Place on edge of board

CLKIN E1 CLKOUT E2

Place these components on edge of board

TRACK/SS1 E4 — TRK/SS1 — VIN — RUN1 — ON/OFF JP1 — R15 18.2K — R20 10k 1% — C3 OPT — 5VBIAS — R30 100K — PGOOD1 E7

TRACK/SS2 E9 — TRK/SS2 — VIN — RUN2 OPT — JP2 — R43 OPT — R46 OPT 1% — C9 OPT — 5VBIAS — R50 100K — PGOOD2 E10

TRACK/SS3 E13 — TRK/SS3 — VIN — RUN3 OPT — JP3 — R63 OPT — R65 OPT 1% — C25 OPT — 5VBIAS — R68 100K — PGOOD3 E14

TRACK/SS4 E17 — TRK/SS4 — VIN — RUN4 OPT — JP4 — R78 OPT — R81 OPT 1% — C32 OPT — 5VBIAS — R83 100K — PGOOD4 E19

Components to parallel two or more phases

VCC — FB1 R8 OPT — FB2 R10 0 — FB3 R19 0 — FB4 R21 0

COMP1 R4 0 — COMP2 R5 0 — COMP3 R6 0 — COMP4

RUN1 R16 0 — RUN2 R17 0 — RUN3 R18 0 — RUN4

ILIM1 R22 0 — ILIM2 R23 0 — ILIM3 R24 0 — ILIM4

TRK/SS1 R25 0 — TRK/SS2 R26 0 — TRK/SS3 R27 0 — TRK/SS4

IAVG1 R12 0 — IAVG2 R13 0 — IAVG3 R14 0 — IAVG4

VSNSOUT1 R106 0 — VSNSOUT2 R107 0 — VSNSOUT3 R108 0 — VSNSOUT4

TP5 TP6 TP7 TP8

VSNSOUT1 — C3-1 3.3nF — R3-1 332 — R1-1 10.0K — R2-1 4.12K — C1-1 2.2nF — C2-1 220pF — FB1 — C6 OPT — Fsw = 400kHz — R44 30.9K — TRK/SS1

5VBIAS — VOS1+ — RT-1 — RB-1 10.0K — VOS1- — R54 1

VSNSOUT2 — VOS2+ — RT-2 OPT — RB-2 OPT — VOS2- — C3-2 OPT — R1-2 OPT — R2-2 OPT — C2-2 OPT — C1-2 OPT — C18 .1uF — COMP2 — FB2

VSNSOUT3 — C3-3 OPT — R1-3 OPT — R2-3 OPT — C1-3 OPT — C2-3 OPT — COMP3 — FB3 — VOS3+ — RT-3 — RB-3 — VOS3-

VSNSOUT4 — C3-4 OPT — R3-4 OPT — R1-4 OPT — R2-4 OPT — C1-4 OPT — C2-4 OPT — C29 OPT — COMP4 — FB4 — VOS4+ — RT-4 — RB-4 — VOS4-

U1 LTC7851EUHH

1 COMP1	58 FB1	48 ILIM1	33 ISNS3P
2 VSNSP1	57 TRACK/SS1	47 IAVG1	34 ISNS3N
3 VSNSN1	56 FREQ	46 ISNS1P	35 ISNS4N
4 VSNSOUT1	55 CLKIN	45 ISNS1N	36 ISNS4P
5 SGND	54 CLKOUT	44 ISNS2N	37 IAVG4
6 VSNSOUT2	53 RUN1	43 ISNS2P	
7 VSNSN2	52 PWM1	42 IAVG2	
8 VSNSP2	51 RUN2	41 ILIM2	
9 COMP2	50 PWM2	40 TRK/SS2	
10 FB2	49 PGOOD1	39 VINSNS	
11 VCC		38 PGOOD2	
12 FB3		37 TRK/SS3	
13 COMP3		36 ILIM3	
14 VSNSP3		35 IAVG3	
15 VSNSN3			
16 VSNSOUT3			
17 VSNSOUT4			
18 VSNSN4			
19 VSNSP4			
20 COMP4	21 FB4	22 TRACK/SS4	23 RUN4 24 PWM4 25 PGOOD4 26 PWM3 27 RUN3 28 PGOOD3 29 ILIM4

ILIM1 — R51 43.2K — C11 100pF — IAVG1 — C13 0.22uF — ISNS1P — ISNS1N — C14 0.22uF — IAVG2 — C15 OPT — ILIM2 — R57 OPT — C16 OPT — TRK/SS2 — C17 OPT — TRK/SS3 — C19 OPT — ILIM3 — R61 OPT — C20 OPT — IAVG3 — ISNS3P — ISNS3N — C22 0.22uF — ISNS4N — C24 0.22uF — ISNS4P — IAVG4 — C26 OPT — ILIM4 — R69 OPT

RUN1 — RUN2 — RUN3 — RUN4 — TRK/SS4

R47 0

5VBIAS — R1 1 — R2 0 — R3 0 — C2 0.22uF — C1 2.2uF 16V — R7 10K — R9 OPT — R11 10K — TP1 — C4 2.2uF 16V — R28 24.9K — C40 OPT — VOUT1 — L1 0.25uH 744301025 — R38 3.57K 1% — R34 0 — COUT1 COUT2 100uF 6.3V 1206 — CIN3 CIN4 22uF 25V 1210 — U2 FDMF5820DC

R40 1 — R41 0 — R42 0 — C8 0.22uF — C7 2.2uF 16V — R45 10K — R48 OPT — R49 10K — TP2 — C10 2.2uF 16V — R52 24.9K — C41 OPT — VOUT2 — L2 0.25uH 744301025 — R55 3.57K 1% — R56 0 — COUT6 COUT7 100uF 6.3V 1206 — CIN5 CIN6 22uF 25V 1210 — U3 FDMF5820DC

R59 1 — R60 0 — R62 0 — C23 0.22uF — C21 2.2uF 16V — R64 10K — R66 OPT — R67 10K — TP3 — C27 2.2uF 16V — R70 24.9K — C42 OPT — VOUT3 — L3 0.25uH 744301025 — R72 3.57K 1% — R73 0 — COUT11 COUT12 100uF 6.3V 1206 — CIN7 CIN8 22uF 25V 1210 — U4 FDMF5820DC

R75 1 — R76 0 — R79 0 — C31 0.22uF — C30 2.2uF 16V — R80 10K — R82 OPT — R84 10K — TP4 — C34 2.2uF 16V — R86 24.9K — C43 OPT — VOUT4 — L4 0.25uH 744301025 — R87 3.57K 1% — R88 0 — COUT16 COUT17 100uF 6.3V 1206 — CIN9 CIN10 22uF 25V 1210 — U5 FDMF5820DC

VIN — CIN1 180uF 16V — CIN2 180uF 16V — E3 VIN+ — J1 VIN+ 7V - 14V — J2 VIN- — E5 VIN-

CIN1,2: Sanyo 16SVP180MX (180uF, 30mOhms, 3.02A, 16V)

CIN3-10: Murata GRM32ER71E226K (22uF, 16V, X5R, 1210)

VOUT1+ — R29 10 — E6 VOS1+ — J3 VOUT1+ 1.2V / 120A — COUT3 COUT4 COUT5 330uF 2.5V — C5 10uF 0805 — J4 VOUT1- — R39 10 — E8 VOS1- — VOS1-

R31 0 mOhm 2010 — R35 0 mOhm 2010 — R32 0 mOhm 2010 — R36 0 mOhm 2010 — R33 0 mOhm 2010 — R37 0 mOhm 2010

COUT1,2,6,7,11,12,16,17: Murata GRM31CR60J107M (100uF, 6.3V, X5R, 1206)

COUT3-5,8-10,13-15,18-20: Panaasonic EEFSX0E331ER (330uF, 2.5V, 9mOhms)

L1-4: Wurth 744301025 (0.25uH, DCR=0.325mOhms +/-7%)

VOUT2+ — R53 10 — E11 OPT — VOS2+ — J5 VOUT2+ — COUT8 COUT9 COUT10 330uF 2.5V — C12 10uF 0805 — J6 VOUT2- — R58 OPT — E12 OPT — VOS2- — VOS2-

VOUT3+ — R71 10 — E15 OPT — VOS3+ — J7 VOUT3+ — COUT13 COUT14 COUT15 330uF 2.5V — C28 10uF 0805 — J8 VOUT3- — R74 OPT — E16 OPT — VOS3- — VOS3-

VOUT4+ — R77 10 — E18 OPT — VOS4+ — J9 VOUT4+ — COUT18 COUT19 COUT20 330uF 2.5V — C33 10uF 0805 — J10 VOUT4- — R85 OPT — E20 OPT — VOS4- — VOS4-

	VOUT1	VOUT2	VOUT3	VOUT4
-A	1.8V/30A	1.5V/30A	1.2V/30A	1.0V/30A
-B	1.8V/60A		1.2V/60A	
-C	1.2V/120A			

REVISION HISTORY

ECO	REV	DESCRIPTION	APPROVED	DATE
—	2	PRODUCTION	Mike S.	10-21-15

CUSTOMER NOTICE

LINEAR TECHNOLOGY HAS MADE A BEST EFFORT TO DESIGN A CIRCUIT THAT MEETS CUSTOMER-SUPPLIED SPECIFICATIONS; HOWEVER, IT REMAINS THE CUSTOMER'S RESPONSIBILITY TO VERIFY PROPER AND RELIABLE OPERATION IN THE ACTUAL APPLICATION. COMPONENT SUBSTITUTION AND PRINTED CIRCUIT BOARD LAYOUT MAY SIGNIFICANTLY AFFECT CIRCUIT PERFORMANCE OR RELIABILITY. CONTACT LINEAR TECHNOLOGY APPLICATIONS ENGINEERING FOR ASSISTANCE.

THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.

APPROVALS

PCB DES. HZ

APP ENG. MIKE S.

SCALE = NONE

1630 McCarthy Blvd.
Milpitas, CA 95035
Phone: (408)432-1900
Fax: (408)434-0507
www.linear.com

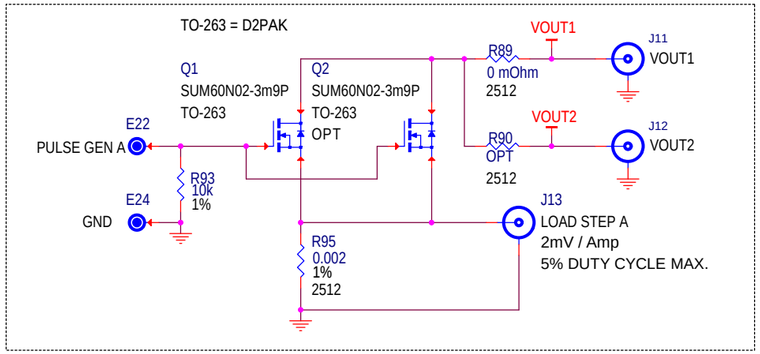
LTC Confidential-For Customer Use Only

TITLE: SCHEMATIC HIGH OUTPUT CURRENT 4 PHASE STEP-DOWN CONVERTER

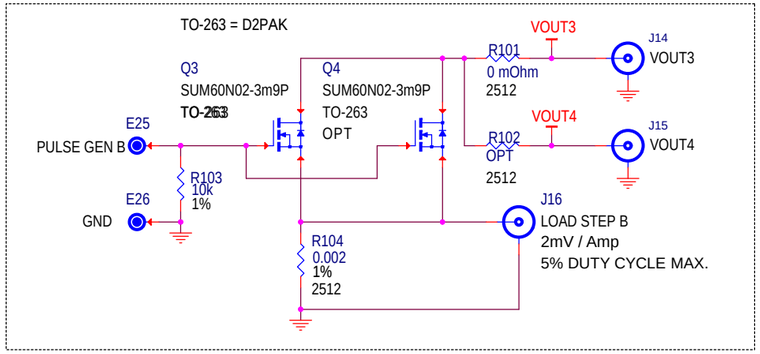
SIZE N/A — IC NO. LTC7851EUHH — DEMO CIRCUIT 2380A-C — REV. 2

DATE: Tuesday, February 09, 2016 — SHEET 1 OF 2

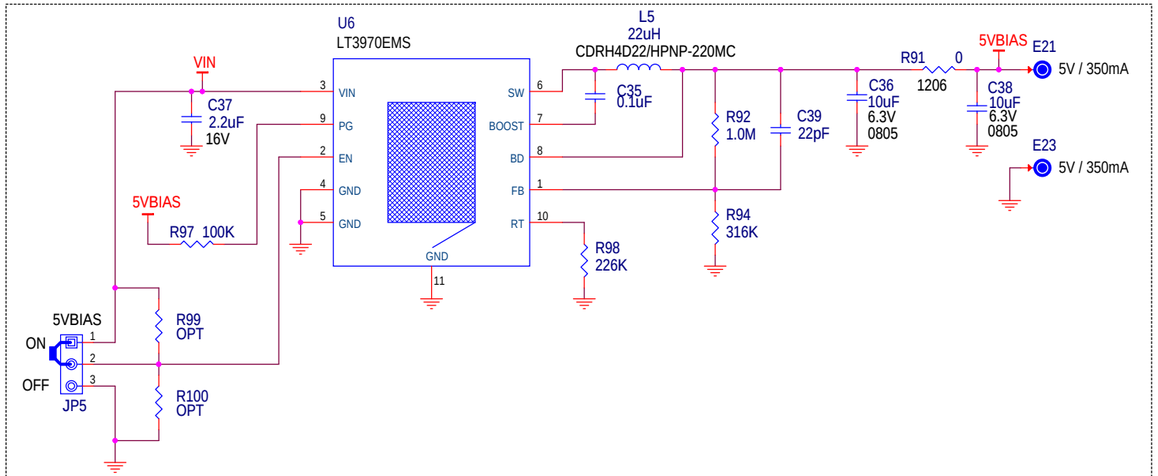
DYNAMIC LOAD CIRCUIT FOR VOUT1 AND VOUT2

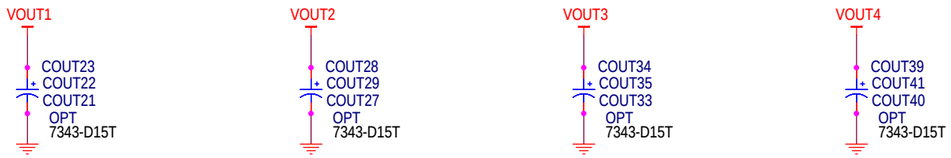


DYNAMIC LOAD CIRCUIT FOR VOUT3 AND VOUT4



BIAS SUPPLY FOR DrMOS and LTC7851





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APPROVALS	
PCB DES.	HZ
APP ENG.	MIKE S.

SCALE = NONE

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www.linear.com

TITLE: SCHEMATIC HIGH OUTPUT CURRENT 4 PHASE STEP-DOWN CONVERTER

SIZE	IC NO.	REV.
N/A	LTC7851EUHH DEMO CIRCUIT 2380A-C	2

DATE: Tuesday, January 19, 2016 SHEET 2 OF 2