

Electronic Component Codes

Quick reference for instrumentation and control engineers



instrumentationblog.in

Resistor colour code

Colour	Digit	Multiplier	Tolerance
Black	0	$\times 1$	
Brown	1	$\times 10$	$\pm 1 \%$
Red	2	$\times 100$	$\pm 2 \%$
Orange	3	$\times 1k$	
Yellow	4	$\times 10k$	
Green	5	$\times 100k$	$\pm 0.5 \%$
Blue	6	$\times 1M$	$\pm 0.25 \%$
Violet	7	$\times 10M$	$\pm 0.1 \%$
Grey	8		$\pm 0.05 \%$
White	9		
Gold		$\times 0.1$	$\pm 5 \%$
Silver		$\times 0.01$	$\pm 10 \%$
None			$\pm 20 \%$

Reading bands

- 4 band: digit, digit, multiplier, tolerance (yellow violet red gold = $4.7 k\Omega \pm 5 \%$)
- 5 band: digit, digit, digit, multiplier, tolerance
- The tolerance band is usually spaced apart or gold/silver

SMD resistor codes

Code	Value	Rule
472	4.7	3 digit: $47 \times 10^2 k\Omega$
1002	10 k Ω	4 digit: 100×10^2
4R7	4.7 Ω	R = decimal point
01C	10 k Ω	EIA 96: 100×100
000	0 Ω	Jumper

EIA 96 multiplier letters

Letter	Multiplier
Z	$\times 0.001$
Y or R	$\times 0.01$
X or S	$\times 0.1$
A	$\times 1$
B or H	$\times 10$
C	$\times 100$
D	$\times 1000$
E	$\times 10,000$
F	$\times 100,000$

Capacitor codes

Code	Value
104	100 nF = 0.1 μ F
103	10 nF
102	1 nF
473	47 nF
105	1 μ F
4n7	4.7 nF
47	47 pF

Value in pF = first two digits $\times 10^{\text{third digit}}$ ($8 = \times 0.01$, $9 = \times 0.1$).

Tolerance letters

Letter	Tolerance
B	$\pm 0.1 pF$
C	$\pm 0.25 pF$
D	$\pm 0.5 pF$
F	$\pm 1 \%$
G	$\pm 2 \%$
J	$\pm 5 \%$
K	$\pm 10 \%$
M	$\pm 20 \%$
Z	+80 / -20 %

Standard values (per decade)

Series	Values
E6 ($\pm 20 \%$)	1.0 1.5 2.2 3.3 4.7 6.8
E12 ($\pm 10 \%$)	1.0 1.2 1.5 1.8 2.2 2.7 3.3 3.9 4.7 5.6 6.8 8.2
E24 ($\pm 5 \%$)	1.0 1.1 1.2 1.3 1.5 1.6 1.8 2.0 2.2 2.4 2.7 3.0 3.3 3.6 3.9 4.3 4.7 5.1 5.6 6.2 6.8 7.5 8.2 9.1

SMD package power (typical)

Package	Power
0402	1/16 W
0603	1/10 W
0805	1/8 W
1206	1/4 W
2512	1 W