Differences in Features for TPS65920 and TPS65921

Application Report

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ABSTRACT

The following table shows the differences in features for the TPS65920 and TPS65921 devices. This document can be referenced with the TPS65920 TRM and the register differences document.

Table 1. Feature Differences for TPS65920 and TPS65921

	Module	TPS65920	TPS65921	Impact/Comment
1	Power	N/A	Extended wait time in power sequence from 61 to 305 µs	Delay added between HFCLKOUT and nRESPWRON.
2	Power	NA	Extened wait time in power sequence from 5.3 to 32.41 ms	Delay added between CLKEN and HFCLKOUT
3	Power	N/A	Default value of registers is changed.	
4	Power	N/A	VBAT.RIGHT and VBAT.LEFT are removed because no audio function is available.	No impact
5	Power	VDD1 and VDD2 output voltage can be controlled by VMODE1 and VMODE2 pin.	"VMODE" Voltage scaling feature removed.	VDD1 and VDD2 output voltage can be changed only through General purpose or Smart-reflex I2C.
6	Power	Device restart automatically after an 8s power on button press when STOPON_PWRON feature is enabled.	Device will goes in WAIT_ON but doesn't restart after an 8s power on button press when STOPON_PWRON feature is enabled.	TPS65921 need a new switch on event to restart.
7	Power	N/A.	VRUSB3V1 regulator output level can be programmed	Level selection can be done in VUSB_DEDICATED1 register.
8	Power	To unlock protected registers PROTECT_KEY should be written with the following values sequentially: 0xC0 then 0x0C	To unlock protected registers PROTECT_KEY should be written with the following values sequentially: 0xFC then 0x96	Software needs to be modified with this where ever applicable
9	Auxiliaries	N/A	Led and Vibrator drivers removed	No Led and Vibrator features in this device
10	GPIO	GPIO0, GPIO1, GPIO2, GPIO6, GPIO7, GPIO9, GPIO10, GPIO11, GPIO12, GPIO13, GPIO14, GPIO15	GPIO0, GPIO1, GPIO2, GPIO3, GPIO4, GPIO5, GPIO9, GPIO10, GPIO11, GPIO12, GPIO14	
11	MADC	Has current source for ADCIN0.	Current source has been removed for ADCIN0.	Can be used as a GP input only.
12	MADC	External MADC channels: ADCIN0, ADCIN2	External MADC channels: ADCIN0.	ADCIN2 removed.
13	MADC	Internal MADC channels: CH8(VBUS), CH9(VBACKUP), (CH12(VBAT), CH15(VRUSB).	Internal MADC channels: CH8(VBUS), CH12(VBAT).	
14	USB	ULPI pads are 90 ohms.	ULPI pads are 50 ohms.	Ensure that impedance matches on PCB.
15	USB	N/A	New feature: Output impedance and current drive strengths can be changed in functional mode.	To make changes to the parameters, user must be in functional mode. Changes can be done in the OTHER_FUNC_CTRL2 register.
16	Charger	Battery charger and detection functions are not available.	New feature: Battery charger detection function is available.	Battery charger detection is done using the USB module.
17	Backup	Backup battery feature available	Backup battery feature removed	RTC and configuration registers value reset in case of main battery lower than VBNPR threshold. Backup battery charger feature removed MADC backup channel removed.

Table 1. Feature Differences for TPS65920 and TPS65921 (continued)

	Module	TPS65920	TPS65921	Impact/Comment
18	Keypad	6x6 keypad interface.	8x 8 keypad interface.	

The following tables show the differences in registers for the TPS65920 and TPS65921 devices.

Table 2. Power Registers

Address	Register Name	TPS65920	TPS65921	Impact/Comment
0x36	CFG_P1_TRANSITION	Bit 7 is R/W, reset value = 1	Bit 7 reserved, reset value = 0	This bit is not writable in TPS65921.
0x37	CFG_P2_TRANSITION	Bit 7 is R/W, reset value = 1	Bit 7 reserved, reset value = 0	This bit is not writable in TPS65921.
0x38	CFG_P3_TRANSITION	Bit 7 is R/W, reset value = 1	Bit 7 reserved, reset value = 0	This bit is not writable in TPS65921.
0x46	P1_SW_EVENTS	Bit 7 is RW, reset value = 0	Bit 7 is RW, reset value = 1	STOPON_PWRON bit reset value is changed from 0 to 1
0x47	P2_SW_EVENTS	Bit 7 is RW, reset value = 0	Bit 7 is RW, reset value = 1	STOPON_PWRON bit reset value is changed from 0 to 1
0x48	P3_SW_EVENTS	Bit 7 is RW, reset value = 0	Bit 7 is RW, reset value = 1	STOPON_PWRON bit reset value is changed from 0 to 1
0x3D	BOOT_BCI	"Some bits are used, reset value = 0x15"	Register removed.	Feature removed.
0x51	RESERVED_E	Reserved	VBUS and ID debounce selection for starting events.	Refer to register description in register manual for I2C slave address 0x4B
0xBC, 0xCA	VDDX_VROOF	VMODE VROOF programming is possible	Register removed.	Feature removed.
0xBA, 0xC8	VDDX_VMODE_CFG	Bit 4 and 0 used	Bit 4 and 0 reserved	VMODE feature removed
0xD8	VUSB_DEDICATED1	Bits 6:5 reserved	Bits 6:5 used for VRUSB3P1 level control	Refer to register description in register manual for I2C slave address 0x4B.

Table 3. Interface Registers

Address	Register Name	TPS65920	TPS65921	Impact/Comment
0x45,0x46,0x60	VIBATOR registers	VIBRATOR configuration is possible	Registers removed	Feature removed
0x0D	PMBR1	Bit 5:4 used	Bit 5:4 reserved	PWM. VIBRATOR, GPIO7 removed
0x98→0xC5	GPIO registers		Remove registers/bits for removed GPIO	

Table 4. Auxillary Registers

Address	Register Name	TPS65920	TPS65921	Impact/Comment
0xB9 → 0xC6	BCI Registers			BCI module is removed in TPS65921 and is replaced by new feature set. Refer to register description in register manual for I2C slave address 0x4A.
0x0F	ACQUISITION	TEST register	ACQUISITION	TEST register in TPS65920 is changed to ACQUISITION. Acquistion register bits can be changed to modify the analog input settling time. This value is used for MADC conversions.
0xF8 → 0xFC	PWM registers	PWM control	Registers removed	Feature removed
0xEE → 0xF2	LED registers	LED control	Registers removed	Feature removed
0x00 → 0x67	MADC registers		Remove registers/bits for removed MADC channels	

Table 5. USB Registers

Address	Register Name	TPS65920	TPS65921	Impact/Comment
0xB8	OTHER_FUNC_CTRL2	bits 7-1 reserved	bits 7-1 used	New feature added in TPS65921. Added control for modifying output impedance and drive strength in HS mode for improving eye-diagram
0xB9	OTHER_FUNC_CTRL2	bits 7-1 reserved	bits 7-1 used	New feature added in TPS65921. Added control for modifying output impedance and drive strength in HS mode for improving eye-diagram
0xBA	OTHER_FUNC_CTRL2	bits 7-1 reserved	bits 7-1 used	New feature added in TPS65921. Added control for modifying output impedance and drive strength in HS mode for improving eye-diagram
0xF4	VBUS_EN_TEST	USB ZHSDRV programming	Register removed	Move to OTHER_FUNC_CTRL2 register
0xF5	ID_EN_TEST	USB VHSOH programming	Register removed	Move to OTHER_FUNC_CTRL2 register

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