

AURIX™ TC36x variants

About this document

Scope and purpose

This document is an addendum to the TC36x 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	TC36x AA step variants	3
1.1	TC36x AA step (part 1)	3
1.2	TC36x AA step (part 2)	6
1.3	TC36x AA step (part 3)	9
2	Memory maps of TC36x variants	12
	Revision history	13
	Disclaimer	14

1 TC36x AA step variants

1 TC36x AA step variants

1.1 TC36x AA step (part 1)

A table listing the TC36x AA step variants.

Table 1 TC36x_AA step (part 1)

SAK- TC365DP-64F 300W	SAK- TC364DP-64F 300W	SAK- TC367DP-64F 300S	SAL- TC367DP-64F 300S	SAL- TC365DP-64F 300W	SAK- TC365DP-64F 200W	SAK- TC367DP-48F 200S
Step						
AA	AA	AA	AA	AA	AA	AA
Production Status						
Standard	Standard	Standard	Standard	Standard	Customer Specific	Customer Specific
Package Type						
PG-QFP-176	PG-QFP-144	PG-LFBGA-292	PG-LFBGA-292	PG-QFP-176	PG-QFP-176	PG-LFBGA-292
Pinout						
LQFP 0.5 mm	LQFP 0.5 mm	LFBGA 0.8 mm	LFBGA 0.8 mm	LQFP 0.5 mm	LQFP 0.5 mm	LFBGA 0.8 mm
Reference Silicon						
TC36x	TC36x	TC36x	TC36x	TC36x	TC36x	TC36x
Temperature Range (Ambient)						
SAK	SAK	SAK	SAL	SAL	SAK	SAK
Chip ID						
Attention: The value of SCU_CHIPID in the UCODE field contains the default value 0 not the µCode version.						
0x87006580	0x87006480	0x87006780	0x87006780	0x87006580	0x87006580	0x86006780
Cores / Checker Cores						
2/2	2/2	2/2	2/2	2/2	2/2	2/2
Max. Freq. (MHz)						
300	300	300	300	300	200	200
Program Flash (MB)						
4	4	4	4	4	4	3
Data Flash0 (single-ended) (KB)						
128	128	128	128	128	128	128
Total SRAM (without EMEM and Cache) (KB)						
576	576	576	576	576	576	576
EMEM Size (KB)						
0	0	0	0	0	0	0

1 TC36x AA step variants

Table 1 TC36x_AA step (part 1) (continued)

SAK- TC365DP-64F 300W	SAK- TC364DP-64F 300W	SAK- TC367DP-64F 300S	SAL- TC367DP-64F 300S	SAL- TC365DP-64F 300W	SAK- TC365DP-64F 200W	SAK- TC367DP-48F 200S
DSPR (KB)						
192 per CPU	192 per CPU	192 per CPU	192 per CPU	192 per CPU	192 per CPU	192 per CPU
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)						
32 per CPU	32 per CPU	32 per CPU	32 per CPU	32 per CPU	32 per CPU	32 per CPU
LMU (KB)						
0	0	0	0	0	0	0
DAM (KB)						
0	0	0	0	0	0	0
AMU¹⁾						
No	No	No	No	No	No	No
ADC (Primary Groups/Channels)						
4/25	4/19	4/32	4/32	4/25	4/25	4/32
ADC (Secondary Groups/Channels)						
2/25	2/21	2/28	2/28	2/25	2/25	2/28
ADC (Fast Compare Channels)						
2	2	2	2	2	2	2
ADC (EDSADC Channels)						
4	4	4	4	4	4	4
CAN (Modules/Nodes)						
2/2x4	2/2x4	2/2x4	2/2x4	2/2x4	2/2x4	2/2x4
FlexRay (Modules/Channels)						
1/1x2	1/1x2	1/1x2	1/1x2	1/1x2	1/1x2	1/1x2
HSSL Modules						
1	1	1	1	1	1	1
ASCLIN Modules / with ASC & LIN / with 3-wire SPI						
12/12/10	12/12/8	12/12/10	12/12/10	12/12/10	12/12/10	12/12/10
QSPI Modules / with LVDS						
4/1	4/1	4/1	4/1	4/1	4/1	4/1

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

1 TC36x AA step variants

Table 1 TC36x_AA step (part 1) (continued)

SAK- TC365DP-64F 300W	SAK- TC364DP-64F 300W	SAK- TC367DP-64F 300S	SAL- TC367DP-64F 300S	SAL- TC365DP-64F 300W	SAK- TC365DP-64F 200W	SAK- TC367DP-48F 200S
SENT Channels						
10	10	10	10	10	10	10
MSC Modules						
1	1	1	1	1	1	1
PSI5 Channels						
2	2	2	2	2	2	2
PSI5-S Module						
Yes	Yes	Yes	Yes	Yes	Yes	Yes
SDMMC Module						
No	No	No	No	No	No	No
Max. Ethernet Availability: 1Gbit/100Mbit/No						
100Mbit/s (RMII)	100Mbit/s (RMII)	1Gbit/s	1Gbit/s	100Mbit/s (RMII)	100Mbit/s (RMII)	1Gbit/s
MCDS Availability						
No	No	No	No	No	No	No
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

1 TC36x AA step variants

1.2 TC36x AA step (part 2)

A continuation table listing the TC36x AA step variants.

Table 2 TC36x_AA step (part 2)

SAK- TC364DP-64F300F	SAL- TC364DP-64F300F	SAK- TC364DP-48F300F	SAK- TC364DP-48F200F	SAK- TC366DP-64F300S
Step				
AA	AA	AA	AA	AA
Production Status				
Standard	Standard	Customer Specific	Customer Specific	Standard
Package Type				
PG-QFP-144	PG-QFP-144	PG-QFP-144	PG-QFP-144	PG-LFBGA-180
Pinout				
TQFP 0.4 mm	TQFP 0.4 mm	TQFP 0.4 mm	TQFP 0.4 mm	LFBGA 0.8 mm
Reference Silicon				
TC36x	TC36x	TC36x	TC36x	TC36x
Temperature Range (Ambient)				
SAK	SAL	SAK	SAK	SAK
Chip ID				
Attention: The value of SCU_CHIPID in the UCODE field contains the default value 0 not the µCode version.				
0x87006480	0x87006480	0x86006480	0x86006480	0x87006680
Cores / Checker Cores				
2/2	2/2	2/2	2/2	2/2
Max. Freq. (MHz)				
300	300	300	200	300
Program Flash (MB)				
4	4	3	3	4
Data Flash0 (single-ended) (KB)				
128	128	128	128	128
Total SRAM (without EMEM and Cache) (KB)				
576	576	576	576	576
EMEM Size (KB)				
0	0	0	0	0
DSPR (KB)				
192 per CPU	192 per CPU	192 per CPU	192 per CPU	192 per CPU
DLMU (KB)				
64 per CPU	64 per CPU	64 per CPU	64 per CPU	64 per CPU

1 TC36x AA step variants

Table 2 TC36x_AA step (part 2) (continued)

SAK- TC364DP-64F300F	SAL- TC364DP-64F300F	SAK- TC364DP-48F300F	SAK- TC364DP-48F200F	SAK- TC366DP-64F300S
PSPR (KB)				
32 per CPU	32 per CPU	32 per CPU	32 per CPU	32 per CPU
LMU (KB)				
0	0	0	0	0
DAM (KB)				
0	0	0	0	0
AMU²⁾				
No	No	No	No	No
ADC (Primary Groups/Channels)				
4/16	4/16	4/16	4/16	4/19
ADC (Secondary Groups/Channels)				
2/21	2/21	2/21	2/21	2/18
ADC (Fast Compare Channels)				
2	2	2	2	2
ADC (EDSADC Channels)				
4	4	4	4	4
CAN (Modules/Nodes)				
2/2x4	2/2x4	2/2x4	2/2x4	2/2x4
FlexRay (Modules/Channels)				
1/1x2	1/1x2	1/1x2	1/1x2	1/1x2
HSSL Modules				
1	1	1	1	1
ASCLIN Modules / with ASC & LIN / with 3-wire SPI				
12/12/8	12/12/8	12/12/8	12/12/8	12/12/9
QSPI Modules / with LVDS				
4/1	4/1	4/1	4/1	4/1
SENT Channels				
10	10	10	10	10
MSC Modules				
1	1	1	1	1
PSI5 Channels				

² AMU is abbreviated as ASC Modeling Unit. For Additional details about AMU, Contact an Infineon Representative

1 TC36x AA step variants
Table 2 TC36x_AA step (part 2) (continued)

SAK- TC364DP-64F300F	SAL- TC364DP-64F300F	SAK- TC364DP-48F300F	SAK- TC364DP-48F200F	SAK- TC366DP-64F300S
2	2	2	2	2
PSI5-S Module				
Yes	Yes	Yes	Yes	Yes
SDMMC Module				
No	No	No	No	No
Max. Ethernet Availability: 1Gbit/100Mbit/No				
100Mbit/s (RMII)	100Mbit/s (RMII)	100Mbit/s (RMII)	100Mbit/s (RMII)	100Mbit/s (RMII)
MCDS Availability				
No	No	No	No	No
ADAS Cluster Available				
No	No	No	No	No
CIF				
No	No	No	No	No
HSM Available				
Yes	Yes	Yes	Yes	Yes

1 TC36x AA step variants

1.3 TC36x AA step (part 3)

A continuation table listing the TC36x AA step variants.

Table 3 TC36x_AA step (part 3)

	SAL-TC366DP-64F300S	SAK-TC367DP-48F300S
Step		
	AA	AA
Production Status		
	Standard	Customer Specific
Package Type		
	PG-LFBGA-180	PG-LFBGA-292
Pinout		
	LFBGA 0.8 mm	LFBGA 0.8 mm
Reference Silicon		
	TC36x	TC36x
Temperature Range (Ambient)		
	SAL	SAK
Chip ID		
Attention: The value of SCU_CHIPID in the UCODE field contains the default value 0 not the µCode version.		
	0x87006680	0x86006780
Cores / Checker Cores		
	2/2	2/2
Max. Freq. (MHz)		
	300	300
Program Flash (MB)		
	4	3
Data Flash0 (single-ended) (KB)		
	128	128
Total SRAM (without EMEM and Cache) (KB)		
	576	576
EMEM Size (KB)		
	0	0
DSPR (KB)		
	192 per CPU	192 per CPU
DLMU (KB)		
	64 per CPU	64 per CPU

1 TC36x AA step variants

Table 3 TC36x_AA step (part 3) (continued)

	SAL-TC366DP-64F300S	SAK-TC367DP-48F300S
PSPR (KB)		
	32 per CPU	32 per CPU
LMU (KB)		
	0	0
DAM (KB)		
	0	0
AMU³⁾		
	No	No
ADC (Primary Groups/Channels)		
	4/19	4/32
ADC (Secondary Groups/Channels)		
	2/18	2/28
ADC (Fast Compare Channels)		
	2	2
ADC (EDSADC Channels)		
	4	4
CAN (Modules/Nodes)		
	2/2x4	2/2x4
FlexRay (Modules/Channels)		
	1/1x2	1/1x2
HSSL Modules		
	1	1
ASCLIN Modules / with ASC & LIN / with 3-wire SPI		
	12/12/9	12/12/10
QSPI Modules / with LVDS		
	4/1	4/1
SENT Channels		
	10	10
MSC Modules		
	1	1
PSI5 Channels		
	2	2

³ AMU is abbreviated as ASC Modeling Unit. For Additional details about AMU, Contact an Infineon Representative

1 TC36x AA step variants
Table 3 TC36x_AA step (part 3) (continued)

	SAL-TC366DP-64F300S	SAK-TC367DP-48F300S
PSI5-S Module		
	Yes	Yes
SDMMC Module		
	No	No
Max. Ethernet Availability: 1Gbit/100Mbit/No		
	100Mbit/s (RMII)	1Gbit/s
MCDS Availability		
	No	No
ADAS Cluster Available		
	No	No
CIF		
	No	No
HSM Available		
	Yes	Yes

2 Memory maps of TC36x variants

2 Memory maps of TC36x variants

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

Program flash

Variants:

- 4 MB: umbrella (2 x 2 MB), see User's Manual.
- 3 MB: 2 + 1 MB (see Figure below).

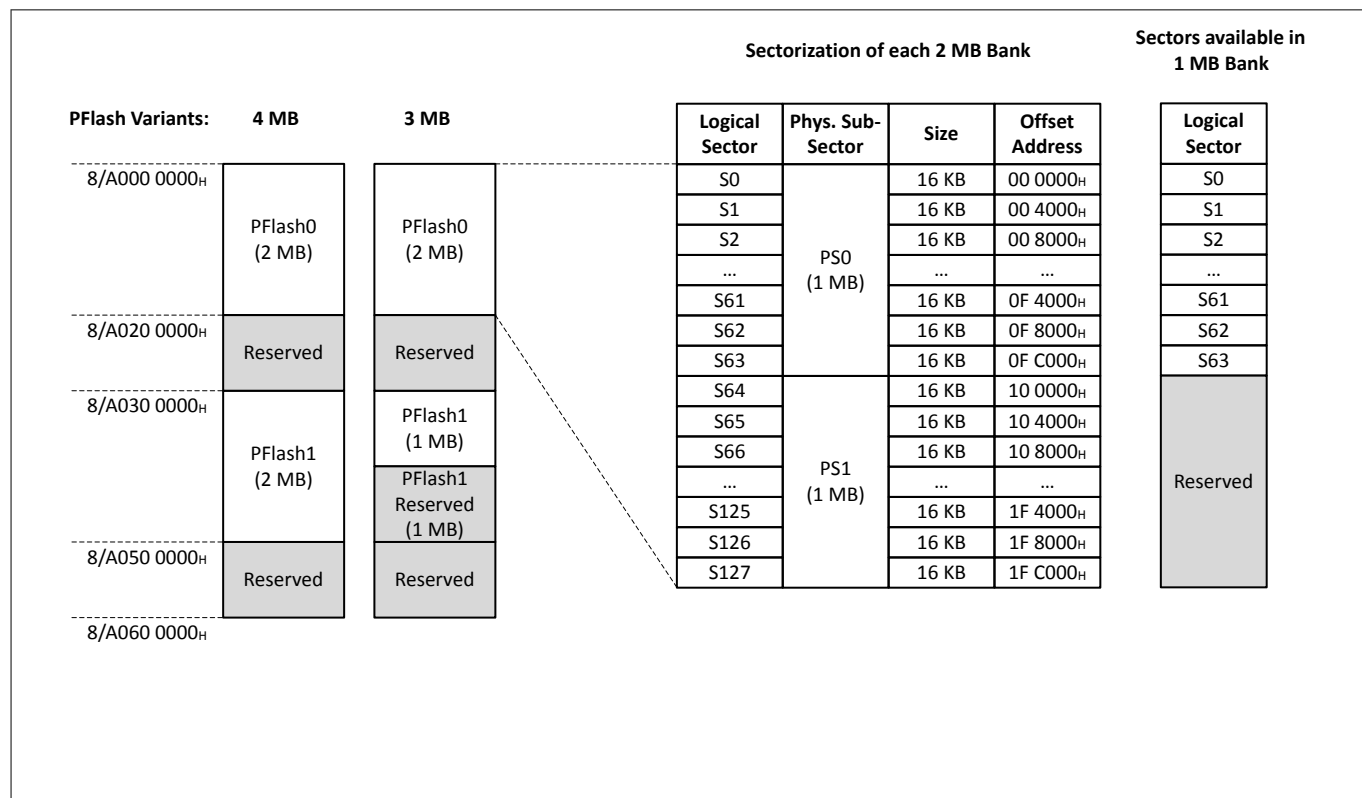


Figure 1 TC36x PFlash variants

Ethernet availability

- 1Gbit/s: umbrella for TC36x, see User's Manual.
- 100Mbit/s (RMII): due to pin limitations in this package the GETH module can be only used in RMII mode.

ADC availability

- Limitation on availability of ADC channels are caused by pin limitations. See Data Sheet for the pinning table of the package.

Revision history
Revision history

Document version	Date of release	Description of changes
V1.0	2019-03-01	First release.
V1.1	2019-06-13	- Added new Variants SAK-TC365DP-64F200W,SAK-TC365DP-64F200F, SAK-TC365DP-64F200S,SAK-TC365DP-64F200. - 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	2019-08-02	- For the Product Variants SAK-TC364DP-64F300F, SAL-TC364DP-64F300F , SAK-TC364DP-48F300F ,SAK-TC364DP-48F200F - Number of ADC (Secondary Groups/ Channels) were corrected from 2/24 to 2/21. - For the Product Variants SAK-TC366DP-64F300S , SAL-TC366DP-64F300S - Number of ADC (Secondary Groups/ Channels) were corrected from 2/21 to 2/18.
V1.3	2020-01-10	- Chapter 1: Updated the "Production status" for SAK-TC367DP-48F300S, SAK-TC364DP-48F300F to "Customer Specific". - Page 1: About the document:Feature Package 'X' definition is updated to remove CIF. - Chapter 1 and 2:Added new row in the variant tables called "CIF" indicating the Camera Interface availability.
V1.4	2020-11-18	Chapter 1: Removed Bare Die Marking variants SAL-TC360DP-64F300, SAL-TC360DP-64F200.

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Edition 2020-11

Published by
Infineon Technologies AG
81726 Munich, Germany

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Document reference
IFX-cxy1559114683516

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