



# **Technical Note**

## **TN\_166**

# **FTDI Example IC PCB Footprints**

**Version 1.1**

**Issue Date: 2017-05-16**

This Technical Note shows examples of FTDI IC PCB footprints which can be used as a guide for creating your own IC PCB footprints.

Use of FTDI devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify and hold FTDI harmless from any and all damages, claims, suits or expense resulting from such use.

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## 1 Introduction

This Technical Note shows examples of FTDI IC PCB footprints which can be used as a guide for creating your own PCB footprints.

The IC footprints in this document are sourced from various FTDI hardware such as development and application [modules](#) and demo hardware, using the most common and cost effective package types.

Most FTDI IC footprints are included in this document; however some are missing when a package type has not been used for specific FTDI hardware. See Table 1.1 for unavailable footprints.

The IC footprints in this document provide:

- A 1:1 scaled IC footprint
- An annotated IC footprint showing some key measurements

All dimensions shown are in millimeters (mm).

Additionally, a range of USB Interface IC solutions from FTDI Chip available through AltiumLive.

To view Altium files, you need either the full version of 'Altium Designer', or 'Altium Viewer' which can be downloaded for free from Altium's web site.

<http://www.ftdichip.com/Support/Documents/PCBData.htm>

Note that all IC footprints may not be available through AltiumLive. It is a live dBase continually being updated.

### 1.1 Scope

These IC PCB footprints can be used as a guide to create your own IC PCB footprints with particular PCB design tools other than Altium.

Please refer to the IC datasheet for full IC package parameters.

**Note: No guarantees can be provided in this document. These can be used as a guide only.**

**Note:** FTDI [Cables](#) and [Modules](#) are recommended for product test and development prior to custom hardware development.

#### 1.1.1 Unavailable Footprints

Table 1.1 shows that there are some footprints not included in this document as, for example, they have never been used for specific hardware developments within FTDI. Other package options for those products exist and are included in this document.

**Note:** This is correct at the time of writing and newer products may not be included.

Package	Part Numbers
32-pin WQFN	FT51BQ
44-pin LQFP	FT51AL

**Table 1.1 Unavailable Footprints**

## 2 All Scaled Footprints

This section shows all packages scaled to 1:1 size to show the exact package size which can help when selecting a package to use in your design.

Note that not all packages are available for all products. See Section 3 'Packages by Product' in this document, the product datasheet, or check the IC webpage:

<http://www.ftdichip.com/Products/ICs.htm>

### 2.1 DFN Packages

Figure 2.1 shown in pin count order from left to right:

DFN-10, DFN-12.

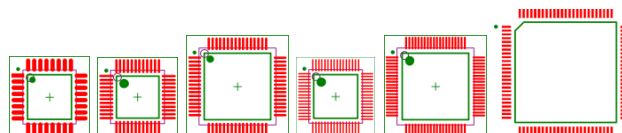


**Figure 2.1 DFN Packages**

### 2.2 QFP Packages

Figure 2.2 shown in pin count order from left to right:

LQFP-32, LQFP-48, LQFP-64, TQFP-64, LQFP-80, LQFP-100.

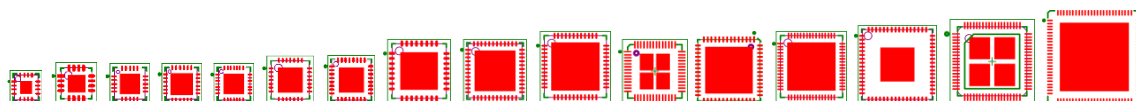


**Figure 2.2 QFP Packages**

### 2.3 QFN Packages

Figure 2.3 shown in pin count order from left to right:

QFN-16 (3x3), QFN-16 (4x4), QFN-20, QFN-24, QFN-28, WQFN-28, QFN-32 (5x5), QFN-32 (7x7), QFN-48 (7x7), QFN-48 (8x8), QFN-56 (7x7), VQFN-56 (8x8), QFN-64 (8x8), QFN-64 (9x9), QFN-76, QFN-100.

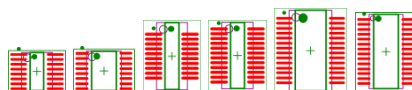


**Figure 2.3 QFN Packages**

### 2.4 SSOP Packages

Figure 2.4 shown in pin count order from left to right:

SSOP-16, TSSOP-16, SSOP-20, SSOP-24, SSOP-28, TSSOP-28.



**Figure 2.4 SSOP Packages**



## 3 Packages by Product

Package availability for FTDI products is shown in this section.

### 3.1 DFN Packages

Package	Part Numbers
<a href="#">DFN-10</a>	FT200XD
<a href="#">DFN-12</a>	FT234XD

**Table 3.1 DFN Packages**

### 3.2 QFP Packages

Package	Part Numbers
<a href="#">LQFP-32</a>	FT232BL, FT245BL, FT311D-32L1C, FT312D-32L1C, VNC2-32L1B
<a href="#">LQFP-48</a>	FT232HL, FT2232D, VNC1L-1A, VNC2--48L1B
<a href="#">LQFP-64</a>	FT2232HL, FT4232HL, FT313HL, VNC2-64L1B
<a href="#">TQFP-64</a>	FT313HP
<a href="#">LQFP-80</a>	FT905L, FT906L, FT907L, FT908L
<a href="#">LQFP-100</a>	FT900L, FT901L, FT902L, FT903L

**Table 3.2 QFP Packages**

### 3.3 QFN Packages

Package	Part Numbers
<a href="#">QFN-16 (3x3)</a>	FT121Q
<a href="#">QFN-16 (4x4)</a>	FT201XQ, FT220XQ, FT230XQ
<a href="#">QFN-20</a>	FT221XQ, FT231XQ
<a href="#">QFN-24</a>	FT240XQ
<a href="#">QFN-28</a>	FT120Q, FT122Q
<a href="#">WQFN-28</a>	FT260Q
<a href="#">QFN-32 (5x5)</a>	FT232RQ, FT245RQ, FT4222HQ
<a href="#">QFN-32 (7x7)</a>	FT311D-32Q1C, FT312D-32Q1C, VNC2-32Q1B
<a href="#">QFN-48 (7x7)</a>	FT51AQ, FT800Q, FT801Q, FT810Q, FT811Q
<a href="#">QFN-48 (8x8)</a>	FT232HQ, VNC2-48Q1B
<a href="#">QFN-56 (7x7)</a>	FT600Q
<a href="#">VQFN-56 (8x8)</a>	FT2232H-56Q, FT4232H-56Q, FT812Q, FT813Q

Package	Part Numbers
<a href="#">QFN-64 (8x8)</a>	VNC2-64Q1B
<a href="#">QFN-64 (9x9)</a>	FT2232HQ, FT4232HQ, FT313HQ
<a href="#">QFN-76</a>	FT601Q, FT905Q, FT906Q, FT907Q, FT908Q
<a href="#">QFN-100</a>	FT900Q, FT901Q, FT902Q, FT903Q

**Table 3.3 QFN Packages**

### 3.4 SSOP Packages

Package	Part Numbers
<a href="#">SSOP-16</a>	FT201XS, FT220XS, FT230XS
<a href="#">TSSOP-16</a>	FT121T
<a href="#">SSOP-20</a>	FT221XS, FT231XS
<a href="#">SSOP-24</a>	FT240XS
<a href="#">SSOP-28</a>	FT232RL, FT245RL, FT51CS
<a href="#">TSSOP-28</a>	FT120T, FT122T, FT260S

**Table 3.4 SSOP Packages**

## 4 10-pin DFN

The 10-pin DFN is used on the following product:

- [FT200XD](#)

This package is nominally 3.00mm x 3.00mm. The solder pads are on a 0.50mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 4.1 Scaled Footprint

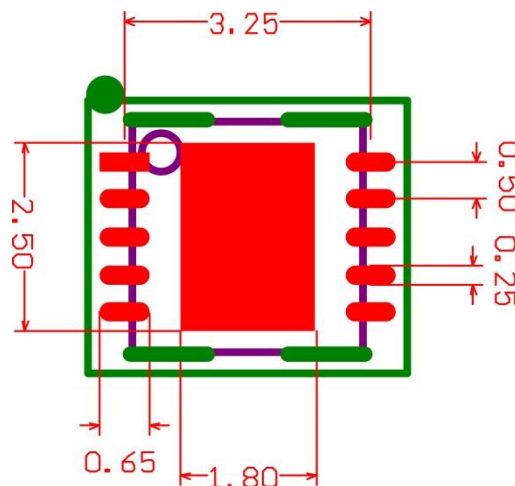
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 4.1 10-pin DFN Scaled Footprint**

### 4.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 4.2 10-pin DFN Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 5 12-pin DFN

The 12-pin DFN is used on the following product:

- [FT234XD](#)

This package is nominally 3.00mm x 3.00mm. The solder pads are on a 0.45mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 5.1 Scaled Footprint

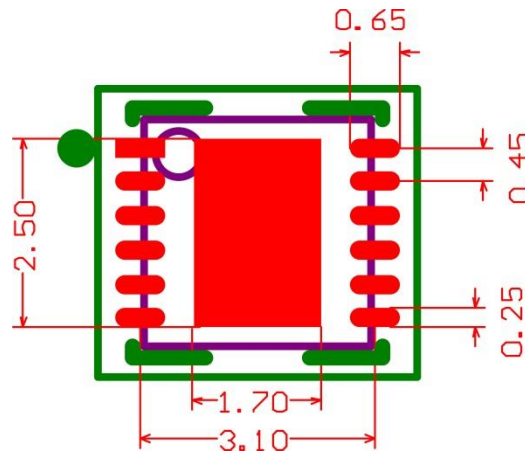
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 5.1 12-pin DFN Scaled Footprint**

### 5.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 5.2 12-pin DFN Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 6 16-pin QFN (3mm x 3mm)

The 16-pin QFN (3mm x 3mm) is used on the following product:

- [FT121Q](#)

This package is nominally 3.00mm x 3.00mm. The solder pads are on a 0.50mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 6.1 Scaled Footprint

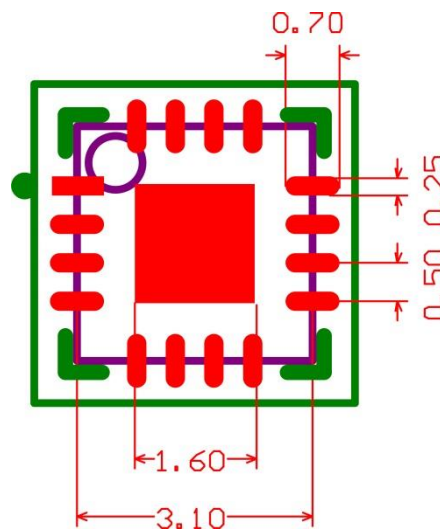
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 6.1 16-pin QFN (3mm x 3mm) Scaled Footprint**

### 6.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 6.2 16-pin QFN (3mm x 3mm) Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 7 16-pin QFN (4mm x 4mm)

The 16-pin QFN (4mm x 4mm) is used on the following products:

- [FT201XQ](#)
- [FT220XQ](#)
- [FT230XQ](#)

This package is nominally 4.00mm x 4.00mm. The solder pads are on a 0.65mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 7.1 Scaled Footprint

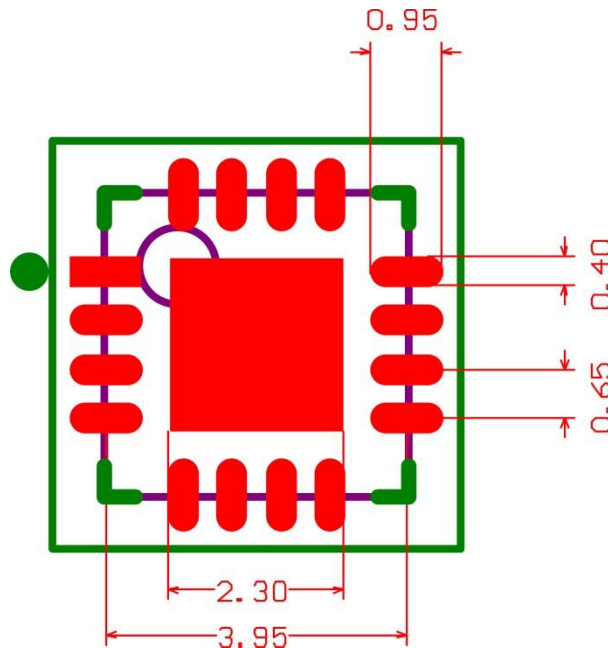
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 7.1 16-pin QFN (4mm x 4mm) Scaled Footprint**

### 7.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 7.2 16-pin QFN (4mm x 4mm) Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 8 16-pin SSOP-

The 16-pin SSOP is used on the following products:

- [FT201XS](#)
- [FT220XS](#)
- [FT230XS](#)

This package is nominally 4.90mm x 3.91mm body (4.90mm x 5.99mm including pins). The solder pads are on a 0.635mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 8.1 Scaled Footprint

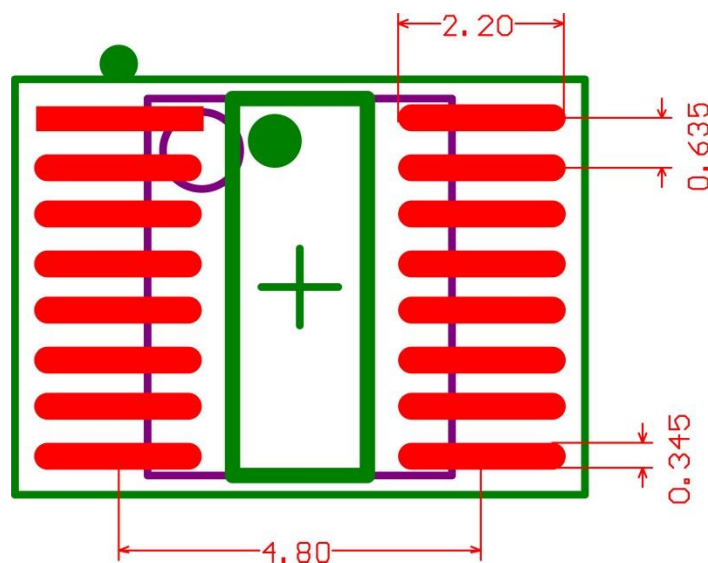
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 8.1 16-pin SSOP Scaled Footprint**

### 8.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 8.2 16-pin SSOP Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

## 9 16-pin TSSOP

The 16-pin TSSOP is used on the following product:

- [FT121T](#)

This package is nominally 5.0mm x 4.4mm body (5.0mm x 6.4mm including pins). The solder pads are on a 0.65mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 9.1 Scaled Footprint

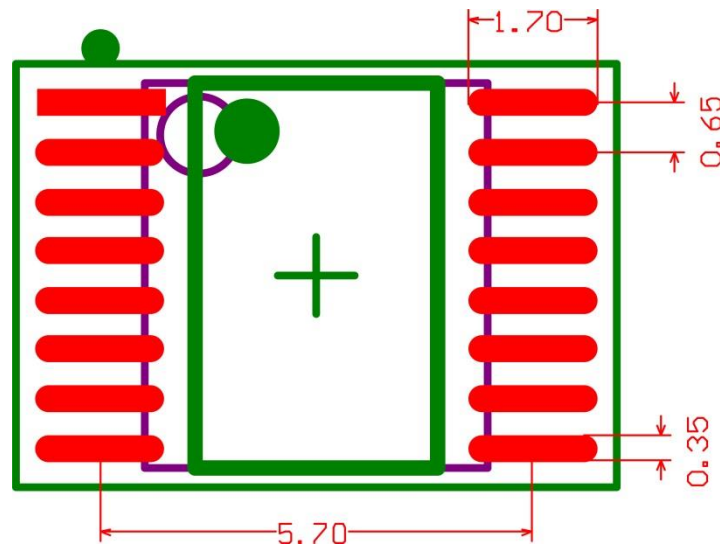
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 9.1 16-pin TSSOP Scaled Footprint**

### 9.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 9.2 16-pin TSSOP Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.



## 10 20-pin QFN

The 20-pin QFN is used on the following products:

- [FT221XQ](#)
- [FT231XQ](#)

This package is nominally 4.00mm x 4.00mm. The solder pads are on a 0.50mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 10.1 Scaled Footprint

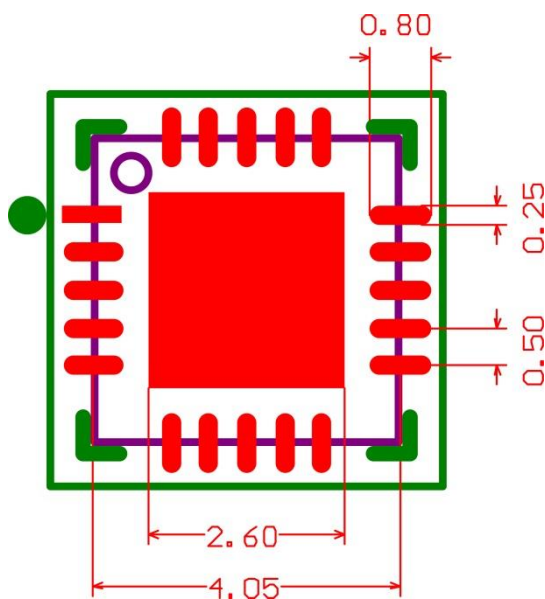
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 10.1 20-pin QFN Scaled Footprint**

### 10.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 10.2 20-pin QFN Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 11 20-pin SSOP

The 20-pin SSOP is used on the following products:

- [FT221XS](#)
- [FT231XS](#)

This package is nominally 8.66mm x 3.91mm body (8.66mm x 5.99mm including pins). The solder pads are on a 0.635mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 11.1 Scaled Footprint

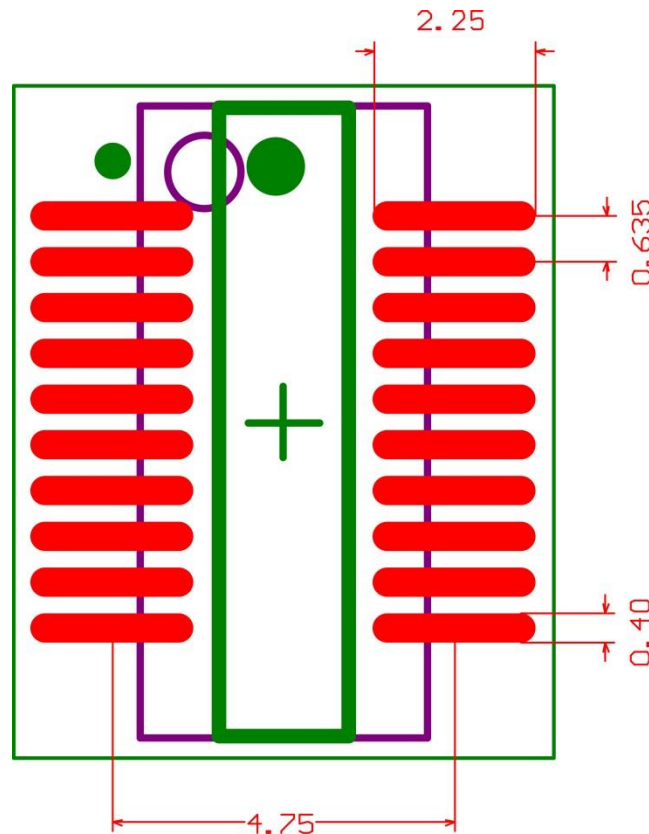
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 11.1 20-pin SSOP Scaled Footprint**

### 11.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 11.2 20-pin SSOP Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

## 12 24-pin QFN

The 24-pin QFN is used on the following product:

- [FT240XQ](#)

This package is nominally 4.00mm x 4.00mm. The solder pads are on a 0.50mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 12.1 Scaled Footprint

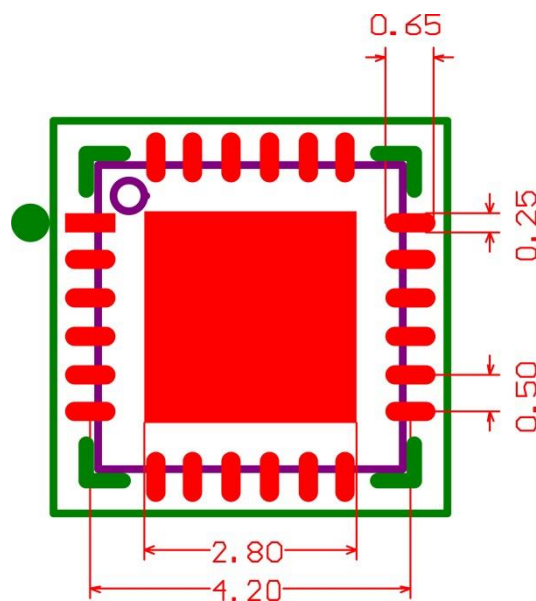
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 12.1 24-pin QFN Scaled Footprint**

### 12.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 12.2 24-pin QFN Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 13 24-pin SSOP

The 24-pin SSOP is used on the following products:

- [FT240XS](#)

This package is nominally 8.66mm x 3.91 mm body (8.66mm x 5.99mm including pins). The solder pads are on a 0.635mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 13.1 Scaled Footprint

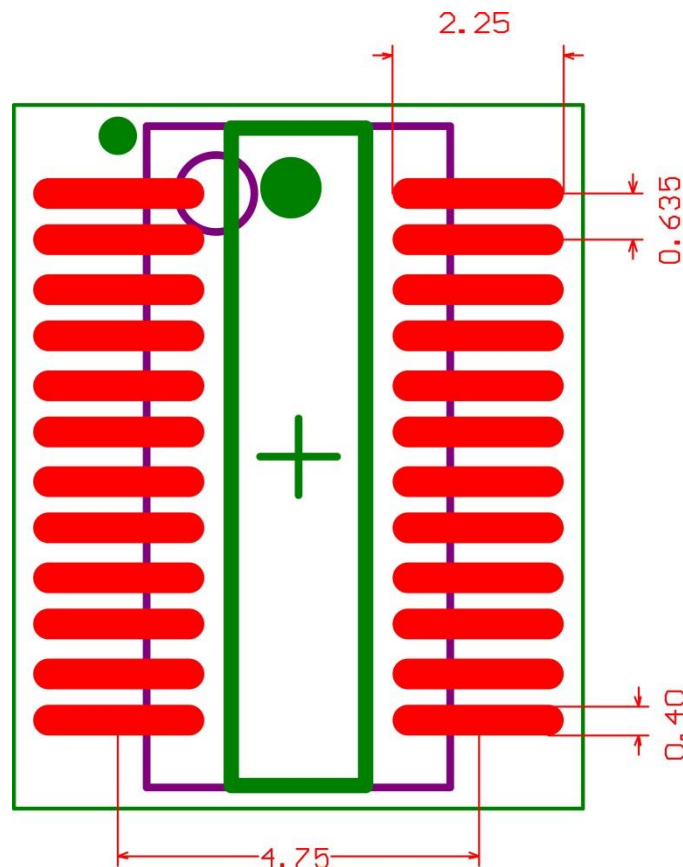
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 13.1 24-pin SSOP Scaled Footprint**

### 13.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 13.2 24-pin SSOP Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

## 14 28-pin QFN

The 28-pin QFN is used on the following products:

- [FT120Q](#)
- [FT122Q](#)

This package is nominally 4.00mm x 4.00mm. The solder pads are on a 0.40mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 14.1 Scaled Footprint

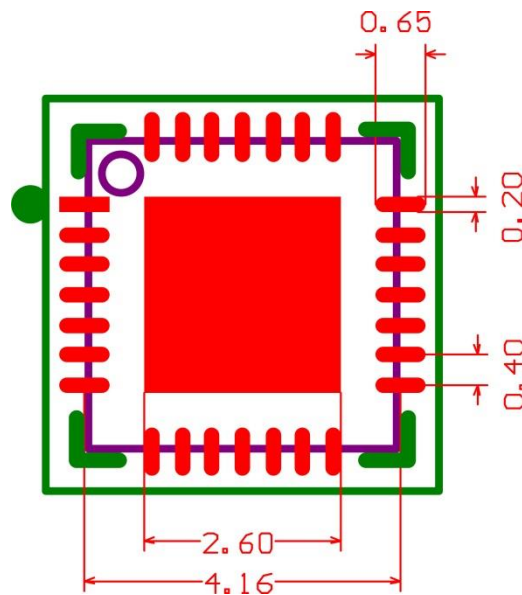
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 14.1 28-pin QFN Scaled Footprint**

### 14.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 14.2 28-pin QFN Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 15 28-pin SSOP

The 28-pin SSOP is used on the following products:

- [FT232RL](#)
- [FT245RL](#)
- [FT51CS](#)

This package is nominally 5.30mm x 10.20mm body (7.80mm x 10.20mm including pins). The solder pads are on a 0.65mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 15.1 Scaled Footprint

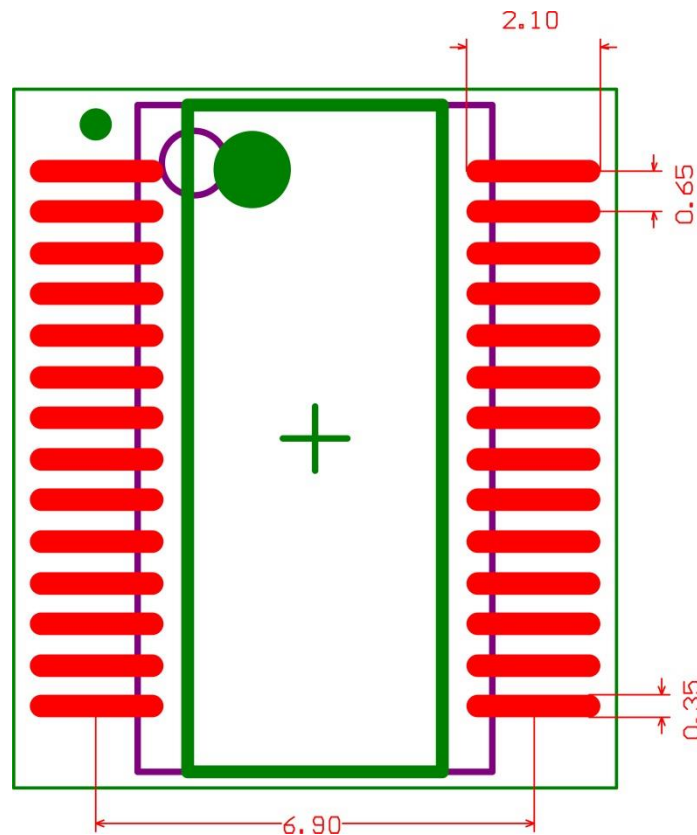
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 15.1 28-pin SSOP Scaled Footprint**

### 15.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 15.2 28-pin SSOP Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers

## 16 28-pin TSSOP

The 28-pin TSSOP is used on the following products:

- [FT120T](#)
- [FT122T](#)
- [FT260S](#)

This package is nominally 9.7mm x 4.4mm body (9.7mm x 6.4mm including pins). The solder pads are on a 0.65mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 16.1 Scaled Footprint

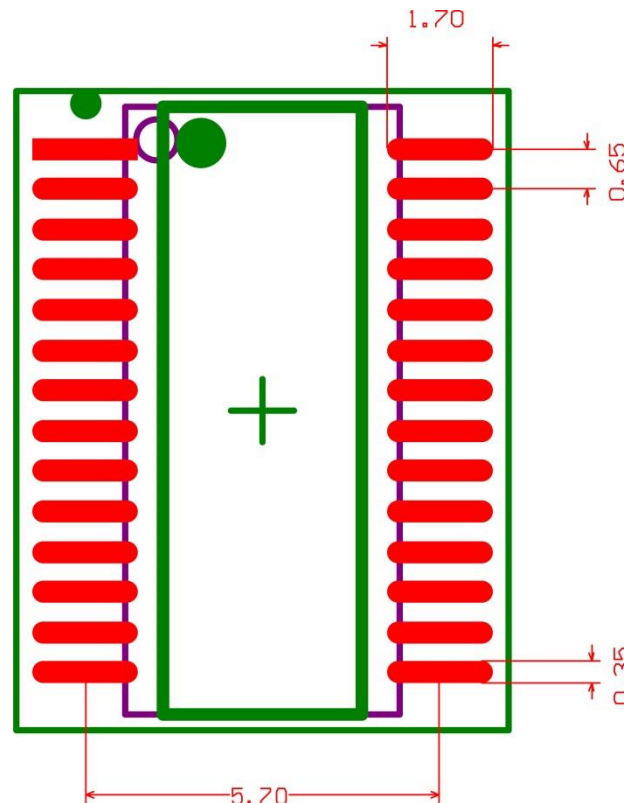
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 16.1 28-pin TSSOP Scaled Footprint**

### 16.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 16.2 28-pin TSSOP Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

## 17 28-pin WQFN

The 28-pin WQFN is used on the following product:

- [FT260Q](#)

This package is nominally 5.00mm x 5.00mm. The solder pads are on a 0.50mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 17.1 Scaled Footprint

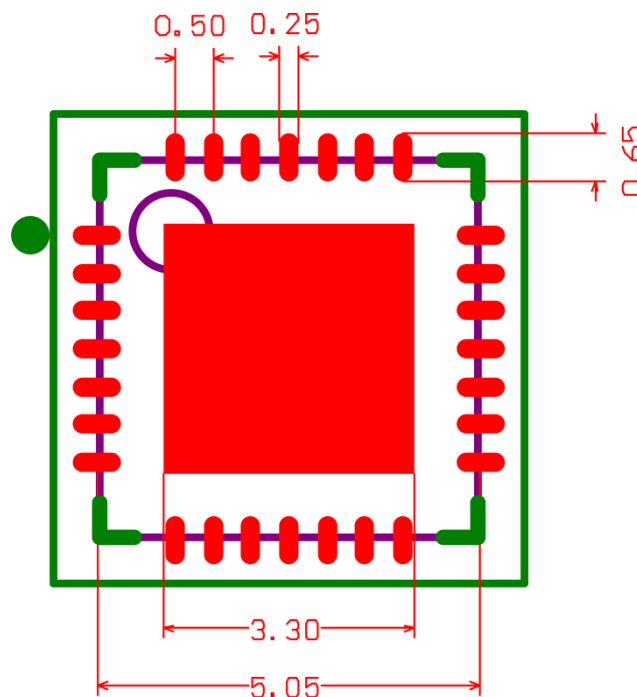
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 17.1 28-pin WQFN Scaled Footprint**

### 17.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 17.2 28-pin WQFN Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.



## 18 32-pin LQFP

The 32-pin LQFP is used on the following products:

- [VNC2-32L1B](#)
- [FT311D-32L1C](#)
- [FT312D-32L1C](#)
- [FT232BL](#)
- [FT245BL](#)

This package is nominally 9.00mm x 9.00mm. The solder pads are on a 0.80mm pitch.  
 Please see the IC Package Parameters in the IC datasheet for full information.

### 18.1 Scaled Footprint

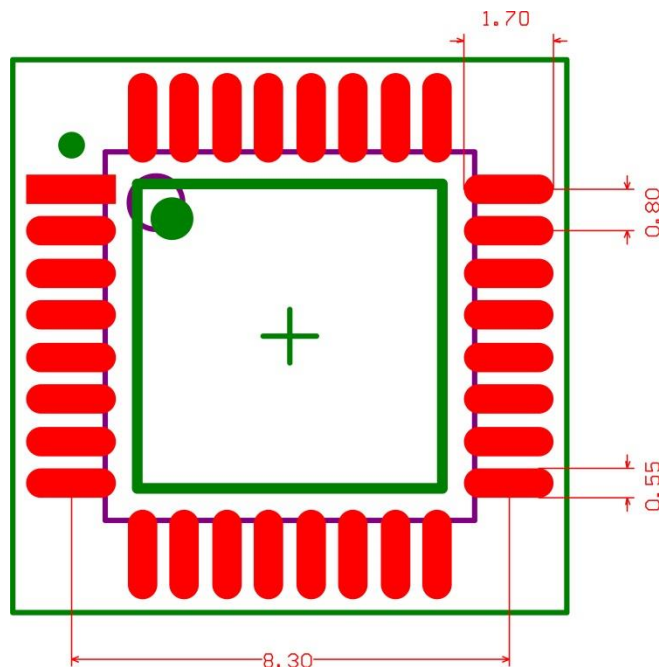
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 18.1 32-pin LQFP Scaled Footprint**

### 18.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 18.2 32-pin LQFP Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

## 19 32-pin VQFN/QFN (5mm x 5mm)

The 32-pin VQFN/QFN (5mm x 5mm) is used on the following products:

- [FT232RQ](#)
- [FT245RQ](#)
- [FT4222HQ](#)

This package is nominally 5.00mm x 5.00mm. The solder pads are on a 0.50mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 19.1 Scaled Footprint

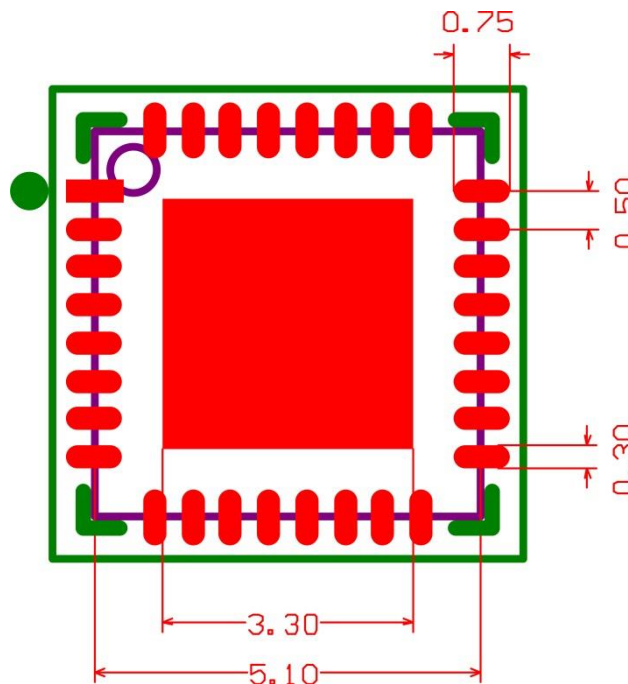
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 19.1 32-pin VQFN/QFN (5mm x 5mm) Scaled Footprint**

### 19.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 19.2 32-pin VQFN/QFN (5mm x 5mm) Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 20 32-pin QFN (7mm x 7mm)

The 32-pin QFN (7mm x 7mm) is used on the following products:

- [VNC2-32Q1B](#)
- [FT311D-32Q1C](#)
- [FT312D-32Q1C](#)

This package is nominally 7.00mm x 7.00mm. The solder pads are on a 0.65mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 20.1 Scaled Footprint

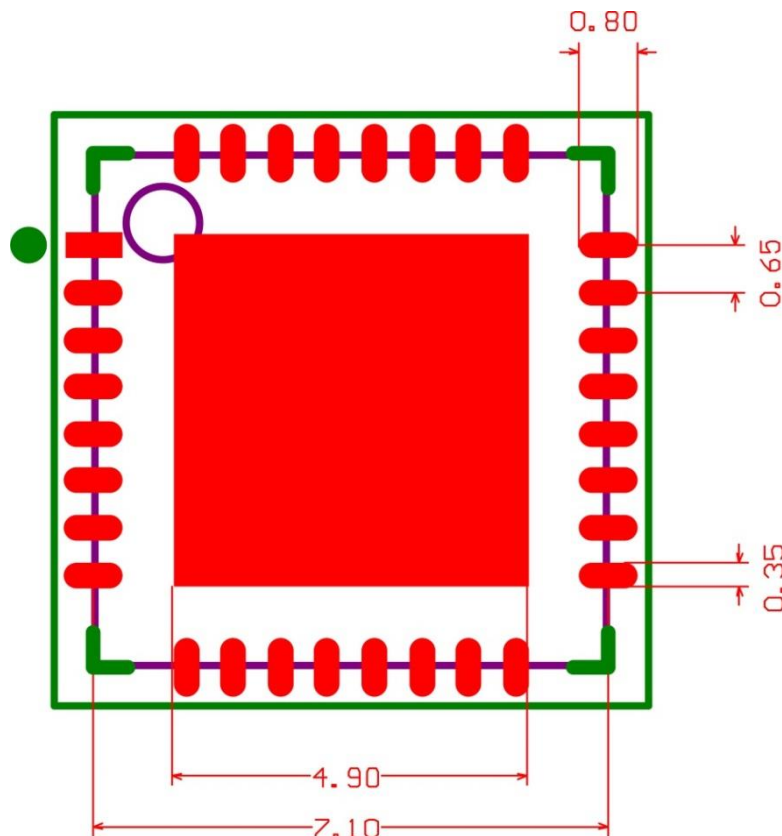
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 20.1 32-pin QFN (7mm x 7mm) Scaled Footprint**

### 20.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 20.2 32-pin QFN (7mm x 7mm) Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 21 48-pin LQFP

The 48-pin LQFP is used on the following products:

- [FT232HL](#)
- [FT2232D](#)
- [VNC1L-1A](#)
- [VNC2-48Q1B](#)

This package is nominally 9.00mm x 9.00mm. The solder pads are on a 0.50mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 21.1 Scaled Footprint

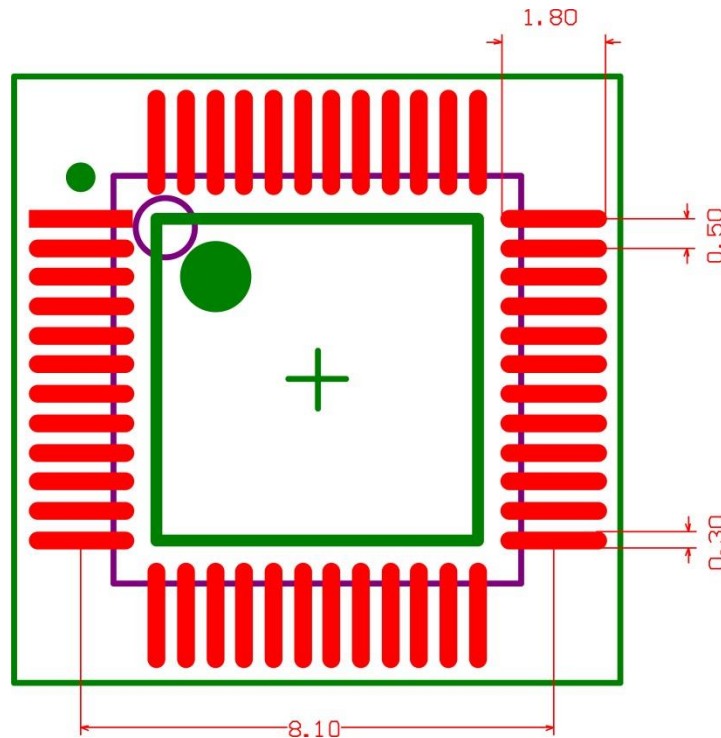
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 21.1 48-pin LQFP Scaled Footprint**

### 21.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 21.2 48-pin LQFP Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

## 22 48-pin VQFN/WQFN (7mm x 7mm)

The 48-pin VQFN/WQFN (7mm x 7mm) is used on the following products:

- [FT800Q](#)
- [FT801Q](#)
- [FT810Q](#)
- [FT811Q](#)
- [FT51AQ](#)

This package is nominally 7.00mm x 7.00mm. The solder pads are on a 0.50mm pitch. Please see the IC Package Parameters in the IC datasheet for full information.

### 22.1 Scaled Footprint

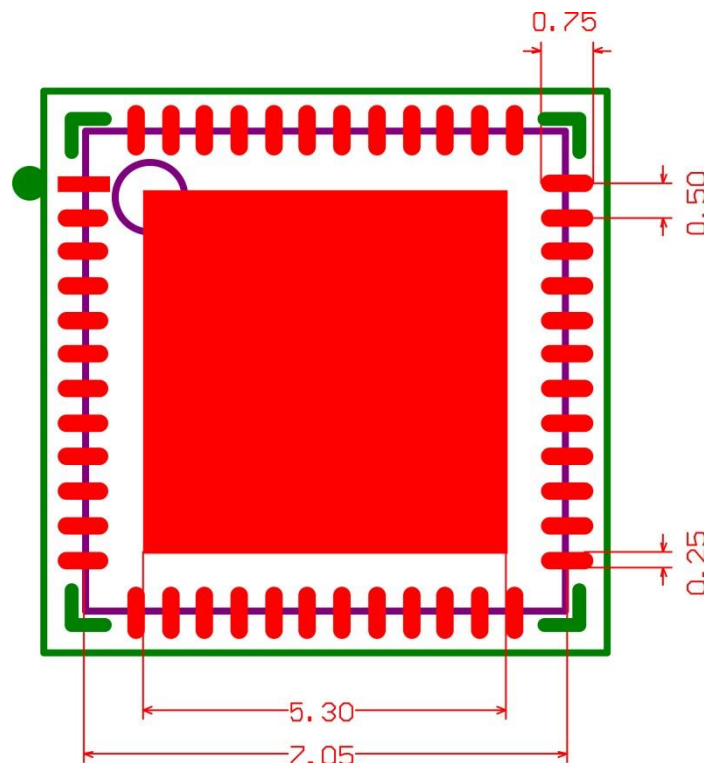
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 22.1 48-pin VQFN/WQFN (7mm x 7mm) Scaled Footprint**

### 22.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 22.2 48-pin VQFN/WQFN (7mm x 7mm) Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 23 48-pin QFN (8mm x 8mm)

The 48-pin QFN (8mm x 8mm) is used on the following products:

- [VNC2-48Q1B](#)
- [FT232HQ](#)

This package is nominally 8.00mm x 8.00mm. The solder pads are on a 0.50mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 23.1 Scaled Footprint

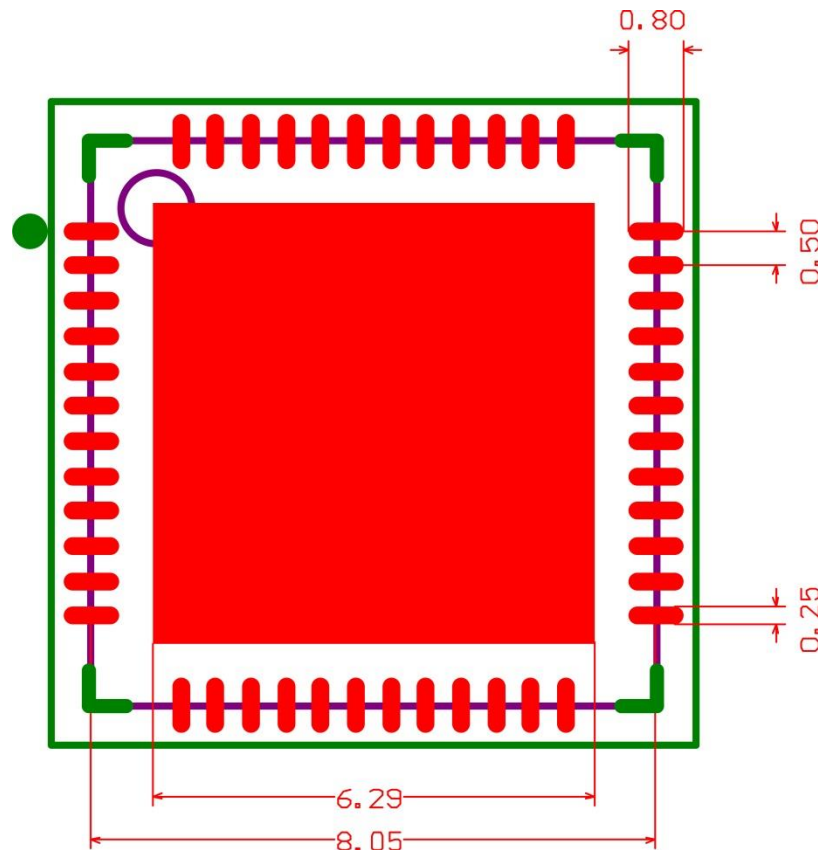
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 23.1 48-pin QFN (8mm x 8mm) Scaled Footprint**

### 23.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 23.2 48-pin QFN (8mm x 8mm) Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 24 56-pin QFN (7mm x 7mm)

The 56-pin QFN (7mm x 7mm) is used on the following product:

- [FT600Q](#)

This package is nominally 7.00mm x 7.00mm. The solder pads are on a 0.40mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 24.1 Scaled Footprint

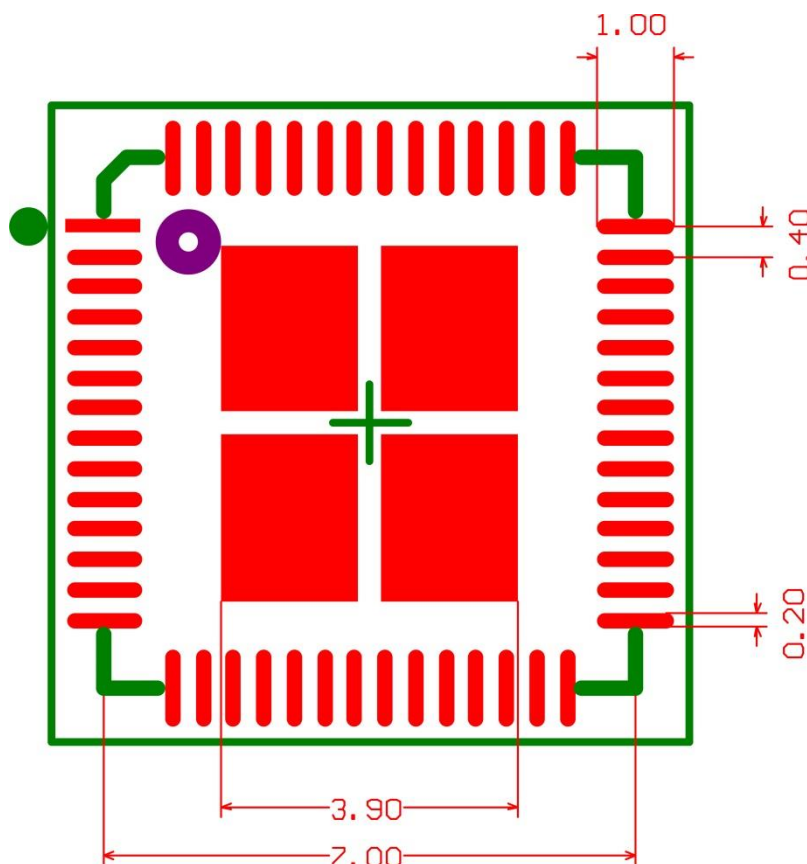
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 24.1 56-pin QFN (7mm x 7mm) Scaled Footprint**

### 24.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 24.2 56-pin QFN (7mm x 7mm) Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area. Cross-hatching designs used for less solder paste and less heat up rate required.

## 25 56-pin VQFN (8mm x 8mm)

The 56-pin VQFN (8mm x 8mm) is used on the following products:

- [FT812Q](#)
- [FT813Q](#)
- [FT2232HQ](#)
- [FT4232HQ](#)

This package is nominally 8.00mm x 8.00mm. The solder pads are on a 0.50mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 25.1 Scaled Footprint

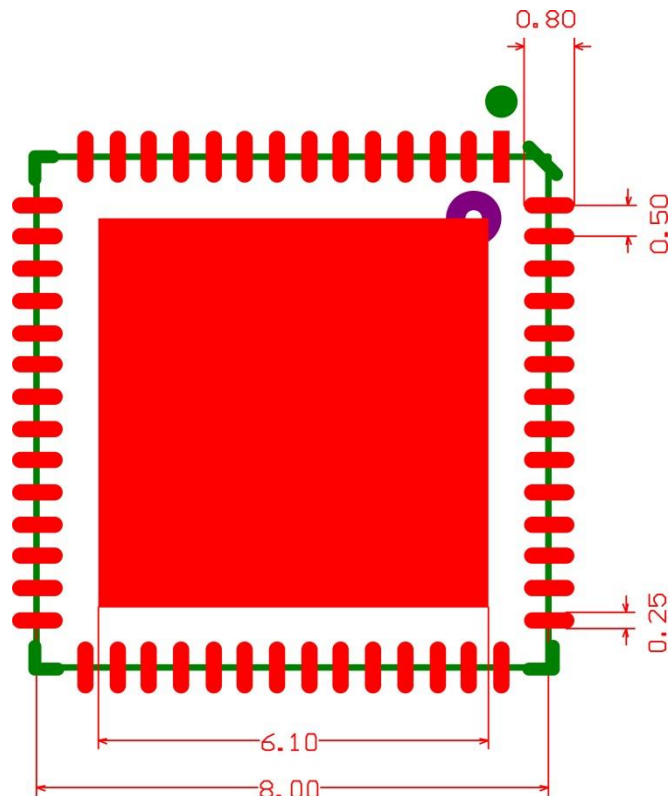
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 25.1 56-pin VQFN (8mm x 8mm) Scaled Footprint**

### 25.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 25.2 56-pin VQFN (8mm x 8mm) Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.



## 26 64-pin LQFP

The 64-pin LQFP is used on the following products:

- [VNC2-64L1B](#)
- [FT313HL](#)
- [FT2232HL](#)
- [FT4232HL](#)

This package is nominally 12.00mm x 12.00mm. The solder pads are on a 0.50mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 26.1 Scaled Footprint

This 1:1 scaled footprint is the exact size when viewed or printed at 100%.

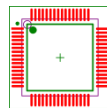


Figure 26.1 64-pin LQFP Scaled Footprint

### 26.2 Annotated Footprint

The annotated footprint shows key measurements.

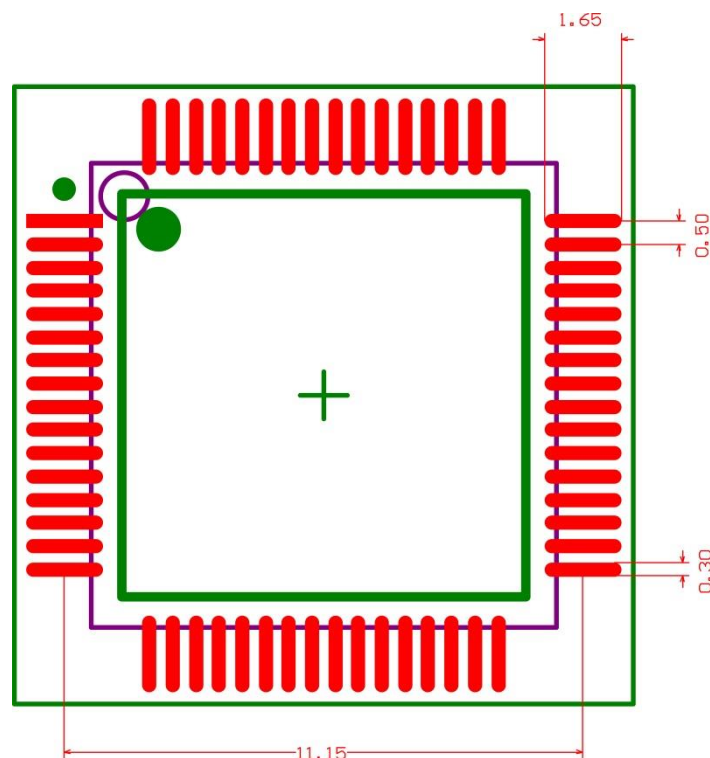


Figure 26.2 64-pin LQFP Annotated Footprint

**Note:** Red = top layer copper, other colors are mechanical layers.

## 27 64-pin TQFP

The 64-pin TQFP is used on the following products:

- [FT313HP](#)

This package is nominally 9.00mm x 9.00mm. The solder pads are on a 0.40mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 27.1 Scaled Footprint

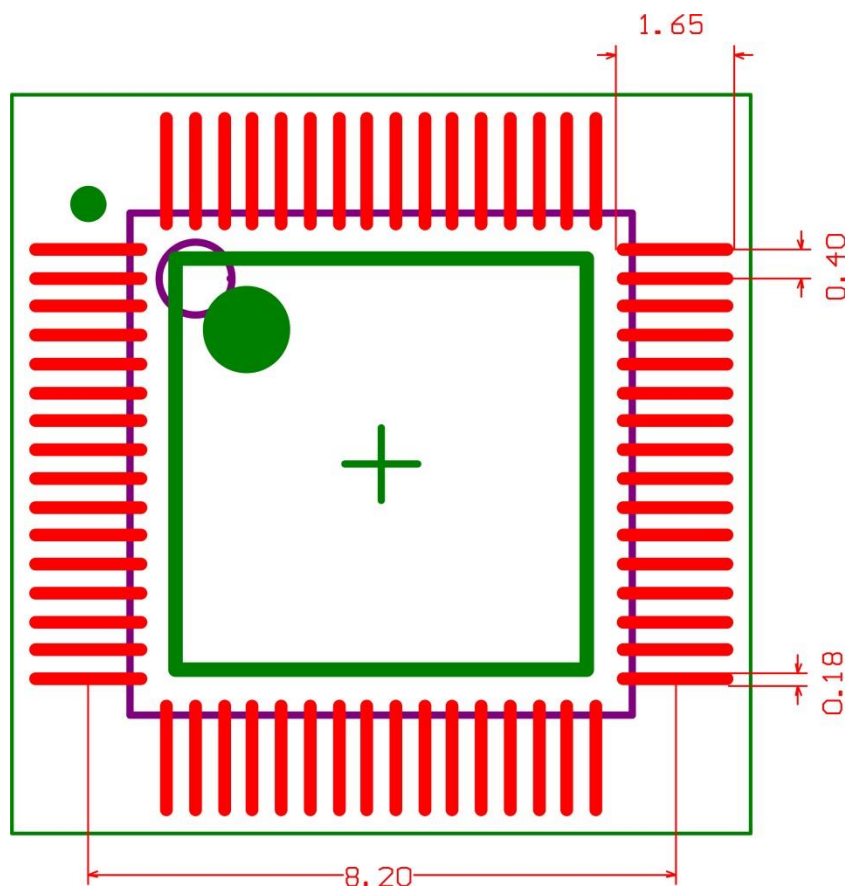
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 27.1 64-pin TQFP Scaled Footprint**

### 27.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 27.2 64-pin TQFP Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

## 28 64-pin QFN (8mm x 8mm)

The 64-pin QFN (8mm x 8mm) is used on the following product:

- [VNC2-64Q1B](#)

This package is nominally 8.00mm x 8.00mm. The solder pads are on a 0.40mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 28.1 Scaled Footprint

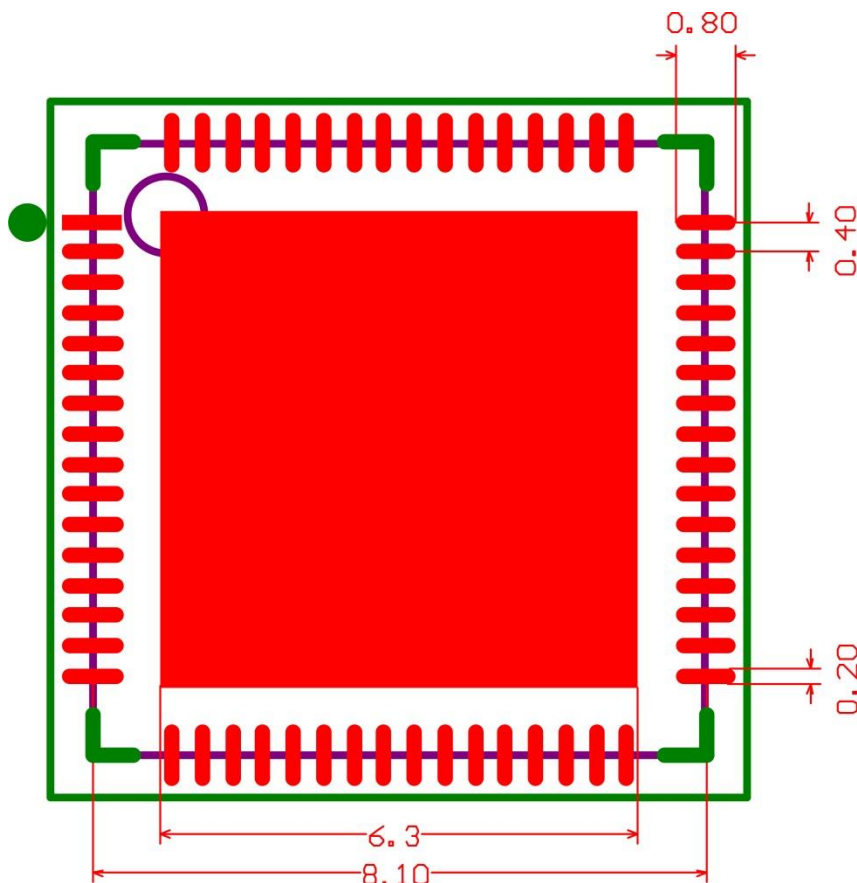
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 28.1 64-pin QFN (8mm x 8mm) Scaled Footprint**

### 28.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 28.2 64-pin QFN (8mm x 8mm) Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 29 64-pin QFN (9mm x 9mm)

The 64-pin QFN (9mm x 9mm) is used on the following products:

- [FT313HQ](#)
- [FT2232HQ](#)
- [FT4232HQ](#)

This package is nominally 9.00mm x 9.00mm. The solder pads are on a 0.50mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 29.1 Scaled Footprint

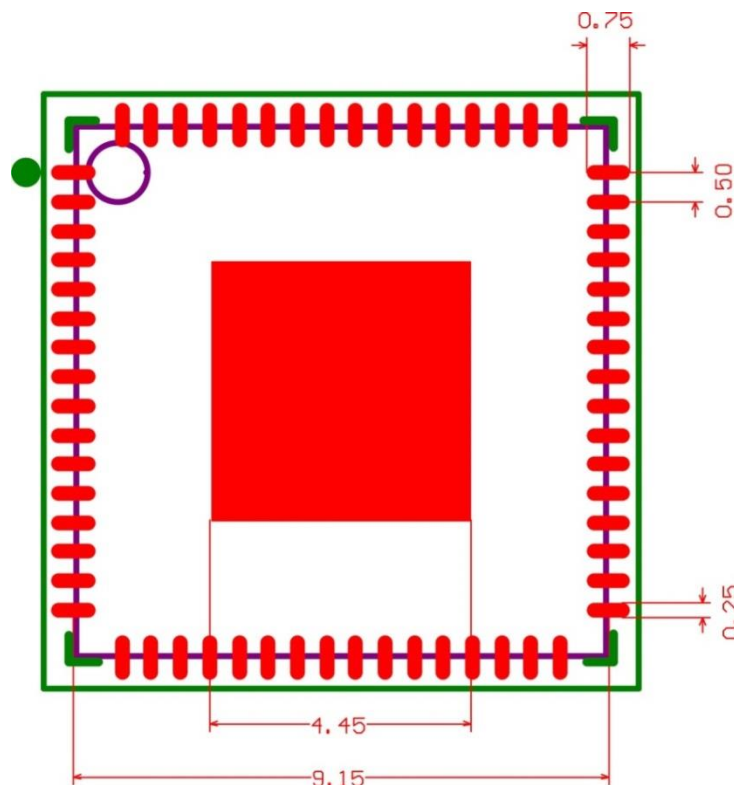
This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



**Figure 29.1 64-pin QFN (9mm x 9mm) Scaled Footprint**

### 29.2 Annotated Footprint

The annotated footprint shows key measurements.



**Figure 29.2 64-pin QFN (9mm x 9mm) Annotated Footprint**

**Note:** Red = top layer copper, other colors are mechanical layers.

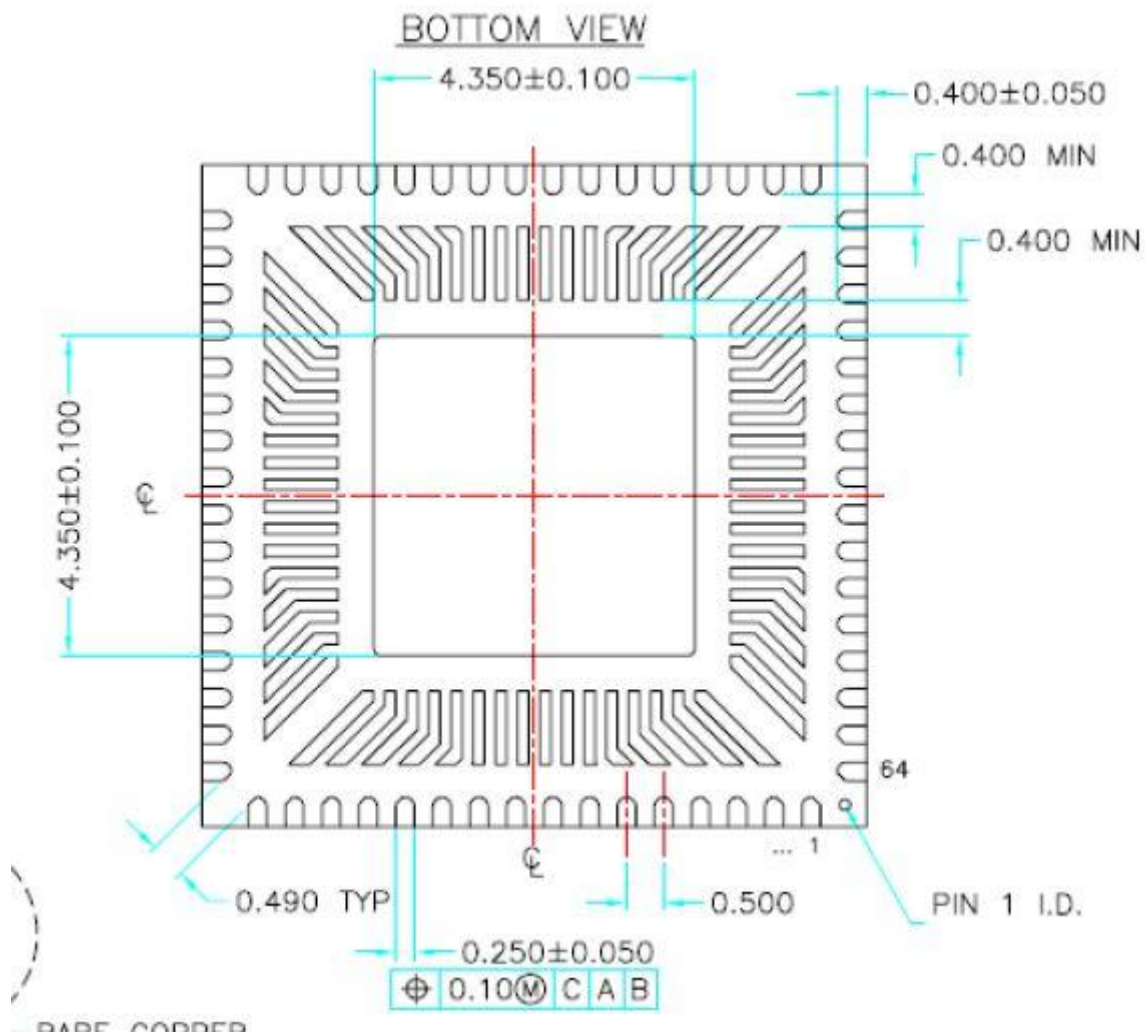
**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

### 29.2.1 Additional Information

This package is unique to all the other packages where there is extra strain relief between the exposed pad in the center and the IC pins at the edge of the IC.

The exposed strain relief is connected to the pins so it is very important to ensure that the center exposed pad is not larger than specified, otherwise it could short all the signals together rendering the device and PCB useless.

The exposed strain relief should not be connected to the PCB in any way and this area should be marked as keep out. Only the pins at the edge of the package and the center exposed pad should be connected to the PCB.



**Figure 29.3 64-pin QFN (9mm x 9mm) Bottom View**

## 30 76-pin QFN

The 76-pin QFN is used on the following products:

- [FT601Q](#)
- [FT905Q](#)
- [FT906Q](#)
- [FT907Q](#)
- [FT908Q](#)

This package is nominally 9.00mm x 9.00mm. The solder pads are on a 0.40mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 30.1 Scaled Footprint

This 1:1 scaled footprint is the exact size when viewed or printed at 100%.



Figure 30.1 76-pin QFN Scaled Footprint

### 30.2 Annotated Footprint

The annotated footprint shows key measurements.

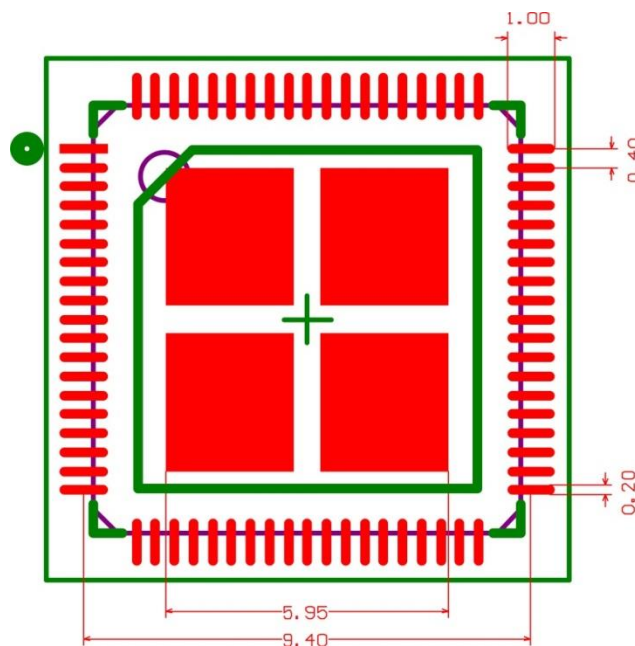


Figure 30.2 76-pin QFN Annotated Footprint

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area. Cross-hatching design used for less solder paste and less heat up rate required.

## 31 80-pin LQFP

The 80-pin LQFP is used on the following products:

- [FT905L](#)
- [FT906L](#)
- [FT907L](#)
- [FT908L](#)

This package is nominally 12.00mm x 12.00mm. The solder pads are on a 0.40mm pitch.  
 Please see the IC Package Parameters in the IC datasheet for full information.

### 31.1 Scaled Footprint

This 1:1 scaled footprint is the exact size when viewed or printed at 100%.

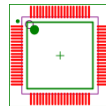


Figure 31.1 80-pin LQFP Scaled Footprint

### 31.2 Annotated Footprint

The annotated footprint shows key measurements.

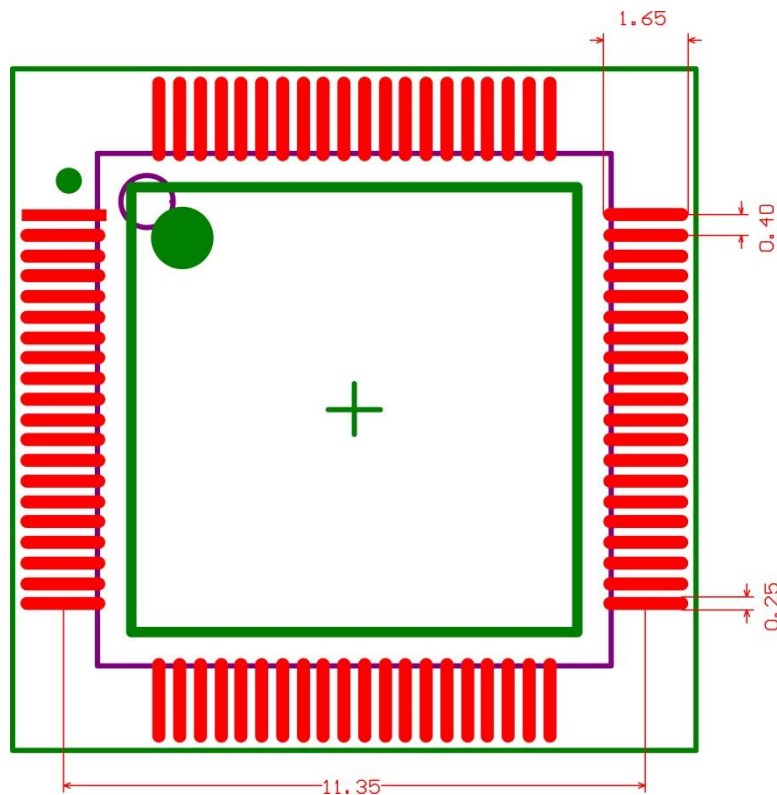


Figure 31.2 80-pin LQFP Annotated Footprint

**Note:** Red = top layer copper, other colors are mechanical layers.

## 32 100-pin LQFP

The 100-pin LQFP is used on the following products:

- [FT900L](#)
- [FT901L](#)
- [FT902L](#)
- [FT903L](#)

This package is nominally 16.00mm x 16.00mm. The solder pads are on a 0.50mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 32.1 Scaled Footprint

This 1:1 scaled footprint is the exact size when viewed or printed at 100%.

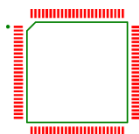


Figure 32.1 100-pin LQFP Scaled Footprint

### 32.2 Annotated Footprint

The annotated footprint shows key measurements.

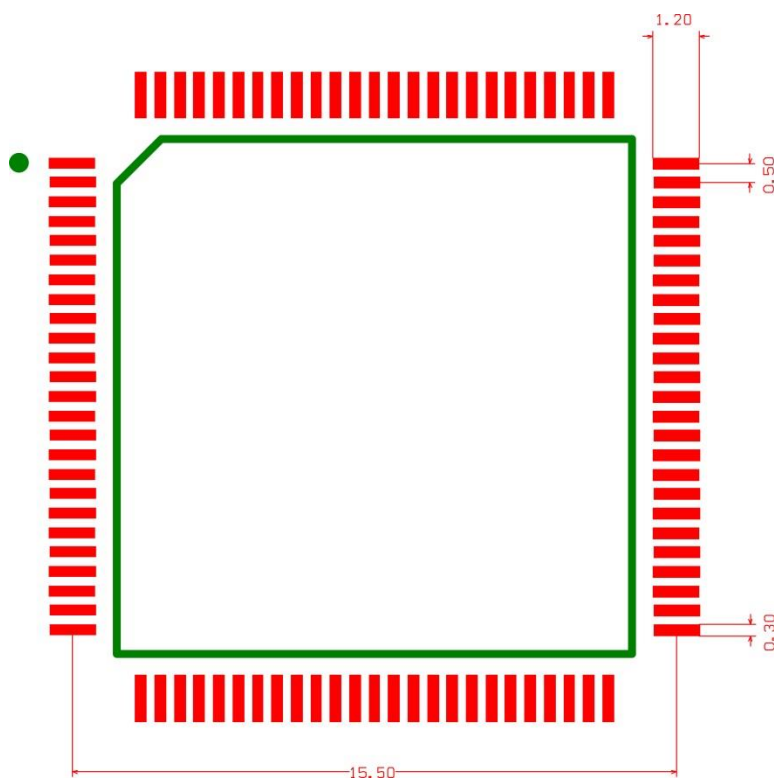


Figure 32.2 100-pin LQFP Annotated Footprint

**Note:** Red = top layer copper, other colors are mechanical layers.



## 33 100-pin QFN

The 100-pin QFN is used on the following products:

- [FT900Q](#)
- [FT901Q](#)
- [FT902Q](#)
- [FT903Q](#)

This package is nominally 12.00mm x 12.00mm. The solder pads are on a 0.40mm pitch.

Please see the IC Package Parameters in the IC datasheet for full information.

### 33.1 Scaled Footprint

This 1:1 scaled footprint is the exact size when viewed or printed at 100%.

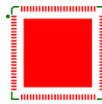


Figure 33.1 100-pin QFN Scaled Footprint

### 33.2 Annotated Footprint

The annotated footprint shows key measurements.

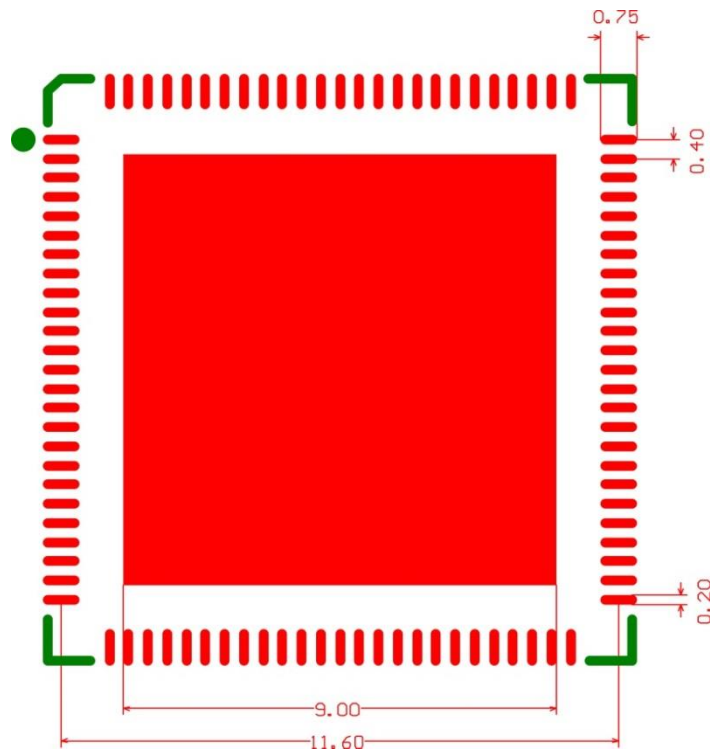


Figure 33.2 100-pin QFN Annotated Footprint

**Note:** Red = top layer copper, other colors are mechanical layers.

**Note:** Connect exposed center pad to GND. Do not place tracks on the top layer of the PCB in this area.

## 34 Contact Information

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## Appendix A – References

### Document References

<http://www.ftdichip.com/Support/Documents/PCBData.htm>

<http://www.ftdichip.com/Products/ICs.htm>

### Acronyms and Abbreviations

Terms	Description
DFN	Dual-Flat No-Leads Package
IC	Integrated Circuit
LQFP	Low Profile Quad Flat Package
PCB	Printed Circuit Board
QFN	Quad Flat No-Leads Package
SSOP	Shrink Small-Outline Package
TSSOP	Thin-Shrink Small Outline Package
VQFN / WQFN	Very Thin Quad Flat No-Lead Package

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## Appendix C – Revision History

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1.0	Initial Release	2016-04-27
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