









Bank Number	VREF	PinName/Function (2)	Optional Function(s)	Configuration Function	Dedicated Tx/Rx Channel	Emulated LVDS Output Channel	U02	DQS for X8	DQS for X16	HMC Pin Assignment for DDR3/DDR2 (3)	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					AC1								
		GND					AC2								
		GND					AC3								
		GND					AD14								
		GND					AD22								
		GND					AD25								
		GND					AD3								
		GND					AD6								
		GND					AD8								
		GND					AE1								
		GND					AE16								
		GND					AE18								
		GND					AE2								
		GND					AE3								
		GND					AF24								
		GND					AF3								
		GND					AG1								
		GND					AG17								
		GND					AG2								
		GND					AG27								
		GND					AG3								
		GND					AG7								
		GND					AH10								
		GND					AH20								
		GND					B15								
		GND					B17								
		GND					B20								
		GND					B22								
		GND					B25								
		GND					B27								
		GND					B3								
		GND					B5								
		GND					BF								
		GND					C1								
		GND					C11								
		GND					C2								
		GND					C3								
		GND					D10								
		GND					D13								
		GND					D16								
		GND					D3								
		GND					E1								
		GND					E19								
		GND					E2								
		GND					E22								
		GND					E24								
		GND					E27								
		GND					E3								
		GND					E9								
		GND					F3								
		GND					G1								
		GND					G2								
		GND					G3								
		GND					H11								
		GND					H15								
		GND					H18								
		GND					H20								
		GND					H24								
		GND					H27								
		GND					I5								
		GND					I3								
		GND					I26								
		GND					I29								
		GND					J1								
		GND					J2								
		GND					J3								
		GND					J5								
		GND					J6								
		GND					K11								
		GND					K12								
		GND					K14								
		GND					K16								
		GND					K20								
		GND					K3								
		GND					K5								
		GND					K6								
		GND					L14								
		GND					L1								
		GND					L12								
		GND					L13								
		GND					L15								
		GND					L17								
		GND					L19								
		GND					L2								
		GND					L24								
		GND					L27								
		GND					L3								
		GND					L5								
		GND					W4								
		GND					W7								
		GND					M10								
		GND					M11								
		GND					M14								
		GND					M16								
		GND					M20								
		GND					M3								
		GND					M8								
		GND					N1								
		GND					N13								
		GND					N15								
		GND					N17								
		GND					N19								
		GND					N2								
		GND					N3								
		GND					N6								
		GND					P10								
		GND					P12								
		GND					P16								
		GND					P18								
		GND					P20								
		GND					P25								
		GND					P3								
		GND					P6								
		GND					P9								
		GND					R1								
		GND					R11								
		GND					R13								
		GND					R15								
		GND					R2								
		GND					R5								
		GND					R8								
		GND					T10								
		GND					T14								
		GND					T3								
		GND					U7								
		GND					U12								



Bank Number	VREF	PinName/Function (2)	Optional Function(s)	Configuration Function	Dedicated Tx/Rx Channel	Emulated LVDS Output Channel	U62	DQS for X8	DQS for X16	HMC Pin Assignment for DDR3/DDR2 (3)	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					I17								
		GND					I2								
		GND					I20								
		GND					I24								
		GND					I27								
		GND					I8								
		GND					I8								
		GND					I14								
		GND					I3								
		GND					I8								
		GND					I9								
		GND					I01								
		GND					I16								
		GND					I18								
		GND					I22								
		GND					I25								
		GND					I24								
		GND					I26								
		GND					I20								
		GND					I26								
		GND					I21								
		GND					I28								
		GND					I21								
		GND					I11								
		GND					K13								
		GND					K16								
		GND					L11								
		GND					L12								
		GND					L14								
		GND					M12								
		GND					M13								
		GND					M16								
		GND					M8								
		GND					N10								
		GND					N11								
		GND					N12								
		GND					N14								
		GND					N8								
		GND					P11								
		GND					P13								
		GND					P14								
		GND					P16								
		GND					R10								
		GND					R12								
		GND					R14								
		GND					R9								
		GND					T13								
		GND					T9								
		GND					L4								
		GND					T4								
		GND					M5								
		GND					M5								
		GND					R5								
		GND					R5								
		GND					T5								
		GND					L26								
		DNU					A2								
		DNU					B2								
		DNU					D1								
		DNU					D2								
		DNU					H1								
		DNU					H2								
		DNU					M1								
		DNU					M2								
		DNU					T1								
		DNU					T2								
		DNU					Y1								
		DNU					Y2								
		DNU					AD1								
		DNU					AD2								
		DNU					CD1								
		DNU					E12								
		DNU					L8								
		DNU					AE14								
		DNU					Y10								
		VCCP6M					AD24								
		VCCP6M					H18								
		VCCBAT					D7								
		VCCD3A					AA5								
		VCCD3A					H5								
		VCCD3B					AA12								
		VCCD3B					AE10								
		VCCD3B					AE13								
		VCCD3B					AG4								
		VCCD4A					AA16								
		VCCD4A					AE1								
		VCCD4A					AF14								
		VCCD4A					AF19								
		VCCD4A					AG13								
		VCCD4A					AG22								
		VCCD4A					AH15								
		VCCD4A					AK25								
		VCCD4A					W13								
		VCCD5A					AC25								
		VCCD5A					W17								
		VCCD6A_HPS					C26								
		VCCD6A_HPS					C27								
		VCCD6A_HPS					F27								
		VCCD6A_HPS					E24								
		VCCD6A_HPS					H21								
		VCCD6A_HPS					H26								
		VCCD6A_HPS					L26								
		VCCD6A_HPS					M21								
		VCCD6B_HPS					AD27								
		VCCD6B_HPS					P27								
		VCCD6B_HPS					I21								
		VCCD6B_HPS					T26								
		VCCD6B_HPS					U18								
		VCCD6B_HPS					W27								
		VCCD7A_HPS					CD2								
		VCCD7A_HPS					D18								
		VCCD7B_HPS					B13								
		VCCD7B_HPS					H14								
		VCCD7C_HPS					B10								
		VCCD7D_HPS					D6								
		VCCD7D_HPS					S8								
		VCCD8A					E7								
		VCCP8A					AD10								
		VCCP8A					AA14								
		VCCP8B					AD13								
		VCCP8B					AD16								
		VCCP8B					AD18								
		VCCP8B					AD21								
		VCCP8B					AD26								
		VCCP8A					Y21								



Bank Number	VREF	PinName/Function (2)	Optional Function(s)	Configuration Function	Dedicated Tx/Rx Channel	Emulated LVDS Output Channel	U072	DQS for X8	DQS for X16	HMC Pin Assignment for DDR3/DDR2 (3)	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
		VCCPD6MB_HPS					K21								
		VCCPD6MB_HPS					K24								
		VCCPD6MB_HPS					U04								
		VCCPD6MB_HPS					P21								
		VCCPD6MB_HPS					P24								
		VCCPD7A_HPS					E21								
		VCCPD7B_HPS					E17								
		VCCPD7C_HPS					E14								
		VCCPD7D_HPS					E18								
		VCCPD8A					E10								
3A	VREFB3AND	VREFB3AND					A65								
3B	VREFB3BND	VREFB3BND					AF12								
4A	VREFB4AND	VREFB4AND					AF16								
5A	VREFB5AND	VREFB5AND					AC26								
		VREFB7A/B/C/D/E/G_HPS					D19								
8A	VREFB8AND	VREFB8AND					D6								
		NC					W25								
		NC					AK25								
		NC					W35								
		NC					W39								
		VCCRSTCLK_HPS					F29								
		RREF_TL					B1								
		VCCA_FPLL					HS								
		VCCA_FPLL					P4								
		VCCA_FPLL					Q4								
		VCCA_FPLL					U5								
		VCCA_FPLL					J4								
		VCCA_FPLL					AK21								
		VCCA_FPLL					M4								
		VCCA_FPLL					R4								
		VCC_AUX					AC24								
		VCC_AUX					AC8								
		VCC_AUX					AD15								
		VCC_AUX					E15								
		VCC_AUX					F8								
		VCC_AUX_SHARED					F21								
		VCCRLL_HPS					HC3								
		VCC_HPS					U21								
		VCC_HPS					K17								
		VCC_HPS					L16								
		VCC_HPS					L18								
		VCC_HPS					M17								
		VCC_HPS					M15								
		VCC_HPS					M19								
		VCC_HPS					N16								
		VCC_HPS					N15								
		VCC_HPS					P17								
		VCC_HPS					P19								

Notes:

(1) For more information about pin definitions and pin connection guidelines, refer to the

[Cyclone V Device Family Pin Connection Guidelines](#).

(2) HPS DDR pins are for memory interface only. For the dedicated pin function corresponding with the respective memory interfaces, refer to the HMC columns.

(3) RESET pin is only applicable for DDR3 device.



Pin Information for the Cyclone® V 5CSEMA2 Device  
Version 1.2

Version Number	Date	Changes Made
1.0	7/8/2013	Initial release.
1.1	9/30/2014	Remove corresponding bank number from VCCRSTCLK_HPS pin.
1.2	12/23/2016	-Renamed SDMMC_FB_CLK_IN to HPS_GPIO44.