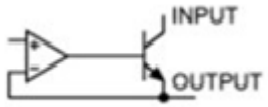
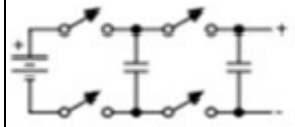
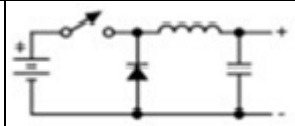
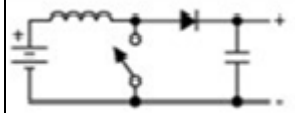
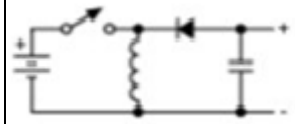
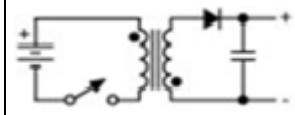
Voltage Regulator Topology Table

Topology/Type	Arrangement	Strong points	Limitations
Linear (step-down)		• Inexpensive • Can be very small • Low no-load current • Low-noise/low EMI • Usually the best solution for smaller loads	• VOUT must be less than VIN • Inefficient at high-input voltages and/or large loads • Can require a large heat sink
Charge pump (boost or invert polarity)		• Inexpensive • Small • Can boost or invert	• Limited output power • Limited range of • input/output voltage ratio
Buck (step-down)		• Lowest peak current • Efficient • Modest cost • Low-ripple current in output-filter capacitor • Simple inductor • Low switch-stress voltage	• VOUT must be less than VIN • High-side switch
Boost (step-up)		• Low peak current • Low-side switch • Simple inductor • Low switch-stress voltage	• VOUT must be greater than VIN • Output cannot be completely turned off by removing drive • No short-circuit protection
Buck-boost (inverts polarity)		• Simple inductor	• Negative output only • High-side switch • High peak currents
Flyback (step-down, step-up or inverts polarity)		• Isolated output • Can offer multiple outputs • Steps up/down, inverts • Low-side switch	• Transformer instead of inductor • High peak currents • High switch-stress voltage