

- Ensure that the JTAG test logic is kept transparent to the system logic by forcing TAP into the Test-Logic-Reset controller state. During power-up, SJC's internal TRSTB is asserted as IC's POR\_B is asserted which forces the TAP controller into this state. After that, if TMS either remains unconnected or is connected to VCC, then the TAP controller cannot leave the Test-Logic-Reset state, regardless of the state of TCK.
- DE\_B is an IO pin with pullup and care must be taken of the direction when driving this signal.

## 56.9 SJC Memory Map/Register Definition

In addition to the standard accessible JTAG registers (per IEEE1149.1 standard) listed in [SoC JTAG Instruction Register \(SJIR\)](#) , the chip contains the following registers accessed using the ExtraDebug mechanism, controlled via "ENABLE\_ExtraDebug" IR instruction.

### NOTE

SJC registers are only accessible by JTAG interface. They are not memory mapped to processor address space, so the absolute addresses provided by default in the SJC memory map are not valid.

This section assumes the JTAG controller is accessed in standalone mode or daisy chained (defined by TAP Selection Block) using the appropriate TSB configuration.

See "System Debug" chapter for more details about the general purpose register descriptions that are unique to this chip.

**SJC memory map**

Absolute address (hex)	Register name	Width (in bits)	Access	Reset value	Section/ page
0	General Purpose Unsecured Status Register 1 (SJC_GPUSR1)	32	R	0000_0000h	<a href="#">56.9.1/4959</a>
1	General Purpose Unsecured Status Register 2 (SJC_GPUSR2)	32	R	0000_0000h	<a href="#">56.9.2/4961</a>
2	General Purpose Unsecured Status Register 3 (SJC_GPUSR3)	32	R	0000_0000h	<a href="#">56.9.3/4961</a>
3	General Purpose Secured Status Register (SJC_GPSSR)	32	R	0000_0000h	<a href="#">56.9.4/4962</a>
4	Debug Control Register (SJC_DCR)	32	R/W	0000_0000h	<a href="#">56.9.5/4963</a>
5	Security Status Register (SJC_SSR)	32	R	<a href="#">See section</a>	<a href="#">56.9.6/4965</a>
7	General Purpose Clocks Control Register (SJC_GPCCR)	32	R/W	0000_0000h	<a href="#">56.9.7/4968</a>

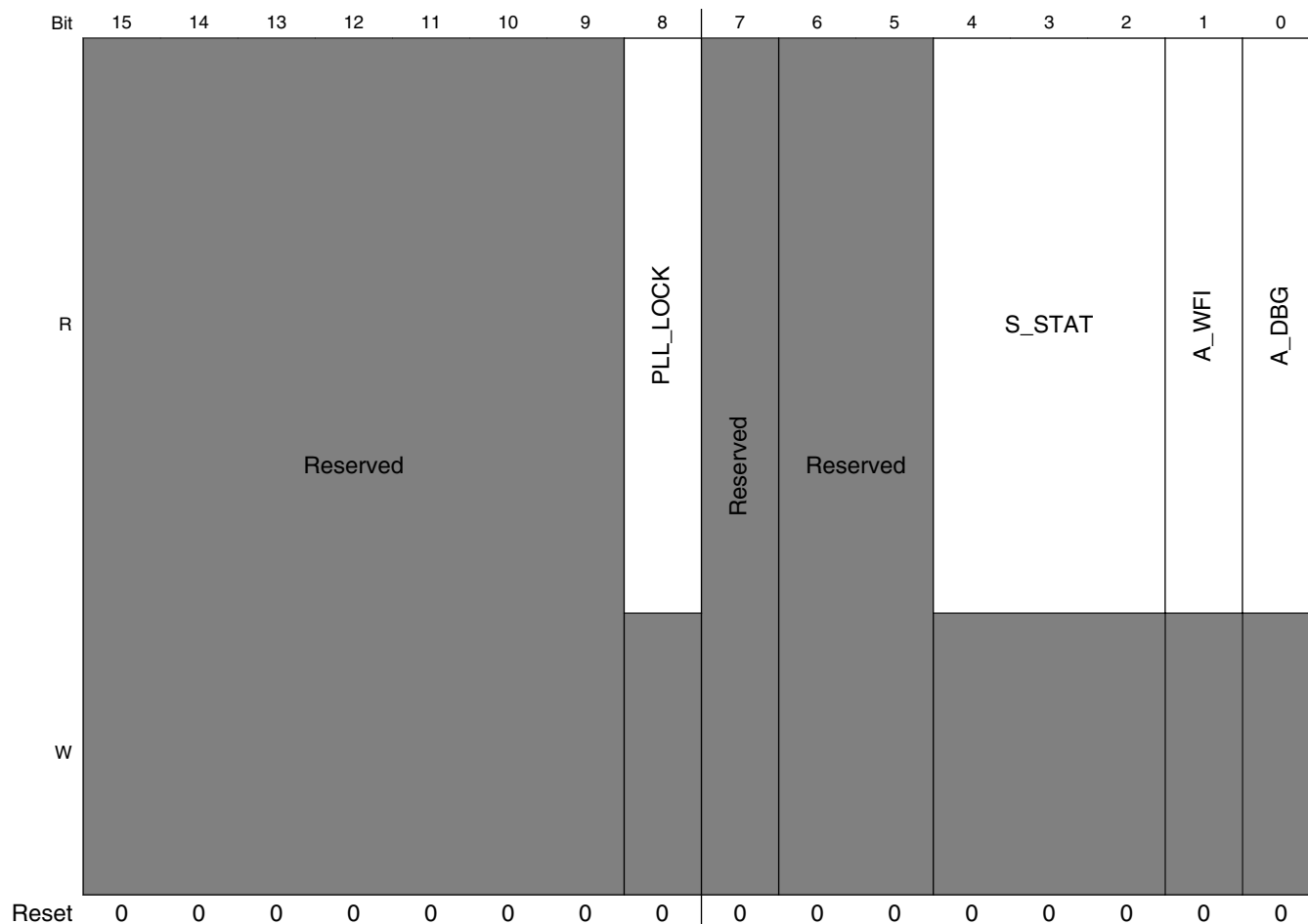
### 56.9.1 General Purpose Unsecured Status Register 1 (SJC\_GPUSR1)

The General Purpose Unsecured Status Register 1 is a read only registers used to check the status of the different Cores and of the PLL. The rest of its bits are for general purpose use.

Address: 0h base + 0h offset = 0h

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R	Reserved															
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## SJC Memory Map/Register Definition



### SJC\_GPUSR1 field descriptions

Field	Description
31–9 -	This field is reserved. Reserved.
8 PLL_LOCK	PLL_LOCK A Combined PLL-Lock flag indicator, for all the PLL's.
7 -	This field is reserved. Reserved
6–5 -	This field is reserved. Reserved.
4–2 S_STAT	3 LSBits of SDMA core statusH.
1 A_WFI	ARM core wait-for interrupt bit Bit 1 is the ARM core standbywfi (stand by wait-for interrupt). When this bit is HIGH, ARM core is in wait for interrupt mode.
0 A_DBG	ARM core debug status bit Bit 0 is the ARM core DBGACK (debug acknowledge)  DBGACK can be overwritten in the ARM core DCR to force a particular DBGACK value. Consequently interpretation of the DBGACK value is highly dependent on the debug sequence. When this bit is HIGH, ARM core is in debug.

## 56.9.2 General Purpose Unsecured Status Register 2 (SJC\_GPUSR2)

Address: 0h base + 1h offset = 1h

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																STBYWFE				S_STAT				STBYWFI							
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

### SJC\_GPUSR2 field descriptions

Field	Description
31–12 -	This field is reserved. Reserved
11–8 STBYWFE	STBYWFE[3:0] Reflecting the "Standby Wait For Event" signals of all cores.
7–4 S_STAT	S_STAT[3:0] SDMA debug status bits: debug_core_state[3:0]
STBYWFI	STBYWFI[3:0] These bits provide status of "Standby Wait-For-Interrupt" state of all ARM cores.

## 56.9.3 General Purpose Unsecured Status Register 3 (SJC\_GPUSR3)

Address: 0h base + 2h offset = 2h

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R	Reserved															
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	Reserved												SYS_WAIT	IPG_STOP	IPG_WAIT	
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

### SJC\_GPUSR3 field descriptions

Field	Description
31–3 -	This field is reserved. Reserved

Table continues on the next page...

**SJC\_GPUSR3 field descriptions (continued)**

Field	Description
2 SYS_WAIT	System In wait Indication on System in wait mode (from CCM).
1 IPG_STOP	IPG_STOP CCM's "ipg_stop" signal indication
0 IPG_WAIT	IPG_WAIT CCM's "ipg_wait" signal indication

**56.9.4 General Purpose Secured Status Register (SJC\_GPSSR)**

The General Purpose Secured Status Register is a read-only register used to check the status of the different critical information in the SoC. This register cannot be accessed in secure modes.

Address: 0h base + 3h offset = 3h

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	GPSSR																															
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

**SJC\_GPSSR field descriptions**

Field	Description
GPSSR	General Purpose Secured Status Register Register is used for testing and debug.

## 56.9.5 Debug Control Register (SJC\_DCR)

This register is used to control propagation of debug request from DE\_B pad to the cores and debug signals from internal logic to the DE\_B pad.

Address: 0h base + 4h offset = 4h

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R	Reserved															
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	Reserved								DIRECT_ARM_REQ_EN	DIRECT_SDMA_REQ_EN	Reserved	DEBUG_OBS	Reserved	DE_TO_SDMA	DE_TO_ARM	
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**SJC\_DCR field descriptions**

Field	Description
31–7 -	This field is reserved. Reserved
6 DIRECT_ARM_REQ_EN	Pass Debug Enable event from DE_B pin to ARM platform debug request signal(s). This bit controls the propagation of debug request DE_B to the Arm platform. 0 Disable propagation of system debug to (DE_B pin) to Arm platform. 1 Enable propagation of system debug to (DE_B pin) to Arm platform.
5 DIRECT_SDMA_REQ_EN	Debug enable of the sdma debug request This bit controls the propagation of debug request DE_B to the sdma. 0 Disable propagation of system debug to (DE_B pin) to sdma. 1 Enable propagation of system debug to (DE_B pin) to sdma.
4 -	This field is reserved. Reserved

*Table continues on the next page...*

**SJC\_DCR field descriptions (continued)**

Field	Description
3 DEBUG_OBS	<p>Debug observability</p> <p>This bit controls the propagation of the "system debug" input to SJC</p> <p>For i.MX 6x, the SJC's "system_debug" input is tied to logic HIGH value, therefore, set of "debug_obs" bit, will result in unconditional assertion of DE_B pad.</p> <p>0   Disable propagation of system debug to DE_B pin 1   unconditional assertion of pad. DE_B</p>
2 -	<p>This field is reserved.</p> <p>Reserved</p>
1 DE_TO_SDMA	<p>SDMA debug request input propagation</p> <p>This bit controls the propagation of debug request to SDMA, when the JTAG state machine is put in "ENTER_DEBUG" IR instruction..</p> <p>0   Disable propagation of debug request to SDMA 1   Enable propagation of debug request to SDMA</p>
0 DE_TO_ARM	<p>ARM platform debug request input propagation</p> <p>This bit controls the propagation of debug request to ARM platform ("dbgreq"), when the JTAG state machine is put in "ENTER_DEBUG" IR instruction.</p> <p>0   Disable propagation of debug request to ARM platform 1   Enable propagation of debug request to ARM platform</p>

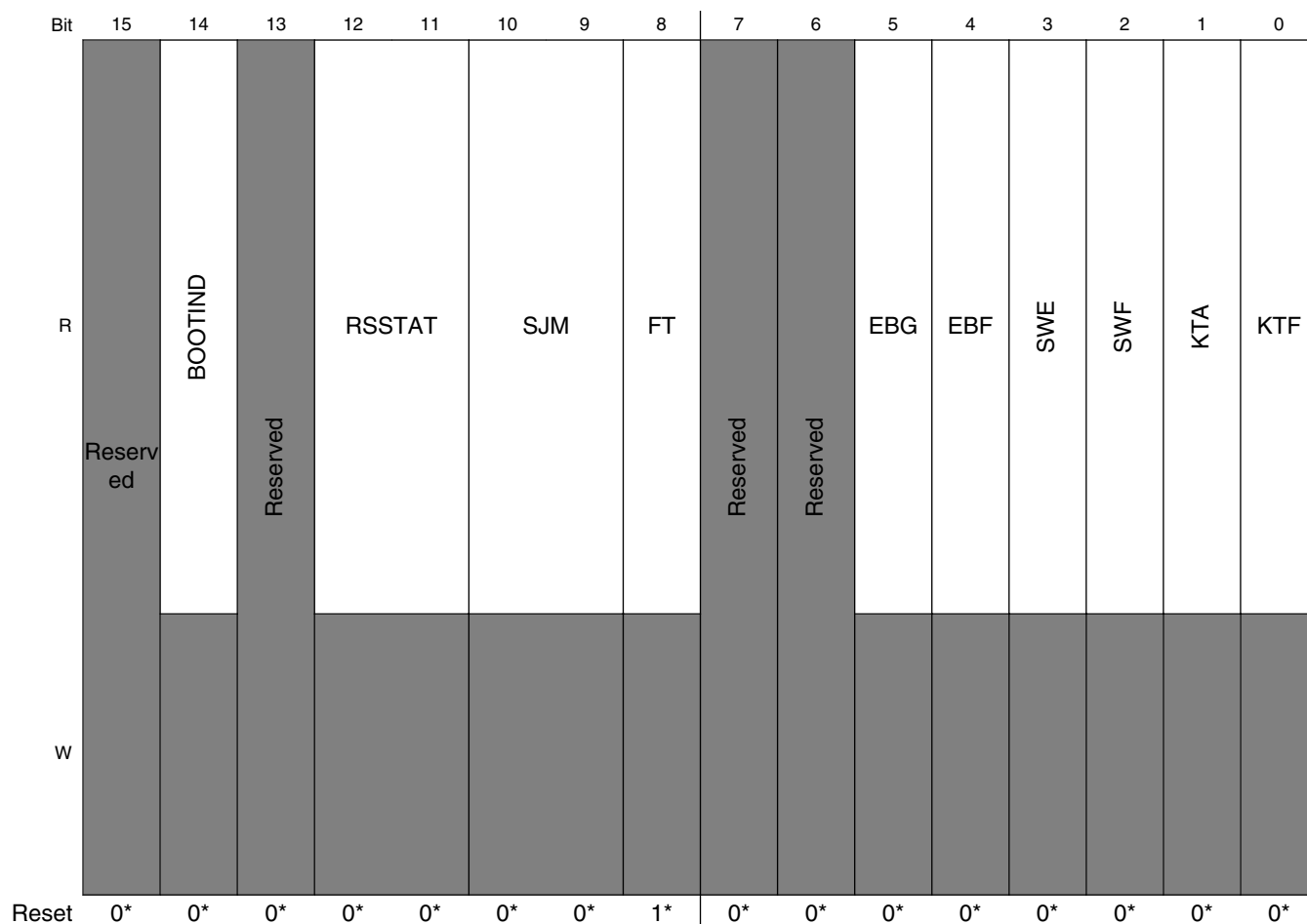
## 56.9.6 Security Status Register (SJC\_SSR)

Address: 0h base + 5h offset = 5h

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
R								-								
W																Reserved
Reset	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*



## SJC Memory Map/Register Definition



\* Notes:

- The SJM reset value, reflects the JTAG security state, as defined by status of JTAG\_SMODE[1:0] fuses. See the [SJM](#) bitfield description for details on valid values.

### SJC\_SSR field descriptions

Field	Description
31–17 -	Reserved.
16–15 -	This field is reserved. Reserved
14 BOOTIND	Boot Indication Inverted Internal Boot indication, i.e inverse of SRC: "src_int_boot" signal
13 -	This field is reserved. Reserved
12–11 RSSTAT	Response status Response status bits  00 Response wasn't entered 01 Response was entered but not verified

Table continues on the next page...

**SJC\_SSR field descriptions (continued)**

Field	Description
	10 Response was entered and is incorrect 11 Response is correct
10–9 SJM	SJC Secure mode Secure JTAG mode, as set by external fuses. 00 No debug (#1) 01 Secure JTAG (#2) 10 Reserved 11 JTAG enabled (#3)
8 FT	Fuse type Fuse type bit - e-fuse or laser fuse 0 E-fuse technology 1 Laser fuse technology
7 -	This field is reserved. Reserved
6 -	This field is reserved. Reserved
5 EBG	External boot granted External boot enabled, requested and granted 1 granted 0 not granted
4 EBF	External Boot fuse Status of the external boot disable fuse 0 (intact) - external boot is allowed 1 (burned) - external boot is disabled
3 SWE	SW enable SW JTAG enable status 1 enabled 0 disabled
2 SWF	Software JTAG enable fuse Status of the no SW disable JTAG fuse 0 (intact) - SW enable possible 1 (intact) - no SW enable possible
1 KTA	Kill Trace is active 1 active 0 not active
0 KTF	Kill Trace Enable fuse value 0 (intact) - kill trace is never active 1 (burned) - kill trace functionality enabled

### 56.9.7 General Purpose Clocks Control Register (SJC\_GPCCR)

This register is used to configure clock related modes in SOC, see System Configuration chapter for more information. Those bits are directly connected to JTAG outputs. Bit 0 of GPCCR controls SDMA clocks invocation. When out of reset, the SDMA is in sleep mode with no SDMA clock running. Unlike events, debug requests does not wake SDMA if it is in sleep mode. The debug request is recognized by the SDMA only when it exits sleep mode upon reception of an event. To be able to enter debug mode even if no event is triggered, the SDMA clock on bit needs to be set prior to sending the debug request (clear at reset).

Address: 0h base + 7h offset = 7h

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	-														ACLKOFFDIS	SCLKR
W																
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SJC\_GPCCR field descriptions

Field	Description
31–2 -	Reserved
1 ACLKOFFDIS	Disable/prevent ARM platform clock/power shutdown
0 SCLKR	SDMA Clock ON Register - This bit forces the clock on of the SDMA