

66.3.9 UTMI RTL Version (USBPHYx_VERSION)

Fields for RTL Version.

Address: Base address + 80h offset

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R	MAJOR										MINOR										STEP											
W																																
Reset	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

USBPHYx_VERSION field descriptions

Field	Description
31–24 MAJOR	Fixed read-only value reflecting the MAJOR field of the RTL version.
23–16 MINOR	Fixed read-only value reflecting the MINOR field of the RTL version.
STEP	Fixed read-only value reflecting the stepping of the RTL version.

66.4 USB Analog Memory Map/Register Definition

USB_ANALOG memory map

Absolute address (hex)	Register name	Width (in bits)	Access	Reset value	Section/page
20C_81A0	USB VBUS Detect Register (USB_ANALOG_USB1_VBUS_DETECT)	32	R/W	0010_0004h	66.4.1/5545
20C_81A4	USB VBUS Detect Register (USB_ANALOG_USB1_VBUS_DETECT_SET)	32	R/W	0010_0004h	66.4.1/5545
20C_81A8	USB VBUS Detect Register (USB_ANALOG_USB1_VBUS_DETECT_CLR)	32	R/W	0010_0004h	66.4.1/5545
20C_81AC	USB VBUS Detect Register (USB_ANALOG_USB1_VBUS_DETECT_TOG)	32	R/W	0010_0004h	66.4.1/5545
20C_81B0	USB Charger Detect Register (USB_ANALOG_USB1_CHRG_DETECT)	32	R/W	0000_0000h	66.4.2/5546
20C_81B4	USB Charger Detect Register (USB_ANALOG_USB1_CHRG_DETECT_SET)	32	R/W	0000_0000h	66.4.2/5546
20C_81B8	USB Charger Detect Register (USB_ANALOG_USB1_CHRG_DETECT_CLR)	32	R/W	0000_0000h	66.4.2/5546
20C_81BC	USB Charger Detect Register (USB_ANALOG_USB1_CHRG_DETECT_TOG)	32	R/W	0000_0000h	66.4.2/5546

Table continues on the next page...

USB_ANALOG memory map (continued)

Absolute address (hex)	Register name	Width (in bits)	Access	Reset value	Section/page
20C_81C0	USB VBUS Detect Status Register (USB_ANALOG_USB1_VBUS_DETECT_STAT)	32	R	0000_0000h	66.4.3/5548
20C_81D0	USB Charger Detect Status Register (USB_ANALOG_USB1_CHRG_DETECT_STAT)	32	R	0000_0000h	66.4.4/5550
20C_81F0	USB Misc Register (USB_ANALOG_USB1_MISC)	32	R/W	0000_0002h	66.4.5/5551
20C_81F4	USB Misc Register (USB_ANALOG_USB1_MISC_SET)	32	R/W	0000_0002h	66.4.5/5551
20C_81F8	USB Misc Register (USB_ANALOG_USB1_MISC_CLR)	32	R/W	0000_0002h	66.4.5/5551
20C_81FC	USB Misc Register (USB_ANALOG_USB1_MISC_TOG)	32	R/W	0000_0002h	66.4.5/5551
20C_8200	USB VBUS Detect Register (USB_ANALOG_USB2_VBUS_DETECT)	32	R/W	0010_0004h	66.4.6/5552
20C_8204	USB VBUS Detect Register (USB_ANALOG_USB2_VBUS_DETECT_SET)	32	R/W	0010_0004h	66.4.6/5552
20C_8208	USB VBUS Detect Register (USB_ANALOG_USB2_VBUS_DETECT_CLR)	32	R/W	0010_0004h	66.4.6/5552
20C_820C	USB VBUS Detect Register (USB_ANALOG_USB2_VBUS_DETECT_TOG)	32	R/W	0010_0004h	66.4.6/5552
20C_8210	USB Charger Detect Register (USB_ANALOG_USB2_CHRG_DETECT)	32	R/W	0000_0000h	66.4.7/5554
20C_8214	USB Charger Detect Register (USB_ANALOG_USB2_CHRG_DETECT_SET)	32	R/W	0000_0000h	66.4.7/5554
20C_8218	USB Charger Detect Register (USB_ANALOG_USB2_CHRG_DETECT_CLR)	32	R/W	0000_0000h	66.4.7/5554
20C_821C	USB Charger Detect Register (USB_ANALOG_USB2_CHRG_DETECT_TOG)	32	R/W	0000_0000h	66.4.7/5554
20C_8220	USB VBUS Detect Status Register (USB_ANALOG_USB2_VBUS_DETECT_STAT)	32	R	0000_0000h	66.4.8/5556
20C_8230	USB Charger Detect Status Register (USB_ANALOG_USB2_CHRG_DETECT_STAT)	32	R	0000_0000h	66.4.9/5558
20C_8250	USB Misc Register (USB_ANALOG_USB2_MISC)	32	R/W	0000_0002h	66.4.10/5559
20C_8254	USB Misc Register (USB_ANALOG_USB2_MISC_SET)	32	R/W	0000_0002h	66.4.10/5559
20C_8258	USB Misc Register (USB_ANALOG_USB2_MISC_CLR)	32	R/W	0000_0002h	66.4.10/5559
20C_825C	USB Misc Register (USB_ANALOG_USB2_MISC_TOG)	32	R/W	0000_0002h	66.4.10/5559
20C_8260	Chip Silicon Version (USB_ANALOG_DIGPROG)	32	R	0000_0000h	66.4.11/5560

66.4.1 USB VBUS Detect Register (USB_ANALOG_USB1_VBUS_DETECTn)

This register defines controls for USB VBUS detect.

Address: 20C_8000h base + 1A0h offset + (4d × i), where i=0d to 3d

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R					CHARGE_VBUS	DISCHARGE_VBUS						VBUSVALID_PWRUP_CMPS				
W					Reserved				Reserved				Reserved			
Reset	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R														VBUSVALID_THRESH		
W									Reserved							
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

USB_ANALOG_USB1_VBUS_DETECTn field descriptions

Field	Description
31–28 -	This field is reserved. Reserved.
27 CHARGE_VBUS	USB OTG charge VBUS.
26 DISCHARGE_VBUS	USB OTG discharge VBUS.
25–21 -	This field is reserved. Reserved.
20 VBUSSVALID_PWRUP_CMPS	Powers up comparators for vbus_valid detector.
19–3 -	This field is reserved. Reserved.
VBUSSVALID_THRESH	Set the threshold for the VBUSSVALID comparator. This comparator is the most accurate method to determine the presence of 5v, and includes hysteresis to minimize the need for software debounce of the detection. This comparator has ~50mV of hysteresis to prevent chattering at the comparator trip point. 000 4V0 — 4.0V

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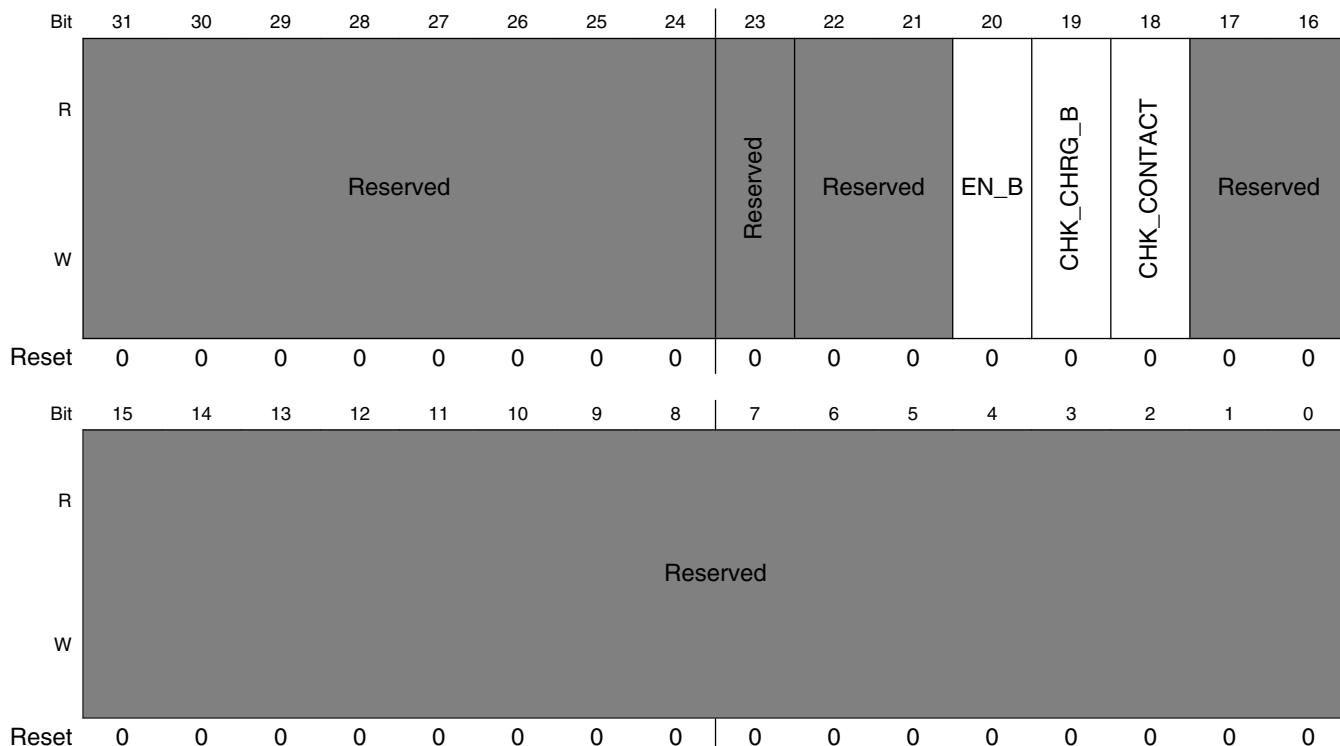
USB_ANALOG_USB1_VBUS_DETECTn field descriptions (continued)

Field	Description
	001 4V1 — 4.1V
	010 4V2 — 4.2V
	011 4V3 — 4.3V
	100 4V4 — 4.4V (default)
	101 4V5 — 4.5V
	110 4V6 — 4.6V
	111 4V7 — 4.7V

66.4.2 USB Charger Detect Register (USB_ANALOG_USB1_CHRG_DETECTn)

This register defines controls for USB charger detect.

Address: 20C_8000h base + 1B0h offset + (4d × i), where i=0d to 3d

**USB_ANALOG_USB1_CHRG_DETECTn field descriptions**

Field	Description
31–24 -	This field is reserved. Reserved.

Table continues on the next page...

USB_ANALOG_USB1_CHRG_DETECTn field descriptions (continued)

Field	Description
23 -	This field is reserved. Reserved.
22–21 -	This field is reserved. Reserved.
20 EN_B	Control the charger detector. 0 ENABLE — Enable the charger detector. 1 DISABLE — Disable the charger detector.
19 CHK_CHRG_B	0 CHECK — Check whether a charger (either a dedicated charger or a host charger) is connected to USB port. 1 NO_CHECK — Do not check whether a charger is connected to the USB port.
18 CHK_CONTACT	0 NO_CHECK — Do not check the contact of USB plug. 1 CHECK — Check whether the USB plug has been in contact with each other
-	This field is reserved. Reserved.

66.4.3 USB VBUS Detect Status Register (USB_ANALOG_USB1_VBUS_DETECT_STAT)

This register defines fields for USB VBUS Detect status.

Address: 20C_8000h base + 1C0h offset = 20C_81C0h

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R																
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R													VBUS_VALID	VALID	BVALID	SESEND
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

USB_ANALOG_USB1_VBUS_DETECT_STAT field descriptions

Field	Description
31–4 -	This field is reserved. Reserved.

Table continues on the next page...

USB_ANALOG_USB1_VBUS_DETECT_STAT field descriptions (continued)

Field	Description
3 VBUS_VALID	VBus valid for USB OTG. This bit is a read only version of the state of the analog signal. It can not be overwritten by software.
2 AVALID	Indicates VBus is valid for a A-peripheral. This bit is a read only version of the state of the analog signal. It can not be overwritten by software.
1 BVALID	Indicates VBus is valid for a B-peripheral. This bit is a read only version of the state of the analog signal. It can not be overwritten by software.
0 SESEND	Session End for USB OTG. This bit is a read only version of the state of the analog signal. It can not be overwritten by software like the SESSEND bit below. NOTE: This bit's default value depends on whether VDD5V is present, 0 if VDD5V is present, 1 if VDD5V is not present.

66.4.4 USB Charger Detect Status Register (USB_ANALOG_USB1_CHRG_DETECT_STAT)

This register defines fields for USB charger detect status.

Address: 20C_8000h base + 1D0h offset = 20C_81D0h

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R																
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R													DP_STATE	DM_STATE	CHRG_DETECTED	PLUG_CONTACT
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

USB_ANALOG_USB1_CHRG_DETECT_STAT field descriptions

Field	Description
31–4 -	This field is reserved. Reserved.
3 DP_STATE	DP line state output of the charger detector.
2 DM_STATE	DM line state output of the charger detector.
1 CHRG_DETECTED	State of charger detection. This bit is a read only version of the state of the analog signal. 0 CHARGER_NOT_PRESENT — The USB port is not connected to a charger. 1 CHARGER_PRESENT — A charger (either a dedicated charger or a host charger) is connected to the USB port.
0 PLUG_CONTACT	State of the USB plug contact detector. 0 NO_CONTACT — The USB plug has not made contact. 1 GOOD_CONTACT — The USB plug has made good contact.

66.4.5 USB Misc Register (USB_ANALOG_USB1_MISCrn)

This register defines controls for USB.

Address: 20C_8000h base + 1F0h offset + (4d × i), where i=0d to 3d

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R	Reserved															
W		EN_CLK_UTMI														
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R																
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

USB_ANALOG_USB1_MISC n field descriptions

Field	Description
31 -	This field is reserved. Reserved.
30 EN_CLK_UTMI	Enables the clk to the UTMI block.
29–2 -	This field is reserved. Reserved.
1 EN_DEGLITCH	Enable the deglitching circuit of the USB PLL output.
0 HS_USE_ EXTERNAL_R	Use external resistor to generate the current bias for the high speed transmitter. This bit should not be changed unless recommended by Freescale.

66.4.6 USB VBUS Detect Register (USB_ANALOG_USB2_VBUS_DETECT n)

This register defines controls for USB VBUS detect.

Address: 20C_8000h base + 200h offset + (4d × i), where i=0d to 3d

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R																
	Reserved				CHARGE_VBUS	DISCHARGE_VBUS			Reserved				VBUSVALID_PWRUP_CMP_S			
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R									Reserved						VBUSVALID_THRESH	
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

USB_ANALOG_USB2_VBUS_DETECT n field descriptions

Field	Description
31–28 -	This field is reserved. Reserved.

Table continues on the next page...

USB_ANALOG_USB2_VBUS_DETECTn field descriptions (continued)

Field	Description																
27 CHARGE_VBUS	USB OTG charge VBUS.																
26 DISCHARGE_VBUS	USB OTG discharge VBUS.																
25–21 -	This field is reserved. Reserved.																
20 VBUSVALID_PWRUP_CMPS	Powers up comparators for vbus_valid detector.																
19–3 -	This field is reserved. Reserved.																
VBUSVALID_THRESH	<p>Set the threshold for the VBUSVALID comparator. This comparator is the most accurate method to determine the presence of 5v, and includes hysteresis to minimize the need for software debounce of the detection. This comparator has ~50mV of hysteresis to prevent chattering at the comparator trip point.</p> <table> <tbody> <tr><td>000</td><td>4V0 — 4.0V</td></tr> <tr><td>001</td><td>4V1 — 4.1V</td></tr> <tr><td>010</td><td>4V2 — 4.2V</td></tr> <tr><td>011</td><td>4V3 — 4.3V</td></tr> <tr><td>100</td><td>4V4 — 4.4V (default)</td></tr> <tr><td>101</td><td>4V5 — 4.5V</td></tr> <tr><td>110</td><td>4V6 — 4.6V</td></tr> <tr><td>111</td><td>4V7 — 4.7V</td></tr> </tbody> </table>	000	4V0 — 4.0V	001	4V1 — 4.1V	010	4V2 — 4.2V	011	4V3 — 4.3V	100	4V4 — 4.4V (default)	101	4V5 — 4.5V	110	4V6 — 4.6V	111	4V7 — 4.7V
000	4V0 — 4.0V																
001	4V1 — 4.1V																
010	4V2 — 4.2V																
011	4V3 — 4.3V																
100	4V4 — 4.4V (default)																
101	4V5 — 4.5V																
110	4V6 — 4.6V																
111	4V7 — 4.7V																

66.4.7 USB Charger Detect Register (USB_ANALOG_USB2_CHRG_DETECT*n*)

This register defines controls for USB charger detect.

Address: 20C_8000h base + 210h offset + (4d × i), where i=0d to 3d

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R	Reserved								Reserved		EN_B		CHK_CHRG_B		CHK_CONTACT	
W	Reserved								Reserved							
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

USB_ANALOG_USB2_CHRG_DETECT*n* field descriptions

Field	Description
31–24 -	This field is reserved. Reserved.
23 -	This field is reserved. Reserved.
22–21 -	This field is reserved. Reserved.
20 EN_B	Control the charger detector. 0 ENABLE — Enable the charger detector. 1 DISABLE — Disable the charger detector.
19 CHK_CHRG_B	0 CHECK — Check whether a charger (either a dedicated charger or a host charger) is connected to USB port. 1 NO_CHECK — Do not check whether a charger is connected to the USB port.

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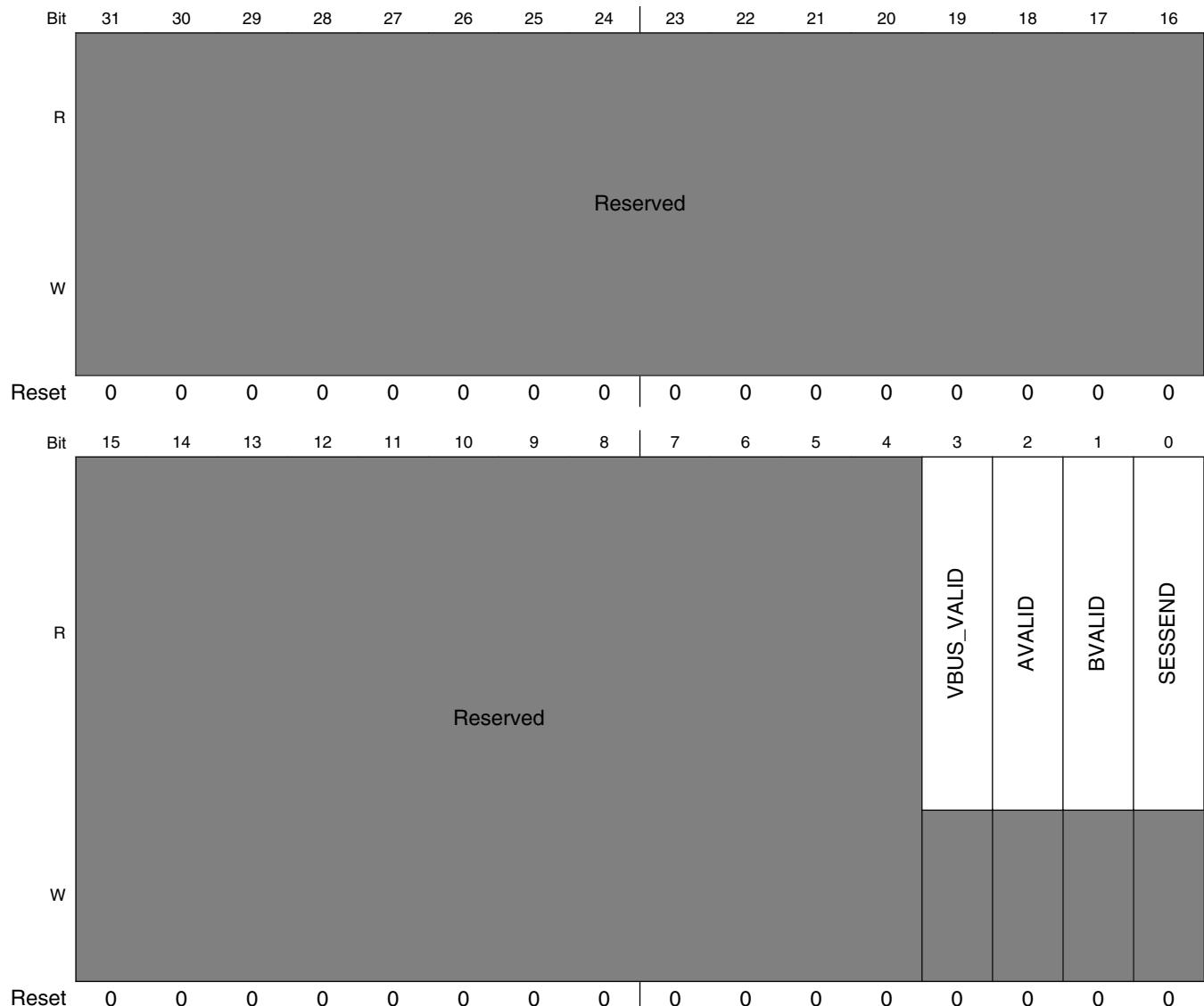
USB_ANALOG_USB2_CHRG_DETECT*n* field descriptions (continued)

Field	Description
18 CHK_CONTACT	0 NO_CHECK — Do not check the contact of USB plug. 1 CHECK — Check whether the USB plug has been in contact with each other
-	This field is reserved. Reserved.

66.4.8 USB VBUS Detect Status Register (USB_ANALOG_USB2_VBUS_DETECT_STAT)

This register defines fields for USB VBUS Detect status.

Address: 20C_8000h base + 220h offset = 20C_8220h



USB_ANALOG_USB2_VBUS_DETECT_STAT field descriptions

Field	Description
31–4 -	This field is reserved. Reserved.

Table continues on the next page...

USB_ANALOG_USB2_VBUS_DETECT_STAT field descriptions (continued)

Field	Description
3 VBUS_VALID	VBus valid for USB OTG. This bit is a read only version of the state of the analog signal. It can not be overwritten by software.
2 AVALID	Indicates VBus is valid for a A-peripheral. This bit is a read only version of the state of the analog signal. It can not be overwritten by software.
1 BVALID	Indicates VBus is valid for a B-peripheral. This bit is a read only version of the state of the analog signal. It can not be overwritten by software.
0 SESEND	Session End for USB OTG. This bit is a read only version of the state of the analog signal. It can not be overwritten by software like the SESSEND bit below. NOTE: This bit's default value depends on whether VDD5V is present, 0 if VDD5V is present, 1 if VDD5V is not present.

66.4.9 USB Charger Detect Status Register (USB_ANALOG_USB2_CHRG_DETECT_STAT)

This register defines fields for USB charger detect status.

Address: 20C_8000h base + 230h offset = 20C_8230h

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R																
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R													DP_STATE	DM_STATE	CHRG_DETECTED	PLUG_CONTACT
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

USB_ANALOG_USB2_CHRG_DETECT_STAT field descriptions

Field	Description
31–4 -	This field is reserved. Reserved.
3 DP_STATE	DP line state output of the charger detector.
2 DM_STATE	DM line state output of the charger detector.
1 CHRG_DETECTED	State of charger detection. This bit is a read only version of the state of the analog signal. 0 CHARGER_NOT_PRESENT — The USB port is not connected to a charger. 1 CHARGER_PRESENT — A charger (either a dedicated charger or a host charger) is connected to the USB port.
0 PLUG_CONTACT	State of the USB plug contact detector. 0 NO_CONTACT — The USB plug has not made contact. 1 GOOD_CONTACT — The USB plug has made good contact.

66.4.10 USB Misc Register (USB_ANALOG_USB2_MISCrn)

This register defines controls for USB.

Address: 20C_8000h base + 250h offset + (4d × i), where i=0d to 3d

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R	Reserved															
W		EN_CLK_UTMI														
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R																
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

USB_ANALOG_USB2_MISC n field descriptions

Field	Description
31 -	This field is reserved. Reserved.
30 EN_CLK_UTMI	Enables the clk to the UTMI block.
29–2 -	This field is reserved. Reserved.
1 EN_DEGLITCH	Enable the deglitching circuit of the USB PLL output.
0 HS_USE_ EXTERNAL_R	Use external resistor to generate the current bias for the high speed transmitter. This bit should not be changed unless recommended by Freescale.

66.4.11 Chip Silicon Version (USB_ANALOG_DIGPROG)

The DIGPROG register returns the digital program ID for the silicon.

Address: 20C_8000h base + 260h offset = 20C_8260h

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R	Reserved										MAJOR_UPPER										MAJOR_LOWER										MINOR	
W																																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

USB_ANALOG_DIGPROG field descriptions

Field	Description
31–24 -	This field is reserved. Reserved.
23–16 MAJOR_UPPER	MAJOR upper byte - Read-only value representing the chip type. 0x63 i.MX 6Dual/6Quad
15–8 MAJOR_LOWER	MAJOR lower byte - Read-only value representing a major silicon revision. 0x00 silicon revision 1.x 0x01 silicon revision 2.x
MINOR	MINOR lower byte - Read-only value representing a minor silicon revision. 0x00 silicon revision x.1 0x01 silicon revision x.2