Modify note

Version	Date	Author	Change Note	Approved
V00	20160713	hwq	First edictor	

RK3399 I2C MAP

Port	Pin name	Domain	Bus name	Pull-up voltage	Slave Device	Slave Addr (MS 7Bits)	Note	Slave Bus Capability
I2C0	GPIO1_B7/SPI3_RXD/I2C0_SDA GPIO1_C0/SPI3_TXD/I2C0_SCL	PMUIO2 VCC3V0_IO	I2C0_SDA_PMIC I2C0_SCL_PMIC	VCC3V0	TT8563	0xA2,0XA3	RTC	
					Rockchip RK808	0x1b	PMIC	
I2C1	GPIO4_A1/I2C1_SDA GPIO4_A2/I2C1_SCL	APIO5 VCC1V8_IO	I2C1_SDA_PCIE I2C1_SDA_PCIE	VCCA1V8_CODEC				
			I2C1_SDA_AUDIO I2C1_SCL_AUDIO	VCCA1V8_CODEC	ALC5640	0x38h	Audio codec	
			I2C1_SDA_CAM I2C1_SCL_CAM	VCCA1V8_CODEC	Omnivision OV13850	0x6c0,0x6D	MIPI Camera	
				VCCA1V8_CODEC	S5K4ECGX	0x78	DVP Camera	
			Other pin function	VCCA1V8_CODEC				
I2C2	GPIO2_A0/VOP_D0/CIF_D0/I2C2_SDA GPIO2_A1/VOP_D1/CIF_D1/I2C2_SCL	APIO2 VCC1V8_IO	Other pin function	VCC1V8_DVP				
I2C3	GPIO4_C0/I2C3_SDA/UART2B_RX GPIO4_C1/I2C3_SCL/UART2B_TX	APIO4 VCC3V0_IO	I2C3_SDA_HDMI I2C3_SCL_HDMI	VCC_3V0				
I2C4	GPIO1_B3/I2C4_SDA GPIO1_B4/I2C4_SCL	PMUIO2 VCC3V0_IO	I2C4_SDA_TYPEC I2C4_SCL_TYPEC	VCC_3V0	Fairchild FUSB302B	0x44,0x46	USB-TypeC Mux	100kHz,400KHz,1MHz fast mode+
			I2C4_SDA_TP I2C4_SCL_TP	VCC_3V0	Silead GSL3680	0x40	Touch panel	
			AT18_SDA AT18_SCL	VCC_3V0	AT18		Encryption	
			Other pin function	VCC_3V0				
I2C5	GPIO3_B2/MAC_RXER/I2C5_SDA GPIO3_B3/MAC_CLK/I2C5_SCL	APIO1 VCC3V3_LAN	Other pin function	VCC3V3_S3				
I2C6	GPIO2_B1/SPI2_RXD/CIF_HREF/I2C6_SDA GPIO2_B2/SPI2_TXD/CIF_CLKIN/I2C6_SCL	APIO2 VCC1V8_IO	Other pin function	VCC1V8_DVP				
I2C7	GPIO2_A7/VOP_D7/CIF_D7/I2C7_SDA GPIO2_B0/VOP_CLK/CIF_VSYNC/I2C7_SCL	APIO2 VCC1V8_IO	Other pin function					
I2C8	GPIO1_C4/I2C8_SDA GPIO1_C5/I2C8_SCL	PMUIO2 VCC3V0_IO	Other pin function					

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Title: I2C Map		
File: Firefly-RK3399		REV: 1.0
Create Date: Monday, March 28, 2016		Page Num: 2
Modify Date: Tuesday, January 03, 2017		Page Total: 30

RK3399 Power Domain Map

Part Port	Domain	Pin name in datasheet	I/O type	Power supply	Power source
Part C	PMUIO1	pmuio1_gpio0ab	1.8V only	VCC1V8_PMUPLL	RK808 VLDO3
Part E	PMUIO2	pmu1830_gpio1abcd	1.8V(Default) 3.0V	VCC_1V5 VCC_3V0	RK808 VLDO6 RK808 VLDO8
Part I	APIO1	gmac_gpio3abc	3.3V only	VCC3V3_S3	RK808 VSW1
Part L	APIO2	bt656_gpio2ab	1.8V(Default) 3.0V	VCC1V8_DVP	RK808 VLDO1
Part G	APIO3	wifi/bt_gpio2cd	1.8V only	VCC1V8_S3	RK808 Buck4
Part K	APIO4	gpio1830_gpio4cd	1.8V 3.0V(Default)	VCC_1V5 VCC3V0_IO	RK808 VLDO6 RK808 VLDO8
Part J	APIO5	audio_gpio3d_gpio4a	1.8V(Default) 3.0V	VCCA1V8_CODEC	RK808 VLDO7
Part F	SDMMC0	sdmmc_gpio4b	1.8V 3.0V(Default)	VCC_SDIO	RK808 VLDO4

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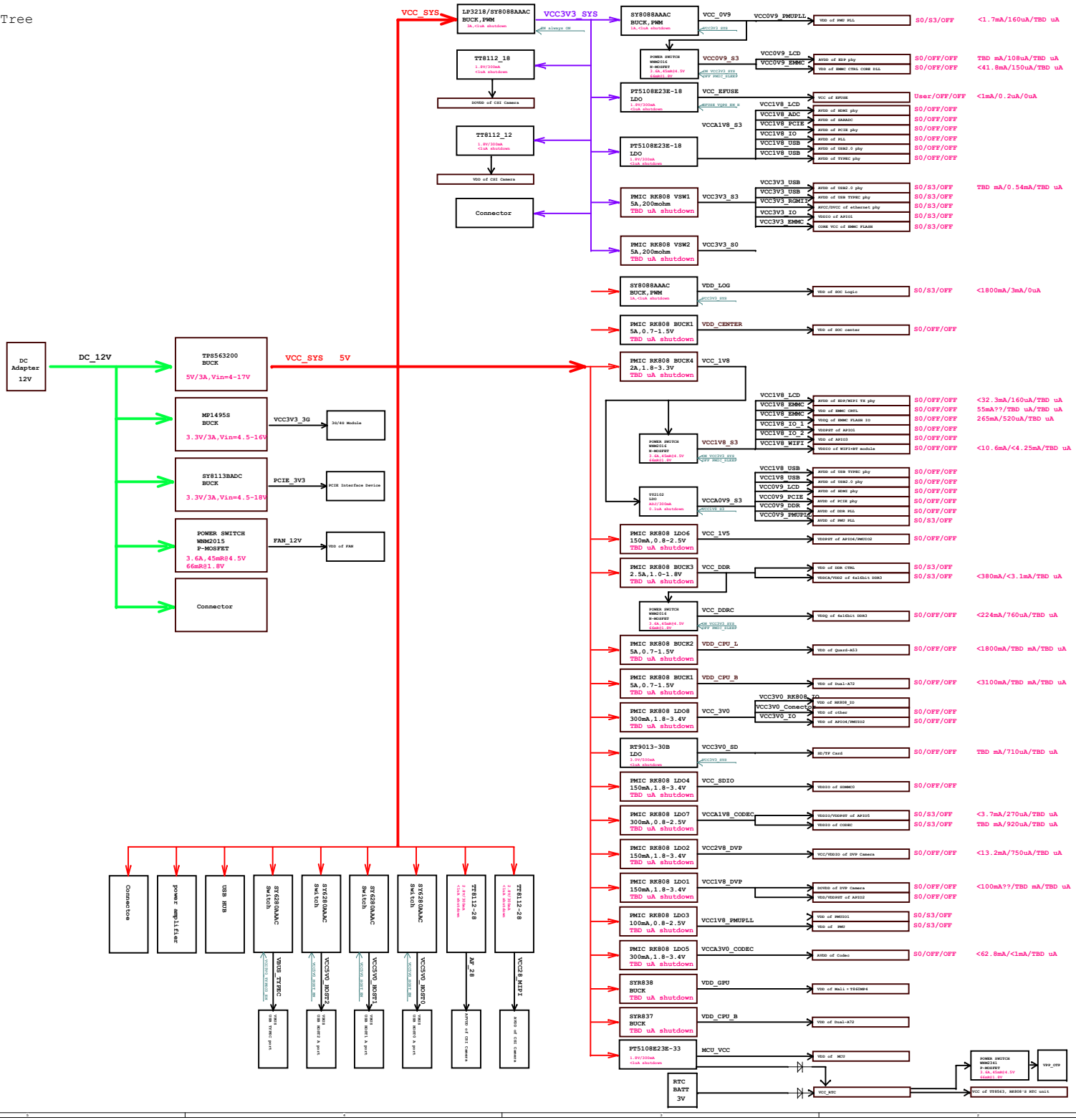
Title: Power Domain Map

File: Firefly-RK3399 REV: 1.0

Create Date: Monday, March 28, 2016 Page Num: 3

Modify Date: Tuesday, January 03, 2017 Page Total: 30

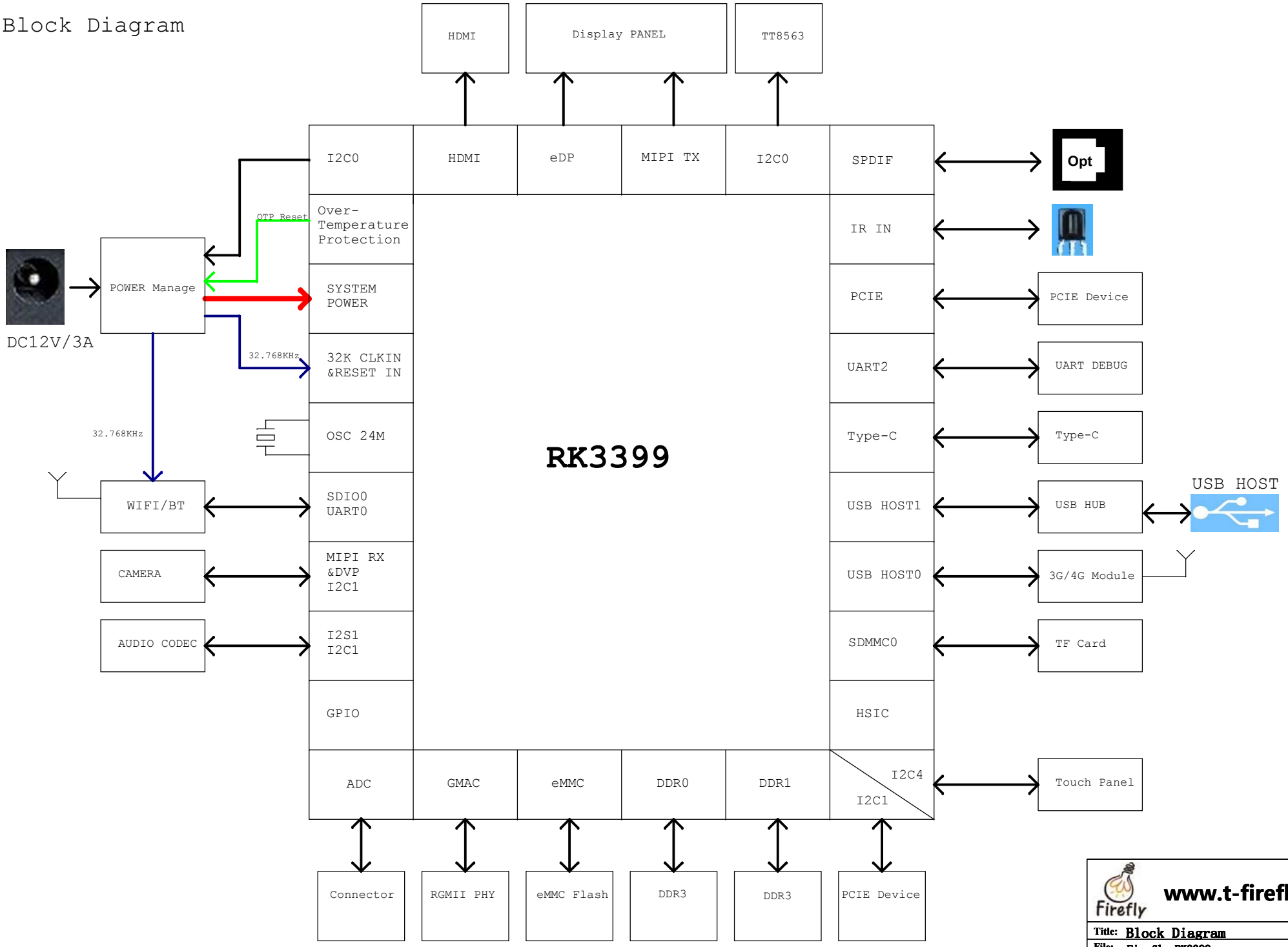
RK3399 Power Tree



Firefly www.t-firefly.com

Title:	Power Tree
File:	Firefly-RK3399
REV:	1.0
Create Date:	Monday, March 28, 2016
Page Num:	4
Modify Date:	Tuesday, January 03, 2017
Page Total:	30

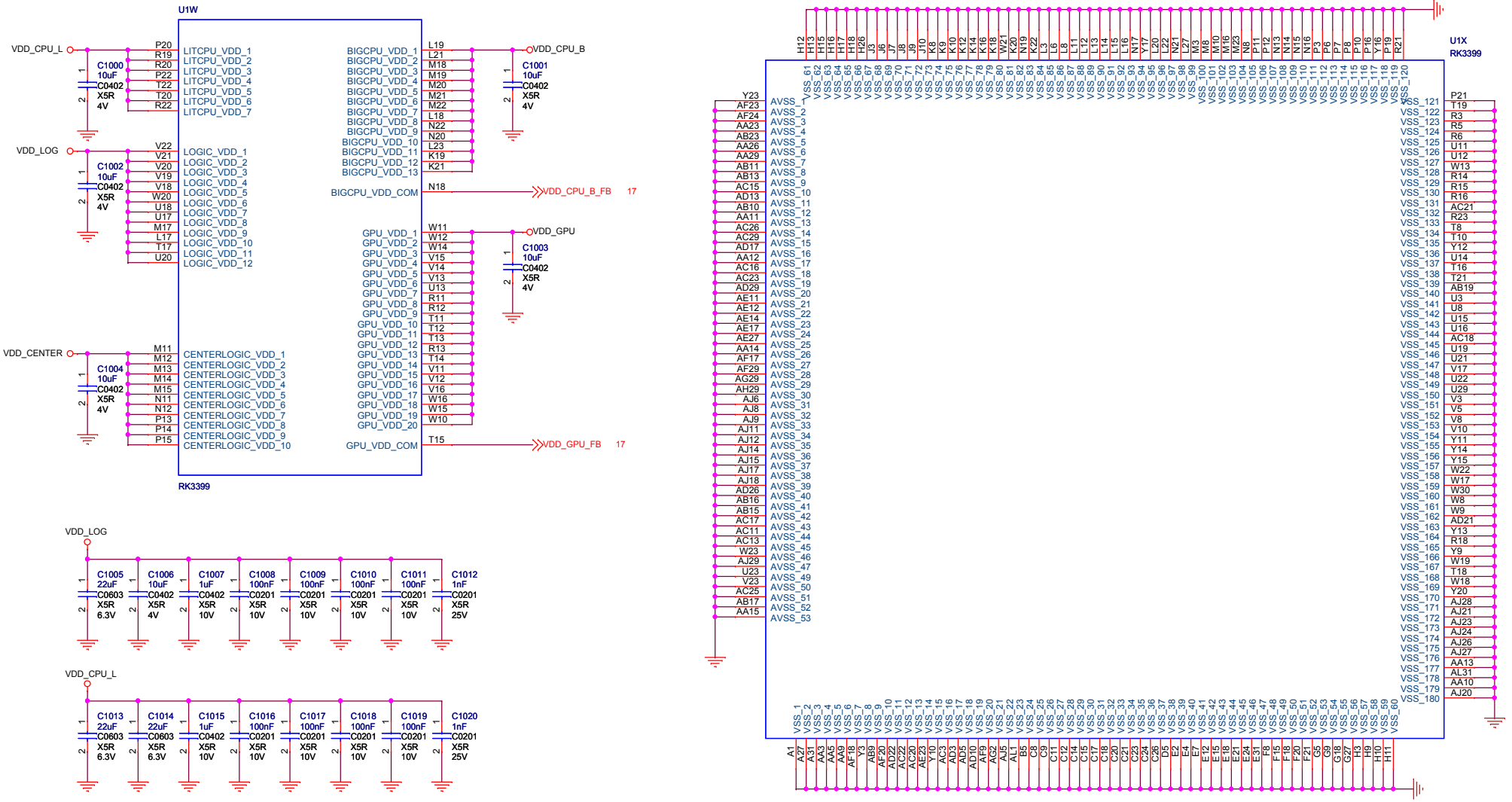
Block Diagram

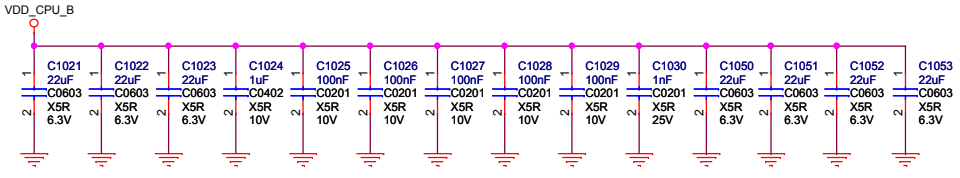


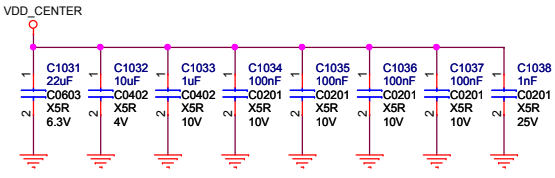
Firefly www.t-firefly.com

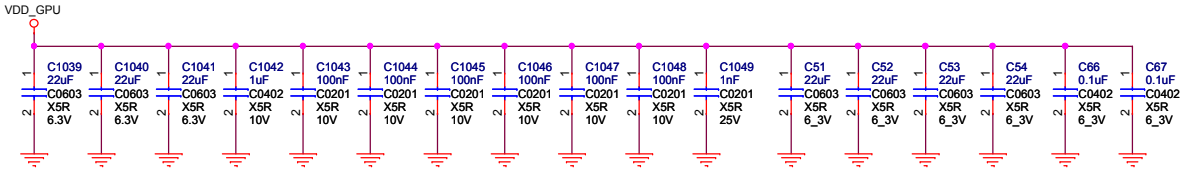
Title:	Block Diagram	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Friday, June 17, 2016	Page Num: 5
Modify Date:	Tuesday, January 03, 2017	Page Total: 30

RK3399 Power









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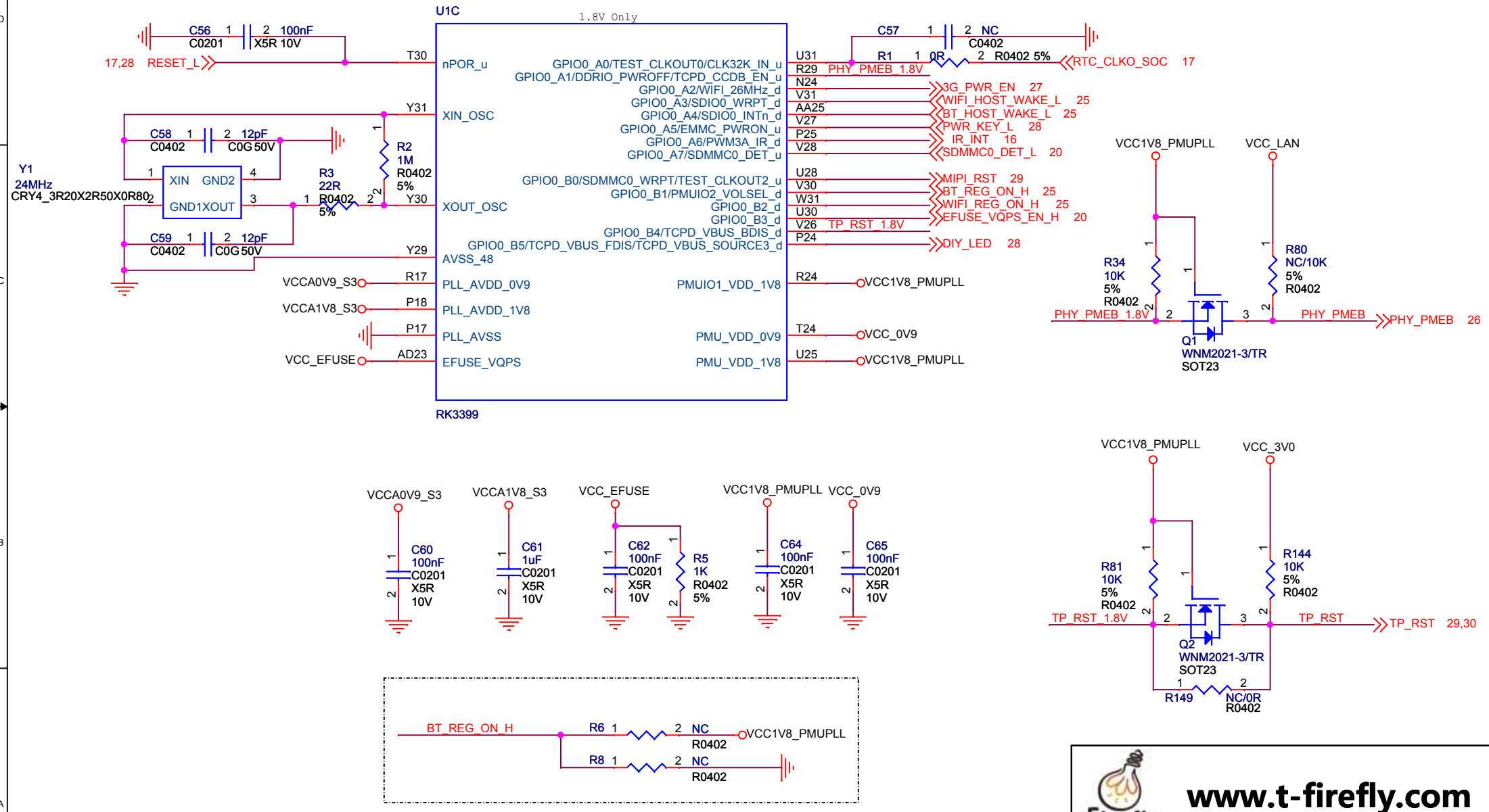
Title:	RK3399 Power	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Monday, March 28, 2016	Page Num: 6
Modify Date:	Tuesday, January 03, 2017	Page Total: 30

RK3399 PMU Controler



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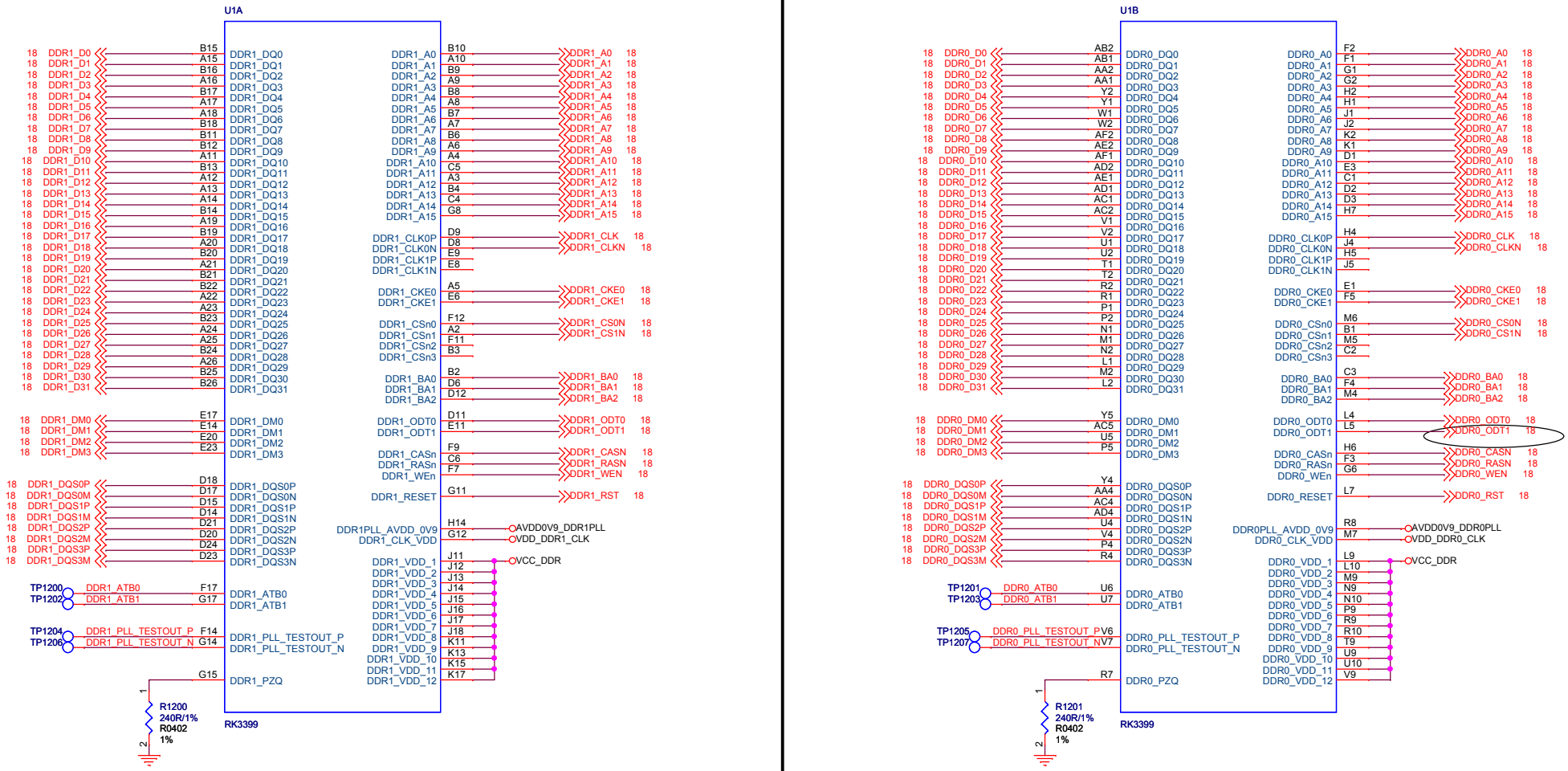
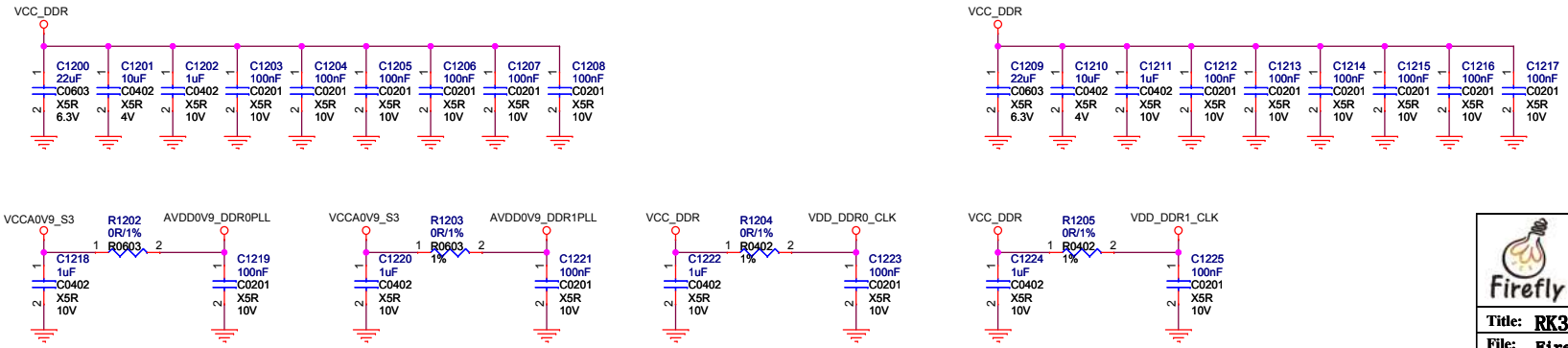
Title:	RK3399 PMU Controler	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Monday, March 28, 2016	Page Num: 7
Modify Date:	Wednesday, February 08, 2017	Page Total: 30

RK3399 DDR Controler



DDR FILTER



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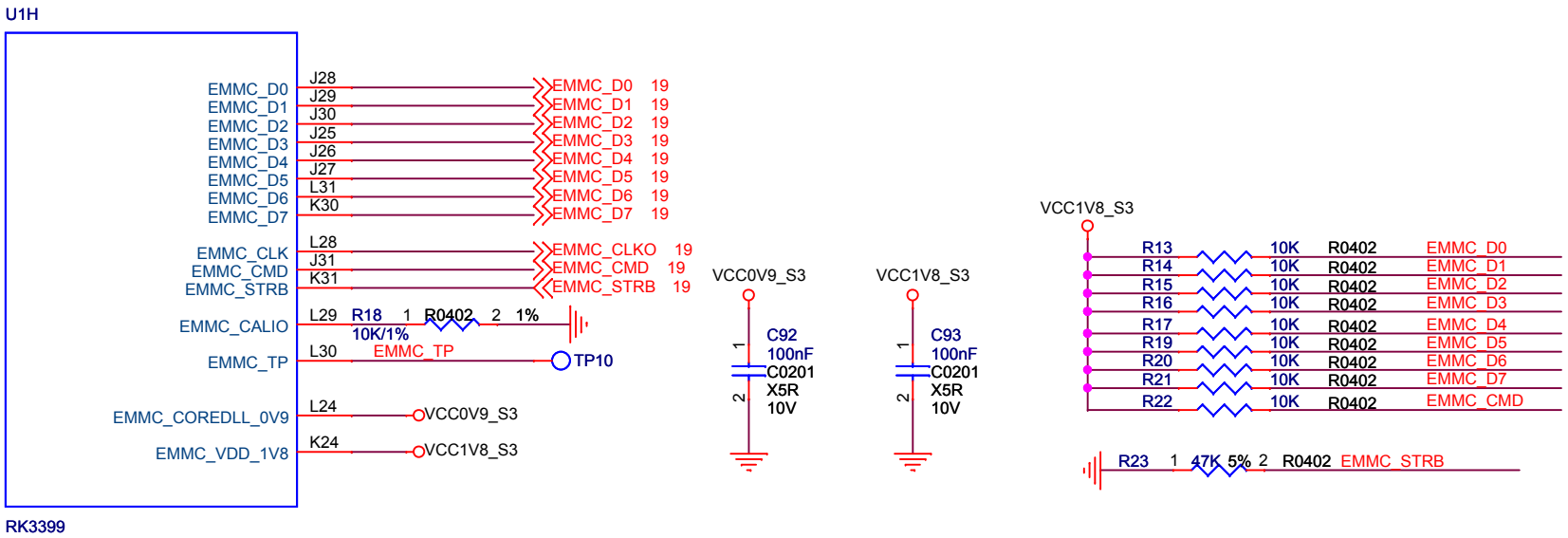
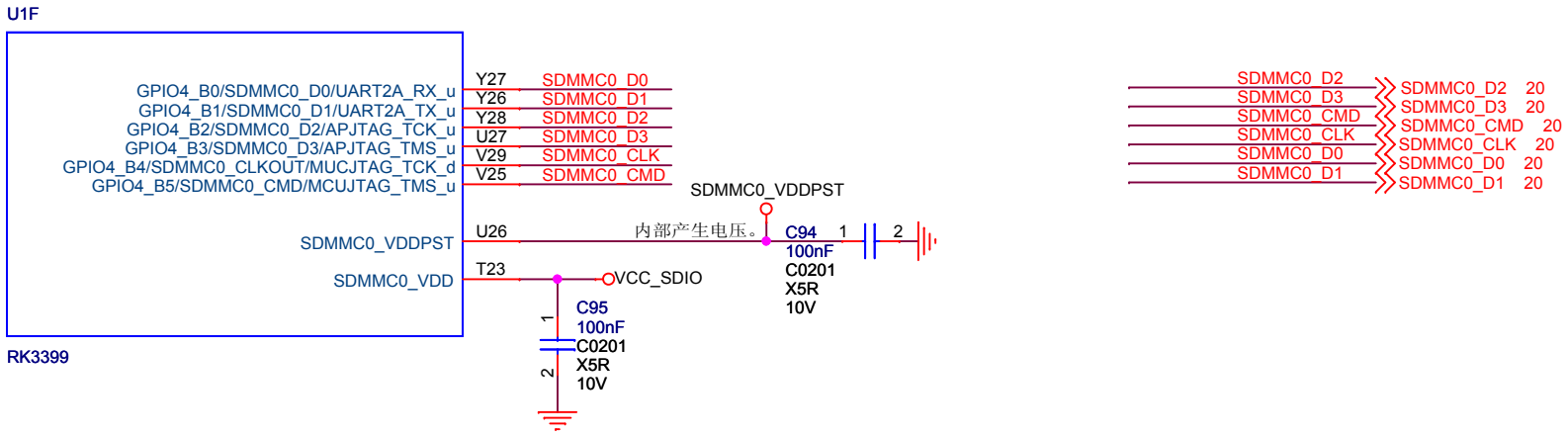
Title:	RK3399 DDR Controler	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Monday, March 28, 2016	Page Num: 8
Modify Date:	Tuesday, January 03, 2017	Page Total: 30

eMMC



SDIO0



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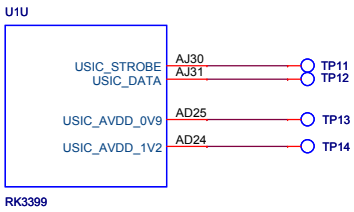
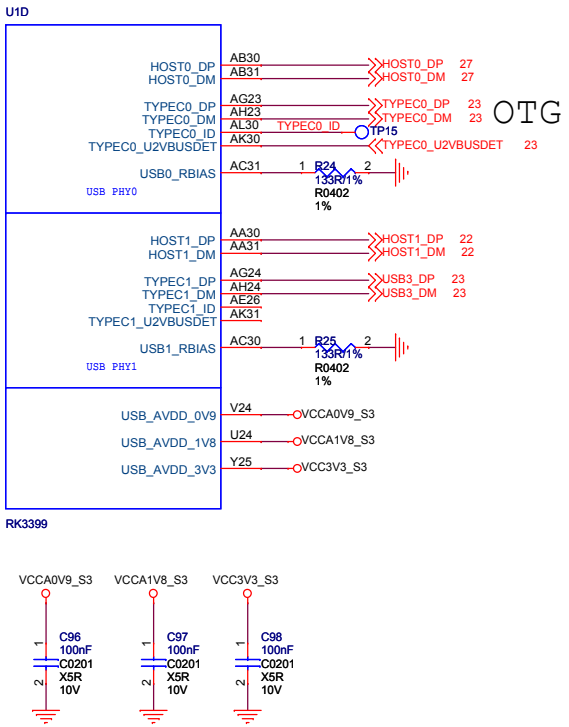
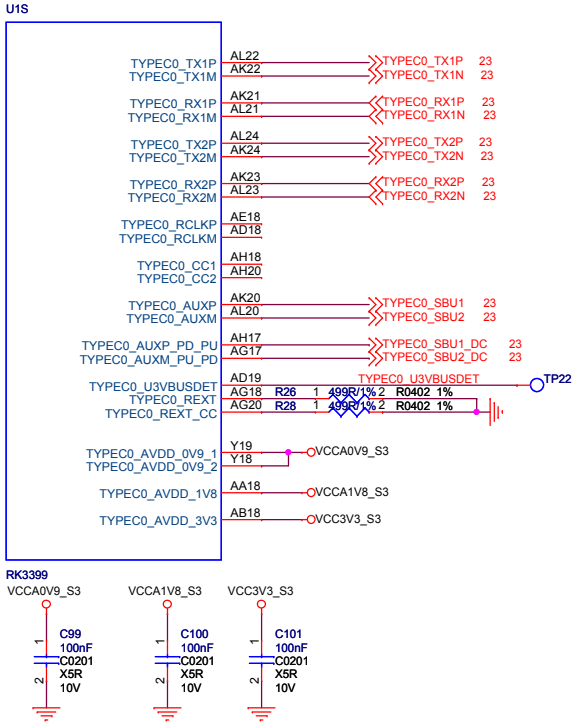
Title: RK3399 Flash/SDMMC Controler		
File: Firefly-RK3399		REV: 1.0
Create Date: Monday, March 28, 2016		Page Num: 9
Modify Date: Tuesday, January 03, 2017		Page Total: 30

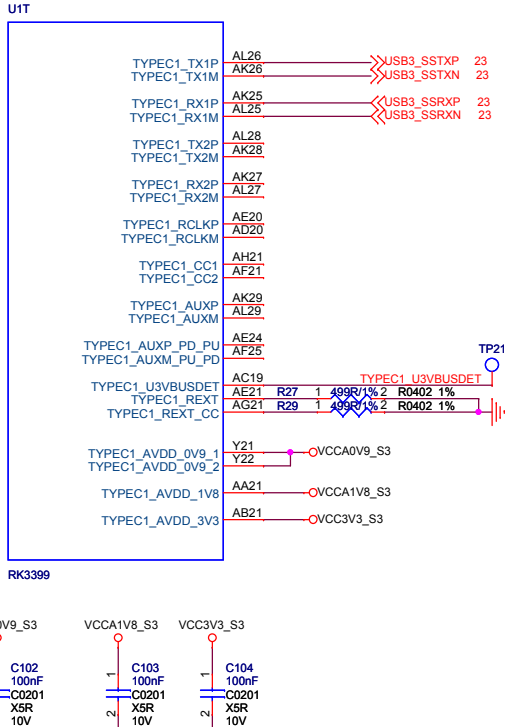
RK3399 USIC Controler

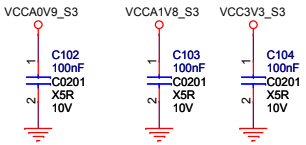


RK3399 USB Controler









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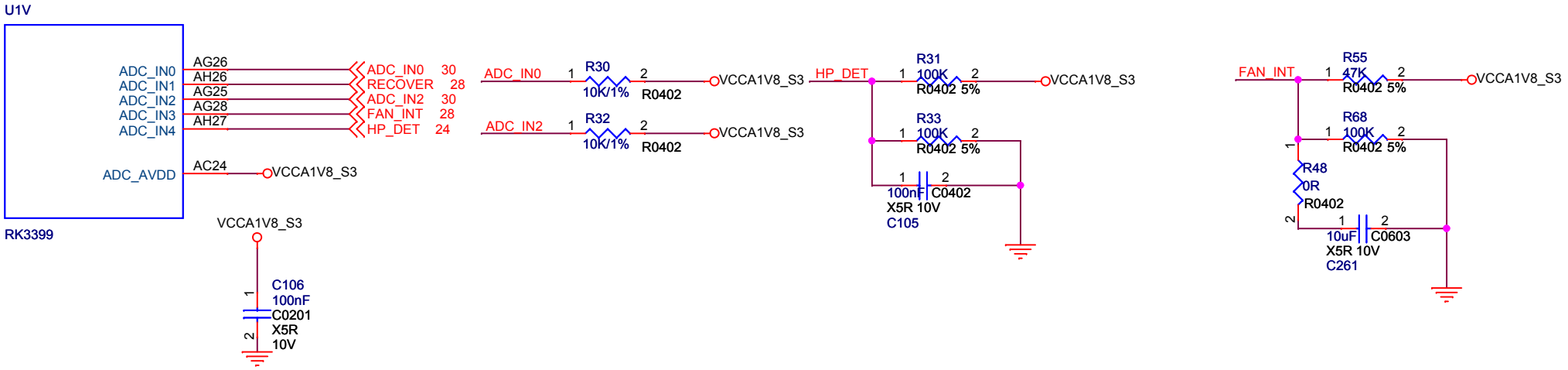
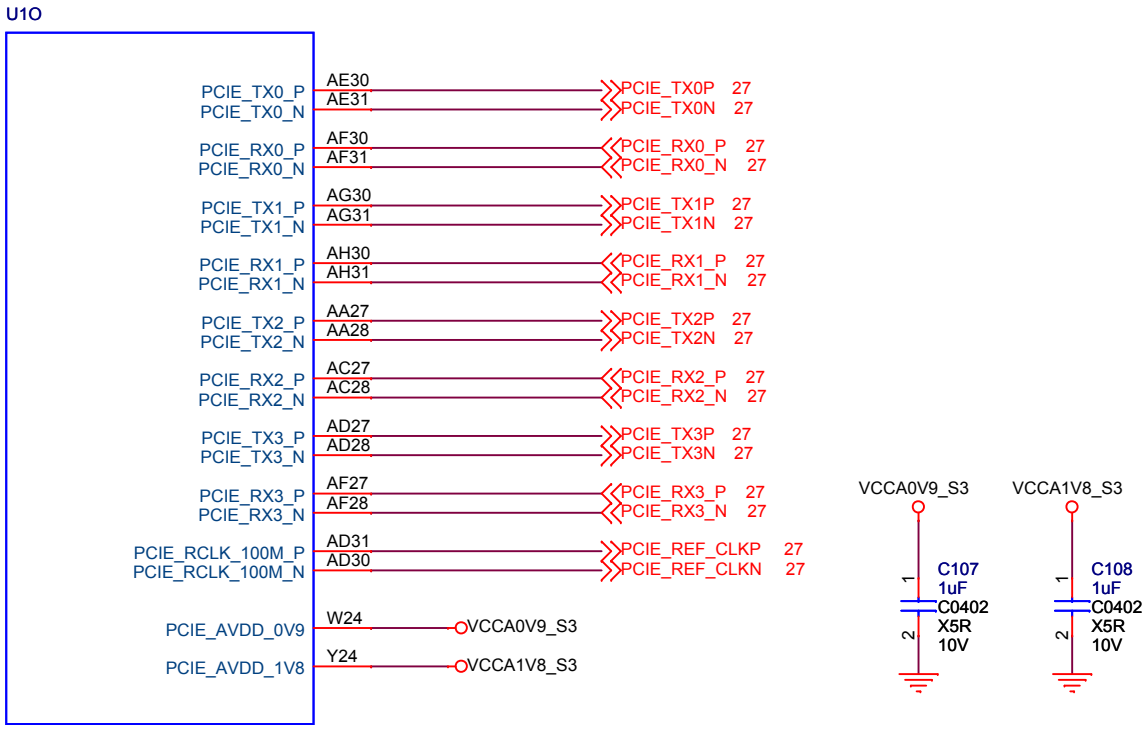
Title:	RK3399 USB/USIC Controler	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Monday, March 28, 2016	Page Num: 10
Modify Date:	Tuesday, January 03, 2017	Page Total: 30

RK3399 SARADC



RK3399 PCIE



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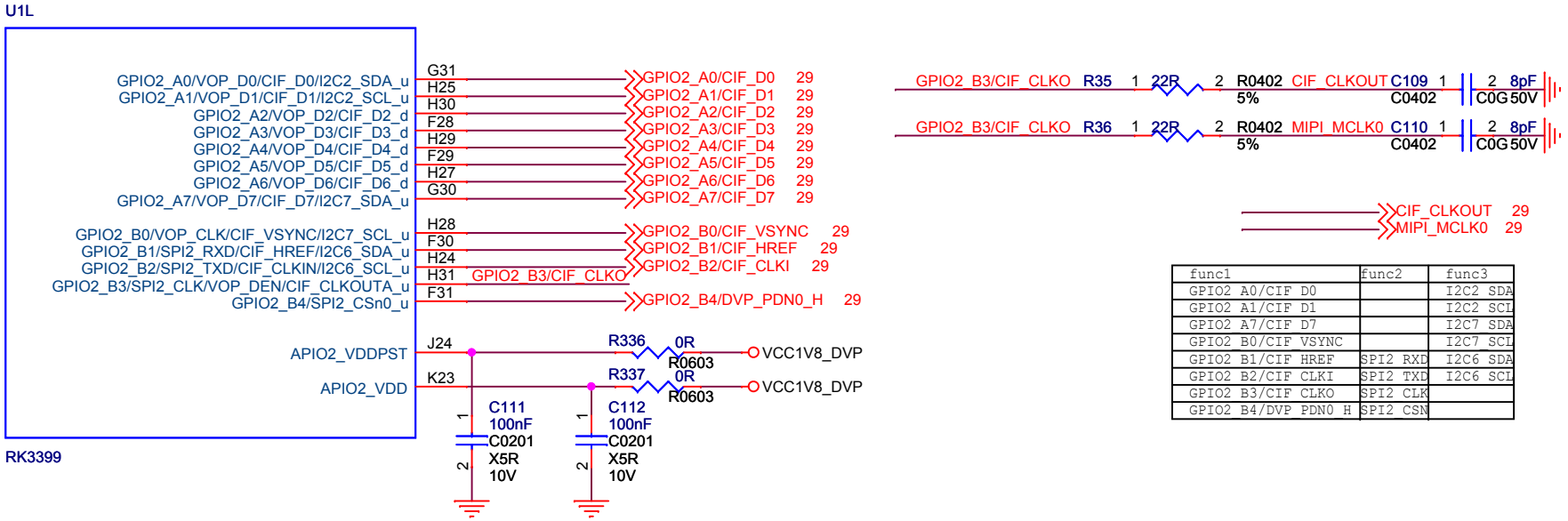
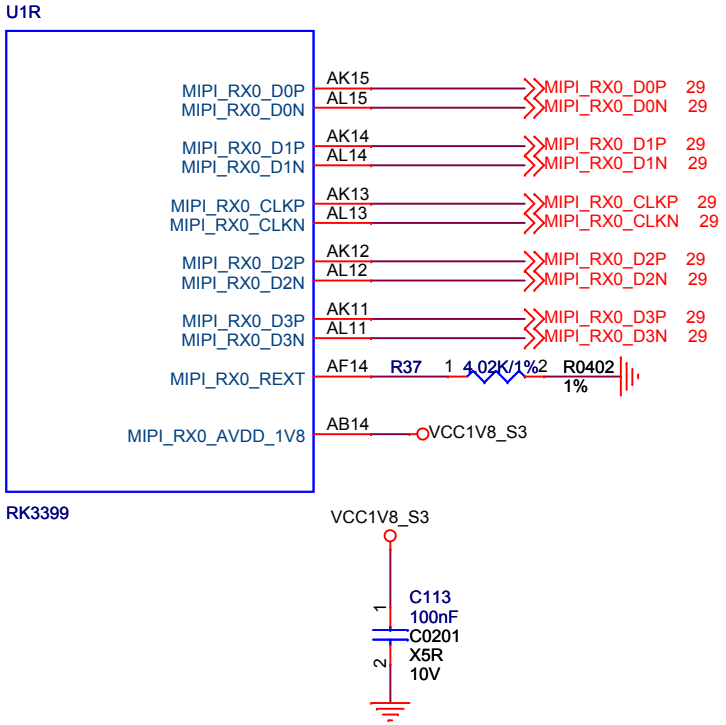
Title:	RK3399 SARADC/PCIE	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Monday, March 28, 2016	Page Num: 11
Modify Date:	Tuesday, January 03, 2017	Page Total: 30

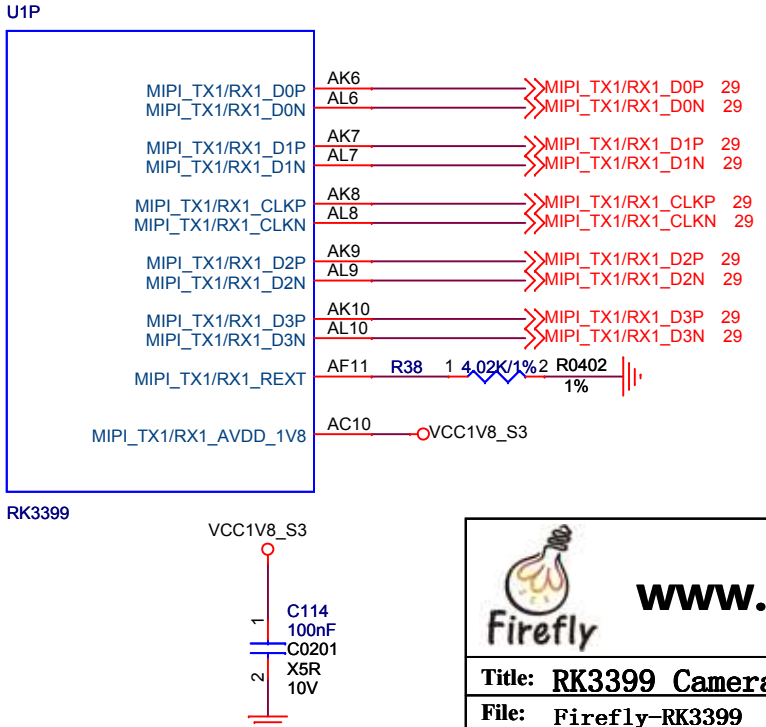
RK3399 DVP



func1	func2	func3
GPIO2 A0/CIF D0		I2C2 SDA
GPIO2 A1/CIF D1		I2C2 SCL
GPIO2 A7/CIF D7		I2C7 SDA
GPIO2 B0/CIF VSYNC		I2C7 SCL
GPIO2 B1/CIF HREF	SPI2 RXD	I2C6 SDA
GPIO2 B2/CIF CLKI	SPI2 TXD	I2C6 SCL
GPIO2 B3/CIF CLKO	SPI2 CLK	
GPIO2 B4/DVP PDN0 H	SPI2 CSN	

RK3399 CSI





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Title: RK3399 Camera Interface		
File: Firefly-RK3399		REV: 1.0
Create Date: Monday, March 28, 2016		Page Num: 12
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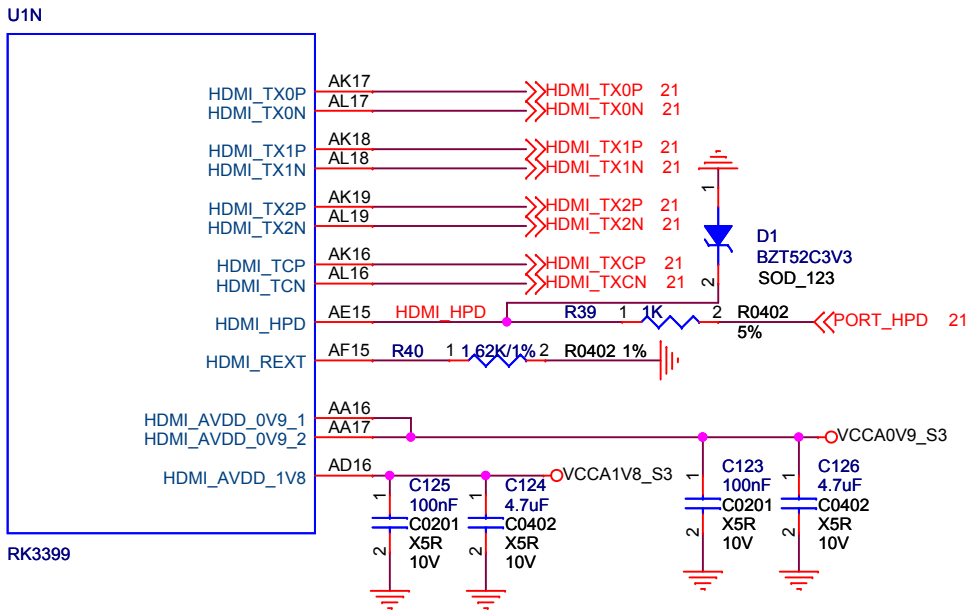
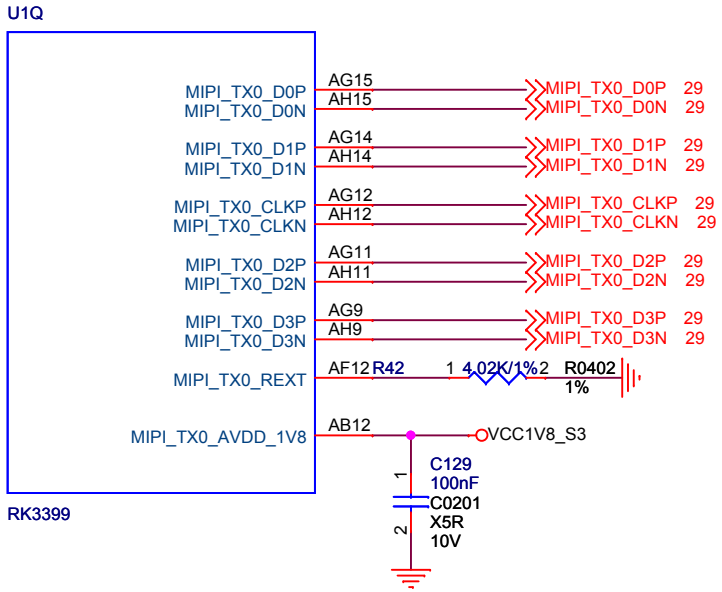
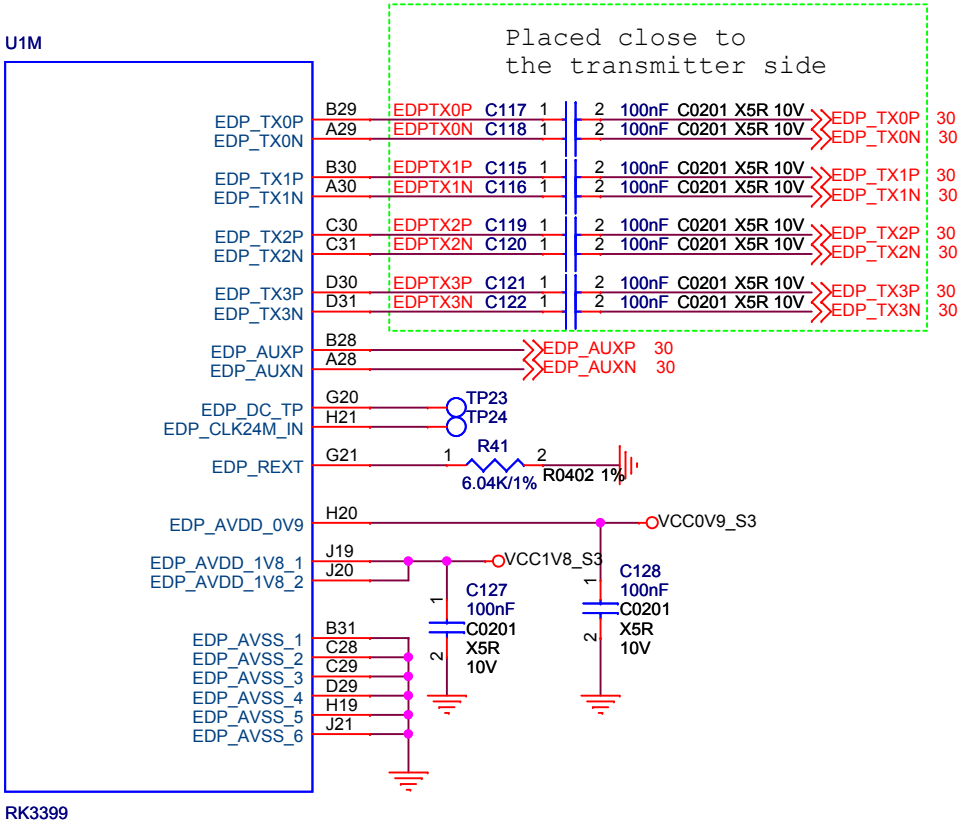
HDMI Interface



MIPI Interface



eDP Interface



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Title:	RK3399 Display Interface	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Monday, March 28, 2016	Page Num: 13
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U1I
3.3V Only
RK3399
U1E
RK3399
U1G
1.8V Only
RK3399
U1J
RK3399
U1K
RK3399
1.8V Only
VDDPST=VDDIO=1.8V
3.3V Only
VDDPST=1.8V,VDDIO=3.3V
other
3.0V mode:VDDPST=1.5V,VDDIO=3.0V
1.8V mode:VDDPST=1.8V,VDDIO=1.8V
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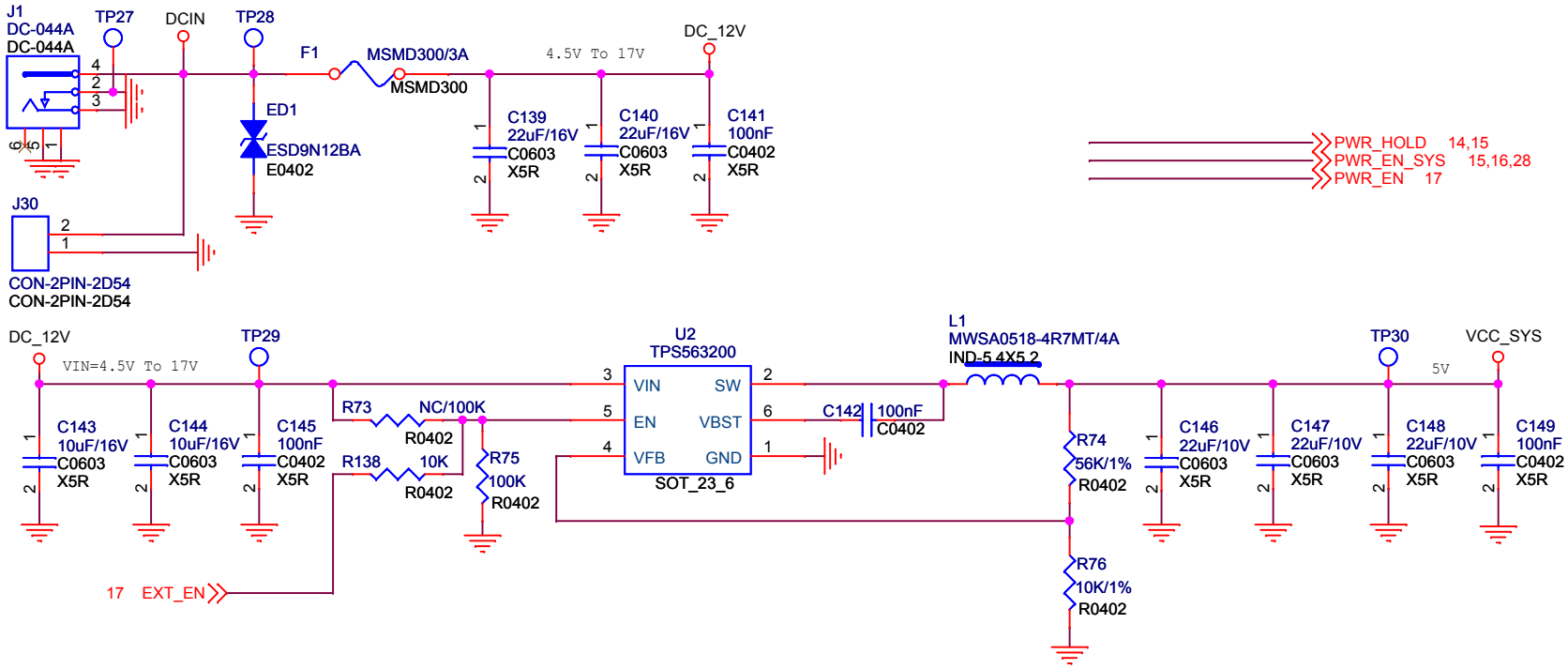
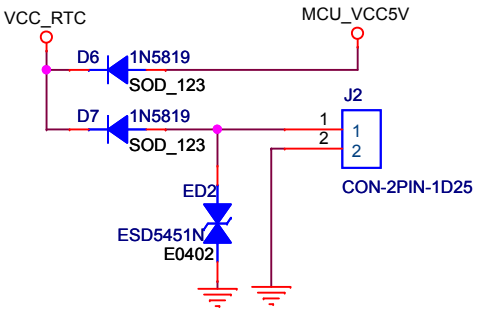
Title: RK3399 GPIO
File: Firefly-RK3399
REV: 1.0
Create Date: Monday, March 28, 2016
Page Num: 14
Modify Date: Wednesday, February 08, 2017
Page Total: 30

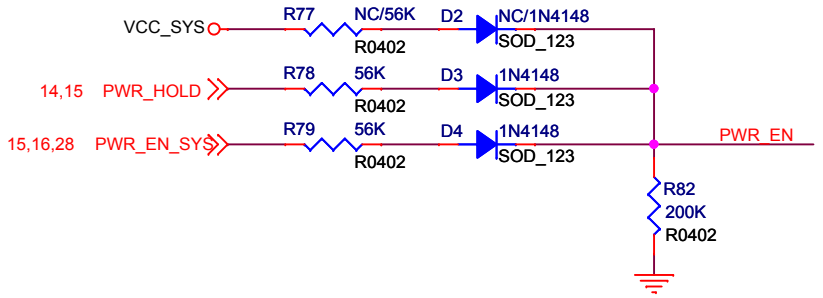
DC_IN



RTC_BAT



PWR_EN



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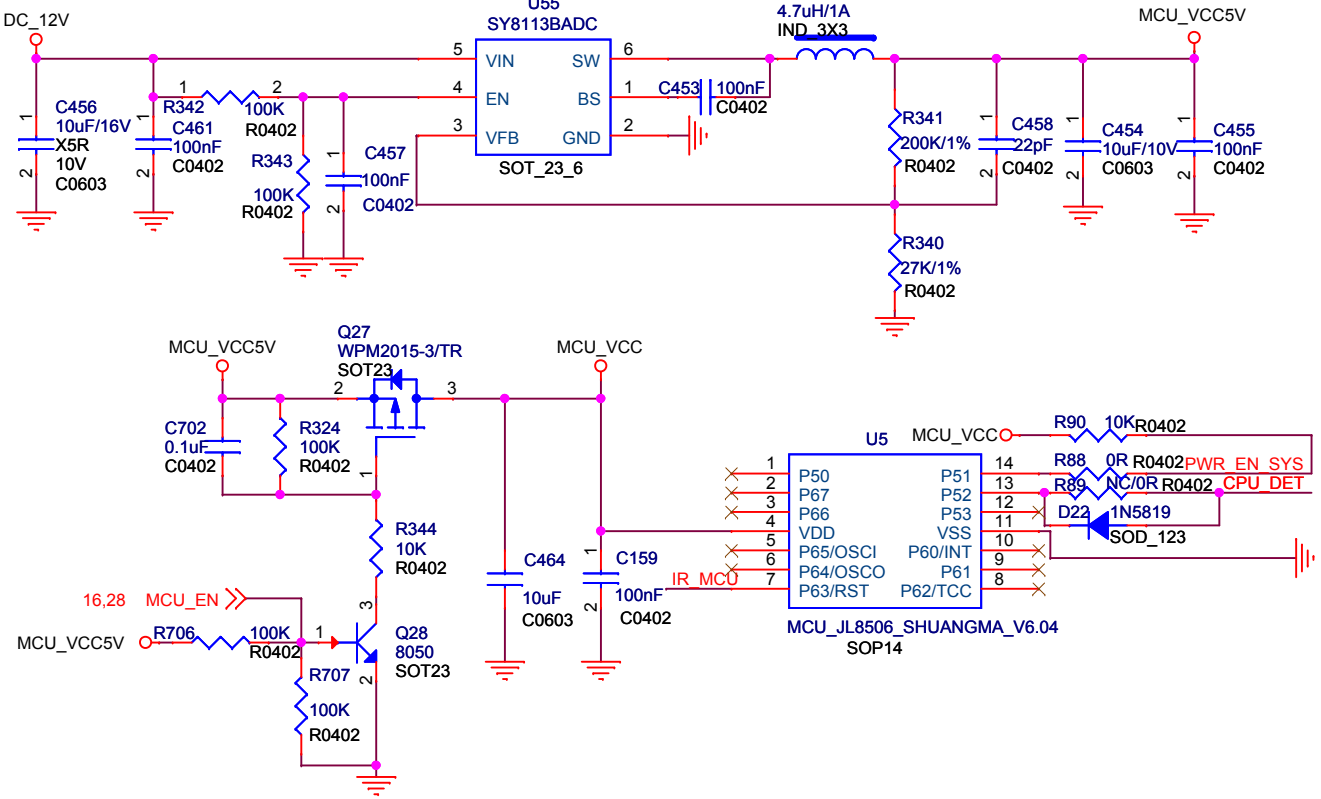
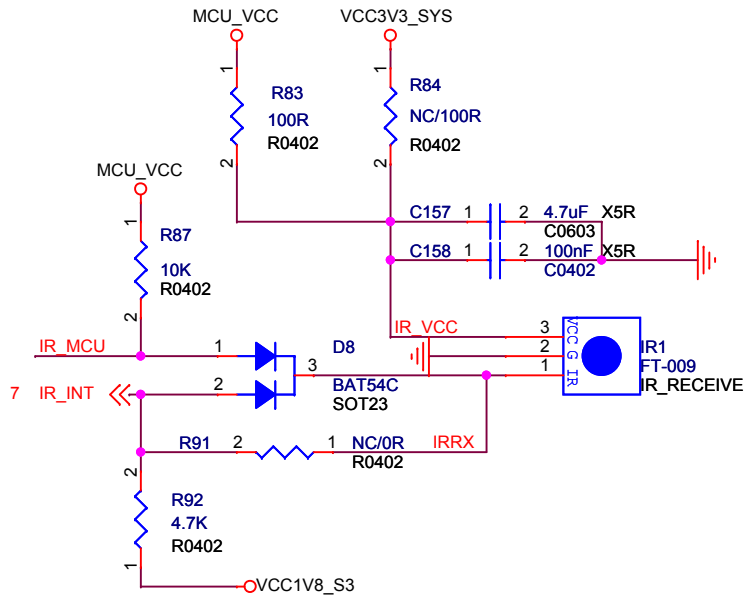
Title: DC_IN/RTC		
File: Firefly-RK3399		REV: 1.0
Create Date: Monday, April 18, 2016		Page Num: 15
Modify Date: Tuesday, January 03, 2017		Page Total: 30

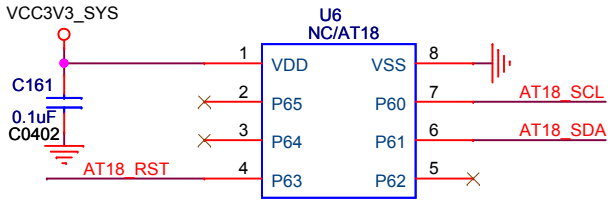
MCU

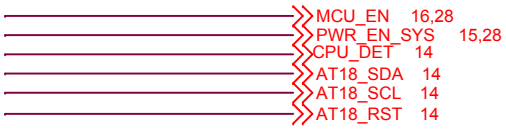


IR Receiver

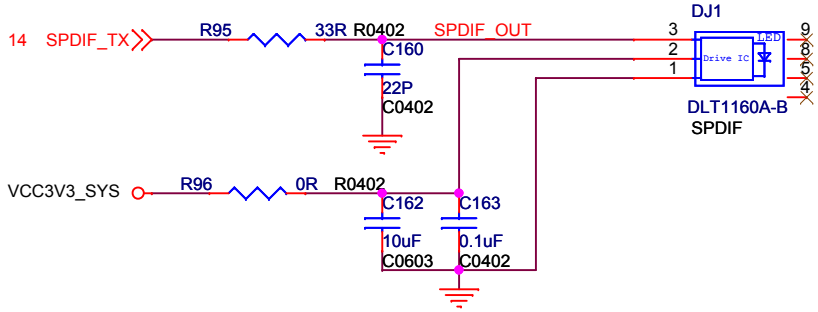


AT18





SPDIF



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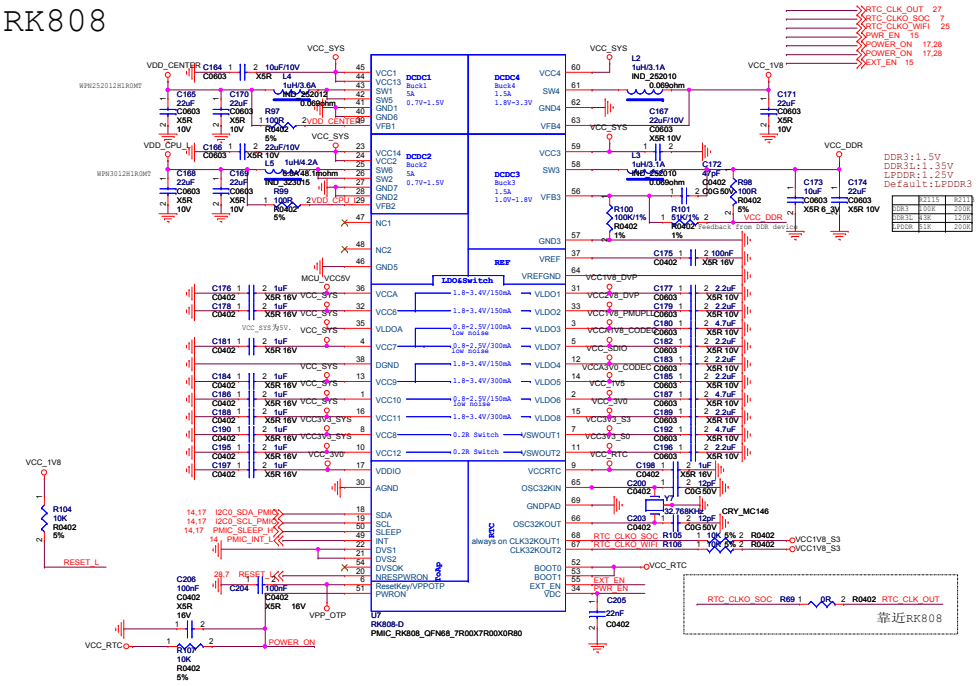
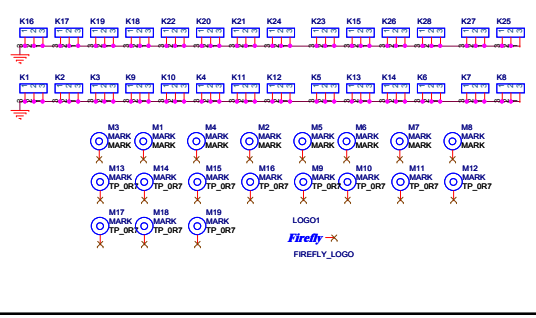
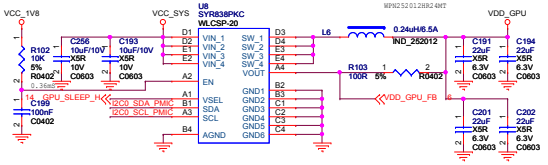
Title: IR/SPDIF/AT18		
File: Firefly-RK3399		REV: 1.0
Create Date: Tuesday, June 21, 2016		Page Num: 16
Modify Date: Tuesday, January 03, 2017		Page Total: 30

RK808

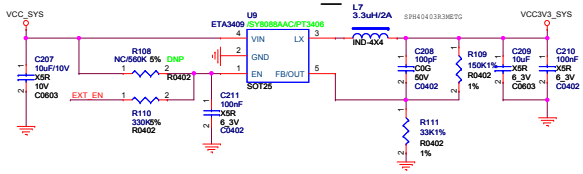




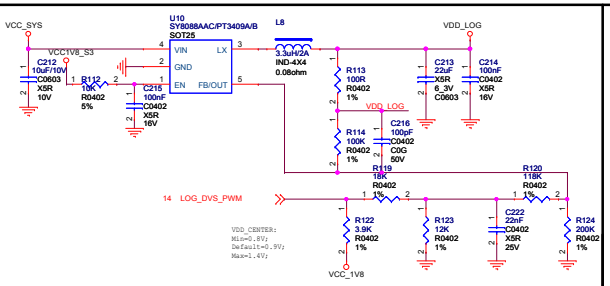
VDD_GPU



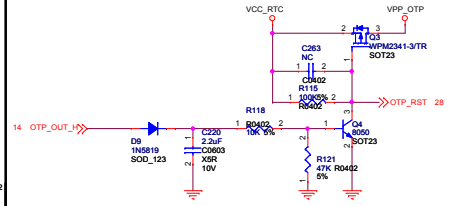
VCC3V3_SYS



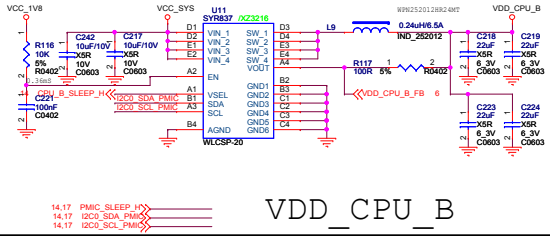
VDD_LOG



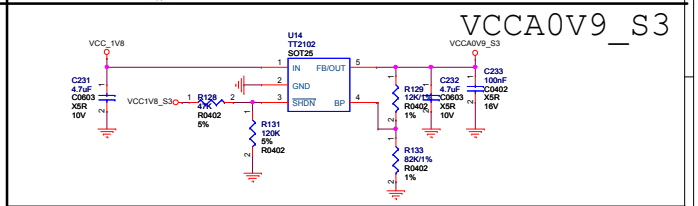
Over-temperature Protection



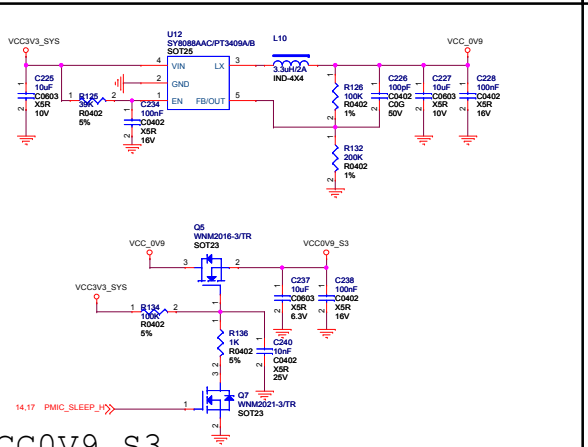
VDD_CPU_B



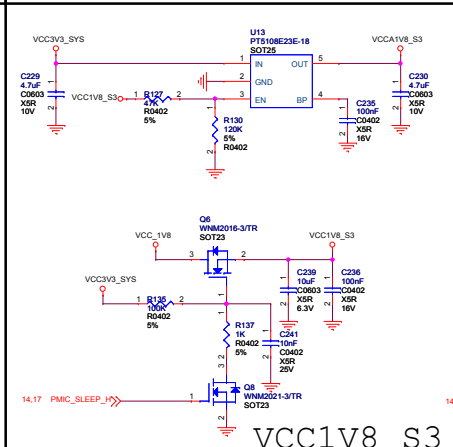
VCCA0V9_S3



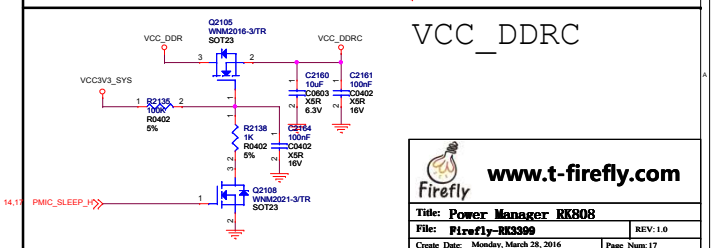
VCC0V9_S3



VCC1V8_S3

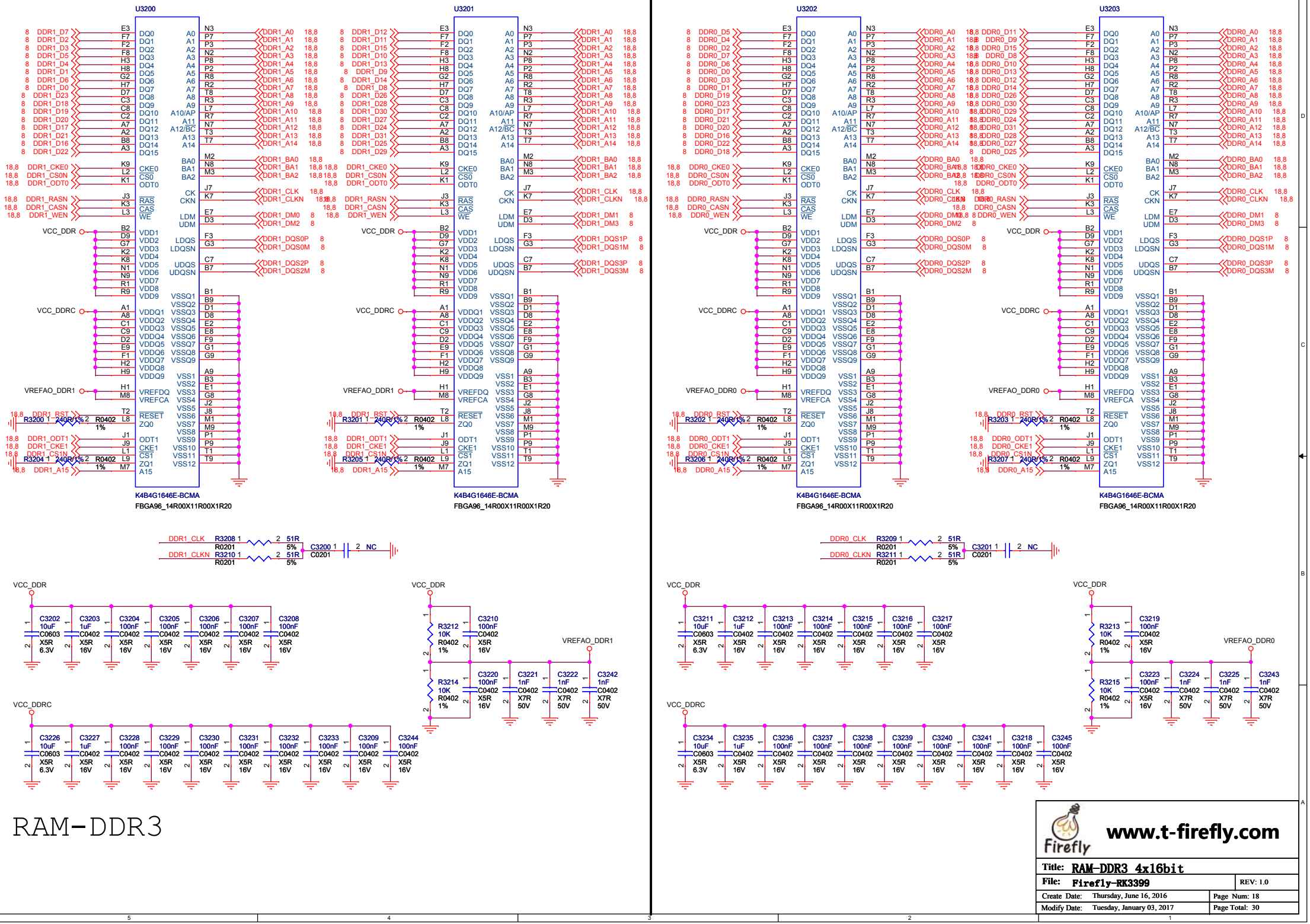


VCC_DDRC

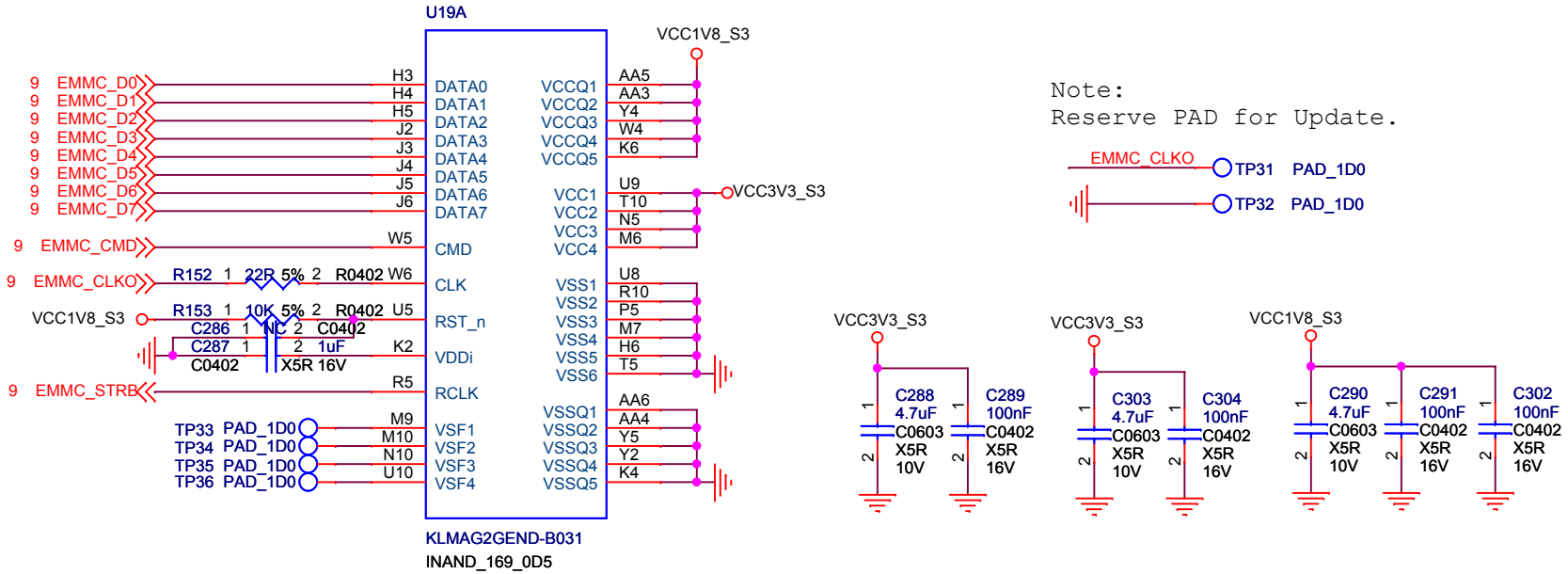


www.t-firefly.com

Title:	Power Manager RK808	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Monday, March 28, 2016	Page Num: 17
Modify Date:	Wednesday, February 08, 2017	Page Total: 30


U3200
U3201
U3202
U3203
K4B4G1646E-BCMA
FBGA96_14R00X11R00X1R20
VCC_DDR
VCC_DDRC
VREFAO_DDR1
VREFAO_DDR0
DDR1_CLK
DDR1_CLKN
DDR0_CLK
DDR0_CLKN
RAM-DDR3
Firefly
www.t-firefly.com
Title: RAM-DDR3 4x16bit
File: Firefly-RK3399
REV: 1.0
Create Date: Thursday, June 16, 2016
Page Num: 18
Modify Date: Tuesday, January 03, 2017
Page Total: 30

eMMC FLASH

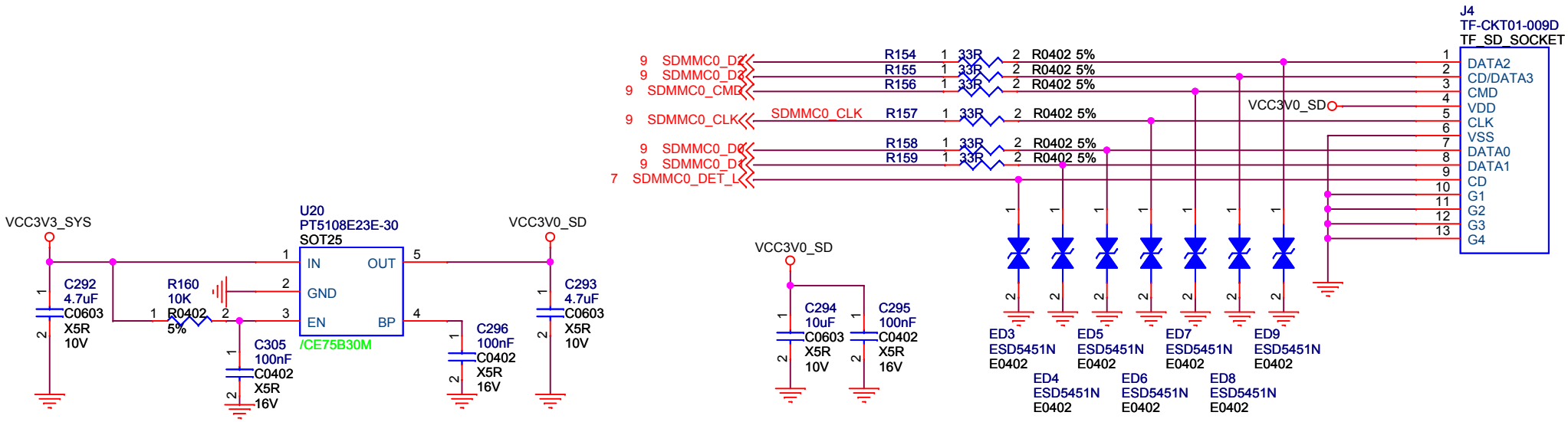


Firefly

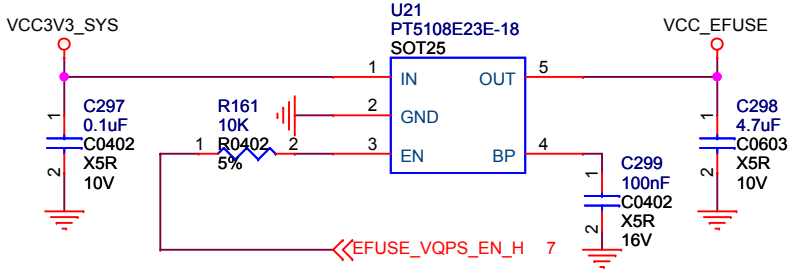
www.t-firefly.com

Title:	Memory-eMMC	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Monday, March 28, 2016	Page Num: 19
Modify Date:	Tuesday, January 03, 2017	Page Total: 30

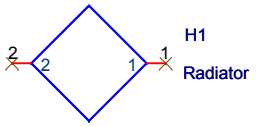
TF CARD



EFUSE



Radiator



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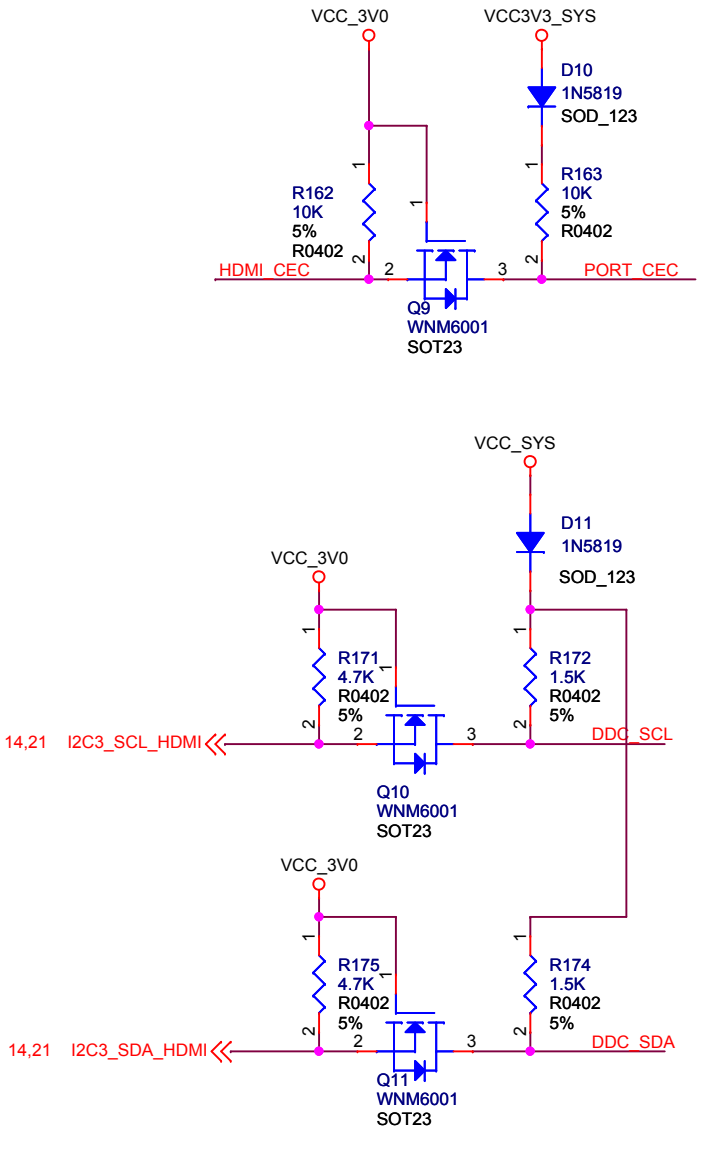
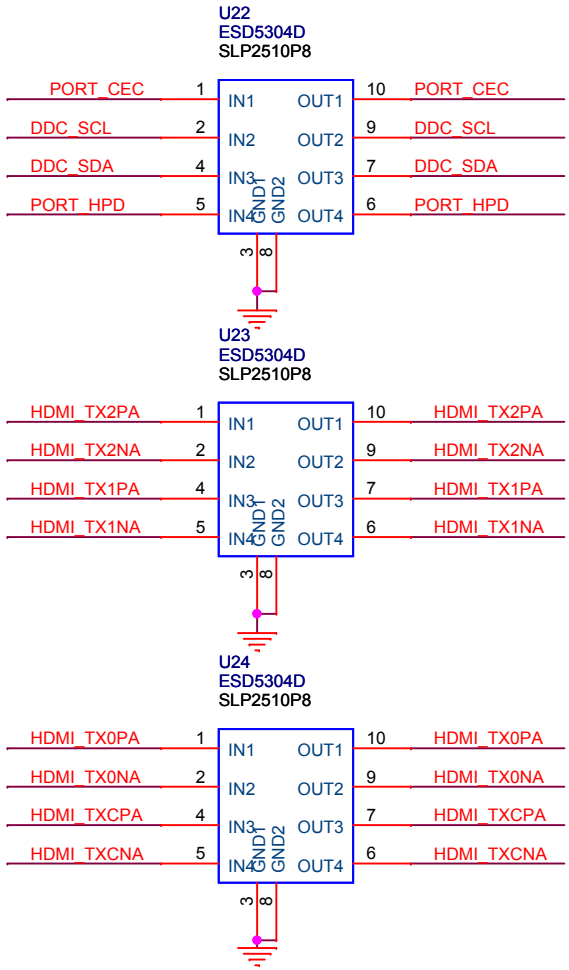
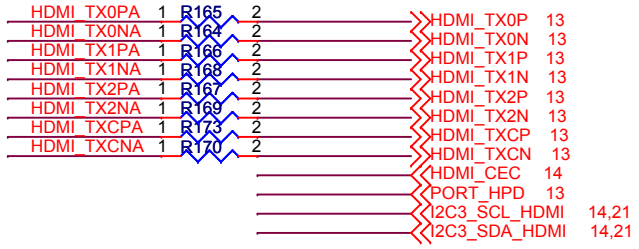
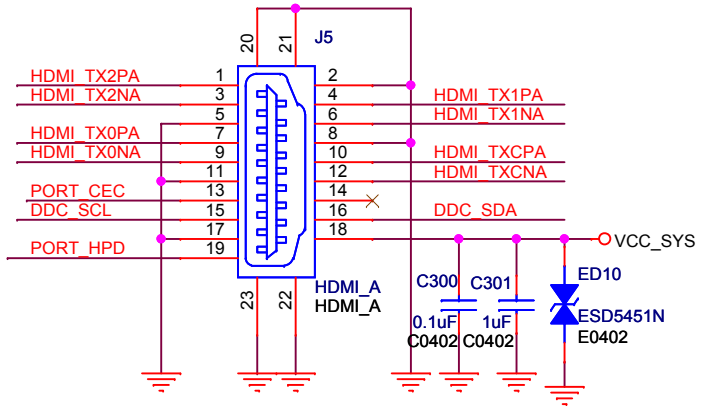
Title:	TF Card/EFUSE	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Wednesday, March 30, 2016	Page Num: 20
Modify Date:	Wednesday, February 08, 2017	Page Total: 30

HDMI Port









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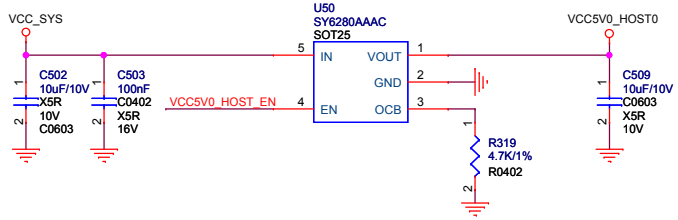
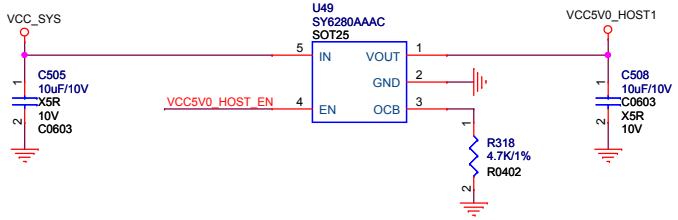
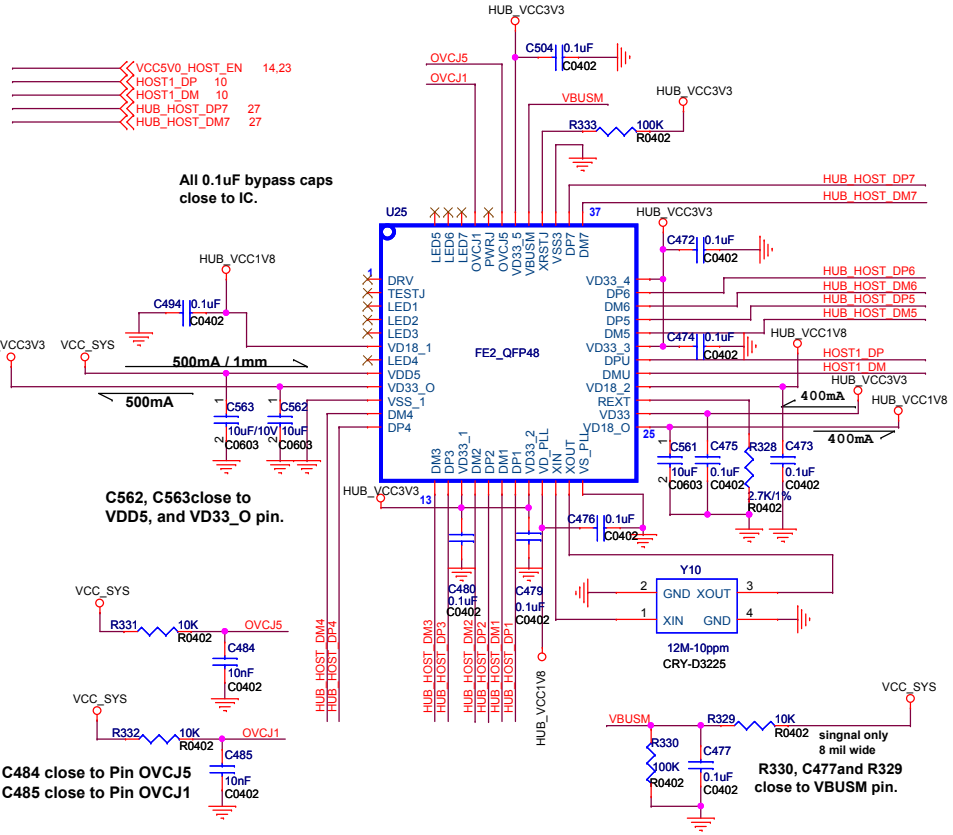
Title:	HDMI Port	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Monday, March 28, 2016	Page Num: 21
Modify Date:	Tuesday, January 03, 2017	Page Total: 30

HOST POWER

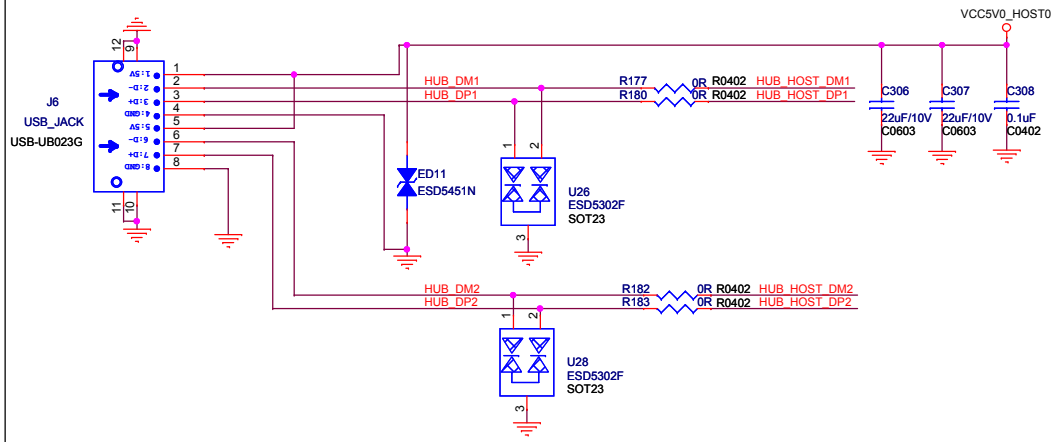


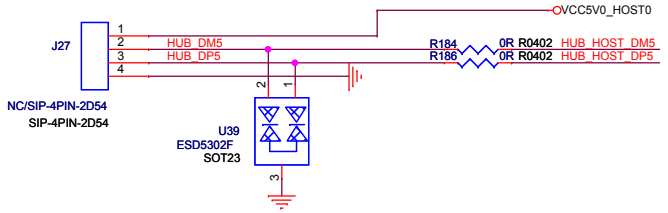


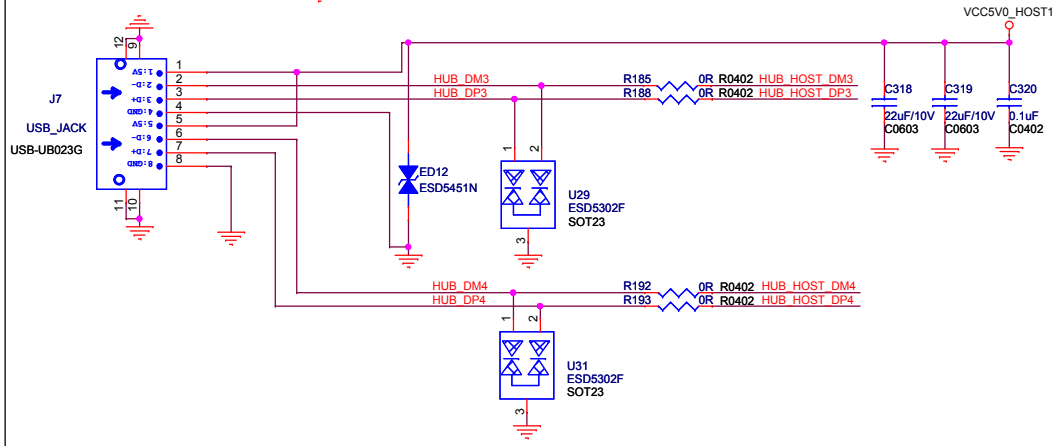
HUB

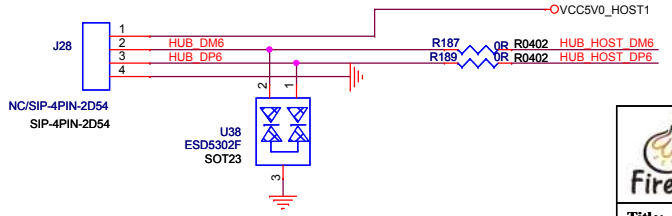


HOST PORT/USB2.0





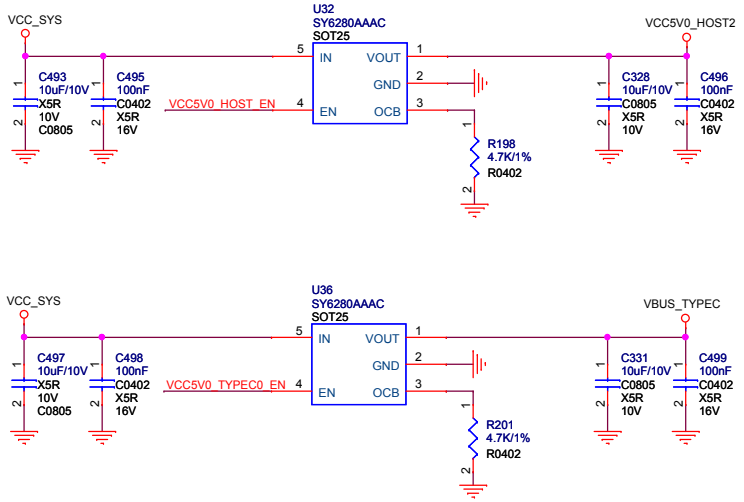




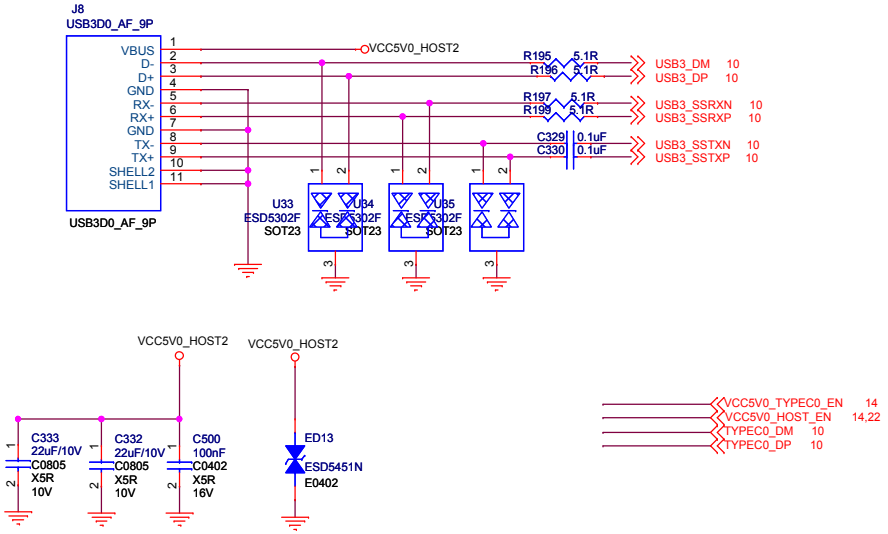
Firefly www.t-firefly.com

Title: USB2.0 Port		
File: Firefly-RK3399		REV: 1.0
Create Date: Friday, April 29, 2016	Page Num: 22	
Modify Date: Tuesday, January 03, 2017	Page Total: 30	

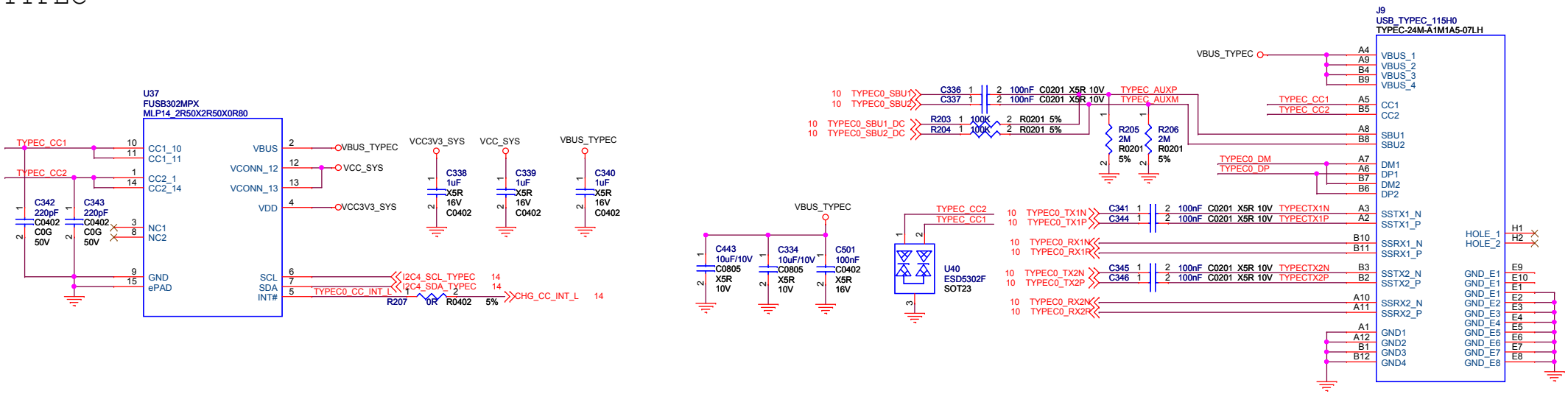
HOST POWER



HOST PORT/USB3.0



TYPEC



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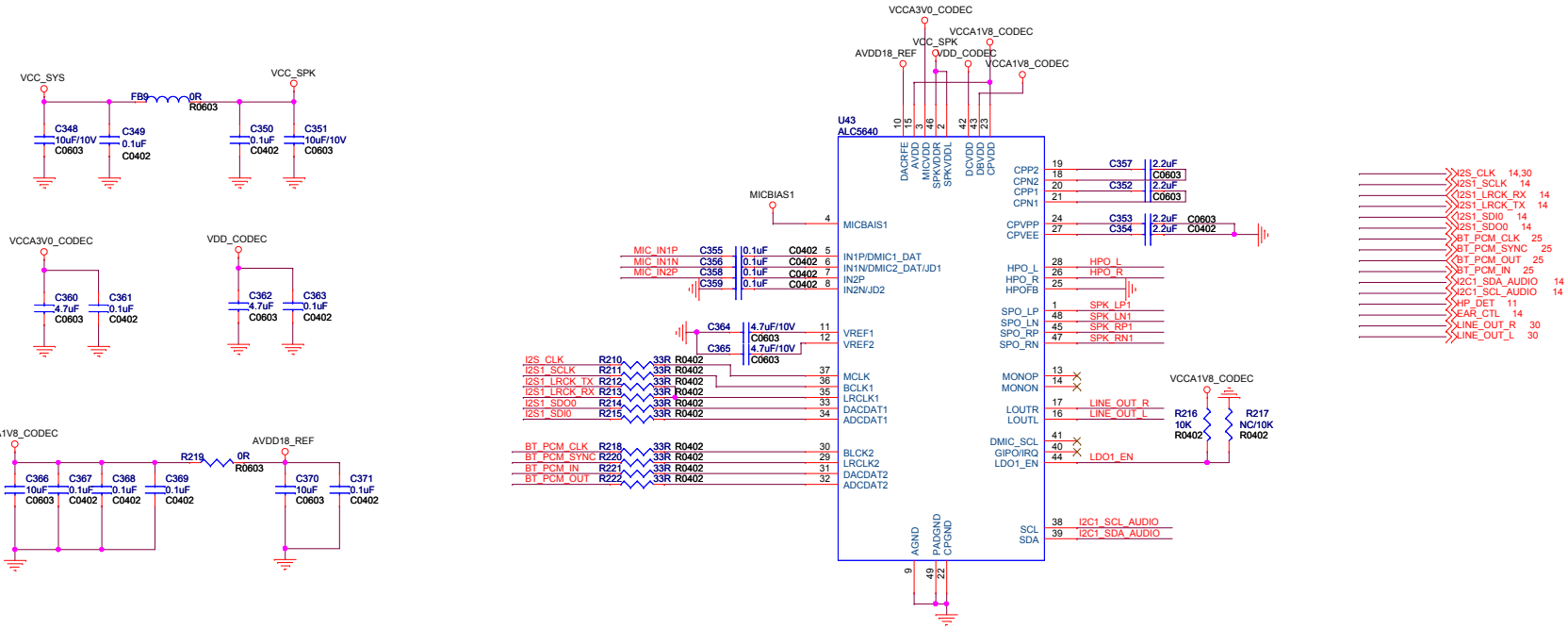
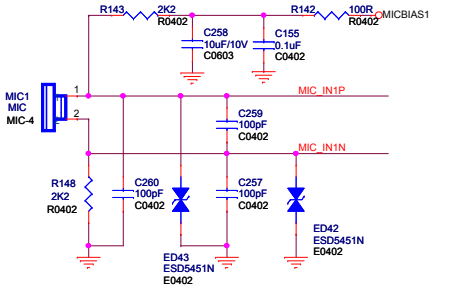
Title:	TYPE-C0/USB3.0 Port	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Monday, March 28, 2016	Page Num: 23
Modify Date:	Tuesday, January 03, 2017	Page Total: 30

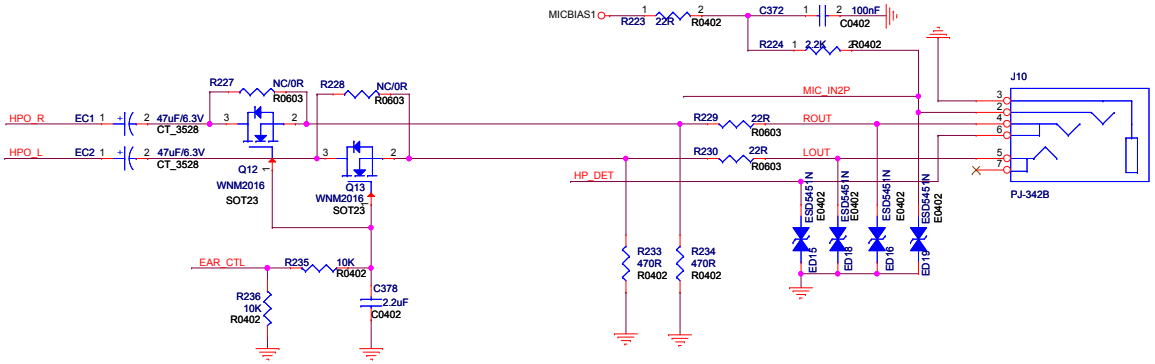
CODEC



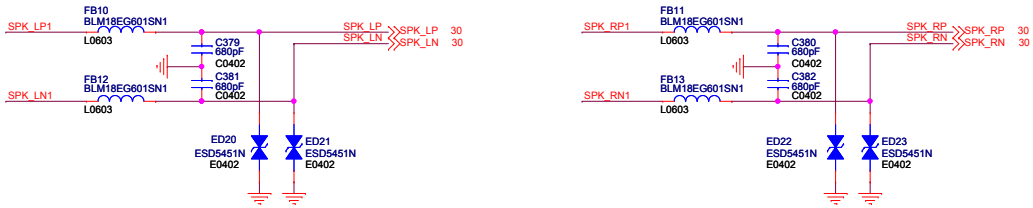
MIC



EARPHONE



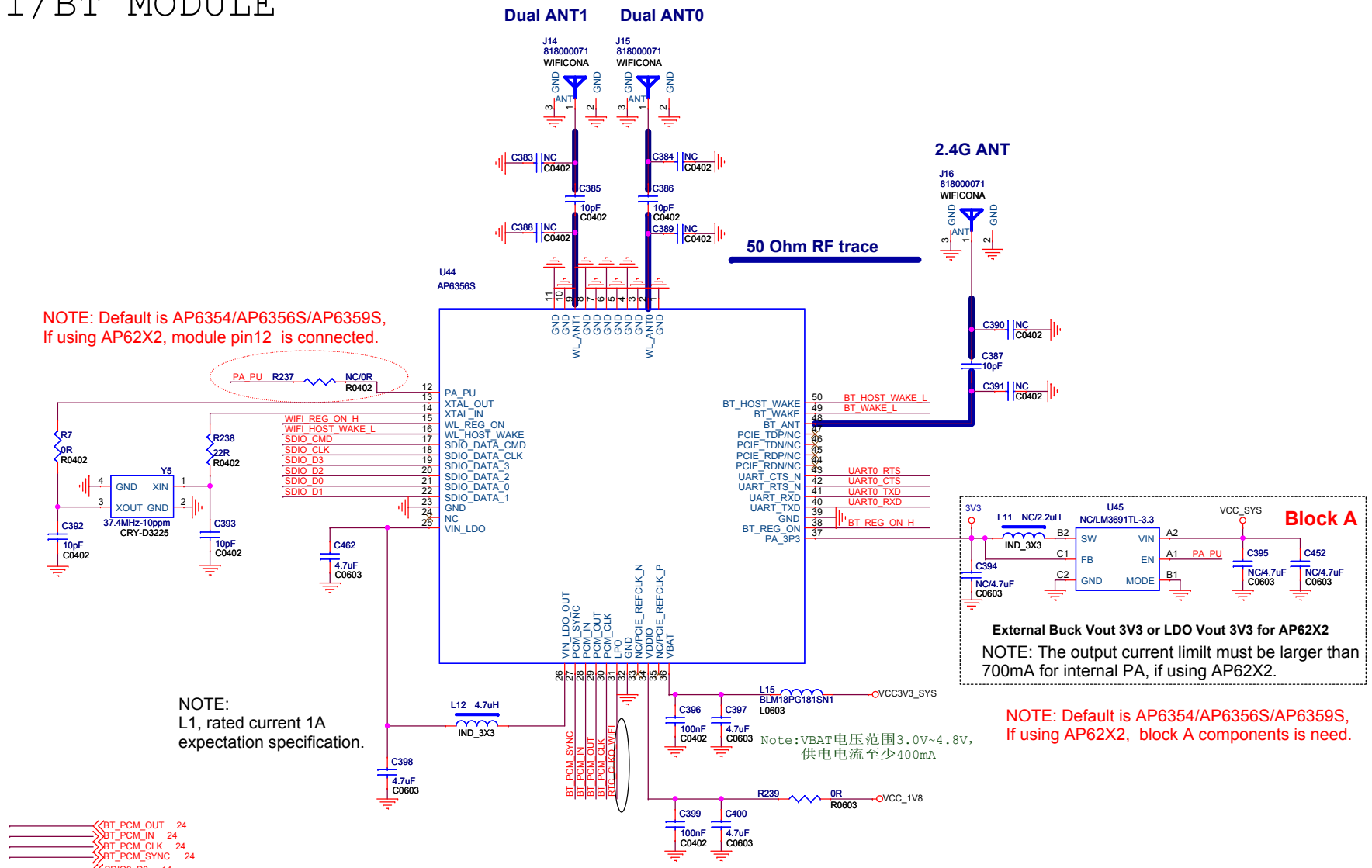
SPEAKER



www.t-firefly.com

Title:	Audio Codec-ALC5640	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Thursday, June 16, 2016	Page Num: 24
Modify Date:	Tuesday, January 03, 2017	Page Total: 30

WIFI/BT MODULE



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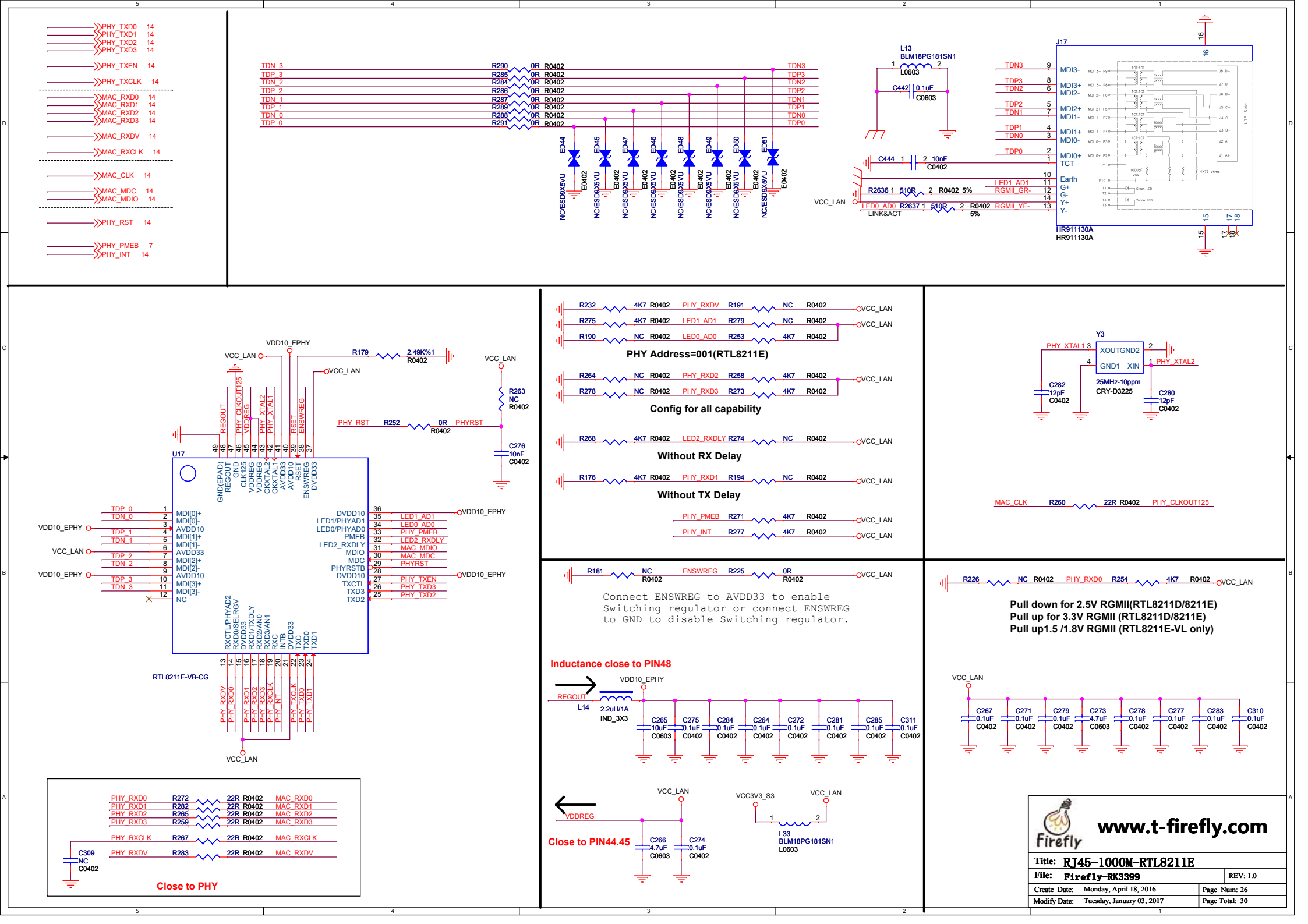
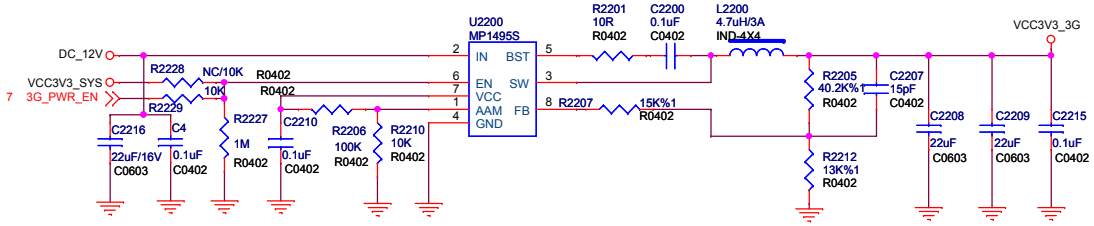
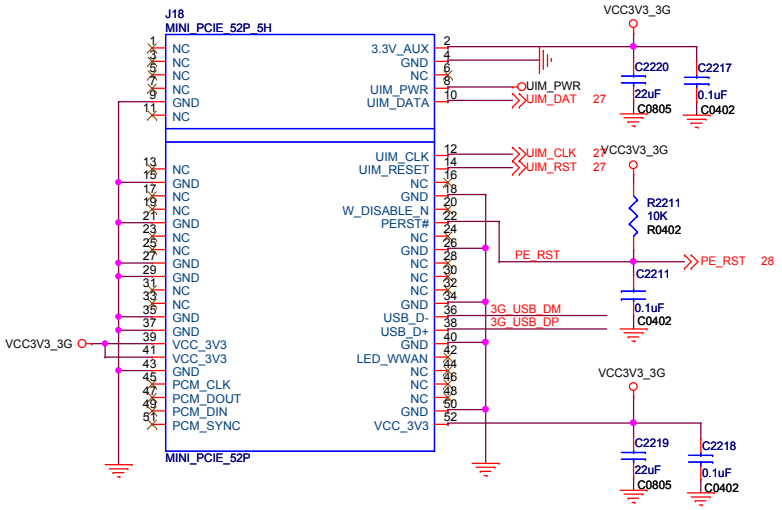
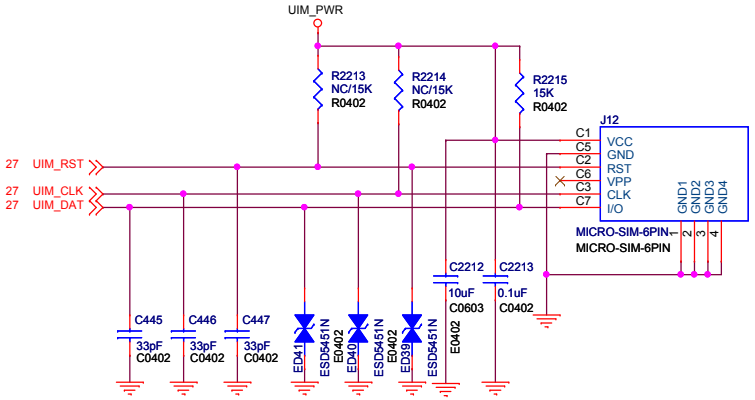
Title:	WIFI/BT-AP6356S	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Monday, June 20, 2016	Page Num: 25
Modify Date:	Friday, January 13, 2017	Page Total: 30


PHY_TXD0 14
PHY_TXD1 14
PHY_TXD2 14
PHY_TXD3 14
PHY_TXEN 14
PHY_TXCLK 14
MAC_RXD0 14
MAC_RXD1 14
MAC_RXD2 14
MAC_RXD3 14
MAC_RXDV 14
MAC_RXCLK 14
MAC_CLK 14
MAC_MDC 14
MAC_MDIO 14
PHY_RST 14
PHY_PMEB 7
PHY_INT 14
TDN_3 R290 0R R0402 TDN3
TDP_3 R285 0R R0402 TDP3
TDN_2 R284 0R R0402 TDN2
TDP_2 R286 0R R0402 TDP2
TDN_1 R287 0R R0402 TDN1
TDP_1 R289 0R R0402 TDP1
TDN_0 R288 0R R0402 TDN0
TDP_0 R291 0R R0402 TDP0
ED44 ED45 ED47 ED46 ED48 ED49 ED50 ED51
NC/ESD9X5VU E0402
L13 BLM18PG181SN1 L0603
C442 0.1uF C0603
C444 10nF C0402
R2636 510R R0402 5%
LED1_AD1 RGMII_GR-
LED0_AD0 LINK&ACT
R2637 510R R0402 5% RGMII_YE-
VCC_LAN
J17
MDI3- MDI3+ MDI2- MDI2+ MDI1- MDI1+ MDI0- MDI0+ TCT Earth G+ G- Y+ Y-
HR911130A
HR911130A
U17
RTL8211E-VB-CG
VDD10_EPHY
R179 2.49K%1 R0402
R263 NC R0402
C276 10nF C0402
PHY_RST R252 0R PHYRST R0402
REGOUT PHY_CLKOUT125 VDDREG PHY_XTAL2 PHY_XTAL1 RSET ENSWREG
GND(EPAD) REGOUT GND CLK125 VDDREG VDDREG CKXTAL2 CKXTAL1 AVDD33 AVDD10 RSET ENSWREG DVDD33
MDI[0]+ MDI[0]- AVDD10 MDI[1]+ MDI[1]- AVDD33 MDI[2]+ MDI[2]- AVDD10 MDI[3]+ MDI[3]- NC
DVDD10 LED1/PHYAD1 LED0/PHYAD0 PMEB LED2_RXDLY MDIO MDC PHYRSTB DVDD10 TXCTL TXD3 TXD2
RXCTL/PHYAD2 RXD0/SELRGV DVDD33 RXD1/TXDLY RXD2/AN0 RXD3/AN1 RXC INTB DVDD33 TXC TXD0 TXD1
PHY_RXDV PHY_RXD0 PHY_RXD1 PHY_RXD2 PHY_RXD3 PHY_RXCLK PHY_INT PHY_TXCLK PHY_TXD0 PHY_TXD1
R232 4K7 R0402 PHY_RXDV R191 NC R0402
R275 4K7 R0402 LED1_AD1 R279 NC R0402
R190 NC R0402 LED0_AD0 R253 4K7 R0402
PHY Address=001(RTL8211E)
R264 NC R0402 PHY_RXD2 R258 4K7 R0402
R278 NC R0402 PHY_RXD3 R273 4K7 R0402
Config for all capability
R268 4K7 R0402 LED2_RXDLY R274 NC R0402
Without RX Delay
R176 4K7 R0402 PHY_RXD1 R194 NC R0402
Without TX Delay
PHY_PMEB R271 4K7 R0402
PHY_INT R277 4K7 R0402
Y3
PHY_XTAL1 XOUTGND2 PHY_XTAL2
GND1 XIN
25MHz-10ppm
CRY-D3225
C282 12pF C0402
C280 12pF C0402
MAC_CLK R260 22R R0402 PHY_CLKOUT125
R181 NC R0402 ENSWREG R225 0R R0402
Connect ENSWREG to AVDD33 to enable
Switching regulator or connect ENSWREG
to GND to disable Switching regulator.
Inductance close to PIN48
REGOUT L14 2.2uH/1A IND_3X3
VDD10_EPHY
C265 10uF C0603
C275 C284 C264 C272 C281 C285 C311 0.1uF C0402
VDDREG
Close to PIN44.45
C266 4.7uF C0603
C274 0.1uF C0402
VCC3V3_S3
L33 BLM18PG181SN1 L0603
R226 NC R0402 PHY_RXD0 R254 4K7 R0402
Pull down for 2.5V RGMII(RTL8211D/8211E)
Pull up for 3.3V RGMII (RTL8211D/8211E)
Pull up1.5 /1.8V RGMII (RTL8211E-VL only)
C267 C271 C279 C273 C278 C277 C283 C310 0.1uF C0402
PHY_RXD0 R272 22R R0402 MAC_RXD0
PHY_RXD1 R282 22R R0402 MAC_RXD1
PHY_RXD2 R265 22R R0402 MAC_RXD2
PHY_RXD3 R259 22R R0402 MAC_RXD3
PHY_RXCLK R267 22R R0402 MAC_RXCLK
PHY_RXDV R283 22R R0402 MAC_RXDV
C309 NC C0402
Close to PHY
www.t-firefly.com
Title: RJ45-1000M-RTL8211E
File: Firefly-RK3399
REV: 1.0
Create Date: Monday, April 18, 2016
Page Num: 26
Modify Date: Tuesday, January 03, 2017
Page Total: 30

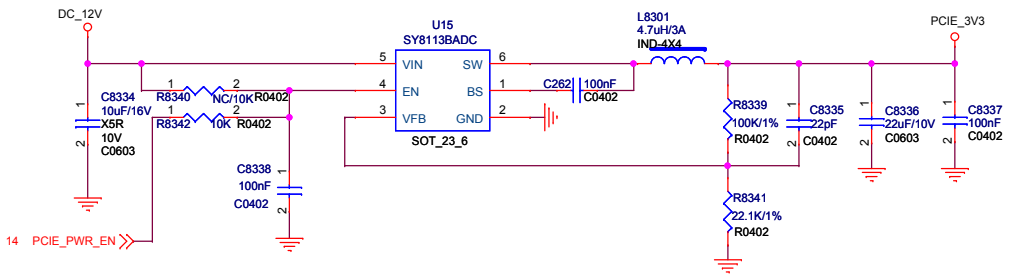
MINI PCIE-3G/4G

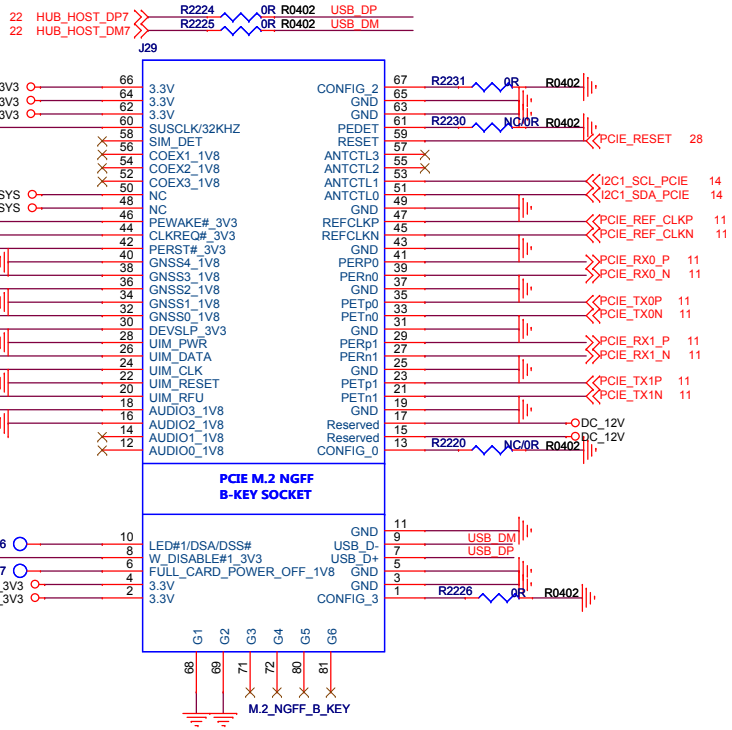


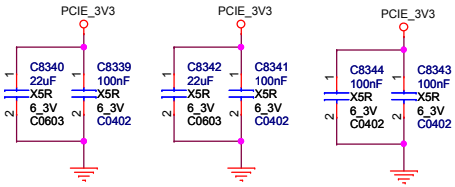




M2.NGFF







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Title:	3G/4G MODULE/M2.NGFF	
File:	Firefly-RK3399	REV: 1.0
Create Date:	Tuesday, July 19, 2016	Page Num: 27
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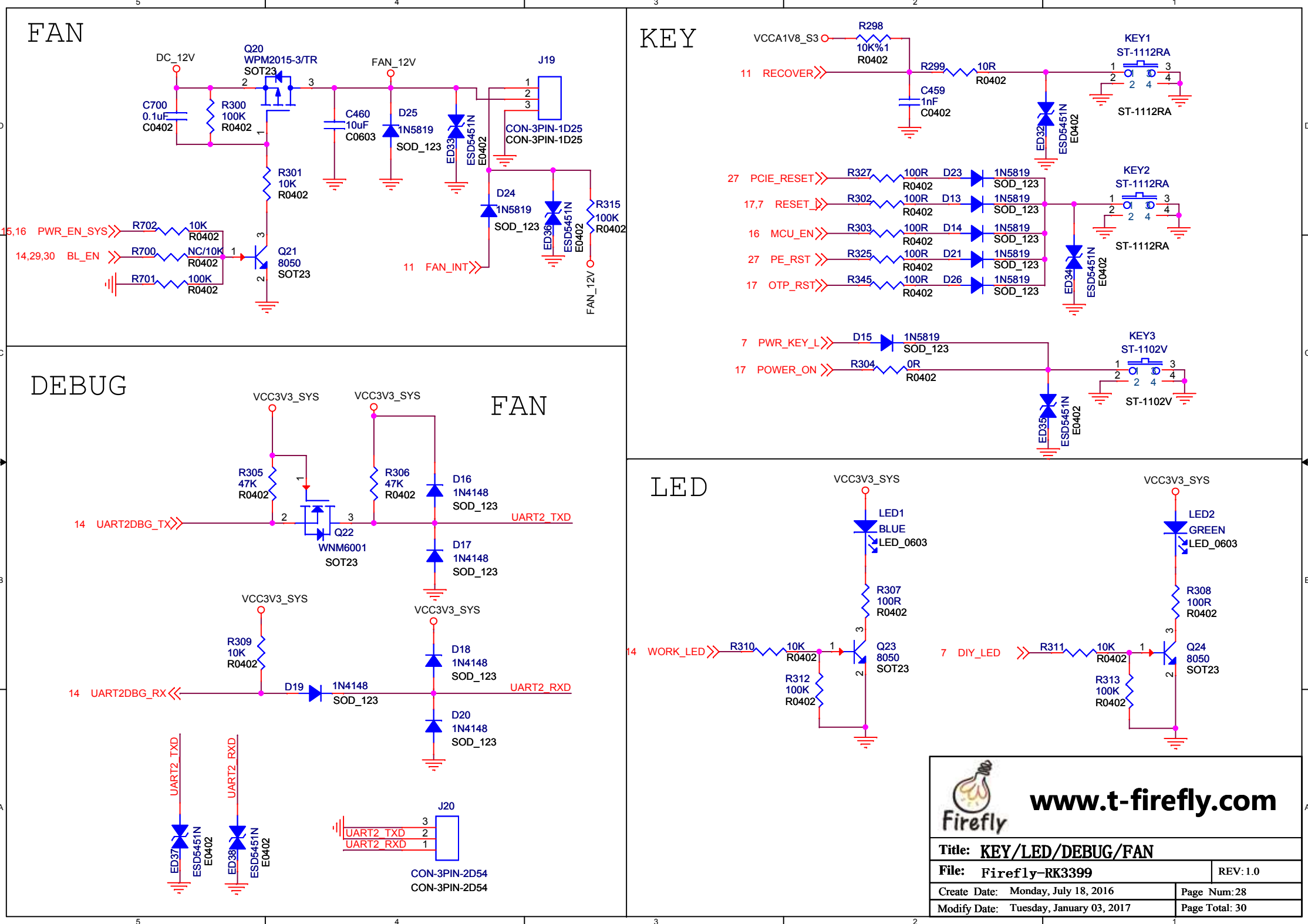
FAN
DC_12V
Q20
WPM2015-3/TR
SOT23
FAN_12V
J19
C700
0.1uF
C0402
R300
100K
R0402
C460
10uF
C0603
D25
1N5819
SOD_123
ED33
ESD5451N
E0402
CON-3PIN-1D25
CON-3PIN-1D25
R301
10K
R0402
D24
1N5819
SOD_123
ED36
ESD5451N
E0402
R315
100K
R0402
15,16 PWR_EN_SYS
R702
10K
R0402
14,29,30 BL_EN
R700
NC/10K
R0402
R701
100K
R0402
Q21
8050
SOT23
11 FAN_INT
FAN_12V
KEY
VCCA1V8_S3
R298
10K%1
R0402
11 RECOVER
R299
10R
R0402
C459
1nF
C0402
KEY1
ST-1112RA
ED32
ESD5451N
E0402
27 PCIE_RESET
17,7 RESET_L
16 MCU_EN
27 PE_RST
17 OTP_RST
R327
R302
R303
R325
R345
100R
R0402
D23
D13
D14
D21
D26
1N5819
SOD_123
KEY2
ST-1112RA
ED34
ESD5451N
E0402
7 PWR_KEY_L
17 POWER_ON
D15
R304
0R
R0402
KEY3
ST-1102V
ED35
ESD5451N
E0402
DEBUG
FAN
VCC3V3_SYS
R305
47K
R0402
R306
47K
R0402
D16
1N4148
SOD_123
14 UART2DBG_TX
Q22
WNM6001
SOT23
UART2_TXD
D17
1N4148
SOD_123
R309
10K
R0402
D18
1N4148
SOD_123
14 UART2DBG_RX
D19
1N4148
SOD_123
UART2_RXD
D20
1N4148
SOD_123
UART2_TXD
UART2_RXD
ED37
ESD5451N
E0402
ED38
ESD5451N
E0402
J20
CON-3PIN-2D54
CON-3PIN-2D54
LED
LED1
BLUE
LED_0603
R307
100R
R0402
14 WORK_LED
R310
10K
R0402
R312
100K
R0402
Q23
8050
SOT23
LED2
GREEN
LED_0603
R308
100R
R0402
7 DIY_LED
R311
10K
R0402
R313
100K
R0402
Q24
8050
SOT23
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Title: KEY/LED/DEBUG/FAN
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REV: 1.0
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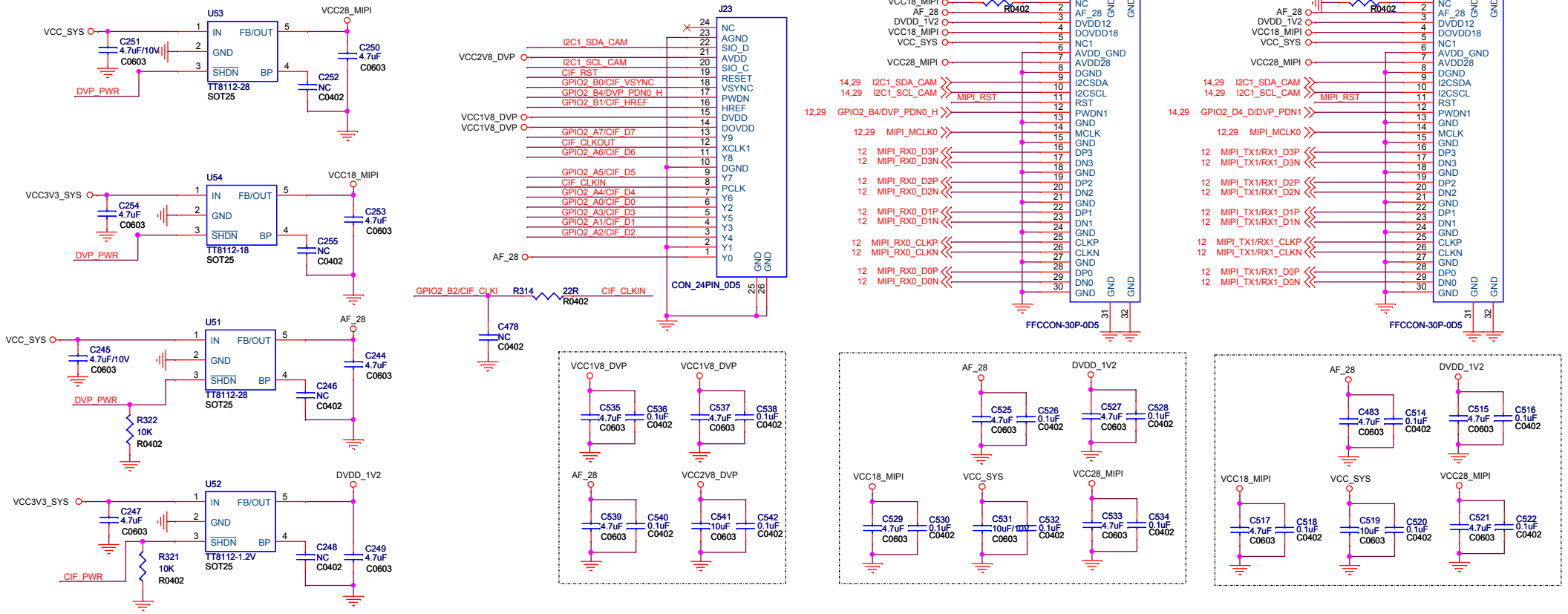
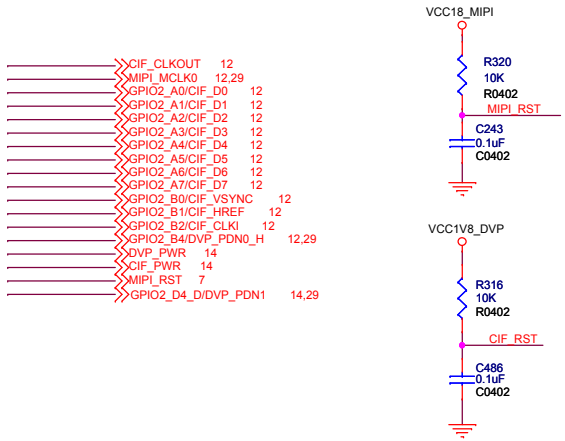
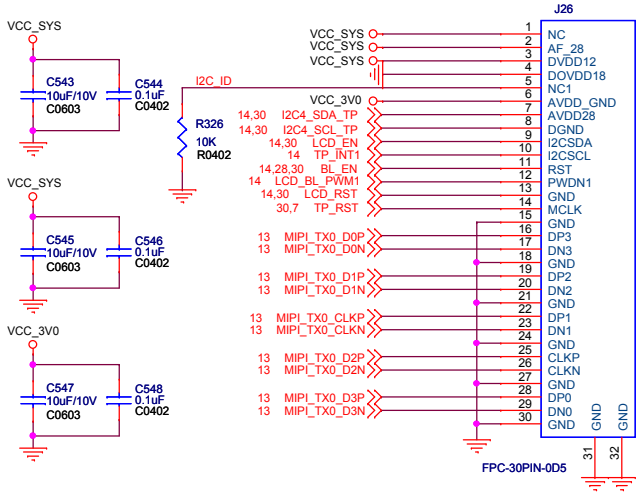
YUV/MIPI_RX/TX





MIPI_TX



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Title:	DVP/MIPI Interface	
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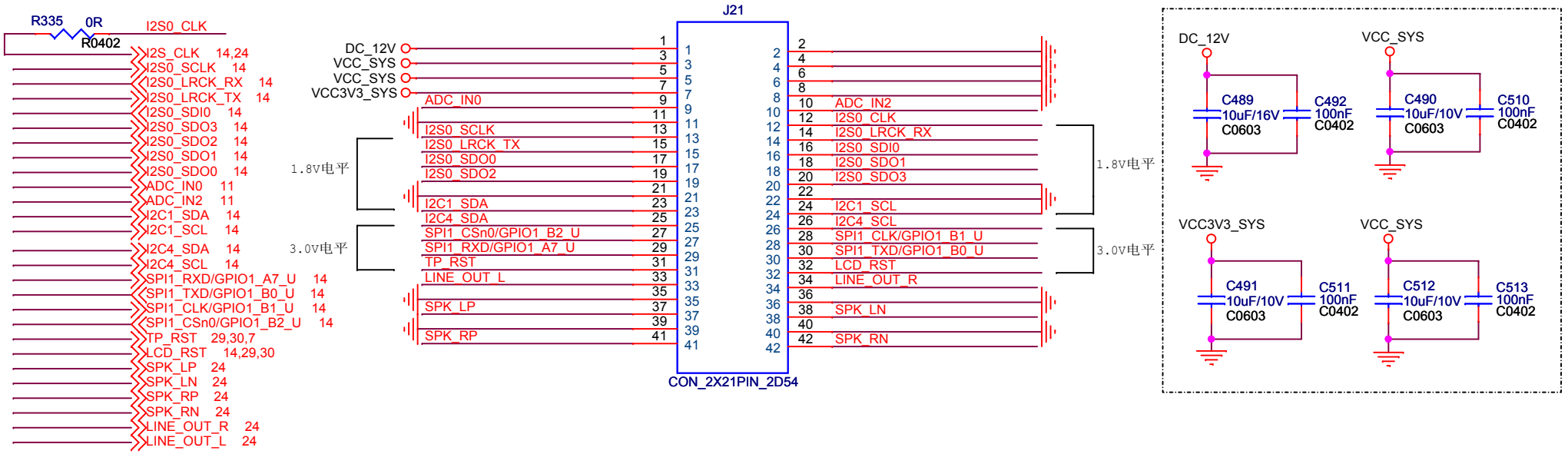
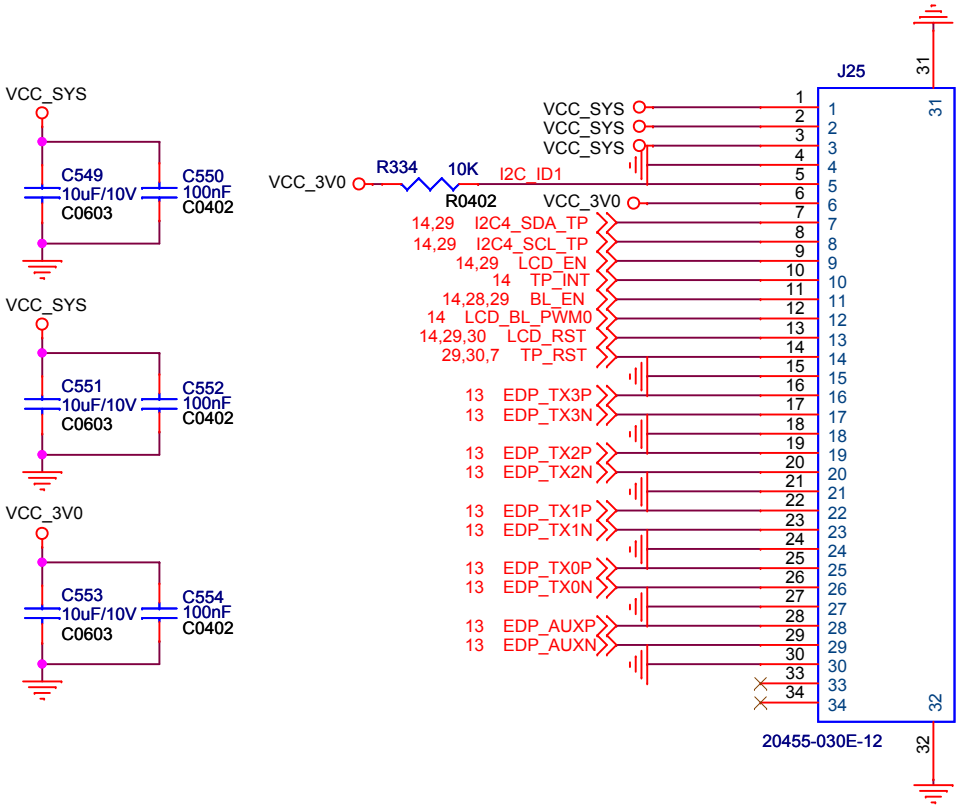
Connector



eDP



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Title: Connector/eDP		
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