

TINY-Tiger® 2 plus - Data Sheet

TINY-Tiger® 2 plus

Generation 3

Tiny, high speed multitasking computers in the size of a component. Tiny-Tiger® 2 plus are universal, full featured control computers used in numerous projects and series products as:

- medical equipment
- GPS systems
- communication equipment
- industrial control
- alarm systems
- vending machines
- container tracking
- power plants ... and many more

New: Pico-series
Highly compatible
to Tiny-Tiger



Tiny-Tiger® 2 plus offers

- short development cycles
- highest product reliability
- low cost
- innovative features

For further information, detailed literature and manuals in printed or downloadable formats visit:

<https://www.wilke.de/>

or

<https://www.wilke.de/en.html>

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Electrical Specifications

- Operating voltage: a) VCC2=5V (integrated regulator to 3.3V) to pin 44a
abs. max. rating +5.5V
b) Alternatively VCC1=3.3V to pin 22b 3.5Vmax
- Typ. power draw: max. 300 mA (for power supply layout incl. external load on module pins)

	Syntax/Pseudo code	Speed	Typ. power consumption*)		
			Tiger 1	Tiger 2	Tiger plus
Default ▶	USER_FREQUENCY SPEED_25	25%	36 mA	82 mA	44 mA
	USER_FREQUENCY SPEED_50	50%			74 mA
	USER_FREQUENCY SPEED_100	100%			135 mA

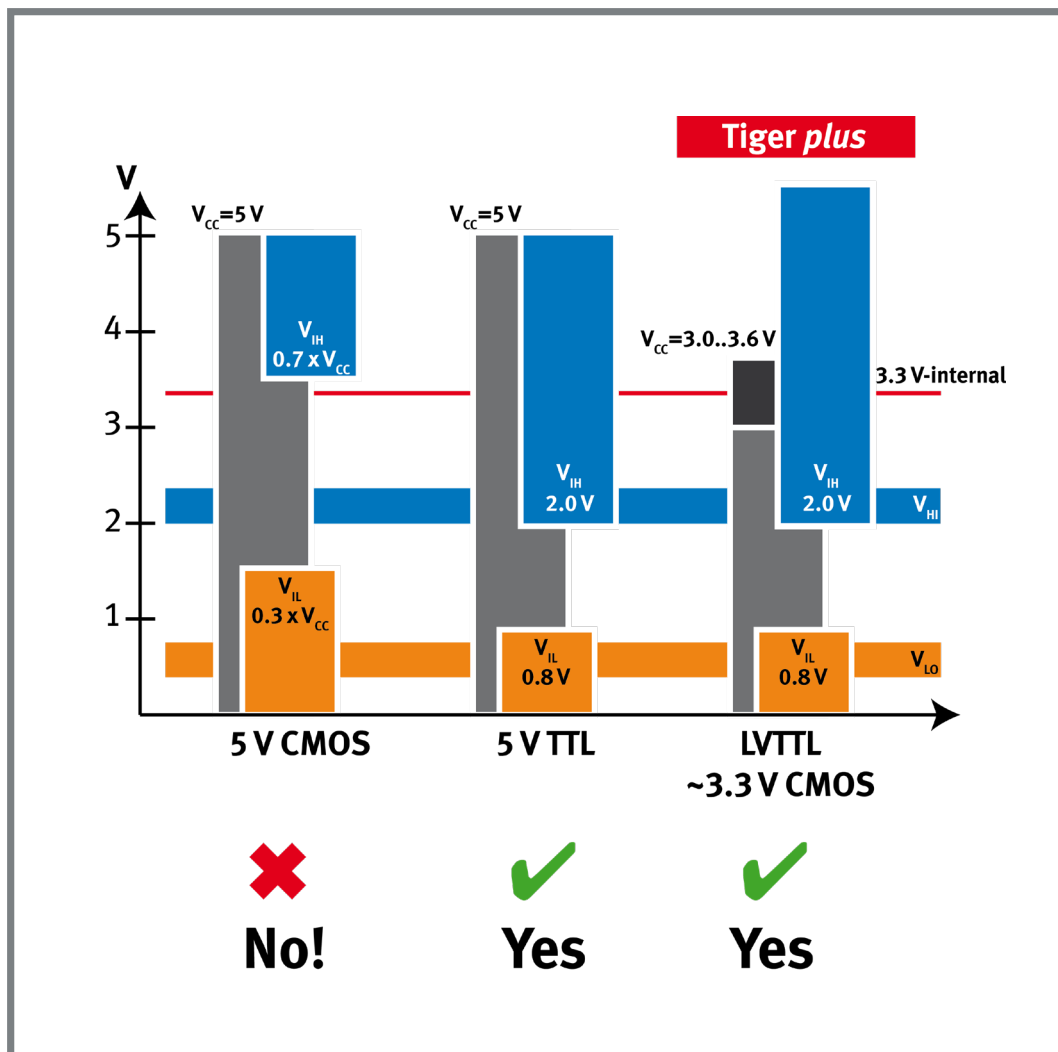
*)with no external load.

Depends on application from 50 to 200 mA

- Absolut maximum ratings:
 - Max. sink capability: -5 mA per pin (5.0V tolerant output)
-3 mA @ Alarm pin
 - Max. sink over all pins: -25 mA (5.0V tolerant output)
 - Max. source/sink capability: ±25mA per pin (3.3V output)
 - Max. source/sink over all pins: ±125 mA (3.3V output)
-0.3V to + 5.5V in I/O mode
-3 mA @ Alarm pin
 - Max. voltage: -0.3V to +5.5V in I/O mode
 - Pin 37a-40a, 39b-42b, 1b-4b used as Analog-IN: -0.3V..5.5V
 - Analog Reference: +3.3V..5.5V
 - RTC-Sleep: 1-2µA typ.
 - RAM-Sleep: 200-500µA

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Electrical Specifications



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Electrical Specifications

- Impedance digital Inputs:

Pull-up resistor:	40 kΩ typ. all I/Os except L72 10 kΩ typ. L72
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- Digital Inputs:

Input voltage „high“:	2.0V _{min}
Input voltage „low“:	0.8V _{max}

- Analog:

Inputs:	12 channels
Vref Input:	3.5V .. 5.0V
Impedance inputs:	40 kΩ typ.
Input Range:	0 .. 5V (abs. max. = -0.3 .. 5.5V)
Input resolution:	to be selected by the according device driver 12 bit 10 bit 8 bit
Input accuracy:	typ. ± 2 LSB, ± V _{CC1} accuracy
Sampling rate:	up to ~160 kS/sec

USER_FREQUENCY SPEED_25	80 kS/sec. max
USER_FREQUENCY SPEED_50	80 kS/sec. max
USER_FREQUENCY SPEED_100	160 kS/sec. max

depending on Device Driver used
 Sampling buffer: up to 2 MB

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Electrical Specifications

- Serial channels: 2 UART channels:
 - CH-0: Rx/D, Tx/D, CTS, [RTS]
Baudrates: up to 614 400 Bd
Data/Parity: 7E, 7O, 8N, 8E, 8O, 9N
 - CH-1: as above, Rx/D and Tx/D lines
 - Level systems: 3.3V TTL level, 5V tolerant
 - Variable buffer-size: Up to 8 KB

- Serial channels (soft UARTs): Up to 8 additional serial I/O channels through software driver SER2_pp_xx.TD3.
 Selectable PIN functions:

RxD	RTS, CTS
TxD	TE (RS 485)
RxD + TxD	

- System timebase accuracy:
 - ± 50 ppm base tolerance,
 - ± 30 ppm over temp. range -20 °C to +70 °C add.drift.
 - ± 5 ppm per year max. aging

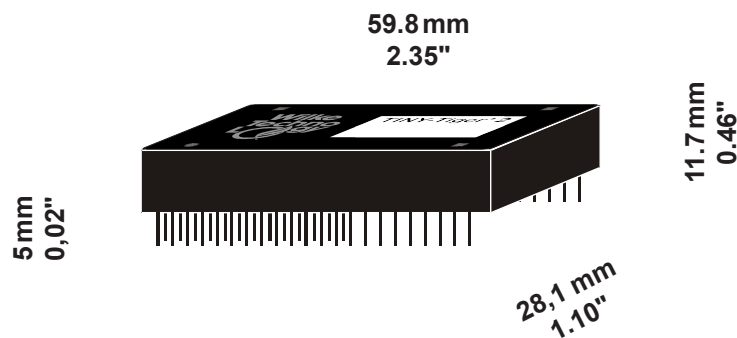
- Reset: Reset input: LOW-active, internal pull-up R = 10 kΩ typ.

- I/O pins: 36 universal I/O-pins

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Physical Specifications

- Dimensions: approx. 28.1 x 59.8 x 10.7 mm / 1.11 x 2.35 x 0.42"
46-pin DIP type case
- Case type pin to pin clearance 2.54 mm / 0.10", row distance 22.86 mm / 0.9"
- Pin size square pins 0.64 x 0.64 mm / 0.025 x 0.025"
- Case Dimensions:



Dimensions identical with Tiny-Tiger® 2 moduls of Generation 1 Product

- Weight: approx. 28 g / 1 ounces
- Operating temperature: -40 to 70°C
Expanded: expanded temperature ranges on request
- Memory:
- Flash erase cycles: Min. 10.000 cycles, typ. ~ 500.000
- Flash data retention: > 10 years
- Flash sector size: 64 kB

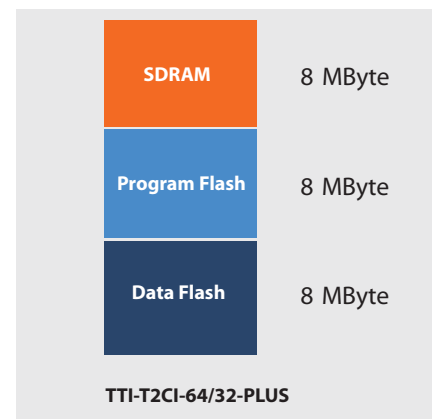
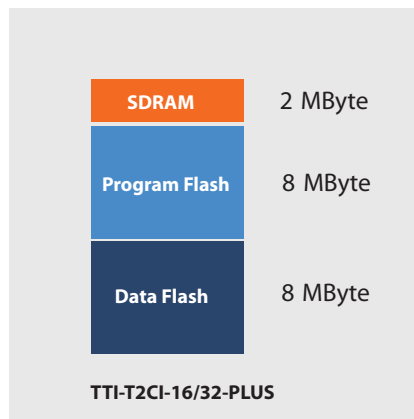
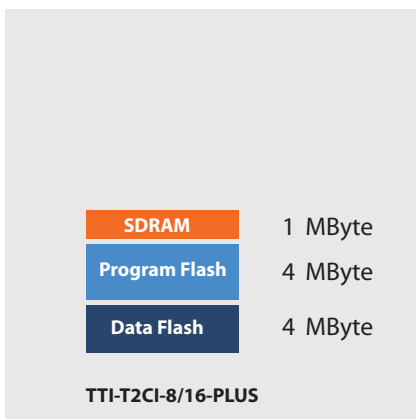
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Physical Specifications

Memory constellation overview for TINY-Tiger 2 plus module types

T2CI-series

TINY-Tiger 2 Pico



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Physical Specifications

Memory constellation overview for TINY-Tiger 2 Pico module types

T2CI-series

TINY-Tiger 2 Pico

SDRAM	64 kByte
Program Flash	512 kByte
Data Flash	512 kByte

TINY-TIGER2-PICO

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Cross References/Order Codes

Previous TINY-Tiger2 Modules

NEW TINY-Tiger2 Modules

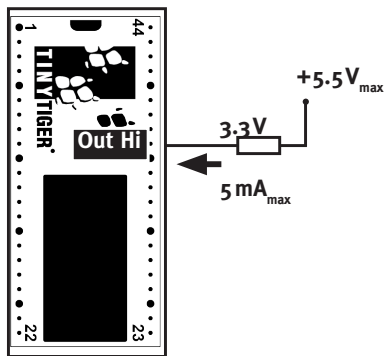
TINY-Tiger 2			TINY-Tiger 2 <i>plus</i>			
Product Code	RAM	FLASH	Product-Code	RAM	Program Flash	Data Flash
TTI-T2CI-8/16-R	1 MByte	2 MByte	TTI-T2CI-8/16-PLUS	1 MByte	4 MByte	4 MByte
TTI-T2CI-16/32-R	2 MByte	4 MByte	TTI-T2CI-16/32-PLUS	2 MByte	8 MByte	8 MByte
New Module →			TTI-T2CI-64/32-PLUS	8 MByte	8 MByte	8 MByte
New Pico Module →			TINY-TIGER2-PICO	64 kByte	512 kByte	512 kByte

Note: *plus* Series products offer and use more firmware resources, so at least use the recommended replacement type or larger part.
10+ years delivery guarantee.

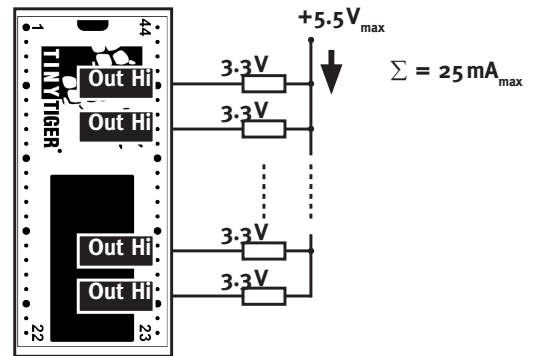
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5 Volt I/O-Tolerance Conditions

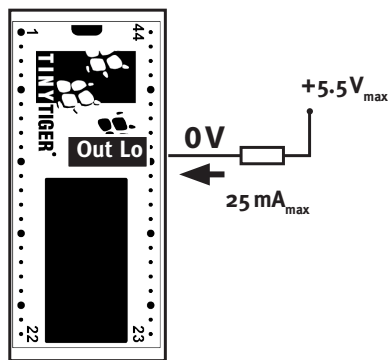
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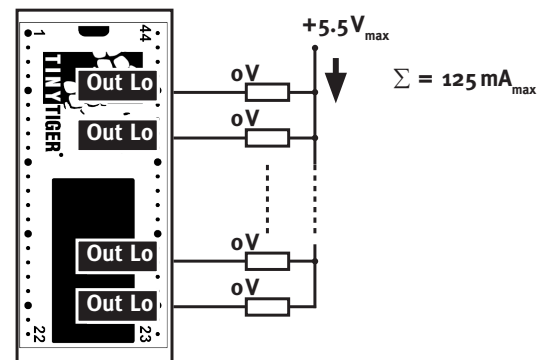
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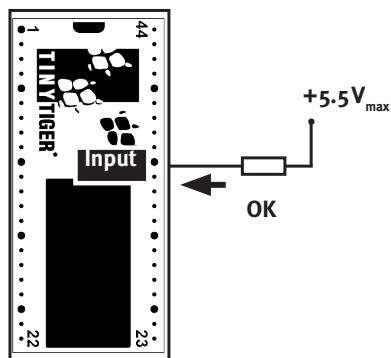
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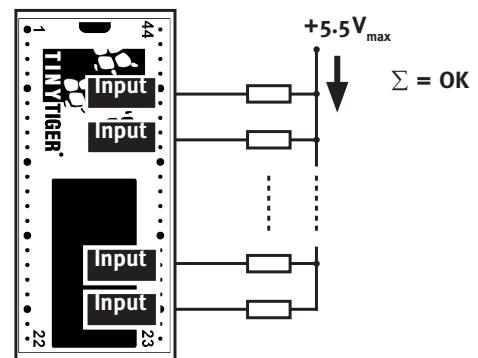
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$V_{CC1} = +3.3V$ OR $V_{CC2} = +5.0V$



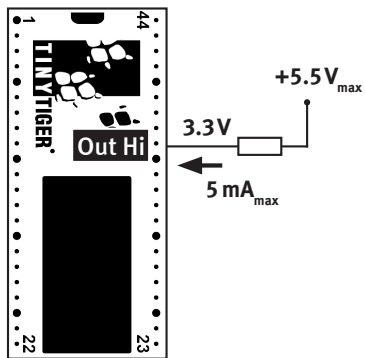
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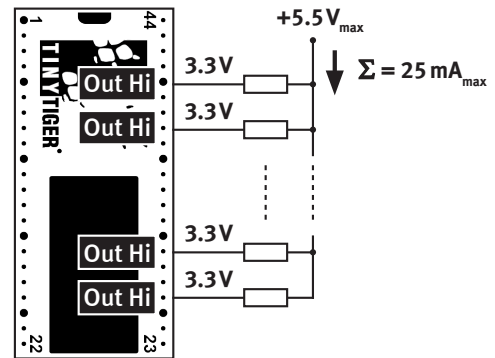
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3.3 Volt I/O Conditions

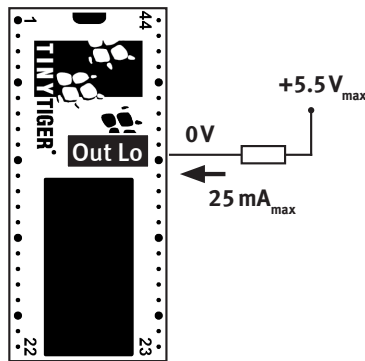
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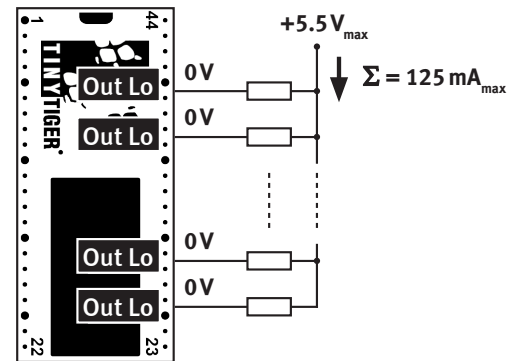
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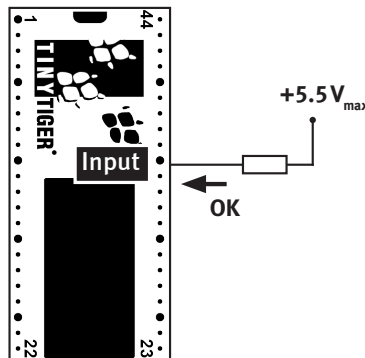
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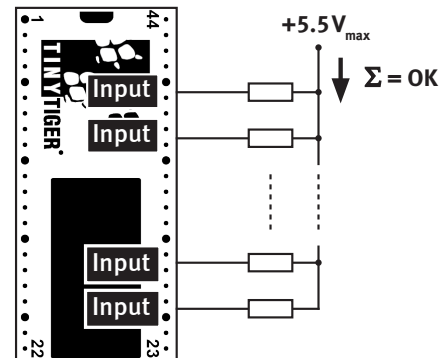
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$V_{CC1} = +3.3V$ OR $V_{CC2} = +5.0V$



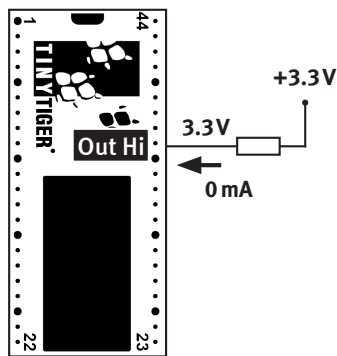
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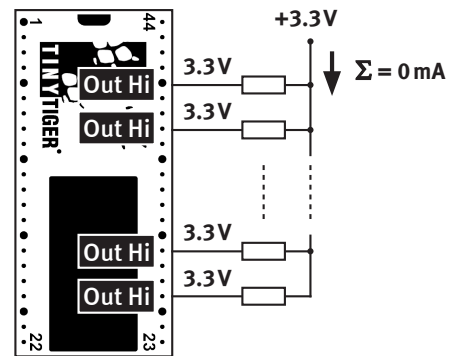
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I/O Conditions to GND

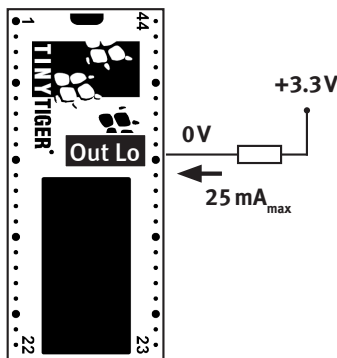
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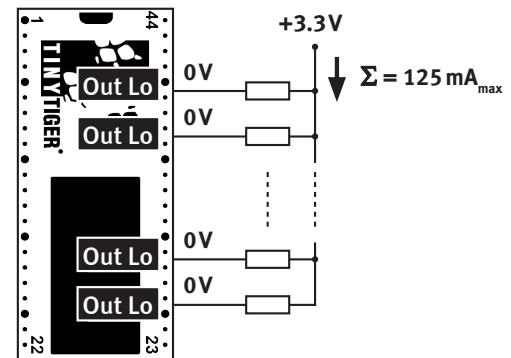
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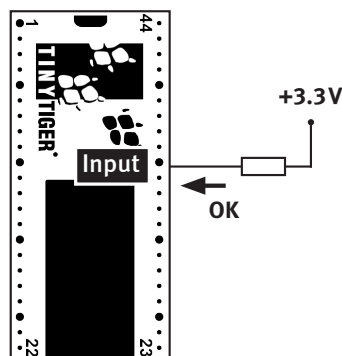
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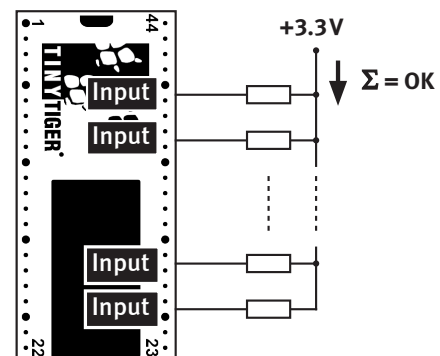
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Document Version History

V01	Electrical and physical specifications	November 3, 2015
V02	New electrical specifications	February 23, 2016
V03	Cross references	March 24, 2016
V04	Preliminary Data-Sheet	February 17, 2017
V05	First official release	September 20, 2017
V06	Small Corrections and Design	October 27, 2017
V07	Design Corrections	November 09, 2017
V09	Corrections	August 13, 2018
V10	Physical Specifications: Flash sector size, Cross References/Order Codes	November 23, 2018
V11	Physical Specifications: Pico-series	April 18, 2019

Notes:

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