$$v_{L(t)} = V_{L(pk)} sin\,(\omega_L t) \quad \text{where} \quad \omega_L = 2\pi f_L = 1000\pi \quad \because \; f_L = 500Hz$$
$$v_{\mathrm{L}}(t) = V_{\mathrm{L(pk)}} \sin\,(\omega_{\mathrm{L}} t) \quad \text{where} \quad \omega_{\mathrm{L}} = 2\pi f_{\mathrm{L}} = 1000\pi \quad \because \; f_{\mathrm{L}} = 500\,\mathrm{Hz}$$

$$Z_L = R_L + j\omega_L L_L \quad \text{where} \quad \omega_L = 2\pi f_L = 1000\pi \quad \because \; f_L = 500Hz$$
$$Z_{\mathrm{L}} = R_{\mathrm{L}} + j\omega_{\mathrm{L}} L_{\mathrm{L}} \quad \text{where} \quad \omega_{\mathrm{L}} = 2\pi f_{\mathrm{L}} = 1000\pi \quad \because \; f_{\mathrm{L}} = 500\,\mathrm{Hz}$$

$$V_{DC} = I_{DC} R \quad \text{OR} \quad v_{(t)} = i_{(t)} R$$
$$V_{\mathrm{DC}} = I_{\mathrm{DC}} R \quad \text{or} \quad v(t) = i(t) R$$

$$p_{(t)} = v_{(t)} i_{(t)}$$
$$p(t) = v(t) \cdot i(t)$$

$$v_{L(t)} = V_{L(pk)}\; cos(1000\pi t) \quad \text{and} \quad i_{L(t)} = V_{L(pk)}\; cos(1000\pi t)/R$$
$$v_{\mathrm{L}}(t) = V_{\mathrm{L(pk)}} \cos(1000\pi t) \quad \text{and} \quad i_{\mathrm{L}}(t) = \frac{V_{\mathrm{L(pk)}} \cos(1000\pi t)}{R}$$

$$p_{L(t)} = \frac{V_{L(pk)}^2}{R}\; cos^2(1000\pi t) = \frac{V_{L(pk)}^2}{2R}\,[\; cos(2000\pi t) + 1]$$
$$p_{\mathrm{L}}(t) = \frac{V_{\mathrm{L(pk)}}^2}{R} \cos^2(1000\pi t) = \frac{V_{\mathrm{L(pk)}}^2}{2R}\,[\cos(2000\pi t) + 1]$$

$$P = \frac{1}{T_L} \int_0^{T_L} p_{L(t)}\, dt \; = \frac{1}{T_L} \int_0^{T_L} v_{(t)} i_{(t)}\, dt \; = V_{L(pk)}^2/2R$$
$$P = \frac{1}{T_{\mathrm{L}}} \int_0^{T_{\mathrm{L}}} p_{\mathrm{L}}(t)\, dt \; = \frac{1}{T_{\mathrm{L}}} \int_0^{T_{\mathrm{L}}} v(t) \cdot i(t)\, dt \; = \frac{V_{\mathrm{L(pk)}}^2}{2R}$$

$$P = \frac{1}{T_L}\int_0^{T_L} p_{L(t)}\, dt\ = \frac{1}{T_L}\int_0^{T_L} v_{(t)} i_{(t)}\, dt\ = \frac{1}{RT_L}\int_0^{T_L} v_{(t)}^2\, dt \overset{\text{OR}}{=} \frac{R}{T_L}\int_0^{T_L} i_{(t)}^2\, dt$$

$$P = \frac{1}{T_\mathrm{L}}\int_0^{T_\mathrm{L}} p_\mathrm{L}(t)\, dt\ = \frac{1}{T_\mathrm{L}}\int_0^{T_\mathrm{L}} v(t){\cdot}i(t)\, dt\ = \frac{1}{RT_\mathrm{L}}\int_0^{T_\mathrm{L}} v^2(t)\, dt \overset{\text{OR}}{=} \frac{R}{T_\mathrm{L}}\int_0^{T_\mathrm{L}} i^2(t)\, dt$$

$$V_{RMS}^2 = \frac{1}{T_L}\int_0^{T_L} v_{(t)}^2\, dt \quad \text{and} \quad I_{RMS}^2 = \frac{1}{T_L}\int_0^{T_L} i_{(t)}^2\, dt$$

$$V_\mathrm{RMS}^2 = \frac{1}{T_\mathrm{L}}\int_0^{T_\mathrm{L}} v^2(t)\, dt \quad \text{and} \quad I_\mathrm{RMS}^2 = \frac{1}{T_\mathrm{L}}\int_0^{T_\mathrm{L}} i^2(t)\, dt$$

$$V_{RMS} = \sqrt{\frac{1}{T_L}\int_0^{T_L} V_{L(pk)}^2\ cos^2(\omega_L t)\, dt} = \sqrt{\frac{1}{T_L}\int_0^{T_L} \frac{V_{L(pk)}^2}{2}\ \ [cos(2\omega_L t) + 1]\ dt} = \frac{V_{L(pk)}}{\sqrt{2}}$$

$$V_\mathrm{RMS} = \sqrt{\frac{1}{T_\mathrm{L}}\int_0^{T_\mathrm{L}} V_\mathrm{L(pk)}^2 \cos^2(\omega_\mathrm{L} t)\, dt} = \sqrt{\frac{1}{T_\mathrm{L}}\int_0^{T_\mathrm{L}} \frac{V_\mathrm{L(pk)}^2}{2}\ \ [\cos(2\omega_\mathrm{L} t) + 1]\ dt} = \frac{V_\mathrm{L(pk)}}{\sqrt{2}}$$

$$|S| = V_{RMS} I_{RMS}$$

$$|S| = V_\mathrm{RMS} \cdot I_\mathrm{RMS}$$

$$p.f. = \frac{P}{|S|}$$

$$p.f. = \frac{P}{|S|}$$

$$Q = \sqrt{|S|^2 - P^2}$$

$$Q = \sqrt{|S|^2 - P^2}$$

$$S = P + jQ$$

$$S = P + jQ$$

$$v_{L(t)} = V_{L(pk)}\ cos(1000\pi t) \quad \text{and} \quad i_{L(t)} = V_{L(pk)}\ cos(1000\pi t - \pi/2)/\omega_L L$$

$$v_{\mathrm{L}}(t) = V_{\mathrm{L(pk)}} \cos(1000\pi t) \quad \text{and} \quad i_{\mathrm{L}}(t) = \frac{V_{\mathrm{L(pk)}} \cos(1000\pi t - \frac{\pi}{2})}{\omega_{\mathrm{L}} L}$$

$$p_{L(t)} = \frac{V^2_{L(pk)}}{\omega_L L}\ cos(1000\pi t)\ cos(1000\pi t - \pi/2) = \frac{V^2_{L(pk)}}{2\omega_L L}\ sin(2000\pi t)$$

$$p_{\mathrm{L}}(t) = \frac{V^2_{\mathrm{L(pk)}}}{\omega_{\mathrm{L}} L} \cos(1000\pi t) \cos\left(1000\pi t - \frac{\pi}{2}\right) = \frac{V^2_{\mathrm{L(pk)}}}{2\omega_{\mathrm{L}} L} \sin(2000\pi t)$$

$$P = \frac{1}{T_L} \int_0^{T_L} p_{L(t)}\, dt \ = 0 \quad \text{and} \quad Q = \frac{V^2_{L(pk)}}{2\omega_L L} = \frac{V^2_{L(RMS)}}{\omega_L L}$$

$$P = \frac{1}{T_{\mathrm{L}}} \int_0^{T_{\mathrm{L}}} p_{\mathrm{L}}(t)\, dt \ = 0 \quad \text{and} \quad Q = \frac{V^2_{\mathrm{L(pk)}}}{2\omega_{\mathrm{L}} L} = \frac{V^2_{\mathrm{L(RMS)}}}{\omega_{\mathrm{L}} L}$$

$$V_{pk} = \sqrt{2} V_{RMS} \quad \text{and} \quad I_{pk} = \sqrt{2} I_{RMS}$$

$$V_{\mathrm{pk}} = \sqrt{2} V_{\mathrm{RMS}} \quad \text{and} \quad I_{\mathrm{pk}} = \sqrt{2} I_{\mathrm{RMS}}$$

$$P = V_{RMS} I_{RMS} = I^2_{RMS} R = V^2_{RMS}/R$$

$$P = V_{\mathrm{RMS}} I_{\mathrm{RMS}} = I^2_{\mathrm{RMS}} R = \frac{V^2_{\mathrm{RMS}}}{R}$$

$$v_{vs(t)} = v_{L(t)}\ R_b/(R_a + R_b)$$
$$v_{\mathrm{vs}}(t) = v_{\mathrm{L}}(t)\ \frac{R_{\mathrm{b}}}{R_{\mathrm{a}} + R_{\mathrm{b}}}$$

$$V_{vs(pk-pk)} = V_{L(pk-pk)}\ R_b/(R_a{+}R_b) \quad \Rightarrow \quad 1 \geq 15.4{\times}2\sqrt{2}\ R_b/(R_a{+}R_b) \quad \Rightarrow \quad R_a \geq 41.4R_b$$
$$V_{\text{vs(pk-pk)}} = V_{\text{L(pk-pk)}}\ \frac{R_{\mathrm{b}}}{R_{\mathrm{a}} + R_{\mathrm{b}}} \quad \Rightarrow \quad 1 \geq 15.4{\times}2\sqrt{2}\ \frac{R_{\mathrm{b}}}{R_{\mathrm{a}} + R_{\mathrm{b}}} \quad \Rightarrow \quad R_{\mathrm{a}} \geq 41.4R_{\mathrm{b}}$$

$$P_{vs-loss} = V_{L(RMS)}^2/(R_a + R_b)$$
$$P_{\text{vs-loss}} = \frac{V_{\mathrm{L(RMS)}}^2}{R_{\mathrm{a}} + R_{\mathrm{b}}}$$

$$v_{is(t)} = i_{L(t)}R_s$$
$$v_{\mathrm{is}}(t) = i_{\mathrm{L}}(t) \cdot R_{\mathrm{s}}$$

$$P_{is-loss} = I_{L(RMS)}^2 R_s \quad \Rightarrow \quad 0.05 \geq 0.55^2 R_s \quad \Rightarrow \quad R_s \leq 165m\Omega$$
$$P_{\text{is-loss}} = I_{\mathrm{L(RMS)}}^2 \cdot R_{\mathrm{s}} \quad \Rightarrow \quad 0.05 \geq 0.55^2 R_{\mathrm{s}} \quad \Rightarrow \quad R_{\mathrm{s}} \leq 165\,\mathrm{m\Omega}$$

$$V_{is(pk-pk)-highest} = 0.55 \times 2\sqrt{2} \times 0.16 \approx 250mV$$
$$V_{\text{is(pk-pk)-highest}} = 0.55 \times 2\sqrt{2} \times 0.16 \approx 250\,\mathrm{mV}$$

$$V_{is(pk-pk)-lowest} = 0.16 \times 2\sqrt{2} \times 0.16 \approx 72mV$$
$$V_{\text{is(pk-pk)-lowest}} = 0.16 \times 2\sqrt{2} \times 0.16 \approx 72\,\text{mV}$$

$$R_{dc} = \frac{\rho l}{A}$$
$$R_{\text{dc}} = \frac{\rho \cdot l}{A}$$

$$C = \frac{\epsilon_r \epsilon_0 A}{d}$$
$$C = \frac{\epsilon_{\text{r}} \epsilon_0 A}{d}$$

$$\text{Time per Bit} = \frac{1}{\text{Baud Rate}}$$
$$\text{Time per Bit} = \frac{1}{\text{Baud Rate}}$$

$$\text{Data Rate} = \frac{\text{Data Bits per Frame}}{\text{Total Bits per Frame}} \times \text{Baud Rate}$$
$$\text{Data Rate} = \frac{\text{Data Bits per Frame}}{\text{Total Bits per Frame}} \times \text{Baud Rate}$$

$$\text{Transmission Time} = \frac{\text{Data Bits to Transmit}}{\text{Data Rate}}$$
$$\text{Transmission Time} = \frac{\text{Data Bits to Transmit}}{\text{Data Rate}}$$

$$\text{Baud Rate} = \frac{f_{osc}}{16 \times (UBRR0 + 1)} \quad \text{or} \quad UBRR0 = \frac{f_{osc}}{(\text{Baud Rate}) \times 16} - 1$$

$$\text{Baud Rate} = \frac{f_{\text{osc}}}{16 \times (\texttt{UBRR0} + 1)} \quad \text{or} \quad \texttt{UBRR0} = \frac{f_{\text{osc}}}{(\text{Baud Rate}) \times 16} - 1$$

$$t_{sample} = \frac{1}{f_{sample}}$$

$$t_{\text{sample}} = \frac{1}{f_{\text{sample}}}$$

$$f_{sample(max)} = \frac{1}{t_{acquisition(min)} + t_{conversion(min)}}$$

$$f_{\text{sample(max)}} = \frac{1}{t_{\text{acquisition(min)}} + t_{\text{conversion(min)}}}$$

$$V_{step} = \frac{V_{ref}}{2^{resolution}}$$

$$V_{\text{step}} = \frac{V_{\text{ref}}}{2^{\text{resolution}}}$$

$$\tau = (R_{signal} + R_{sample})C_{sample}$$

$$\tau = (R_{\text{signal}} + R_{\text{sample}})C_{\text{sample}}$$

$$V_{\text{Absolute Error}} = V_{\text{step}} \times LSB_{\text{Absolute Error}}$$

$$V_{\text{Absolute Error}} = V_{\text{step}} \times \texttt{LSB}_{\text{Absolute Error}}$$

$$V_{\text{ADC}} - V_{\text{Absolute Error}} \leqslant V_{\text{Actual}} \leqslant V_{\text{ADC}} + V_{\text{Absolute Error}}$$
$$V_{\text{ADC}} - V_{\text{Absolute Error}} \leqslant V_{\text{Actual}} \leqslant V_{\text{ADC}} + V_{\text{Absolute Error}}$$

$$V_{vf} = G_{vs} G_{vo} V_{AC} + V_{off}$$
$$V_{\text{vf}} = G_{\text{vs}} G_{\text{vo}} V_{\text{AC}} + V_{\text{off}}$$

$$V_{if} = G_{is} G_{io} I_L + V_{off}$$
$$V_{\text{if}} = G_{\text{is}} G_{\text{io}} I_{\text{L}} + V_{\text{off}}$$

$$V_{AC}[i] = (ADC0Value[i] \times 5/1024 - V_{off}) \,/\, (G_{vs} G_{vo})$$
$$V_{\text{AC}}[i] = \frac{\texttt{ADC0Value}[i] \times \frac{5}{1024} - V_{\text{off}}}{G_{\text{vs}} G_{\text{vo}}}$$

$$I_L[i] = (ADC1Value[i] \times 5/1024 - V_{off}) \,/\, (G_{is} G_{io})$$
$$I_{\text{L}}[i] = \frac{\texttt{ADC1Value}[i] \times \frac{5}{1024} - V_{\text{off}}}{G_{\text{is}} G_{\text{io}}}$$

$$RMS = \frac{Peak}{\sqrt{2}}$$
$$\text{RMS} = \frac{\text{Peak}}{\sqrt{2}}$$

$$V_{AC_{rms}} = \sqrt{\frac{1}{T_p}\int_0^{T_p} V_{AC}^2 dt} \quad \text{OR} \quad I_{L_{rms}} = \sqrt{\frac{1}{T_p}\int_0^{T_p} I_L^2 dt}$$

$$V_{\mathrm{AC(RMS)}} = \sqrt{\frac{1}{T_\mathrm{p}}\int_0^{T_\mathrm{p}} V_\mathrm{AC}^2 \, dt} \quad \text{or} \quad I_{\mathrm{L(RMS)}} = \sqrt{\frac{1}{T_\mathrm{p}}\int_0^{T_\mathrm{p}} I_\mathrm{L}^2 \, dt}$$

$$V_{AC_{rms}}^2 = \frac{1}{N\Delta t_{sample}} \sum_{i=0}^{N-1} V_{AC}^2[i]\Delta t_{sample} \quad \text{OR} \quad I_{L_{rms}}^2 = \frac{1}{N\Delta t_{sample}} \sum_{i=0}^{N-1} I_L^2[i]\Delta t_{sample}$$

$$V_{\mathrm{AC(RMS)}}^2 = \frac{1}{N\Delta t_\mathrm{sample}} \sum_{i=0}^{N-1} V_\mathrm{AC}^2[i]{\cdot}\Delta t_\mathrm{sample} \quad \text{or} \quad I_{\mathrm{L(RMS)}}^2 = \frac{1}{N\Delta t_\mathrm{sample}} \sum_{i=0}^{N-1} I_\mathrm{L}^2[i]{\cdot}\Delta t_\mathrm{sample}$$

$$P = V_{AC_{rms}} I_{L_{rms}} cos(\theta)$$

$$P = V_{\mathrm{AC(RMS)}} I_{\mathrm{L(RMS)}} \cos(\theta)$$

$$P = \frac{1}{T_p}\int_0^{T_p} V_{AC} I_L dt$$

$$P = \frac{1}{T_\mathrm{p}}\int_0^{T_\mathrm{p}} V_\mathrm{AC} I_\mathrm{L} \, dt$$

$$P = \frac{1}{N\Delta t_{sample}} \sum_{i=0}^{N-1} V_{AC}[i] I_L[i] \Delta t_{sample} = \frac{1}{N} \sum_{i=0}^{N-1} V_{AC}[i] I_L[i]$$

$$P = \frac{1}{N\Delta t_\mathrm{sample}} \sum_{i=0}^{N-1} \left(V_\mathrm{AC}[i] \cdot I_\mathrm{L}[i] \cdot \Delta t_\mathrm{sample}\right) = \frac{1}{N} \sum_{i=0}^{N-1} \left(V_\mathrm{AC}[i] \cdot I_\mathrm{L}[i]\right)$$

$$\bar{V}_{AC}[i] = \left(V_{AC}[i] + V_{AC}[i+1]\right)/2$$

$$\bar{V}_\mathrm{AC}[i] = \frac{V_\mathrm{AC}[i] + V_\mathrm{AC}[i+1]}{2}$$

$$\bar{I}_L[i] = \left(I_L[i-1] + I_L[i]\right)/2$$

$$\bar{I}_{\mathrm{L}}[i] = \frac{I_{\mathrm{L}}[i-1] + I_{\mathrm{L}}[i]}{2}$$

$$P = \frac{1}{2N} \sum_{i=0}^{N-1} \left[V_{AC}[i]\bar{I}_L[i] + \bar{V}_{AC}[i]I_L[i]\right]$$

$$P = \frac{1}{2N} \sum_{i=0}^{N-1} \left[V_{\mathrm{AC}}[i] \cdot \bar{I}_{\mathrm{L}}[i] + \bar{V}_{\mathrm{AC}}[i] \cdot I_{\mathrm{L}}[i]\right]$$

$$T_{system\_clk} = \frac{1}{f_{system\_clk}}$$

$$T_{\texttt{system\_clk}} = \frac{1}{f_{\texttt{system\_clk}}}$$

$$T_{cpu\_clk} = \frac{1}{f_{cpu\_clk}}$$

$$T_{\texttt{cpu\_clk}} = \frac{1}{f_{\texttt{cpu\_clk}}}$$

$$f_{timer\_clk} = \frac{f_{system\_clk}}{\mathrm{Prescaler}}$$

$$f_{\texttt{timer\_clk}} = \frac{f_{\texttt{system\_clk}}}{\mathrm{Prescaler}}$$

$$0 \leqslant \mathrm{count} < 2^{bits}$$

$$0 \leqslant \mathrm{count} < 2^{\mathrm{bits}}$$

$$\text{Resolution} = \frac{1}{f_{timer\_clk}}$$

$$\text{Resolution} = \frac{1}{f_{\texttt{timer\_clk}}}$$

$$\text{Range} = \text{Resolution} \times \left(2^{bits} - 1\right)$$

$$\text{Range} = \text{Resolution} \times \left(2^{\text{bits}} - 1\right)$$

$$\text{Period} = \text{Resolution} \times (\text{Top} + 1)$$

$$\text{Period} = \text{Resolution} \times (\text{Top} + 1)$$

$$T_p = T_{on} + T_{off}$$

$$T_{\text{p}} = T_{\text{on}} + T_{\text{off}}$$

$$V_{DC} = V_{supply} \times T_{on}/T_p = DV_{supply}$$

$$V_{\text{DC}} = V_{\text{supply}} \times \frac{T_{\text{on}}}{T_{\text{p}}} = D \cdot V_{\text{supply}}$$

$$T_p = \text{Resolution} \times (\text{Top} + 1) = (\text{Top} + 1)\,/\,f_{timer\_clk}$$

$$T_{\text{p}} = \text{Resolution} \times (\text{Top} + 1) = \frac{\text{Top} + 1}{f_{\texttt{timer\_clk}}}$$

$$T_{on} = \text{Resolution} \times (\text{Compare} + 1) = (\text{Compare} + 1) \,/ f_{timer\_clk}$$
$$T_{\text{on}} = \text{Resolution} \times (\text{Compare} + 1) = \frac{\text{Compare} + 1}{f_{\texttt{timer\_clk}}}$$

$V_{DC} = I_{DC} R$
$V_{\text{DC}} = I_{\text{DC}} R$

$v_{(t)} = i_{(t)} R$
$v(t) = i(t) R$

$\bar{V} = \bar{I} R$
$\bar{V} = \bar{I} R$

$v_{(t)} = i_{(t)} R$
$v(t) = i(t) R$

$V_{(s)} = I_{(s)} R$
$V(s) = I(s) R$

$v_{(t)} = L \frac{\mathrm{d}i_{(t)}}{\mathrm{d}t}$
$v(t) = L \frac{\mathrm{d}i(t)}{\mathrm{d}t}$

$\bar{V} = jX_L \bar{I} = j\omega L \bar{I}$
$\bar{V} = jX_L \bar{I} = j\omega L \bar{I}$

$v_{(t)} = L \frac{\mathrm{d}i_{(t)}}{\mathrm{d}t}$
$v(t) = L \frac{\mathrm{d}i(t)}{\mathrm{d}t}$

$V_{(s)} = sLI_{(s)}$
$V(s) = sLI(s)$

$i_{(t)} = C \frac{\mathrm{d}v_{(t)}}{\mathrm{d}t}$
$i(t) = C \frac{\mathrm{d}v(t)}{\mathrm{d}t}$

$\bar{V} = jX_C \bar{I} = \bar{I} / j\omega C$
$\bar{V} = jX_C \bar{I} = \frac{\bar{I}}{j\omega C}$

$i_{(t)} = C\frac{\mathrm{d}v_{(t)}}{\mathrm{d}t}$
$i(t) = C\frac{\mathrm{d}v(t)}{\mathrm{d}t}$

$V_{(s)} = I_{(s)}/sC$
$V(s) = \frac{I(s)}{sC}$

$I_{in} - I_1 - I_2 = 0$
$I_{\mathrm{in}} - I_1 - I_2 = 0$

$V_{in} - V_1 - V_3 = 0 \quad \Rightarrow \quad V_{in} = I_1R_1 + (I_1 + I_2)R_3$
$V_{\mathrm{in}} - V_1 - V_3 = 0 \quad \Rightarrow \quad V_{\mathrm{in}} = I_1R_1 + (I_1 + I_2)R_3$

$V_1 - V_2 = 0 \quad \Rightarrow \quad I_1R_1 = I_2R_2$
$V_1 - V_2 = 0 \quad \Rightarrow \quad I_1R_1 = I_2R_2$

$I_1 = I_2 = 0.5A \;\;\&\;\; I_{in} = 1A$
$I_1 = I_2 = 0.5\,\mathrm{A} \;\;\&\;\; I_{\mathrm{in}} = 1\,\mathrm{A}$

R_1‘, ensures the voltage at PB7 is pulled to 5V (i.e. VCC supplied to the MCU) when the push-button is released. The filter capacitor, ‘C_1‘, is used for debouncing. When the push-button is pressed it creates 0V at PB7, when released PB7 will be 5V. LED is connected to PB5 through a current limiting resistor, ‘R_2‘. Generating 5V at PB5 will create a current to flow turning-on the LED (i.e. ‘$I_{LED} = (5 - V_f)/R_2$‘ where ‘$V_f \approx 2V$
R_1‘, ensures the voltage at PB7 is pulled to 5V (i.e. VCC supplied to the MCU) when the push-button is released. The filter capacitor, ‘C_1‘, is used for debouncing. When the push-button is pressed it creates 0V at PB7, when released PB7 will be 5V. LED is connected to PB5 through a current limiting resistor, ‘R_2‘. Generating 5V at PB5 will create a current to flow turning-on the LED (i.e. ‘$I_{\mathrm{LED}} = (5 - V_{\mathrm{f}})/R_2$‘ where ‘$V_{\mathrm{f}} \approx 2\,\mathrm{V}$

T_{system_clk}
$T_{\texttt{system\_clk}}$