REVISION HISTORY

DATE:	DESCRIPTION	REVISION
Jaunary. 2014	Created	1.0

KSZ8795CLX Reference Design Schematics

KENDIN OPERATIONS

Title: KSZ8795 Reference Schematics		
Size	Document Number: Revision History	Rev: 1.0
Date: Friday, January 24, 2014	Sheet 1 of 5	

VDDIO JP1 1-2 Close when JP6 2-3 is closed for MDC/MDIO mode

Jumpers	1-2 Closed	2-3 Closed
JP4(SPIQ_SDO)	SPI Slave Mode	MDC/MDIO Mode and JP1 1-2 is Closed too

JP2	JP3	Description
1-2 Close	1-2 Close	8795 SPI, MIIM (Default)
2-3 Close	2-3 Close	External MIIM

FXSDx pins are for KSZ8765 only

Jumpers	Open (Default)	Closed
JP5(LED1_0)	Open: Gbps mode on port 5	Close: 10/100Mbps on port 5
JP6(LED1_1)	Open: Device clock source from OSC 25MHz in RMII normal mode	Close: Device clock source from SW5-RMII TXC5 in RMII normal mode
JP7(LED2_0)	Open: REFCLKO pin 25MHz Output Enable	Close: REFCLKO pin 25 MHz output is disabled
JP8(LED2_1)	Open: SW5-MII in MAC mode, SW5-RMII in Clock mode	Close: SW5-MII in PHY mode, SW5-RMII in Normal mode

JP10	JP9	SW5-GMAC Mode
Close	Close	MII Mode
Close	Open	RMII
Open	Close	GMII
Open	Open	RGMII (Default)

KSZ8795

80-Pin LQFP

Title: KSZ8795 DEMO BOARD
Size:
Document Number: Device Configuration
Rev: 1.0
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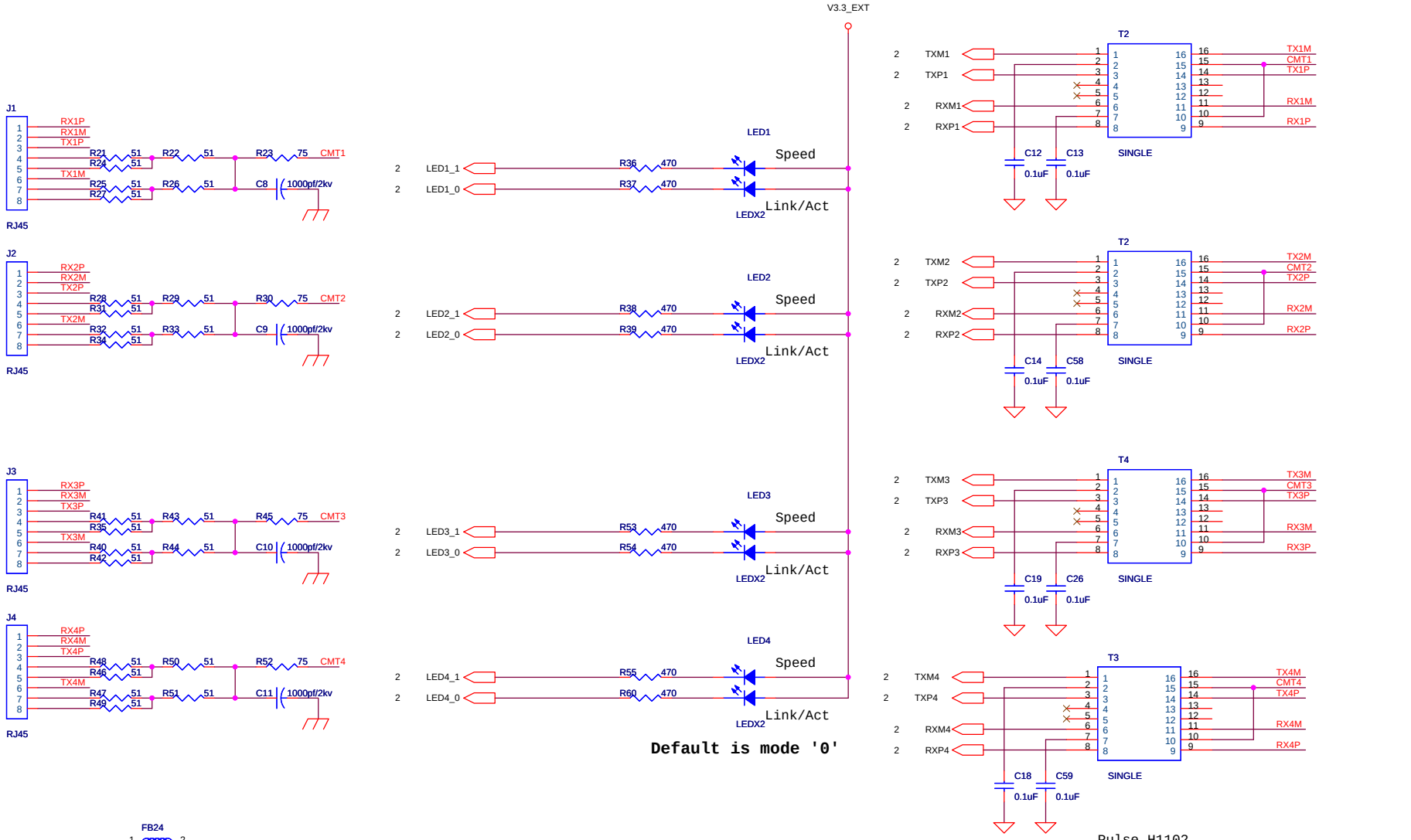
Sheet 2 of 5



Pulse H1102
TDK TLA_6T718A
YCL PT163020
Transpower HB726
DELTA LF8505
Bel Fuse S558-5999-U7
(or using a quad transformer H1164NL)

Title	KSZ8795 EVAL BOARD	
Size	Document Number: Copper Ports, Transformer and LEDs	Rev: 1.1
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DVDDL KSZ9031RN Decouple Pins 14, 18, 23, 26, 30, 39

C35 4.7uF/6.3V, C36 10nF, C37 10nF, C38 10nF, C39 10nF, C40 10nF, C41 10nF

DVDDH KSZ9031RN Decouple Pins 16, 34, 40

C43 4.7uF/6.3V, C44 10nF, C45 10nF, C46 10nF

AVDDL KSZ9031RN Decouple Pins 3, 9

C50 4.7uF/6.3V, C51 10nF, C52 10nF

Close these jumpers below for KSZ9031 power (default). Open these jumpers below for the measurement of the KSZ8795/65 power current

V1.2A — JP30 — AVDDL
V1.2D — JP31 — DVDDL
VDDIO — JP32 — DVDDH
VDDAT — JP33 — AVDDH

Strapping Pins for MODE Selection

JP	Pin	MODE
JP26	P5RXD3	MODE3
JP27	P5RXD2	MODE2
JP28	P5RXD1	MODE1
JP29	P5RXD0	MODE0

MODE[3:0]	Description
0000	RGMII Mode
0001	Reserved
0010-0011	Reserved
0100	NAND Tree mode
0101-0110	Reserved
0111	Chip Power Down

MODE[3:0]	Description
1000	RGMII Mode & PMEN on LED1 pin
1001	Reserved
1010	RGMII Mode & INT_N on LED1 pin
1011	Reserved
1100	RGMII 1000/Full
1101	RGMII 1000/Full/Half
1110	RGMII 10/100/1000/Full
1111	RGMII 10/100/1000/Full/Half

DVDDH — R92 10K — D1 1N4148 — RST9031 — JP25 — JP — RST# 2,5 — C42 10uF/6.3V

For Tri-color LED mode — R101 1K

AVDDL (1.2V Analog) AVDDH (3.3V Analog) AVDDL_PLL (1.2V Analog for PLL) — C48 22pF, C49 22pF, Y2 25MHz, R102 0

DVDDL (1.2V Digital) DVDDH (3.3V Digital) — R103 4.7K

P5_INTR — D2 LED — R104 330 — P5INT_N 2

Place GND hole on solder side, Center and connect to Paddle Ground of device.

R105 12.1K — TP2

MDIO 2 — MDC 2

Port 5 Giga Port

RJ1 — Differential Pairs — H5007NL — T5

DA+ 1 — R107 75 — MX4+ 14 — MCT4 15 — TD4+ 11 — TCT4 10 — C55 0.1uF
DA- 2 — MX4- 13 — MCT4 15 — TD4- 12 — TCT4 10 — C55 0.1uF
DB+ 3 — R111 75 — MX3+ 17 — MCT3 18 — TD3+ 8 — TCT3 7 — C56 0.1uF
DB- 4 — MX3- 16 — MCT3 18 — TD3- 9 — TCT3 7 — C56 0.1uF
DC+ 5 — R114 75 — MX2+ 20 — MCT2 21 — TD2+ 5 — TCT2 4 — C57 0.1uF
DC- 6 — MX2- 19 — MCT2 21 — TD2- 6 — TCT2 4 — C57 0.1uF
DD+ 7 — R115 75 — MX1+ 23 — MCT1 24 — TD1+ 2 — TCT1 1 — C58 0.1uF
DD- 8 — MX1- 22 — MCT1 24 — TD1- 3 — TCT1 1 — C58 0.1uF

NC 12, NC 11, CGND 10, CGND 9 — C59 1000pF / 2kV

RJ45 Belfuse SS-6488S-A-FLS-50

U4 — KSZ9031RNX 48-Pin QFN (7x7mm) P-GND

Pin	Name	Pin	Name
1	AVDDH	36	MDC
2	TXRXP_A	35	RX_CLK/PHYAD2
3	TXRXM_A	34	DVDDH
4	AVDDL	33	RX_DV/CLK125_EN
5	TXRXP_B	32	RXD0/MODE0
6	TXRXM_B	31	RXD1/MODE1
7	TXRXP_C	30	DVDDL
8	TXRXM_C	29	VSS
9	AVDDL	28	RXD2/MODE2
10	TXRXP_D	27	RXD3/MODE3
11	TXRXM_D	26	DVDDL
12	AVDDH	25	TX_EN
13	NC/VSS_PS	24	GTX_CLK
14	DVDDL	23	DVDDL
15	LED2/PHYAD1	22	TXD3
16	DVDDH	21	TXD2
17	LED1/PHYAD0/PME_N	20	TXD1
18	DVDDL	19	TXD0

Pin	Name	Pin	Name
48	ISET	41	CLK125_NDO/LED_MODE
47	NC/AVDDH	40	DVDDH
46	XI	39	DVDDL
45	XO	38	INT_N/PME_N
44	AVDDL_PLL	37	MDIO
43	LDO_O		
42	RESET_N		

P5RX_CLK — R106 22 — TXC5/GTXC5 2
P5RX_DV — R108 22 — TXEN5 2
P5RXD0 — R109 22 — TXD5_0
P5RXD1 — R110 22 — TXD5_1
P5RXD2 — R112 22 — TXD5_2
P5RXD3 — R113 22 — TXD5_3
TXD5_[0..3] 2

Place close to 9031 chip

Traces of TX group and RX group should be Equal length individually between KSZ9031 to KSZ8795/8765 device

P5TX_EN — R116 22 — RXDV5 — RXDV5 2
P5GTX_CLK — R117 22 — RXC5/GRXC5 — RXC5/GRXC5 2
P5TXD3 — R119 22 — RXD5_3
P5TXD2 — R120 22 — RXD5_2
P5TXD1 — R121 22 — RXD5_1
P5TXD0 — R123 22 — RXD5_0
RXD5_[0..3] 2

Place these 22ohm resistors close to pins of the KSZ8795/8765 chip

DVDDH — R118 220, R122 220 — D3 — Green P5LED2, Red P5LED1

Dialight 598-8610-207F / 1210 SMD

Tri-color Dual LED Mode

Pins [LED2, LED1]	Description	Dual LED Color
[0, 1] [toggling, 1]	Solid Color : 1G Link Blinking : Activity (RX, TX)	Green
[1, 0] [1, toggling]	Solid Color : 100M Link Blinking : Activity (RX, TX)	Red
[0, 0] [toggling, toggling]	Solid Color : 10M Link Blinking : Activity (RX, TX)	Orange
[1, 1]	Link off	None

AVDDH KSZ9031RN Decouple Pins 1, 12

C60 4.7uF/6.3V, C61 10nF, C62 10nF

AVDDL AVDDL_PLL KSZ9031RN Decouple Pin 44

FB6 FBEAD — C64 4.7uF/6.3V, C65 0.1uF, C66 10nF

DVDDH — R124 10K — P5RX_CLK — R127 NP — PHYAD2
DVDDH — R125 10K — P5LED2 — R128 NP — PHYAD1
DVDDH — R126 10K — P5LED1 — R129 NP — PHYAD0

PHY address bits [4:3] are always set to "00"

Strapping PHY Address PHYAD[2-0] = 7 (111) for Port 5

Title	KSZ8795 DEMO BOARD		
Size C	Document Number Port 5 to GPHY KSZ9031		Rev 1.0
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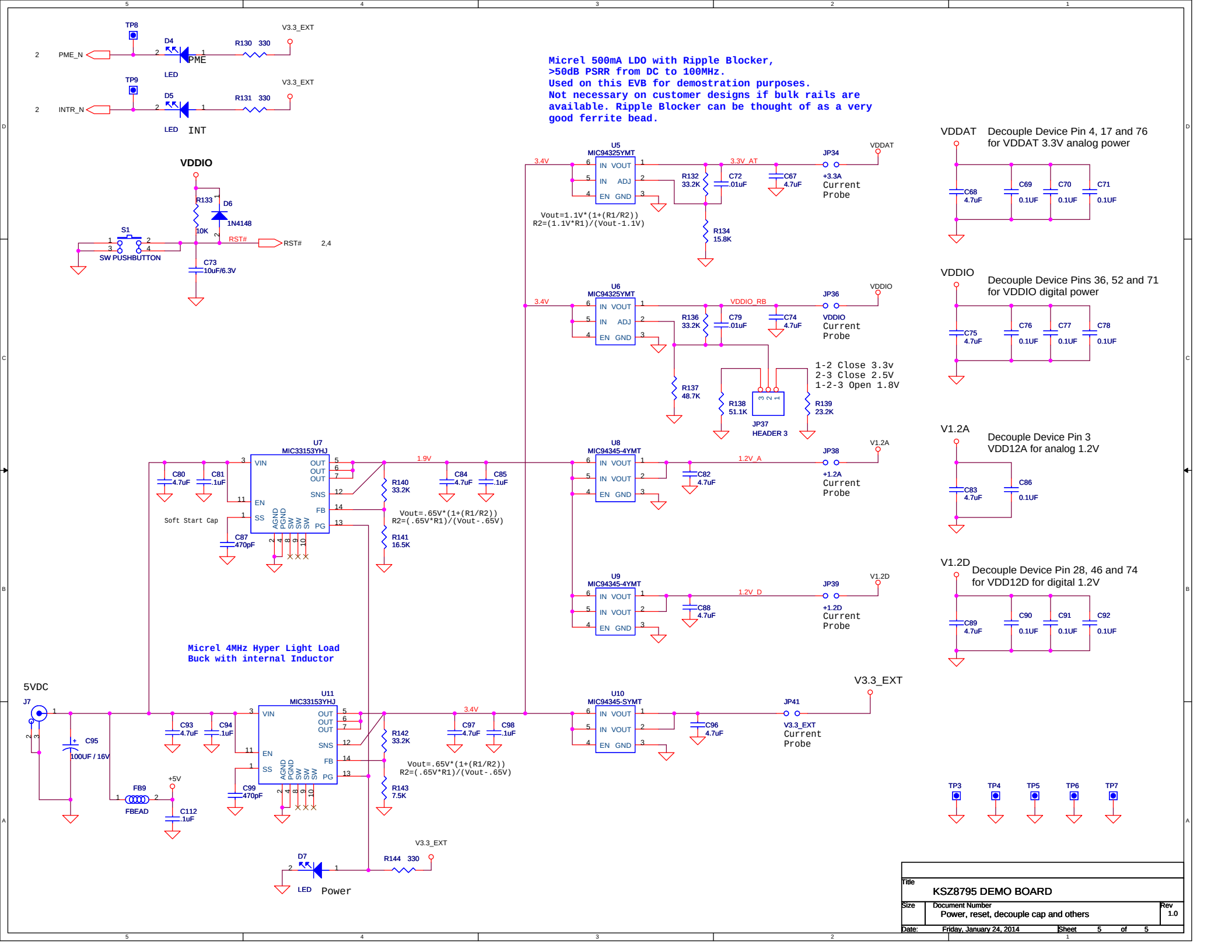
TP8
V3.3_EXT
PME_N
D4
R130 330
PME
LED
TP9
V3.3_EXT
INTR_N
D5
R131 330
LED
INT
VDDIO
R133
D6
1N4148
10K
S1
RST#
RST#
2,4
SW PUSHBUTTON
C73
10uF/6.3V
Micrel 500mA LDO with Ripple Blocker,
>50dB PSRR from DC to 100MHz.
Used on this EVB for demostration purposes.
Not necessary on customer designs if bulk rails are
available. Ripple Blocker can be thought of as a very
good ferrite bead.
U5
MIC94325YMT
3.4V
IN VOUT
IN ADJ
EN GND
R132
33.2K
C72
.01uF
3.3V_AT
C67
4.7uF
JP34
VDDAT
+3.3A
Current
Probe
Vout=1.1V*(1+(R1/R2))
R2=(1.1V*R1)/(Vout-1.1V)
R134
15.8K
U6
MIC94325YMT
3.4V
VDDIO_RB
JP36
VDDIO
R136
33.2K
C79
.01uF
C74
4.7uF
VDDIO
Current
Probe
R137
48.7K
R138
51.1K
JP37
HEADER 3
R139
23.2K
1-2 Close 3.3v
2-3 Close 2.5V
1-2-3 Open 1.8V
U7
MIC33153YHJ
C80
4.7uF
C81
.1uF
VIN
OUT
SNS
FB
EN
SS
PG
AGND
PGND
SW
Soft Start Cap
C87
470pF
1.9V
R140
33.2K
C84
4.7uF
C85
.1uF
Vout=.65V*(1+(R1/R2))
R2=(.65V*R1)/(Vout-.65V)
R141
16.5K
U8
MIC94345-4YMT
IN VOUT
IN VOUT
EN GND
C82
4.7uF
1.2V_A
JP38
V1.2A
+1.2A
Current
Probe
U9
MIC94345-4YMT
IN VOUT
IN VOUT
EN GND
C88
4.7uF
1.2V_D
JP39
V1.2D
+1.2D
Current
Probe
Micrel 4MHz Hyper Light Load
Buck with internal Inductor
5VDC
J7
C95
100UF / 16V
FB9
FBEAD
+5V
C112
.1uF
U11
MIC33153YHJ
C93
4.7uF
C94
.1uF
C99
470pF
3.4V
C97
4.7uF
C98
.1uF
R142
33.2K
Vout=.65V*(1+(R1/R2))
R2=(.65V*R1)/(Vout-.65V)
R143
7.5K
U10
MIC94345-SYMT
IN VOUT
IN VOUT
EN GND
C96
4.7uF
JP41
V3.3_EXT
V3.3_EXT
Current
Probe
V3.3_EXT
D7
R144 330
LED
Power
VDDAT
Decouple Device Pin 4, 17 and 76
for VDDAT 3.3V analog power
C68
4.7uF
C69
0.1UF
C70
0.1UF
C71
0.1UF
VDDIO
Decouple Device Pins 36, 52 and 71
for VDDIO digital power
C75
4.7uF
C76
0.1UF
C77
0.1UF
C78
0.1UF
V1.2A
Decouple Device Pin 3
VDD12A for analog 1.2V
C83
4.7uF
C86
0.1UF
V1.2D
Decouple Device Pin 28, 46 and 74
for VDD12D for digital 1.2V
C89
4.7uF
C90
0.1UF
C91
0.1UF
C92
0.1UF
TP3
TP4
TP5
TP6
TP7
Title
KSZ8795 DEMO BOARD
Size
Document Number
Power, reset, decouple cap and others
Rev
1.0
Date:
Friday, January 24, 2014
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