

Example w/ numbers

$$\left. \begin{array}{l} t_{ri} = 100 \text{ ns} \\ t_{fi} = 200 \text{ ns} \\ t_{rv} = 100 \text{ ns} \\ t_{fv} = 50 \text{ ns} \end{array} \right\} \begin{array}{l} \text{Ex.} \\ \text{transfer} \end{array}$$

Circuit

$$V_{in} = 300 \text{ V}$$

$$I_o = 4 \text{ A}$$

$$\text{switch } f = 25 \text{ kHz}$$

$$\langle P \rangle = \frac{\frac{1}{2} I_o V_{in} (t_{ri} + t_{fi} + t_{rv} + t_{fv})}{T}$$

$$= \frac{\frac{1}{2} 4 \text{ A} \cdot 300 \text{ V} (100 \text{ ns} + 200 \text{ ns} + 100 \text{ ns} + 50 \text{ ns})}{40 \mu\text{s}}$$

$$= 6.75 \text{ W}$$

for faster switching ( $f = 100 \text{ kHz}$ )

$$\langle P \rangle = 27 \text{ W}$$