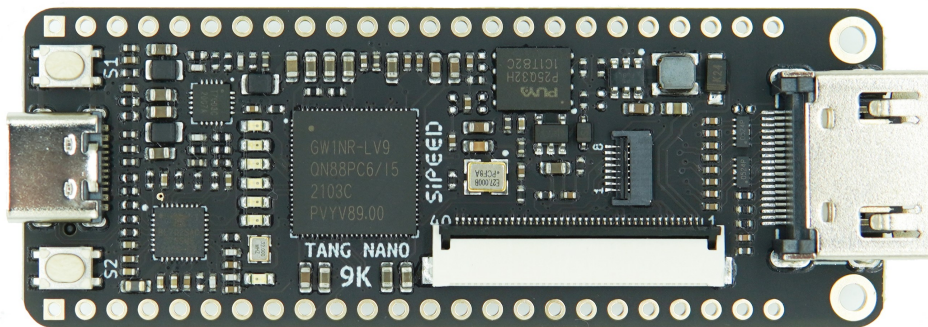# Sipeed Tang Nano 9K

Datasheet v1.0

Characteristic：

- FPGA chip : GW1NR-9 with 8640 LUT4 logical units
- Onboard USB to JTAG&UART debugger
- Onboard screen connector
- Onboard RGB screen connector
- Onboard 1.14 inch SPI screen connector
- Onboard 32M-bit SPI FLASH

Update record of this document	
V1.0	Edited on December 23, 2021; Original document

| Hardware overview	
LUT4	8640
Flip-Flop (FF)	6480
Shadow SRAM SSRAM(bits)	17280
Block SRAM BSRAM	468K
BSRAM quantity BSRAM	26
User Flash(bits)	608K
PSRAM(bits)	64M
High performance DSP	Support 9x9,18x18,36x36bits multiplier and 54bits accumulator
18 x 18 Multiplier	20
SPI FLASH	32M-bit
PLLs	2
Display interface	Screen connector, RGB interface connector, SPI interface connector
Debugger	Onboard BL702, which provides USB-JTAG and USB-UART for GW1NR-9
IO	• Support 4mA, 8mA, 16mA, 24mA and other driving capabilities • Independent bus keeper, pull-up / pull-down resistor and open drain output options are provided for each I/O
Connector	TF card slot ; 2x24P 2.54mm IO pad
Button	Onboard 2 user buttons
LED	Onboard 6 LED

Software overview	
IDE	Support Gowin IDE(Version>1.9.7) ；Support Gowin Synthesis
License	https://wiki.sipeed.com/soft/Tang/zh/Tang-Nano-Doc/get_started/install-the-ide.html
IDE	http://www.gowinsemi.com.cn/faq.aspx
GOAI brief introduction	http://www.gowinsemi.com.cn/down.aspx?TypeId=666&Id=757
GOAI Official project	https://github.com/gowinsemi/GoAI
Sipeed Reference example	https://github.com/sipeed

Working conditions	
Power supply demand	TYPE-C 接口：5V±10% 0.5A
Temperature rise	<30K
Operating ambient temperature range	-10℃ ~ 65℃

Appearance drawing
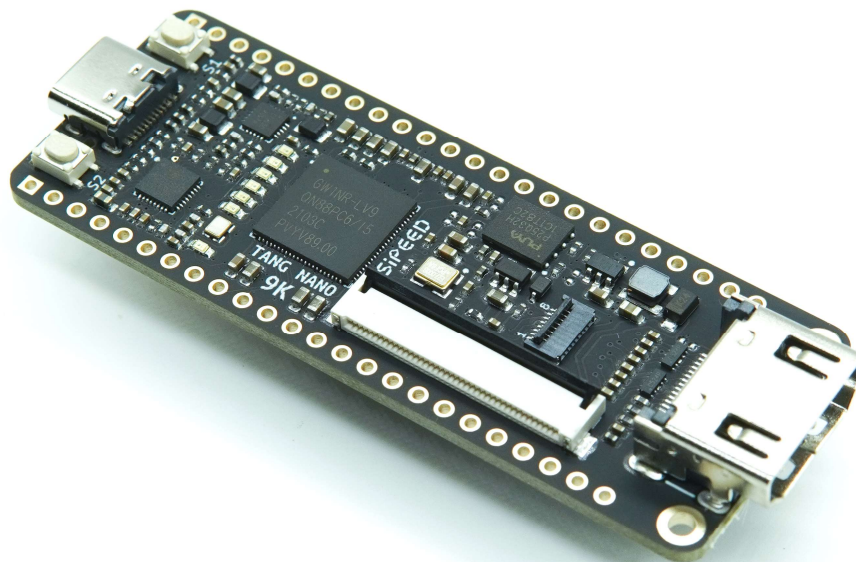
Functional annotation
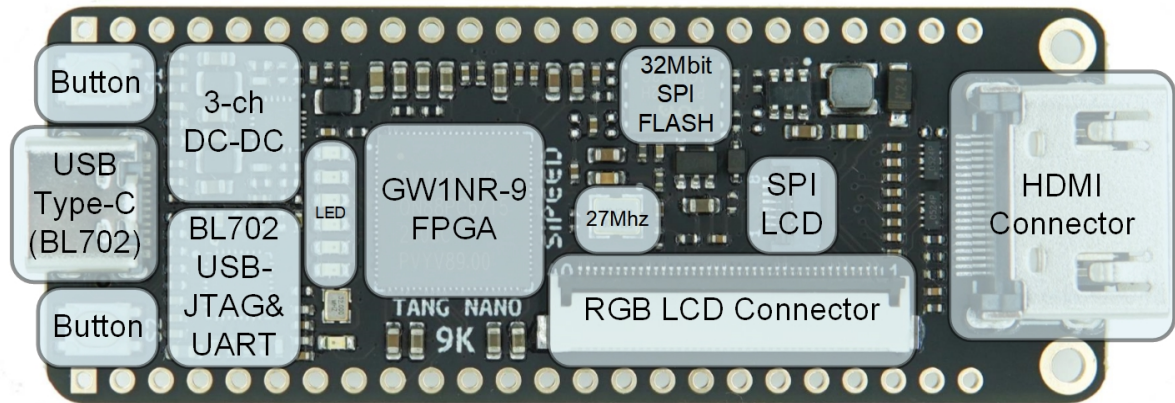
Dimension information	
Length	70.0 mm
Width	26.0mm
Thickness	Please check the 3D drawing
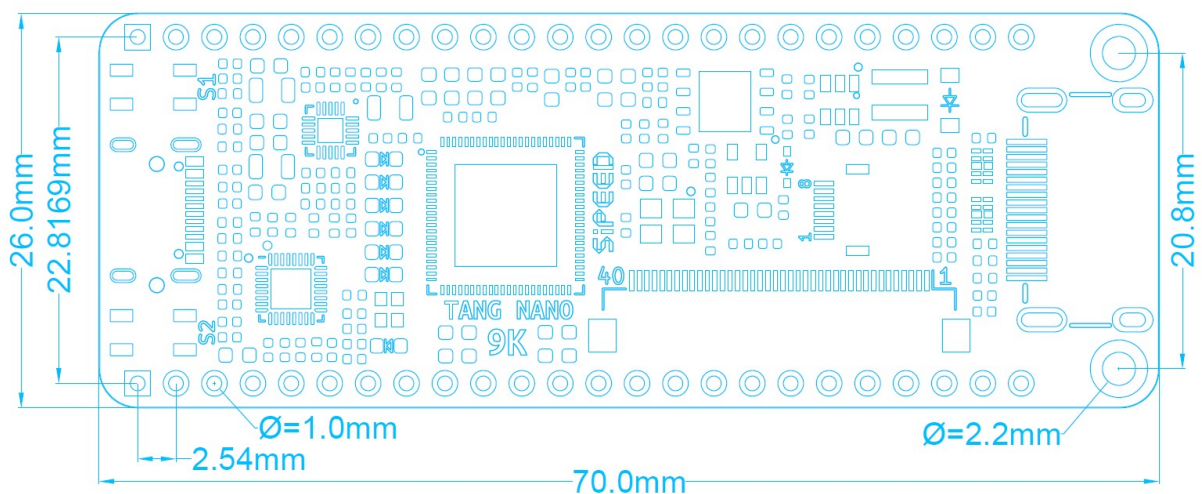
Matters needing attention	
ESD protection	Please pay attention to avoid static electricity hitting PCBA; Please release the static electricity from the handle before contacting PCBA
Tolerance voltage	The working voltage of each GPIO has been marked in the schematic . Please do not let the actual working voltage of GPIO exceed the rated value, otherwise it will cause permanent damage to PCBA
FPC connector	When connecting FPC flexible cable, please ensure that the cable is completely inserted into the cable without offset;
Plugging	Please disconnect the power completely before plugging in and out the camera
Avoid short circuit	Please avoid any liquid or metal touching the pads of components on PCBA during power on, otherwise it will cause short circuit and burn PCBA

Resources	
Official website	www.sipeed.com
Github	https://github.com/Sipeed
BBS	http://bbs.sipeed.com
Wiki	wiki.sipeed.com
Sipeed Model platform	https://maixhub.com/
SDK /HDK Relevant information	https://dl.sipeed.com/
E-mail (Technical support and business cooperation)	support@sipeed.com