AURIX™ TC3Ex Variants

About this document

Scope and purpose

This document is an addendum to the TC3Ex Product Data Sheet and User's Manual, listing all planned product variants, key parameters such as memory size and optional features.

The User's Manual lists functions implemented on the Silicon, but this document counts functions that are pinning dependent; i.e. functions are counted that are connected to at least one package pin. As pins are overlaid with several functions the pinning needs to be checked (see Product Data Sheet) to determine the number of usable functions in an application.

Naming conventions

Prefix:

- 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:

- P: Standard feature.
- E: Emulation device with all features of the emulated standard type, additionally full MCDS, overlay functionality for calibration, AGBT as trace interface for development (depending on the package).
- C,V,Z: Customer Specific.
- A: ADAS ext. Memory.
- T: ADAS + emulation.
- X: Extended Feature device. These products contain the extended memory (EMEM) of the ADAS subsystem. The ADAS peripherals SPU and RIF are not available.
- M: MotionWise software.
- F: Extended Flash.
- G: Additional Connectivity.
- H: ADAS Standard feature.
- N: Standard feature with AMU.

Table of contents

About this document 1
Table of contents 2
1 TC3Ex AA step 3
2 Memory maps of TC3Ex variants 6
Revision history 8
Disclaimer 9

1 TC3Ex AA step

A table listing the TC3Ex AA step variants.

Table 1 TC3Ex AA step

SAK-TC3E7QX-192F300S	SAL-TC3E7QX-192F300S	SAK-TC3E7QG-160F300S	SAK-TC3E7QC-192F300S	SAK-TC3E7QF-192F300S	SAL-TC3E7QF-192F300S	SAL-TC3E7QG-160F300S
Step						
AA	AA	AA	AA	AA	AA	AA
Production Status						
Standard	Standard	Standard	Customer Specific	Standard	Standard	Standard
Package Type						
PG-LFBGA-292	PG-LFBGA-292	PG-LFBGA-292	PG-LFBGA-292	PG-LFBGA-292	PG-LFBGA-292	PG-LFBGA-292
Pinout						
LFBGA 0.8 mm	LFBGA 0.8 mm	LFBGA 0.8 mm	LFBGA 0.8 mm	LFBGA 0.8 mm	LFBGA 0.8 mm	LFBGA 0.8 mm
Reference Silicon						
TC3Ex	TC3Ex	TC3Ex	TC3Ex	TC3Ex	TC3Ex	TC3Ex
Temperature Range (Ambient)						
SAK	SAL	SAK	SAK	SAK	SAL	SAL
Chip ID ***Attention*: *The value of SCU_CHIPID in the UCODE field contains the default value 0 not the µCode version.***						
0xAD00E780	0xAD00E780	0xEC00E780	0xED00E780	0xED00E780	0xED00E780	0xEC00E780
Cores / Checker Cores						
4/2	4/2	4/2	4/2	4/2	4/2	4/2
Max. Freq. (MHz)						
300	300	300	300	300	300	300
Program Flash (MB)						
12	12	10	12	12	12	10
Data Flash0 (single-ended) (KB)						
1MB	1MB	512	1MB	1MB	1MB	512
Total SRAM (without EMEM and Cache) (KB)						
1504	1504	1504	1504	1504	1504	1504
EMEM Size (KB)						
0	0	0	0	0	0	0
DSPR (KB)						

1 TC3Ex AA step

Table 1 TC3Ex AA step (continued)

SAK-TC3E7QX-192F300S	SAL-TC3E7QX-192F300S	SAK-TC3E7QG-160F300S	SAK-TC3E7QC-192F300S	SAK-TC3E7QF-192F300S	SAL-TC3E7QF-192F300S	SAL-TC3E7QG-160F300S
240 in CPU0&1; 96 other	240 in CPU0&1; 96 other	240 in CPU0&1; 96 other	240 in CPU0&1; 96 other	240 in CPU0&1; 96 other	240 in CPU0&1; 96 other	240 in CPU0&1; 96 other
DLMU (KB)						
64 per CPU	64 per CPU	64 per CPU	64 per CPU	64 per CPU	64 per CPU	64 per CPU
PSPR (KB)						
64 per CPU	64 per CPU	64 per CPU	64 per CPU	64 per CPU	64 per CPU	64 per CPU
LMU (KB)						
256	256	256	256	256	256	256
DAM (KB)						
64	64	64	64	64	64	64
AMU[1)]						
No	No	No	No	No	No	No
ADC (Primary Groups/Channels)						
5/40	5/40	5/40	5/40	5/40	5/40	5/40
ADC (Secondary Groups/Channels)						
4/60	4/60	4/60	4/60	4/60	4/60	4/60
ADC (Fast Compare Channels)						
4	4	4	4	4	4	4
ADC (EDSADC Channels)						
6	6	6	6	6	6	6
CAN (Modules/Nodes)						
5/5x4	5/5x4	5/5x4	3/3x4	3/3x4	3/3x4	5/5x4
FlexRay (Modules/Channels)						
2/2x2	2/2x2	2/2x2	2/2x2	2/2x2	2/2x2	2/2x2
HSSL Modules						
1	1	1	1	1	1	1
ASCLIN Modules / with ASC & LIN / with 3-wire SPI						
24/24/11	24/24/11	24/24/11	24/24/11	24/24/11	24/24/11	24/24/11
QSPI Modules / with LVDS						
5/2	5/2	5/2	5/2	5/2	5/2	5/2

1 AMU is abbreviated as ASC Modeling Unit. For Additional details about AMU, Contact an Infineon Representative

1 TC3Ex AA step

Table 1 TC3Ex AA step (continued)

SAK-TC3E7QX-192F300S	SAL-TC3E7QX-192F300S	SAK-TC3E7QG-160F300S	SAK-TC3E7QC-192F300S	SAK-TC3E7QF-192F300S	SAL-TC3E7QF-192F300S	SAL-TC3E7QG-160F300S
SENT Channels						
20	20	20	20	20	20	20
MSC Modules						
2	2	2	2	2	2	2
PSI5 Channels						
4	4	4	4	4	4	4
PSI5-S Module						
Yes	Yes	Yes	Yes	Yes	Yes	Yes
SDMMC Module						
Yes	Yes	Yes	No	No	No	Yes
Max. Ethernet Availability: 1GBit/100Mbit/No						
1Gbit/s	1Gbit/s	1Gbit/s	1Gbit/s	1Gbit/s	1Gbit/s	1Gbit/s
MCDS Availability						
miniMCDS	miniMCDS	miniMCDS	miniMCDS	miniMCDS	miniMCDS	miniMCDS
ADAS Cluster Available						
No	No	No	No	No	No	No
CIF						
No	No	No	No	No	No	No
HSM Available						
Yes	Yes	Yes	Yes	Yes	Yes	Yes

2 Memory maps of TC3Ex variants

This section describes the influence of the available feature variants on the memory map.

Program flash

Variants:

- 12 MB: umbrella (4 x 3 MB), see User's Manual.
- 10 MB: reduced Flash variant (3 x 3 MB, 1x 1 MB), see Figure below.

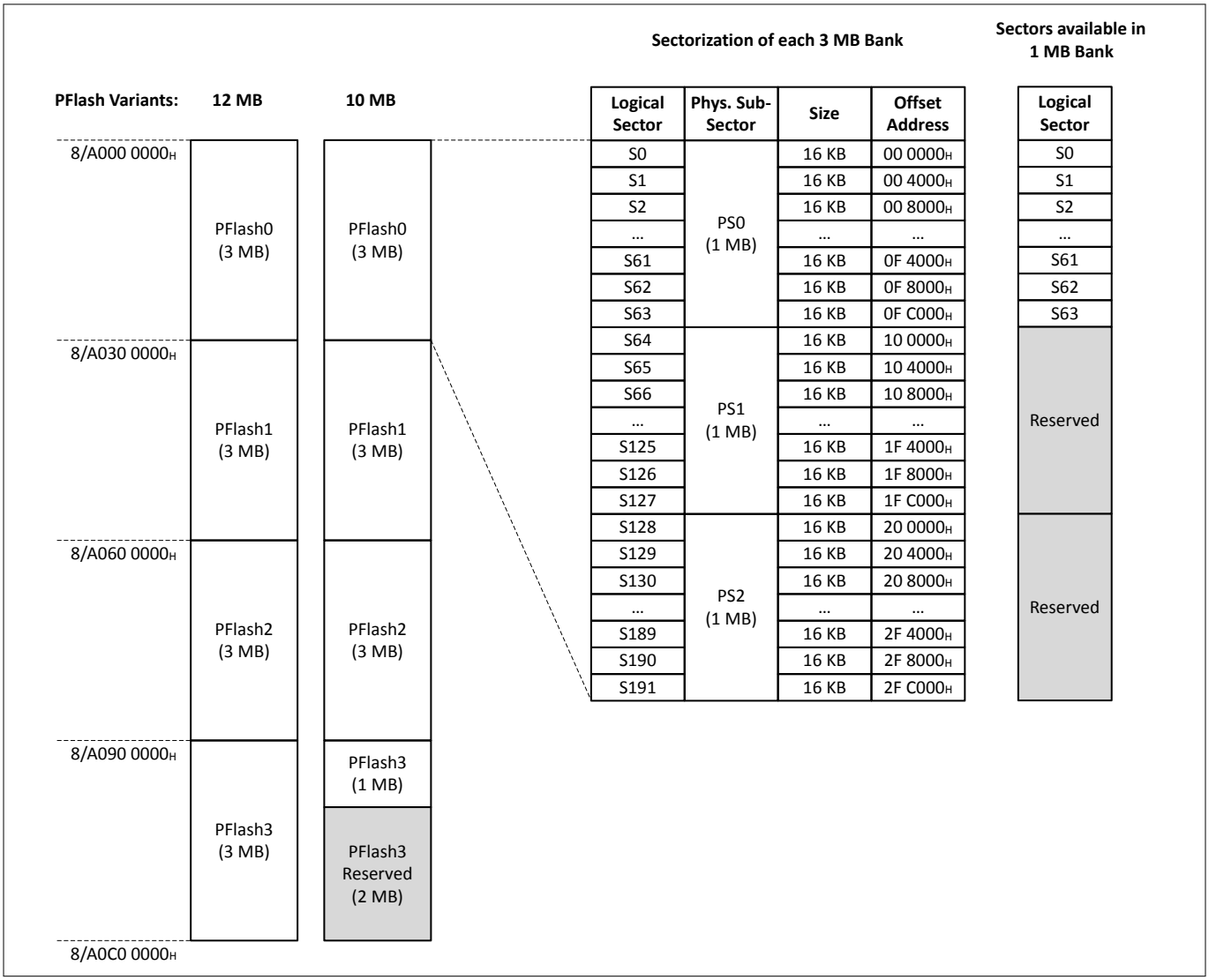


Figure 1 TC3Ex PFlash variants

Data flash

Variants:

- 1 MB: umbrella, see User's Manual.
- 512 KB: reduced flash variant (see Figure below).

2 Memory maps of TC3Ex variants

DFLASH0_EEPROM Variants: (Single Ended Mode)

1 MB

	Logical Sector	Size	Offset Address
AF00 0000H	EEPROM0	4 KB	00 0000H
	EEPROM1	4 KB	00 1000H
	EEPROM2	4 KB	00 2000H
	...	...	...
	EEPROM255	4 KB	0F F000H
AF10 0000H			

512 KB

	Logical Sector	Size	Offset Address
AF00 0000H	EEPROM0	4 KB	00 0000H
	EEPROM1	4 KB	00 1000H
	EEPROM2	4 KB	00 2000H
	...	...	...
	EEPROM127	4 KB	07 F000H
AF08 0000H	Reserved		
AF10 0000H			

Figure 2 TC3Ex DFlash variants

Revision history

Document version	Date of release	Description of changes
V1.0	2019-03-05	• First release.
V1.1	2019-06-03	• Chapter 1: Removed the Variant SAK-TC387QU0192F300S from the table. • Chapter 1: TC3Ex AA step variants table format changed to fit all the contents. • Chapter 1: Added new row in the variant tables called "AMU" with the footnote for additional details. • Chapter: About this document: Feature package definitions are updated to consistent with the product naming nomenclature definition.
V1.2	2019-08-29	• Chapter 1: Table 1,SAK-TC3E7QG-160F300S, SAK-TC3E7QC-192F300S , SAK-TC3E7QF-192F300S, SAL-TC3E7QF-192F300S Variant's ChipID values updated due to the change in the VART field.
V1.3	2020-01-10	• Chapter 1: Changes in the CAN Nodes available for SAK-TC3E7QC-192F300S , SAK-TC3E7QF-192F300S, SAL-TC3E7QF-192F300S • Page 1: About the document:Feature Package 'X' definition is updated to remove CIF. • Chapter 1:Added new row in the variant tables called "CIF" indicating the Camera Interface availability.
V1.4	2021-03-05	• Chapter 1: Added a new Variant SAL-TC3E7QG-160F300S.

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Edition 2021-03

Published by

Infineon Technologies AG

81726 Munich, Germany

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Do you have a question about any aspect of this document?

Email: erratum@infineon.com

Document reference
IFX-fyu1559119516510

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