AURIX™ TC37x variants

About this document

Scope and purpose

This document is an addendum to the TC37x 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). Refer to the Emulation devices Data Sheet for further details.
- C,I,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.

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1 TC37x AA step variants

1.1 TC37x AA step (part 1)

A table listing the TC37x AA step variants.

Table 1 TC37x AA step (part 1)

SAL-TC370TP-96F300	SAL-TC377TP-96F300S	SAL-TC375TP-96F300W	SAK-TC377TP-96F300S	SAK-TC375TP-96F300W	SAK-TC377DP-96F300S	SAL-TC377DP-96F300S
Step						
AA	AA	AA	AA	AA	AA	AA
Production Status						
Standard	Standard	Standard	Standard	Standard	Customer Specific	Customer Specific
Package Type						
Bare Die	PG-LFBGA-292	PG-QFP-176	PG-LFBGA-292	PG-QFP-176	PG-LFBGA-292	PG-LFBGA-292
Pinout						
BD	LFBGA 0.8 mm	LQFP 0.5 mm	LFBGA 0.8 mm	LQFP 0.5 mm	LFBGA 0.8 mm	LFBGA 0.8 mm
Reference Silicon						
TC37x	TC37x	TC37x	TC37x	TC37x	TC37x	TC37x
Temperature Range (Ambient)						
SAL	SAL	SAL	SAK	SAK	SAK	SAL
Chip ID ***Attention*: *The value of SCU_CHIPID in the UCODE field contains the default value 0 not the µCode version.***						
0x89007080	0x89007780	0x89007580	0x89007780	0x89007580	0xC9007780	0xC9007780
Cores / Checker Cores						
3/2	3/2	3/2	3/2	3/2	2/2	2/2
Max. Freq. (MHz)						
300	300	300	300	300	300	300
Program Flash (MB)						
6	6	6	6	6	6	6
Data Flash0 (single-ended) (KB)						
256	256	256	256	256	256	256
Total SRAM (without EMEM and Cache) (KB)						
992	992	992	992	992	768	768
EMEM Size (KB)						
0	0	0	0	0	0	0

1 TC37x AA step variants

Table 1 TC37x AA step (part 1) (continued)

SAL-TC370TP-96F300	SAL-TC377TP-96F300S	SAL-TC375TP-96F300W	SAK-TC377TP-96F300S	SAK-TC375TP-96F300W	SAK-TC377DP-96F300S	SAL-TC377DP-96F300S
DSPR (KB)						
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	240 in CPU0&1
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	64	64	64	64	64	64
LMU (KB)						
0	0	0	0	0	0	0
DAM (KB)						
32	32	32	32	32	32	32
AMU[1)]						
No	No	No	No	No	No	No
ADC (Primary Groups/Channels)						
4/32	4/32	4/25	4/32	4/25	4/32	4/32
ADC (Secondary Groups/Channels)						
4/60	4/60	4/45	4/60	4/45	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)						
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						
12/12/11	12/12/11	12/12/10	12/12/11	12/12/10	12/12/11	12/12/11
QSPI Modules / with LVDS						

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

1 TC37x AA step variants

Table 1 TC37x AA step (part 1) (continued)

SAL-TC370TP-96F300	SAL-TC377TP-96F300S	SAL-TC375TP-96F300W	SAK-TC377TP-96F300S	SAK-TC375TP-96F300W	SAK-TC377DP-96F300S	SAL-TC377DP-96F300S
5/2	5/2	5/2	5/2	5/2	5/2	5/2
SENT Channels						
15	15	15	15	15	15	15
MSC Modules						
2	2	2	2	2	2	2
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						
1Gbit/s	1Gbit/s	100Mbit/s (RMII)	1Gbit/s	100Mbit/s (RMII)	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

1.2 TC37x AA step (part 2)

A continuation table listing the TC37x AA step variants.

Table 2 TC37x AA step (part 2)

SAK-TC375DP-96F300W	SAL-TC375DP-96F300W	SAK-TC375TI-96F300W	SAL-TC375TI-96F300W
Step			
AA	AA	AA	AA
Production Status			
Customer Specific	Customer Specific	Customer Specific	Customer Specific
Package Type			
PG-QFP-176	PG-QFP-176	PG-QFP-176	PG-QFP-176
Pinout			
LQFP 0.5 mm	LQFP 0.5 mm	LQFP 0.5 mm	LQFP 0.5 mm
Reference Silicon			
TC37x	TC37x	TC37x	TC37x
Temperature Range (Ambient)			
SAK	SAL	SAK	SAL
Chip ID ***Attention:*** ***The value of SCU_CHIPID in the UCODE field contains the default value 0 not the µCode version.***			
0x89007580	0x89007580	0xE9007580	0xE9007580
Cores / Checker Cores			
2/2	2/2	3/2	3/2
Max. Freq. (MHz)			
300	300	300	300
Program Flash (MB)			
6	6	6	6
Data Flash0 (single-ended) (KB)			
256	256	256	256
Total SRAM (without EMEM and Cache) (KB)			
768	768	992	992
EMEM Size (KB)			
0	0	0	0
DSPR (KB)			
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

1 TC37x AA step variants

Table 2 TC37x AA step (part 2) (continued)

SAK-TC375DP-96F300W	SAL-TC375DP-96F300W	SAK-TC375TI-96F300W	SAL-TC375TI-96F300W
PSPR (KB)			
64 per CPU	64 per CPU	64 per CPU	64 per CPU
LMU (KB)			
0	0	0	0
DAM (KB)			
32	32	32	32
AMU[2)]			
No	No	No	No
ADC (Primary Groups/Channels)			
4/25	4/25	4/25	4/25
ADC (Secondary Groups/Channels)			
4/45	4/45	4/45	4/45
ADC (Fast Compare Channels)			
4	4	4	4
ADC (EDSADC Channels)			
6	6	6	6
CAN (Modules/Nodes)			
2/2x4	2/2x4	2/2x4	2/2x4
FlexRay (Modules/Channels)			
1/1x2	1/1x2	1/1x2	1/1x2
HSSL Modules			
1	1	1	1
ASCLIN Modules / with ASC & LIN / with 3-wire SPI			
12/12/10	12/12/10	12/12/10	12/12/10
QSPI Modules / with LVDS			
5/2	5/2	5/2	5/2
SENT Channels			
15	15	15	15
MSC Modules			
2	2	2	2
PSI5 Channels			
2	2	2	2

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

1 TC37x AA step variants

Table 2 TC37x AA step (part 2) (continued)

SAK-TC375DP-96F300W	SAL-TC375DP-96F300W	SAK-TC375TI-96F300W	SAL-TC375TI-96F300W
PSI5-S Module			
Yes	Yes	Yes	Yes
SDMMC Module			
No	No	No	No
Max. Ethernet Availability: 1GBit/100Mbit/No			
100Mbit/s (RMII)	100Mbit/s (RMII)	100Mbit/s (RMII)	100Mbit/s (RMII)
MCDS Availability			
miniMCDS	miniMCDS	miniMCDS	miniMCDS
ADAS Cluster Available			
No	No	No	No
CIF			
No	No	No	No
HSM Available			
Yes	Yes	Yes	Yes

2 Memory maps of TC37x variants

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

Cores / checker cores

Variants:

- 3/2: umbrella, see User's Manual.
- 2/2: reduced CPU variant, not available is CPU2 including its RAMs (DSPR, DCACHE, DTAG, PSPR, PCACHE, PTAG, DLMU).

HSM

Variants:

- Yes: umbrella, see User's Manual.
- No: HSM and DF1 are not available.

Ethernet availability

- 1Gbit/s: umbrella, 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

Document version	Date of release	Description of changes
V1.0	2019-02-05	• First release.
V1.1	2019-03-01	• Removed devices: SAK-TC377T-96F300S and SAK-TC375T-96F300W. • Added devices: SAK-TC377DP-96F300S and SAL-TC377DP-96F300S.
V1.2	2019-06-12	• Chapter 1: TC37x 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.
V1.3	2020-01-10	• Chapter 1: New TC37x AA step variants added: SAK-TC375DP-96F300W,SAL-TC375DP-96F300W . • 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	2020-04-30	• Chapter 1: New TC37x AA step variants added: SAK-TC375TI-96F300W,SAL-TC375TI-96F300W . • About this document section: Added an additional note for the Feature package 'E'.

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