

High Precision Chip Resistors

- Thin film passivated NiCr resistor
- Very tight tolerance from $\pm 0.01\%$ ~ 1%
- Extremely low TCR from $\pm 5\sim\pm 50\text{ppm}/^\circ\text{C}$
- Wide R-value range $1\Omega\sim 3\text{M}\Omega$



GENERAL SPECIFICATIONS

Type	Item	Power Rating at 70 °C	Operating Temperature Range	Maximum Operating Voltage	Maximum Overload Voltage	Resistance Range					TCR (ppm/°C)
						$\pm 0.05\%$	$\pm 0.1\%$	$\pm 0.25\%$	$\pm 0.5\%$	$\pm 1\%$	
AR01 (0201)	1/32W		$-55^\circ\text{C}\sim+155^\circ\text{C}$	15V	30V				$49.9\Omega\sim 4.99\text{K}\Omega$		± 25
									$49.9\Omega\sim 33\text{K}\Omega$		± 50
AR02 (0402)	1/16W			25V	50V	$49.9\Omega\sim 12\text{K}\Omega$		$100\Omega\sim 205\text{K}\Omega$			± 25
							$10\Omega\sim 205\text{K}\Omega$	$1\Omega\sim 205\text{K}\Omega$			± 50
AR03 (0603)	1/16W			50V	100V	$4.7\Omega\sim 332\text{K}\Omega$	$4.7\Omega\sim 1\text{M}\Omega$	$2\Omega\sim 1\text{M}\Omega$			± 25
								$1\Omega\sim 1\text{M}\Omega$			± 50
AR05 (0805)	1/10W			100V	200V	$4.7\Omega\sim 511\text{K}\Omega$	$4.7\Omega\sim 2\text{M}\Omega$	$1\Omega\sim 2\text{M}\Omega$			± 25
											± 50
AR06 (1206)	1/8W			150V	300V	$4.7\Omega\sim 1\text{M}\Omega$	$4.7\Omega\sim 2.49\text{M}\Omega$	$1\Omega\sim 2.49\text{M}\Omega$			± 25
AR13 (1210)	1/4W										± 50
AR10 (2010)	1/4W			150V	300V	$4.7\Omega\sim 1\text{M}\Omega$	$4.7\Omega\sim 3\text{M}\Omega$	$1\Omega\sim 3\text{M}\Omega$			± 25
AR12 (2512)	1/2W										± 50

Operating Voltage: $\sqrt{P \cdot R}$ or maximum operating voltage listed above, whichever is lower

Overload Voltage: $2.5 \cdot \sqrt{P \cdot R}$ or maximum overload voltage listed above, whichever is lower.

■ Optional specifications are also available.

■ Lower Resistance: $1\sim 10\Omega$

CHARACTERISTICS

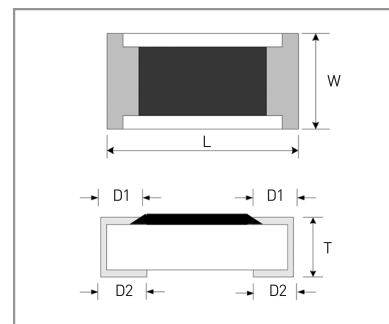
Test	Specification		Test Method
	ToL,≤0.05%	ToL, > 0.05%	
Temperature Coefficient	As Spec.		+25/-55/+25/+125/+25℃
Operating Temperature Range			-55℃~-+155℃
Short Time Overload	△R±0.05%	△R±0.2%	RCWV×2,5 or maximum overload voltage for 5seconds
	△R±0.2% for high power rating		
Dielectric Withstand Voltage	By Type		Apply maximum overload voltage for 1minute
Insulation Resistance	> 1000MΩ		Apply 100VDC for 1minute
Thermal Shock	△R±0.05%	△R±0.25%	-55℃~-+150℃, 100Cycles
Load Life	△R±0.05%	△R±0.2%	70±2℃, Maximum Working voltage for 1000hours with 1.5hours "ON" and 0.5hours "OFF"
	> 7KΩ △R±0.5% △R±0.5% for high power rating		
Damp Heat with Load	△R±0.05%	△R±0.3%	40±2℃, 90~95%, Maximum working voltage for 1000hours with 1.5hours "ON" and 0.5hours "OFF"
	△R±0.5% for high power rating		
Low Temperature Operation	△R±0.05%	△R±0.2%	1 hours, -65℃, followed by 45 minutes of RCWV
	△R±0.5% for high power rating		
Bending Strength	△R±0.05%	△R±0.2%	Bending amplitude 3mm for 10seconds
Solderability	95% coverage minimum		245±5℃, 3seconds
Resistance to Soldering Heat	△R±0.05%	△R±0.2%	260±5℃, 10±1 seconds

* Storage Temperature: $25 \pm 3^\circ\text{C}$, Humidity $< 80\% \text{ RH}$

* Reference Standards: MIL-STD-202, JIS-C 5201-1

DIMENSIONS [mm]

Model	Size (inch)	Dimensions [mm]				
		L	W	T	D1	D2
AR01	0201	0.58±0.05	0.29±0.05	0.23±0.05	0.21±0.05	0.15±0.05
AR02	0402	1.00±0.05	0.50±0.05	0.30±0.05	0.20±0.10	0.20±0.10
AR03	0603	1.55±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20
AR05	0805	2.00±0.15	1.25±0.15	0.55±0.10	0.30±0.20	0.40±0.25
AR06	1206	3.05±0.15	1.55±0.15	0.55±0.10	0.42±0.20	0.35±0.25
AR13	1210	3.10±0.15	2.40±0.15	0.55±0.10	0.40±0.20	0.55±0.25
AR10	2010	4.90±0.15	2.40±0.15	0.55±0.10	0.60±0.30	0.50±0.25
AR12	2512	6.30±0.15	3.10±0.15	0.55±0.10	0.60±0.30	0.50±0.25



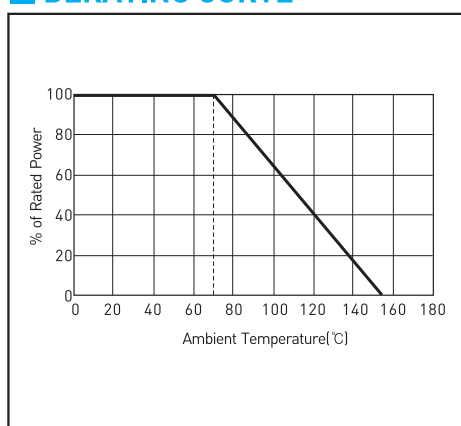
SPECIAL SPECIFICATIONS

Model	Power Rating At 70℃	Operating Temp. Range	Max Operating Voltage	Max Overloading Voltage	Resistance Range			TCR (ppm/℃)
					±0.01%	±0.05%	±0.1%	
AR02 (0402)	1/16W	-55℃ ~ +155℃	25V	50V	49.9Ω~4.99KΩ			±5
					49.9Ω~12KΩ			±10
					49.9Ω~12KΩ		49.9Ω~69.8KΩ	±15
AR03 (0603)	1/16W		50V	100V	24.9Ω~15KΩ			±5
					24.9Ω~100KΩ	4.7Ω~332KΩ		±10, ±15
AR05 (0805)	1/10W		100V	200V	24.9Ω~30KΩ			±5
					24.9Ω~200KΩ	4.7Ω~411KΩ		±10, ±15
AR06 (1206)	1/8W		150V	300V	24.9Ω~49.9KΩ			±5
					24.9Ω~499KΩ	4.7Ω~1MΩ		±10, ±15
AR13 (1210)	1/4W	150V	300V	24.9Ω~49.9KΩ			±5	
				24.9Ω~499KΩ	4.7Ω~1MΩ		±10, ±15	
AR10 (2010)	1/4W	150V	300V	24.9Ω~100KΩ			±5	
				24.9Ω~499KΩ	4.7Ω~1MΩ		±10, ±15	
AR12 (2512)	1/2W	150V	300V	24.9Ω~100KΩ			±5	
				24.9Ω~499KΩ	4.7Ω~1MΩ		±10, ±15	

Operating Voltage: $\sqrt{P \cdot R}$ or maximum operating voltage listed above, whichever is lower

Overload Voltage: $2.5 \cdot \sqrt{P \cdot R}$ or maximum overload voltage listed above, whichever is lower.

DERATING CURVE



ORDERING PROCEDURE EXAMPLE

AR 12	C	T	N	T	1001	N
Model # AR01: 0201 AR02: 0420 AR03: 0603 AR05: 0805 AR06: 1206 AR13: 1210 AR10: 2010 AR12: 2512	Resistance Tolerance T: ±0.01% A: ±0.05% B: ±0.10% C: ±0.25% D: ±0.50% F: ±1.0%	Packaging T: Taping Reel B: Bulk	TCR S: ±5ppm/°C B: ±10ppm/°C N: ±15ppm/°C C: ±25ppm/°C D: ±50ppm/°C	Power Rating None=Standard/Special T: 1W Q: 3/4W U: 1/2W O: 1/3W V: 1/4W P: 1/5W M: 1/6W W: 1/8W X: 1/10W Y: 1/16W	Resistance 0010: 1Ω 4R70: 4.7Ω 1001: 1KΩ 1004: 1MΩ	Marking None=Standard Marking for E96/E24 N: No Marking

RECOMMENDED LAND PATTERN [mm]

Model	Dimension [mm]		
	A	B	C
AR01	0.25	0.30	0.40±0.2
AR02	0.50	0.50	0.60±0.2
AR03	0.80	1.00	0.90±0.2
AR05	1.00	1.00	1.35±0.2
AR06	2.00	1.15	1.70±0.2
AR10	3.60	1.40	2.50±0.2
AR12	4.90	1.60	3.10±0.2
AR13	2.00	1.15	2.56±0.2

