We have done lots of calculations of the power dissipated by resistors, and the limits to which they should be pushed.

For example, for 1/8 W resistors

$$P_r = \frac{V_{max}^2}{R} = \frac{1}{8} W$$

$$V_{max}^2 = \frac{R}{8}$$

$$V_{max} = \sqrt{\frac{R}{8}}.$$

R	V_{max}
1k	11.2 V
10k	35.4 V
100k	112 V

R	V_{max}
100Ω	3.5 V
200Ω	5 V
500Ω	7.9 V
1000Ω	11.2 V
10 kΩ	35.4 V
100 kΩ	112 V

BTW, this is an argument for how to size resistors. One rule of thumb is to make sure that, if the biggest voltage in your

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circuit was put across any resistor in that system, that resistor will not [redacted] be out of spec. So, if you have a ckt that runs on ±10 V, for a maximum difference of 20 V, the smallest 1/8 W resistor you could use would be about 3 kΩ (exactly: $R = 8 V_{max}^2 = 3200\ \Omega$)

You could even make a table that would show the smallest [redacted] power rating that could be used for each value of resistor,

Max $\Delta V = 20$ V

R	Smallest Power Rating
1	400 W
10	40 W
100	4 W
1 k	.4 W
10 k	.04 W

OR, you could state the Available Resistor Power Ratings and show the smallest R that can be used:

Ex. $\Delta V_{max} = 20\,V$

Available	(Intermittent) Smallest $R = \frac{1}{P} V_{max}^2$	Routine or expected
1/8 W	3200 Ω	1600
1/4 W	1600 Ω	800
1/2 W	800 Ω	400
1 W	400 Ω	200
2 W	200 Ω	80
5 W	80 Ω	
.		.
.		.

Show what happens if exceeded:

$\frac{1}{4}$ W, 100 Ω $\Rightarrow V_{max} = 5\,V$

$\frac{1}{4}$ W, 1 kΩ $\Rightarrow V_{max} = 15.8$

Demo

220 d

Capacitors are rated as follows:

Capacitance (C)
Working Voltage DC (WVDC)
Dielectric
Tolerance (J = ±5%, K = ±10%, M = ±20%)

The insulator between the plates, known as dielectric determines the properties of the capacitor. Some are good at high frequencies, some at low, some have high dielectric constants (high capacitance for small volume.) others lower, some are cheap, some ~~have h~~ lend themselves to high precision, etc.

The dielectric and the physical construction lead to a maximum voltage (WVDC) the capacitor can withstand without breaking down, usually shorting out.

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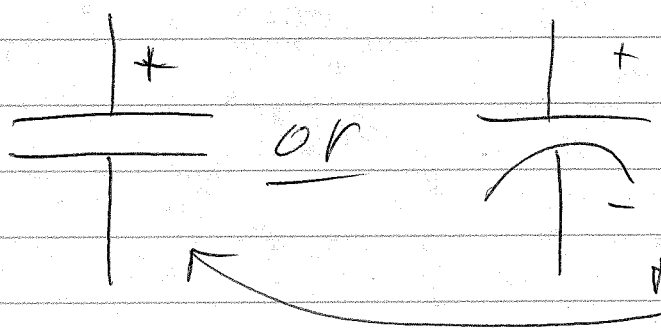
One way to get relatively high dielectric values is to use an electrolytic material.

These materials are "stronger" in one direction than the other, so they are "polarized":



In one of those bizarre circumstances, the way they are marked in schematics is NOT the way they are marked in real life: (Show electrolytics) where there is a "—" sign for one lead.

If you reverse the voltage + exceed rating, the dielectric breaks down + can even boil, leading to a mechanical failure.