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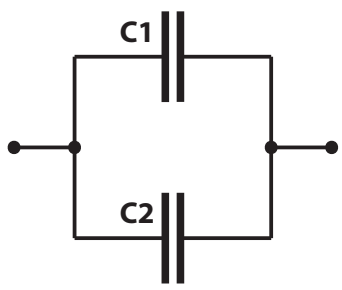
Capacitor Codes And Values Reference Chart

Microfarad	Nanofarad	Picofarad	European	EIA/MIL	Colour Band Code
0.001uF	1.0nF	1000pF	1n0	102	Brown-Black-Red
0.0012uF	1.2nF	1200pF	1n2	122	Brown-Red-Red
0.0015uF	1.5nF	1500pF	1n5	152	Brown-Green-Red
0.0018uF	1.8nF	1800pF	1n8	182	Brown-Grey-Red
0.0022uF	2.2nF	2200pF	2n2	222	Red-Red-Red
0.0027uF	2.7nF	2700pF	2n7	272	Red-Violet-Red
0.0033uF	3.3nF	3300pF	3n3	332	Orange-Orange-Red
0.0039uF	3.9nF	3900pF	3n9	392	Orange-White-Red
0.0047uF	4.7nF	4700pF	4n7	472	Yellow-Violet-Red
0.0056uF	5.6nF	5600pF	5n6	562	Green-Blue-Red
0.0068uF	6.8nF	6800pF	6n8	682	Blue-Grey-Red
0.0082uF	8.2nF	8200pF	8n2	822	Grey-Red-Red
0.01uF	10nF	10x10^3pF	10n	103	Brown-Black-Orange
0.012uF	12nF	12x10^3pF	12n	123	Brown-Red-Orange
0.015uF	15nF	15x10^3pF	15n	153	Brown-Green-Orange
0.018uF	18nF	18x10^3pF	18n	183	Brown-Grey-Orange
0.022uF	22nF	22x10^3pF	22n	223	Red-Red-Orange
0.027uF	27nF	27x10^3pF	27n	273	Red-Violet-Orange
0.033uF	33nF	33x10^3pF	33n	333	Orange-Orange-Orange
0.039uF	39nF	39x10^3pF	39n	393	Orange-White-Orange
0.047uF	47nF	47x10^3pF	47n	473	Yellow-Violet-Orange
0.056uF	56nF	56x10^3pF	56n	563	Green-Blue-Orange
0.068uF	68nF	68x10^3pF	68n	683	Blue-Grey-Orange
0.082uF	82nF	82x10^3pF	82n	823	Grey-Red-Orange
0.1uF	100nF	10x10^4pF	100n	104	Brown-Black-Yellow
0.12uF	120nF	12x10^4pF	120n	124	Brown-Red-Yellow
0.15uF	150nF	15x10^4pF	150n	154	Brown-Green-Yellow
0.18uF	180nF	18x10^4pF	180n	184	Brown-Grey-Yellow
0.22uF	220nF	22x10^4pF	220n	224	Red-Red-Yellow
0.27uF	270nF	27x10^4pF	270n	274	Red-Violet-Yellow
0.33uF	330nF	33x10^4pF	330n	334	Orange-Orange-Yellow
0.39uF	390nF	39x10^4pF	390n	394	Orange-White-Yellow
0.47uF	470nF	47x10^4pF	470n	474	Yellow-Violet-Yellow
0.56uF	560nF	56x10^4pF	560n	564	Green-Blue-Yellow
0.68uF	680nF	68x10^4pF	680n	684	Blue-Grey-Yellow
0.82uF	820nF	82x10^4pF	820n	824	Grey-Red-Yellow
1.0uF	1000nF	10x10^5pF	1u	105	Brown-Black-Green
1.2uF	1200nF	12x10^5pF	1u2	125	Brown-Red-Green
1.5uF	1500nF	15x10^5pF	1u5	155	Brown-Green-Green
1.8uF	1800nF	18x10^5pF	1u8	185	Brown-Grey-Green
2.2uF	2200nF	22x10^5pF	2u2	225	Red-Red-Green
2.7uF	2700nF	27x10^5pF	2u7	275	Red-Violet-Green
3.3uF	3300nF	33x10^5pF	3u3	335	Orange-Orange-Green
3.9uF	3900nF	39x10^5pF	3u9	395	Orange-White-Green
4.7uF	4700nF	47x10^5pF	4u7	475	Yellow-Violet-Green
5.6uF	5600nF	56x10^5pF	5u6	565	Green-Blue-Green
6.8uF	6800nF	68x10^5pF	6u8	685	Blue-Grey-Green
8.2uF	8200nF	82x10^5pF	8u2	825	Grey-Red-Green
10uF	10000nF	10x10^6pF	10u	106	Brown-Black-Blue
12uF	12000nF	12x10^6pF	12u	126	Brown-Red-Blue
15uF	15000nF	15x10^6pF	15u	156	Brown-Green-Blue
18uF	18000nF	18x10^6pF	18u	186	Brown-Grey-Blue
22uF	22000nF	22x10^6pF	22u	226	Red-Red-Blue
27uF	27000nF	27x10^6pF	27u	276	Red-Violet-Blue
33uF	33000nF	33x10^6pF	33u	336	Orange-Orange-Blue
39uF	39000nF	39x10^6pF	39u	396	Orange-White-Blue
47uF	47000nF	47x10^6pF	47u	476	Yellow-Violet-Blue
56uF	56000nF	56x10^6pF	56u	566	Green-Blue-Blue
68uF	68000nF	68x10^6pF	68u	686	Blue-Grey-Blue
82uF	82000nF	82x10^6pF	82u	826	Grey-Red-Blue
100uF	100,000nF	10x10^7pF	100u	107	Brown-Black-Violet
220uF	220,000nF	22x10^7pF	220u	227	Red-Red-Violet

Parallel Capacitors



Ctotal = C1 + C2 + C3

Series Capacitors

$$C_{total} = \frac{C1 \times C2}{C1 + C2}$$

Stored Charge

Q = V x C

Stored Energy

$$W = \frac{C \times V^2}{2}$$

Q = Charge in Coulombs
C = Capacitance in Farads (F)
V = Voltage
W = Energy in Joules (Watt-seconds)

Common Capacitor Types

Electrolytic

Polarised. Often used for filtering or smoothing power supply rails, for bypassing and coupling in audio circuits, and as a non-critical timing element.

Tantalum

Polarised. Physically smaller than electrolytics, and have a lower series equivalent resistance.

Ceramic

Low cost and high capacitance values in a small physical package. Often used in RF circuits due to tight tolerances and good stability. Monolithic multi-layer ceramics are commonly used as bypass capacitors.

Polyester

Very cheap, general purpose. Sometimes called "greencaps" because they are typically green.

Polycarbonate

Low temperature coefficient and low dielectric losses at high frequency, so usually used for applications where temperature stability is important.

Polystyrene

Tight tolerances, high stability, predictable temperature coefficient.

Polypropylene

Very low dielectric losses. Suitable for high power inverters and high voltage applications.

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