



ADP1829, APD210X and ADP171X Reference Design

Preliminary Technical Data

FCDC 00057

FEATURES

Seven Output Voltages: 5.0 V, 3.6 V, 3.3 V, 2.5 V, 1.8 V, 1.2 V, 0.9 V

Output Current: 0.002 A to 3.0 A

Input voltage: 10.8-13.2 V

Ripple 2% ppk of Output Voltage

Transient step $\pm 5\%$, 50% max load

ADP1829, APD210X AND ADP171X REFERENCE DESIGN DESCRIPTION

This ADP1829, APD210X and ADP171X Reference Design uses 10.8 V to 13.2 V for the input voltage. The output voltages and currents are as follows:

- $V_{OUT1} = 3.6$ V with a maximum output current of 7.7 A for intermediate rail,
- $V_{OUT2} = 1.2$ V with a maximum output current of 3.0 A for VP,
- $V_{OUT3} = 1.8$ V with a maximum output current of 2.8 A for VP,
- $V_{OUT4} = 0.9$ V with a maximum output current of ± 0.5 A for VP,
- $V_{OUT5} = 3.3$ V with a maximum output current of 0.34 A for VP,
- $V_{OUT6} = 1.2$ V with a maximum output current of 0.1 A for VP,
- $V_{OUT7} = 3.3$ V with a maximum output current of 1.5 A for FPGA,
- $V_{OUT8} = 2.5$ V with a maximum output current of 1.6 A for FPGA,
- $V_{OUT9} = 1.8$ V with a maximum output current of 1.6 A for FPGA,
- $V_{OUT10} = 1.2$ V with a maximum output current of 0.5 A for FPGA,
- $V_{OUT11} = 2.5$ V with a maximum output current of 0.3 A for FPGA,
- $V_{OUT12} = 1.8$ V with a maximum output current of 1.95 A for DVI,
- $V_{OUT13} = 0.9$ V with a maximum output current of ± 0.5 A for FPGA,
- $V_{OUT14} = 3.3$ V with a maximum output current of 1.55 A for DVI,
- $V_{OUT15} = 5.0$ V with a maximum output current of 0.005 A for DVI,
- $V_{OUT16} = 3.3$ V with a maximum output current of 0.6 A for DCD,
- $V_{OUT17} = 1.8$ V with a maximum output current of 0.9 A for DCD,
- $V_{OUT18} = 3.3$ V with a maximum output current of 0.02 A for DCD,
- $V_{OUT19} = 2.5$ V with a maximum output current of 0.4 A for DCD,
- $V_{OUT20} = 1.25$ V with a maximum output current of 0.002 A for DCD,

Rev. A

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Design criteria are for coincidental tracking of V_{OUT17} and V_{OUT19} with V_{OUT16} and near ratiometric tracking of V_{OUT2} with V_{OUT5} to ensure turn on times are nearly the same (V_{OUT5} reaches regulation no more than 500us after V_{OUT2}). Two DDR terminations are designed for ratiometric tracking: V_{OUT4} tracks V_{OUT3} and V_{OUT13} tracks V_{OUT9} . All outputs discharge to 0.1 V in under 100 ms through external pull down resistors switched on when the rails are disabled. The ripple and transient assumptions are 2% peak to peak voltage ripple (for the switchers) and 5% deviation due to 50% instantaneous load step respectively. The nominal switching frequency is fixed at 300 kHz for V_{OUT1} , V_{OUT2} , V_{OUT3} , V_{OUT4} , V_{OUT12} and V_{OUT13} . V_{OUT7} , V_{OUT8} , V_{OUT9} , V_{OUT14} , V_{OUT16} and V_{OUT17} switch at a fixed nominal frequency of 1.2 MHz. V_{OUT10} switches at a pseudo fixed frequency of 3 MHz (frequency varies slightly with load). All other outputs are filtered, or linear regulated out of the switching rails.

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REVISION HISTORY

9/5/2007—Revision 0: Initial Version

GENERAL DESCRIPTION

ADP1823

The ADP1829 is a versatile, dual output, interleaved, synchronous PWM buck controller that generates two independent outputs from an input voltage of 2.9 V to 20 V. Each channel can be configured to provide output voltage from 0.6V to 85% of the input voltage. The two channels operate 180° out of phase, which reduces the current stress on the input capacitor and allows the use of a smaller and lower cost input capacitor.

The ADP1829 operates at a pin-selectable fixed switching frequency of either 300 kHz or 600 kHz. For some noise sensitive applications, it can also be synchronized to an external clock to achieve switching frequency between 300 kHz and 1 MHz. The switching frequency chosen is 300 kHz to get good efficiency over a wide range of input and output conditions.

The ADP1829 includes an adjustable soft start to limit input inrush current, voltage tracking for sequencing or DDR termination, independent power-good output, and a power enable pin. It also provides current-limit and short-circuit protection by sensing the voltage on the synchronous MOSFET.

ADP2105, ADP2106, ADP2107

The ADP2105,6,7 are a versatile, single output, synchronous PWM buck controller with integrated synchronous FETs that generates a single output from an input voltage of 2.7 V to 5.5 V. The controller can be configured to provide output voltage from 0.8 V to the input voltage with an output current up to 2 A.

The ADP2105,6,7 operate at a fixed switching frequency of 1.2 MHz to reduce component size.

The ADP2105,6,7 include an adjustable soft start to limit input inrush current. Inherent to their current mode design they provide current-limit and short-circuit protection by sensing the voltage dropped across the internal MOSFET.

ADP171X

The ADP171X is a family of low drop out CMOS linear regulators that provides versatile and inexpensive step-down voltage regulation. The input voltage range is 2.5 V to 5.5 V and the output current capability is up to 500 mA. The various versions provide features such as Enable, Soft Start, Low Noise Bypass and Tracking. They are available in space saving TSOT-5 and MSOP-8 packages and operate over the -40°C to +125°C temperature range.

ADP2102

The ADP2102 is a low quiescent current, step-down dc-to-dc converter in a compact 3 mm × 3 mm LFCSP package. The ADP2102 uses a current-mode, constant on-time, valley current control scheme for excellent stability and transient response with only three external components. To ensure the longest battery life in portable applications, the ADP2102 has a power-saving mode (PSM) that reduces the switching frequency under light load conditions to significantly reduce quiescent current.

The ADP2102 runs on input voltages from 2.7 V to 5.5 V and operate over the -40°C to +85°C temperature range.

ADP1581

The ADP1581 is a low cost, 2-terminal (shunt), precision band gap reference. It provides an accurate 1.250 V output for input currents between 60 µA and 10 mA.

The ADP1581 is available in two grades, A and B, both of which are provided in the SOT-23 package. Both grades are specified over the industrial temperature range of -40°C to +85°C.

BLOCK DIAGRAM

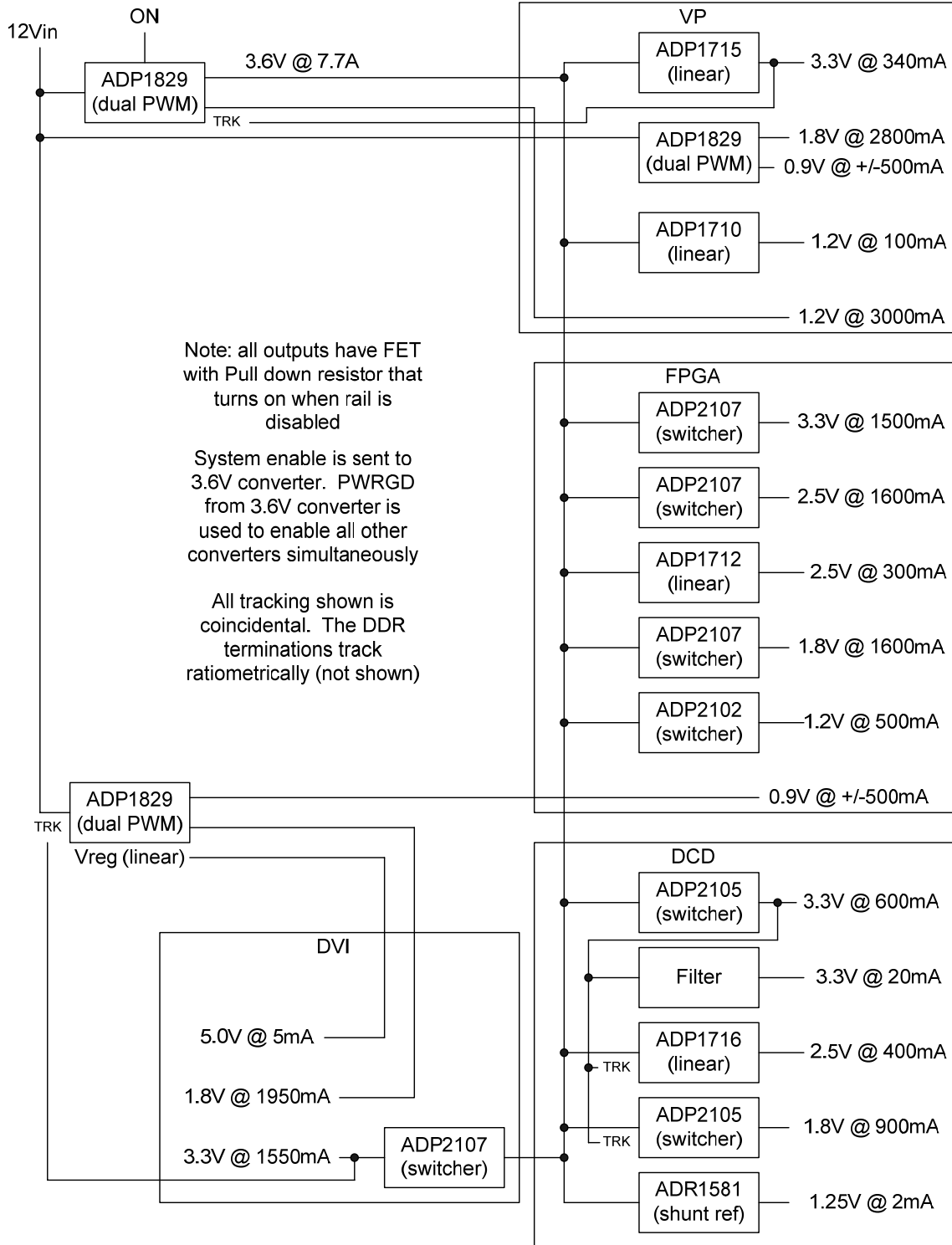


Figure 1. Block Diagram of the System

SCHEMATIC

3.6V at 7.7A and 1.2V at 3.0A (VP)

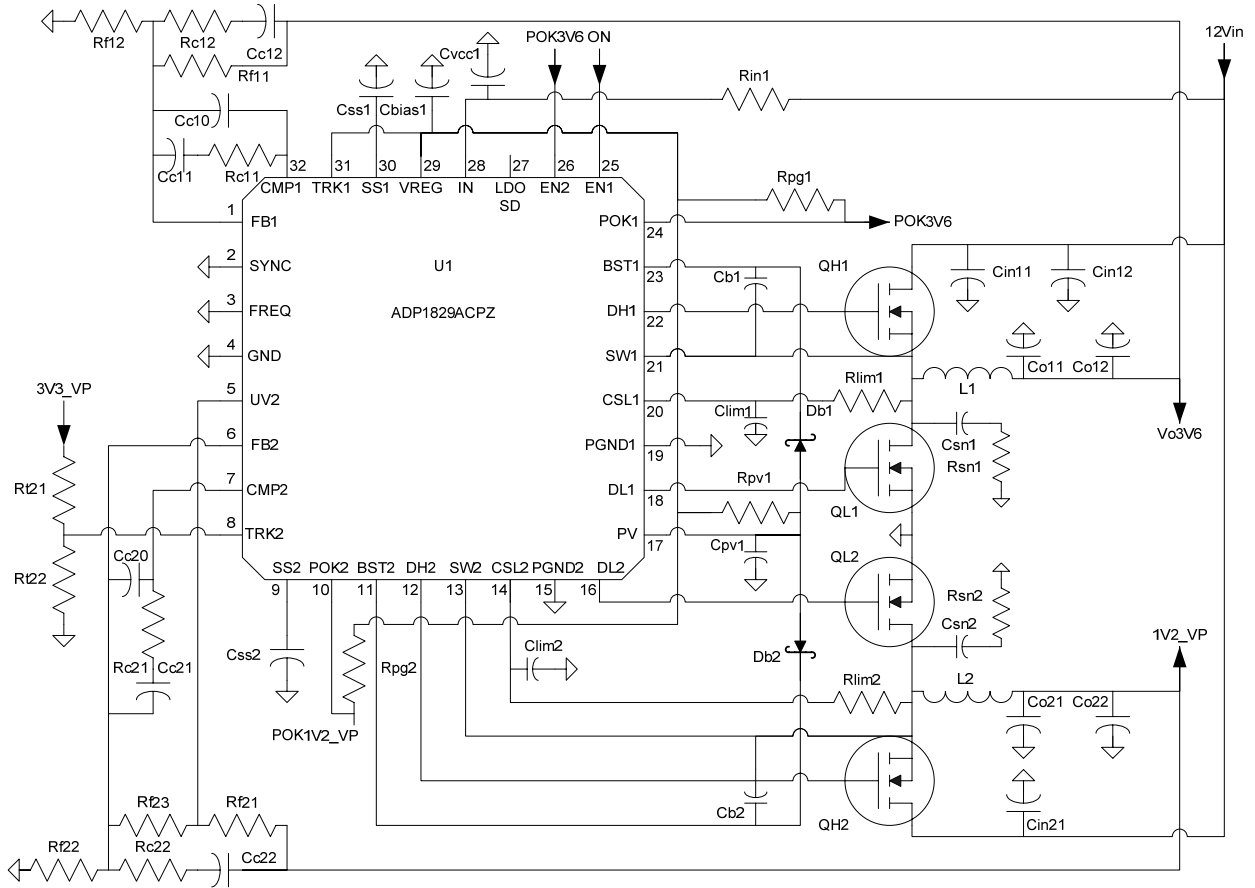
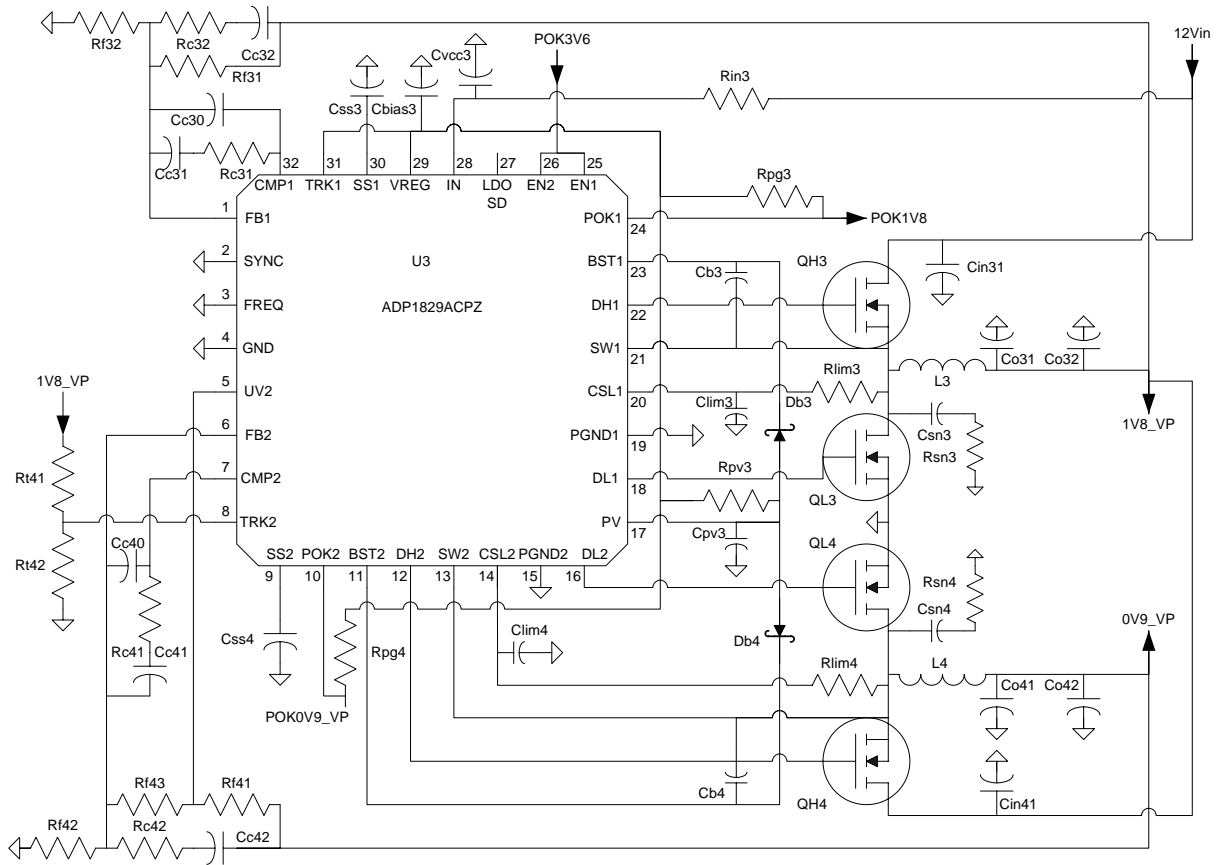


Figure 2. Schematic: V_{OUT1} and V_{OUT2}

1.8V at 2.8A (VP) and 0.9V at +/-0.5A (VP)



3.3V at 0.34A (VP) and 1.2V at 0.1A (VP)

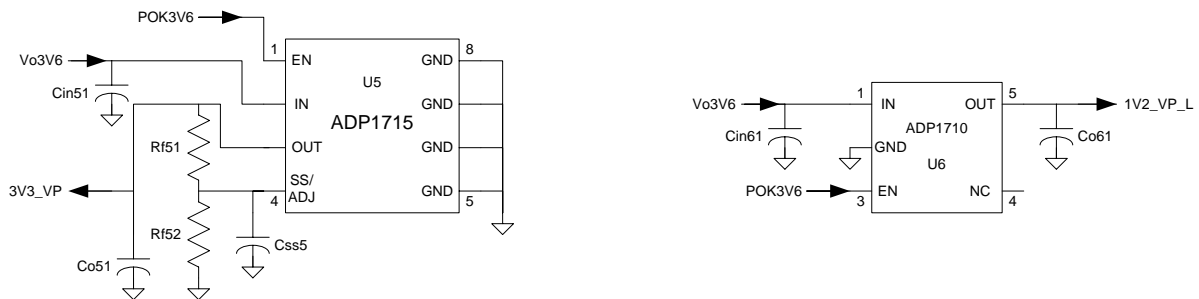
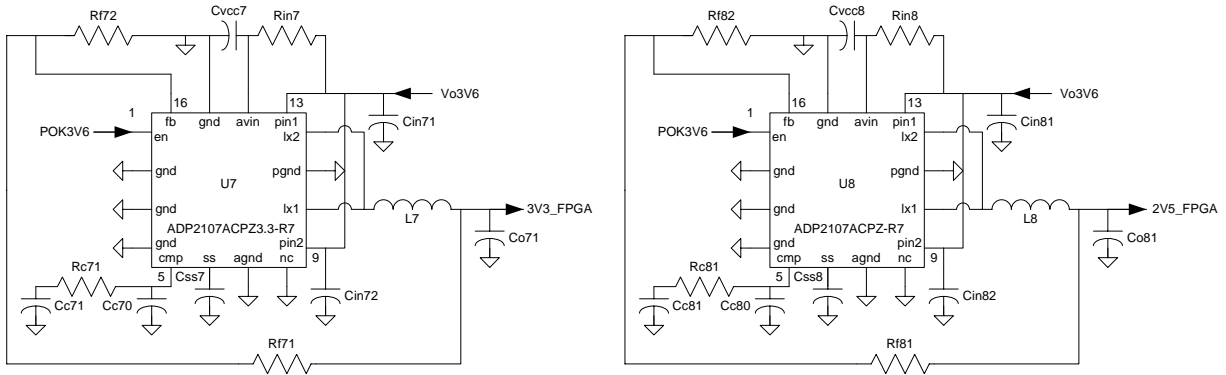
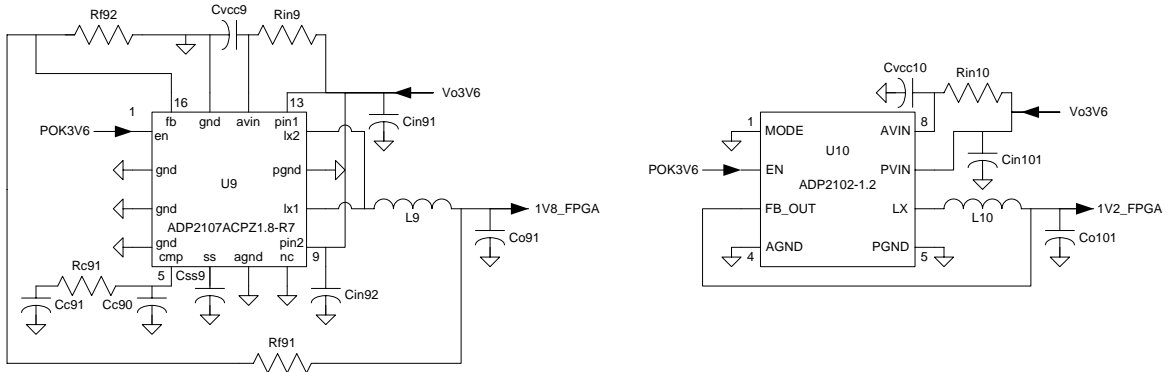


Figure 3. Schematic: V_{OUT3} , V_{OUT4} , V_{OUT5} and V_{OUT6}

3.3V at 1.5A (FPGA) and 2.5V at 1.6A (FPGA)



1.8V at 1.6A (FPGA) and 1.2V at 0.5A (FPGA)



2.5V at 0.3A (FPGA) Low Noise

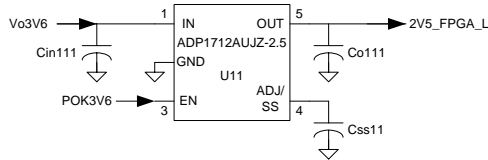
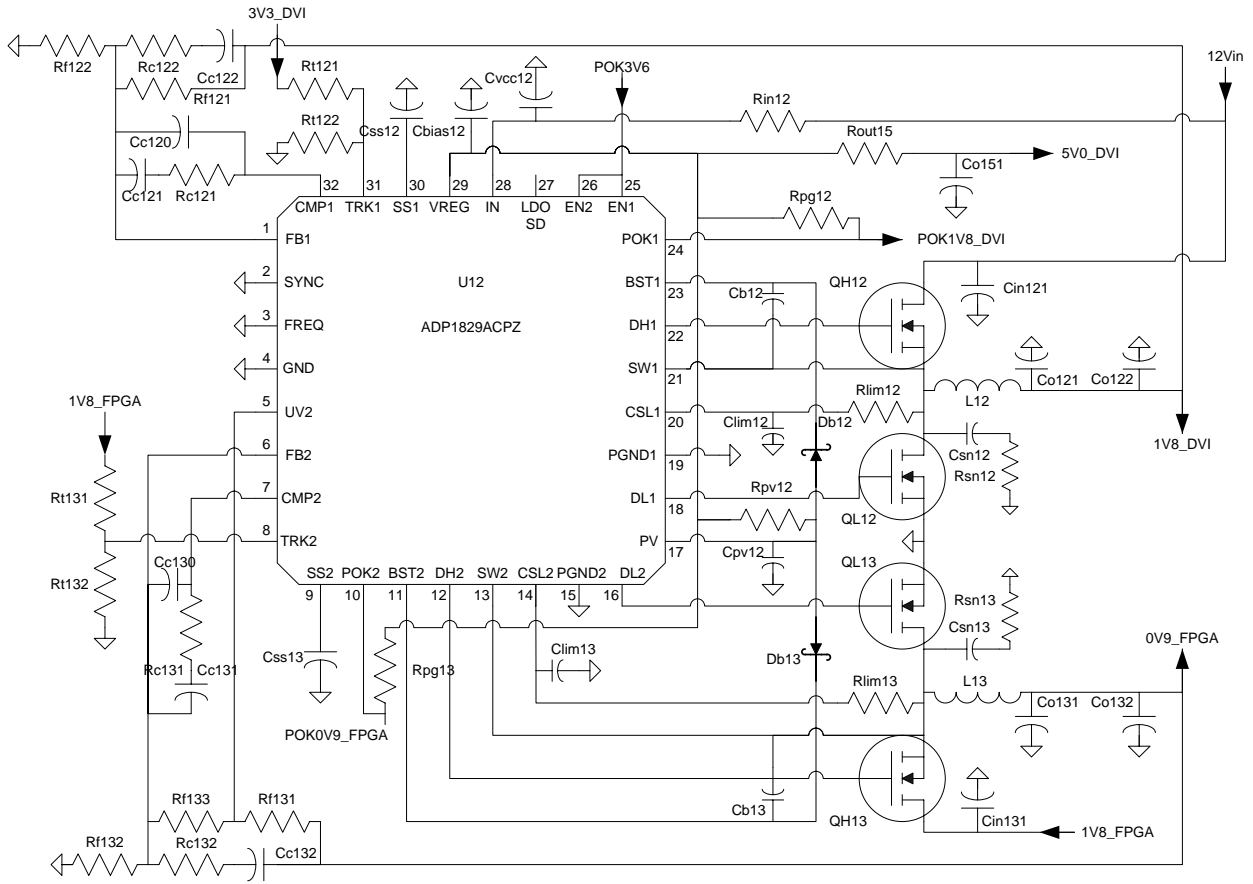


Figure 4. Schematic: V_{OUT7} , V_{OUT8} , V_{OUT9} , V_{OUT10} and V_{OUT11}

0.9V at +/-0.5A (FPGA) and 1.8V at 1.95A (DVI)



3.3V at 1.55A (DVI)

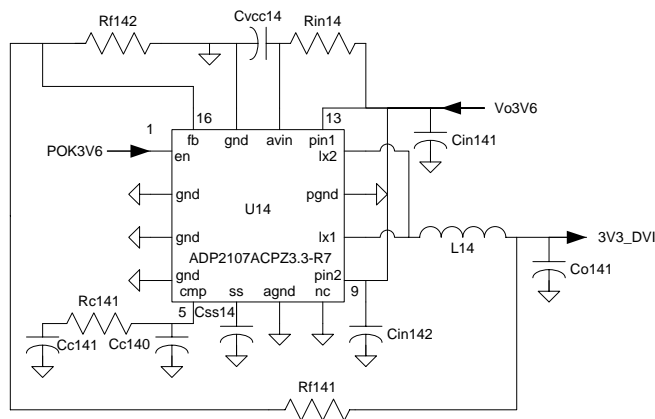
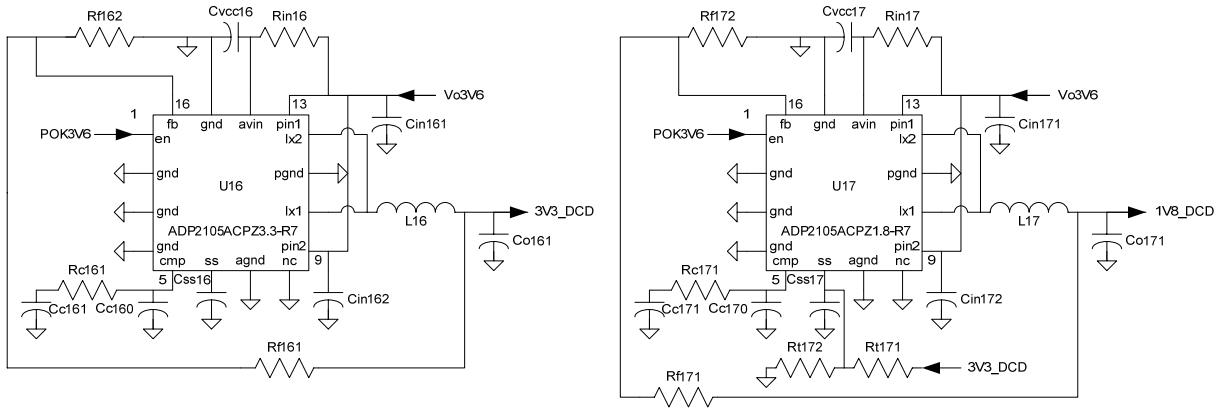
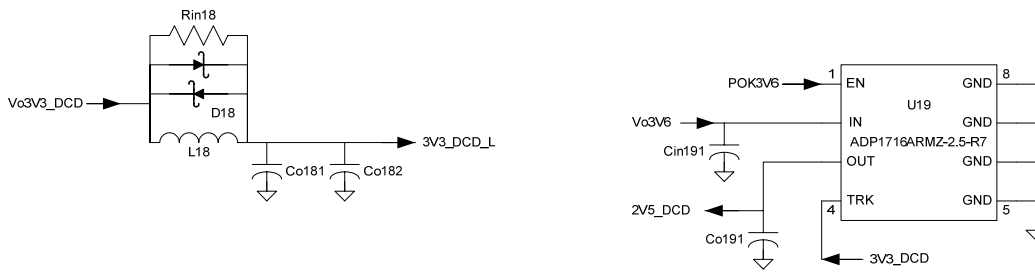


Figure 5. Schematic: V_{OUT12} , V_{OUT13} , V_{OUT14} and V_{OUT15}

3.3V at 0.6A (DCD) and 1.8V at 0.9 (DCD)



3.3V at 0.02A (DCD) Low Noise and 2.5V at 0.4 A (DCD)



1.25V at 2mA (DCD) Low Noise

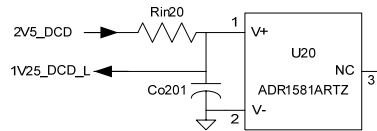


Figure 6. Schematic: V_{OUT16} , V_{OUT17} , V_{OUT18} , V_{OUT19} and V_{OUT20}

Pull Down Circuitry Ensures all rails <math><0.1V</math> in under 100ms from ON deassertion

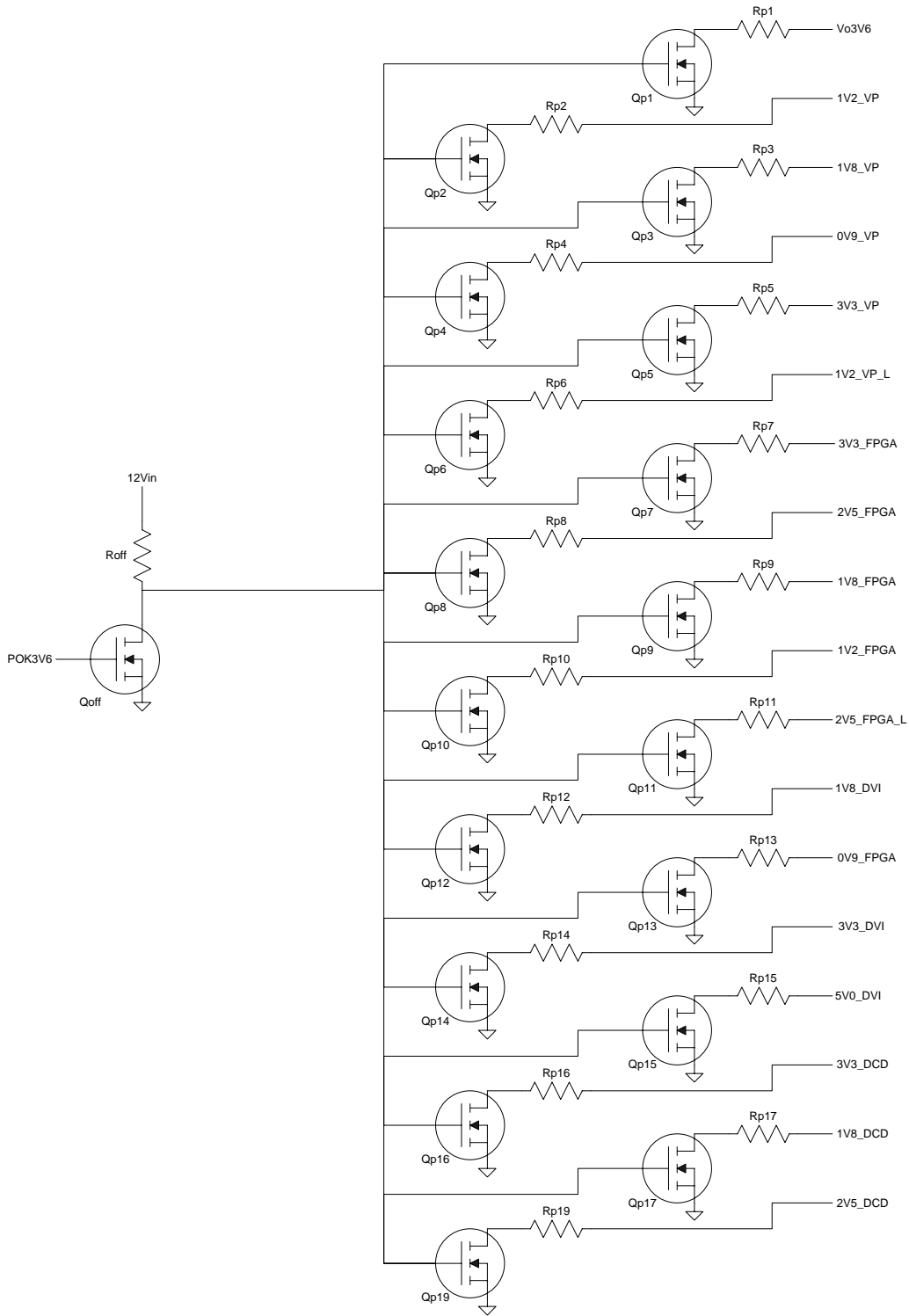


Figure 7. Schematic: Power Down Circuitry

BILL OF MATERIALS

Table 1. Vout1, and Vout2 Bill of Materials (Vo3V6 and 1V2_VP)

Description	Designator	Quantity	Manufacturer	MFR#
Capacitor Ceramic X7R 2.2n 0603 50V	Cc12	1	Vishay	Generic
Capacitor Ceramic COG 22p 0603 50V	Cc10, Cc20	2	Vishay	Generic
Capacitor Ceramic X7R 1.8n 0603 50V	Cc11	1	Vishay	Generic
Capacitor Ceramic X7R 1u 0603 16V	Cbias1, Cpv1, Cvcc1	3	Murata	GRM188R71C105KA12D
Capacitor Ceramic X7R 47n 0603 16V	Css1	1	Vishay	Generic
Capacitor Ceramic X7R 4.7n 0603 50V	Css2	1	Vishay	Generic
Capacitor Ceramic X5R 22u 1210 16V	Cin11, Cin21	2	Murata	grm32er61c226k
Capacitor Al Poly 125C 180u 10mm x 7.7mm 16V	Cin12	1	Nippon Chemi-con	APXH160ARA181MJ80G
Capacitor Ceramic X7R 100n 0603 16V	Cb1, Cb2	2	Vishay	Generic
Capacitor Ceramic COG 33p 0603 50V	Clim1, Clim2	2	Vishay	Generic
Capacitor Ceramic X7R 1.5n 0603 50V	Cc21	1	Vishay	Generic
Capacitor Ceramic X7R 1.2n 0603 50V	Cc22	1	Vishay	Generic
Capacitor Ceramic X5R 22u 1206 6.3V	Co11, Co21	2	Murata	grm31cr60j226k
Capacitor Al Poly 105C 470u 8mm x 7.7mm 6.3V	Co12	1	Nippon Chemi-con	APXE6R3ARA471MH80G
Capacitor Al Poly 105C 180u 5mm x 5.8mm 2.5V	Co22	1	Nippon Chemi-con	APXE2R5ARA181ME61G
Diode Schottky 200mA SOD-323 30V	Db1, Db2	2	Diodes inc	BAT54WS
Inductor Iron 4.5uH 13.2mm x 13.8mm	L1	1	Coilcraft	MLC1550-452MLC
Inductor Ferrite 3.8uH 10.2mm x 10mm	L2	1	Coilcraft	MSS1038-382NLC
Single N-Channel MOSFET PG-TDSON-8 30V	QH1, QH2	2	Infineon	BSC120N03LS
Single N-Channel MOSFET PG-TDSON-8 30V	QL1, QL2	2	Infineon	BSC050N03LS
5% Thick Film 10 Ohms 0603	Rpv1, Rin1, Rf23	3	Vishay	Generic
1% Thick Film 3.92k 0603	Rf12	1	Vishay	Generic
1% Thick Film 10.0k 0603	Rpg1, Rpg2	2	Vishay	Generic
1% Thick Film 20.0k 0603	Rf11, Rf21, Rf22, Rt21	4	Vishay	Generic
1% Thick Film 5.36k 0603	Rt22	1	Vishay	Generic
1% Thick Film 3.24k 0603	Rc22	1	Vishay	Generic
1% Thick Film 1.18k 0603	Rlim1	1	Vishay	Generic
1% Thick Film 2.43k 0603	Rlim2	1	Vishay	Generic
1% Thick Film 2.87k 0603	Rc12	1	Vishay	Generic
1% Thick Film 24.9k 0603	Rc11	1	Vishay	Generic
1% Thick Film 18.7k 0603	Rc21	1	Vishay	Generic
2 chan 300k to 600k PWM LFCSP-32	U1	1	Analog Devices	ADP1829ACPZ

Table 2. Vout3, Vout4, Vout5 and Vout6 Bill of Materials (3V3_VP, 1V8_VP, 1V2_VP and 0V9_VP)

Description	Designator	Quantity	Manufacturer	MFR#
Capacitor Ceramic COG 22p 0603 50V	Cc30, Cc40	2	Vishay	Generic
Capacitor Ceramic X7R 1.8n 0603 50V	Cc31, Cc32	2	Vishay	Generic
Capacitor Ceramic X7R 1u 0603 16V	Cbias3, Cpv3, Cvcc3, Cin61, Co61	5	Murata	GRM188R71C105KA12D
Capacitor Ceramic X7R 22n 0603 16V	Css3	1	Vishay	Generic
Capacitor Ceramic X7R 4.7n 0603 50V	Css4	1	Vishay	Generic
Capacitor Ceramic X7R 10n 0603 50V	Css5	1	Vishay	Generic
Capacitor Ceramic X5R 22u 1210 16V	Cin31	1	Murata	grm32er61c226k
Capacitor Ceramic X5R 2.2u 0805 16V	Cin51, Co51	2	Murata	GRM21BR61C225KA88L
Capacitor Ceramic X7R 100n 0603 16V	Cb3, Cb4	2	Vishay	Generic
Capacitor Ceramic COG 33p 0603 50V	Clim3, Clim4	2	Vishay	Generic
Capacitor Ceramic COG 330p 0603 50V	Cc41	1	Vishay	Generic
Capacitor Ceramic COG 820p 0603 50V	Cc42	1	Vishay	Generic
Capacitor Ceramic X5R 22u 1206 6.3V	Co31, Co41, Cin41	3	Murata	grm31cr60j226k
Capacitor Al Poly 105C 180u 5mm x 5.8mm 2.5V	Co32	1	Nippon Chemi-con	APXE2R5ARA181ME61G
Diode Schottky 200mA SOD-323 30V	Db3, Db4	2	Diodes inc	BAT54WS
Inductor Ferrite 7.0uH 10.2mm x 10mm	L3	1	Coilcraft	MSS1038-702NLC
Inductor Ferrite 10uH 8mm x 8mm	L4	1	Coilcraft	MSS7341-103MLD
Single N-Channel MOSFET PG-TDSON-8 30V	QL3	1	Infineon	BSC120N03LS
Single N-Channel MOSFET SOT23-6 20V	QH3, QH4, QL4	3	Vishay	Si3460DV
5% Thick Film 10 Ohms 0603	Rpv3, Rin3	2	Vishay	Generic
1% Thick Film 10.0k 0603	Rf32, Rpg3, Rpg4	3	Vishay	Generic
1% Thick Film 4.99k 0603	Rf43	1	Vishay	Generic
1% Thick Film 24.9k 0603	Rf42	1	Vishay	Generic
1% Thick Film 15.0k 0603	Rf41	1	Vishay	Generic
1% Thick Film 20.0k 0603	Rf31, Rt41	2	Vishay	Generic
1% Thick Film 7.68k 0603	Rt42	1	Vishay	Generic
1% Thick Film 60.4 Ohms 0603	Rc42	1	Vishay	Generic
1% Thick Film 2.00k 0603	Rlim3	1	Vishay	Generic
1% Thick Film 1.05k 0603	Rlim4	1	Vishay	Generic
1% Thick Film 2.15k 0603	Rc32	1	Vishay	Generic
1% Thick Film 21.5k 0603	Rc31	1	Vishay	Generic
1% Thick Film 49.9k 0603	Rc41	1	Vishay	Generic
2 chan 300k to 600k PWM LFCSP-32	U3	1	Analog Devices	ADP1829ACPZ
500mA 2.5V Linear Reg MSOP-8 w/track	U5	1	Analog Devices	ADP1715ARMZ-3.3-R7
150mA 1.2V Linear Reg TSOT-5	U6	1	Analog Devices	ADP1710AUJZ-1.2-R7

Table 3. Vout7, Vout8, Vout9, Vout10 and Vout11 Bill of Materials (3V3_FPGA, 2V5_FPGA, 1V8_FPGA, 1V2_FPGA and 2V5_FPGA)

Description	Designator	Quantity	Manufacturer	MFR#
Capacitor Ceramic X7R 1u 0603 16V	Cin71, Cin72	2	Murata	GRM188R71C105KA12D
Capacitor Ceramic X5R 2.2u 0805 16V	Cin81, Cin82, Cin101, Cin111, Co111	5	Murata	GRM21BR61C225KA88L
Capacitor Ceramic X5R 4.7u 0805 10V	Cin91, Cin92, Cout101	3	Murata	GRM21BR61A475KA73L
Capacitor Ceramic X7R 1n 0603 50V	Css7, Css8, Css9	3	Vishay	Generic
Capacitor Ceramic X7R 10n 0603 25V	Css11	1	Vishay	Generic
Capacitor Ceramic COG 82p 0603 50V	Cc71	1	Vishay	Generic
Capacitor Ceramic COG 68p 0603 50V	Cc91	1	Vishay	Generic
Capacitor Ceramic X7R 100n 0603 16V	Cvcc7, Cvcc8, Cvcc9, Cvcc10	4	Vishay	Generic
Capacitor Ceramic COG 120p 0603 50V	Cc81	1	Vishay	Generic
Capacitor Ceramic X5R 10u 1206 10V	Co71, Co81	2	Murata	grm31mr61a106k
Capacitor Ceramic X5R 22u 1206 6.3V	Co91	1	Murata	grm31cr60j226k
Inductor Ferrite 3.3uH 4mm x 4mm	L7	1	Coilcraft	LPS4018-332
Inductor Ferrite 2.2uH 4mm x 4mm	L8, L9	2	Coilcraft	LPS4018-222
Inductor Ferrite 2.2uH 1210 1.1A	L10	1	Taiyo Yuden	CB C3225T2R2MR
5% Thick Film 10 Ohms 0603	Rin7, Rin8, Rin9, Rin10	4	Vishay	Generic
1A Thick Film 0 Ohm jumper 0603	Rf71, Rf91	2	Vishay	Generic
1% Thick Film 169k 0603	Rf81	1	Vishay	Generic
1% Thick Film 80.6k 0603	Rf82	1	Vishay	Generic
1% Thick Film 69.8k 0603	Rc81	1	Vishay	Generic
1% Thick Film 100k 0603	Rc71	1	Vishay	Generic
1% Thick Film 200k 0603	Rc91	1	Vishay	Generic
Integrated 1.2MHz PWM LFCSP-16	U7	1	Analog Devices	ADP2107ACPZ-3.3-R7
Integrated 1.2MHz PWM LFCSP-16	U8	1	Analog Devices	ADP2107ACPZ-R7
Integrated 1.2MHz PWM LFCSP-16	U9	1	Analog Devices	ADP2107ACPZ-1.8-R7
Integrated 3MHz PWM LFCSP-8	U10	1	Analog Devices	ADP2102YCPZ-1.2-R7
300mA 2.5V Linear Reg TSOT-5 w/SS	U11	1	Analog Devices	ADP1712AUJZ-2.5-R7

Table 4. Vout12, Vout13, Vout14 and Vout15 Bill of Materials (1V8_DVI, 0V9_FPGA, 3V3_DVI, and 5V0_DVI)

Description	Designator	Quantity	Manufacturer	MFR#
Capacitor Ceramic COG 68p 0603 50V	Cc120	1	Vishay	Generic
Capacitor Ceramic COG 22p 0603 50V	Cc130	1	Vishay	Generic
Capacitor Ceramic X7R 2.2n 0603 50V	Cc121	1	Vishay	Generic
Capacitor Ceramic COG 820p 0603 50V	Cc122	1	Vishay	Generic
Capacitor Ceramic X7R 1u 0603 16V	Cbias12, Cpv12, Cvcc12	3	Murata	GRM188R71C105KA12D
Capacitor Ceramic X7R 4.7n 0603 16V	Css12, Css13	2	Vishay	Generic
Capacitor Ceramic X7R 1n 0603 50V	Css14	1	Vishay	Generic
Capacitor Ceramic X5R 22u 1210 16V	Cin121	1	Murata	grm32er61c226k
Capacitor Ceramic X5R 2.2u 0805 16V	Cin141, Cin142	2	Murata	GRM21BR61C225KA88L
Capacitor Ceramic X7R 100n 0603 16V	Cb12, Cb13, Co151, Cvcc14	4	Vishay	Generic
Capacitor Ceramic COG 33p 0603 50V	Clim12, Clim13	2	Vishay	Generic
Capacitor Ceramic COG 330p 0603 50V	Cc131	1	Vishay	Generic
Capacitor Ceramic COG 820p 0603 50V	Cc132	1	Vishay	Generic
Capacitor Ceramic COG 120p 0603 50V	Cc141	1	Vishay	Generic
Capacitor Ceramic X5R 22u 1206 6.3V	Co121, Co122, Co131, Cin131	4	Murata	grm31cr60j226k
Capacitor Ceramic X5R 10u 1206 10V	Co141	1	Murata	grm31mr61a106k
Diode Schottky 200mA SOD-323 30V	Db12, Db13	2	Diodes inc	BAT54WS
Inductor Ferrite 7.0uH 10.2mm x 10mm	L12	1	Coilcraft	MSS1038-702NLC
Inductor Ferrite 10uH 8mm x 8mm	L13	1	Coilcraft	MSS7341-103MLD
Inductor Ferrite 2.2uH 4mm x 4mm	L14	1	Coilcraft	LPS4018-222
Single N-Channel MOSFET SOT23-6 20V	QH12, QL12, QH13, QL13	4	Vishay	Si3460DV
5% Thick Film 10 Ohms 0603	Rpv12, Rin12, Rin14, Rout15	4	Vishay	Generic
1% Thick Film 10.0k 0603	Rf122, Rt122, Rpg12, Rpg13	4	Vishay	Generic
1A Thick Film 0 Ohm jumper 0603	Rf141	1	Vishay	Generic
1% Thick Film 4.99k 0603	Rf133	1	Vishay	Generic
1% Thick Film 24.9k 0603	Rf132	1	Vishay	Generic
1% Thick Film 15.0k 0603	Rf131	1	Vishay	Generic
1% Thick Film 20.0k 0603	Rf121, Rt131, Rt121	3	Vishay	Generic
1% Thick Film 7.68k 0603	Rt132	1	Vishay	Generic
1% Thick Film 60.4 Ohms 0603	Rc132	1	Vishay	Generic
1% Thick Film 2.87k 0603	Rlim12	1	Vishay	Generic
1% Thick Film 1.05k 0603	Rlim13	1	Vishay	Generic
1% Thick Film 49.9 Ohms 0603	Rc122	1	Vishay	Generic
1% Thick Film 49.9k 0603	Rc131	1	Vishay	Generic
1% Thick Film 8.45k 0603	Rc121	1	Vishay	Generic
1% Thick Film 61.9k 0603	Rc141	1	Vishay	Generic
2 chan 300k to 600k PWM LFCSP-32	U12	1	Analog Devices	ADP1829ACPZ
Integrated 1.2MHz PWM LFCSP-16	U14	1	Analog Devices	ADP2107ACPZ-3.3-R7

Table 5. Vout16, Vout17, Vout18, Vout19 and Vout20 Bill of Materials (3V3_DCD, 1V8_DCD, 3V3_DCD_L, 2V5_DCD and 1V25_DCD_L)

Description	Designator	Quantity	Manufacturer	MFR#
Capacitor Ceramic X7R 1u 0603 16V	Cin161, Co162	2	Murata	GRM188R71C105KA12D
Capacitor Ceramic X5R 2.2u 0805 16V	Cin171, Cin172, Cin191, Co191	4	Murata	GRM21BR61C225KA88L
Capacitor Ceramic X7R 1n 0603 50V	Css16, Co201	2	Vishay	Generic
Capacitor Ceramic COG 100p 0603 50V	Cc171, Css17	2	Vishay	Generic
Capacitor Ceramic X7R 100n 0603 16V	Cvcc16, Cvcc17, Co181	3	Vishay	Generic
Capacitor Ceramic COG 47p 0603 50V	Cc161	1	Vishay	Generic
Capacitor Ceramic X5R 22u 1206 6.3V	Co161	1	Murata	grm31cr60j226k
Capacitor Ceramic X5R 10u 1206 10V	Co171	1	Murata	grm31mr61a106k
Capacitor Al Poly 105C 100u 5mm x 5.8mm 4V	Co182	1	Nippon Chemi-con	APXE4R0ARA101ME61G
Inductor Ferrite 4.7uH 1210 1A	L16	1	Taiyo Yuden	CB C3225T4R7MR
Inductor Ferrite 2.2uH 1210 1.1A	L17	1	Taiyo Yuden	CB C3225T2R2MR
Inductor Ferrite 100uH 1210 0.27A	L18	1	Taiyo Yuden	CB C3225T101MR
5% Thick Film 10 Ohms 0603	Rin16, Rin17, Rin18	3	Vishay	Generic
1% Thick Film 402 Ohms 0603	Rin20	1	Vishay	Generic
1A Thick Film 0 Ohm jumper 0603	Rf161, Rf171	2	Vishay	Generic
1% Thick Film 100k 0603	Rt171	1	Vishay	Generic
1% Thick Film 80.6k 0603	Rt172	1	Vishay	Generic
1% Thick Film 200k 0603	Rc161	1	Vishay	Generic
1% Thick Film 76.8k 0603	Rc171	1	Vishay	Generic
Diode Dual Schottky 200mA SOT-323 30V	D18	1	Diodes inc	BAT54SW
Integrated 1.2MHz PWM LFCSP-16	U16	1	Analog Devices	ADP2105ACPZ-3.3-R7
Integrated 1.2MHz PWM LFCSP-16	U17	1	Analog Devices	ADP2105ACPZ-1.8-R7
500mA 2.5V Linear Reg MSOP-8 w/track	U19	1	Analog Devices	ADP1716ARMZ-2.5-R7
10mA 1.25V Shunt Ref SOT23	U20	1	Analog Devices	ADR1581ARTZ

Table 6. Power Down Bill of Materials

Description	Designator	Quantity	Manufacturer	MFR#
Single N-Channel MOSFET SOT523 60V	Qoff, Qp1, Qp2, Qp3, Qp4, Qp5, Qp6, Qp7, Qp8, Qp9, Qp10, Qp11, Qp12, Qp13, Qp14, Qp15, Qp16, Qp17, Qp19	19	Diodes inc	2N7002T-7-F
1% Thick Film 10.0k 0603	Roff	1	Vishay	Generic
1% Thick Film 28.7 Ohms 1206	Rp1	1	Vishay	Generic
1% Thick Film 130 Ohms 0603	Rp2	1	Vishay	Generic
1% Thick Film 100 Ohms 0603	Rp3	1	Vishay	Generic
1% Thick Film 1.43k 0603	Rp4, Rp13	2	Vishay	Generic
1% Thick Film 9.09k 0603	Rp5	1	Vishay	Generic
1% Thick Film 28.0k 0603	Rp6	1	Vishay	Generic
1% Thick Film 1.96k 0603	Rp7, Rp14	2	Vishay	Generic
1% Thick Film 2.15k 0603	Rp8	1	Vishay	Generic
1% Thick Film 536 Ohms 0603	Rp9	1	Vishay	Generic
1% Thick Film 5.90k 0603	Rp10	1	Vishay	Generic
1% Thick Film 9.76k 0603	Rp11, Rp19	2	Vishay	Generic
1% Thick Film 536 Ohms 0603	Rp12	1	Vishay	Generic
1% Thick Film 178k 0603	Rp15	1	Vishay	Generic
1% Thick Film 154 Ohms 0603	Rp16	1	Vishay	Generic
1% Thick Film 2.37k 0603	Rp17	1	Vishay	Generic

NOTES

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