

X99-Phoenix SLI Rev 1.0

Structure Introduction

Power Sequence

Check Points List

JEFF.KO



X99-Phoenix SLI



- Intel USB3.1 Type-C
- NVMe PCIe Gen3 x4 22110 M.2
- Onboard U.2 for Intel SSD 750 support
- Dual Hybrid Fan Headers (PWM/Voltage Control for Water pump/Fan)
- Surround Ambient LED with RGB Multi-Color Choices
- Anti-Sulfur Resistors & Stainless Steel IO Connectors

Chipset

- Intel X99 chipset

Processor Support

- Supports New Intel® Core™ i7 Processor Extreme Edition, LGA 2011-3

Main Memory

- DDR4, 4 Channel, 8 DIMMs
- XMP, 16G Registered-DIMM support

Graphics

- 2*PCIe 3.0 x16, 2*PCIe 3.0 x8
- Best 3-way/2-way SLI & Crossfire support spacing

Audio

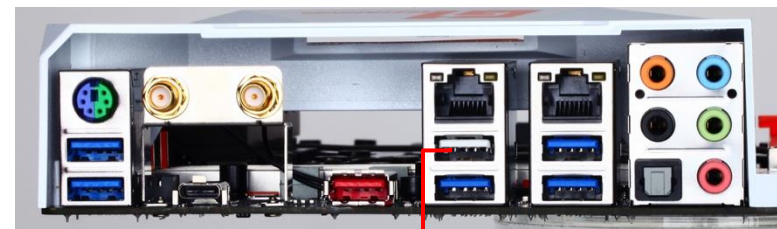
- ALC1150

LAN

- Dual Intel GbE LAN with cFosSpeed support

Others

- 1*PCIe x1
- SATA3*10, U.2,*2, M.2*2, SATA Express*1
- 2 USB3.1(Type C, Type A)/ 10 USB3.0 /4 USB2.0
- ATX 305x244(mm)



Q-Flash Plus USB Port



X99-Designare EX

- Intel USB3.1 Type-C with PD 2.0 36W support
- NVMe PCIe Gen3 x4 22110 M.2
- Onboard U.2 for Intel SSD 750 support
- Dual Hybrid Fan Headers (PWM/Voltage Control for Water pump/Fan)
- Surround Ambient LED with RGB Multi-Color Choices
- Anti-Sulfur Resistors & Stainless Steel IO Connectors

Chipset

- Intel X99 chipset

Processor Support

- Supports New Intel® Core™ i7 Processor Extreme Edition, LGA 2011-3

Main Memory

- DDR4, 4 Channel, 8 DIMMs
- XMP, 16G Registered-DIMM support

Graphics

- 3*PCIe 3.0 x16, 1*PCIe 3.0 x8
- Best 3-way/2-way SLI & Crossfire support spacing

Audio

- ALC1150

LAN

- Dual Intel GbE LAN with cFosSpeed support

Others

- 1*PCIe x4 + 1*PCIe x1
- SATA3*10, U.2,*2, M.2*2, SATA Express*1
- 2 USB3.1(Type C, Type A)/ 10 USB3.0 /4 USB2.0
- ATX 305x244(mm)



DP-In for future upgrade

Q-Flash Plus USB Port



X99-Ultra Gaming



- Intel USB3.1 Type-C
- NVMe PCIe Gen3 x4 22110 M.2
- Onboard U.2 for Intel SSD 750 support
- Dual Hybrid Fan Headers (PWM/Voltage Control for Water pump/Fan)
- Surround Ambient LED with RGB Multi-Color Choices
- Anti-Sulfur Resistors & Stainless Steel IO Connectors

■ Chipset

- Intel X99 chipset

■ Processor Support

- Supports New Intel® Core™ i7 Processor Extreme Edition, LGA2011-3

■ Main Memory

- DDR4, 4 Channel, 8 DIMMs
- XMP, 16G Registered-DIMM support

■ Graphics

- 2*PCIe 3.0 x16, 2*PCIe 3.0 x8
- Best 3-way/2-way SLI & Crossfire support spacing

■ Audio

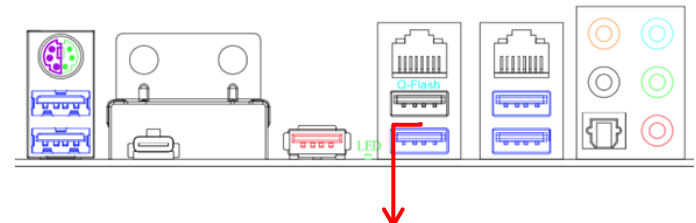
- ALC1150

■ LAN

- Intel i219V+Killer E2400

■ Others

- 1*PCIe x1
- SATA3*10, U.2,*1, M.2*2, SATA Express*1
- 2 USB3.1 (Type C, Type A)/10 USB 3.0(F4, R6)
- ATX 305x244(mm)



Q-Flash Plus USB Port

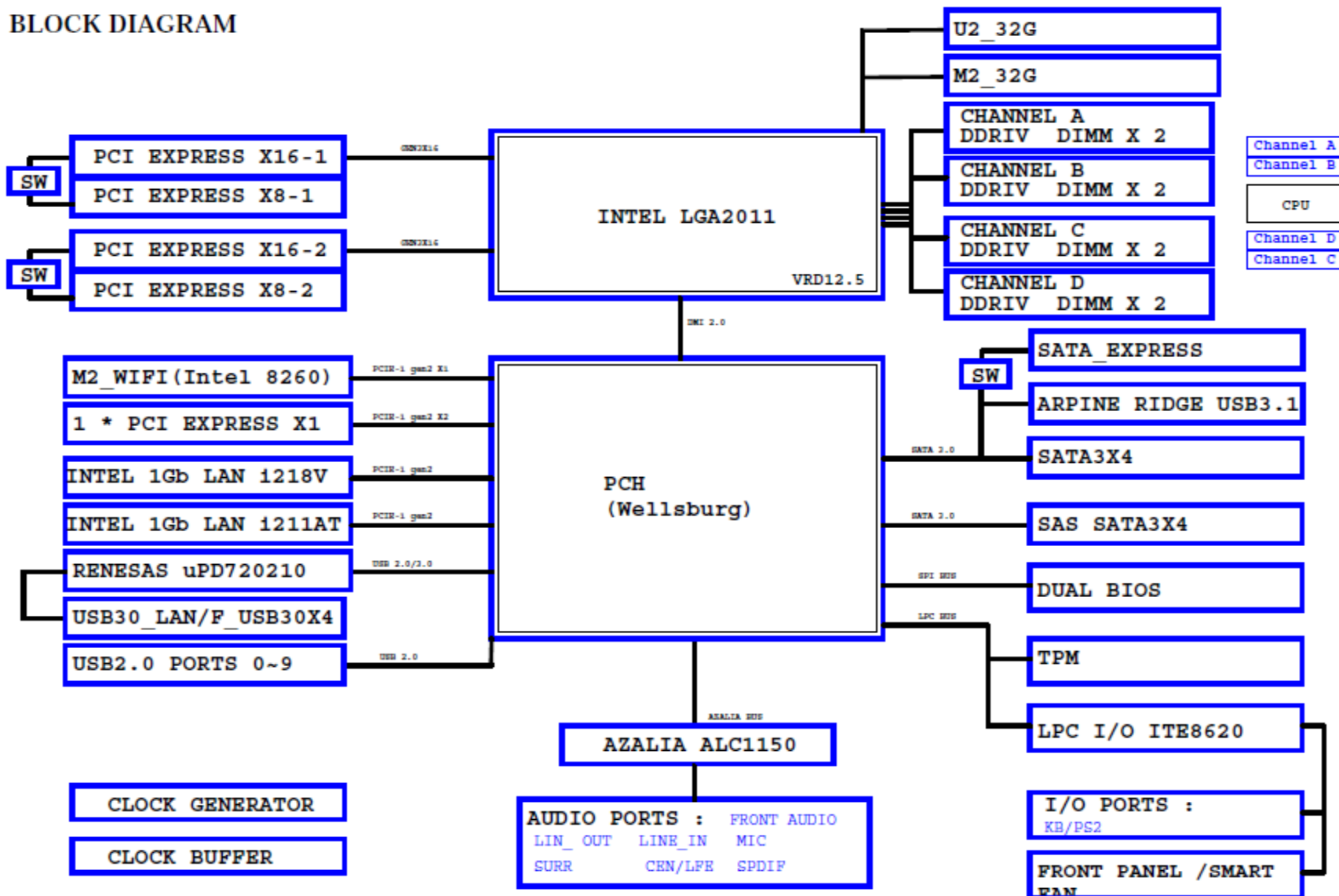
Intel Broadwell-E Family

Processor Name	Intel Core i7-6950X	Intel Core i7-6900K	Intel Core i7-6850K	Intel Core i7-6800K
Process Node	14nm	14nm	14nm	14nm
Cores/Threads	10/20	8/16	6/12	6/12
Core Clock	3.00 GHz	3.20 GHz	3.60 GHz	3.40 GHz
Boost Clock	3.50 GHz	3.70 GHz	3.80 GHz	3.60 GHz
L3 Cache	25 MB L3 Cache	20 MB L3 Cache	15 MB L3 Cache	15 MB L3 Cache
Unlocked Multiplier (BCLK OC)	Yes, Full Range OC	Yes, Full Range OC	Yes, Full Range OC	Yes, Full Range OC
Chipset	X99	X99	X99	X99
Socket	LGA 2011-3	LGA 2011-3	LGA 2011-3	LGA 2011-3
PCI-E Lanes	40	40	40	28
Memory Support	DDR4-2400 MHz	DDR4-2400 MHz	DDR4-2400 MHz	DDR4-2400 MHz
TDP	140W	140W	140W	140W

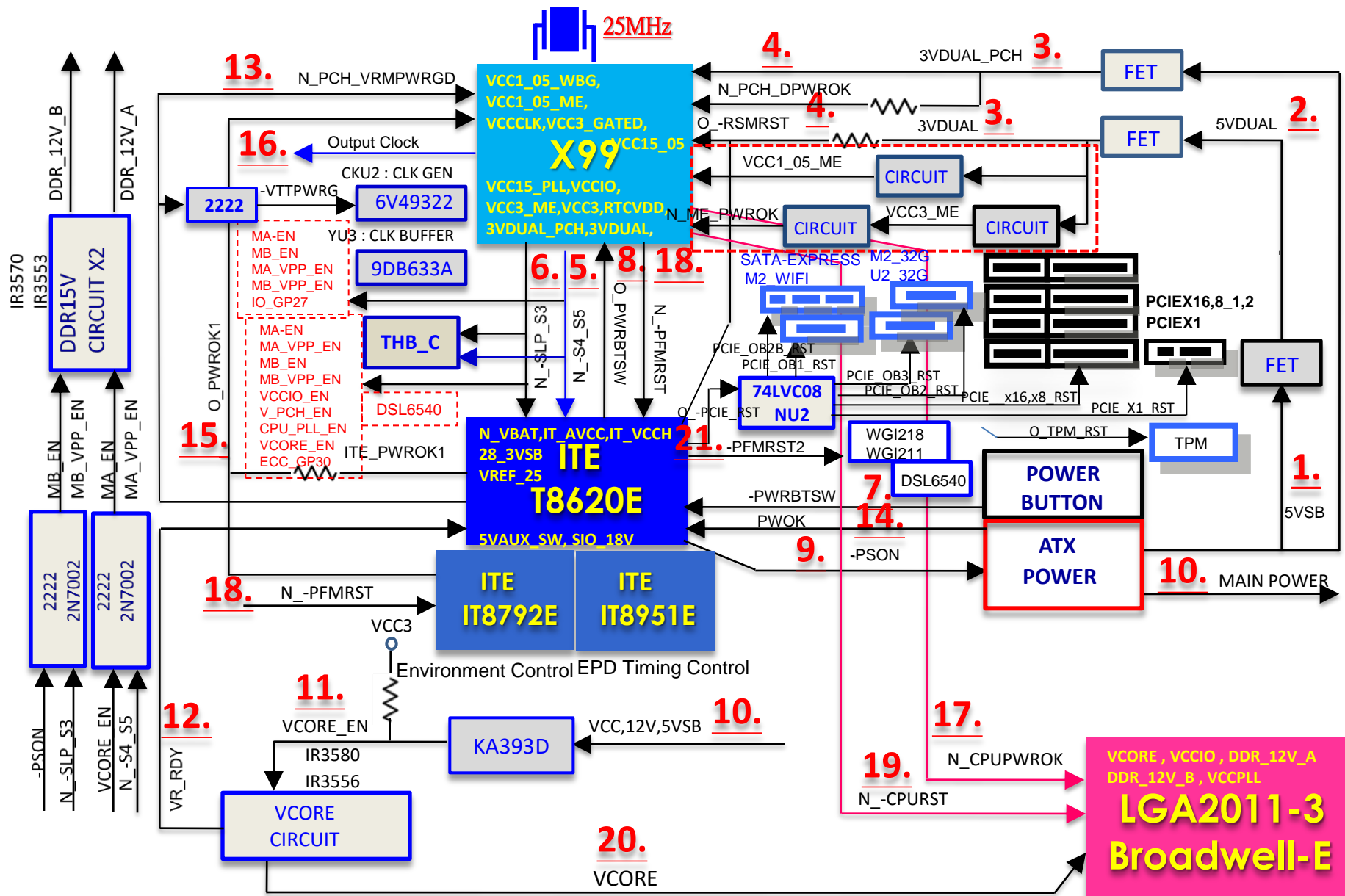
Intel Haswell-E vs Ivy Bridge-E

Processor Name	Intel Core i7-5960X	Intel Core i7-5930K	Intel Core i7-5820K	Intel Core i7-4960X
Platform	Haswell-E	Haswell-E	Haswell-E	Ivy Bridge-E
Process Node	22nm	22nm	22nm	22nm
Cores/Threads	8/16	6/12	6/12	6/12
Core Clock	3.00 GHz	3.50 GHz	3.30 GHz	3.40 GHz
Boost Clock	3.30 GHz	3.90 GHz-4.0 GHz	3.60 GHz-3.80 GHz	3.60 GHz
L3 Cache	20 MB L3 Cache	15 MB L3 Cache	15 MB L3 Cache	15 MB L3 Cache
Unlocked Multiplier (BCLK OC)	Yes, Full Range OC	Yes, Full Range OC	Yes, Full Range OC	No
Chipset	X99 Wellsburg	X99 Wellsburg	X99 Wellsburg	X79 Patsburg
Socket	LGA 2011-3	LGA 2011-3	LGA 2011-3	LGA 2011
PCI-E Lanes	40	40	28	40
Memory Support	DDR4-2133 MHz	DDR4-2133 MHz	DDR4-2133 MHz	DDR3-1600 MHz
TDP	140W	140W	140W	130W

BLOCK DIAGRAM



X99-Phoenix SLI Power Sequence



Signals	Clock	Reset	Control
U2_PCIE_IP16_SW U2_PCIE_IN16_SW U2_PCIE_IP15_SW U2_PCIE_IN15_SW U2_PCIE_IP14 U2_PCIE_IN14 U2_PCIE_IP13 U2_PCIE_IN13 U2_PCIE_TP16_SW U2_PCIE_TN16_SW U2_PCIE_TP15_SW U2_PCIE_TN15_SW U2_PCIE_TP14 U2_PCIE_TN14 U2_PCIE_TP13 U2_PCIE_TN13	CK_U2_100M_DP CK_U2_100M_DN	O_-PCIE_RST	N_GPP_D14

X99-Phoenix SLI Voltage

CPU	PCH (X99)	SIO (IT8620E)	DDR4
VCORE VCORE0 VCORE3 VCORE4 VCORE5 VCCIO VCCIO1~11 VCCPLL DDR_12V_A DDR_12V_B	3VDUAL 3VDUAL_PCH VCC3 VCC3_ME VCC1_05_ME VCCCLK VCCIO VCC15_PLL VCC15_05 VCC1_05_WBG VCC3_GATED	IT_AVCC IT_VCCH 28_3VSB N_VBAT VREF_25 5VAUX_SW SIO_18V	DDR_12V_A DDR_12V_B VDDSPDA VPP_25V_A VPP_25V_B DDRVTT_A DDRVTT_B M_VREF_DDRA M_VREF_DDRB M_VREF_DDRC M_VREF_DDRD

X99-Phoenix SLI Clock

CPU	PCH (X99)	SIO (IT8620E)	DDR4
N_-CPU_BCLK0~1	32.768K	N_LPC33	M_DCLKA0~A3
N_CPU_BCLK0~1	25M	N_LPCCLK48	M_-DCLKA0~A3
M_DCLKA0~A3	N_PCHCLK14		M_DCLKB0~B3
M_-DCLKA0~A3	N_CPU_BK0		M_-DCLKB0~B3
M_DCLKB0~B3	N_-CPU_BK0		M_DCLKC0~C3
M_-DCLKB0~B3	T_TPMCLK		M_-DCLKC0~C3
M_DCLKC0~C3	N_ECC33		M_DCLKD0~D3
M_-DCLKC0~C3	N_EC33		M_-DCLKD0~D3
M_DCLKD0~D3	N_PCH33		M_CKEA0~A3
M_-DCLKD0~D3	N_LPC33		M_CKEB0~B3
M_CKEA0~A3	N_LPCCLK48		M_CKEC0~C3
M_CKEB0~B3	EC_LPCCLK48		M_CKED0~D3
M_CKEC0~C3	ECC_LPCCLK48		
M_CKED0~D3			

X99-Phoenix SLI PWOK

CPU	PCH (X99)	SIO (IT8620E)	DDR4
N_CPUPWROK A_DRAM_PWROK0 A_DRAM_PWROK1	N_PCH_VRMPWRGD N_CPUPWROK N_PCH_DPWROK A_DRAM_PWROK O_PWROK1 N_ME_PWROK	PWOK O_PWROK1 ITE_PWROK2 N_PCH_DPWROK N_PCH_VRMPWRGD	

X99-Phoenix SLI Reset

CPU	PCH (X99)	SIO (IT8620E)	DDR4
N_-CPURST A_-M_RSTC01 A_-M_RSTC23	N_-PFMRST N_-CPURST N_-RTCRST N_-SRTCST O_-RSMRST N_-SYS_RST N_-PFMRST N_-KBRST	O_-RSMRST N_-PFMRST O_-PFMRST2 O_-PCIE_RST -RST_BTN N_-KBRST	A_-M_RSTC01 A_-M_RSTC23

X99-Phoenix SLI Signals

CPU	PCH (X99)	SIO (IT8620E)	DDR4
A_-VIDALRT A_VIDSLCK A_VIDSOUT	N_-SLP_S3 N_-S4_S5 O_PWRBTSW N_LAD0~3 N_SMBDATA N_SMBCLK N_SERIRQ N_-LFRAME N_-LPCPME N_-PCIE_WAKE N_ICH_SPI_MOSI N_ICH_SPI_MISO N_-ICH_SPI_CS N_ICH_SPI_CLK N_SPI_DQ2 N_SPI_DQ3	N_-SLP_S3 N_-S4_S5 -PWRBTSW O_PWRBTSW N_LAD0~3 N_A20GATE N_-LDRQ0 N_SERIRQ N_-LFRAME N_-LPCPME VIN0~VIN6 VREF CEB_N	