$$R_{SN(MAX)} = \frac{V_{CL(0)(MIN)} - D_{MAX}\,(V_{CL(0)(MIN)} - V_{CL(100)(MIN)})}{I_{OUT(MAX)} + \frac{V_{OUT}(1-D_{MAX})}{2 \times L \times f_S}} \approx \frac{V_{CL(0)(MIN)} - D_{MAX}\,(V_{CL(0)(MIN)} - V_{CL(100)(MIN)})}{1.15 \times I_{OUT(MAX)}}$$

$$\frac{V_{IN}1.8R_{SN}\left(\frac{1}{\pi Q_{MAX}} + D\text{-}0.5\right)}{f_S\,(V_{SL} + 50 \times 10^{-6} \times R_{SL})} \le L \le \frac{V_{IN}1.8R_{SN}\left(\frac{1}{\pi Q_{MIN}} + D\text{-}0.5\right)}{f_S\,(V_{SL} + 50 \times 10^{-6} \times R_{SL})}$$

0.5<Q<2 AND VSL : 103mV

$V_{OUT} = 1.27*(1+ R_{FB1}/R_{FB2})$

out_3A[1A] VIN

VREG_EN VREG_EN

INPUT VOLTAGE RANGE: 24V-27.7V

R42 (R67) 12mR

R41 (R64) NC SNUBBER

C31 (C34) N.C

C32 100n

ISEN

Q2 (Q13) 5-6-7-8

NTTFS5C673NLTAG

DRV

L7 10uH

VOUT_5A Battery_Dis

14.4V @72W

R44 (R62) 10K

GND

C34 (C53) 22uF/50V

C35 (C44) 22uF/50V

C33 (C40) 0.1uF/50V

U4 (U5)

VIN SW

ISEN FB

DR CB

COMP/SD GND

LM3477MM/NOPB

FB

C39 (C41) 100n

R47 (R61) 10R

R49 (R63) 6R8

D16 (D9) V2PM15-M3/H

D15 (D12) SS54B

C36 22uF/25V

C37 22uF/25V

C38 (C26) 22uF/25V

FB Direnç 124K 12K

R43 (R69) 100K

R45 (R78) 7.5K

R48 (R85) 10.4K

D14 (D21) S190ANG4-M-

R46 (R182) 1K

VREG_EN

U_Mosfet_Output_OD Mosfet_Output_OD.SchDoc

MOSFET_IN GND MOSFET_OD

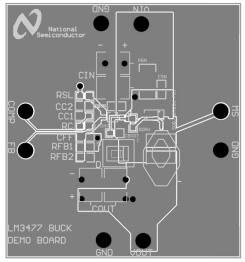
R50 (R59) 420R

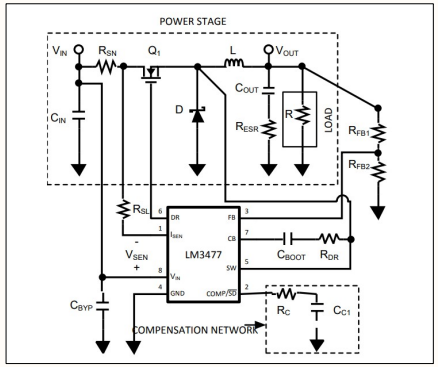
C40 (C25) N.P

COMP CAP

C41 (C28) CL10B154KA8VPNC 150nF

GND





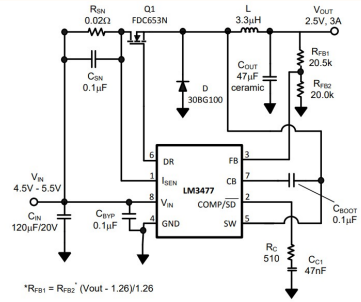


Figure 1. Typical High Efficiency Step-Down (Buck) Converter

Title		
Size A4	Number	Revision
Date: 9.01.2025	Sheet of	
File: D:\Projects\..\14.4 CONVERTER.SchDoc	Drawn By:	