

TYPE	BANK	HF35 Package
Transceiver I/O	1C	28
Transceiver I/O	1D	28
Transceiver I/O	1E	28
Transceiver I/O	1F	28
LVDS I/O	2K	48
LVDS I/O	2L	48
LVDS I/O	2M	48
LVDS I/O	2N	48
LVDS I/O	3A	48
LVDS I/O	3B	48
LVDS I/O	3C	48
LVDS I/O	3D	48
3V I/O	6A	8
SDM shared LVDS I/O	SDM	29

- i. Total LVDS channels per bank supporting SERDES Non-DPA and DPA mode is equivalent to (LVDS I/O per bank)/2, inclusive of clock pair. Please refer to Dedicated Tx/Rx Channel column in the pin-out table for the channel availability.
- ii. Total LVDS channels supporting SERDES Soft-CDR mode is 12 pairs per bank. Please refer to Soft CDR column in the pin out table for the channel availability.

Bank Number	Index within I/O Bank	VREF	Pin Name/Function	Optional Function(s)	Configuration Function	HPS Function	Dedicated Tx/Rx Channel	Soft CDR Support	GT support	HF35	DQS for X4	DQS for X8/A9	DQS for X16/X18	DQS for X32/A36
1F			REFCLK_GXB11F_CHTp								L28			
1F			REFCLK_GXB11F_CHTn								L27			
1F			GXB11F_TX_CH5n								A31			
1F			GXB11F_TX_CH5p								A32			
1F			GXB11F_RX_CH5n,GXB11F_REFCLK5n								B29			
1F			GXB11F_RX_CH5p,GXB11F_REFCLK5p								B30			
1F			GXB11F_TX_CH4n								C31			
1F			GXB11F_TX_CH4p								C32			
1F			GXB11F_RX_CH4n,GXB11F_REFCLK4n								D29			
1F			GXB11F_RX_CH4p,GXB11F_REFCLK4p								D30			
1F			GXB11F_TX_CH3n								D33			
1F			GXB11F_TX_CH3p								D34			
1F			GXB11F_RX_CH3n,GXB11F_REFCLK3n								F29			
1F			GXB11F_RX_CH3p,GXB11F_REFCLK3p								F30			
1F			GXB11F_TX_CH2n								E31			
1F			GXB11F_TX_CH2p								E32			
1F			GXB11F_RX_CH2n,GXB11F_REFCLK2n								H29			
1F			GXB11F_RX_CH2p,GXB11F_REFCLK2p								H30			
1F			GXB11F_TX_CH1n								F33			
1F			GXB11F_TX_CH1p								F34			
1F			GXB11F_RX_CH1n,GXB11F_REFCLK1n								K29			
1F			GXB11F_RX_CH1p,GXB11F_REFCLK1p								K30			
1F			GXB11F_TX_CH0n								G31			
1F			GXB11F_TX_CH0p								G32			
1F			GXB11F_RX_CH0n,GXB11F_REFCLK0n								L31			
1F			GXB11F_RX_CH0p,GXB11F_REFCLK0p								L32			
1F			REFCLK_GXB11F_CH8p								N28			
1F			REFCLK_GXB11F_CH8n								N27			
1E			REFCLK_GXB11E_CHTp								R28			
1E			REFCLK_GXB11E_CHTn								R27			
1E			GXB11E_TX_CH5n								H33			
1E			GXB11E_TX_CH5p								H34			
1E			GXB11E_RX_CH5n,GXB11E_REFCLK5n								M29			
1E			GXB11E_RX_CH5p,GXB11E_REFCLK5p								M30			
1E			GXB11E_TX_CH4n								J31			
1E			GXB11E_TX_CH4p								J32			
1E			GXB11E_RX_CH4n,GXB11E_REFCLK4n								N31			
1E			GXB11E_RX_CH4p,GXB11E_REFCLK4p								N32			
1E			GXB11E_TX_CH3n								K33			
1E			GXB11E_TX_CH3p								K34			
1E			GXB11E_RX_CH3n,GXB11E_REFCLK3n								P29			
1E			GXB11E_RX_CH3p,GXB11E_REFCLK3p								P30			
1E			GXB11E_TX_CH2n								M33			
1E			GXB11E_TX_CH2p								M34			
1E			GXB11E_RX_CH2n,GXB11E_REFCLK2n								R31			
1E			GXB11E_RX_CH2p,GXB11E_REFCLK2p								R32			
1E			GXB11E_TX_CH1n								P33			
1E			GXB11E_TX_CH1p								P34			
1E			GXB11E_RX_CH1n,GXB11E_REFCLK1n								T29			
1E			GXB11E_RX_CH1p,GXB11E_REFCLK1p								T30			
1E			GXB11E_TX_CH0n								T33			
1E			GXB11E_TX_CH0p								T34			
1E			GXB11E_RX_CH0n,GXB11E_REFCLK0n								U31			
1E			GXB11E_RX_CH0p,GXB11E_REFCLK0p								U32			
1E			REFCLK_GXB11E_CH8p								U28			
1E			REFCLK_GXB11E_CH8n								U27			
1D			REFCLK_GXB11D_CHTp								W28			
1D			REFCLK_GXB11D_CHTn								W27			
1D			GXB11D_TX_CH5n								V33			
1D			GXB11D_TX_CH5p								V34			
1D			GXB11D_RX_CH5n,GXB11D_REFCLK5n								V29			
1D			GXB11D_RX_CH5p,GXB11D_REFCLK5p								V30			
1D			GXB11D_TX_CH4n								Y33			
1D			GXB11D_TX_CH4p								Y34			
1D			GXB11D_RX_CH4n,GXB11D_REFCLK4n								W31			
1D			GXB11D_RX_CH4p,GXB11D_REFCLK4p								W32			
1D			GXB11D_TX_CH3n								AB33			
1D			GXB11D_TX_CH3p								AB34			
1D			GXB11D_RX_CH3n,GXB11D_REFCLK3n								Y29			
1D			GXB11D_RX_CH3p,GXB11D_REFCLK3p								Y30			
1D			GXB11D_TX_CH2n								AD33			
1D			GXB11D_TX_CH2p								AD34			
1D			GXB11D_RX_CH2n,GXB11D_REFCLK2n								AA31			
1D			GXB11D_RX_CH2p,GXB11D_REFCLK2p								AA32			
1D			GXB11D_TX_CH1n								AF33			
1D			GXB11D_TX_CH1p								AF34			
1D			GXB11D_RX_CH1n,GXB11D_REFCLK1n								AB29			
1D			GXB11D_RX_CH1p,GXB11D_REFCLK1p								AB30			
1D			GXB11D_TX_CH0n								AG31			
1D			GXB11D_TX_CH0p								AG32			
1D			GXB11D_RX_CH0n,GXB11D_REFCLK0n								AC31			
1D			GXB11D_RX_CH0p,GXB11D_REFCLK0p								AC32			
1D			REFCLK_GXB11D_CH8p								AA28			
1D			REFCLK_GXB11D_CH8n								AA27			
1C			REFCLK_GXB11C_CHTp								AC28			
1C			REFCLK_GXB11C_CHTn								AC27			
1C			GXB11C_TX_CH5n								AH33			
1C			GXB11C_TX_CH5p								AH34			
1C			GXB11C_RX_CH5n,GXB11C_REFCLK5n								AD29			
1C			GXB11C_RX_CH5p,GXB11C_REFCLK5p								AD30			
1C			GXB11C_TX_CH4n								AJ31			
1C			GXB11C_TX_CH4p								AJ32			
1C			GXB11C_RX_CH4n,GXB11C_REFCLK4n								AE31			
1C			GXB11C_RX_CH4p,GXB11C_REFCLK4p								AE32			
1C			GXB11C_TX_CH3n								AK33			
1C			GXB11C_TX_CH3p								AK34			
1C			GXB11C_RX_CH3n,GXB11C_REFCLK3n								AF29			











Bank Number	Index within I/O Bank	VREF	Pin Name/Function	Optional Function(s)	Configuration Function	HPS Function	Dedicated Tx/Rx Channel	Soft CDR Support	GT support	HF35	DQS for X4	DQS for X8/X9	DQS for X16/X18	DQS for X32/X36
			GND							AN16				
			GND							AM16				
			GND							Y8				
			GND							Y32				
			GND							Y31				
			GND							Y3				
			GND							Y25				
			GND							Y23				
			GND							Y18				
			GND							Y13				
			GND							W5				
			GND							W34				
			GND							W33				
			GND							W30				
			GND							W29				
			GND							W26				
			GND							W25				
			GND							W20				
			GND							W15				
			GND							W10				
			GND							V7				
			GND							V32				
			GND							V31				
			GND							V25				
			GND							V22				
			GND							V2				
			GND							V17				
			GND							V12				
			GND							U9				
			GND							U4				
			GND							U34				
			GND							U33				
			GND							U30				
			GND							U29				
			GND							U26				
			GND							U25				
			GND							U24				
			GND							U19				
			GND							U14				
			GND							T6				
			GND							T32				
			GND							T31				
			GND							T25				
			GND							T21				
			GND							T16				
			GND							T11				
			GND							T1				
			GND							R8				
			GND							R34				
			GND							R33				
			GND							R30				
			GND							R3				
			GND							R29				
			GND							R26				
			GND							R25				
			GND							R23				
			GND							R18				
			GND							R13				
			GND							P5				
			GND							P32				
			GND							P31				
			GND							P25				
			GND							P20				
			GND							P15				
			GND							P10				
			GND							N7				
			GND							N34				
			GND							N33				
			GND							N30				
			GND							N29				
			GND							N26				
			GND							N25				
			GND							N22				
			GND							N2				
			GND							N17				
			GND							N12				
			GND							M9				
			GND							M4				
			GND							M32				
			GND							M31				
			GND							M25				
			GND							M24				
			GND							M19				
			GND							M14				
			GND							L6				
			GND							L34				
			GND							L33				
			GND							L30				
			GND							L29				
			GND							L26				
			GND							L25				
			GND							L21				
			GND							L16				
			GND							L11				
			GND							L1				
			GND							K8				
			GND							K32				



Bank Number	Index within I/O Bank	VREF	Pin Name/Function	Optional Function(s)	Configuration Function	HPS Function	Dedicated Tx/Rx Channel	Soft CDR Support	GT support	HF35	DQS for X4	DQS for X8/X9	DQS for X16/X18	DQS for X32/X36
			GND							K31				
			GND							K3				
			GND							K25				
			GND							K23				
			GND							K18				
			GND							K13				
			GND							J5				
			GND							J34				
			GND							J33				
			GND							J30				
			GND							J29				
			GND							J28				
			GND							J27				
			GND							J26				
			GND							J25				
			GND							J20				
			GND							J15				
			GND							J10				
			GND							H7				
			GND							H32				
			GND							H31				
			GND							H28				
			GND							H27				
			GND							H22				
			GND							H2				
			GND							H17				
			GND							H12				
			GND							G9				
			GND							G4				
			GND							G34				
			GND							G33				
			GND							G30				
			GND							G29				
			GND							G28				
			GND							G24				
			GND							G19				
			GND							G14				
			GND							F6				
			GND							F32				
			GND							F31				
			GND							F28				
			GND							F26				
			GND							F21				
			GND							F16				
			GND							F11				
			GND							F1				
			GND							E8				
			GND							E34				
			GND							E33				
			GND							E30				
			GND							E3				
			GND							E29				
			GND							E28				
			GND							E23				
			GND							E18				
			GND							E13				
			GND							D5				
			GND							D32				
			GND							D31				
			GND							D28				
			GND							D25				
			GND							D20				
			GND							D15				
			GND							D10				
			GND							C7				
			GND							C34				
			GND							C33				
			GND							C30				
			GND							C29				
			GND							C28				
			GND							C27				
			GND							C22				
			GND							C2				
			GND							C17				
			GND							C12				
			GND							B5				
			GND							B4				
			GND							B34				
			GND							B33				
			GND							B32				
			GND							B31				
			GND							B28				
			GND							B24				
			GND							B19				
			GND							B14				
			GND							B1				
			GND							AP5				
			GND							AP33				
			GND							AP32				
			GND							AP31				
			GND							AP30				
			GND							AP25				
			GND							AP20				
			GND							AP2				
			GND							AP15				
			GND							AP10				
			GND							AN7				

Bank Number	Index within I/O Bank	VREF	Pin Name/Function	Optional Function(s)	Configuration Function	HPS Function	Dedicated Tx/Rx Channel	Soft CDR Support	GT support	HF35	DQS for X4	DQS for X8/X9	DQS for X16/X18	DQS for X32/X36
			GND							AN34				
			GND							AN33				
			GND							AN30				
			GND							AN29				
			GND							AN28				
			GND							AN27				
			GND							AN22				
			GND							AN2				
			GND							AN17				
			GND							AN12				
			GND							AN1				
			GND							AM9				
			GND							AM4				
			GND							AM32				
			GND							AM31				
			GND							AM28				
			GND							AM24				
			GND							AM19				
			GND							AM14				
			GND							AL5				
			GND							AL34				
			GND							AL33				
			GND							AL30				
			GND							AL29				
			GND							AL28				
			GND							AL26				
			GND							AL21				
			GND							AL16				
			GND							AL11				
			GND							AL1				
			GND							AK9				
			GND							AK32				
			GND							AK31				
			GND							AK3				
			GND							AK28				
			GND							AK23				
			GND							AK18				
			GND							AK13				
			GND							AJ5				
			GND							AJ34				
			GND							AJ33				
			GND							AJ30				
			GND							AJ29				
			GND							AJ28				
			GND							AJ25				
			GND							AJ20				
			GND							AJ15				
			GND							AJ10				
			GND							AH7				
			GND							AH32				
			GND							AH31				
			GND							AH28				
			GND							AH27				
			GND							AH22				
			GND							AH2				
			GND							AH17				
			GND							AH12				
			GND							AG9				
			GND							AG4				
			GND							AG34				
			GND							AG33				
			GND							AG30				
			GND							AG29				
			GND							AG28				
			GND							AG24				
			GND							AG19				
			GND							AG14				
			GND							AF6				
			GND							AF32				
			GND							AF31				
			GND							AF28				
			GND							AF27				
			GND							AF26				
			GND							AF21				
			GND							AF16				
			GND							AF11				
			GND							AF1				
			GND							AE8				
			GND							AE34				
			GND							AE33				
			GND							AE30				
			GND							AE3				
			GND							AE29				
			GND							AE26				
			GND							AE25				
			GND							AE23				
			GND							AE18				
			GND							AE13				
			GND							AD5				
			GND							AD32				
			GND							AD31				
			GND							AD25				
			GND							AD20				
			GND							AD15				
			GND							AD10				
			GND							AC7				
			GND							AC34				

Bank Number	Index within I/O Bank	VREF	Pin Name/Function	Optional Function(s)	Configuration Function	HPS Function	Dedicated Tx/Rx Channel	Soft CDR Support	GT support	HF35	DQS for X4	DQS for X8/A9	DQS for X16/X18	DQS for X32/X36
			GND							AC33				
			GND							AC30				
			GND							AC29				
			GND							AC26				
			GND							AC25				
			GND							AC22				
			GND							AC2				
			GND							AC17				
			GND							AC12				
			GND							AB9				
			GND							AB4				
			GND							AB32				
			GND							AB31				
			GND							AB25				
			GND							AB24				
			GND							AB19				
			GND							AB14				
			GND							AA6				
			GND							AA34				
			GND							AA33				
			GND							AA30				
			GND							AA29				
			GND							AA26				
			GND							AA25				
			GND							AA21				
			GND							AA16				
			GND							AA11				
			GND							AA1				
			GND							A6				
			GND							A33				
			GND							A30				
			GND							A29				
			GND							A28				
			GND							A26				
			GND							A21				
			GND							A2				
			GND							A16				
			GND							A11				
			GNDSENSE							T14				
			VCC							Y9				
			VCC							Y7				
			VCC							Y22				
			VCC							Y21				
			VCC							Y20				
			VCC							Y19				
			VCC							Y17				
			VCC							Y16				
			VCC							Y15				
			VCC							Y14				
			VCC							Y12				
			VCC							Y10				
			VCC							W9				
			VCC							W8				
			VCC							W7				
			VCC							W22				
			VCC							W21				
			VCC							W19				
			VCC							W18				
			VCC							W17				
			VCC							W16				
			VCC							W14				
			VCC							W13				
			VCC							W12				
			VCC							W11				
			VCC							U22				
			VCC							T9				
			VCC							T8				
			VCC							T7				
			VCC							T22				
			VCC							T20				
			VCC							T19				
			VCC							T18				
			VCC							T17				
			VCC							T13				
			VCC							T12				
			VCC							T10				
			VCC							R9				
			VCC							R7				
			VCC							R22				
			VCC							R21				
			VCC							R20				
			VCC							R19				
			VCC							R17				
			VCC							R16				
			VCC							R15				
			VCC							R14				
			VCC							R12				
			VCC							R11				
			VCC							R10				
			VCC							P9				
			VCC							P8				
			VCC							P7				
			VCC							P22				
			VCC							P21				
			VCC							P19				
			VCC							P17				

Bank Number	Index within I/O Bank	VREF	Pin Name/Function	Optional Function(s)	Configuration Function	HPS Function	Dedicated Tx/Rx Channel	Soft CDR Support	GT support	HF35	DQS for X4	DQS for X8/A9	DQS for X16/X18	DQS for X32/X36
			VCC							P16				
			VCC							P14				
			VCC							P13				
			VCC							P12				
			VCC							N9				
			VCC							N8				
			VCC							N21				
			VCC							N19				
			VCC							N15				
			VCC							N14				
			VCC							AB8				
			VCC							AB7				
			VCC							AB22				
			VCC							AB21				
			VCC							AB17				
			VCC							AB15				
			VCC							AB12				
			VCC							AA9				
			VCC							AA8				
			VCC							AA7				
			VCC							AA22				
			VCC							AA20				
			VCC							AA19				
			VCC							AA17				
			VCC							AA15				
			VCC							AA14				
			VCC							AA13				
			VCC							AA12				
			VCC							AA10				
			VCCPT							V9				
			VCCPT							V8				
			VCCPT							V21				
			VCCPT							V20				
			VCCPT							V19				
			VCCPT							V18				
			VCCPT							V16				
			VCCPT							V13				
			VCCPT							V11				
			VCCPT							V10				
			VCCPT							U8				
			VCCPT							U21				
			VCCPT							U20				
			VCCPT							U18				
			VCCPT							U17				
			VCCPT							U16				
			VCCPT							U15				
			VCCPT							U13				
			VCCPT							U12				
			VCCPT							U11				
			VCCPT							U10				
			DNU							AG27				
			DNU							AN25				
			DNU							AN25				
			DNU							IR				
			DNU							H8				
			DNU							AP18				
			DNU							AN19				
			DNU							AN18				
			DNU							AN20				
			DNU							AP28				
			DNU							AP27				
			TEMPDIODE0n							AN15				
			TEMPDIODE0p							AM15				
			TEMPDIODE1n							AJ27				
			TEMPDIODE1p							AH26				
			VCCBAT							AE15				
			VCCA_PLL							V15				
			VCCA_PLL							V14				
			VCCIO2K							AD19				
			VCCIO2K							AC20				
			VCCIO2K							AC19				
			VCCIO2L							M21				
			VCCIO2L							M20				
			VCCIO2L							L20				
			VCCIO2M							M18				
			VCCIO2M							L19				
			VCCIO2M							L18				
			VCCIO2N							M17				
			VCCIO2N							M16				
			VCCIO2N							L17				
			VCCIO3A							AD13				
			VCCIO3A							AC14				
			VCCIO3A							AC13				
			VCCIO3B							AC9				
			VCCIO3B							AC8				
			VCCIO3B							AC10				
			VCCIO3C							W6				
			VCCIO3C							V6				
			VCCIO3C							V5				
			VCCIO3D							M10				
			VCCIO3D							I9				
			VCCIO3D							L10				
			VCCIO3V							AC24				
			VCCIO3V							AC23				
			VCCIO_HPS							M12				
			VCCIO_HPS							M11				
			VCCIO_SBM							AD16				

Bank Number	Index within I/O Bank	VREF	Pin Name/Function	Optional Function(s)	Configuration Function	HPS Function	Dedicated Tx/Rx Channel	Soft CDR Support	GT support	HF35	DQS for X4	DQS for X8/A9	DQS for X16/X18	DQS for X32/A36
2K		VREFB2KNO	VREFB2KNO							AC21				
2L		VREFB2LNO	VREFB2LNO							K20				
2M		VREFB2MNO	VREFB2MNO							K19				
2N		VREFB2NNO	VREFB2NNO							M15				
3A		VREFB3ANO	VREFB3ANO							AC15				
3B		VREFB3BNO	VREFB3BNO							AC11				
3C		VREFB3CNO	VREFB3CNO							Y6				
3D		VREFB3DNO	VREFB3DNO							M8				
		NC								U6				
		NC								R6				
		NC								P6				
		NC								N6				
		NC								AG26				
		NC								AD28				
		NC								AC5				
		NC								AC18				
		VCCX_GXBLCF								V26				
		VCCX_GXBLCF								P26				
		VCCX_GXBLCF								K26				
		VCCX_GXBLCF								AB26				
		VCCR_GXBLLC								AD28				
		VCCR_GXBLLC								AD27				
		VCCR_GXBLLC								AD26				
		VCCR_GXBLLD								Y28				
		VCCR_GXBLLD								T27				
		VCCR_GXBLLD								Y26				
		VCCR_GXBLLD								T28				
		VCCR_GXBLLD								T27				
		VCCR_GXBLLD								T26				
		VCCR_GXBLLF								M28				
		VCCR_GXBLLF								M27				
		VCCR_GXBLLF								M26				
		VCCX_GXBLLC								AB28				
		VCCX_GXBLLC								AB27				
		VCCX_GXBLLD								V28				
		VCCX_GXBLLD								V27				
		VCCX_GXBLLD								P28				
		VCCX_GXBLLD								P27				
		VCCX_GXBLLD								K28				
		VCCX_GXBLLD								K27				
		RREF_BI								AP29				
		VCCAOC								AF15				
		VCCERAM								Y24				
		VCCERAM								W24				
		VCCERAM								W23				
		VCCERAM								V24				
		VCCERAM								V23				
		VCCERAM								T24				
		VCCERAM								T23				
		VCCERAM								R24				
		VCCERAM								P24				
		VCCERAM								P23				
		VCCERAM								N24				
		VCCERAM								N23				
		VCCERAM								N20				
		VCCERAM								N16				
		VCCERAM								N13				
		VCCERAM								N10				
		VCCERAM								AB23				
		VCCERAM								AB20				
		VCCERAM								AB16				
		VCCERAM								AB13				
		VCCERAM								AB10				
		VCCERAM								AA24				
		VCCERAM								AA23				
		VCCFUSEWR_SDM								AE16				
		VCCSENSE								T15				
		VCCX_HPS								M13				
		VCCX_HPS								L14				
		VCCX_HPS								L13				
		VCCX_HPS								L12				
		VCCX_HPS								K14				
		VCCP								Y11				
		VCCP								P18				
		VCCP								P11				
		VCCP								N18				
		VCCP								N11				
		VCCP								AB18				
		VCCP								AB11				
		VCCP								AK18				
		VCCPLLDIG_HPS								J11				
		VCCPLLDIG_SDM								AD17				
		VCCPLL_HPS								K11				
		VCCPLL_SDM								AC16				

Date	Version	Changes
October 2019	2019.10.08	Initial release.
December 2019	2019.12.26	Removed NAND_* and PWRMGT_PWM0 pins from banks 3A and 3D.

(1) For more information about pin definition and pin connection guidelines, refer to the [Intel® Stratix® 10 Device Family Pin Connection Guidelines](#)