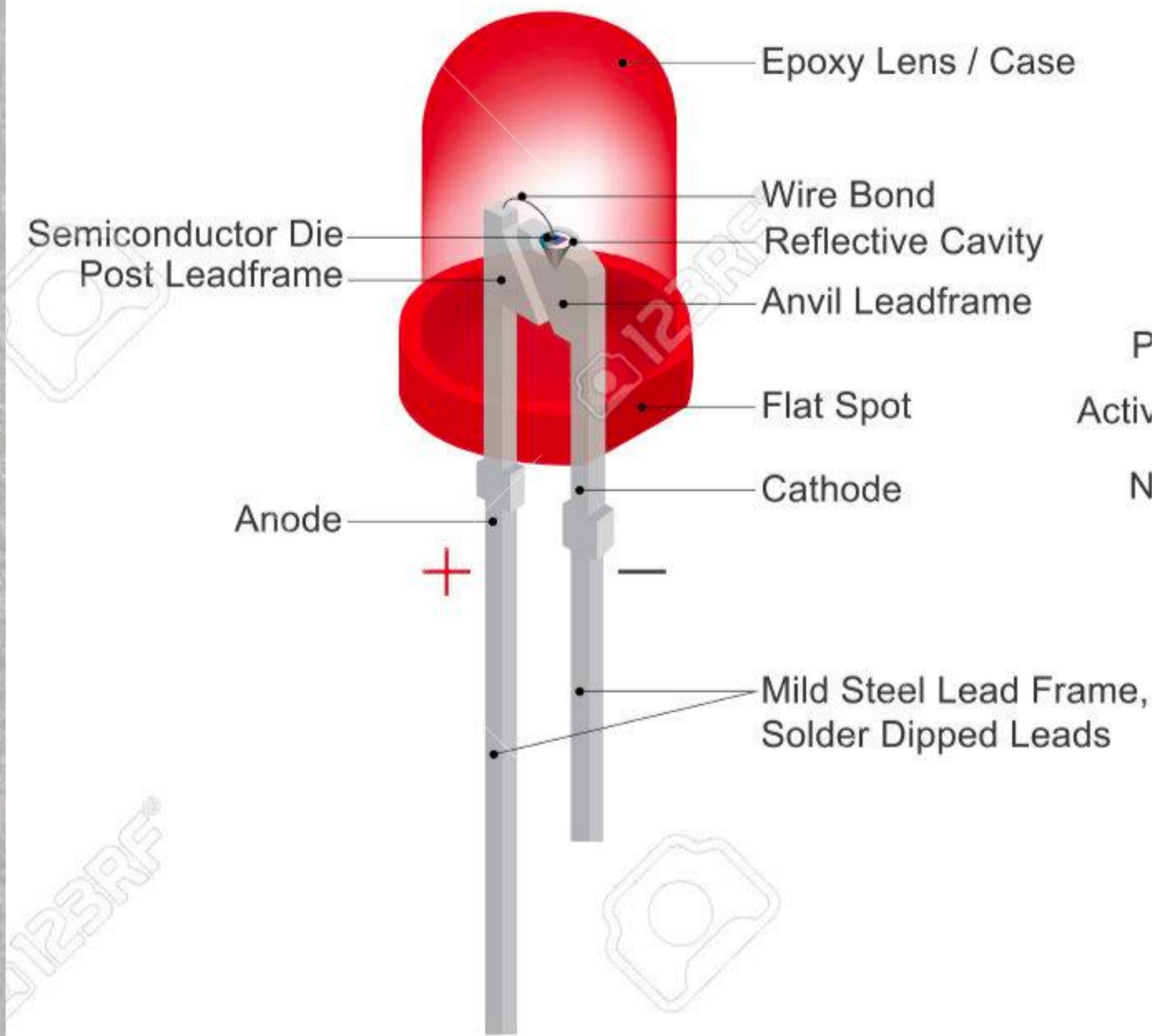
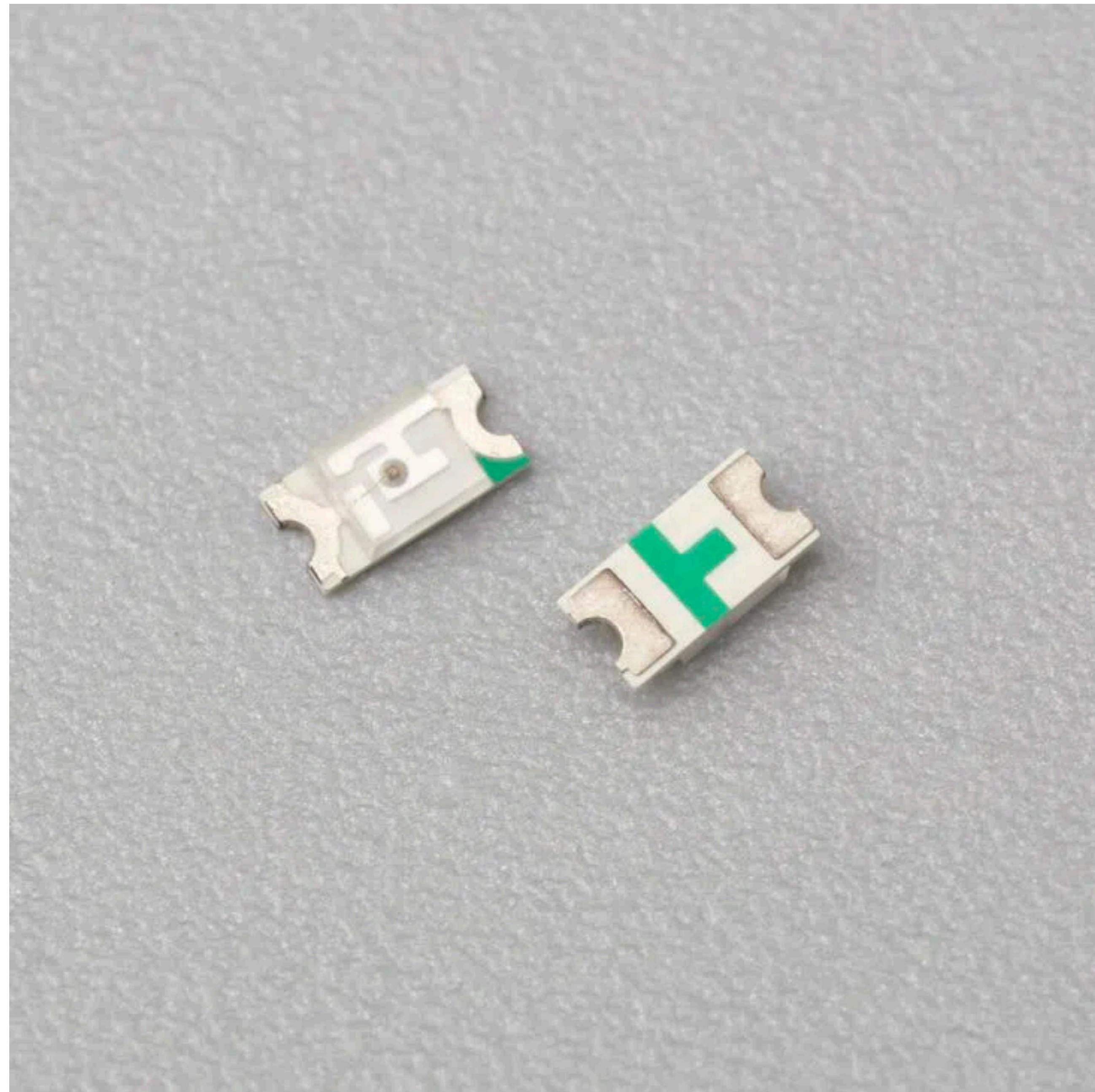


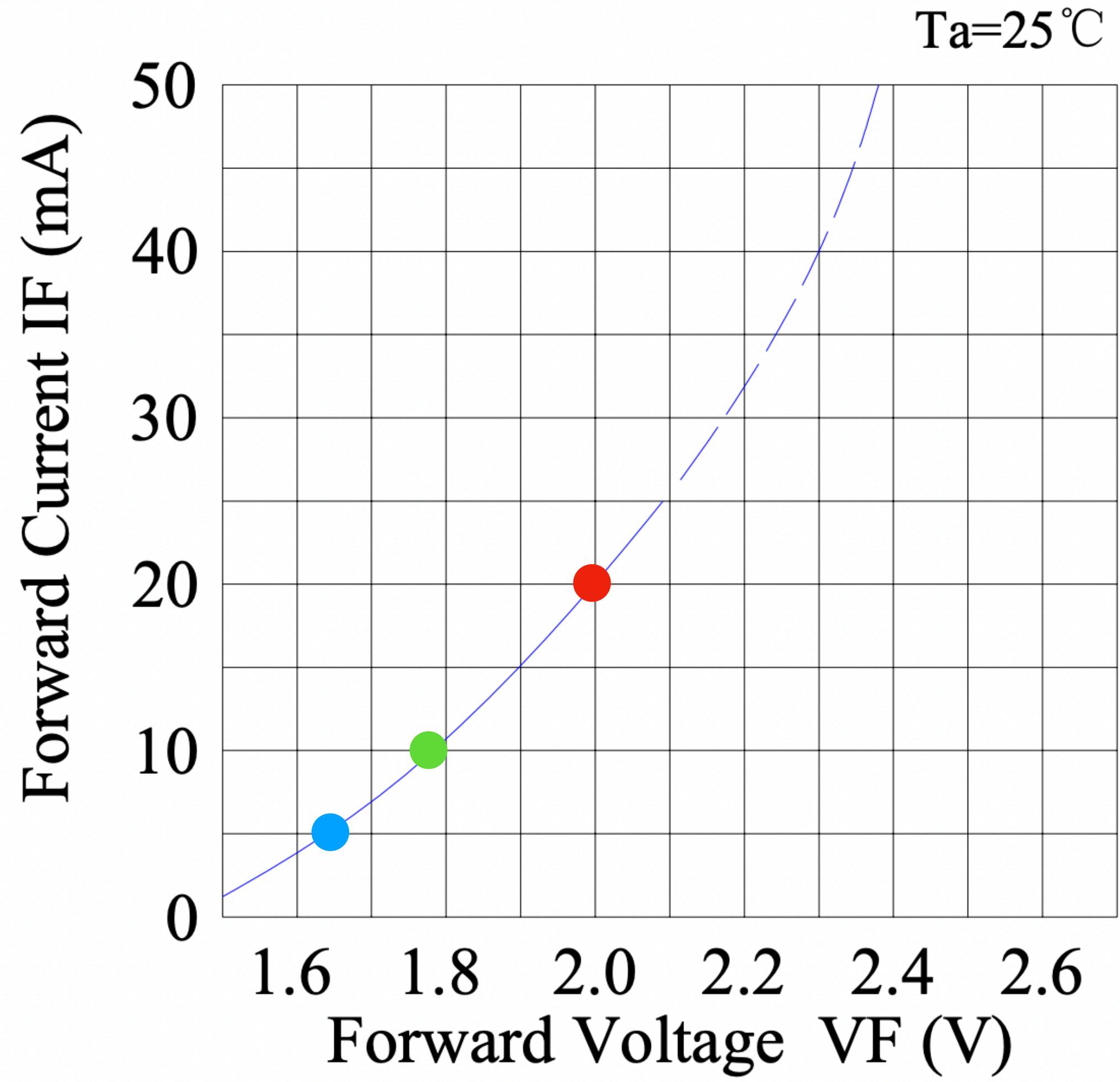
# **Electro Workshop 5**

**Dekorácia s LED diódami**

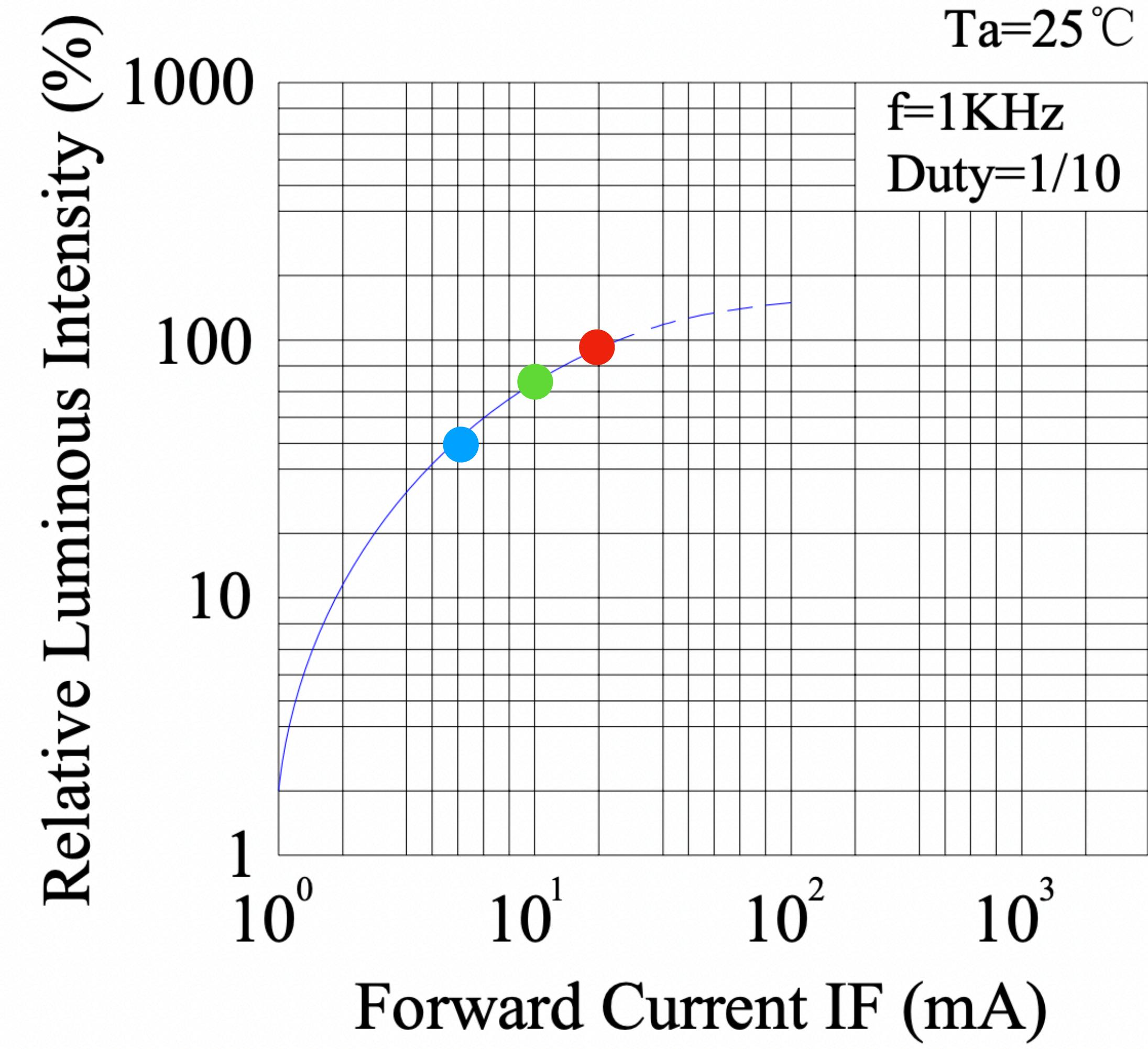
**Ing. Gabriel Valky, PhD.**

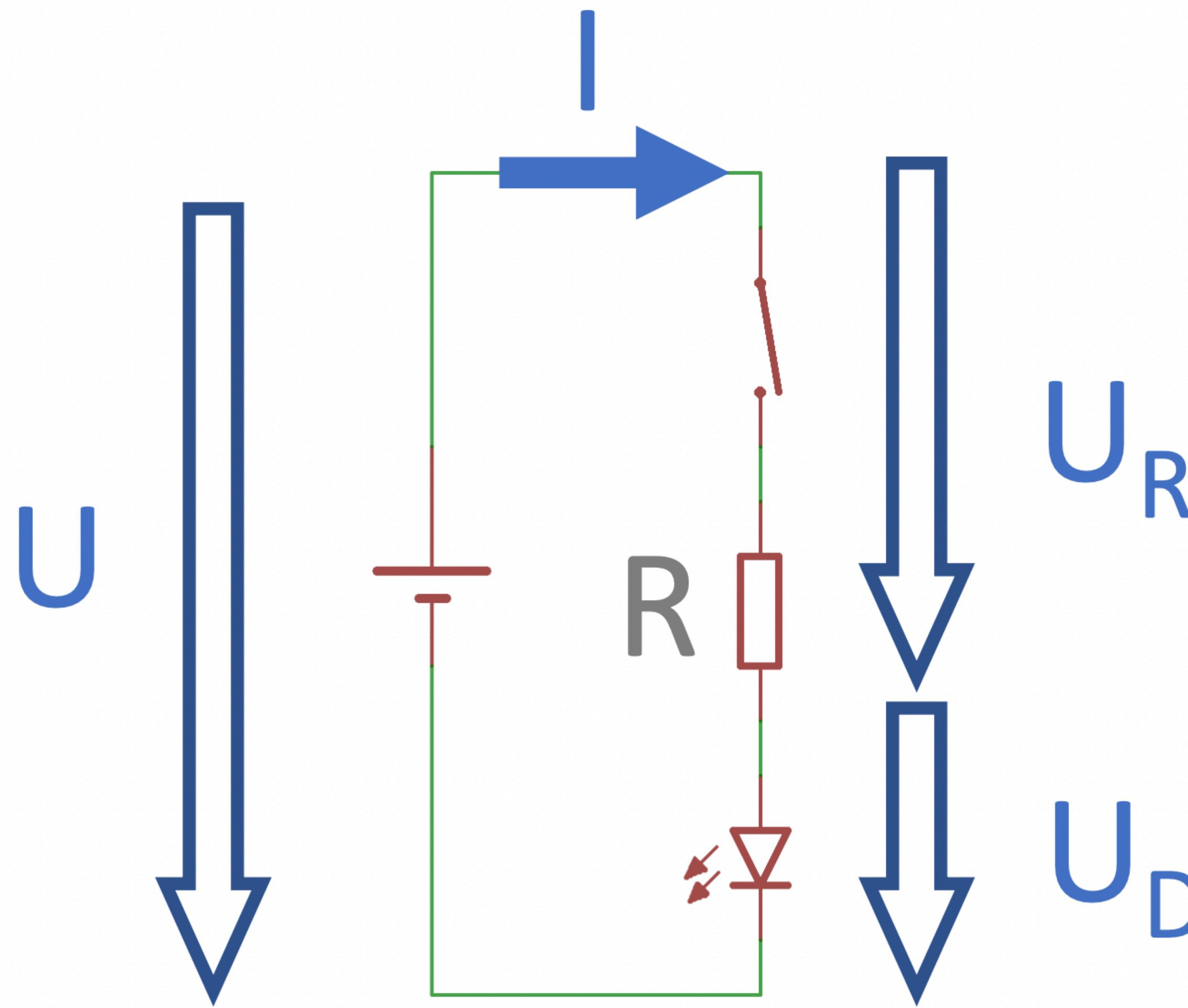


## Forward Current & Forward Voltage



## Luminous Intensity & Forward Current





$$U = U_R + U_D$$

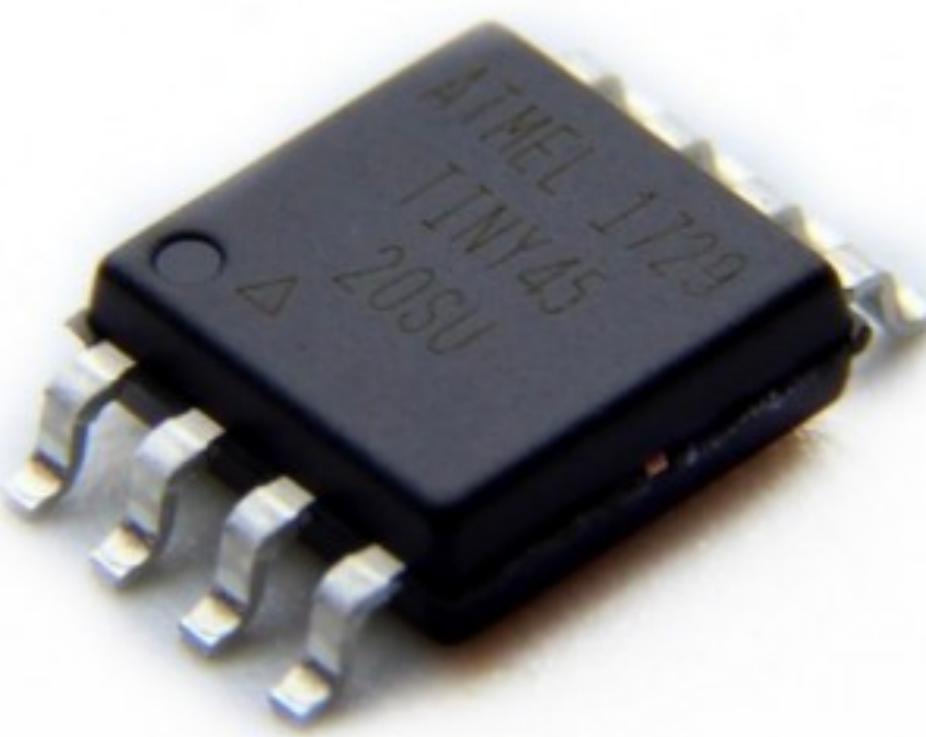
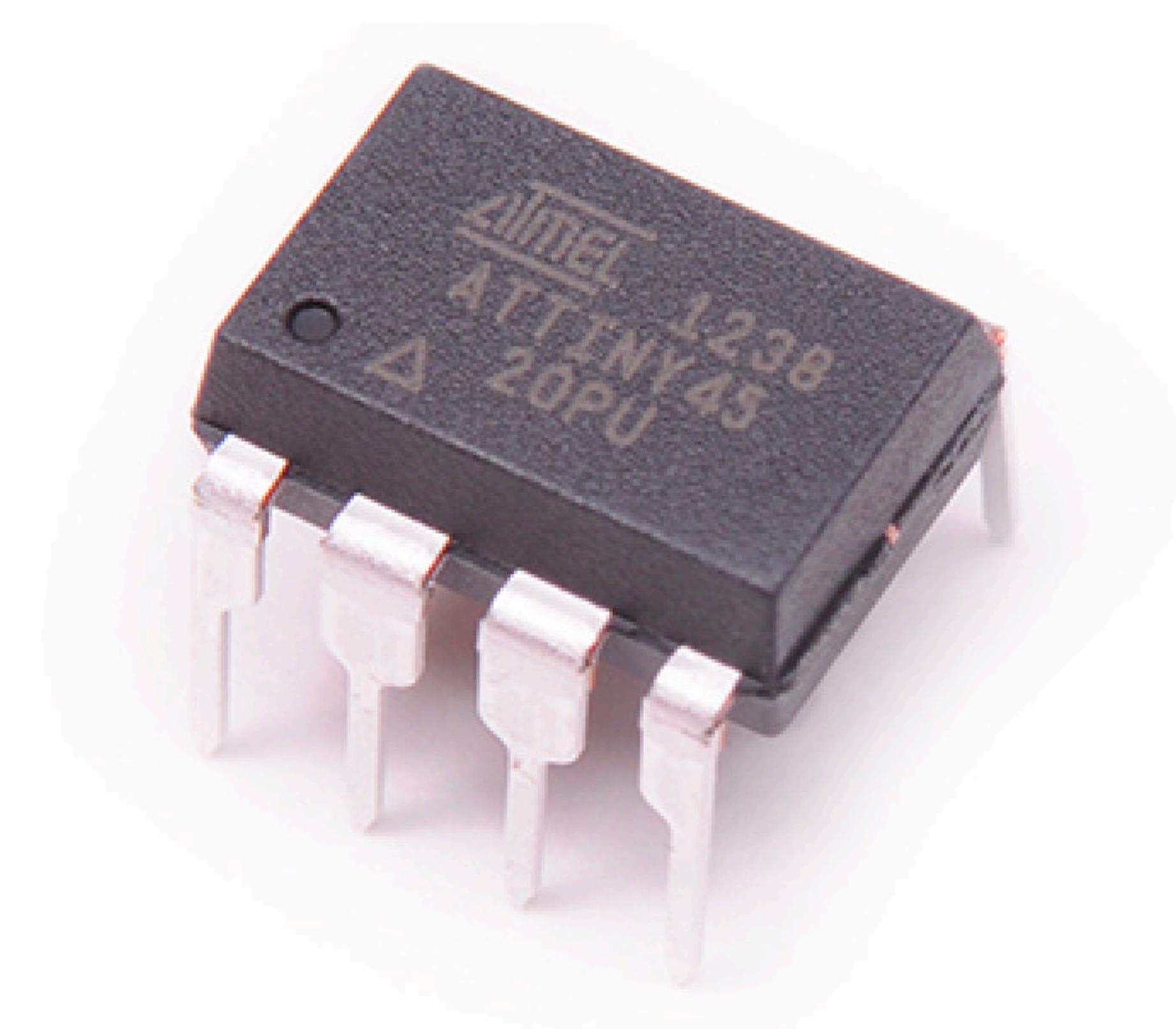
$$U = I \cdot R + U_D$$

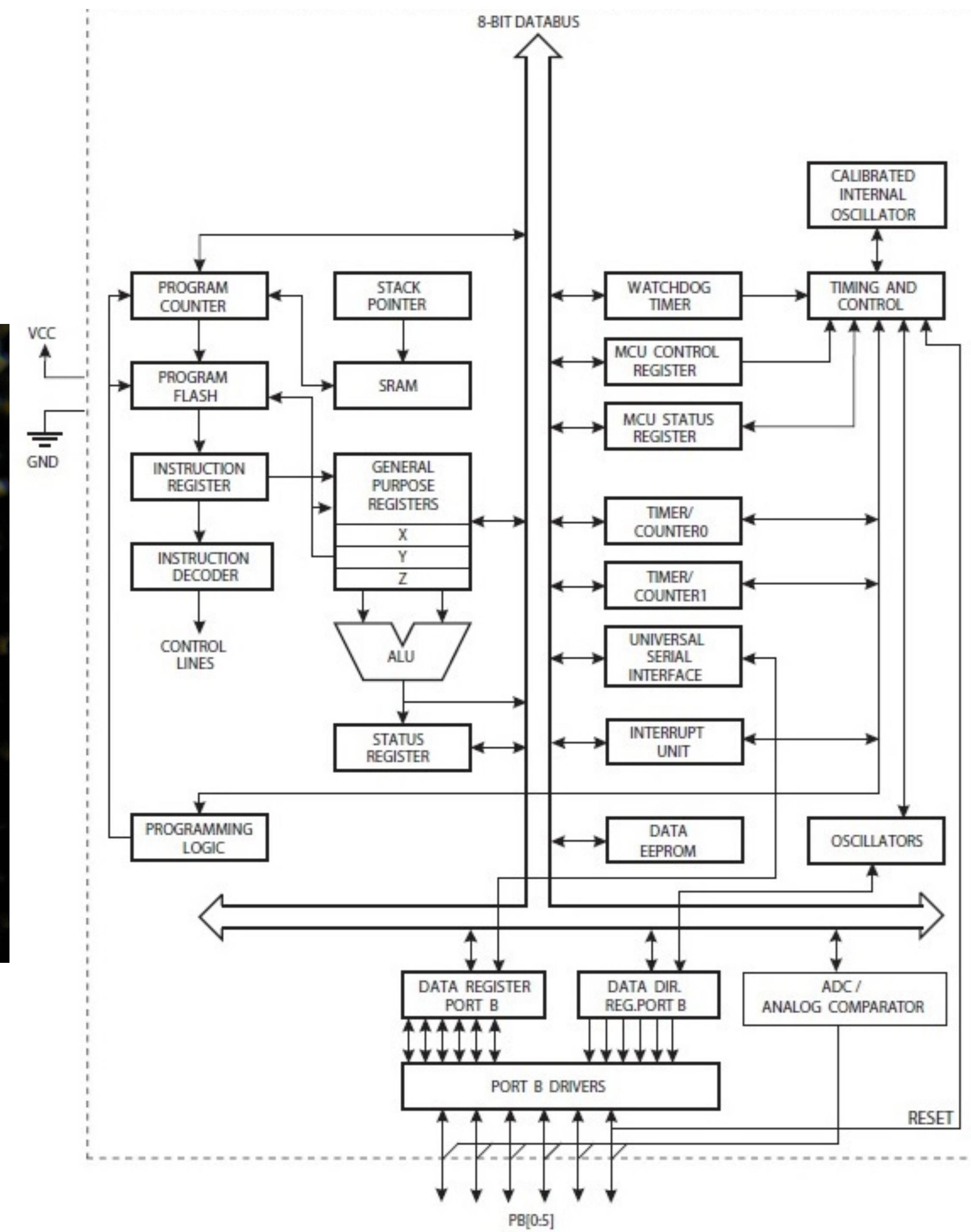
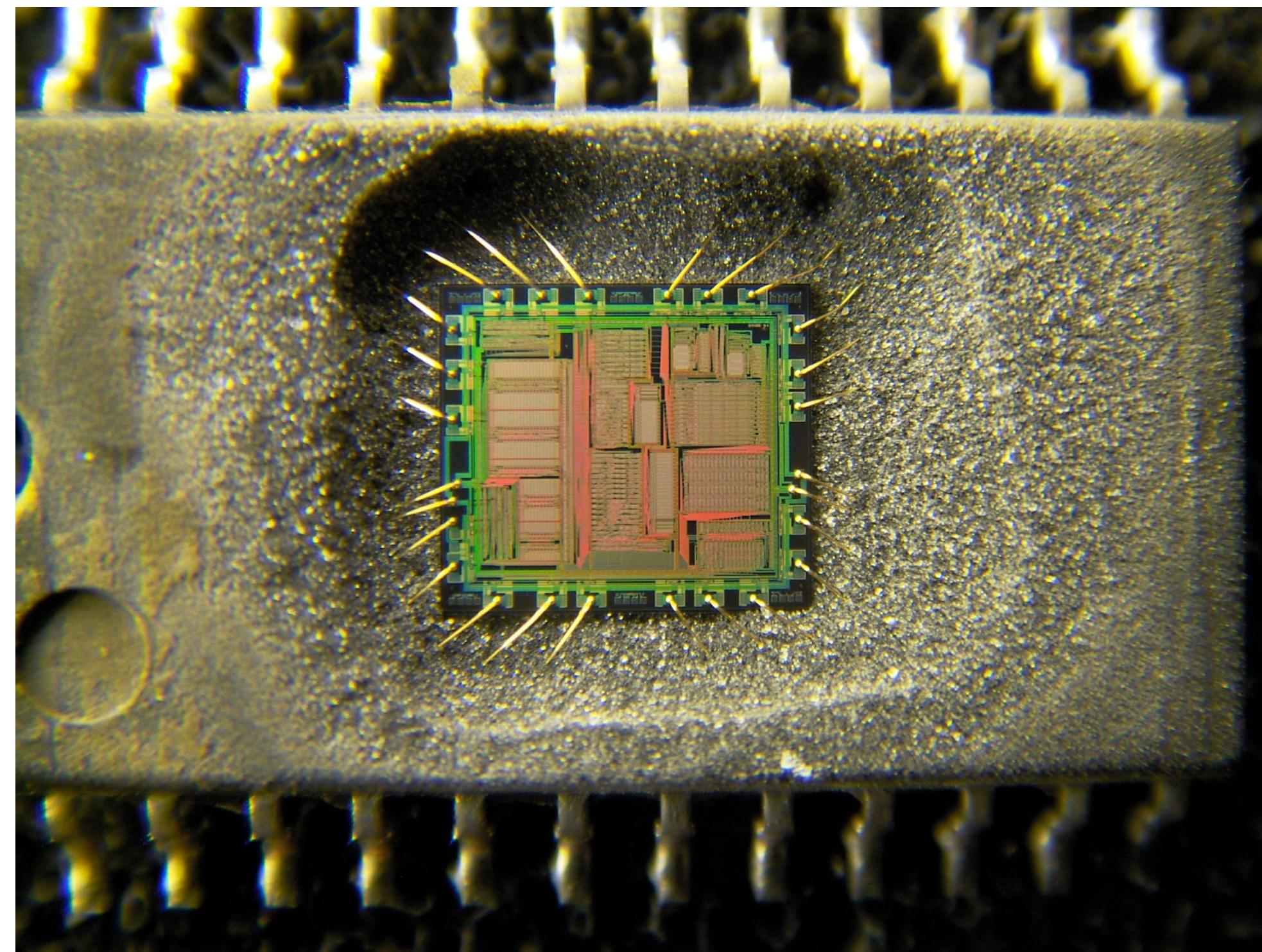
$$4.5V = 20mA \cdot R + 2V$$

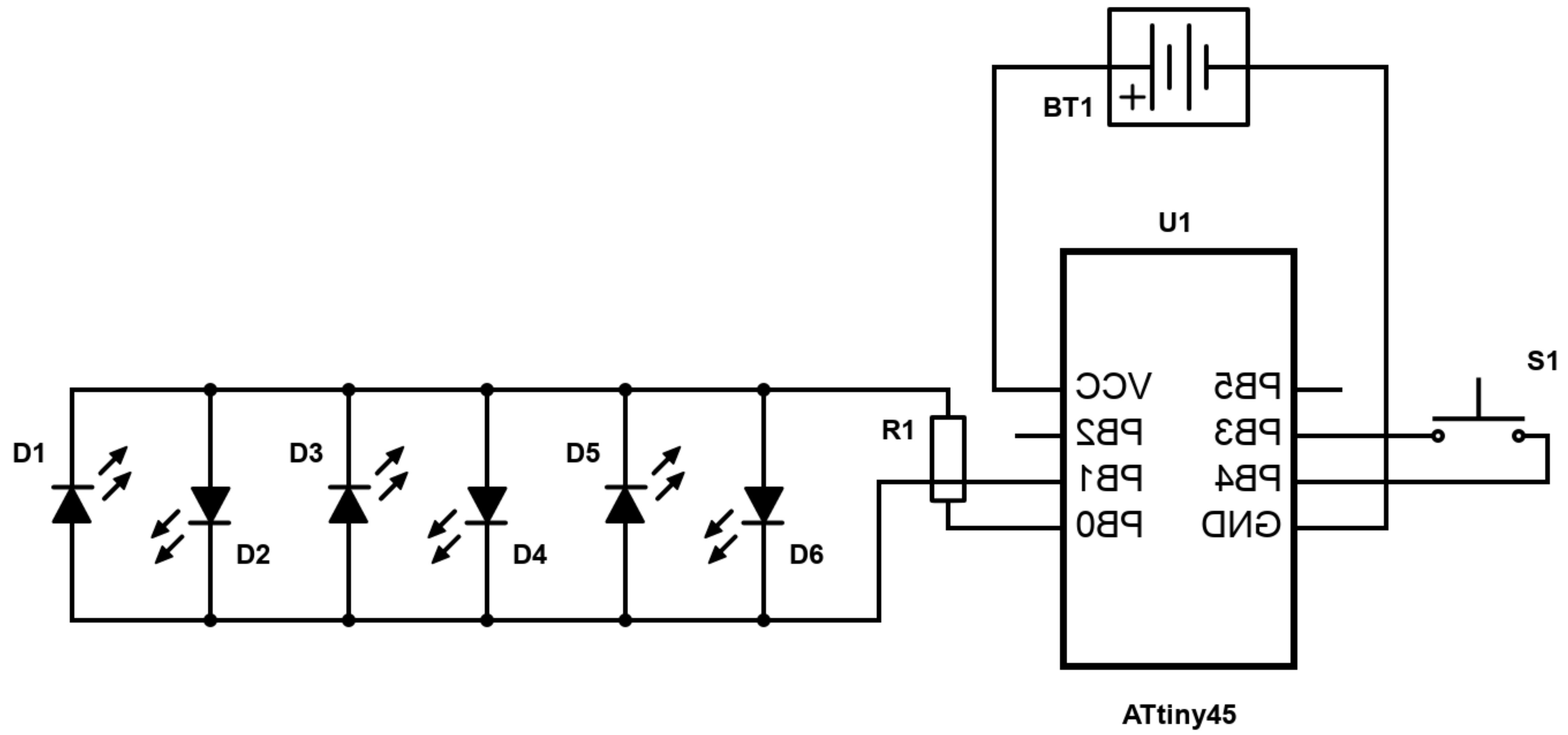
$$R = (4.5V - 2V) / 20mA$$

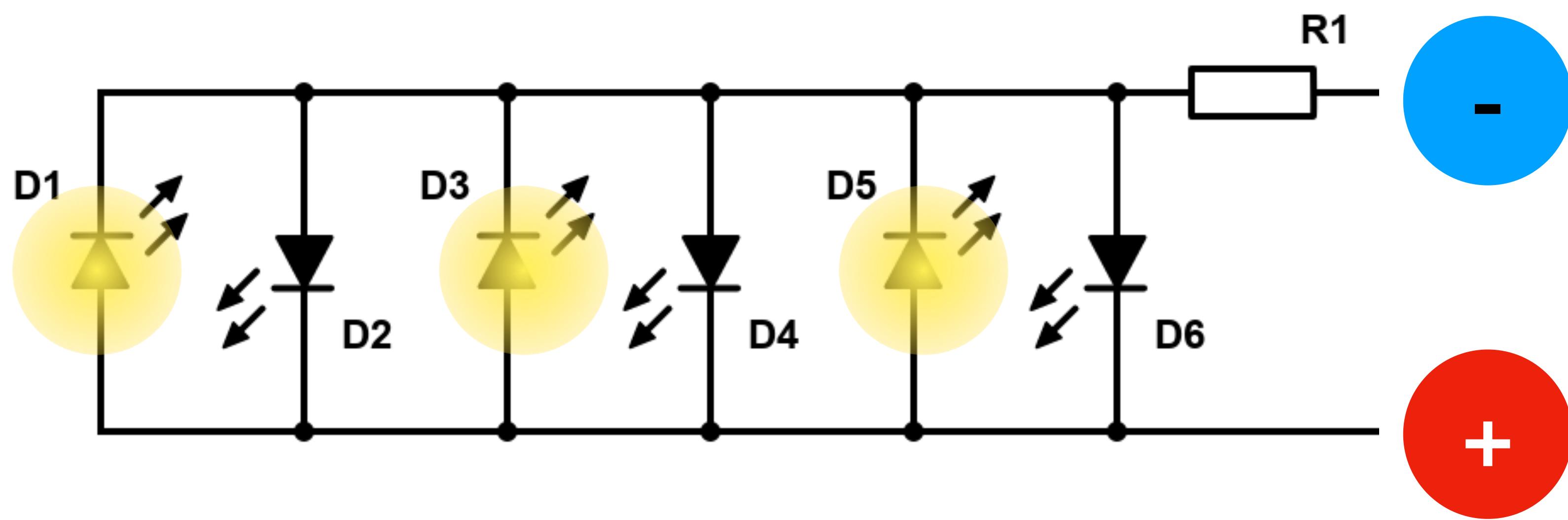
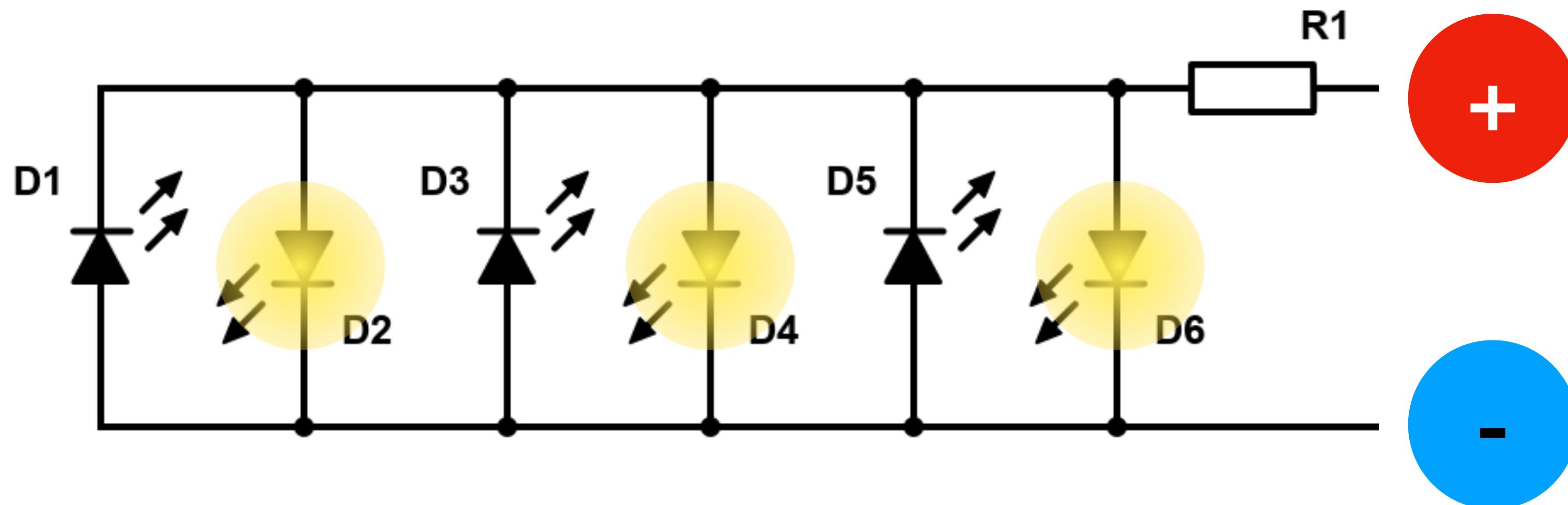
$$R = 3.5 / 0.02$$

$$R = 175 \Omega$$









sketch\_mar01a | Arduino 1.8.15

```
void loop()
{
    counter++;

    // triangle
    temp += dir;
    if (temp == 1023)
        dir = -1;
    if (temp == 0)
        dir = 1;

    // mode switch
    switch(mode)
    {
        case 0: levela = 255; levelb = 255; break;
        case 1: levela = 63; levelb = 63; break;
        case 2: levela = 1; levelb = 1; break;
        case 3: levela = levelb = max(0, temp/4 -100); break;
        case 4: levela = max(0, temp/4 -100); levelb = max(0, 255-temp/4 -100); break;
        case 5: levela = levelb = (((counter >> 4) & 15) == 1) || (((counter >> 4) & 15) == 4);
        // hidden modes
        case 10: levela = 255; levelb = 0; break;
        case 11: levela = 0; levelb = 255; break;
        case 12: levela = levelb = ((counter >> 9) & 1) ? 255 : 1; break;
        case 13: levela = levelb = ((counter >> 8) & 1) ? 255 : 1; break;
        case 14: levela = levelb = ((counter >> 7) & 1) ? 255 : 1; break;
    }
}
```