AURIX™ TC2xx Data Sheet Addendum

About this document

Scope and purpose

This is an addendum to the TC2xx Data Sheet listing all intended product variants, key parameters such as memory size, and optional features.

Prefix naming conventions

- SAK: $T_{ambient}$ Temperature Range from -40 °C up to +125 °C
- SAL: $T_{ambient}$ Temperature Range from -40 °C up to +150 °C (packaged device)

Feature package naming conventions

- T – Standard type without HSM
- TP – Standard type with HSM enabled
- TA – ADAS feature package – HSM enabled
- TX – Truck / SRAM extension – HSM enabled

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DERIVATIVE	PRODUCTION STATUS	PACKAGE TYPE	TEMPERATURE RANGE	CHIP ID	FREQ. (MHz)	FLASH (MB)	EEPROM (KB)	TOTAL SRAM (KB)	CORE 0 TC16E		ADC CHAN.	FlexRay (#/ch.)	ETH	HSM	LOCK-STEP	CAN FD	CAN FD
									DSPR (KB)	PSPR (KB)							ISO 11898-1
SAK-TC214L-8F133N AC	STANDARD	PG-TQFP-144-27	-40°C - +125 °C	0146 1142 H	133	0.5	64@125k	56	48	8	24	No	No	No	Yes	Yes	Yes
SAK-TC213L-8F133N AC	STANDARD	PG-TQFP-100-23	-40°C - +125 °C	0146 1042 H	133	0.5	64@125k	56	48	8	24	No	No	No	Yes	Yes	Yes
SAK-TC213L-8F133F AC	STANDARD	PG-TQFP-100-23	-40°C - +125 °C	0146 1042 H	133	0.5	64@125k	56	48	8	24	No	No	No	Yes	Yes	No
SAK-TC212L-8F133F AC	STANDARD	PG-TQFP-80-7	-40°C - +125 °C	0146 1242 H	133	0.5	64@125k	56	48	8	14	No	No	No	Yes	Yes	No
SAK-TC212L-8F133N AC	STANDARD	PG-TQFP-80-7	-40°C - +125 °C	0146 1242 H	133	0.5	64@125k	56	48	8	14	No	No	No	Yes	Yes	Yes

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DERIVATIVE	PRODUCTION STATUS	PACKAGE TYPE	TEMPERATURE RANGE	CHIP ID	FREQ. (MHz)	FLASH (MB)	EEPROM (KB)	TOTAL SRAM (KB)	CORE 0 TC16E		ADC Chan.	FlexRay (#/ch.)	ETH	HSM	LOCK STEP	CAN FD	CAN FD
									DSPR (KB)	PSPR (KB)							ISO 11898-1
SAK-TC224L-16F133N AC	STANDARD	PG-TQFP-144-27	-40°C - +125 °C	0246 2142 H	133	1	96@ 125k	96	88	8	24	No	No	No	Yes	Yes	Yes
SAK-TC223L-16F133N AC	STANDARD	PG-TQFP-100-23	-40°C - +125 °C	0246 2042 H	133	1	96@125k	96	88	8	24	No	No	No	Yes	Yes	Yes
SAK-TC222L-16F133N AC	STANDARD	PG-TQFP-80-7	-40°C - +125 °C	0246 2242 H	133	1	96@125k	96	88	8	14	No	No	No	Yes	Yes	Yes

3 TC23x

3.1 Standard variants TC23x

DERIVATIVE	PRODUCTION STATUS	PACKAGE TYPE	TEMPERATURE RANGE	CHIP ID	FREQ. (MHz)	FLASH (MB)	EEPROM (KB)	TOTAL SRAM (KB)	CORE 0 TC16E		ADC Chan.	FlexRay (#/ch.)	ETH	HSM	CAN FD
									DSPR (KB)	PSPR (KB)					ISO 11898-1
SAK-TC237LP-32F200N AC	STANDARD	PG-LFBGA-292-6	-40°C - +125 °C	4446 3242 H	200	2	128@125k	192	184	8	24	1 / 2	No	Yes	Yes
SAK-TC234LP-32F200N AC	STANDARD	PG-TQFP-144-27	-40°C - +125 °C	4446 3142 H	200	2	128@125k	192	184	8	24	1 / 2	No	Yes	Yes
SAK-TC233LP-32F200N AC	STANDARD	PG-TQFP-100-23	-40°C - +125 °C	4446 3042 H	200	2	128@125k	192	184	8	24	1 / 2	No	Yes	Yes

3.2 ADAS type TC23x

DERIVATIVE	PRODUCTION STATUS	PACKAGE TYPE	TEMPERATURE RANGE	CHIP ID	FREQ. (MHz)	FLASH (MB)	EEPROM (KB)	TOTAL SRAM (KB)	CORE 0 TC16E		LMU (KB)	EMEM (KB)	ADC Chan.	FlexRay (#/ch.)	ETH	HSM	FFT
									DSPR (KB)	PSPR (KB)							
SAK-TC234LA-32F200F AB	STANDARD	PG-TQFP-144-27	-40°C - +125 °C	4443 3941 H 4447 3941 H	200	2	128@125k	736	184	8	32	512	24	1 / 2	Yes	Yes	Yes

3.3 Extended type TC23x

DERIVATIVE	PRODUCTION STATUS	PACKAGE TYPE	TEMPERATURE RANGE	CHIP ID	FREQ. (MHz)	FLASH (MB)	EEPROM (KB)	TOTAL SRAM (KB)	CORE 0 TC16E		LMU (KB)	EMEM (KB)	ADC Chan.	FlexRay (#/ch.)	ETH	HSM	FFT
									DSPR (KB)	PSPR (KB)							
SAK-TC234LX-32F200F AB	STANDARD	PG-TQFP-144-27	-40°C - +125 °C	4443 3941 H 4447 3941 H	200	2	128@125k	736	184	8	32	512	24	1 / 2	Yes	Yes	No

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4.1 Standard variants TC26x

DERIVATIVE	PRODUCTION STATUS	PACKAGE TYPE	TEMPERATURE RANGE	CHIP ID	FREQ. (MHz)	FLASH (MB)	EEPROM (KB)	TOTAL SRAM (KB)	CORE 1 TC16P		CORE 0 TC16E		LMU (KB)	ADC CHAN.	ETH	CAN FD	CAN FD ISO frame
									DSPR (KB)	PSPR (KB)	DSPR (KB)	PSPR (KB)					
SAK-TC267D-40F200N BC	STANDARD	PG-LFBGA-292-6	-40°C – +125°C	0546 6652$_H$	200	2.5	16 @500k	240	120	32	72	16	0	50	Yes	Yes	Yes
SAK-TC267D-40F200S BC	STANDARD	PG-LFBGA-292-6	-40°C – +125°C	0544 6651$_H$	200	2.5	16 @500k	240	120	32	72	16	0	50	Yes	Yes	No
SAK-TC265D-40F200N BC	STANDARD	PG-LQFP-176-22	-40°C – +125°C	0546 6152$_H$	200	2.5	16 @500k	240	120	32	72	16	0	50	Yes	Yes	Yes
SAK-TC264D-40F200N BC	STANDARD	PG-LQFP-144-22	-40°C – +125°C	0546 6052$_H$	200	2.5	16 @500k	240	120	32	72	16	0	40	Yes	Yes	Yes
SAL-TC267D-40F200N BC	STANDARD	PG-LFBGA-292-6	-40°C – +150°C	0546 6652$_H$	200	2.5	16 @500k	240	120	32	72	16	0	50	Yes	Yes	Yes

4.2 ADAS type TC26x

DERIVATIVE	PRODUCTION STATUS	PACKAGE TYPE	TEMPERATURE RANGE	CHIP ID	FREQ. (MHz)	FLASH (MB)	EEPROM (KB)	TOTAL SRAM (KB)	CORE 1 TC16P		CORE 0 TC16E		LMU (KB)	EMEM (KB)	ADC CHAN.	ETH	CIF	FFT	CAN FD	CAN FD ISO frame
									DSPR (KB)	PSPR (KB)	DSPR (KB)	PSPR (KB)								
SAK-TC264DA-40F200N BC	STANDARD	PG-LQFP-144-22	-40°C – +125°C	0547 6852$_H$	200	2.5	16 @500k	752	120	32	72	16	0	512	40	Yes	Yes	Yes	Yes	Yes

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DERIVATIVE	PRODUCTION STATUS	PACKAGE TYPE	TEMPERATURE RANGE	CHIP ID	FREQ. (MHz)	FLASH (MB)	EEPROM (KB)	TOTAL SRAM (KB)	CORE 1 AND 2 TC16P		CORE 0 TC16E		LMU (KB)	ADC CHAN.	FlexRay (#/ch.)	ETH	HSM	CAN FD	CAN FD ISO frame
									DSPR (KB)	PSPR (KB)	DSPR (KB)	PSPR (KB)							
SAK-TC277TP-64F200N DC	STANDARD	PG-LFBGA-292-6	-40°C – +125°C	4746 7172$_H$	200	4	64 @ 500k	472	120	32	112	24	32	60	1 / 2	Yes	Yes	Yes	Yes
SAK-TC277TP-64F200S DC	STANDARD	PG-LFBGA-292-6	-40°C – +125°C	4746 7172$_H$	200	4	64 @ 500k	472	120	32	112	24	32	60	1 / 2	Yes	Yes	Yes	No
SAK-TC275TP-64F200N DC	STANDARD	PG-LQFP-176-22	-40°C – +125°C	4746 7072$_H$	200	4	64 @ 500k	472	120	32	112	24	32	48	1 / 2	Yes	Yes	Yes	Yes

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6.1 Standard variants TC29x

DERIVATIVE	PRODUCTION STATUS	PACKAGE TYPE	TEMPERATURE RANGE	CHIP ID	FREQ. (MHz)	FLASH (MB)	EEPROM (KB)	TOTAL SRAM (KB)	CORE 1 AND 2 TC16P		CORE 0 TC16P		LMU (KB)	ADC CHAN.	FlexRay (#/ch.)	ETH	HSM	CAN FD	CAN FD ISO frame
									DSPR (KB)	PSPR (KB)	DSPR (KB)	PSPR (KB)							
SAL-TC299TP-128F300N BC	STANDARD	PG-LFBGA-516-5	-40°C – +150°C	4B46 9252$_H$	300	8	128@500k	728	240	32	120	32	32	84	2 / 4	Yes	Yes	Yes	Yes
SAL-TC298TP-128F300N BC	STANDARD	PG-LBGA-416-26	-40°C – +150°C	4B46 9152$_H$	300	8	128@500k	728	240	32	120	32	32	60	2 / 4	Yes	Yes	Yes	Yes
SAK-TC297TP-128F300N BC	STANDARD	PG-LFBGA-292-6	-40°C – +125°C	4B46 9052$_H$	300	8	128@500k	728	240	32	120	32	32	60	2 / 4	Yes	Yes	Yes	Yes

6.2 Extended type TC29x

DERIVATIVE	PRODUCTION STATUS	PACKAGE TYPE	TEMP. RANGE	CHIP ID	FREQ. (MHz)	FLASH (MB)	EEPROM (KB)	TOTAL SRAM (KB)	CORE 1 AND 2 TC16P		CORE 0 TC16P		LMU (KB)	EMEM (KB)	ADC CHAN.	FlexRay (#/ch.)	ETH	CIF	FFT	HSM	CAN FD	CAN FD ISO frame	AGBT
									DSPR (KB)	PSPR (KB)	DSPR (KB)	PSPR (KB)											
SAK-TC299TX-128F300N BC	STANDARD	PG-LFBGA-516-5	-40°C – +125°C	4B47 9A52$_H$	300	8	128 @500k	2776	240	32	120	32	32	2048	84	2 / 4	Yes	No	No	Yes	Yes	Yes	No
SAK-TC297TX-128F300N BC	STANDARD	PG-LFBGA-292-6	-40°C – +125°C	4B47 9852$_H$	300	8	128 @500k	2776	240	32	120	32	32	2048	60	2 / 4	Yes	No	No	Yes	Yes	Yes	No

6.3 ADAS Type TC29x

DERIVATIVE	PRODUCTION STATUS	PACKAGE TYPE	TEMP. RANGE	CHIP ID	FREQ. (MHz)	FLASH (MB)	EEPROM (KB)	TOTAL SRAM (KB)	CORE 1 AND 2 TC16P		CORE 0 TC16P		LMU (KB)	EMEM (KB)	ADC Chan	Flex Ray (#/ch.)	ETH	CIF	FFT	HSM	CAN FD	CAN FD ISO frame	AGBT
									DSPR (KB)	PSPR (KB)	DSPR (KB)	PSPR (KB)											
SAK-TC297TA-128F300N BC	STANDARD	PG-LFBGA-292-6	-40°C – +125°C	4B47 9052$_H$	300	8	128 @500k	2776	240	32	120	32	32	2048	60	2 / 4	Yes	Yes	Yes	Yes	Yes	Yes	No

7 Memory map of variants

This section shows the influence of the feature variants on the memory map.

7.1 TC21x

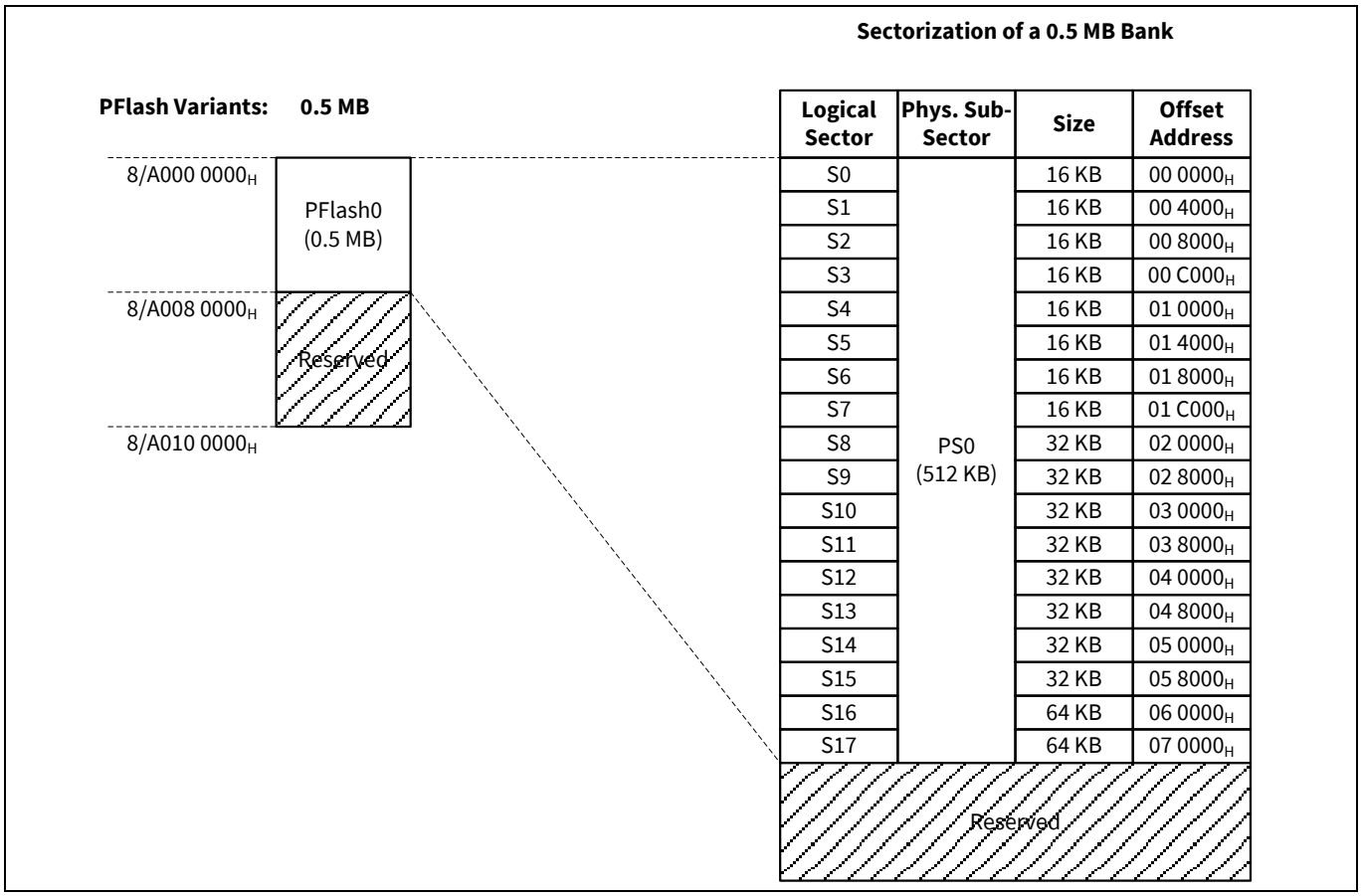


Figure 1 TC21x PFlash variants

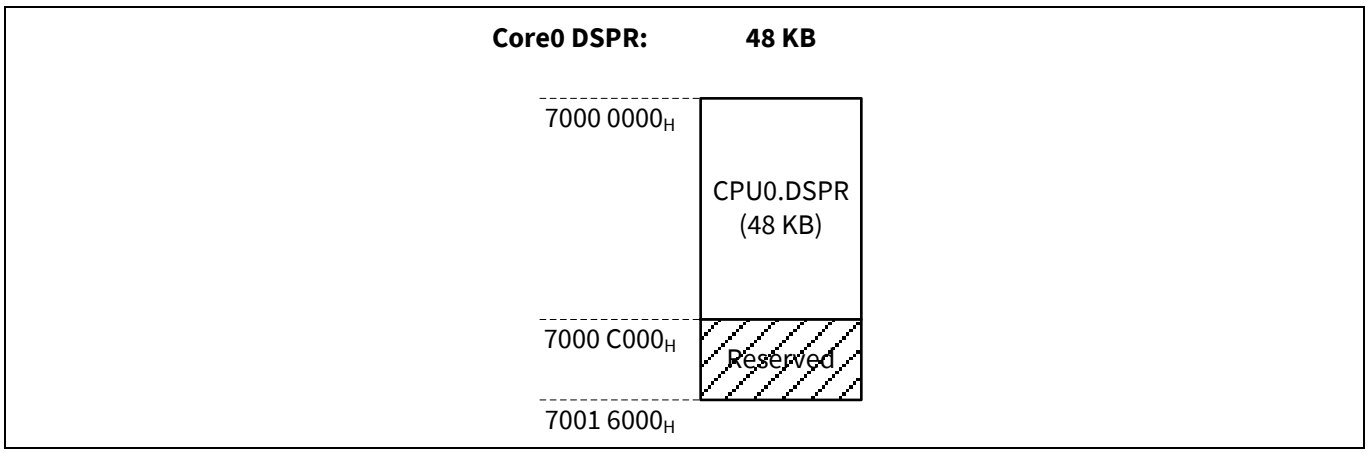


Figure 2 TC21x Coar0 DSPR

Lockstep Variants

No influence on memory ap.

Lockstep = “No” variants: In the Boot Mode Header the BMI.LCL0LSEN must be configured to 0_B.

7.2 TC22X

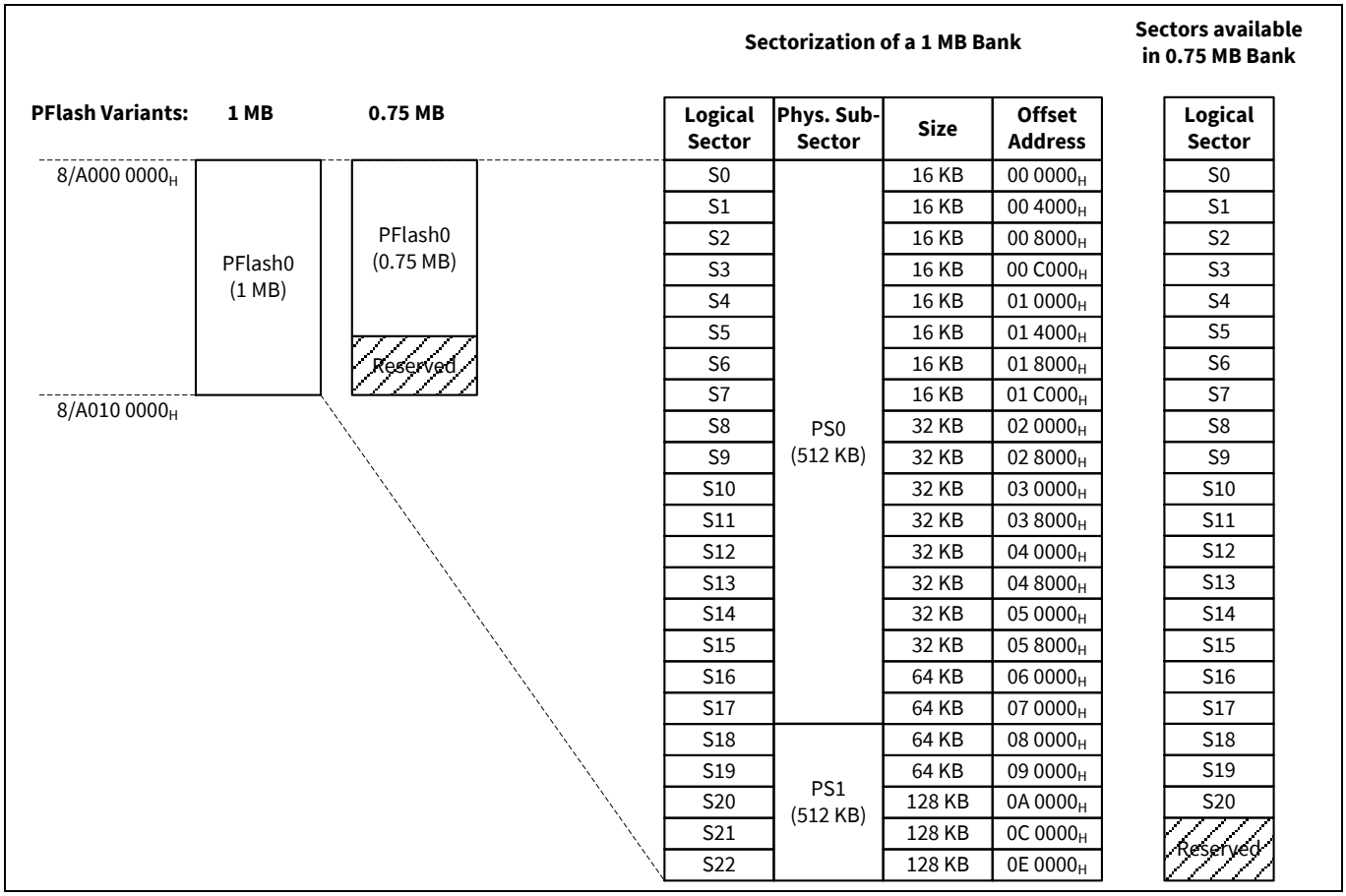


Figure 3 TC22x PFlash variants

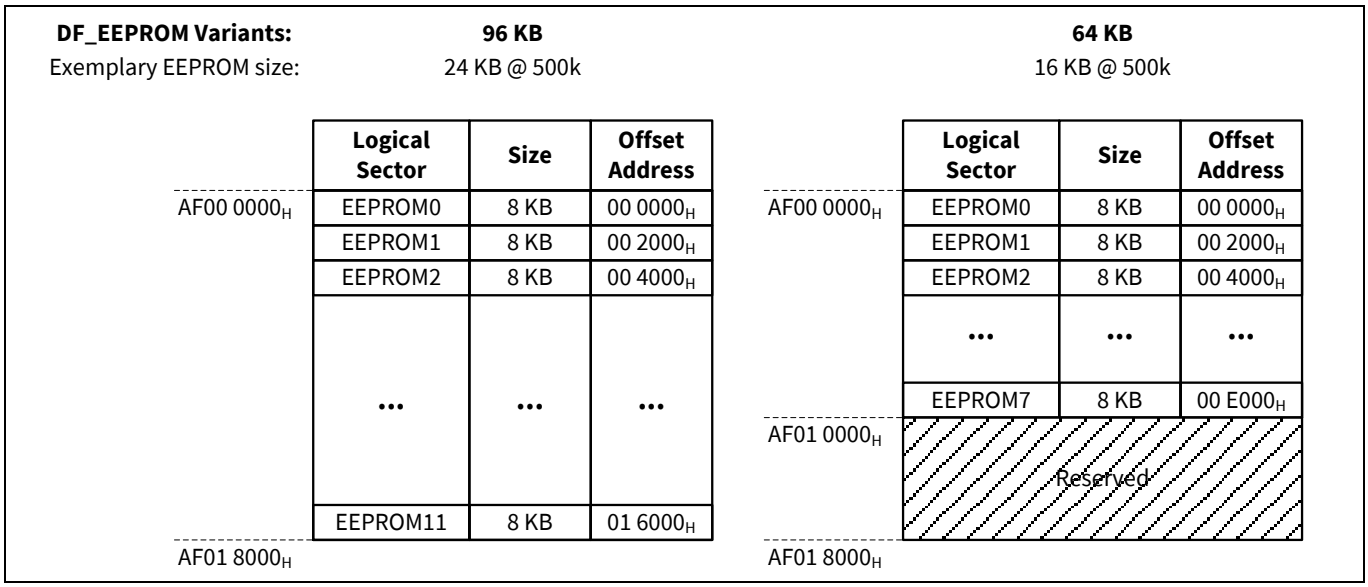


Figure 4 TC22x DF_EEPROM variants

Memory map of variants

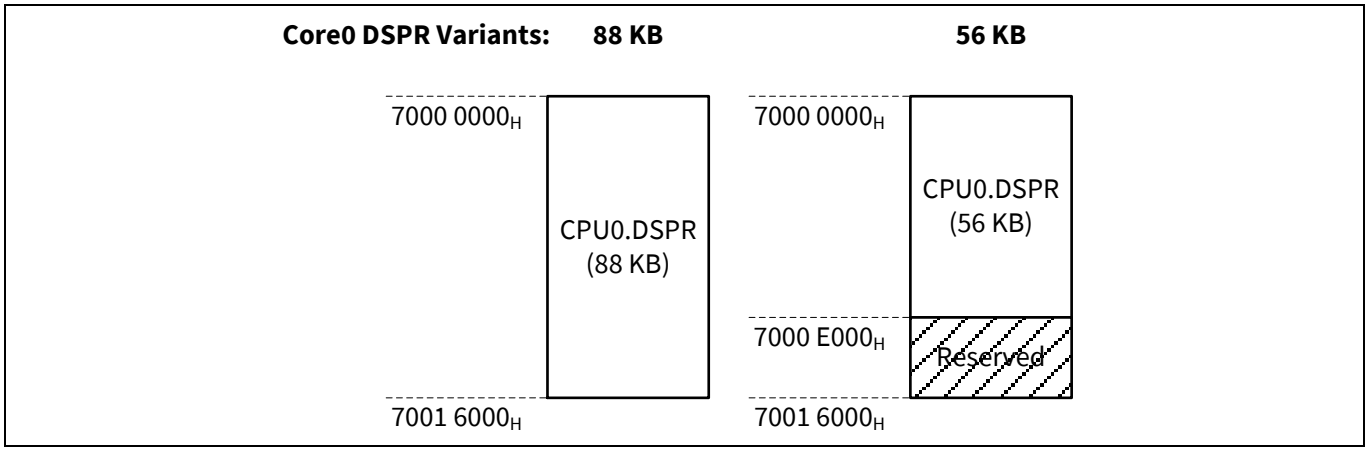
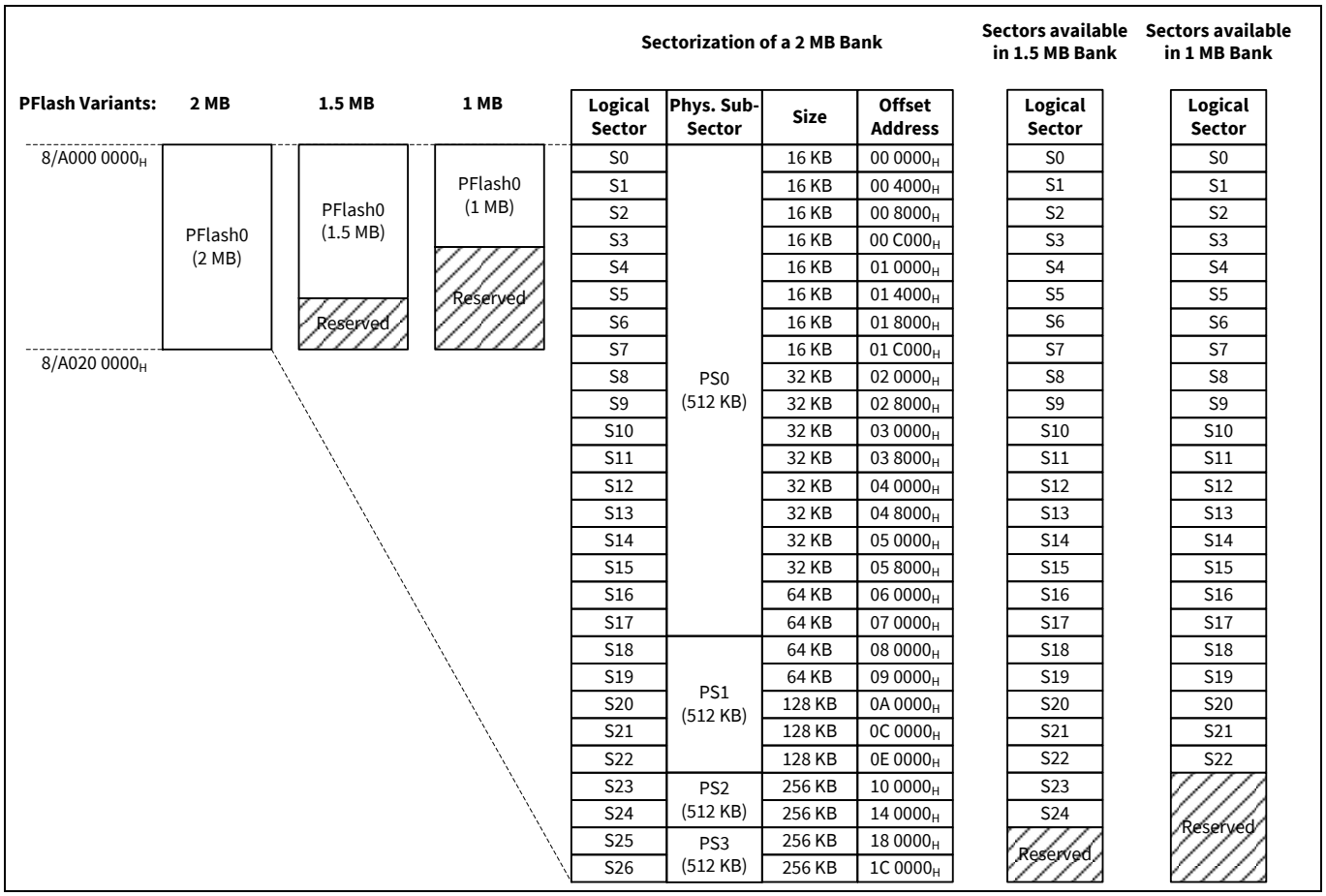


Figure 5 TC22x Core0 DSPR variants

7.3 TC23x



Sectorization of a 2 MB Bank				Sectors available in 1.5 MB Bank	Sectors available in 1 MB Bank
Logical Sector	Phys. Sub-Sector	Size	Offset Address	Logical Sector	Logical Sector
S0	PS0 (512 KB)	16 KB	00 0000H	S0	S0
S1		16 KB	00 4000H	S1	S1
S2		16 KB	00 8000H	S2	S2
S3		16 KB	00 C000H	S3	S3
S4		16 KB	01 0000H	S4	S4
S5		16 KB	01 4000H	S5	S5
S6		16 KB	01 8000H	S6	S6
S7		16 KB	01 C000H	S7	S7
S8		32 KB	02 0000H	S8	S8
S9		32 KB	02 8000H	S9	S9
S10		32 KB	03 0000H	S10	S10
S11		32 KB	03 8000H	S11	S11
S12		32 KB	04 0000H	S12	S12
S13		32 KB	04 8000H	S13	S13
S14		32 KB	05 0000H	S14	S14
S15		32 KB	05 8000H	S15	S15
S16		64 KB	06 0000H	S16	S16
S17		64 KB	07 0000H	S17	S17
S18	PS1 (512 KB)	64 KB	08 0000H	S18	S18
S19		64 KB	09 0000H	S19	S19
S20		128 KB	0A 0000H	S20	S20
S21		128 KB	0C 0000H	S21	S21
S22		128 KB	0E 0000H	S22	S22
S23	PS2 (512 KB)	256 KB	10 0000H	S23	Reserved
S24		256 KB	14 0000H	S24	
S25	PS3 (512 KB)	256 KB	18 0000H	Reserved	
S26		256 KB	1C 0000H		

Figure 6 TC23x PFlash variants

Memory map of variants

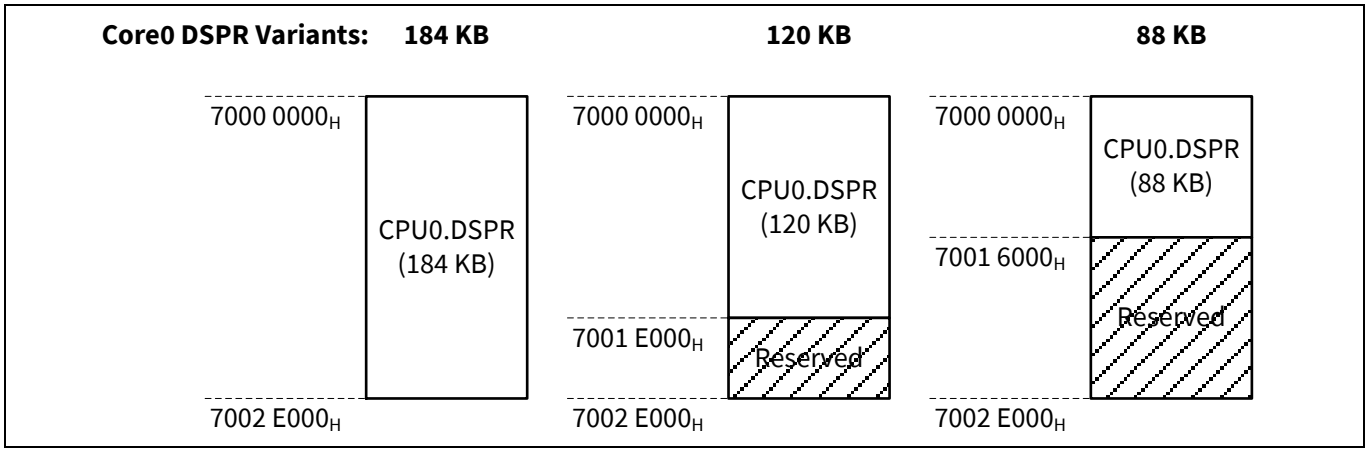


Figure 7 TC23x Core0 DSPR variants

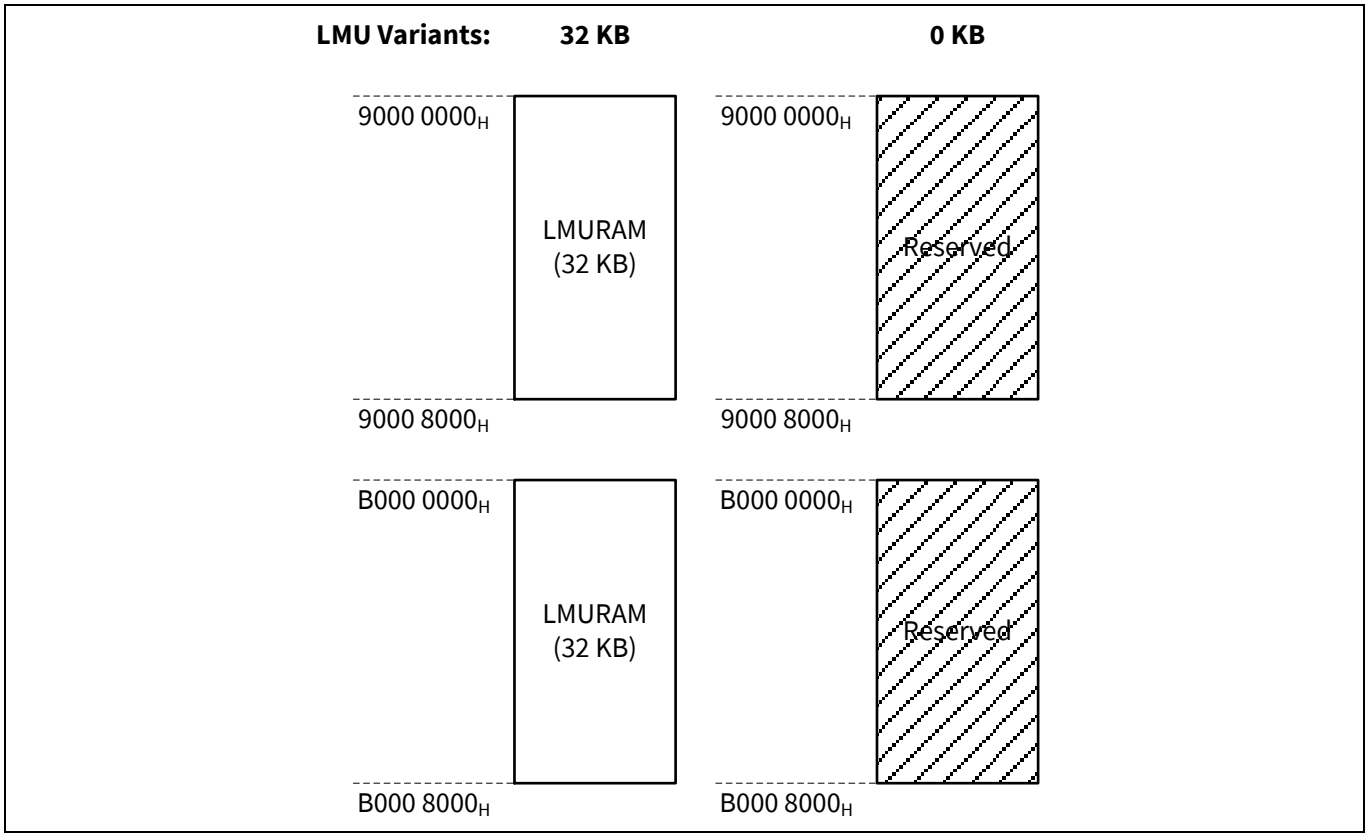


Figure 8 TC23x LMU variants

Memory map of variants

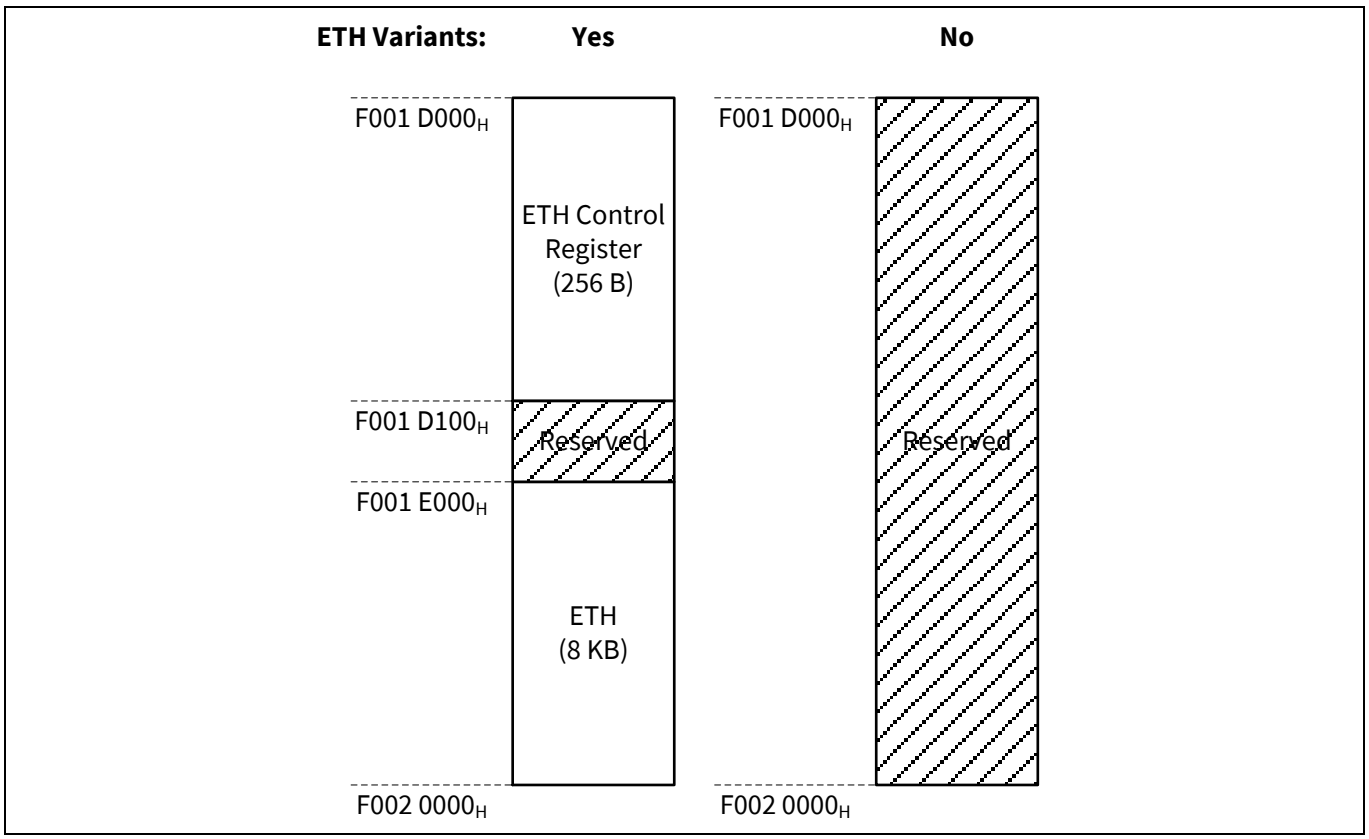


Figure 9 TC23x ETH variants

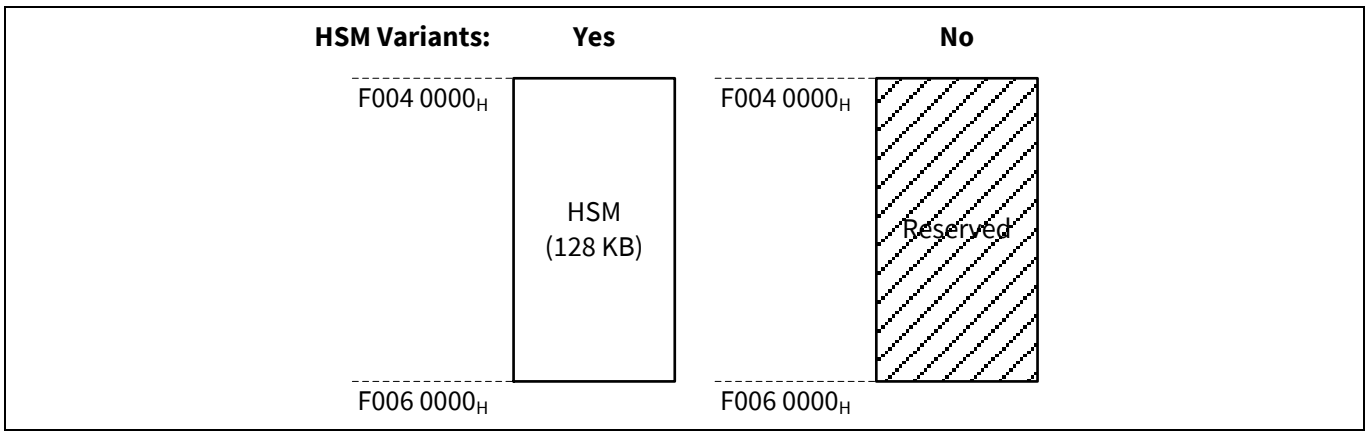


Figure 10 TC23x HSM variants

Memory map of variants

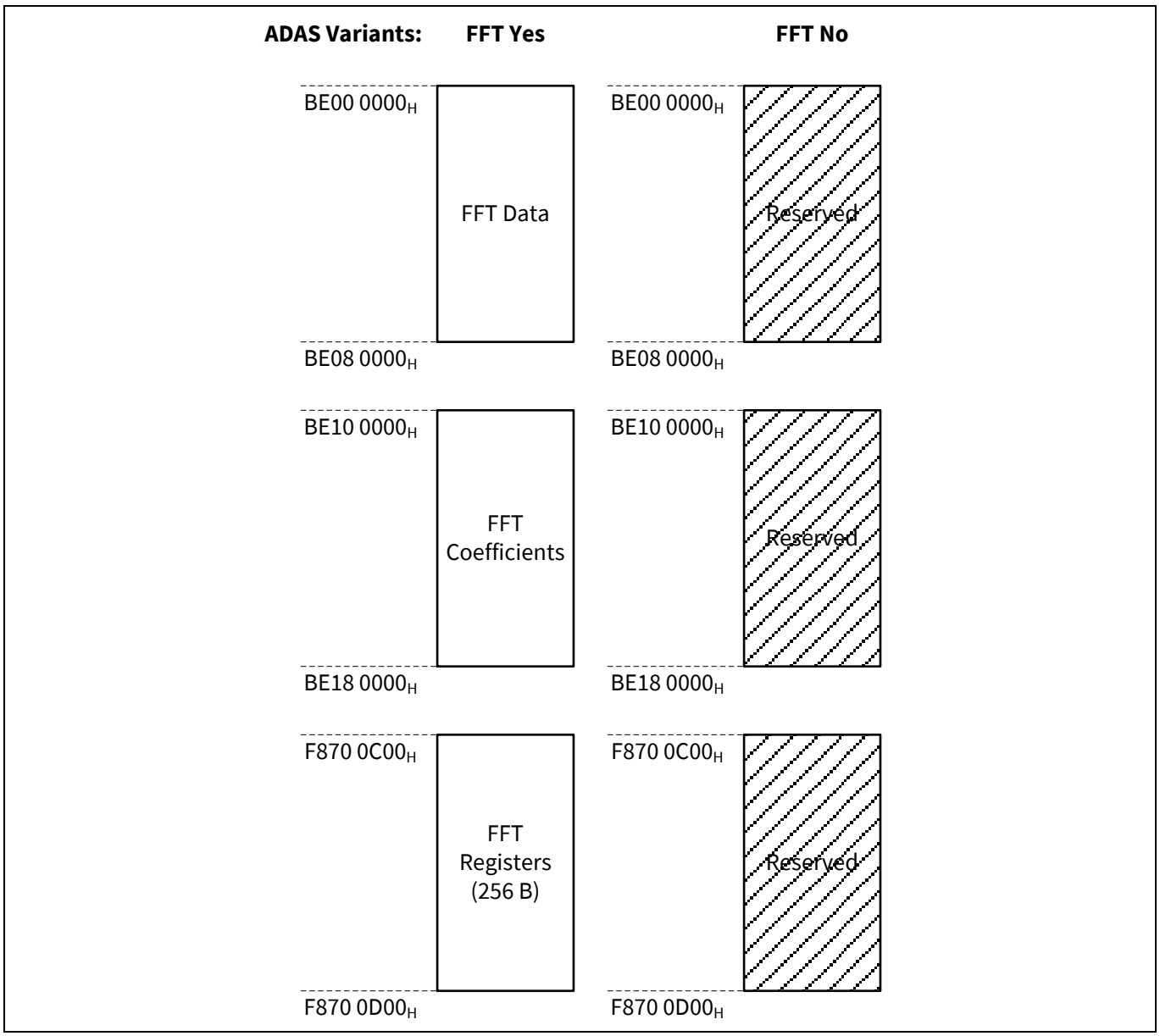


Figure 11 TC23x ADAS variants

ADAS variants

ADAS = “Yes” variants:

The VADC kernels ADC02 and ADC03 are available, offering the Converter Groups G02 and G03. Because of that, the group related registers with x = 2 and x = 3 are implemented.

7.4 TC26x

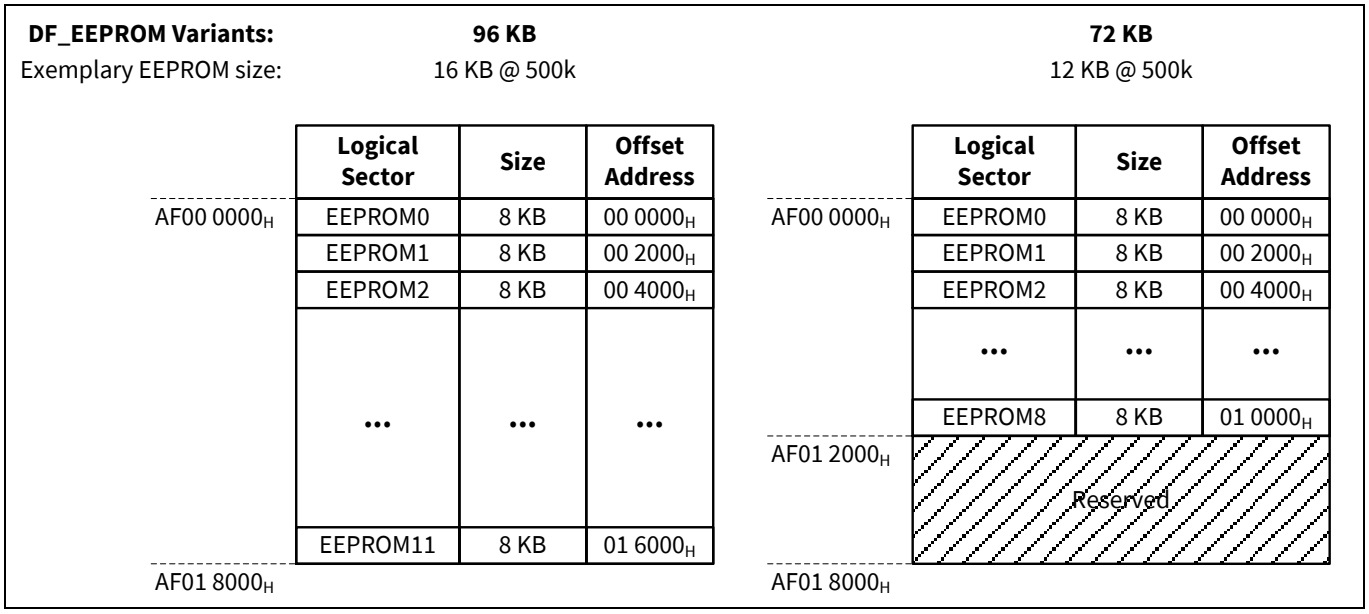


Figure 12 TC26x DF_EEPROM variants

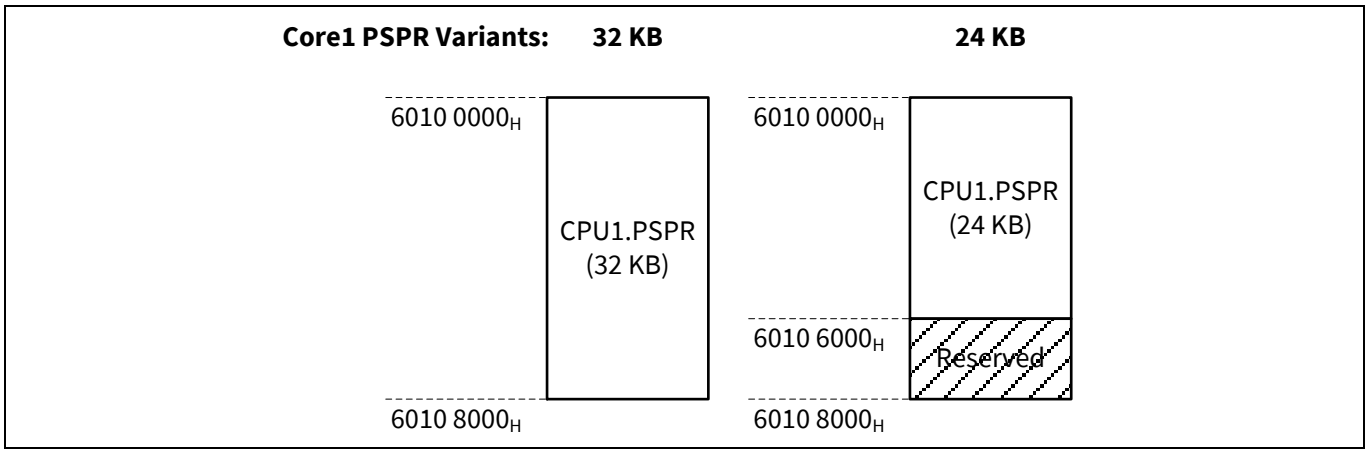


Figure 13 TC26x Core1 PSPR variants

Memory map of variants

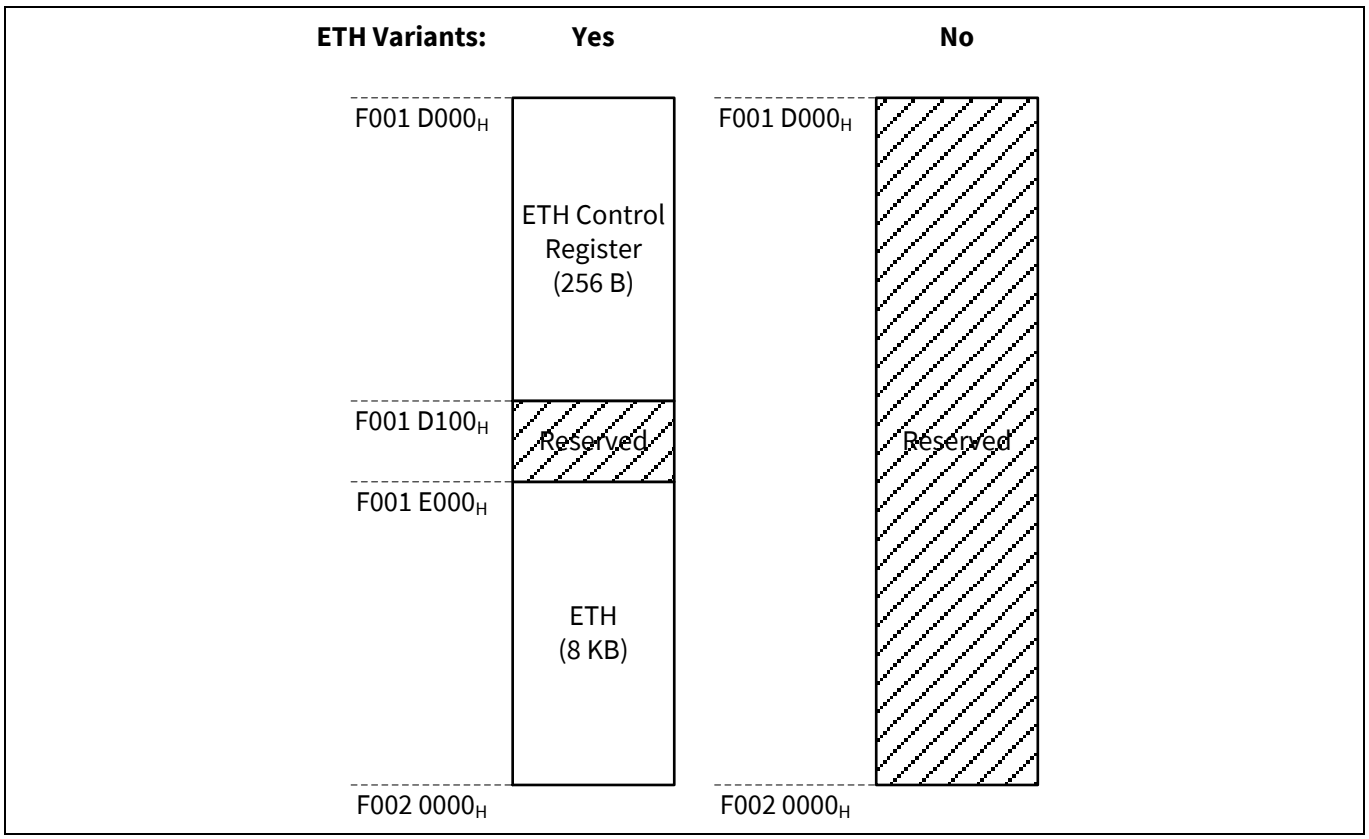


Figure 14 TC26x ETH variants

Memory map of variants

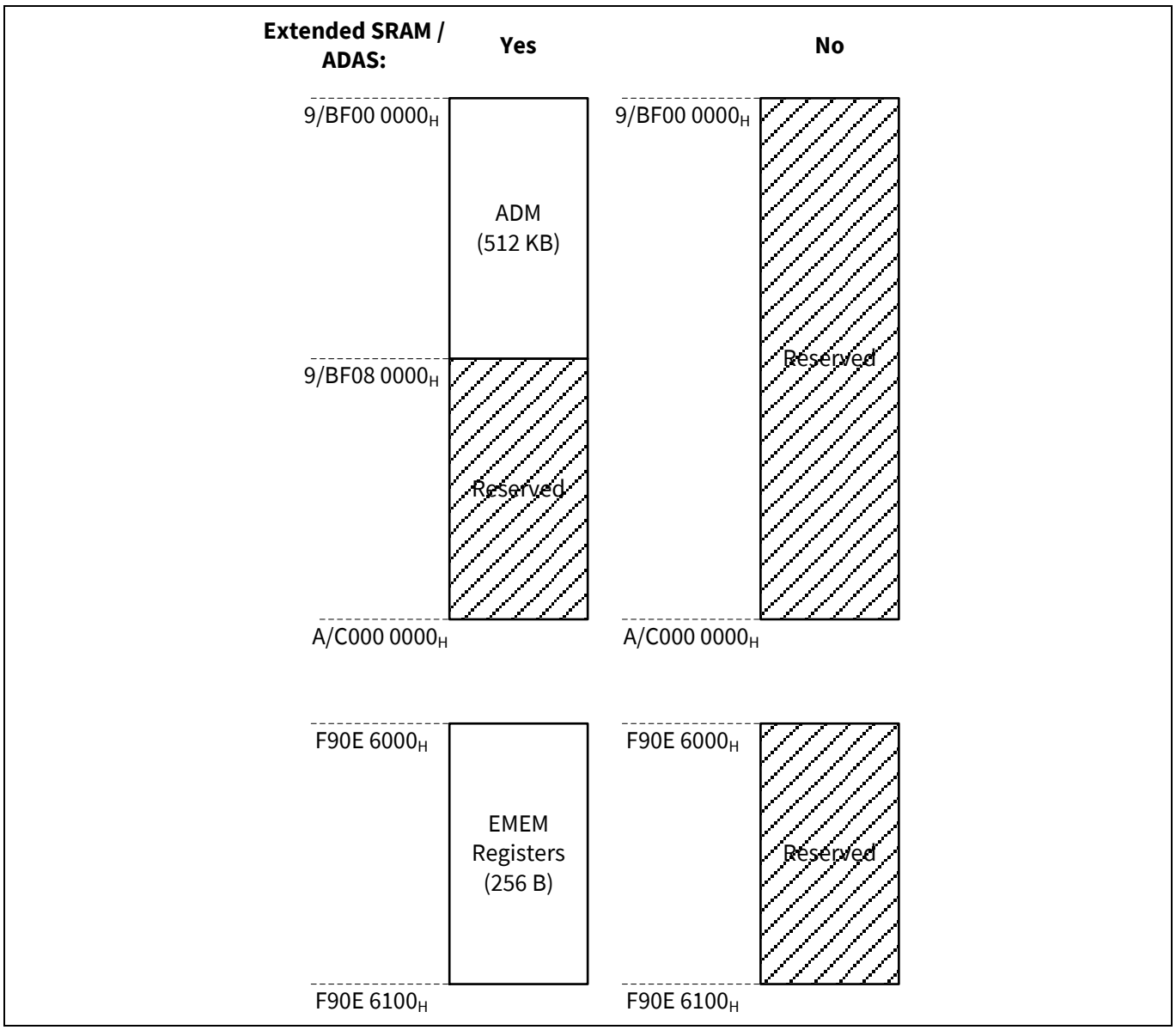


Figure 15 TC26x Extended SRAM / ADAS

Memory map of variants

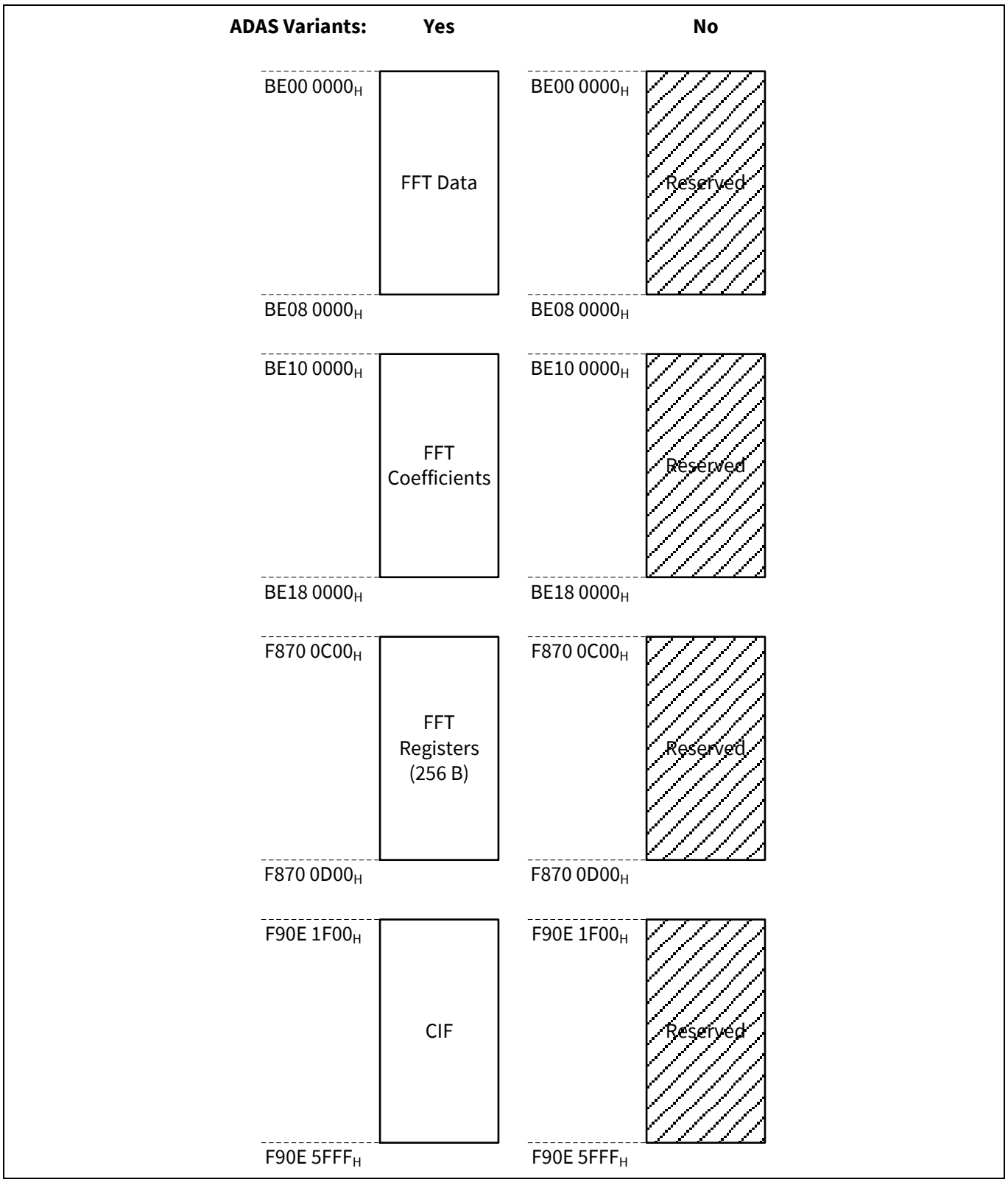


Figure 16 TC26x ADAS variants

CAN FD variants

No influence on Memory Map.

CAN FD = “No” variants: all CAN register fields NCRx.FDEN have to be kept at 0_B.

7.5 TC27x

DF_EEPROM Variants: **384 KB** **144 KB**

Exemplary EEPROM size: 64 KB @ 500k 24 KB @ 500k

	Logical Sector	Size	Offset Address
AF00 0000$_H$	EEPROM0	8 KB	00 0000$_H$
	EEPROM1	8 KB	00 2000$_H$
	EEPROM2	8 KB	00 4000$_H$
	...	...	...
	EEPROM47	8 KB	05 E000$_H$
AF06 0000$_H$			

	Logical Sector	Size	Offset Address
AF00 0000$_H$	EEPROM0	8 KB	00 0000$_H$
	EEPROM1	8 KB	00 2000$_H$
	EEPROM2	8 KB	00 4000$_H$
	...	...	...
	EEPROM17	8 KB	02 2000$_H$
AF02 4000$_H$	Reserved		
AF06 0000$_H$			

Figure 17 TC27x DF_EEPROM variants

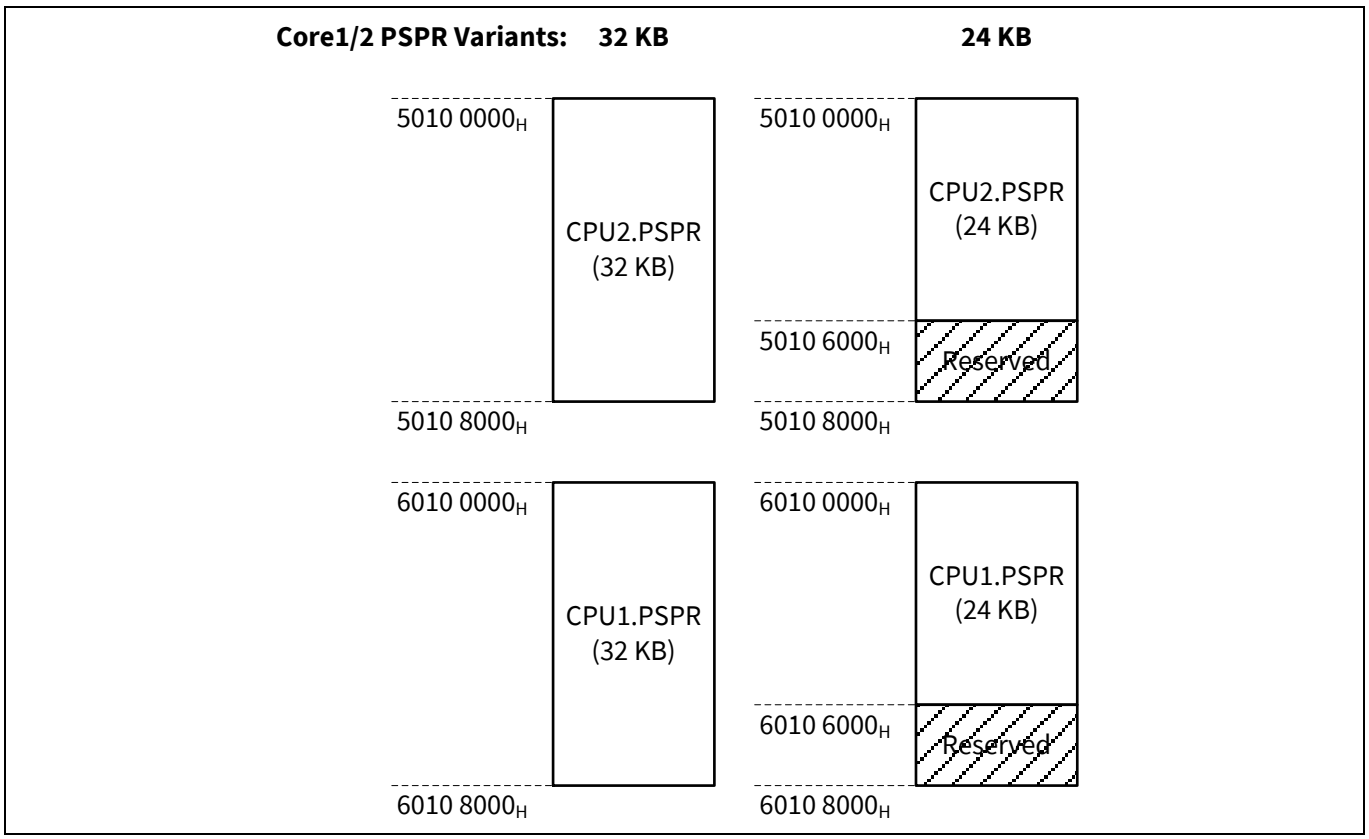


Figure 18 TC27x Core1/2 PSPR variants

Memory map of variants

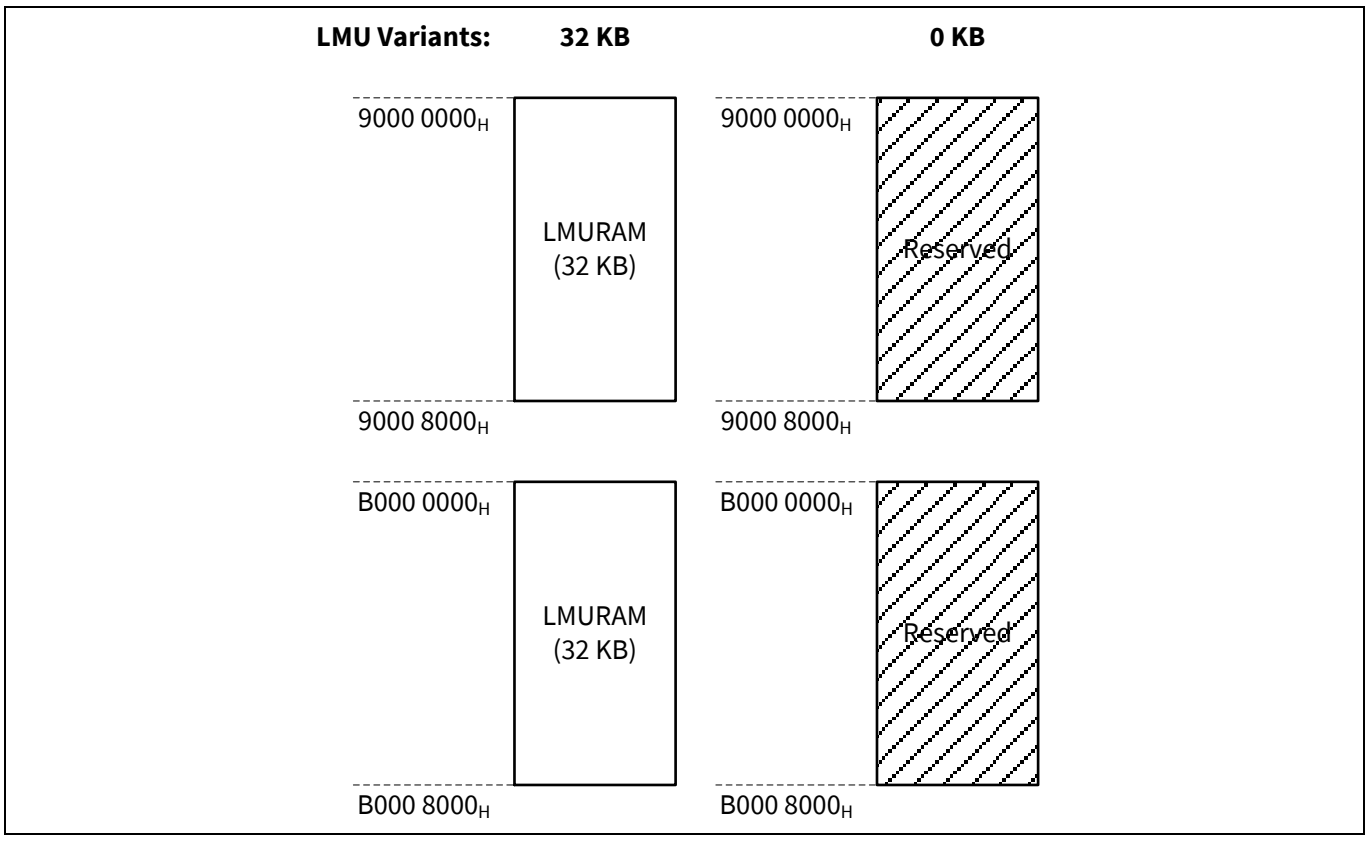


Figure 19 TC27x LMU variants

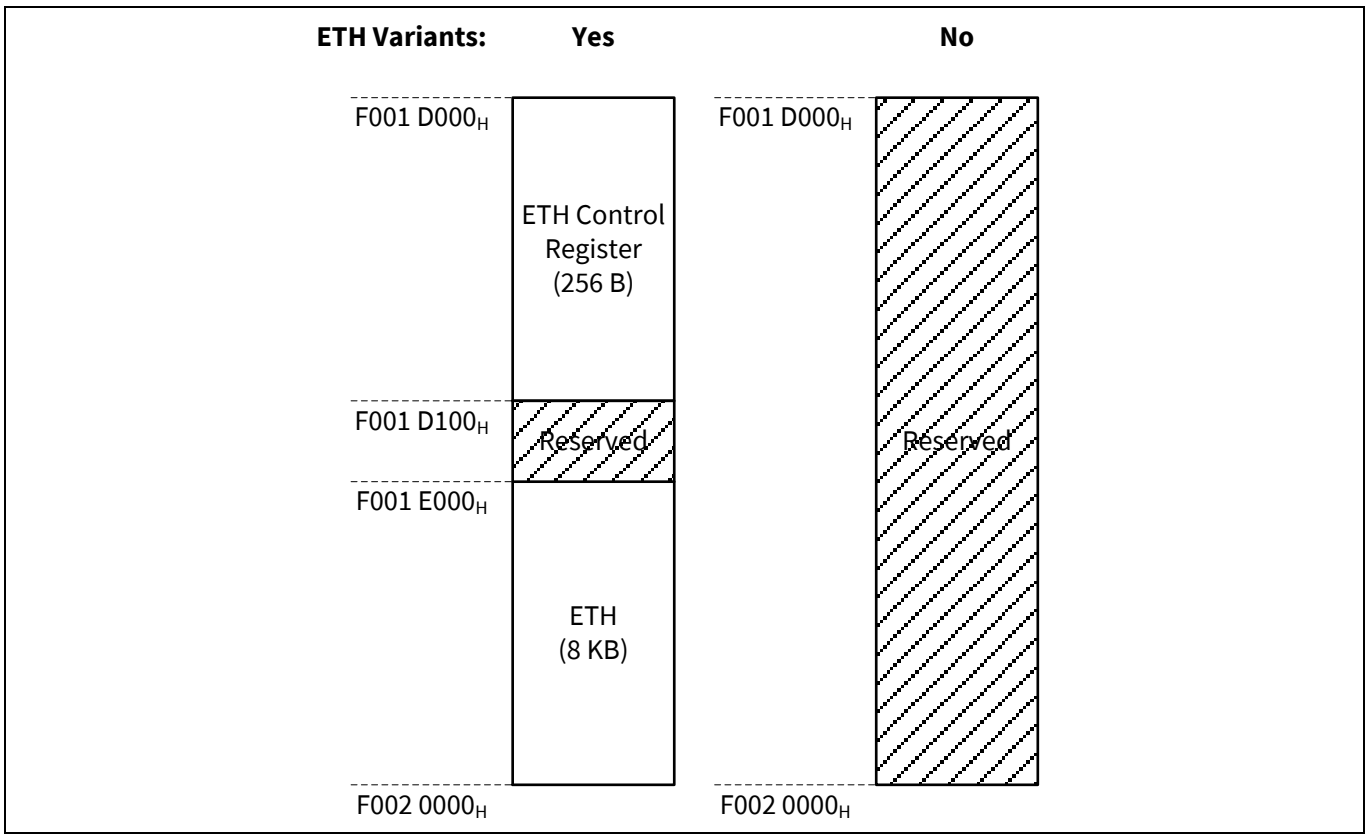


Figure 20 TC27x ETH variants

Memory map of variants

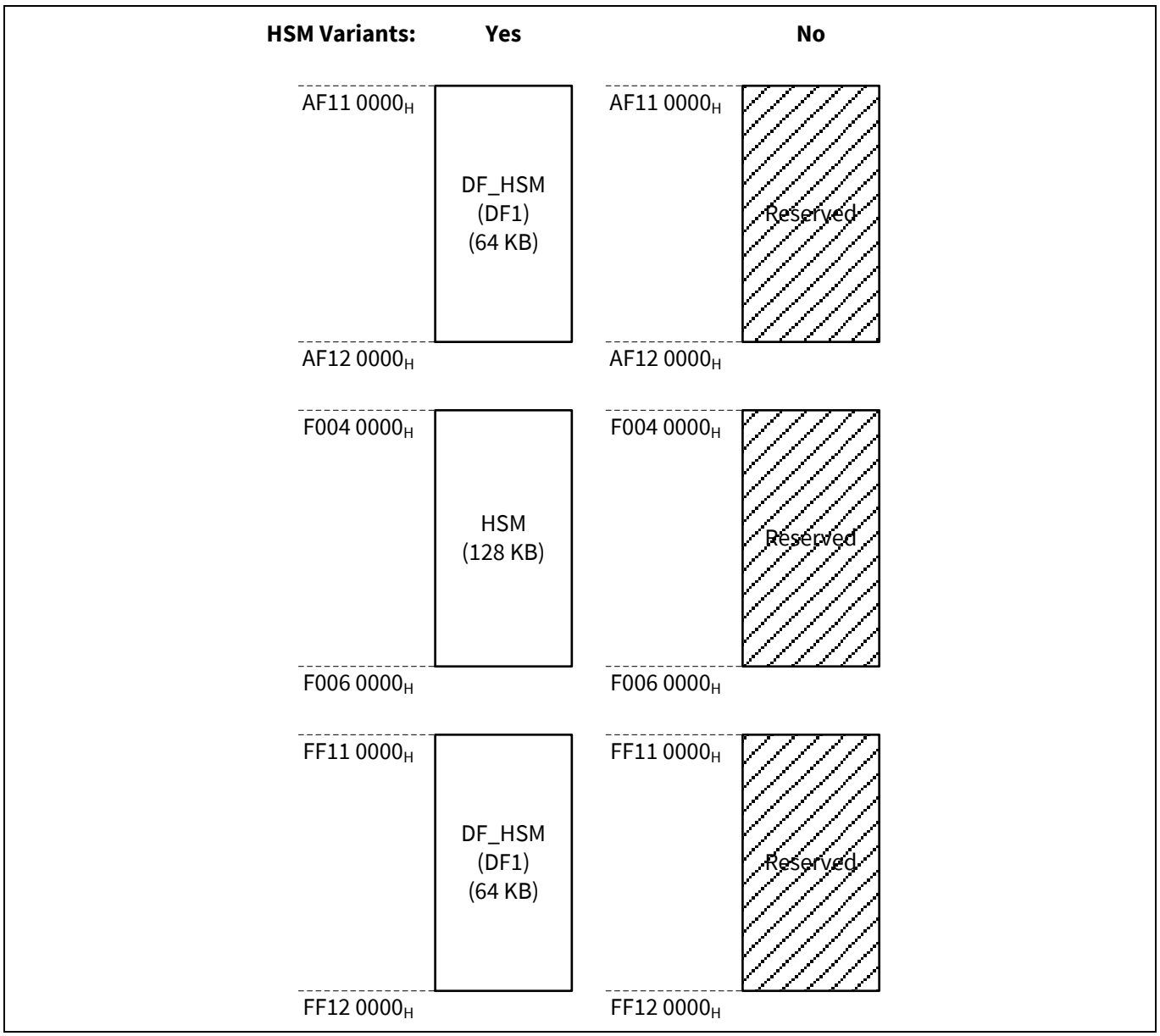


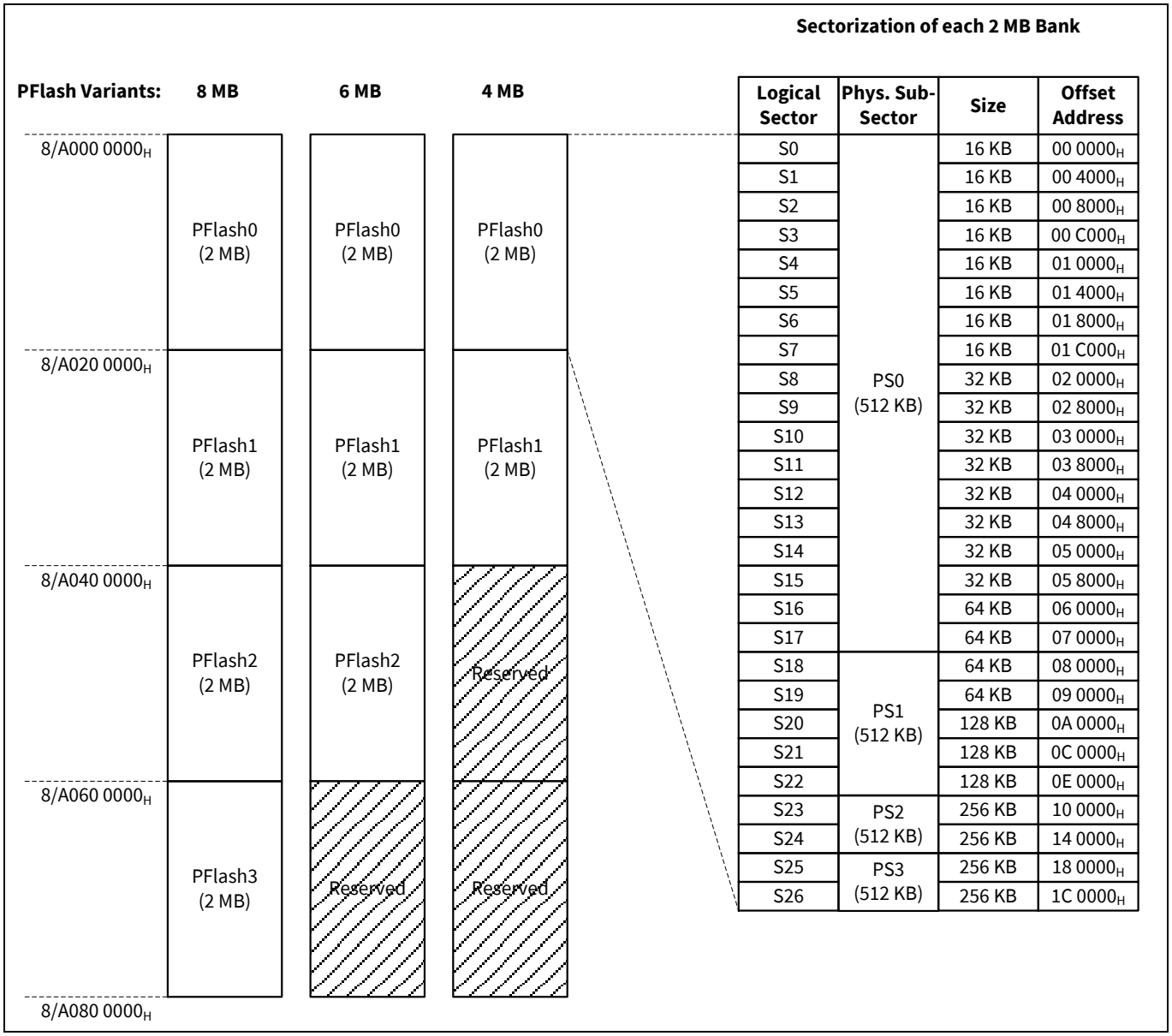
Figure 21 TC27x HSM variants

CAN FD variants

No influence on Memory Map.

CAN FD = “No” variants: all CAN register fields NCRx.FDEN have to be kept at 0_B

7.6 TC29x



Logical Sector	Phys. Sub-Sector	Size	Offset Address
S0	PS0 (512 KB)	16 KB	00 0000H
S1		16 KB	00 4000H
S2		16 KB	00 8000H
S3		16 KB	00 C000H
S4		16 KB	01 0000H
S5		16 KB	01 4000H
S6		16 KB	01 8000H
S7		16 KB	01 C000H
S8		32 KB	02 0000H
S9		32 KB	02 8000H
S10		32 KB	03 0000H
S11		32 KB	03 8000H
S12		32 KB	04 0000H
S13		32 KB	04 8000H
S14		32 KB	05 0000H
S15		32 KB	05 8000H
S16		64 KB	06 0000H
S17		64 KB	07 0000H
S18	PS1 (512 KB)	64 KB	08 0000H
S19		64 KB	09 0000H
S20		128 KB	0A 0000H
S21		128 KB	0C 0000H
S22		128 KB	0E 0000H
S23	PS2 (512 KB)	256 KB	10 0000H
S24		256 KB	14 0000H
S25	PS3 (512 KB)	256 KB	18 0000H
S26		256 KB	1C 0000H

Figure 22 TC29x PFlash variants

Memory map of variants

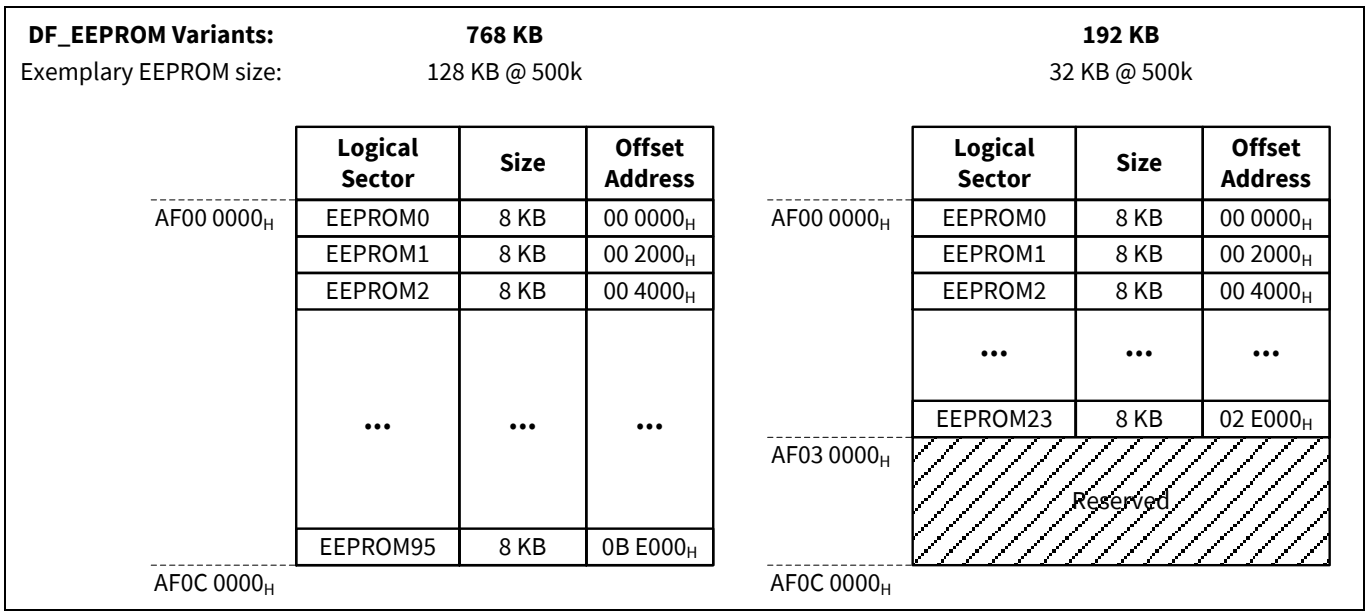


Figure 23 TC29x DF_EEPROM variants

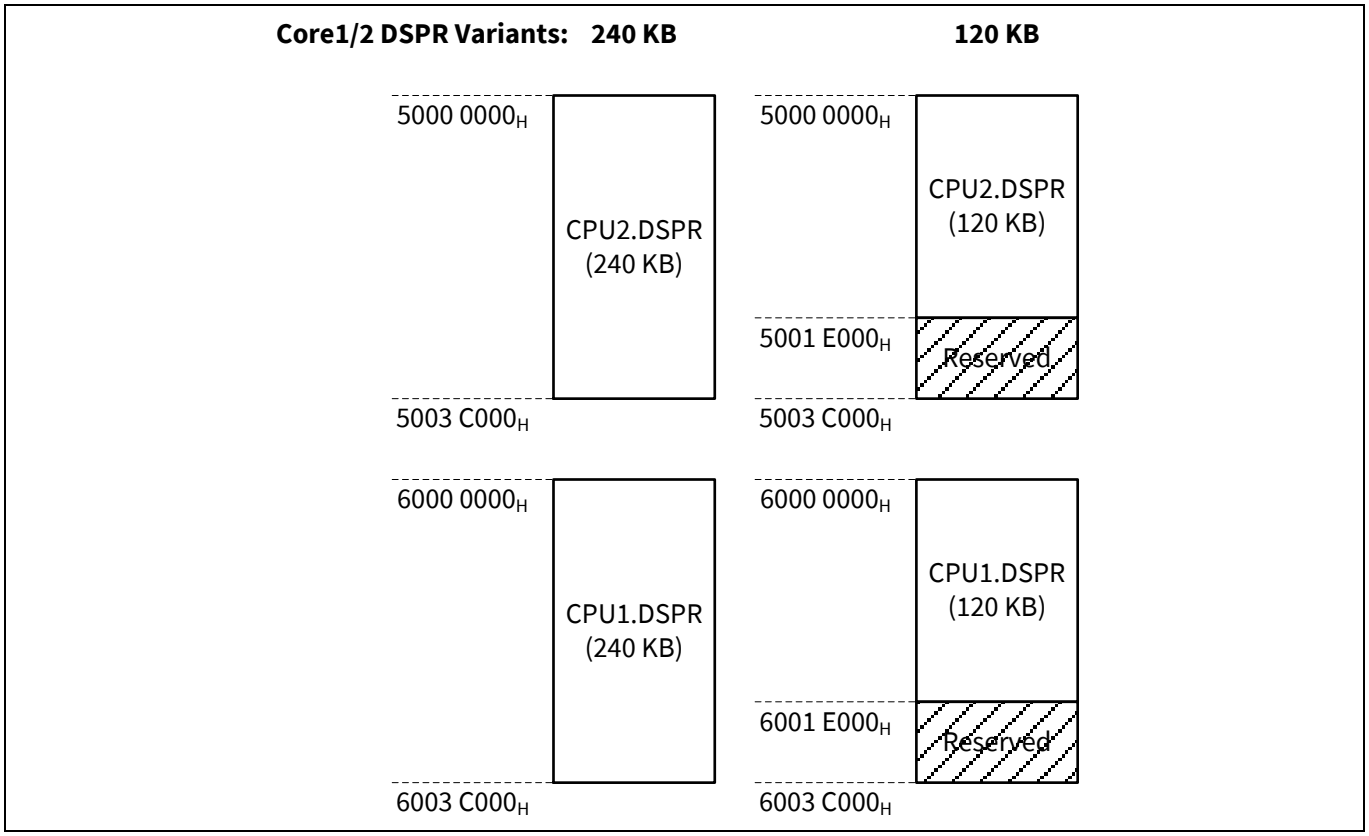


Figure 24 TC29x Core1/2 DSPR variants

Memory map of variants

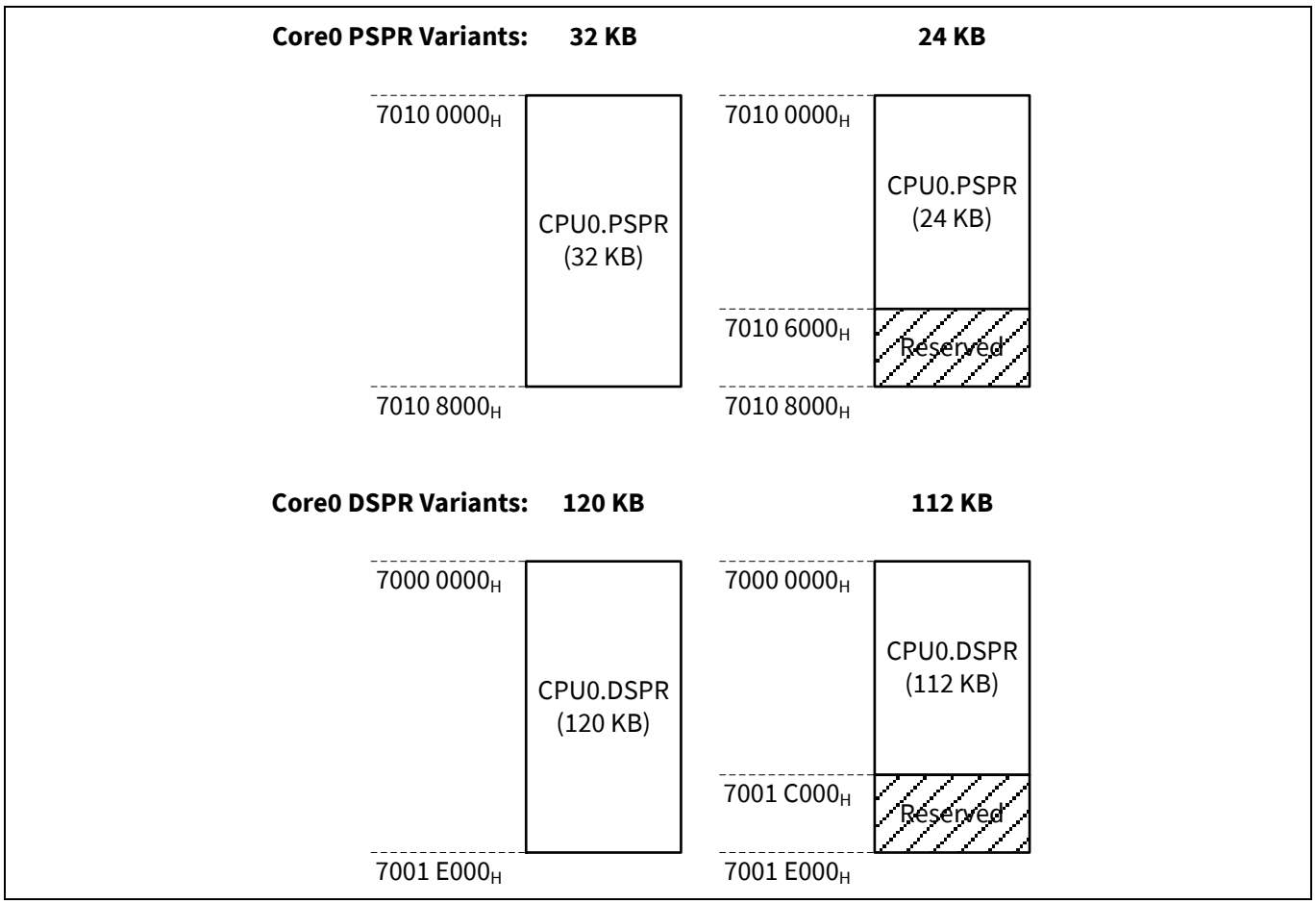


Figure 25 TC29x Core0 PSPR / DSPR variants

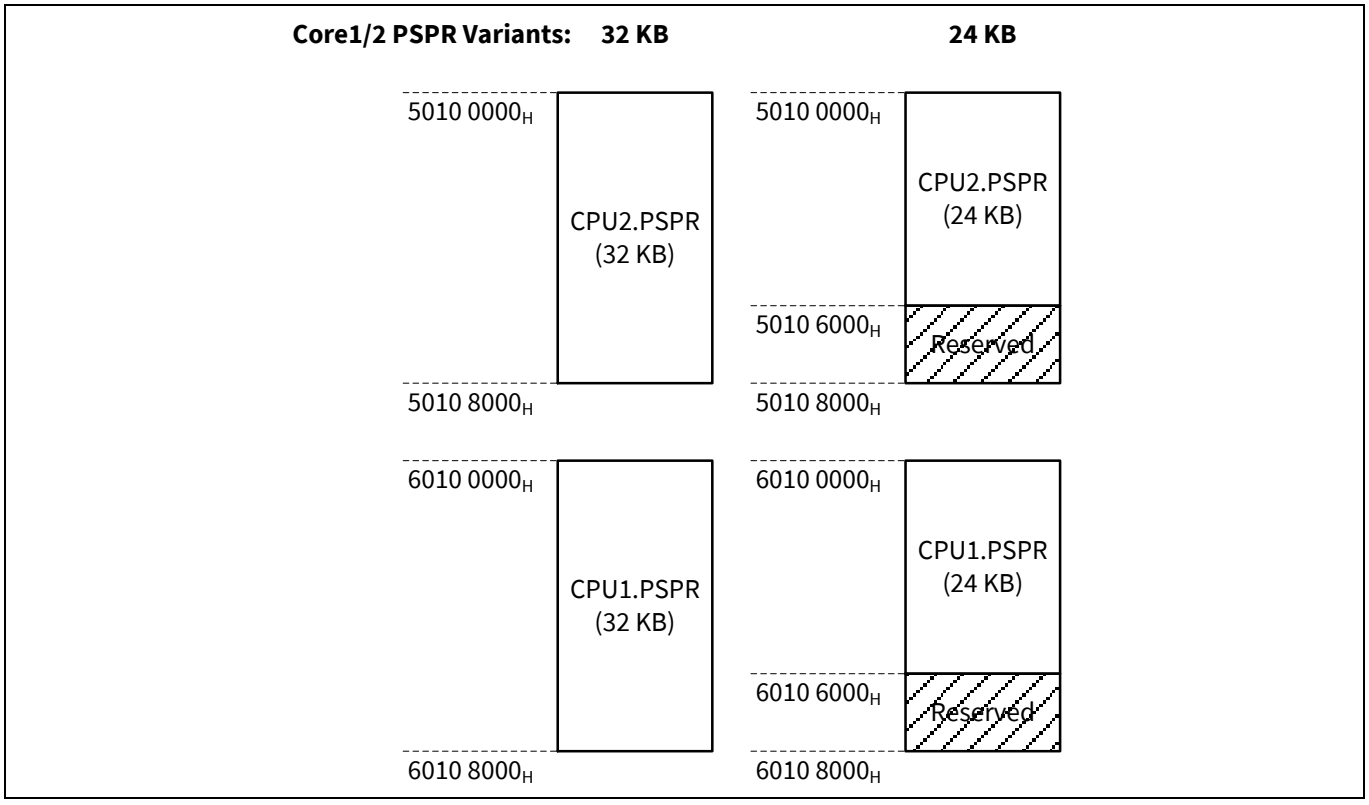


Figure 26 TC29x Core1/2 PSPR variants

Memory map of variants

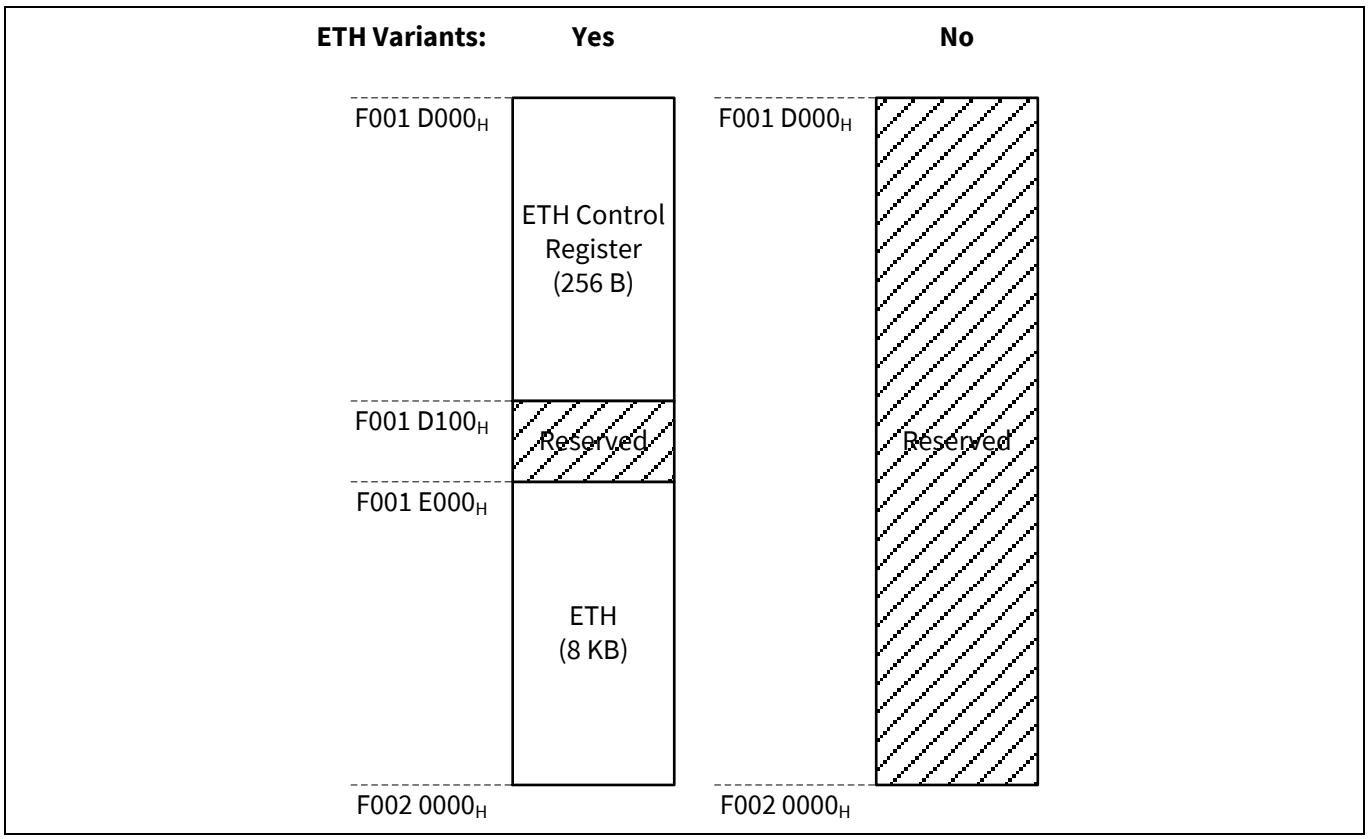


Figure 27 TC29x ETH variants

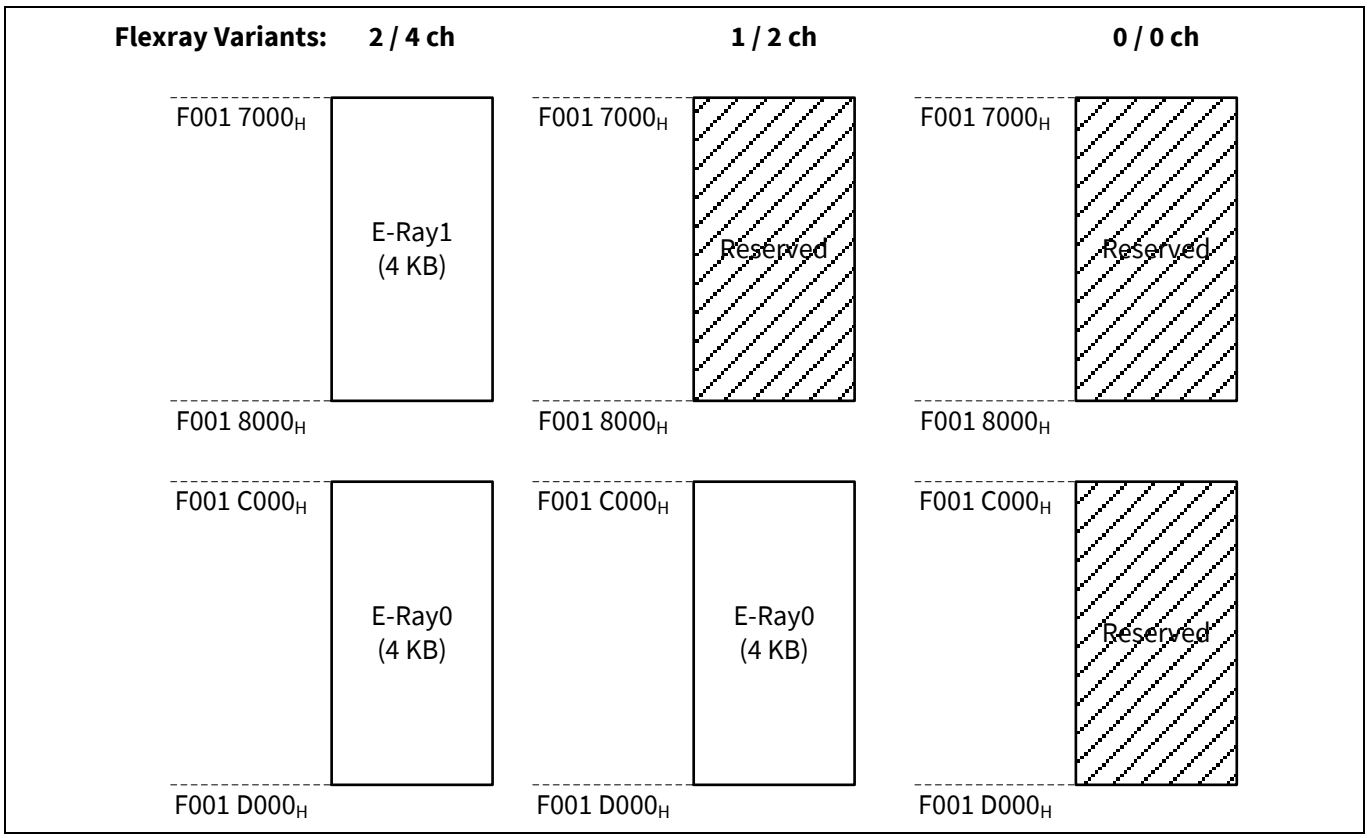


Figure 28 TC29x FlexRay variants

Memory map of variants

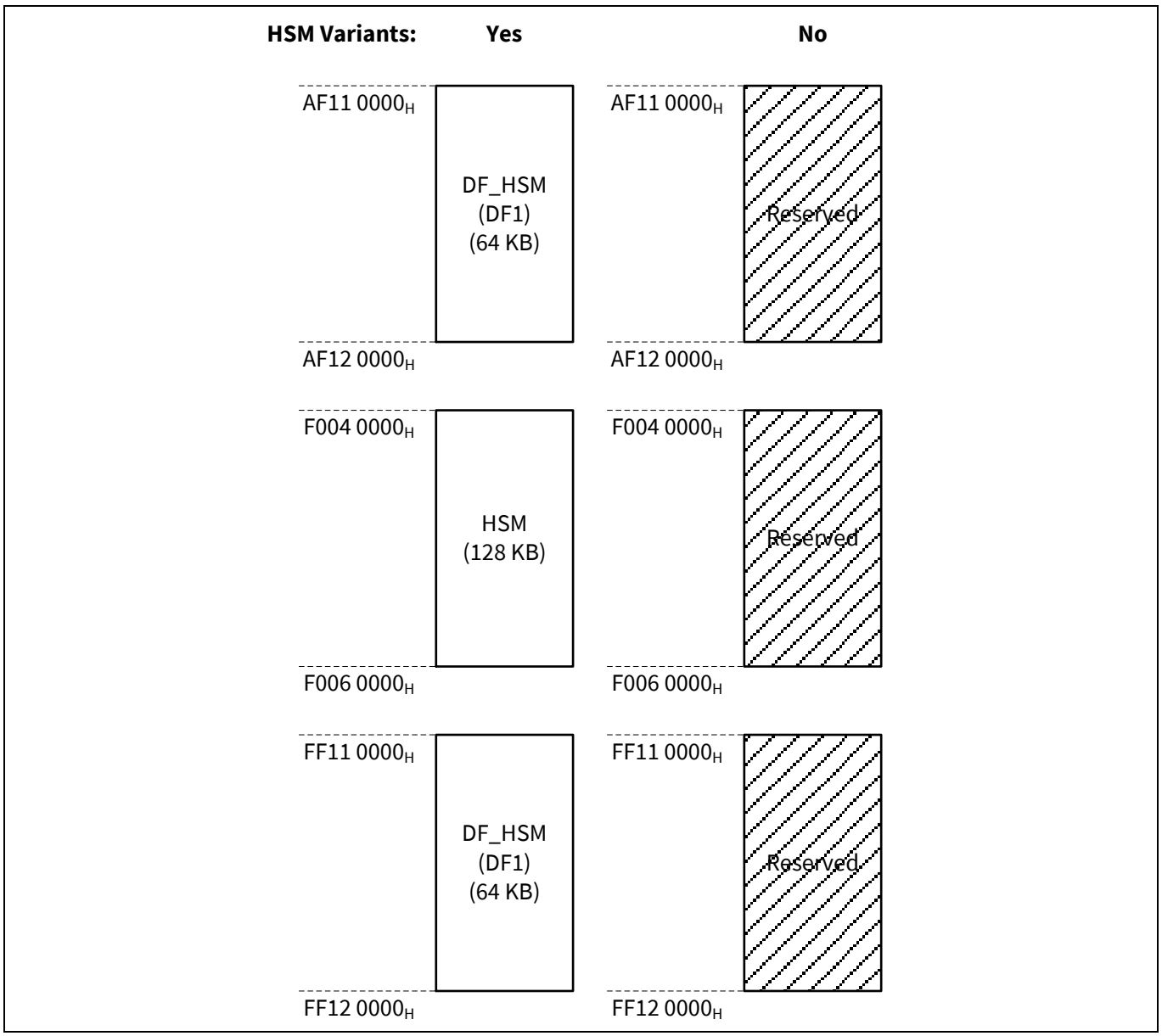


Figure 29 TC29x HSM variants

Memory map of variants

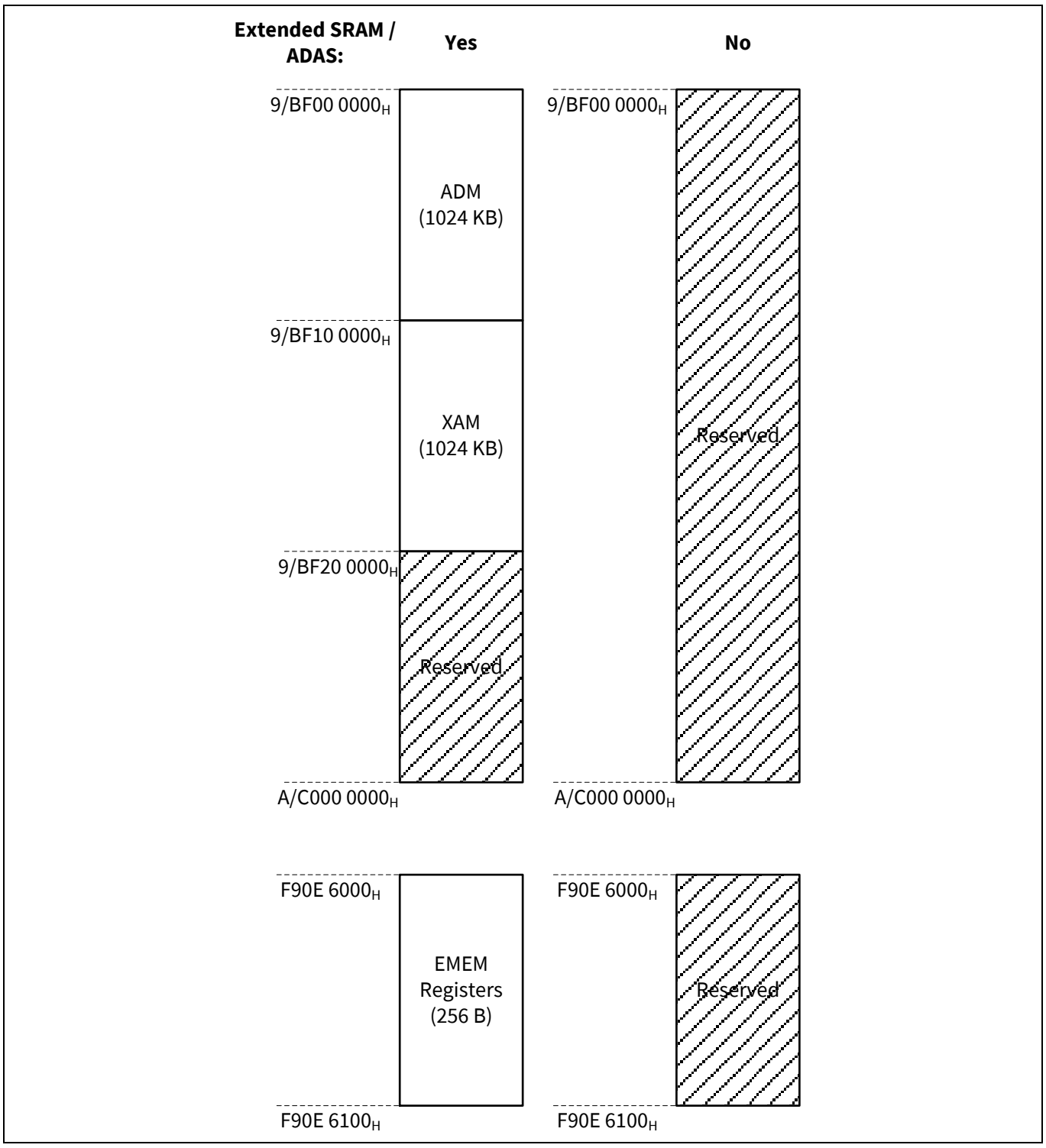


Figure 30 TC29x extended SRAM / ADAS

Memory map of variants

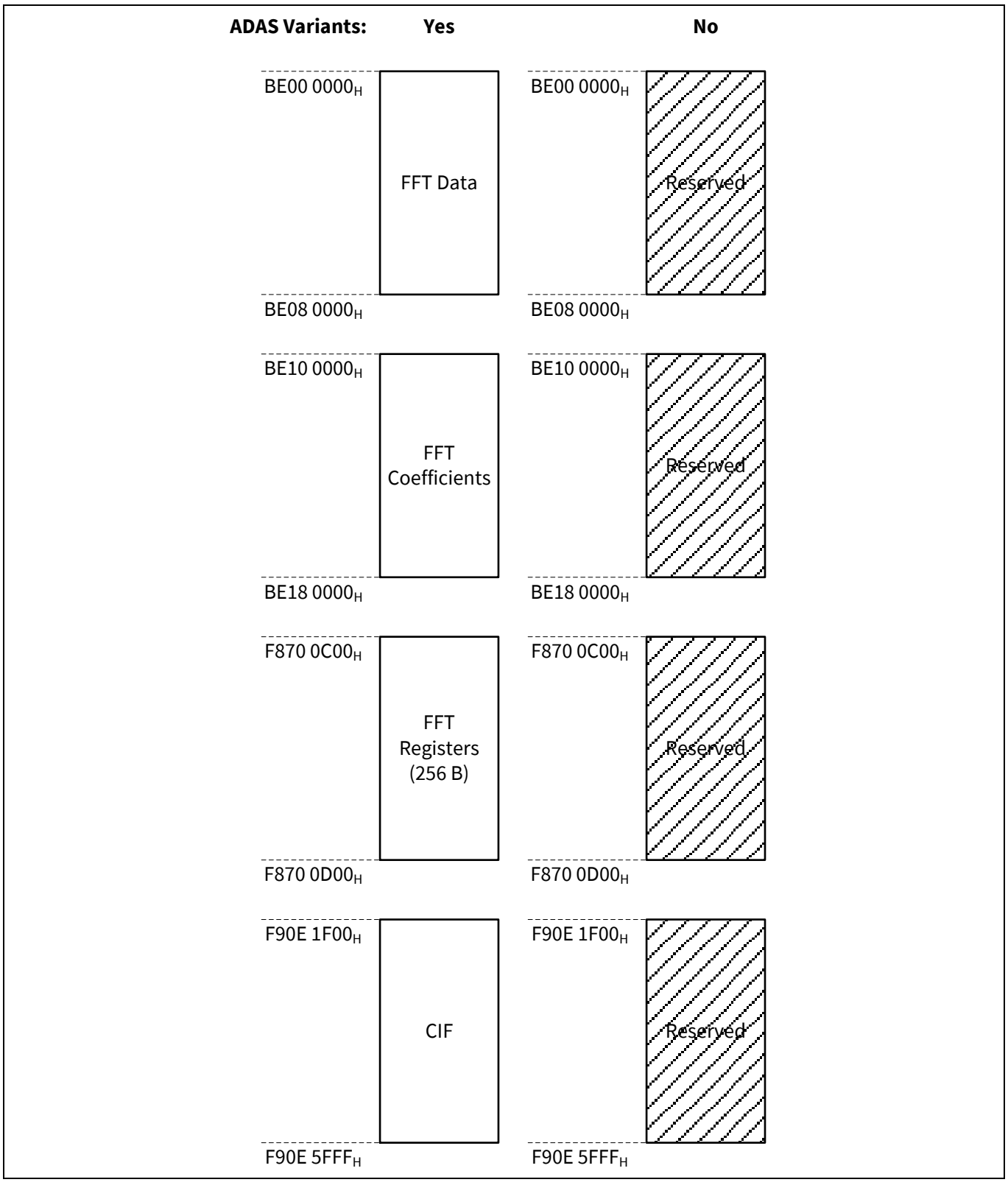


Figure 31 TC29x ADAS variants

CAN FD Variants

No influence on Memory Map.

CAN FD = “No” variants: all CAN register fields NCRx.FDEN have to be kept at 0_B

Revision history

Major changes since the last revision

Page or reference	Description of change
V1.0	First release

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