

MAGNETIC & ELECTRIC CIRCUITS RELATIONSHIPS

CIRCUITS QUANTITIES	MAGNETIC CIRCUIT	ELECTRIC CIRCUIT
FLOW QUANTITY	FLUX Ψ [Wb]	CURRENT I [A]
FLOW DENSITY	FLUX DENSITY B [Wb / m ²]	CURRENT DENSITY J [A/m]
FLOW RESISTANCE	RELUCTANCE $R = \frac{l}{\mu A}$ <small>amp turns per weber</small> [A / Wb]	RESISTANCE $R = \frac{l}{\sigma A}$ [V / A]
MOTIVE FORCE	MAGNETOMOTIVE FORCE MMF [A] <small>amp turns</small>	VOLTAGE V [V]
MOTIVE FORCE INTENSITY	MAGNETIC FIELD INTENSITY H [A / m]	ELECTRIC FIELD INTENSITY E [V / m]
FLOW RELATIONSHIP	MAGNETIC OHM'S LAW MMF = ΨR	OHM'S LAW $V = IR$
MATERIAL PROPERTY	PERMEABILITY $\mu = \mu_r \mu_0$ [Wb / A·m]	CONDUCTIVITY σ [A / V·m]
CONSTITUTIVE RELATIONSHIP	$\vec{B} = \mu \vec{H}$	$\vec{J} = \sigma \vec{E}$

