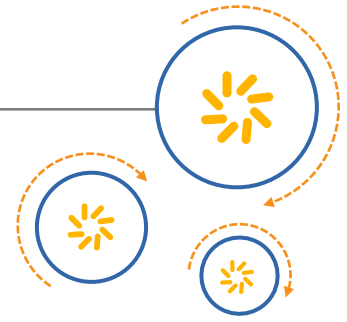




Qualcomm Technologies, Inc.



# DragonBoard™ 410c based on Qualcomm® Snapdragon™ 410E processor

## GPIO Pin Assignment Spreadsheet

January 18, 2017

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LM80-P0436-6 Rev D

## Revision history

Revision	Date	Description
D	January 2017	Added "Processor Allocation" column to table.
C	September 2016	Updated to 'E' part.
B	May 2015	URL removed from cover
A	May 2015	Initial release

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# 1 System I/O

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This document provides information on system General Purpose Input/Outputs (GPIOs) for DragonBoard™ 410c development board based on Qualcomm® Snapdragon™ 410E processor (APQ8016E). Use this document with the DragonBoard 410c schematics.

**NOTE:** These instructions apply only to DragonBoard™ 410c. For more generic instructions for the chipset, see *Qualcomm® Snapdragon™ 410 processor GPIO Pin Assignment Spreadsheet* (LM80-P0436-45).

In the Processor Allocation column, each GPIO is assigned an ownership to a specific processor or sub-system during the preliminary boot sequences. Only the processor or sub-system with access to a specific GPIO may access the registers and modify the state of a GPIO. These assignments apply to Android and Linux operation systems at the time this document was generated. Other operating systems may assign alternate ownership attributes to the various GPIOs.

The GPIO allocations may change with future releases of the operating systems, hence board designers should always test that a GPIO can be accessed by the appropriate sub-system before committing to a final hardware design.

**Table 1-1 System GPIOs for DragonBoard 410c**

GPIO#	MPM IRQ	Pad group	Pad voltage	Dft pull	DragonBoard 410c		Processor Allocation
					Description	DragonBoard 410c	
GPIO_0		3	1.8 V	PD	LS EXP CONN UART0 (GP)	blsp_uart_tx[1]	APPs
GPIO_1	Y	3	1.8 V	PD		blsp_uart_rx[1]	APPs
GPIO_2		3	1.8 V	PD		blsp_uart_cts_n[1]	APPs
GPIO_3		3	1.8 V	PD		blsp_uart_rfr_n[1]	APPs
GPIO_4		3	1.8 V	PD	LS EXP CONN UART1 (debug)	blsp_uart_tx[2]	APPs
GPIO_5	Y	3	1.8 V	PD		blsp_uart_rx[2]	APPs
GPIO_6		3	1.8 V	PD	LS EXP CONN I2C0 (sensors)	blsp_i2c_sda[2]	APPs
GPIO_7		3	1.8 V	PD		blsp_i2c_scl[2]	APPs
GPIO_8		3	1.8 V	PD	HS EXP CONN SPI1	blsp_spi_mosi[3]	APPs
GPIO_9	Y	3	1.8 V	PD		blsp_spi_miso[3]	APPs
GPIO_10		3	1.8 V	PD		blsp_spi_cs_n[3]	APPs
GPIO_11	Y	3	1.8 V	PD		blsp_spi_clk[3]	APPs
GPIO_12	Y	3	1.8 V	PD	LS EXP CONN - GPIOs (touch screen)	GPIO-B (TS_RST_N)	APPs
GPIO_13	Y	3	1.8 V	PD		GPIO-C (TS_INT_N)	APPs
GPIO_14		3	1.8 V	PD	HS EXP CONN (I2C3) DSI2HDMI	blsp_i2c_sda[4]	APPs
GPIO_15		3	1.8 V	PD		blsp_i2c_scl[4]	APPs
GPIO_16		3	1.8 V	PD	LS EXP CONN SPI0 (touch screen)	blsp_spi_mosi[5]	APPs
GPIO_17		3	1.8 V	PD		blsp_spi_miso[5]	APPs
GPIO_18		3	1.8 V	PD		blsp_spi_cs_n[5]	APPs
GPIO_19		3	1.8 V	PD		blsp_spi_clk[5]	APPs
GPIO_20	Y	3	1.8 V	PD	Display	HDMI_HPD_N	APPs
GPIO_21	Y	3	1.8 V	PD	LEDs	USR_LED_1_CTRL	APPs
GPIO_22		3	1.8 V	PD	LS EXP CONN I2C1	blsp_i2c_sda[6]	APPs
GPIO_23		3	1.8 V	PD		blsp_i2c_scl[6]	APPs

GPIO#	MPM IRQ	Pad group	Pad voltage	Dft pull	DragonBoard 410c		Processor Allocation
					Description	DragonBoard 410c	
GPIO_24		3	1.8 V	PD	LS EXP CONN – GPIOs (display)	GPIO-G (DSI_VSYNC)	APPs
GPIO_25	Y	3	1.8 V	PD		GPIO-H (DSI_RST)	APPs
GPIO_26		3	1.8 V	PD	HS EXP CONN – CAM MCLK	CSI0_MCLK	APPs
GPIO_27		3	1.8 V	PD		CSI1_MCLK	APPs
GPIO_28	Y	3	1.8 V	PD	LS EXP CONN – GPIOs (camera)	GPIO-K (CSI1_RST)	APPs
GPIO_29		3	1.8 V	PD	HS EXP CONN I2C2 (CCI)	cci_i2c_sda0	APPs
GPIO_30		3	1.8 V	PD		cci_i2c_scl0	APPs
GPIO_31	Y	3	1.8 V	PD	Display	DSI2HDMI_INT_N	APPs
GPIO_32		3	1.8 V	PD	Display	DSI_SW_SEL	APPs
GPIO_33		3	1.8 V	PD	EXP CONN – GPIOs (camera)	GPIO-L (CSI1_PWDN)	APPs
GPIO_34	Y	3	1.8 V	PD		GPIO-J (CSI0_PWDN)	APPs
GPIO_35	Y	3	1.8 V	PD		GPIO-I (CSI0_RST)	APPs
GPIO_36	Y	3	1.8 V	PD	LS EXP CONN – GPIOs	GPIO_A (APQ_INT)	APPs
GPIO_37	Y	3	1.8 V	PD	For factory emergency download	forced_usb_boot	
GPIO_38	Y	3	1.8 V	PD	SD card	#sd_card_det_n#	APPs

GPIO#	MPM IRQ	Pad group	Pad voltage	Dft pull	DragonBoard 410c		Processor Allocation
					Description	DragonBoard 410c	
GPIO_39		3	1.8 V	PD	WLAN, BT, FM	wcss_bt_ssbi	WCNSS
GPIO_40		3	1.8 V	PD		wcss_wlan_data[2]	WCNSS
GPIO_41		3	1.8 V	PD		wcss_wlan_data[1]	WCNSS
GPIO_42		3	1.8 V	PD		wcss_wlan_data[0]	WCNSS
GPIO_43		3	1.8 V	PD		wcss_wlan_set	WCNSS
GPIO_44		3	1.8 V	PD		wcss_wlan_clk	WCNSS
GPIO_45		3	1.8 V	PD		wcss_fm_ssbi	WCNSS
GPIO_46		3	1.8 V	PD		wcss_fm_sdi	WCNSS
GPIO_47		3	1.8 V	PD		wcss_bt_ctl	WCNSS
GPIO_48		3	1.8 V	PD		wcss_bt_dat_stb	WCNSS
GPIO_49	Y	4	1.8 V/ 2.85 V	PD		NC	
GPIO_50	Y	4	1.8 V/ 2.85 V	PD		NC	
GPIO_51	Y	4	1.8 V/ 2.85 V	PD		NC	
GPIO_52	Y	3	1.8 V	PD		NC	
GPIO_53		6	1.8 V/ 2.85 V	PD		NC	
GPIO_54	Y	6	1.8 V/ 2.85 V	PD		NC	
GPIO_55		6	1.8 V/ 2.85 V	PD		NC	
GPIO_56		3	1.8 V	PD		NC	
GPIO_57		5	1.8 V/ 2.85 V	PD		NC	
GPIO_58		5	1.8 V/ 2.85 V	PD		NC	
GPIO_59		5	1.8 V/ 2.85 V	PD		NC	
GPIO_60		3	1.8 V	PD		NC	

GPIO#	MPM IRQ	Pad group	Pad voltage	Dft pull	DragonBoard 410c		Processor Allocation
					Description	DragonBoard 410c	
GPIO_61		3	1.8 V	PD		NC	
GPIO_62	Y	3	1.8 V	PD		NC	
GPIO_63		3	1.8 V	PD	Audio PDM	CDC_PDM0_CLK	APPs
GPIO_64		3	1.8 V	PD		CDC_PDM0_SYNC	APPs
GPIO_65		3	1.8 V	PD		CDC_PDM0_TX0	APPs
GPIO_66	Y	3	1.8 V	PD		CDC_PDM0_RX0	APPs
GPIO_67		3	1.8 V	PD		CDC_PDM0_RX1	APPs
GPIO_68	Y	3	1.8 V	PD		CDC_PDM0_RX2	APPs
GPIO_69	Y	3	1.8 V	PD		LS EXP CONN – GPIOs (sensors + APQ wake)	GPIO_D (MAG_INT)
GPIO_70		3	1.8 V	PD		NC	QDSP
GPIO_71		3	1.8 V	PD		NC	QDSP
GPIO_72		3	1.8 V	PD		NC	QDSP
GPIO_73		3	1.8 V	PD		NC	QDSP
GPIO_74		3	1.8 V	PD		NC	QDSP
GPIO_75		3	1.8 V	PD		NC	QDSP
GPIO_76		3	1.8 V	PD		NC	QDSP
GPIO_77		3	1.8 V	PD		NC	QDSP
GPIO_78		3	1.8 V	PD		NC	QDSP
GPIO_79		3	1.8 V	PD		NC	QDSP
GPIO_80		3	1.8 V	PD	BOOT CONFIG	boot_config[0] (WDOG_DIS)	QDSP
GPIO_81		3	1.8 V	PD		boot_config[1]	QDSP
GPIO_82		3	1.8 V	PD		boot_config[2]	QDSP
GPIO_83		3	1.8 V	PD		boot_config[3]	QDSP
GPIO_84		3	1.8 V	PD		NC	QDSP
GPIO_85		3	1.8 V	PD		NC	QDSP
GPIO_86		3	1.8 V	PD	BOOT CONFIG	boot_config[5] (apps_boot_from_rom)	QDSP



GPIO#	MPM IRQ	Pad group	Pad voltage	Dft pull	DragonBoard 410c		Processor Allocation
					Description	DragonBoard 410c	
GPIO_87		3	1.8 V	PD		NC	QDSP
GPIO_88		3	1.8 V	PD		NC	QDSP
GPIO_89		3	1.8 V	PD		NC	QDSP
GPIO_90		3	1.8 V	PD		NC	QDSP
GPIO_91		3	1.8 V	PD		NC	QDSP
GPIO_92		3	1.8 V	PD		NC	QDSP
GPIO_93		3	1.8 V	PD		NC	QDSP
GPIO_94		3	1.8 V	PD		NC	QDSP
GPIO_95		3	1.8 V	PD		NC	QDSP
GPIO_96		3	1.8 V	PD		NC	QDSP
GPIO_97	Y	3	1.8 V	PD		NC	
GPIO_98	Y	3	1.8 V	PD		NC	
GPIO_99		3	1.8 V	PD		NC	QDSP
GPIO_100		3	1.8 V	PD		NC	QDSP
GPIO_101		3	1.8 V	PD		NC	QDSP
GPIO_102		3	1.8 V	PD		NC	QDSP
GPIO_103		3	1.8 V	PD		NC	QDSP
GPIO_104		3	1.8 V	PD	GPS control	SSBI_GPS	QDSP
GPIO_105		3	1.8 V	PD		NC	QDSP
GPIO_106		3	1.8 V	PD		NC	QDSP
GPIO_107	Y	3	1.8 V	PD	Keypad	#KEY_VOL_UP_N#	APPs
GPIO_108	Y	3	1.8 V	PD		NC	
GPIO_109	Y	3	1.8 V	PD		NC	
GPIO_110	Y	3	1.8 V	PD	LS EXP CONN (I2S)	pri_mi2s_ws	APPs
GPIO_111	Y	3	1.8 V	PD		NC	
GPIO_112	Y	3	1.8 V	PD		NC	
GPIO_113	Y	3	1.8 V	PD	LS EXP CONN (I2S)	pri_mi2s_sck (ALSP_INT)	APPs

GPIO#	MPM IRQ	Pad group	Pad voltage	Dft pull	DragonBoard 410c		Processor Allocation
					Description	DragonBoard 410c	
GPIO_114	Y	3	1.8 V	PD		pri_mi2s_data0	APPs
GPIO_115	Y	3	1.8 V	PD	LS EXP CONN – GPIOs (sensors)	GPIO_E (GYRO_ACCL_INT_N)	APPs
GPIO_116		3	1.8 V	PD			
GPIO_117	Y	3	1.8 V	PD	DSI2HDMI – I2S	sec_mi2s_ws	APPs
GPIO_118	Y	3	1.8 V	PD		sec_mi2s_sck	APPs
GPIO_119		3	1.8 V	PD		sec_mi2s_data0	APPs
GPIO_120	Y	3	1.8 V	PD	LEDs	USR_LED_2_CTRL	APPs
GPIO_121	Y	3	1.8 V	PD	USB	USB_HS_ID	APPs
PM_GPIO_01					USB	USB_HUB_RESET_N	APPs
PM_GPIO_02					USB	USB_SW_SEL	APPs
PM_GPIO_03					LEDs	USR_LED_3_CTRL	APPs
PM_GPIO_04					LEDs	USR_LED_4_CTRL	APPs
MPP01						VDDPX_BIAS	NA
MPP02					LEDs	WLAN_LED_SINK	APPs
MPP03					LEDs	BT_LED_SINK	APPs
MPP04					LS EXP CONN – GPIOs (display)	GPIO_F (DSI_BLCTL)	APPs

## EXHIBIT 1

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