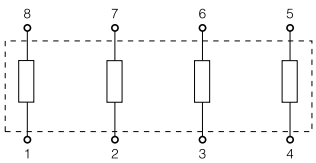
■ Schematics

- Isolated type

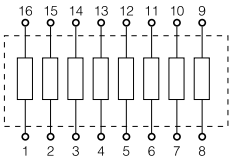
14V, 24V, 34V, V4V — 2 resistors



28V, 38V, V8V, S8V — 4 resistors

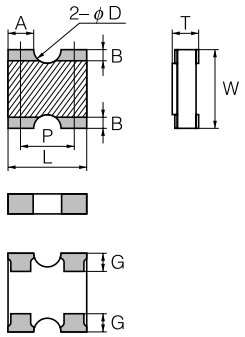


2HV — 8 resistors

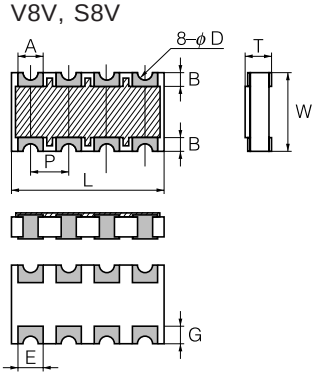


■ Dimensions in mm (not to scale)

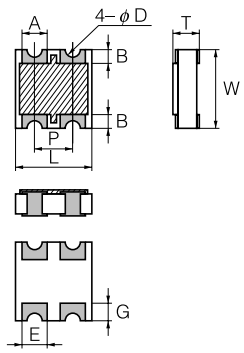
24V



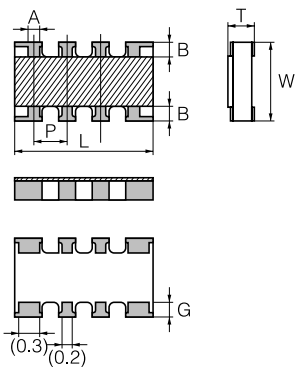
V8V, S8V



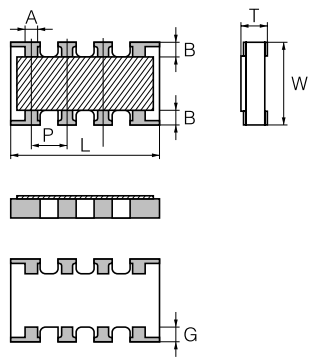
V4V



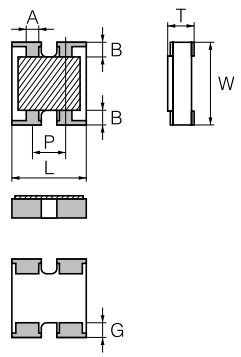
28V



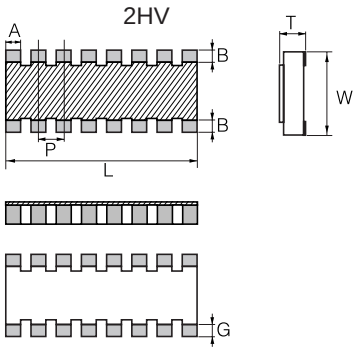
38V



14V, 34V



2HV



	Type (inches)	Dimensions (mm)								
		L	W	T	A	B	φD	P	E	G
NEW	EXB14V (0201×2)	$0.80^{\pm0.10}$	$0.60^{\pm0.10}$	$0.35^{\pm0.10}$	$0.35^{\pm0.10}$	$(0.15^{\pm0.10})$	—	$0.50^{\pm0.10}$	—	$0.15^{\pm0.10}$
	EXB24V (0402×2)	$1.00^{\pm0.05}$	$1.00^{\pm0.05}$	$0.35^{\pm0.05}$	$0.33^{\pm0.05}$	$0.15^{\pm0.10}$	$0.34^{\pm0.05}$	$0.65^{\pm0.10}$	—	$0.25^{\pm0.05}$
	EXB28V (0402×4)	$2.00^{\pm0.10}$	$1.00^{\pm0.10}$	$0.35^{\pm0.10}$	$0.20^{\pm0.10}$	$0.20^{\pm0.10}$	—	$0.50^{\pm0.10}$	—	$0.25^{\pm0.10}$
	EXBV4V (0603×2)	$1.60^{+0.20}_{-0.10}$	$1.60^{+0.20}_{-0.10}$	$0.60^{\pm0.10}$	$0.60^{\pm0.10}$	$0.30^{\pm0.15}$	(0.3)	$0.80^{\pm0.10}$	$0.45^{\pm0.10}$	$0.40^{\pm0.15}$
	EXB34V (0603×2)	$1.60^{\pm0.20}$	$1.60^{\pm0.15}$	$0.50^{\pm0.10}$	$0.45^{\pm0.15}$	$(0.30^{\pm0.20})$	—	$0.80^{\pm0.15}$	—	$0.30^{\pm0.20}$
	EXBV8V (0603×4)	$3.20^{+0.20}_{-0.10}$	$1.60^{+0.20}_{-0.10}$	$0.60^{\pm0.10}$	$0.60^{\pm0.10}$	$0.30^{\pm0.15}$	(0.3)	$0.80^{\pm0.10}$	$0.45^{\pm0.10}$	$0.45^{\pm0.15}$
	EXB38V (0603×4)	$3.20^{\pm0.20}$	$1.60^{\pm0.15}$	$0.50^{\pm0.10}$	$0.45^{\pm0.15}$	$(0.30^{\pm0.20})$	—	$0.80^{\pm0.15}$	—	$0.35^{\pm0.20}$
	EXBS8V (0805×4)	$5.08^{+0.20}_{-0.10}$	$2.20^{+0.20}_{-0.10}$	$0.70^{\pm0.20}$	$0.80^{\pm0.15}$	$0.50^{\pm0.15}$	(0.5)	$1.27^{\pm0.20}$	$0.70^{\pm0.20}$	$0.55^{\pm0.15}$
NEW	EXB2HV (0402×8)	$3.80^{\pm0.10}$	$1.60^{\pm0.10}$	$0.45^{\pm0.10}$	$0.30^{\pm0.10}$	$(0.30^{\pm0.10})$	—	$0.50^{\pm0.10}$	—	$0.30^{\pm0.10}$

( ) Reference

■ Ratings

Item		Specifications
Resistance Range		10 Ω to 1 MΩ: E24 series
Resistance Tolerance	14V,2HV,24V,28V,38V,34V	J: ±5 %
	V4V,V8V,S8V	G: ±2 %, J: ±5 %
Number of Terminal	14V,24V,V4V,34V	4 terminal
	28V,38V,V8V,S8V	8 terminal
	2HV	16 terminal
Number of Resistors	14V,24V,V4V,34V	2 resistors
	28V,38V,V8V,S8V	4 resistors
	2HV	8 resistors
Power Rating at 70 °C	14V,28V	0.031 W/element
	24V,V4V,34V,V8V,38V	0.063 W/element
	S8V	0.1 W/element
	2HV	0.063 W/element (0.25 W/package)

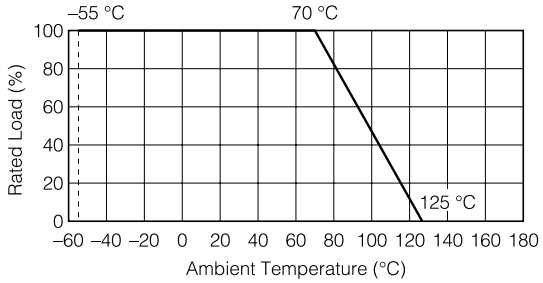
Item		Specifications
Limiting Element Voltage(1) (Max. Rated Continuous Working Voltage)	14V	12.5 V
	2HV	25 V
	24V,28V,38V,34V,V4V,V8V	50 V
	S8V	100 V
Max. Over-load Voltage(2)	14V	25 V
	2HV	50 V
	24V,28V,38V,34V,V4V,V8V	100 V
	S8V	200 V
T.C.R.		±200 $\times 10^{-6}$/°C(ppm/°C)
Category Temperature Range (Operating Temperature Range)		–55 °C to 125 °C
Jumper Array (A) R000 Rated Current	14V,2HV,24V,28V,38V,34V,V4V,V8V	1 A
	S8V	2 A
Jumper Array (A) R000 Max. Overload Current	14V,2HV,24V,28V,38V,34V,V4V,V8V	2 A
	S8V	4 A

(1) Rated Continuous Working Voltage (RCWV) shall be determined from RCWV=$\sqrt{\text{Power Rating} \times \text{Resistance Value}}$, or Limiting Element Voltage (max. RCWV) listed above, whichever less.

(2) Overload (Short-time Overload) Test Voltage (SOTV) shall be determined from SOTV=2.5 × Power Rating or max. Overload (Voltage) listed above whichever less.

Power Derating Curve

For resistors operated in ambient temperature above 70 °C, power rating shall be derated in accordance with the right figure.

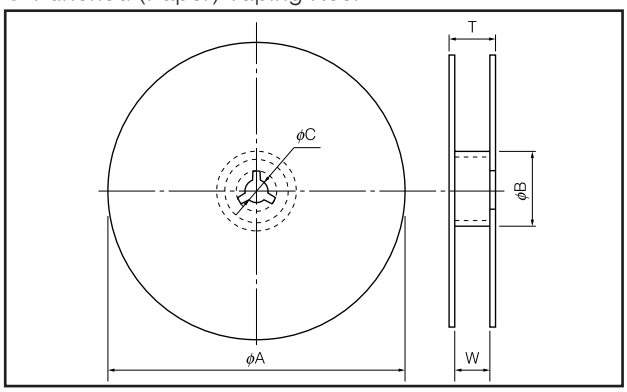


■ Packaging Methods

● Standard Quantity

Type (inches)	Thickness (mm)	Weight/1000 pcs. (g)	Punched (Paper) Taping	Embossed Taping
EXB14V (0201×2)	0.35	14V: 0.5	10000 pcs./reel	—
EXB24V, 28V (0402×2, 0402×4)	0.35	24V: 1.2 28V: 2	10000 pcs./reel	—
EXBV4V, V8V (0603×2, 0603×4)	0.6	V4V: 5 V8V: 10	5000 pcs./reel	—
EXB34V, 38V (0603×2, 0603×4)	0.5	34V: 3.5 38V: 7	5000 pcs./reel	—
EXBS8V (0805×4)	0.7	S8V: 30	—	2500 pcs./reel
EXB2HV (0402×8)	0.45	2HV: 9	5000 pcs./reel	—

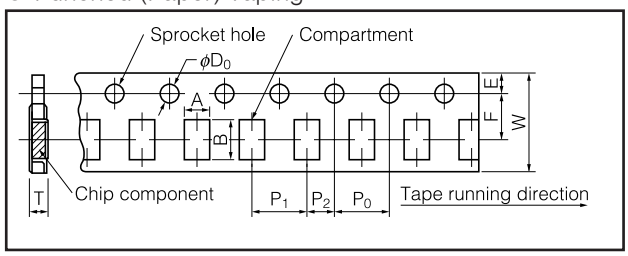
● Punched (Paper) Taping Reel



	Type	φA	φB	φC
Dimensions (mm)	14V, 2HV 24V, 28V V4V, 34V V8V, 38V	$180.0^{0}_{-3.0}$	60 min.	$13.0^{\pm1.0}$

	Type	W	T
Dimensions (mm)	14V, 2HV 24V, 28V V4V, 34V V8V, 38V	$9.0^{\pm1.0}$	$11.4^{\pm2.0}$

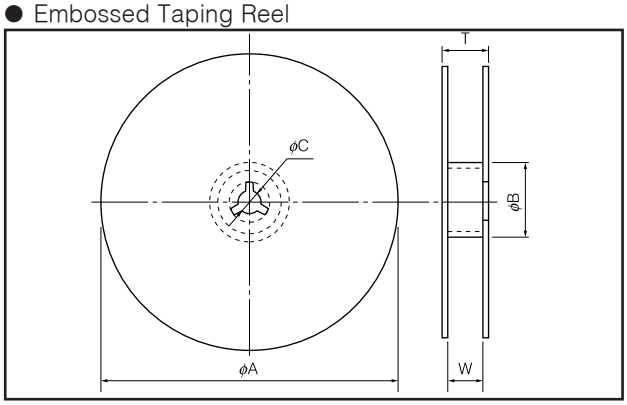
● Punched (Paper) Taping



	Type	A	B	W	F	E
Dimensions (mm)	14V	$0.70^{\pm0.05}$	$0.90^{\pm0.05}$	$8.00^{\pm0.20}$	$3.50^{\pm0.05}$	$1.75^{\pm0.10}$
	24V	$1.20^{\pm0.05}$	$1.20^{\pm0.05}$			
	28V		$2.20^{\pm0.10}$			
	V4V	$1.95^{\pm0.15}$	$1.95^{\pm0.20}$			
	34V					
	V8V	$2.00^{\pm0.15}$	$3.60^{\pm0.20}$			
	38V					
	2HV	$1.90^{\pm0.15}$	$4.10^{\pm0.15}$			

	Type	P_1	P_2	P_0	ϕD_0	T
Dimensions (mm)	14V	$2.00^{\pm0.10}$	$2.00^{\pm0.05}$	$4.00^{\pm0.10}$	$1.50^{+0.10}_{0}$	$0.45^{\pm0.05}$
	24V					
	28V					
	V4V	$4.00^{\pm0.10}$				$0.84^{\pm0.05}$
	34V					$0.64^{\pm0.05}$
	V8V					$0.84^{\pm0.05}$
	38V					$0.64^{\pm0.05}$
	2HV					

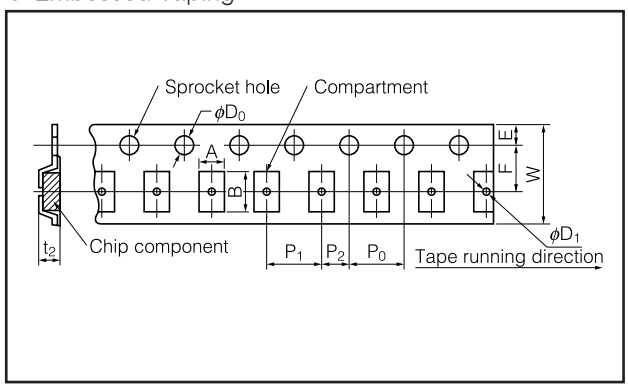
● Embossed Taping Reel



	Type	φA	φB	φC
Dimensions (mm)	S8V	$180.0^{0}_{-3.0}$	60 min.	$13.0^{\pm1.0}$

	Type	W	T
Dimensions (mm)	S8V	$13.0^{\pm1.0}$	$15.4^{\pm2.0}$

● Embossed Taping

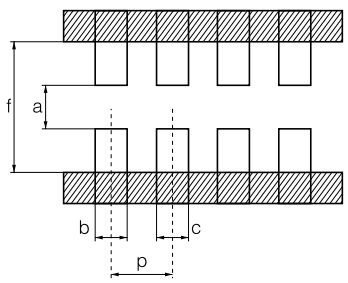


	Type	A	B	W	F	E	P_0
Dimensions (mm)	S8V	$2.80^{\pm0.20}$	$5.70^{\pm0.20}$	$12.00^{\pm0.30}$	$5.50^{\pm0.05}$	$1.75^{\pm0.10}$	$4.00^{\pm0.10}$

	Type	P_1	P_2	ϕD_0	t_2	ϕD_1
Dimensions (mm)	S8V	$4.00^{\pm0.10}$	$2.00^{\pm0.05}$	$1.50^{+0.10}_{0}$	1.6 max.	$1.50^{+0.10}_{0}$

■ Land pattern design

Recommendable land pattern design for Network chip is as shown below figure.



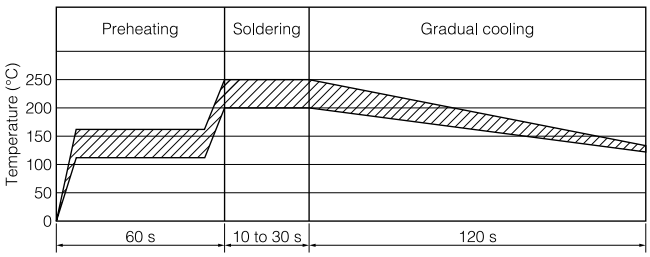
(Not to scale)

Type	Dimensions Unit (mm)				
	a	b	c	p	f
14V	0.3	0.3	0.3	0.50	0.9
24V	0.5	0.35 to 0.40	0.35 to 0.40	0.65	1.4 to 1.5
28V	0.4	0.525	0.25	0.50	1.4
V4V,V8V	0.7 to 0.9	0.4 to 0.45	0.4 to 0.45	0.80	2 to 2.4
34V,38V	0.7 to 0.9	0.4 to 0.5	0.4 to 0.5	0.80	2.2 to 2.6
S8V	1 to 1.2	0.5 to 0.75	0.5 to 0.75	1.27	3.2 to 3.8
2HV	1	0.425	0.25	0.50	2

⚠Cautions for Safety

1. Component Placement
   ① Take measure against mechanical stress during and after mounting so as not to damage the termination and protective coating.
   ② Misplacement of components on the land pattern may cause solder bridge problem.

2. Soldering
   Precaution and recommondations are described below.
   (a)Soldering iron
   Keep the followings:
   ① Soldering iron tip shall not touch the protective coating of the part.
   ② Solder as quick as possible (within 3 seconds) when the temperature of the soldering iron tip is over 280 °C.
   (b)Reflow soldering
   Recommendable reflow soldering is shown right.



3. Cleaning
   Recommendable cleaning method is shown below.

Solvents	Cleaning condition	
	Dipping	Ultrasonic wave washing
Isopropyl Alcohol	5 minutes maximum	1 minute maxium [Power: 20 W/L Frequency: 10 kHz to 100 kHz]

4. If transient load (heavy load in a short time) like pulse is expected to be applied, carry out evaluation and confirmation test with the resistors actually mounted on your own board.
   When the load of more than rated power is applied under the load condition at steady state, it may impair performance and/or reliability of resistor. Never exceed the rated power.
5. Chlorine type or other high-activity flux is not recommeded as the residue may affect performance or reliability of resistors.
6. When soldering with soldering iron, never touch the body of the chip resistor with a tip of the soldering iron. When using a soldering iron with a tip at high temperature, solder for a time as short as possible (three seconds or less up to 350 °C).
7. Avoid physical shock to the resistor and nipping of the resistor with hard tool (a pair of pliers or tweezers) as it may damage protective film or the body of resistor and may affect resistor's performance.
8. Do not use the product in dewy atmospheres.