

# 3CA72

**Key Features**

- High precision - TCR 5ppm/°C and 10ppm/°C
- Tolerance down to 0.01%
- Thin film (nichrome)
- Choice of packages
- Stable high frequency performance
- Temperature range -55°C to +155°C

**Applications**

- Communications
- Instrumentation
- Industrial controls
- Medical



The RN73 series is a high stability precision chip resistor range offering various power dissipations relating to chip size, TCR's down to 5ppm/°C and resistance tolerances to 0.01%. The resistor is produced with three sputtered layers giving optimum performance. Values are restricted to the E96 and E24 value grids. The RN73 has accurate and uniform physical dimensions to facilitate placement.

**Characteristics - Electrical**

	0402						0603						0805					
Rated Power @ 70°C:	0.063W						0.063W						0.1W					
Resistance Range (Ohms)	Min:	49R9	49R9	49R9	49R9	49R9	24R9	24R9	24R9	4R7	24R9	4R7	24R9	24R9	24R9	4R3	24R9	4R3
	Max:	5K0	15K	5K0	15K	5K0	15K	100K	15K	332K	15K	332K	30K	200K	30K	511K	30K	511K
Tolerance (%):	0.01		0.05		0.1		0.01		0.05		0.1		0.01		0.05		0.1	
Code Letter:	L		A		B		L		A		B		L		A		B	
Selection Series:	E24 & E96						E24 & E96						E24 & E96					
Temp. Coefficient (ppm/°C):	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10
Code Letter:	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C
Limiting Element Voltage:	25V						50V						100V					
Max. Overload Voltage:	50V						100V						200V					
Operating Temp. Range:	-55 to +155°C						-55 to +155°C						-55 to +155°C					
Climatic Category (°C):	55/125/55						55/125/55						55/125/55					
Insulation Resistance Dry Min:	1000MΩ						1000MΩ						1000MΩ					
Stability:	0.5%						0.5%						0.5%					

	1206						1210						2010						
Rated Power @ 70°C:	0.125W						0.2W						0.25W						
Resistance Range (Ohms)	Min:	24R9	24R9	24R9	4R7	24R9	4R7	24R9	24R9	24R9	4R7	24R9	4R7	24R9	24R9	24R9	4R7	24R9	4R7
	Max:	50K	562K	50K	1M0	50K	1M0	50K	500K	50K	1M0	50K	1M0	100K	500K	100K	1M0	100K	1M0
Tolerance (%):	0.01		0.05		0.1		0.01		0.05		0.1		0.01		0.05		0.1		
Code Letter:	L		A		B		L		A		B		L		A		B		
Selection Series:	E24 & E96						E24 & E96						E24 & E96						
Temp. Coefficient (ppm/°C):	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10	
Code Letter:	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	
Limiting Element Voltage:	150V						150V						150V						
Max. Overload Voltage:	300V						300V						300V						
Operating Temp. Range:	-55 to +155°C						-55 to +155°C						-55 to +155°C						
Climatic Category (°C):	55/125/55						55/125/55						55/125/55						
Insulation Resistance Dry Min:	1000MΩ						1000MΩ						1000MΩ						
Stability:	0.5%						0.5%						0.5%						

		2512					
<b>Rated Power @ 70°C:</b>		0.5W					
<b>Resistance Range (Ohms)</b>	<b>Min:</b>	24R9	24R9	24R9	4R7	24R9	4R7
	<b>Max:</b>	100K	500K	100K	1M0	100K	1M0
<b>Tolerance (%):</b>		0.01		0.05		0.1	
<b>Code Letter:</b>		L		A		B	
<b>Selection Series:</b>		E24 & E96					
<b>Temp. Coefficient (ppm/°C):</b>	5	10	5	10	5	10	
	A	C	A	C	A	C	
<b>Limiting Element Voltage:</b>		150V					
<b>Max. Overload Voltage:</b>		300V					
<b>Operating Temp. Range:</b>		-55 to +155°C					
<b>Climatic Category (°C):</b>		55/125/55					
<b>Insulation Resistance Dry Min:</b>		1000MΩ					
<b>Stability:</b>		0.5%					

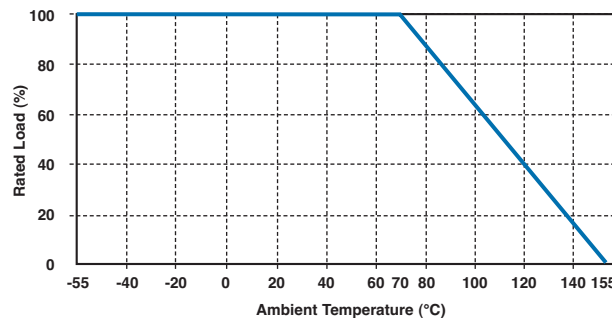
**Characteristics - Environmental**

	Requirement		Test Method
	Tol. ≤ 0.05%	Tol. > 0.05%	
<b>Temperature Coefficient of Resistance (TCR):</b>	As per TCRs specified in value range table on page 1		+25/-55/+25/+125/+25°C
<b>Short Time Overload:</b>	ΔR ±0.05%	ΔR ±0.2%	RCWV* 2.5 or max. overload voltage for 5 seconds
<b>Insulation Resistance:</b>	ΔR ±0.2% for high power rating		Apply 100VDC for 1 minute
<b>Endurance:</b>	>1000MΩ		Apply 100VDC for 1 minute
<b>Damp Heat with Load:</b>	ΔR ±0.05%	ΔR ±0.2%	70 ±2°C, max. working voltage for 1000hrs with 1.5hrs "ON" and 0.5hrs "OFF"
<b>Bending Strength:</b>	>7kΩ ΔR ±0.5%		70 ±2°C, max. working voltage for 1000hrs with 1.5hrs "ON" and 0.5hrs "OFF"
<b>Solderability:</b>	ΔR ±0.05%	ΔR ±0.3%	40 ±2°C, 90 - 95% R.H. max. working voltage hrs with 1.5hrs "ON" and 0.5hrs "OFF"
<b>Resistance to Soldering Heat:</b>	ΔR ±0.5% for high power rating		40 ±2°C, 90 - 95% R.H. max. working voltage hrs with 1.5hrs "ON" and 0.5hrs "OFF"
<b>Dielectric Withstand Voltage:</b>	ΔR ±0.05%	ΔR ±0.2%	Bending amplitude 3mm for 10 seconds
<b>Thermal Shock:</b>	95% min. coverage		245 ±5°C for 3 seconds
<b>Low Temperature Operation:</b>	ΔR ±0.05%	ΔR ±0.2%	260 ±5°C for 10 seconds
<b>Low Temperature Operation:</b>	By type		Max. overload voltage for 1 minute
<b>Low Temperature Operation:</b>	ΔR ±0.05%	ΔR ±0.25%	-55°C to +150°C, 100 cycles
<b>Low Temperature Operation:</b>	ΔR ±0.05%	ΔR ±0.2%	1 hour, -65°C, followed by 45 minutes of RCWV
<b>Low Temperature Operation:</b>	ΔR ±0.5% for high power rating		1 hour, -65°C, followed by 45 minutes of RCWV

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

Storage Temperature: 25±3°C; Humidity < 80%RH

**Power Derating Curve**

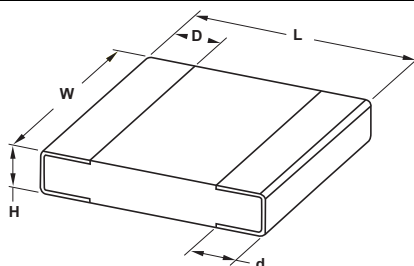


For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with this curve.



# 3CA72

## Dimensions



Part Number	L	W	H	D	d	Weight (g) 1000 pieces
RN73 1E (0402)	1.00+/-0.05	0.50+/-0.05	0.30+/-0.05	0.20+/-0.10	0.20+/-0.10	0.54
RN73 1J (0603)	1.55+/-0.10	0.80+/-0.10	0.45+/-0.10	0.30+/-0.20	0.30+/-0.20	1.83
RN73 2A (0805)	2.00+/-0.15	1.25+/-0.15	0.55+/-0.10	0.30+/-0.20	0.40+/-0.25	4.71
RN73 2B (1206)	3.05+/-0.15	1.55+/-0.15	0.55+/-0.10	0.42+/-0.20	0.35+/-0.25	9.02
RN73 2E (1210)	3.10+/-0.15	2.40+/-0.15	0.55+/-0.10	0.40+/-0.20	0.55+/-0.25	10
RN73 2H (2010)	4.90+/-0.15	2.40+/-0.15	0.55+/-0.10	0.60+/-0.30	0.50+/-0.25	23.61
RN73 3A (2512)	6.30+/-0.15	3.10+/-0.15	0.55+/-0.10	0.60+/-0.30	0.50+/-0.25	38.08

## Marking Codes - Case Sizes 0805 to 2512

### IEC 4 Digit Marking

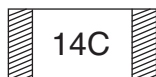
Resistance:	100Ω	2.2KΩ	10KΩ	49.9KΩ	100KΩ
Marking Code:	1000	2201	1002	4992	1003

## Case Sizes 0603

### E24 3 Digit Marking - Example: 101=100Ω 102=1KΩ

E24	10	11	12	13	15	16	18	20	22	24	27	30
	33	36	39	43	47	51	56	62	68	75	82	91

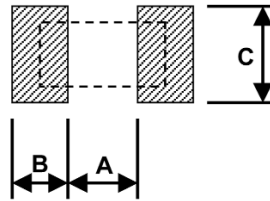
### E96 3 Digit Marking - Examples: 14C=13K7Ω, 13C=13K3Ω, 68B=4K99Ω, 68X=49.9Ω



### 0603 E96 Marking Code Table

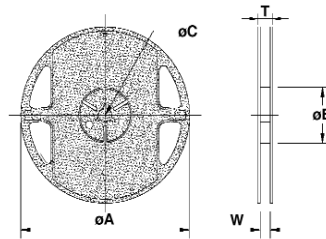
Code	E96	Code	E96	Code	E96	Code	E96				
01	100	25	178	49	316	73	562				
02	102	26	182	50	324	74	576				
03	105	27	187	51	332	75	590				
04	107	28	191	52	340	76	604				
05	110	29	196	53	348	77	619				
06	113	30	200	54	357	78	634				
07	115	31	205	55	365	79	649				
08	118	32	210	56	374	80	665				
09	121	33	215	57	383	81	681				
10	124	34	221	58	392	82	698				
11	127	35	226	59	402	83	715				
12	130	36	232	60	412	84	732				
13	133	37	237	61	422	85	750				
14	137	38	243	62	432	86	768				
15	140	39	249	63	442	87	787				
16	143	40	255	64	453	88	806				
17	147	41	261	65	464	89	825				
18	150	42	267	66	475	90	845				
19	154	43	274	67	487	91	866				
20	158	44	280	68	499	92	887				
21	162	45	287	69	511	93	909				
22	165	46	294	70	523	94	931				
23	169	47	301	71	536	95	953				
24	174	48	309	72	549	96	976				
Code	A	B	C	D	E	F	G	H	X	Y	Z
Multiplier	10 <sup>0</sup>	10 <sup>1</sup>	10 <sup>2</sup>	10 <sup>3</sup>	10 <sup>4</sup>	10 <sup>5</sup>	10 <sup>6</sup>	10 <sup>7</sup>	10 <sup>-1</sup>	10 <sup>-2</sup>	10 <sup>-3</sup>

Recommend Land Pattern



Type	A	B	C
RN73 1E (0402)	0.5	0.5	0.60 ±0.2
RN73 1J (0603)	0.8	1.0	0.90 ±0.2
RN73 2A (0805)	1.0	1.0	1.35 ±0.2
RN73 2B (1206)	2.0	1.15	1.70 ±0.2
RN73 2E (1210)	2.0	1.15	2.50 ±0.2
RN73 2H (2010)	3.6	1.4	2.50 ±0.2
RN73 3A (2512)	4.9	1.6	3.10 ±0.2

Packaging Quantity & Reel Specifications



Type	øA	øB	øC	W	T	Paper Tape (EA)	Embossed Plastic Tape (EA)
RN73 1E (0402)	178.0 ±1.0	60.0 +1.0	13.5 ± 0.7	9.5 ±1.0	11.5 ±1.0	*250 / 1000 / 5000	-
RN73 1J (0603)	178.0 ±1.0	60.0 +1.0	13.5 ± 0.7	9.5 ±1.0	11.5 ±1.0	*250 / 1000 / 5000	-
RN73 2A (0805)	178.0 ±1.0	60.0 +1.0	13.5 ± 0.7	9.5 ±1.0	11.5 ±1.0	*250 / 1000 / 5000	-
RN73 2B (1206)	178.0 ±1.0	60.0 +1.0	13.5 ± 0.7	9.5 ±1.0	11.5 ±1.0	*250 / 1000 / 5000	-
RN73 2E (1210)	178.0 ±1.0	60.0 +1.0	13.5 ± 0.7	9.5 ±1.0	11.5 ±1.0	*250 / 1000 / 5000	-
RN73 2H (2010)	178.0 ±1.0	60.0 +1.0	13.5 ± 0.7	13.5 ±1.0	15.5 ±1.0	-	4000
RN73 3A (2512)	178.0 ±1.0	60.0 +1.0	13.5 ± 0.7	13.5 ±1.0	15.5 ±1.0	-	4000

\* 250 piece packs supplied in sealed bags of cut tape length

**Paper Tape Specification**



Type	A	B	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	øD <sub>0</sub>	T
RN73 1E (0402)	0.70 ±0.05	1.16 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	2.00 ±0.05	2.00 ±0.05	1.55 ±0.05	0.40 ±0.03
RN73 1J (0603)	1.10 ±0.05	1.90 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05	0.60 ±0.03
RN73 2A (0805)	1.60 ±0.05	2.37 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05	0.75 ±0.05
RN73 2B (1206)	2.00 ±0.05	3.55 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05	0.75 ±0.05
RN73 2E (1210)	2.75 ±0.05	3.40 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.05	4.00 ±0.10	2.00 ±0.05	1.60 ±0.10	0.75 ±0.05

**Embossed Plastic Tape Specifications**



Type	A	B	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	øD <sub>0</sub>	T
RN73 2H (2010)	2.85 ±0.10	5.45 ±0.10	12.0 ±0.10	1.75 ±0.10	5.5 ±0.05	4.00 ±0.05	4.00 ±0.10	2.00 ±0.05	1.50 +0.10	1.00 ±0.20
RN73 3A (2512)	3.40 ±0.10	6.65 ±0.10	12.0 ±0.10	1.75 ±0.10	5.5 ±0.05	4.00 ±0.05	4.00 ±0.10	2.00 ±0.05	1.50 +0.10	1.00 ±0.20

**How to Order**

RN73	C	2A	100K	B	TDF
Common Part	Temp. Coefficient	Package Size	Resistor Value	Tolerance	Packaging
RN73 - High precision resistors (RoHS compliant)	A - ±5ppm/°C *C - ±10ppm/°C  * Preferred stock item	1E - 0402 * 1J - 0603 * 2A - 0805 2B - 1206 2E - 1210 2H - 2010 3A - 2512  * Preferred stock item	100R (100 ohms) 1K0 (1000 ohms) 100K (100,000 ohms)	A - ±0.05% *B - ±0.1% L - ±0.01%  * Preferred stock item	TG - 250 Cut tape length (1E, 1J, 2A, 2B) TDF - 1000 REEL (1E, 1J, 2A, 2B) TD - 5000 REEL (1E, 1J, 2A, 2B, 2E) TDG - 250 REEL (1E, 1J, 2A only) TE - 4000 REEL (2H, 3A only)