AURIX™ TC37x Variants

About this document

Scope and purpose

This document is an addendum to the TC37x Data Sheets 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 Silicon. This document counts functions pinning dependent, i.e. functions are counted that are connected at least to one package pin. As pins are overloaded with several functions the pinning (see Data Sheet) needs to be consulted to determine the number of functions usable 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 type with HSM enabled. Not containing the ADAS subsystem.
- - (without second letter): Standard type (like P) but without HSM.
- Z: Standard type with special feature reductions (see table or direct customer agreement).
- A: ADAS device with HSM enabled.
- T: ADAS device with HSM and AGBT.
- B, C, H: ADAS device with special feature reductions (see table or direct customer agreement).
- X: Feature Extension device. These products contain the extended memory (EMEM) of the ADAS subsystem. The ADAS peripherals SPU, RIF and CIF are not available. HSM is enabled.
- R: exceptional marking.

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1 Variants of TC37x

Variants of TC37x and their memory map impact.

1.1 Variant Tables of TC37x

The following tables list the TC37x variants

Attention: ***The value of SCU_CHIPID shown in row "Chip ID" contains for the field UCODE the default value 0 not the real µCode version.***

Table 1 TC37x AA Step

Product Name	SAL-TC370TP-96F300	SAL-TC377TP-96F300S	SAL-TC375TP-96F300W	SAK-TC377TP-96F300S	SAK-TC375TP-96F300W	SAK-TC377T-96F300S	SAK-TC375T-96F300W
Step	AA	AA	AA	AA	AA	AA	AA
Production Status	on request	on request	on request	STANDARD	STANDARD	on request	on request
Package Type	Bare Die	PG-LFBGA-292	PG-QFP-176	PG-LFBGA-292	PG-QFP-176	PG-LFBGA-292	PG-QFP-176
Pinout	BD	LFBGA 0.8 mm	LQFP 0.5 mm	LFBGA 0.8 mm	LQFP 0.5 mm	LFBGA 0.8 mm	LQFP 0.5 mm
Reference Silicon	TC37x	TC37x	TC37x	TC37x	TC37x	TC37x	TC37x
Temperature Range (Ambient)	-40°C up to +170°C	-40°C up to +150°C	-40°C up to +150°C	-40°C up to +125°C	-40°C up to +125°C	-40°C up to +125°C	-40°C up to +125°C
Chip ID	0x89007080	0x89007780	0x89007580	0x89007780	0x89007580	0x9007780	0x9007580
Cores / Checker Cores	3/2	3/2	3/2	3/2	3/2	3/2	3/2
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) (KB)	992	992	992	992	992	992	992
EMEM Size (KB)	0	0	0	0	0	0	0

Variants of TC37x

Table 1 TC37x AA Step (continued)

Product Name	SAL-TC370TP-96F300	SAL-TC377TP-96F300S	SAL-TC375TP-96F300W	SAK-TC377TP-96F300S	SAK-TC375TP-96F300W	SAK-TC377T-96F300S	SAK-TC375T-96F300W
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; 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	64	64	64	64	64	64
LMU (KB)	0	0	0	0	0	0	0
DAM (KB)	32	32	32	32	32	32	32
ADC (Primary Groups/ Channels)	4/32	4/32	4/25	4/32	4/25	4/32	4/25
ADC (Secondary Groups/ Channels)	4/60	4/60	4/45	4/60	4/45	4/60	4/45
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	12/12/10
QSPI Modules / with LVDS	5/2	5/2	5/2	5/2	5/2	5/2	5/2
SENT Channels	15	15	15	15	15	15	15

Variants of TC37x

Table 1 TC37x AA Step (continued)

Product Name	SAL-TC370TP-96F300	SAL-TC377TP-96F300S	SAL-TC375TP-96F300W	SAK-TC377TP-96F300S	SAK-TC375TP-96F300W	SAK-TC377T-96F300S	SAK-TC375T-96F300W
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	100Mbit/s (RMII)
MCDS Availability	miniMCDS	miniMCDS	miniMCDS	miniMCDS	miniMCDS	miniMCDS	miniMCDS
ADAS Cluster Available	No	No	No	No	No	No	No
HSM Available	Yes	Yes	Yes	Yes	Yes	No	No

Table 2 TC37xEXT AA Step

Product Name	SAK-TC377TX-96F300S
Step	AA
Production Status	on request
Package Type	PG-LFBGA-292
Pinout	TX
Reference Silicon	TC37xEXT
Temperature Range (Ambient)	-40°C up to +125°C
Chip ID	0xA9017780
Cores / Checker Cores	3/3
Max. Freq. (MHz)	300
Program Flash (MB)	6
Data Flash0 (single-ended) (KB)	256
Total SRAM (without EMEM) (KB)	992
EMEM Size (KB)	3072

Variants of TC37x

Table 2 TC37xEXT AA Step (continued)

Product Name	SAK-TC377TX-96F300S
DSPR (KB)	240 in CPU0&1; 96 other
DLMU (KB)	64 per CPU
PSPR (KB)	64
LMU (KB)	0
DAM (KB)	32
ADC (Primary Groups/Channels)	4/32
ADC (Secondary Groups/Channels)	4/60
ADC (Fast Compare Channels)	4
ADC (EDSADC Channels)	6
CAN (Modules/Nodes)	3/3x4
FlexRay (Modules/Channels)	1/1x2
HSSL Modules	1
ASCLIN Modules / with ASC & LIN / with 3-wire SPI	12/12/11
QSPI Modules / with LVDS	5/2
SENT Channels	15
MSC Modules	2
PSI5 Channels	2
PSI5-S Module	Yes
SDMMC Module	Yes
Max. Ethernet Availability: 1GBit/100Mbit/No	2x1Gbit/s
MCDS Availability	MCDS
ADAS Cluster Available	No
HSM Available	Yes

1.2 Memory Maps of TC37x Variants

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

Cores / Checker Cores

Variants:

- 3/3: umbrella for TC37xEXT, see User's Manual
- 3/2: umbrella for TC37x, see User's Manual. CPU2 lockstep is not available (LCLCON0.LSEN2 must stay 0_B).

HSM

Variants:

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

Variants of TC37x

CAN

Variants:

- 3/3x4: umbrella for TC37xEXT, see User's Manual.
- 2/2x4: umbrella for TC37x, see User's Manual. Instance CAN2 is not available.

EMEM Availabity

Variants:

- 3072 KB: umbrella for TC37xEXT, see User's Manual.
- 0 KB: umbrella for TC37x, see User's Manual. No EMEM available.

Ethernet Availability

- 1Gbit/s: umbrella for TC37x, see User's Manual.
- 2x1Gbit/s: umbrella for TC37xEXT (only in listed packages with special pinout "TX").
- 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	2018-08-06	• First release.

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