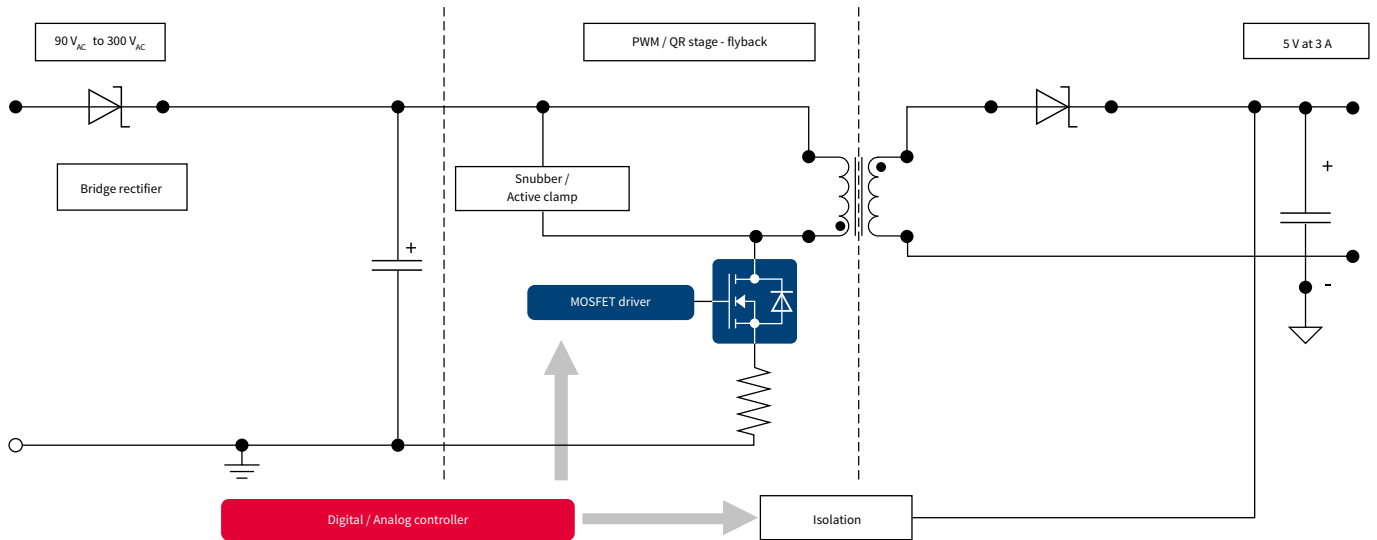


CoolMOS™ CE – target topologies

Wide input range flyback topologies

Typically used in LED drivers and adapters



Design equations for MOSFET selection

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

$$I_D = V_{in} * t_{on} / L_p$$

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

$R_{DS(on)}$ max. 25°C for acceptable power dissipation in MOSFET package = $(1.5 * P_{device}) / (I_{pk}^2 * D)$. I_{pk} is derated value of I_D 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_{AC} to 300 V_{AC} input voltage, 100 kHz switching frequency. Reflected voltage (VR) design affects MOSFET V_{DS} selection criteria. 800 V devices allow greater VR range. Mode of operation – CCM (continuous conduction mode) or DCM (discontinuous conduction mode) also affects MOSFET R_{DS(on)}/I_D 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
150	24	5	71	143	IPA80R310CE	IPA80R460CE
100	24	5	107	214	IPA80R310CE	IPA80R650CE
50	12	10	107	214	IPA80R310CE	IPA80R650CE
36	12	10	143	286	IPA80R460CE	IPA80R1K0CE
25	9	13	143	286	IPA80R460CE	IPA80R1K0CE
15	5	24	143	286	IPA80R460CE	IPA80R1K0CE
10	5	24	214	429	IPA80R650CE	IPA80R1K4CE
5	5	24	429	857	IPA80R1K0CE	IPx80R2K8CE