1 2 3 4 5 6 C1 330pF <500mW top side assy 4.80Arms, 5.45Asat, 1.45App R1 4.7 DC losses 549mW, AC losses 318mW, core losses 584mW CS trips at 65.5mV, refers here to 6.0A input current, refers here to 3.7A output current. CSD18532Q5B D4 B180-13-F total losses 1451mW 114mW TP1 Q3 BSC123N08NS3 G L1 22uH 02 L2 105nH 0 bulk capacitor (FB bus conv.) TP3 BSC340N08NS3 G drain capacitors TP2 R2 0.01 (RF pwr stg) 7693 3.78 1,2,3 7,8 7,8 11,2,3 5,6, 4milliOt 744302010 231mW IHLP-6767GZ-5A 5,6, 4milliOhm C6 <5mW C7 C2 C3 C4 C5 14milliOhm 00mW 5,6, D1 C8 200mW 2.2µF C9 220µF 10uF 10uF 2 2 uF 100nF 100nF 35Vdc @ 5A (34.5V - 37.5V) 38..55V, adjustable max. 150W / max. 3.9A 470µP DFLS1100-7 87Arms C10 C11 C12 C13 34milliOhm Fc 23kHz TP4 C14 TP5 nd 280 10uF 10µF 1µF 2.2ul 2.2uF C15 TP6 TP7 ! breaker function needs 14A input current ! ton 4ns, toff 8ns 7693 BSC340N08 selected for fastest switching, filter fits for Fsw 200kHz. too: SGND check HS FET = LS FET = BSC123N08 attenuation -20dB at 400kHz \checkmark \checkmark SGND SGNE *** converter needs to meet 45mm x 34mm, maximum height 7mm *** bottom side assy -Vi D2 PMEG6010CEH,115 U1 LM5121MH/NOPB R3 R4 C16 1100nF R18 0 100 100 DS BST R5 0 19 HO C17 ctrl housekeeping 175mW CSN SW TP8 O R6 D7 Pdrv HS 58mW 100pF 200k 3.3 17 7.6V auxiliary voltage Pdrv LS 22mW VC R8 0 16 LO /IN 10 ON 33.7V Vth 1.2V PGND 15 UVLC OFF 30.5V startup 4.6ms restart timer 14 RES J1 D3 PWM mode 1 forces . 13 MODE C18 100pF 12 RQ AGND SLOPE DFLS1100-7 ≥ ¦، C19 R10 22.6k 10 P FB 11 COMP 1µF Fsw 400kHz C20 C21 C22 C23 R12 56.2k R13 DNP TPS R11 7.32k 100pF 100ni 220nF 4.7µF K=1 (needs >115nF) R14 C24 4.7nF FOR REUSE: +Vout TP10 TP11 R15 2.21k SGND zero 250Hz Ċ 140k 1) HS FET = LS FET = BSC123N08 R16 49.9 R17 100k pole 50kHz 2) set Fsw to 200kHz, R10 = 45.3kOhm C25 22pF NWΔ Vout set to 55.5V 30mW Vfb 1.2V 3) use inductor 47uH, WE 2013 series, 744 363 47 00 RHP7 >43kHz set bw to 2.9kHz RevB: adjusted loop & RC snubber NOTES: 1) R16 for test purposes only 2) stress calculated for 35Vin, 55Vout, 3Aout 3) L1, WE 1890 series, 744 355 7 2200 offers total losses 361mW (18.3mm x 18.2mm x 8.9mm)
Designed for: Project Title: 150W Boost w/ LM5121

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