

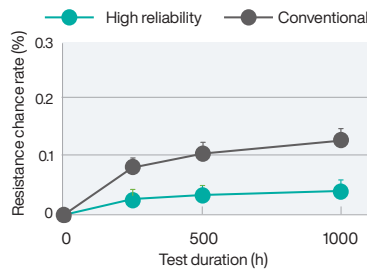
High Precision Thin Film Resistors

ERA*A: Stability over lifetime, no drift of resistance value

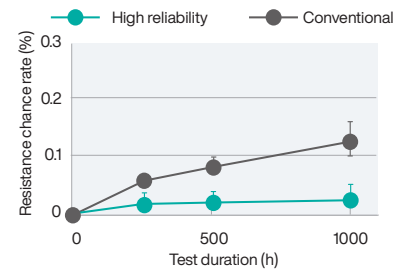
Features & benefits

- High accuracy and precision (down to $\pm 0.05\%$ and $\pm 10\text{ppm/K}$)
- Low resistance value drift ($< \pm 0.1\%$) under high temperature and high humidity conditions
- Excellent current-noise characteristics ($< -30\text{dB}$) and linearity of temperature coefficient of resistance (TCR)
- 100% rated power up to 85°C

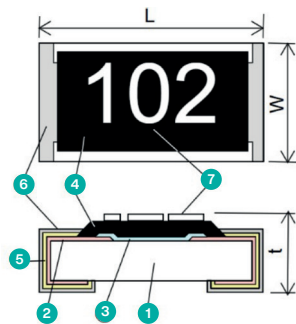
High Reliability:
 $85^\circ\text{C} / 85\% \text{ RH}, 1000 \text{ h} \rightarrow \Delta R < \pm 0.1\%$



High Heat Resistance:
 $155^\circ\text{C}, 1000 \text{ h} \rightarrow \Delta R < \pm 0.1\%$



Structure



- Alumina substrate
- Inner electrode
- Resistive element
- Protective coating
- Middle electrode
- Outside electrode
- Marking (not present in 1A, 2A and E96 values)

Part No. (inch size)	Power Rating (W)	Resistance Tolerance (%)	T.C.R. ($\times 10^{-6}/\text{K}$)	Temperature Range (°C)	AEC-Q200 Grade
ERA1A (0201)	0.05	$\pm 0.05, \pm 0.1, \pm 0.25$	$\pm 10, \pm 25$	-55 to +155	1
ERA2A (0402)	0.063	$\pm 0.1, \pm 0.25, \pm 0.5$	$\pm 10, \pm 15, \pm 25, \pm 100$		1
ERA3A (0603)	0.1	$\pm 0.05, \pm 0.1, \pm 0.25, \pm 0.5$	$\pm 10, \pm 15, \pm 25, \pm 50$		0
ERA6A (0805)	0.125				0
ERA8A (1206)	0.25				0

<div>1</div> <div>E</div>	<div>2</div> <div>R</div>	<div>3</div> <div>A</div>				<div>4</div> <div>3</div>	<div>5</div> <div>A</div>				<div>6</div> <div>E</div>				<div>7</div> <div>B</div>						<div>8</div> <div>1</div>	<div>9</div> <div>0</div>	<div>10</div> <div>5</div>	<div>11</div> <div>1</div>				<div>12</div> <div>V</div>
Product Code			Size, Power Rating			Temperature Coefficient			Resistance Tolerance			Resistance Value						Packaging Methods										
Thin film chip resistors			Code	Inch	Power Rating (W)	Code	T.C.R (×10 ⁻⁶ /K)	Code	Tolerance (%)	<p>Consist of three figures for E24 series resistance value. The first two digits are significant figures of resistance and the third one denotes number of zeros following.</p> <p>Example: 102→1 kΩ</p> <p>Consist of four figures for E96 series resistance value. The first three digits are significant figures of resistance and the fourth one denotes number of zeros following. Example: 1051→ 1.05 kΩ</p>						Code	Packaging	Type										
			1A	0201	0.05	R	±10	W	±0.05							C	Pressed carrier taping 2mm pitch, 15,000 pcs	ERA1A										
			2A	0402	0.063	P	±15	B	±0.1							X	Pressed carrier taping 2mm pitch, 10,000 pcs	ERA2A										
			3A	0603	0.1	E	±25	C	±0.25							V	Punched carrier taping 4mm pitch, 5,000 pcs	ERA3A, ERA6A, ERA8A										
			6A	0805	0.125	H	±50	D	±0.5																			
			8A	1206	0.25	K	±100																					

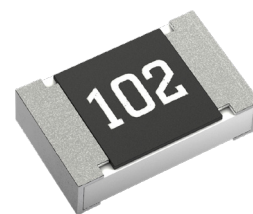
For automotive and high reliability applications

- Corresponding to AEC-Q200
- High stability over lifetime
- Operating temperature from -55°C to $+155^\circ\text{C}$
- Applications include:
 - > Automotive electronics (ECU, EPS, BMS)
 - > Industrial equipment (control circuits and sensing)
 - > Energy devices (i.e smart meters)
 - > Test & measuring equipment

Scan here to learn more



Panasonic High Precision Thin Film Resistors Line-up



*The numbers in the square indicate the TCR (ppm/K)

Size inch	Power Rating (W)	Prefix	Tolerance (%)	Resistance Range (Ω)											
				10	46	47	100	200	470	1k	10k	47k	100k	102k	1M
0201	0.05 W	ERA1AEB	±0.1						±25						
		ERA1AEC	±0.25						±25						
		ERA1ARC	±0.25						±10						
		ERA1ARB	±0.1						±10						
		ERA1ARW	±0.05							±10					
0402	0.063 W	ERA2AKD	±0.5	±100											
		ERA2AED	±0.5						±25						
		ERA2AEC	±0.25						±25						
		ERA2AEB	±0.1						±25						
		ERA2APC	±0.25						±15						
		ERA2APB	±0.1						±15						
		ERA2ARC	±0.25						±10						
		ERA2ARB	±0.1						±10						
0603	0.1 W	ERA3AHD	±0.5	±50											
		ERA3AED	±0.5						±25						
		ERA3AEC	±0.25						±25						
		ERA3AEB	±0.1						±25						
		ERA3APC	±0.25						±15						
		ERA3APB	±0.1						±15						
		ERA3ARC	±0.25							±10					
		ERA3ARB	±0.1							±10					
		ERA3ARW	±0.05							±10					
0805	0.125 W	ERA6AHD	±0.5	±50											
		ERA6AED	±0.5						±25						
		ERA6AEC	±0.25						±25						
		ERA6AEB	±0.1						±25						
		ERA6APC	±0.25						±15						
		ERA6APB	±0.1						±15						
		ERA6ARC	±0.25							±10					
		ERA6ARB	±0.1							±10					
		ERA6ARW	±0.05							±10					
1206	0.25 W	ERA8AHD	±0.5	±50											
		ERA8AED	±0.5						±25						
		ERA8AEC	±0.25						±25						
		ERA8AEB	±0.1						±25						
		ERA8APC	±0.25						±15						
		ERA8APB	±0.1						±15						
		ERA8ARC	±0.25							±10					
		ERA8ARB	±0.1							±10					
		ERA8ARW	±0.05							±10					

Need anti-sulfur specifications or
higher power in the same footprint?
Discover our high-end ERA*V thin film series

