Ethernet PHY

Rev C.1 Updates: U15 is replaced with ESDS312 IEC61000-4-5 rated 25A

Rev D.1 Updates: changed FB2 and R160 to 0603 ferrite bead, (FB2 and FB15), BLM18HE152SN1D from Murata

Ethernet Termination & Protection

IN from Connector Page

Out to PHY

Close to MAG

Close to PHY

WIRE_ETH_TX_P
WIRE_ETH_TX_N
WIRE_ETH_RX_P
WIRE_ETH_RX_N
WIRE_ETH_SPR1
WIRE_ETH_SPR2
WIRE_ETH_SPR3
WIRE_ETH_SPR4

T2 HX0068ANLT

C72 0.01uF 100V 0402
C73 0Ohm 0402
C74 0Ohm 0402
C75 0.01uF 100V 0402

C73, C74 are jumper resistors. They are there in case a capacitor is needed.

RN5 Resistor Array 4x 75ohm

C77 1nF 0805

ETH_GND

C12 4.7nF 1000V 1206 — DC_GND
C71 4.7nF 1000V 1206 — ETH_GND

PHY_AVD
C63 1.0uF 10V 0402
C64 0.1uF 0201 10V
C67 1.0uF 10V 0402
C68 0.1uF 0201 10V

ETH_TD_P
ETH_TD_N
ETH_RD_P
ETH_RD_N

R62 49.9Ohm 0402
R63 49.9Ohm 0402
R64 49.9Ohm 0402
R65 49.9Ohm 0402

C65 1.0uF 10V 0402
C66 0.1uF 0201 10V
C69 1.0uF 10V 0402
C70 0.1uF 0201 10V

TP45

PHY_AVD — FB2 Ferrite 1500ohm @100MHz 0603 — ETH_3V3 — FB15 Ferrite 1500ohm @100MHz 0603 — SYS_3V3

ETH_3V3

C78 100pF 50V 0402
C79 1nF 16V 0402
C80 0.01uF 0402 100V
C81 10uF 10V

PHY_AVD

C82 100pF 50V 0402
C83 1nF 16V 0402
C84 0.01uF 0402 100V
C85 10uF 10V

U15 ESDS314DBVR
I/O1, GND, I/O2, I/O3, I/O4

SYS_3V3 — R70 13kOhm 0402
ETH_3V3 — R71 2.2kOhm 0402, R72 2.2kOhm 0402

Connecting R70 to SYS_3V3
R70 is placed near uC and far from ETH_3V3 plane

TP46 TP47 TP48 TP49 TP50 TP51 TP52 TP53 TP105

MII_TX_CLK
MII_TX_EN
MII_TXD0
MII_TXD1
MII_TXD2
MII_TXD3
MII_RXD0
MII_RXD1
MII_RXD2
MII_RXD3
MII_RX_DV
MII_CRS
MII_RX_ER
MII_COL
MII_RX_CLK
MII_MDC
MII_MDIO

R17 33Ohm 0201
R18 33Ohm 0201

RN3 Resistor Array 4x 33ohm
RN4
RN6

R124 33Ohm 0201
R127 33Ohm 0201
R128 33Ohm 0201

U16 DP83822IRHBT

Pin	Signal	Pin	Signal
2	TX_CLK	21	VDDIO
3	TX_EN/TX_CTRL	14	AVD
4	TX_D0		
5	TX_D1		
6	TX_D2		
7	TX_D3		
30	RX_D0	12	TD_P
31	RX_D1	11	TD_M
32	RX_D2	10	RD_P
1	RX_D3/GPIO	9	RD_M
28	RX_ER		
26	RX_DV/RX_CTRL		
25	RX_CLK		
29	COL/GPIO	24	LED_1/GPIO
27	CRS/CRS_DV	17	LED_0
20	MDC		
19	MDIO		
18	RESET	13	NC
8	INT/PWDN	15	NC
22	XO		
23	XI		
16	RBIAS	33	GND

TX_CLK TX_EN TX_D0 TX_D1 TX_D2 TX_D3 RX_D0 RX_D1 RX_D2 RX_D3 RX_ER RX_DV RX_CLK COL CRS MDC MDIO PHY_nRESET DP_XO DP_XI PHY_RBIAS

ETH_TD_P ETH_TD_N ETH_RD_P ETH_RD_N

DP_LED_1 DP_LED_0

R47 2.49kOhm 0402
R73 470Ohm 0402
D24 LED Green 0402
R46 2.49kOhm 0402
R74 470Ohm 0402
D23 LED Green 0402

R76 4.87kOhm 0402

25MHz 10pF XT3

C86 12pF 0402 50V
C87 12pF 0402 50V

ETH_3V3

C13 0.1uF 0201 10V

R120 10kOhm 0402

R119 DNP 0402

SYS_nRESET
STM_PHY_nRESET
TP54
R11 DNP 0402

U2 SN74LVC1G97DRYR
IN0, IN1, IN2, Y, VCC, GND

AND Gate mode

STM_PHY_INT_PWDN
PHY INT is active LOW

R146 1.96kOhm 0402