



Bank Number	VREF	PinName/Function (2), (3)	Optional Function(s)	Configuration Function	Dedicated Tx/Rx Channel	Emulated LVDS Output Channel	F996 (4)	DQS for X8/X9	DQS for X16/ X18	DQS for X32/ X36	HMC pin assignment for DDR3 (5)	HMC pin assignment for LPDDR2	HPS Pin Mux Select 3	HPS Pin Mux Select 2	HPS Pin Mux Select 1	HPS Pin Mux Select 0
		GND					U24									
		GND					U25									
		GND					U26									
		GND					U29									
		GND					U30									
		GND					V23									
		GND					V27									
		GND					V29									
		GND					W24									
		GND					W29									
		GND					W30									
		GND					Y23									
		GND					Y25									
		GND					Y26									
		GND					Y27									
		GND					Y28									
		GND					AA1									
		GND					AA2									
		GND					AA7									
		GND					AB3									
		GND					AB4									
		GND					AB5									
		GND					AB6									
		GND					AC1									
		GND					AC2									
		GND					AC5									
		GND					AD3									
		GND					AD4									
		GND					AE1									
		GND					AE2									
		GND					AE5									
		GND					AF3									
		GND					AF4									
		GND					AG1									
		GND					AG2									
		GND					AG5									
		GND					AH3									
		GND					AH4									
		GND					AJ1									
		GND					AJ2									
		GND					T3									
		GND					T4									
		GND					U1									
		GND					U2									
		GND					U5									
		GND					U6									
		GND					V3									
		GND					V4									
		GND					V8									
		GND					W1									
		GND					W2									
		GND					W5									
		GND					W7									
		GND					Y3									
		GND					Y4									
		GND					Y6									
		GND					Y7									
		VCCP					AB10									
		VCCP					AB14									
		VCCP					AB17									
		VCCP					AB20									
		VCCP					AC19									
		VCCP					P10									
		VCCP					R17									
		VCCP					R21									
		VCCP					T10									
		VCCA_FPLL					V9									
		VCCA_FPLL					V22									
		VCCPLL_HPS					U10									
		VCCBAT					H25									
		VCC_AUX					AB11									
		VCC_AUX					AB18									
		VCC_AUX					R20									
		VCC_AUX_SHARED					R19									
		VCCD_FPLL					Y9									
		VCCD_FPLL					Y22									
		VCCA_GXBR0					W6									
		VCCA_GXBL1					W26									
		VCOH_GXBR0					V7									
		VCOH_GXBL1					V24									
		VCCL_GXBR0					Y5									
		VCCL_GXBR0					V6									
		VCCL_GXBL1					V25									
		VCCL_GXBL1					V26									
		VCCR_GXBL					AA25									
		VCCR_GXBL					AA26									
		VCCR_GXBR					AA5									
		VCCR_GXBR					AA6									
		VCOI_GXBR0					Y5									
		VCOI_GXBR0					Y7									
		VCOI_GXBL1					W25									
		VCOI_GXBL1					Y24									
		VCC					AA10									
		VCC					AA12									
		VCC					AA14									
		VCC					AA16									
		VCC					AA18									
		VCC					AA19									
		VCC					AA20									
		VCC					T17									
		VCC					T19									
		VCC					T21									
		VCC					T22									
		VCC					U16									
		VCC					U18									
		VCC					U20									
		VCC					V15									
		VCC					V17									
		VCC					V19									
		VCC					V21									
		VCC					W12									
		VCC					W14									
		VCC					W18									
		VCC					W20									
		VCC					Y11									
		VCC					Y13									
		VCC					Y15									



Bank Number	VREF	PinName/Function (2), (3)	Optional Function(s)	Configuration Function	Dedicated Tx/Rx Channel	Emulated LVDS Output Channel	F996 (4)	DQS for X8/X9	DQS for X16/ X18	DQS for X32/ X36	HMC pin assignment for DDR3 (5)	HMC pin assignment for LPDDR2	HPS Pin Mux Select 3	HPS Pin Mux Select 2	HPS Pin Mux Select 1	HPS Pin Mux Select 0
		VCC					Y16									
		VCC					Y17									
		VCC					Y19									
		VCC					Y21									
		VCC					W16									
		VCC_HPS					R12									
		VCC_HPS					T11									
		VCC_HPS					T13									
		VCC_HPS					U12									
		VCC_HPS					U13									
		VCC_HPS					U14									
		VCC_HPS					V11									
		VCC_HPS					V13									
		VCCD3A					AE19									
		VCCD3A					AE22									
		VCCD3A					AF26									
		VCCD3A					AH19									
		VCCD3A					AH22									
		VCCD3A					AH26									
		VCCD3B					AE13									
		VCCD3B					AE16									
		VCCD3B					AH15									
		VCCD3D					AE11									
		VCCD3E					AG13									
		VCCD4A					AD5									
		VCCD4A					AE7									
		VCCD4A					AF5									
		VCCD4A					AH5									
		VCCD4A					AH7									
		VCCD6A_HPS					C2									
		VCCD6A_HPS					C5									
		VCCD6A_HPS					C8									
		VCCD6A_HPS					F2									
		VCCD6A_HPS					FA									
		VCCD6A_HPS					FB									
		VCCD6A_HPS					HI									
		VCCD6A_HPS					J5									
		VCCD6B_HPS					L5									
		VCCD6B_HPS					M4									
		VCCD6B_HPS					N1									
		VCCD6B_HPS					PS									
		VCCD6B_HPS					T2									
		VCCD6B_HPS					TS									
		VCCD7A_HPS					B14									
		VCCD7A_HPS					B17									
		VCCD7A_HPS					G10									
		VCCD7A_HPS					M10									
		VCCD7B_HPS					B01									
		VCCD7B_HPS					E12									
		VCCD7C_HPS					E14									
		VCCD7D_HPS					E18									
		VCCD7E_HPS					J14									
		VCCD7E_HPS					G15									
		VCCD8A					F28									
		VCCD8A					J27									
		VCCD8A					J29									
		VCCD8A					M29									
		VCCD8A					N24									
		VCCD8A					N27									
		VCCD8B					E27									
		VCCD8B					F25									
		VCCD8B					K23									
		VCCD8C					D25									
		VCCD8C					F23									
		VCCD8C					J21									
		VCCD8C					L19									
		VCCD8D					E21									
		VCCD8D					K17									
		VCCP3					AB21									
		VCCP3					AC18									
		VCCP3					AC24									
		VCCP4A					AB7									
		VCCP6A8B_HPS					M8									
		VCCP6A8B_HPS					N8									
		VCCP6A8B_HPS					R8									
		VCCP6A8B_HPS					U8									
		VCCP7A_HPS					N11									
		VCCP7B_HPS					L12									
		VCCP7C_HPS					M13									
		VCCP7D_HPS					M16									
		VCCP7E_HPS					J15									
		VCCP8					P18									
		VCCP8					P22									
		VCCP8					R19									
		VCCP8					R24									
		VCCP8M					F12									
		VCCP8M					AD26									
		VCCP8M					G9									
		VCCP8M					R10									
		VCCP8M					R11									
		VCCP8M					R14									
		VCCP8M					R15									
		VREFB7A/B7C/D7E/M6_HPS					F14									
		GND					AA11									
		GND					AA13									
		GND					AA15									
		GND					AA17									
		GND					AA21									
		GND					AB19									
		GND					AB8									
		GND					AB9									
		GND					AC11									
		GND					AC14									
		GND					AC17									
		GND					AC20									
		GND					AC23									
		GND					AD8									
		GND					AF11									
		GND					AF14									
		GND					AF17									
		GND					AF20									
		GND					AF23									
		GND					AF8									
		GND					AJ11									
		GND					AJ14									
		GND					AJ17									
		GND					AJ20									



Bank Number	VREF	PinName/Function (2), (3)	Optional Function(s)	Configuration Function	Dedicated Tx/Rx Channel	Emulated LVDS Output Channel	F996 (4)	DQS for X8/X9	DQS for X16/ X18	DQS for X32/ X36	HMC pin assignment for DDR3 (5)	HMC pin assignment for LPDDR2	HPS Pin Mux Select 3	HPS Pin Mux Select 2	HPS Pin Mux Select 1	HPS Pin Mux Select 0
		GND					AJ23									
		GND					AJ26									
		GND					AJ5									
		GND					AJ8									
		GND					B11									
		GND					B2									
		GND					B23									
		GND					B26									
		GND					B29									
		GND					B5									
		GND					B8									
		GND					E17									
		GND					E2									
		GND					E20									
		GND					E23									
		GND					E26									
		GND					E29									
		GND					E5									
		GND					E8									
		GND					G12									
		GND					G14									
		GND					H17									
		GND					H2									
		GND					H20									
		GND					H23									
		GND					H26									
		GND					H29									
		GND					H5									
		GND					H8									
		GND					K11									
		GND					K14									
		GND					L17									
		GND					L2									
		GND					L20									
		GND					L23									
		GND					L26									
		GND					L29									
		GND					L5									
		GND					L8									
		GND					N10									
		GND					N14									
		GND					P11									
		GND					P17									
		GND					V16									
		GND					P2									
		GND					P20									
		GND					P23									
		GND					P26									
		GND					P29									
		GND					P5									
		GND					P8									
		GND					R18									
		GND					T12									
		GND					T14									
		GND					T18									
		GND					T20									
		GND					U11									
		GND					U15									
		GND					U17									
		GND					U19									
		GND					U21									
		GND					U7									
		GND					V10									
		GND					V12									
		GND					V14									
		GND					V18									
		GND					V20									
		GND					Y14									
		GND					W13									
		GND					W15									
		GND					W17									
		GND					W19									
		GND					W21									
		GND					Y10									
		GND					Y12									
		GND					Y18									
		GND					Y20									

Notes:
 (1) For more information about pin definitions and pin connection guidelines, refer to the [Arria V Device Family Pin Connection Guidelines](#).
 (2) GND_REFCLK pin is not supported in current Quartus II version, but will be supported in future Quartus II release version.
 (3) Pins with * contains similar name with other pins in the same column. For the selection of the HPS pins, refer to the "HPS Pin Mux Select x" columns.
 (4) Pins with * are the 10 Gbps transceiver channels. For more information about the 10 Gbps transceiver channels clocking recommendation, refer to the [Transceiver Clocking in Arria V Devices chapter](#).
 (5) RESET pin is only applicable for DDR3 device.



**Pin Information for the Arria® V 5ASTMD3 Device
Version 1.3**

Version Number	Date	Changes Made
1.0	4/19/2013	Initial release.
1.1	9/30/2014	Remove corresponding bank number from VCCRSTCLK_HPS pin.
1.2	7/31/2015	Renamed the following columns: - Renamed "DDR3/DDR2 hard memory PHY" to "HMC pin assignment for DDR3". - Renamed "LPDDR2 hard memory PHY" to "HMC pin assignment for LPDDR2".
1.3	12/23/2016	-Renamed SDMMC_FB_CLK_IN to HPS_GPIO44.