Motorcomm YT8618C/YT8618H Product Brief

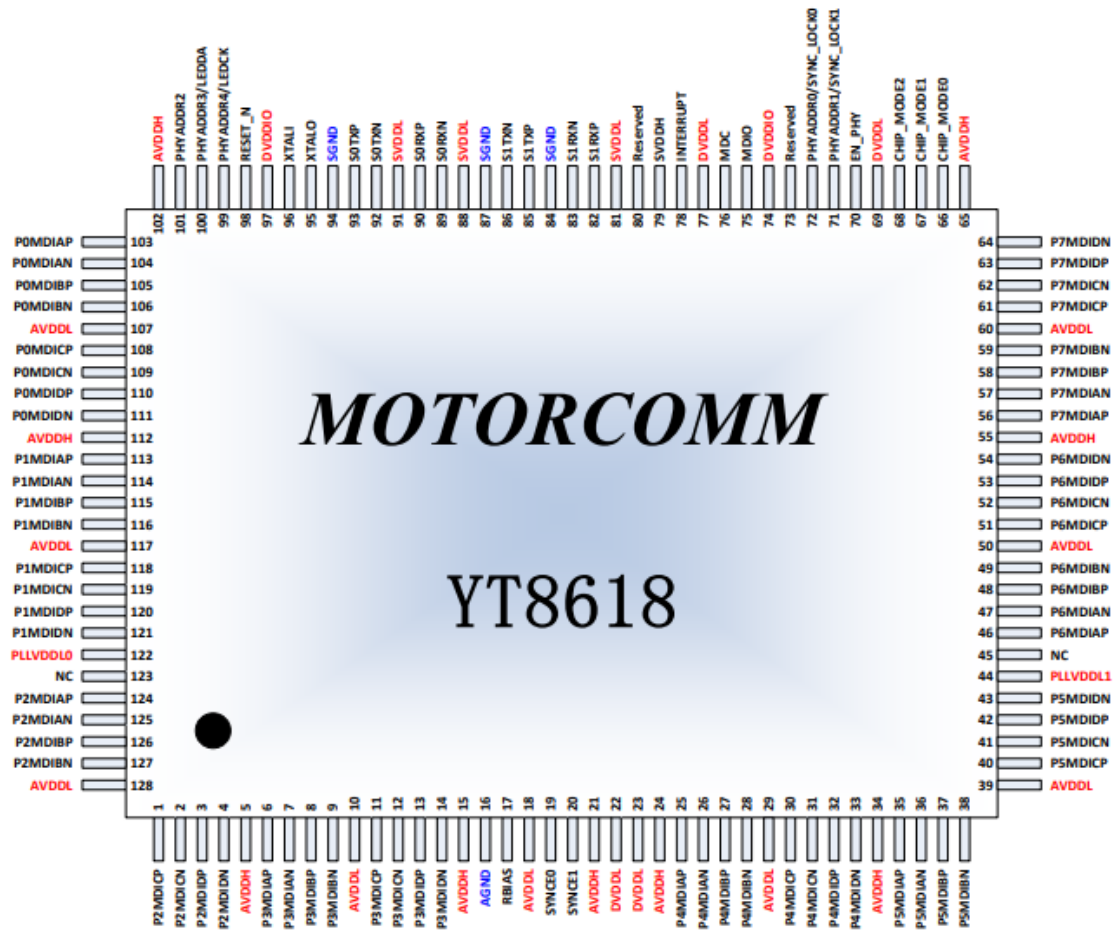Integrated Octal 10/100/1000M Ethernet Transceiver

Overview

The YT8618 integrates octal independent 10/100/1000M Ethernet transceivers into a single IC, and performs all the physical layer (PHY) functions for 1000Base-T, 100Base-TX, and 10Base-Te Ethernet on category 5E UTP cable except 1000Base-T half-duplex. 10Base-Te functionality can also be achieved on standard category 3 or 4 cable.

This device includes PCS, PMA, and PMD sub-layers. They perform encoding/decoding, clock/data recovery, digital adaptive equalization, echo cancellers, crosstalk elimination, and line driver, as well as other required supporting circuit functions. The YT8618 also integrates an internal hybrid that allows the use of inexpensive 1:1 transformer module.
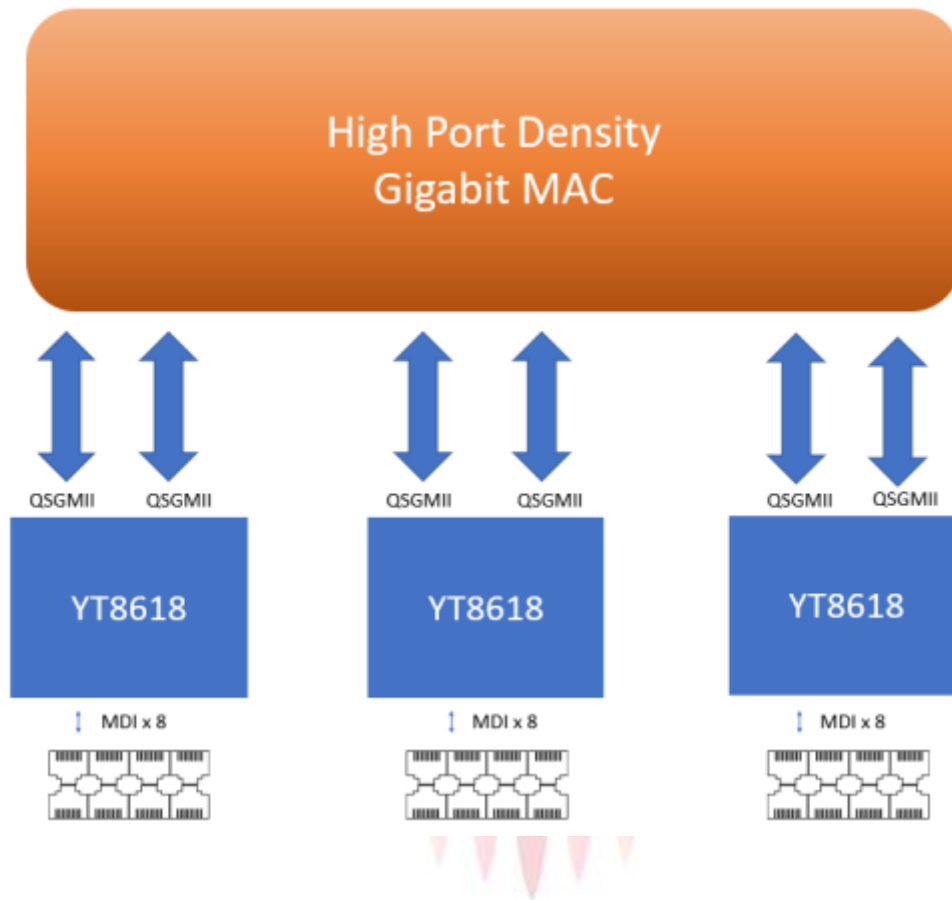
Each of the four independent transceivers features an innovative QSGMII for reduced PCB trace.

Pin Assignment

Top pins (102–65, left to right):
AVDDH (102), PHYADDR2 (101), PHYADDR3/LEDOA (100), PHYADDR4/LEDCK (99), RESET_N (98), DVDDIO (97), XTALI (96), XTALO (95), SGND (94), S0TXP (93), S0TXN (92), SVDDL (91), S0RXP (90), S0RXN (89), SVDDL (88), SGND (87), S1TXN (86), S1TXP (85), SGND (84), S1RXN (83), S1RXP (82), SVDDL (81), Reserved (80), SVDDH (79), INTERRUPT (78), DVDDL (77), MDC (76), MDIO (75), DVDDIO (74), Reserved (73), PHYADDR0/SYNC_LOCK0 (72), PHYADDR1/SYNC_LOCK1 (71), EN_PHY (70), DVDDL (69), CHIP_MODE2 (68), CHIP_MODE1 (67), CHIP_MODE0 (66), AVDDH (65)

Left pins (103–128):
P0MDIAP (103), P0MDIAN (104), P0MDIBP (105), P0MDIBN (106), AVDDL (107), P0MDICP (108), P0MDICN (109), P0MDIDP (110), P0MDIDN (111), AVDDH (112), P1MDIAP (113), P1MDIAN (114), P1MDIBP (115), P1MDIBN (116), AVDDL (117), P1MDICP (118), P1MDICN (119), P1MDIDP (120), P1MDIDN (121), PLLVDDL0 (122), NC (123), P2MDIAP (124), P2MDIAN (125), P2MDIBP (126), P2MDIBN (127), AVDDL (128)

Right pins (64–39):
P7MDIDN (64), P7MDIDP (63), P7MDICN (62), P7MDICP (61), AVDDL (60), P7MDIBN (59), P7MDIBP (58), P7MDIAN (57), P7MDIAP (56), AVDDH (55), P6MDIDN (54), P6MDIDP (53), P6MDICN (52), P6MDICP (51), AVDDL (50), P6MDIBN (49), P6MDIBP (48), P6MDIAN (47), P6MDIAP (46), NC (45), PLLVDDL1 (44), P5MDIDN (43), P5MDIDP (42), P5MDICN (41), P5MDICP (40), AVDDL (39)

Bottom pins (1–38, left to right):
P2MDICP (1), P2MDICN (2), P2MDIDP (3), P2MDIDN (4), AVDDH (5), P3MDIAP (6), P3MDIAN (7), P3MDIBP (8), P3MDIBN (9), AVDDL (10), P3MDICP (11), P3MDICN (12), P3MDIDP (13), P3MDIDN (14), AVDDH (15), AGND (16), RBIAS (17), AVDDL (18), SYNCE0 (19), SYNCE1 (20), AVDDH (21), DVDDL (22), DVDDL (23), AVDDH (24), P4MDIAP (25), P4MDIAN (26), P4MDIBP (27), P4MDIBN (28), AVDDL (29), P4MDICP (30), P4MDICN (31), P4MDIDP (32), P4MDIDN (33), AVDDH (34), P5MDIAP (35), P5MDIAN (36), P5MDIBP (37), P5MDIBN (38)
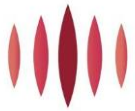
Center: MOTORCOMM YT8618

Application Diagram

Key Features

- Octal-port integrated 10/100/1000M Ethernet transceiver
- Support QSGMII (Quad Serial Gigabit Media Independent Interface) in 10/100/1000M mode
- Support SGMII mode direct link to one designated Copper Giga PHY with speed adaption
- Support LRE100-4, disabled by default
  - Cable reaches up to 400 meters @100Mbps
- Supports IEEE 802.3az-2010 (Energy Efficient Ethernet)
  - EEE Buffering
  - Incorporates EEE buffering for seamless support of legacy MACs

- Supports crossover detection and auto-correction
- Supports auto-detection and auto-correction of wiring pair swaps, pair skew, and pair polarity
- Supports CSD(Cable status diagnostic)
- Supports Link Down Power Saving (Sleep Mode)
- Supports one interrupt output to external CPU for notification
- Support fast link failure indication
- Supports 120m for CAT.5E cable in 1000BASE-T
- Support Serial LED interface
- Supports SyncE clock output Mux
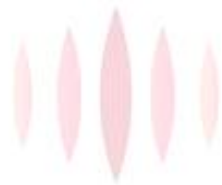 - Recover clock from either SerDes

- Recover clock from either Copper PHY
- From internal 25Mhz Clock
- SerDes Test pattern
  - PRBS-7/10/31
  - IDLE/K28.5/D5.6
  - Customized define by user
  - SerDes BIST

- Packet Generator and Checker
- Low power consumption
- Easy layout, good EMI/EMS, and good thermal performance
- Supports 25MHz crystal or 3.3V OSC input
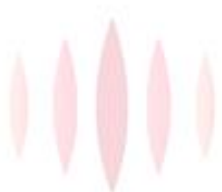- 3.3V and 1.2V power supply
- LQPF 128 package

Target Applications

- High Port Density Switch
- QSGMII MAC