## ULTRA PRECISION CHIP RESISTORS

## BLU SERIES

$\square$ Industry's widest range of precision chip resistors!
$\square$ Tolerance to $\pm 0.01 \%$, TCR to $5 \mathrm{ppm} /{ }^{\circ} \mathrm{C}$

## CUSTOM OPTIONS

$\square$ Option P: Pulse resistant design
$\square$ Option ER: Burn-In for Hi-Rel applications
$\square$ Option V: $+200^{\circ}$ operating temperature
$\square$ Option A: Marking of resis. code in 3 or 4 digits (not available on BLU0201 or BLU0402)
$\square$ Matched sets and TC's to 2ppm available (limited range)

## 'Blu-Chip' performance at an economical price!

RCD's expertise in the field of ultra-precision resistors since 1973, combined with the latest in automated chip resistor production equipment, enables precision chip resistors at prices comparable to lower grade devices. The BLU-chip design features excellent stability levels. Intermediate and extended-range values are available on custom basis. Popular values are available from stock.

| $\begin{aligned} & \text { RCD } \\ & \text { Type } \end{aligned}$ | Power <br> @ $70^{\circ} \mathrm{C}$ | Max. Working Voltage* | $\begin{gathered} \text { TCR }^{2} \\ \left(\mathrm{PPM} /{ }^{\circ} \mathrm{C}\right) \end{gathered}$ | Standard Resistance Range ${ }^{1}$ |  |  |  | Dimensions |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | 0.01\% | .02\%, .05\% | 0.1\%,0.25\% | 0.5\%, 1\% | L | W | T | t |
| BLU0201 | .05W | 15V | 10, 15 | N/A | N/A | 100 2 - 10K | 100 - 10K | $\begin{gathered} .020 \pm .004 \\ {[.5 \pm .1]} \end{gathered}$ | $\begin{gathered} .01 \pm .002 \\ {[.25 \pm .05]} \end{gathered}$ | $\begin{gathered} .014 \pm .004 \\ {[.35 \pm .1]} \end{gathered}$ | $\begin{gathered} 01 \pm .005 \\ {[.25 \pm .12]} \end{gathered}$ |
|  |  |  | 25,50 | N/A | N/A | 100 2 - 10K | $33 \Omega-22 \mathrm{~K}$ |  |  |  |  |
|  |  |  | 100 | N/A | N/A | 100 2 - 10K | 10, -22K |  |  |  |  |
| BLU0402 | .062W | 25 V | 5 | $50 \Omega-2 \mathrm{~K}$ | $50 \Omega-2 \mathrm{~K}$ | $51 \Omega-2 \mathrm{~K}$ | $50 \Omega-2 \mathrm{~K}$ | $\begin{gathered} .040 \pm .004 \\ {[1.0 \pm .1]} \end{gathered}$ | $\begin{aligned} & .020 \pm .002 \\ & {[.5 \pm .05]} \end{aligned}$ | $\begin{gathered} .014 \pm .004 \\ {[.35 \pm .1]} \end{gathered}$ | $\begin{gathered} .01 \pm .005 \\ {[.25 \pm .12]} \end{gathered}$ |
|  |  |  | 10, 15 | $50 \Omega-12 \mathrm{~K}$ | $50 \Omega-12 \mathrm{~K}$ | 51 $\Omega$-12K | 25ת-12K |  |  |  |  |
|  |  |  | 25 | $50 \Omega-12 \mathrm{~K}$ | $50 \Omega-12 \mathrm{~K}$ | 10, -100K | $10 \Omega-100 \mathrm{~K}$ |  |  |  |  |
|  |  |  | 50,100 | $50 \Omega-12 \mathrm{~K}$ | $50 \Omega$-12K | 10, -100K | 10, -1M |  |  |  |  |
| BLU0603 | .1W | 75V | 5 | $50 \Omega-8 \mathrm{~K}$ | $50 \Omega-8 \mathrm{~K}$ | $50 \Omega-8 \mathrm{~K}$ | $50 \Omega-8 \mathrm{~K}$ | $\begin{aligned} & .063 \pm .008 \\ & {[1.6 \pm .2]} \end{aligned}$ | $\begin{gathered} .031 \pm .006 \\ {[.8 \pm .15]} \end{gathered}$ | $\begin{aligned} & .018 \pm .006 \\ & {[.45 \pm .15]} \end{aligned}$ | $\begin{gathered} .012 \pm .008 \\ {[.3 \pm .2]} \end{gathered}$ |
|  |  |  | 10, 15 | $25 \Omega-100 \mathrm{~K}$ | $25 \Omega-100 \mathrm{~K}$ | $10 \Omega-402 \mathrm{~K}$ | $25 \Omega-100 \mathrm{~K}$ |  |  |  |  |
|  |  |  | 25 | $25 \Omega-100 \mathrm{~K}$ | $4.7 \Omega$-150K | $4.7 \Omega-402 \mathrm{~K}$ | $2 \Omega-402 \mathrm{~K}$ |  |  |  |  |
|  |  |  | 50,100 | $25 \Omega-100 \mathrm{~K}$ | $4.7 \Omega-150 \mathrm{~K}$ | 4.7 $\Omega$-402K | $2 \Omega-1 \mathrm{M}$ |  |  |  |  |
| BLU0805 | .125W | 100V | 5 | $50 \Omega-16 \mathrm{~K}$ | $50 \Omega$-16K | $50 \Omega-16 \mathrm{~K}$ | $50 \Omega-16 \mathrm{~K}$ | $\begin{aligned} & .079 \pm .006 \\ & {[2.0 \pm .15]} \end{aligned}$ | $\begin{aligned} & .050 \pm .006 \\ & {[1.25 \pm .15]} \end{aligned}$ | $\begin{aligned} & .018 \pm .006 \\ & {[.45 \pm .15]} \end{aligned}$ | $\begin{aligned} & .014 \pm .008 \\ & {[.35 \pm .2]} \end{aligned}$ |
|  |  |  | 10, 15 | $25 \Omega-200 \mathrm{~K}$ | $25 \Omega-200 \mathrm{~K}$ | $10 \Omega-499 \mathrm{~K}$ | $25 \Omega-200 \mathrm{~K}$ |  |  |  |  |
|  |  |  | 25,50,100 | 25, -200K | 4.7 - -500K | 4.7 - 1M | 1 $\Omega$-1M |  |  |  |  |
| BLU1206 | .25W | 150V | 5 | $50 \Omega-30 \mathrm{~K}$ | $50 \Omega-30 \mathrm{~K}$ | $50 \Omega-30 \mathrm{~K}$ | $50 \Omega-30 \mathrm{~K}$ | $\begin{aligned} & .126 \pm .006 \\ & {[3.2 \pm .15]} \end{aligned}$ | $\begin{gathered} .063 \pm .006 \\ {[1.6 \pm .15]} \end{gathered}$ | $\begin{aligned} & .020 \pm .006 \\ & {[.50 \pm .15]} \end{aligned}$ | $\begin{gathered} .020 \pm .010 \\ {[.51 \pm .25]} \end{gathered}$ |
|  |  |  | 10, 15 | $25 \Omega-500 \mathrm{~K}$ | $25 \Omega-500 \mathrm{~K}$ | $10 \Omega-1 \mathrm{M}$ | $25 \Omega-500 \mathrm{~K}$ |  |  |  |  |
|  |  |  | 25,50,100 | 25, -500K | 4.7 - 1M | 4.7 - 1M | 1 $\Omega$-2M |  |  |  |  |
| BLU1210 | .33W | 150V | 5,10 | $100 \Omega-30 \mathrm{~K}$ | 100 2 -330K | $100 \Omega-330 \mathrm{~K}$ | $100 \Omega-330 \mathrm{~K}$ | $\begin{aligned} & .126 \pm .006 \\ & {[3.2 \pm .15]} \end{aligned}$ | $\begin{aligned} & .098 \pm .008 \\ & {[2.5 \pm .2]} \end{aligned}$ | $\begin{aligned} & .024 \pm .008 \\ & {[.61 \pm .2]} \end{aligned}$ | $\begin{aligned} & .020 \pm .010 \\ & {[.51 \pm .25]} \end{aligned}$ |
|  |  |  | 25 | $51 \Omega-500 \mathrm{~K}$ | $51 \Omega-2 \mathrm{M}$ |  |  |  |  |  |  |
|  |  |  | 50,100 | $51 \Omega-500 \mathrm{~K}$ | $51 \Omega-2 \mathrm{M}$ | 51 $\Omega$ - 2 M | $10 \Omega-4.7 \mathrm{M}$ |  |  |  |  |
| BLU2010 | .5W | 150V | 5 | $50 \Omega-30 \mathrm{~K}$ | $50 \Omega-30 \mathrm{~K}$ | $50 \Omega-30 \mathrm{~K}$ | $50 \Omega-30 \mathrm{~K}$ | $\begin{gathered} .197 \pm .008 \\ {[5 \pm .2]} \end{gathered}$ | $\begin{aligned} & .098 \pm .008 \\ & {[2.5 \pm .2]} \end{aligned}$ | $\begin{aligned} & .024 \pm .008 \\ & {[.61 \pm .2]} \end{aligned}$ | $\begin{aligned} & .024 \pm .008 \\ & {[.61 \pm .2]} \end{aligned}$ |
|  |  |  | 10, 15 | $25 \Omega-500 \mathrm{~K}$ | $25 \Omega-500 \mathrm{~K}$ | $10 \Omega-1 \mathrm{M}$ | $25 \Omega-500 \mathrm{~K}$ |  |  |  |  |
|  |  |  | 25,50,100 | $25 \Omega-500 \mathrm{~K}$ | $4.7 \Omega-1 \mathrm{M}$ | $4.7 \Omega-1 \mathrm{M}$ | 1 $\Omega$-2M |  |  |  |  |
| BLU2512 | 1W | 200V | 5 | $50 \Omega-50 \mathrm{~K}$ | $50 \Omega-50 \mathrm{~K}$ | $50 \Omega-50 \mathrm{~K}$ | $50 \Omega-50 \mathrm{~K}$ | $\begin{aligned} & .248 \pm .008 \\ & {[6.3 \pm .2]} \end{aligned}$ | $\begin{aligned} & .126 \pm .008 \\ & {[3.2 \pm .2]} \end{aligned}$ | $\begin{aligned} & .024 \pm .008 \\ & {[.61 \pm .2]} \end{aligned}$ | $\begin{aligned} & .024 \pm .008 \\ & {[.61 \pm .2]} \end{aligned}$ |
|  |  |  | 10, 15 | $25 \Omega-500 \mathrm{~K}$ | $25 \Omega-500 \mathrm{~K}$ | $10 \Omega-1 \mathrm{M}$ | $25 \Omega-500 \mathrm{~K}$ |  |  |  |  |
|  |  |  | 25,50,100 | $25 \Omega-500 \mathrm{~K}$ | $4.7 \Omega-1 \mathrm{M}$ | $4.7 \Omega-1 \mathrm{M}$ | $1 \Omega-2 \mathrm{M}$ |  |  |  |  |

${ }^{*}$ Maximum working voltage determined by $\mathrm{E}=\sqrt{\mathrm{PR}, \mathrm{E}}$ should not exceed value listed. Increased voltage ratings available. ${ }^{1}$ Extended range available, consult factory. ${ }^{2} \mathrm{TC}$ measured $25^{\circ}-100^{\circ} \mathrm{C}$

TYPICAL PERFORMANCE CHARACTERISTICS

| Requirements | Characteristics (5-25ppm) | Test Method |
| :--- | :--- | :--- |
| Short Time Overload, 5 Sec. | $\pm 0.1 \% \Delta \mathrm{R}$ | Rated W x 2.5, nte 2x Max..Voltage |
| Resistance to Solder Heat | $\pm 0.05 \% \Delta \mathrm{R}$ | $260 \pm 5^{\circ} \mathrm{C}, 3$ seconds |
| High Temperature Exposure | $\pm 0.1 \% \Delta \mathrm{R}$ | 100 hours @ $+125^{\circ} \mathrm{C}$ |
| Thermal Shock | $\pm 0.1 \% \Delta \mathrm{R}$ | $-55^{\circ} \mathrm{C}$ to $+125^{\circ} \mathrm{C}, 0.5 \mathrm{hrs}, 5 \mathrm{cycles}$ |
| Moisture Resistance | $\pm 0.2 \% \Delta \mathrm{R}$ | Mil-STD-202 M103 95\% RH 1000hrs |
| Load Life (1000 hours) | $\pm 0.1 \%( \pm .25 \% 10,000 \mathrm{hrs})$ | Mil-PRF-55342G 4.8.11.1 ceramic |
| Solderability | $95 \%$ (Min.) | MIL-Std-202, Method 208 |
| Shelf Life | 100 ppm/year (Max.) | Room Temp. \& Humidity, No-Load |
| Dielectric Withstand Voltage | 250 V (100V 0402 \& 0603) | 60 Seconds, terminal to ceramic |

## CONSTRUCTION



To ensure utmost reliability, care should be taken to avoid potential sources of ionic contamination.

* The typical $\Delta \mathrm{R}$ of chips with $50-100 \mathrm{ppm}$ TC is double that of chips with 5 to 25 ppm TC


DERATING CURVE
Resistors may be operated up to full rated power with consideration of mounting density, pad geometry, PCB material, and ambient temperature.


RCD Components Inc, 520 E.Industrial Park Dr, Manchester, NH, USA 03109 rcdcomponents.com Tel: 603.669-0054 Fax: 603.669.5455 Email:sales@rcdcomponents.com FA013G Sale of this product is in accordance with GF-061. Specifications subject to change without notice.

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