

EE 362 Constants and conversion factors

Constants

Name	Symbol	Value
speed of light in vacuum	c	2.99792458×10^8 m/s
Avogadro's number	N_A	$6.02214076 \times 10^{23}$ atoms/g molecular weight
Boltzmann's constant	k_B	1.380649×10^{-23} J/K = 8.617333×10^{-5} eV/K
Planck's constant	h	$6.62607015 \times 10^{-34}$ J/Hz or J·s = $4.1356677 \times 10^{-15}$ eV/Hz or eV·s
Reduced/Modified Planck's constant	$\hbar = h/2\pi$	$1.054571817 \times 10^{-34}$ J/Hz or J·s = $6.58211957 \times 10^{-16}$ eV/Hz or eV·s
permittivity of free space	ϵ_0	$8.8541878128 \times 10^{-12}$ F/m
permeability of free space	μ_0	$4\pi \times 10^{-7}$ H/m
electron charge	e^-	$-1.602176634 \times 10^{-19}$ C
electron charge magnitude	e	$1.602176634 \times 10^{-19}$ C
free electron rest mass	m_0	$9.1093837015 \times 10^{-31}$ kg
proton charge	p^+	$1.602176634 \times 10^{-19}$ C
proton rest mass	M or m_p	$1.6726219237 \times 10^{-27}$ kg

Conversions

Description	Value
Electronvolts to Joules	$1 \text{ eV} = 1.602176634 \times 10^{-19} \text{ J}$
Angstrom to meters	$1 \text{ \AA} = 1 \times 10^{-10} \text{ m}$
mils to inches to meters	$1 \text{ mil} = 0.001 \text{ in.} = 25.4 \text{ }\mu\text{m}$
Inches to cm to m	$1 \text{ in.} = 2.54 \text{ cm} = 0.0254 \text{ m}$