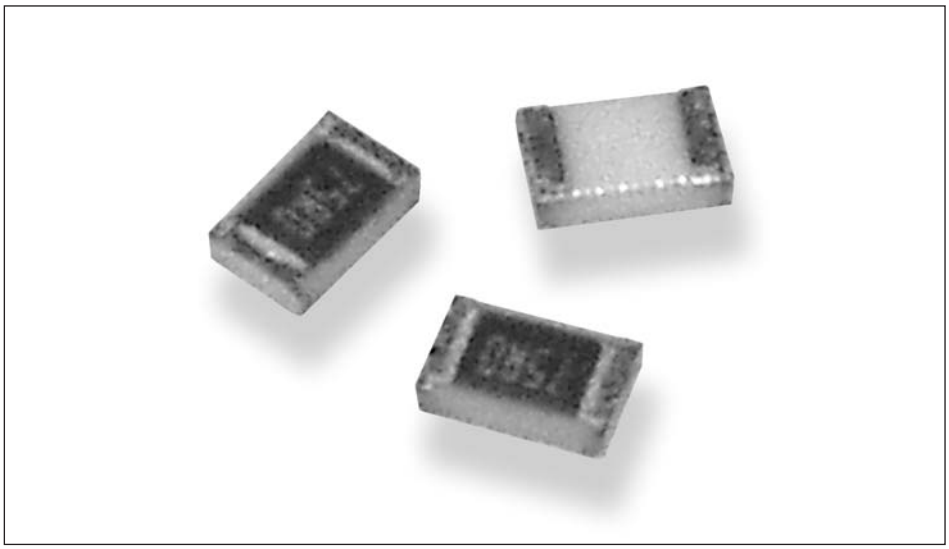
# Type RN73 Series

## 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 | 49R9 | 24R9 | 24R9 | 24R9 | 4R7 | 24R9 | 4R7 | 24R9 | 24R9 | 24R9 | 4R3 | 24R9 | 4R3 |
| | Max: | 5K0 | 15K | 5K0 | 15K | 5K0 | 15K | 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% | | | | | |



Dimensions are in millimeters and inches unless otherwise specified. Values in brackets are standard equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

# Type RN73 Series

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

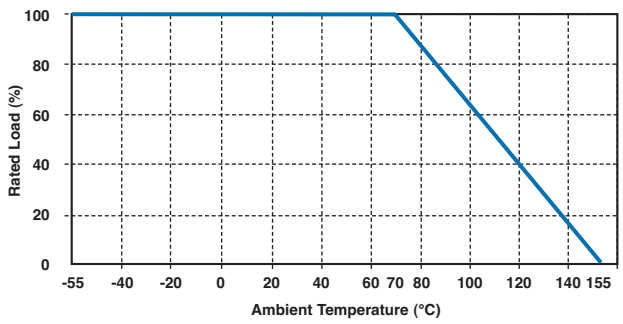
## Characteristics - Environmental

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

**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.



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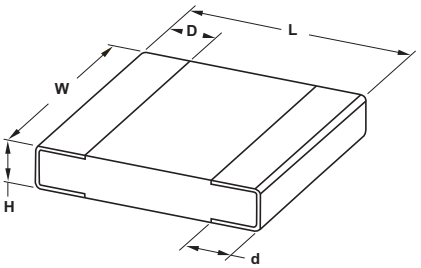
# Type RN73 Series

## 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 | $10^0$ | $10^1$ | $10^2$ | $10^3$ | $10^4$ | $10^5$ | $10^6$ | $10^7$ | $10^{-1}$ | $10^{-2}$ | $10^{-3}$ |



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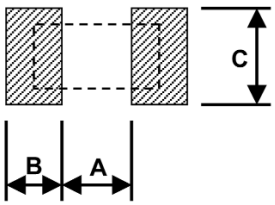
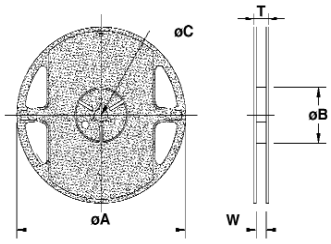
# Type RN73 Series

## 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



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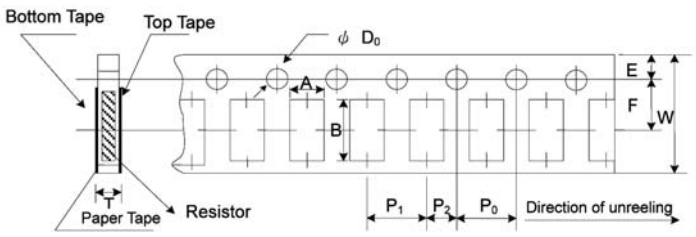
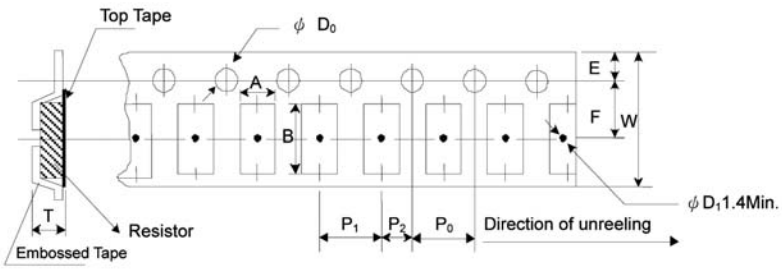
# Type RN73 Series

## Paper Tape Specification




| Type | A | B | W | E | F | $P_0$ | $P_1$ | $P_2$ | ø$D_0$ | 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 | $P_0$ | $P_1$ | $P_2$ | ø$D_0$ | 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<br>*C - ±10ppm/°C<br>* Preferred stock item | 1E - 0402<br>*1J - 0603<br>*2A - 0805<br>2B - 1206<br>2E - 1210<br>2H - 2010<br>3A - 2512<br>* Preferred stock item | 100R (100 ohms)<br>1K0 (1000 ohms)<br>100K (100,000 ohms) | A - ±0.05%<br>*B - ±0.1%<br>L - ±0.01%<br>* Preferred stock item | TG - 250 Cut tape length (1E, 1J, 2A, 2B)<br>TDF -1000 REEL (1E, 1J, 2A, 2B)<br>TD - 5000 REEL (1E, 1J, 2A, 2B, 2E)<br>TDG - 250 REEL (1E, 1J, 2A only)<br>TE - 4000 REEL (2H, 3A only) |

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