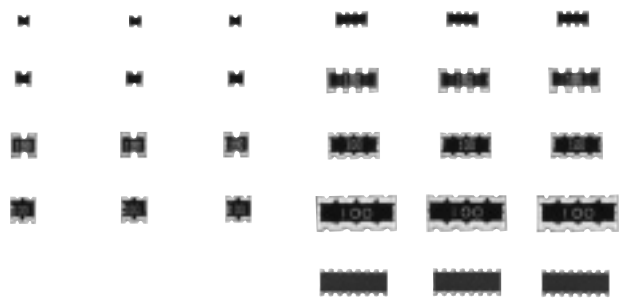
Chip Resistor Array

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, 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

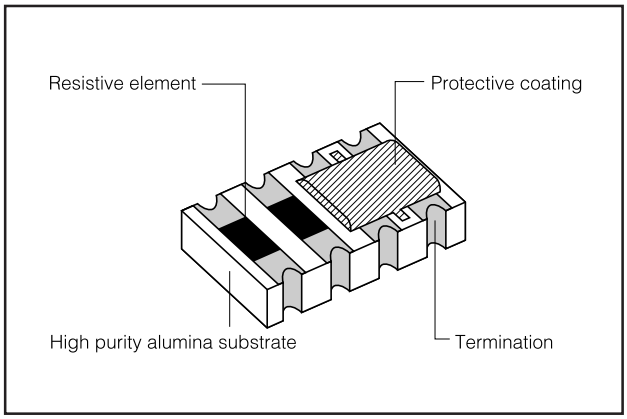
Schematics	
V	Isolated type

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

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)

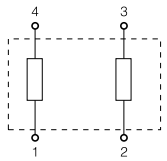
■ Construction (Example : EXBV8V)



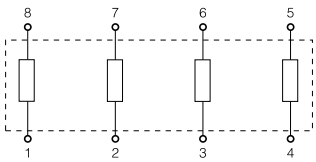
■ Schematics

- Isolated type

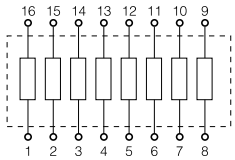
14V, 24V, 34V, V4V — 2 resistors



28V, 38V, V8V, S8V — 4 resistors



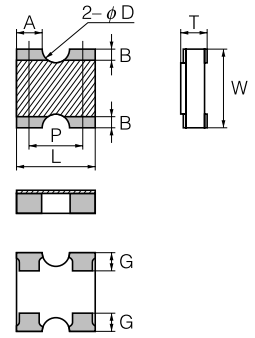
2HV — 8 resistors



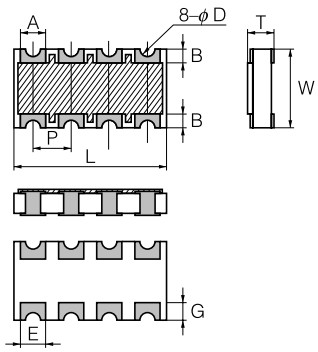
Rev.02/04

■ Dimensions in mm (not to scale)

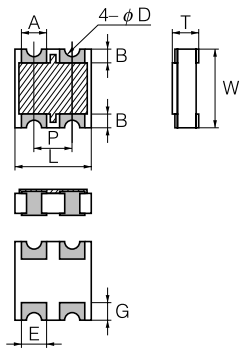
24V



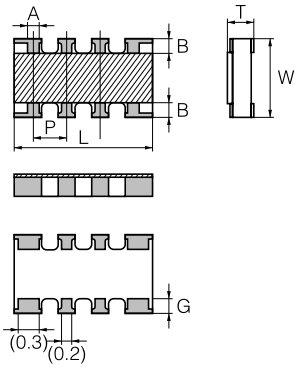
V8V, S8V



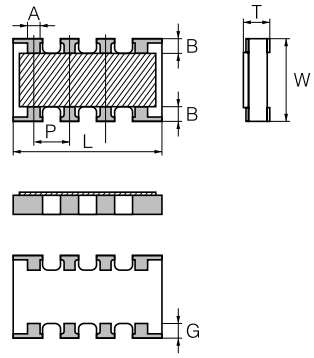
V4V



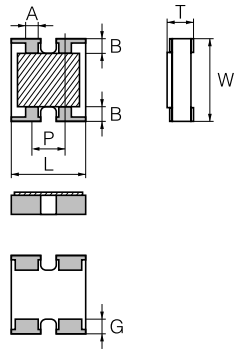
28V



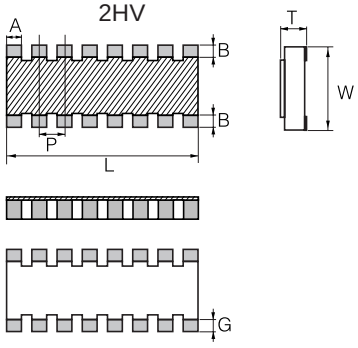
38V



14V, 34V



2HV



Type (inches)	Dimensions (mm)								
	L	W	T	A	B	φD	P	E	G
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)	$1.27^{\pm0.20}$	$0.70^{\pm0.20}$	$0.55^{\pm0.15}$
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		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)

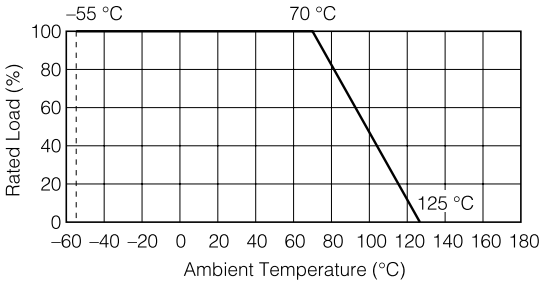
Item			Specifications
Limiting Element Voltage(1) (Max. Rated Continuous Working Voltage)		14V	12.5 V
		2HV	25 V
		24V,28V,38V,34V,V4V,V8V	50 V
		S8V	100 V
Max. Over-load Voltage(2)		14V	25 V
		2HV	50 V
		24V,28V,38V,34V,V4V,V8V	100 V
		S8V	200 V
T.C.R.			±200 ×10⁻⁶/°C(ppm/°C)
Category Temperature Range (Operating Temperature Range)			–55 °C to 125 °C
Jumper Array	Rated Current	14V	0.5 A
		2HV,24V,28V,38V,34V,V4V,V8V	1 A
		S8V	2 A
	Max. Overload Current	14V	1 A
		2HV,24V,28V,38V,34V,V4V,V8V	2 A
		S8V	4 A

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

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

Power Derating Curve

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

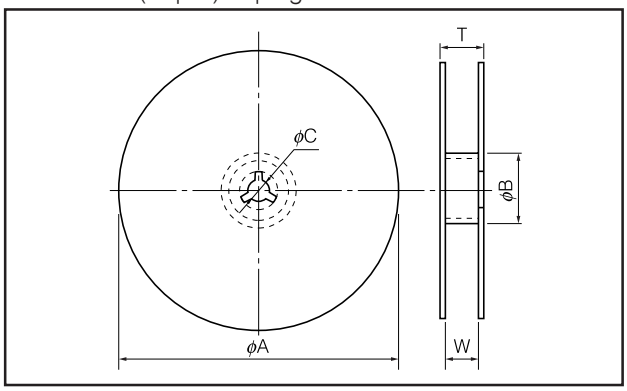


■ Packaging Specifications

● 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	—

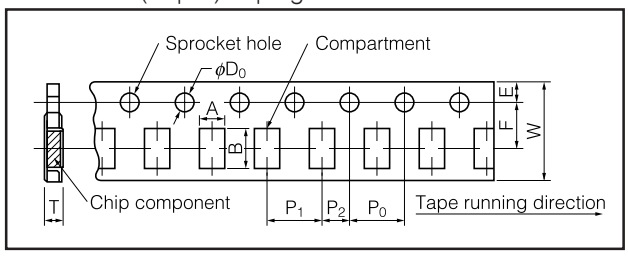
● Punched (Paper) Taping Reel



	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	$9.0^{\pm1.0}$	$11.4^{\pm2.0}$

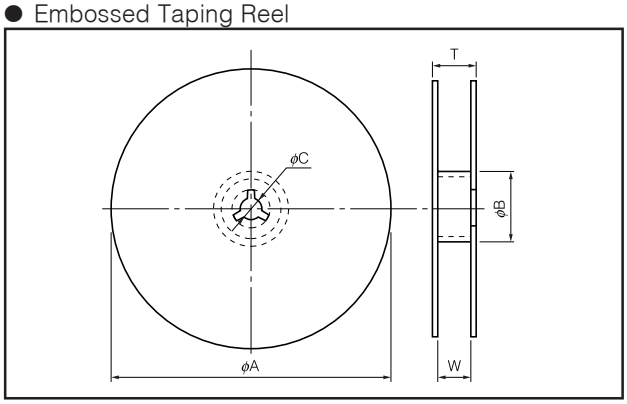
● Punched (Paper) Taping



	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	$2.00^{\pm0.10}$	$2.00^{\pm0.05}$	$4.00^{\pm0.10}$	$1.50^{+0.10}_{0}$	$0.52^{\pm0.05}$
	24V					
	28V					
	V4V	$4.00^{\pm0.10}$				$0.84^{\pm0.05}$
	34V					$0.70^{\pm0.05}$
	V8V					$0.84^{\pm0.05}$
	38V					$0.70^{\pm0.05}$
	2HV					

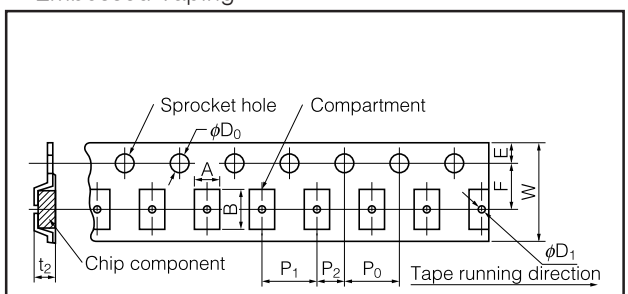
● Embossed Taping Reel



	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

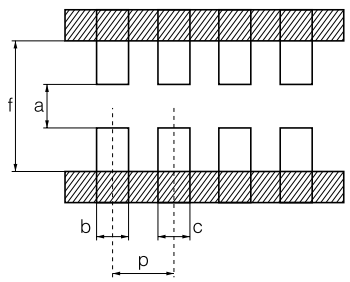


	Type	A	B	W	F	E	P_0
Dimensions (mm)	S8V	$2.80^{\pm0.20}$	$5.70^{\pm0.20}$	$12.00^{\pm0.30}$	$5.50^{\pm0.05}$	$1.75^{\pm0.10}$	$4.00^{\pm0.10}$

	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

Recommended land pattern design for Network chip is shown below.



(Not to scale)

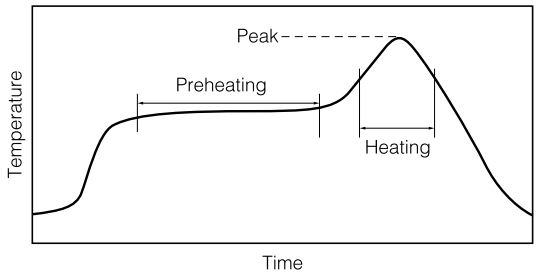
Type	Dimensions Unit (mm)				
	a	b	c	p	f
14V	0.3	0.3	0.3	0.50	0.9
24V	0.5	0.35 to 0.40	0.35 to 0.40	0.65	1.4 to 1.5
28V	0.4	0.525	0.25	0.50	1.4
V4V,V8V	0.7 to 0.9	0.4 to 0.45	0.4 to 0.45	0.80	2 to 2.4
34V,38V	0.7 to 0.9	0.4 to 0.5	0.4 to 0.5	0.80	2.2 to 2.6
S8V	1 to 1.2	0.5 to 0.75	0.5 to 0.75	1.27	3.2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

■ Recommended Soldering Conditions

Recommendations and precautions are described below.

●Recommended soldering conditions for reflow

·Reflow soldering should be a maximum of two times
·Please contact us for additional information when used in conditions other than those specified.
·Please measure the temperature of the terminations and study every type of the printed circuit board for solderability, before actual use.



For solder (Example : Sn/Pb)

	Temperature	Time
Preheating	140 °C to 160 °C	60 s to 120 s
Main heating	Above 200 °C	30 s to 40 s
Peak	235 ± 5 °C	max. 10 s

For lead-free solder (Example : Sn/Ag/Cu)

	Temperature	Time
Preheating	150 °C to 180 °C	60 s to 120 s
Main heating	Above 230 °C	30 s to 40 s
Peak	max. 260 °C	max. 10 s

●Flow soldering

·Flow soldering is not recommended because solder bridge may occur.

⚠Safety Precautions

1. Component Placement
   ① Take measures 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. 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 the board before using in production.
   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.
3. Chlorine type or other high-activity flux is not recommeded as the residue may affect performance or reliability of resistors.
4. When soldering with soldering iron, never touch the body of the chip resistor with the tip of the soldering iron. When using a soldering iron with a tip at high temperature, solder for as short a time as possible (three seconds or less up to 350 °C).
5. Avoid physical shock to the resistor and nipping of the resistor with hard tool (pliers or tweezers) as it may damage protective film or the body of resistor and may affect resistor's performance.
6. Do not use the product in high humidity atmospheres.