$$Q_p = \frac{1}{\pi(m_c D' - 0.5)}$$

$$\omega_a = \pi F_{sw}\sqrt{\frac{\frac{2K_c}{K}\left(\frac{1}{2} - \frac{S_e}{MS_n}\right) - 1}{\frac{2K_c}{K}\left(\frac{S_e}{S_n} - \frac{M}{2}\right) - 1}}$$

$$Q_a = \frac{1}{\pi D}\left(M - \frac{2K_c}{K}\left(\frac{M}{2} - \frac{S_e}{S_n}\right)\right)$$

$$K_c = D'^2$$

$$K = \frac{2LF_{sw}}{R}$$

Current-mode, DCM

Reference 2, 3, 4, and 5 equations:

$$\frac{V_{out}(s)}{V_{err}(s)} = F_m H_d \frac{\overset{1}{\left(1 + \frac{s}{\omega_{z1}}\right)}\overset{2}{\left(1 - \frac{s}{\omega_{z2}}\right)}}{\underset{3}{\left(1 + \frac{s}{\omega_{p1}}\right)}\underset{4}{\left(1 + \frac{s}{\omega_{p2}}\right)}} \tag{2A-26}$$

$$\omega_{z1} = \frac{1}{r_{Cf}C}$$

$\omega_{z2} = \frac{R}{M(1 + M)L}$ (high-frequency RHPZ) In relation to ω_{p2}:

$$\omega_{z2} = \omega_{p2}(1 + 1/M) > 2F_{sw}$$

$$\omega_{p1} = \frac{2}{RC}$$

$$\omega_{p2} = 2F_{sw}\left(\frac{1/D}{1 + 1/M}\right)^2 \geq 2F_{sw}$$

$$H_d = \frac{V_{in}}{\sqrt{K}}$$

$$F_m = \frac{1}{S_n m_c T_{sw}}$$

$M = -D\sqrt{\frac{1}{2\tau_L}}$ with $\tau_L = \frac{L}{RT_{sw}}$

$$K = \frac{2LF_{sw}}{R}$$

For a flyback topology, we can use the buck-boost equations. However, a few manipulations are necessary as the primary inductance L_p and the sense resistor R_i are located on the primary side whereas the load and the output capacitor reside on the secondary side.