

Chart 1 — Resistor Color Code

4-BAND, 5-BAND AND 6-BAND • READ FROM THE GROUPED END **How to read it.** Hold the resistor so the bands are grouped toward the left. The tolerance band is separated by a wider gap, and gold or silver is *always* tolerance. If in doubt, read it both ways and choose the answer that is a standard E-series value (Chart 18).

Color	Digit	Multiplier	Tolerance	Temp. Coeff.
 Black	0	×1	—	250 ppm
 Brown	1	×10	±1%	100 ppm
 Red	2	×100	±2%	50 ppm
 Orange	3	×1 k	—	15 ppm
 Yellow	4	×10 k	—	25 ppm
 Green	5	×100 k	±0.5%	20 ppm
 Blue	6	×1 M	±0.25%	10 ppm
 Violet	7	×10 M	±0.1%	5 ppm
 Gray	8	×100 M	±0.05%	1 ppm
 White	9	×1 G	—	—
 Gold	—	×0.1	±5%	—
 Silver	—	×0.01	±10%	—
(no band)	—	—	±20%	—

WARNING

Never trust the bands alone on a part that looks heat-damaged, discolored or cracked — heat drifts resistors high while leaving the markings perfectly readable. Measure it.

Band layouts

Bands	Meaning of each band, left to right	Example
4-band	Digit • Digit • Multiplier • Tolerance	Brown-Black-Red-Gold = 1 kΩ ±5%
5-band	Digit • Digit • Digit • Multiplier • Tolerance	Brown-Black-Black-Brown-Brown = 1 kΩ ±1%
6-band	Digit • Digit • Digit • Multiplier • Tolerance • TempCo	As 5-band, plus a temperature coefficient band
3-band	Digit • Digit • Multiplier (tolerance assumed ±20%)	Brown-Black-Red = 1 kΩ ±20%

Worked examples

Bands	Calculation	Value
Brown · Black · Orange · Gold	$10 \times 1,000$	10 k Ω $\pm 5\%$
Yellow · Violet · Red · Gold	47×100	4.7 k Ω $\pm 5\%$
Red · Red · Brown · Gold	22×10	220 Ω $\pm 5\%$
Brown · Black · Green · Gold	$10 \times 100,000$	1 M Ω $\pm 5\%$
Orange · Orange · Gold · Gold	33×0.1	3.3 Ω $\pm 5\%$
Brown · Green · Black · Red · Brown	150×100	15 k Ω $\pm 1\%$