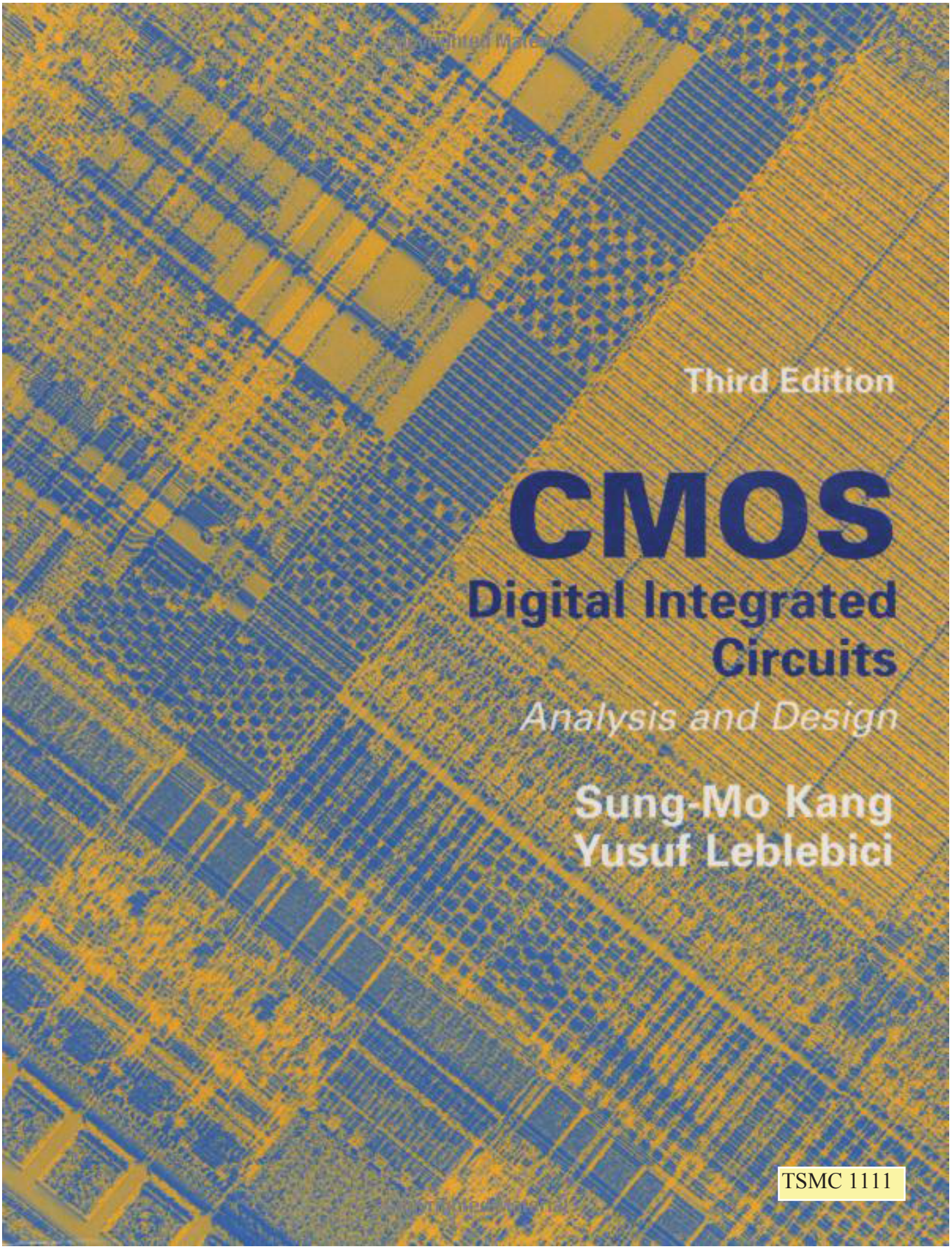

Physical and Materials Constants

Boltzmann's constant	k	1.38×10^{-23}	J/K
Electron charge	q	1.6×10^{-19}	C
Thermal voltage	kT/q	0.026 (at $T = 300$ K)	V
Energy gap of silicon (Si)	E_g	1.12 (at $T = 300$ K)	eV
Intrinsic carrier concentration of silicon (Si)	n_i	1.45×10^{10} (at $T = 300$ K)	cm^{-3}
Dielectric constant of vacuum	ε_0	8.85×10^{-14}	F/cm
Dielectric constant of silicon (Si)	ε_{Si}	$11.7 \times \varepsilon_0$	F/cm
Dielectric constant of silicon dioxide (SiO_2)	ε_{ox}	$3.97 \times \varepsilon_0$	F/cm

Commonly Used Prefixes for Units

giga	G	10^9
mega	M	10^6
kilo	k	10^3
milli	m	10^{-3}
micro	μ	10^{-6}
nano	n	10^{-9}
pico	p	10^{-12}
femto	f	10^{-15}

second edition

CMOS Digital Integrated Circuits

Analysis and Design

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