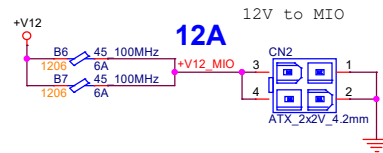


DC_IN to +V12

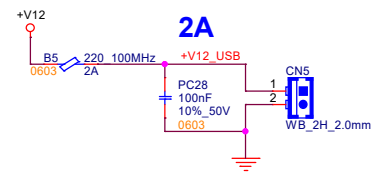
UVLO UV1 and UV2 - Resistor

$$V_{IN(ON)} = \frac{R_{UV1} \times V_{EN}}{R_{UV2}} + V_{EN} = \frac{100k\Omega \times 1.2V}{8.06k\Omega} + 1.2V = 16.09V$$

$$V_{IN(OFF)} = V_{IN(ON)} - R_{UV1} \times I_{HYS} = 16.09V - 100k\Omega \times 10\mu A = 15.09V$$



12V to USB Hub Board



12V output voltage

$$V_{OUT} = \frac{R_{FB1}(k\Omega) \times V_{REF}}{R_{FB2}(k\Omega)} + V_{REF} = \frac{33.2k\Omega \times 0.8V}{2.37k\Omega} + 0.8V = 12.007V$$

12V Current LIMIT (OCP)

$$\Delta I_L = \frac{(V_{IN} - V_{OUT}) \times V_{OUT}}{L \times f \times V_{IN}} = \frac{(24V - 12V) \times 12V}{4.7\mu H \times 350kHz \times 24V} = 3.65A$$

$$I_{LIM} = \frac{R_{ILIM}}{R_{DS(on)Q1}} \times I_{RDS(on)} + \Delta I_L / 2 = \frac{249}{4.5m\Omega} \times 200\mu A + 1.825A = 12.89A$$

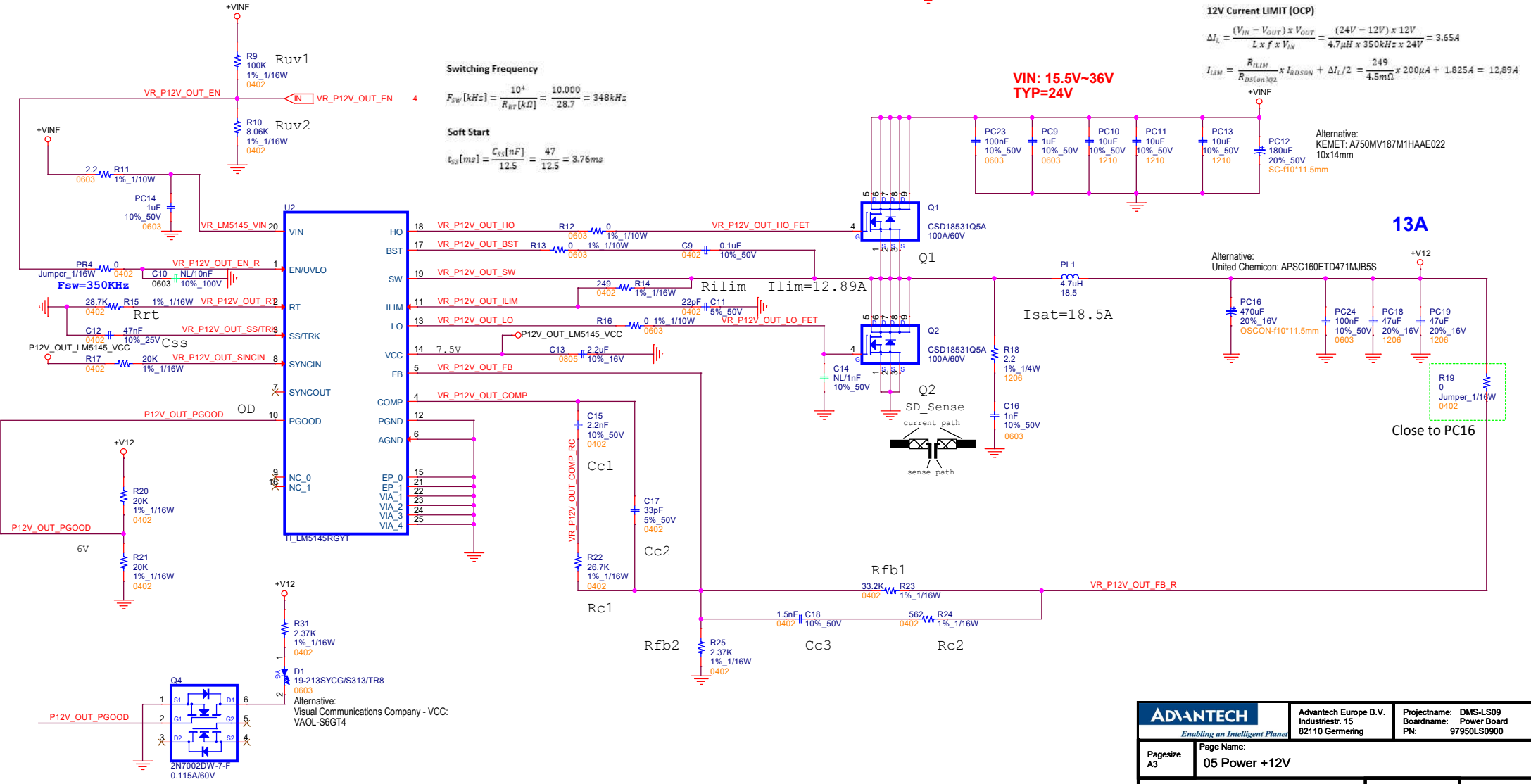
Switching Frequency

$$F_{SW} [kHz] = \frac{10^4}{R_{RT} [k\Omega]} = \frac{10,000}{28.7} = 348kHz$$

Soft Start

$$t_{SS} [ms] = \frac{C_{SS} [nF]}{12.5} = \frac{47}{12.5} = 3.76ms$$

VIN: 15.5V-36V
TYP=24V



ADVANTECH Enabling an Intelligent Planet		Advantech Europe B.V. Industriestr. 15 82110 Germering	Projectname: DMS-LS09 Boardname: Power Board PN: 97950LS0900
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Last Modify Date: Friday, September 01, 2023	Page Create Date: Tuesday, March 02, 2021	Sheet 5 of 6	Rev: 0.04