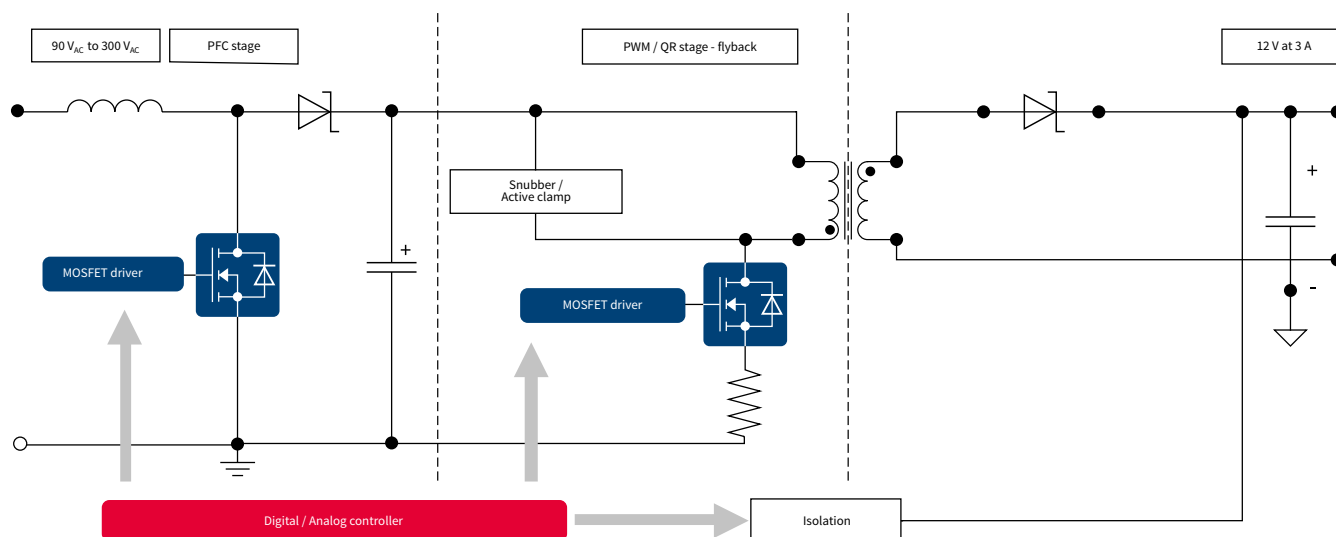


# CoolMOS™ CE – target topologies

## Quasi-resonant flyback topologies

Typically used in chargers, adapters, auxiliary power supplies



### Design equations for MOSFET selection

$$V_{DS} = V_{in} + VR, \text{ where } VR = (0.8 * V_{out} * (NP / NS))$$

$$I_D = V_{in} * ton / Lp$$

$$V_{DS\_FET} = 1.5 * V_{DS} \text{ (with derating for all variables on board)}$$

$$R_{DS(on)} \text{ max. } 25^\circ\text{C for acceptable power dissipation in MOSFET package} = (1.5 * P_{device}) / (I_{pk}^2 * D). \text{ Ipk is derated value of } I_D \text{ to cover all worst case operation conditions. } I_{pk} = 1.5 * I_D$$

$$P_{device} = (T_j - T_a) / R_{thJA}$$

Selection is based for 85 V<sub>AC</sub> to 265 V<sub>AC</sub> input voltage, 100 kHz switching frequency. Reflected voltage (VR) design greatly affects MOSFET V<sub>DS</sub> selection criteria. Mode of operation – CCM (continuous conduction mode) or DCM (discontinuous conduction mode) also affects MOSFET R<sub>DS(on)</sub>/I<sub>D</sub> selection criteria.

Output power [W]	Output voltage [V]	Turns ratio NP / NS	Primary inductance DCM [uH]	Primary inductance CCM [uH]	CoolMOS™ CE device options DCM	CoolMOS™ CE device options CCM
120	19	6	71	143	IPx65R650CE	IPx65R650CE
100	24	5	107	214	IPx65R650CE	IPx65R1k0CE
75	19	6	107	214	IPx65R650CE	IPx65R1k0CE
50	12	10	107	214	IPx65R650CE	IPx65R1k0CE
36	12	10	143	286	IPx70R600CE	IPx70R1K4CE
25	9	13	143	286	IPx70R950CE	IPx70R1K4CE
15	5	24	143	286	IPx70R950CE	IPx70R1K4CE
10	5	24	214	429	IPx70R1K4CE	IPx70R1K4CE
5	5	24	429	857	IPx70R2K0CE	IPx70R1K4CE