Dragonchip

DC6688FLT/FST/BT ISP programming interface

AppNote084

Document Revision 1.8

January, 2020

Table of Content

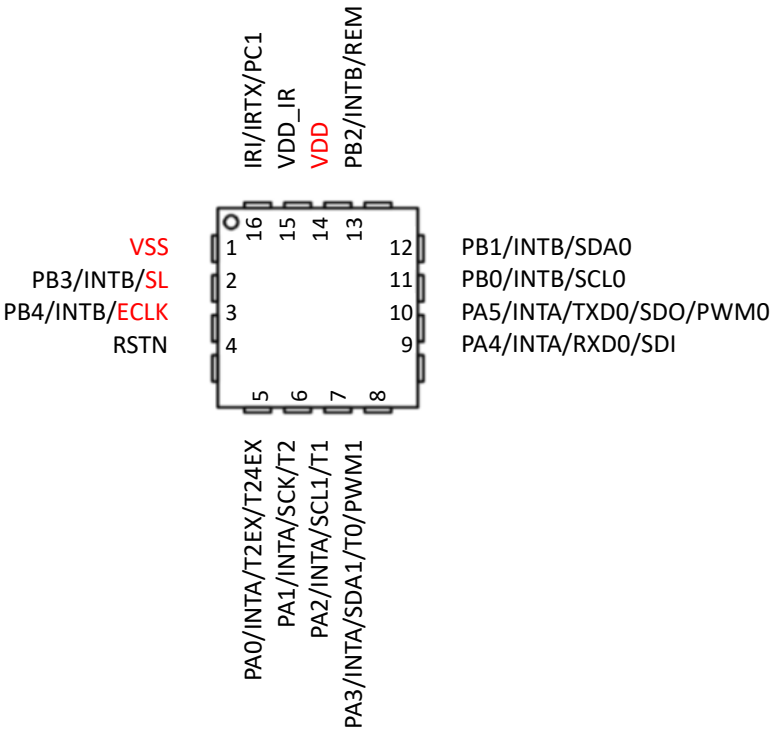
1 Introduction

This document describes how DC6688FLT/DC6688FST/DC6688BT to do programming.

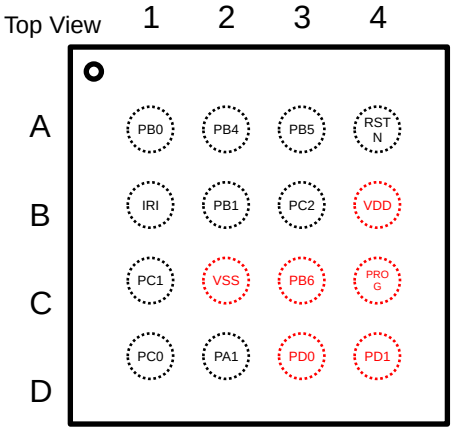
2 Hardware

To do trimming during programming stage, 6 pads are required on PCB to complete this process, and the pins are highlighted in red.

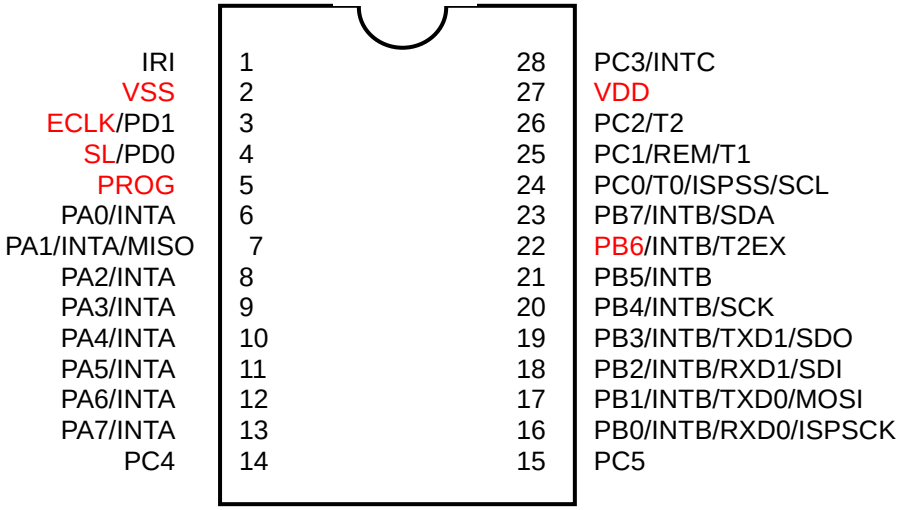
DC6688FL32TH6 (QFN16)



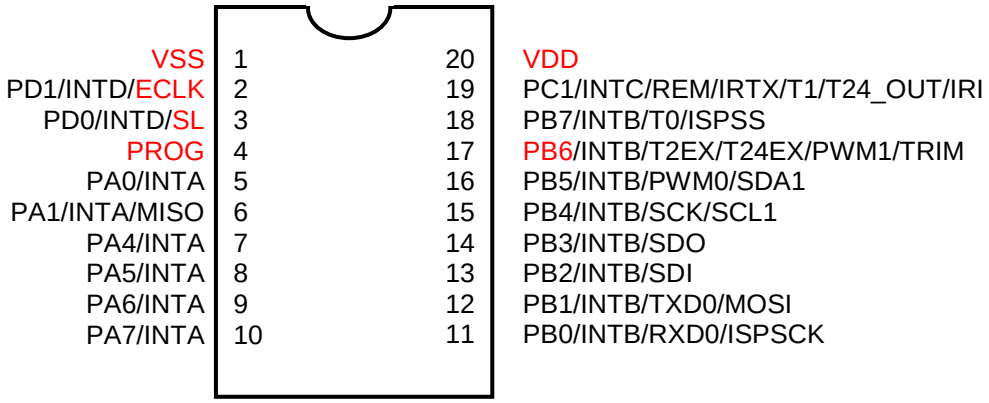
DC6688FL32TC



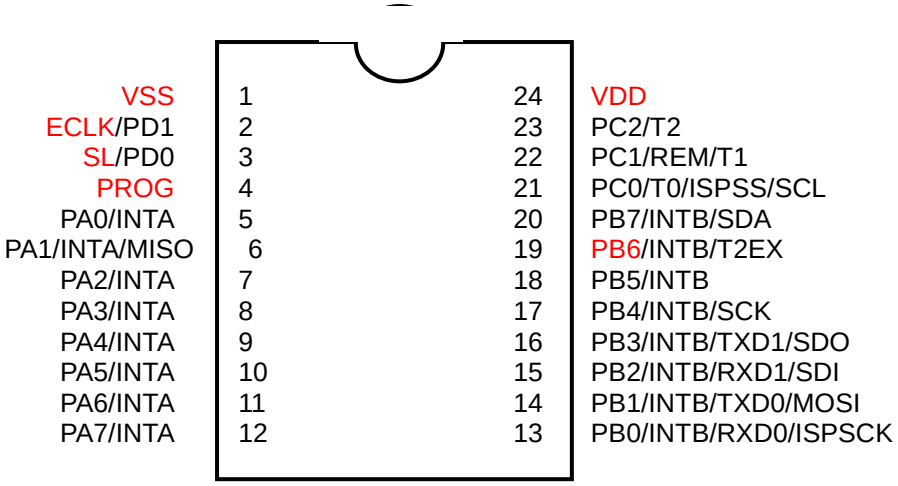
DC6688FL32TT / FL96TT



DC6688FL32TH / FL64TH / FL96TH

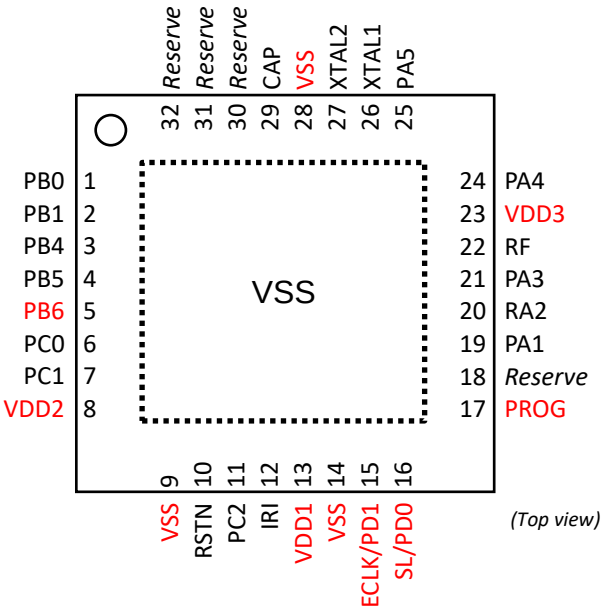


DC6688FST



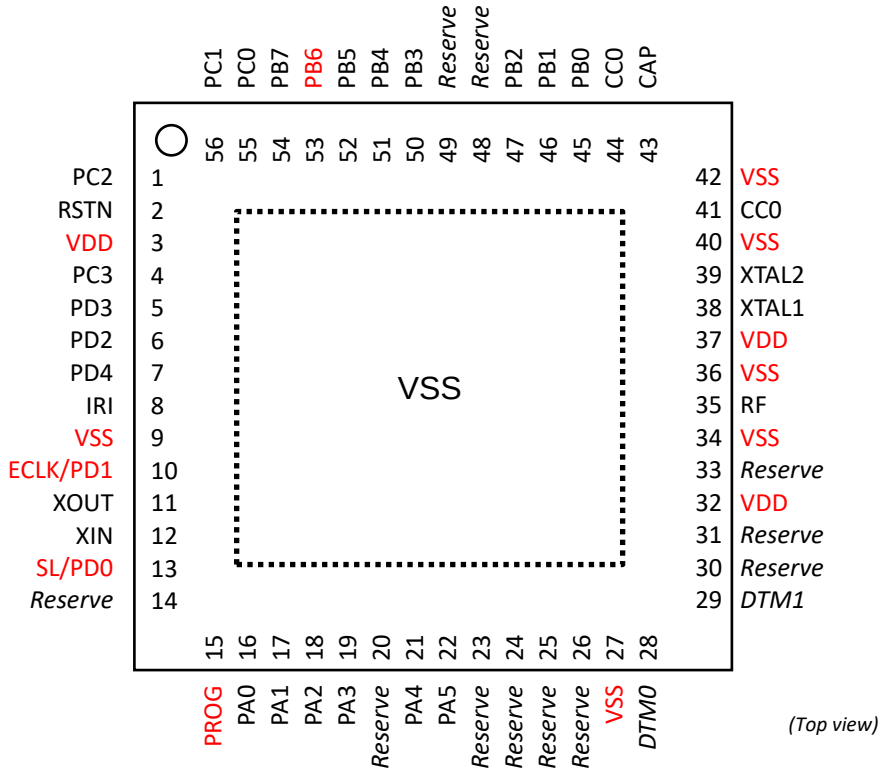
DC6688BT32UL

(QFN32)



DC6688BT96UZ

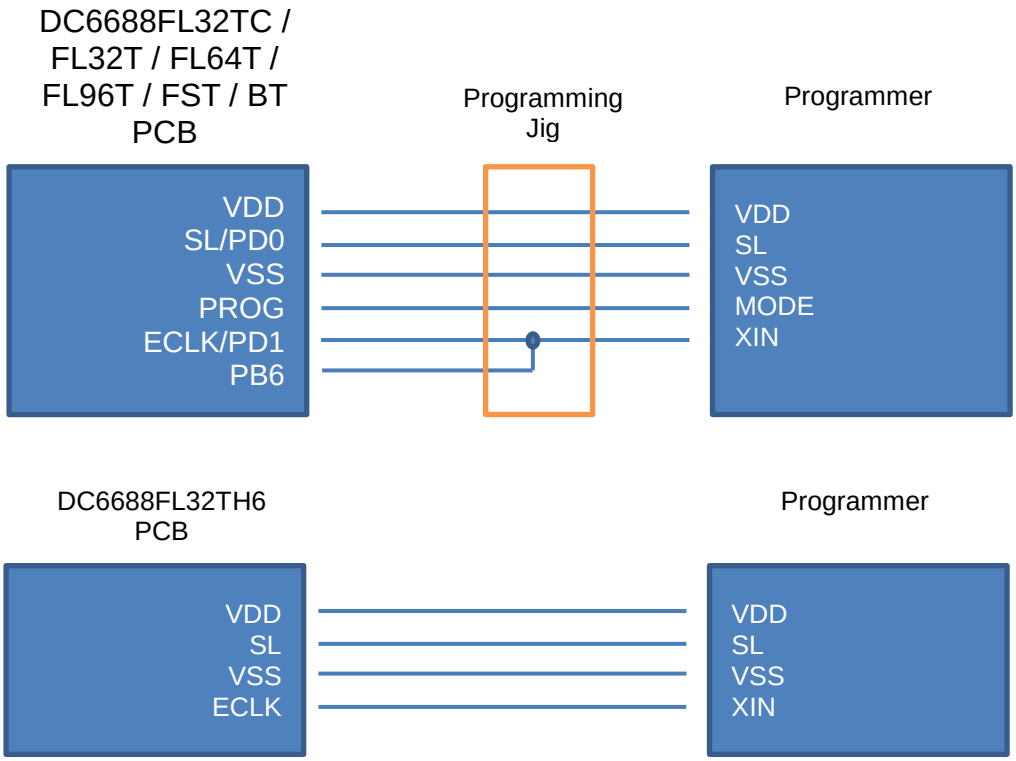
(QFN56)



The programmer requires any one of below:
1. DC6688SLP-USB Rev3.1/3.2.
2. DCT-SLP Rev3.3
3. DCT-EDP Rev3.x

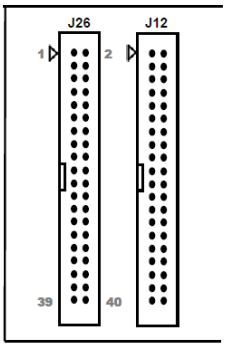
Item 1 and 2 can be able to program up to 8 devices (Device 1 ~ 8).
The pin assignment on the programmer is shown in the following section.

3 DC6688SLP-USB Rev3.1



DC6688FL32TH6 only requires 4 pads.

SLP Rev3.1



J26 Pin Assignment

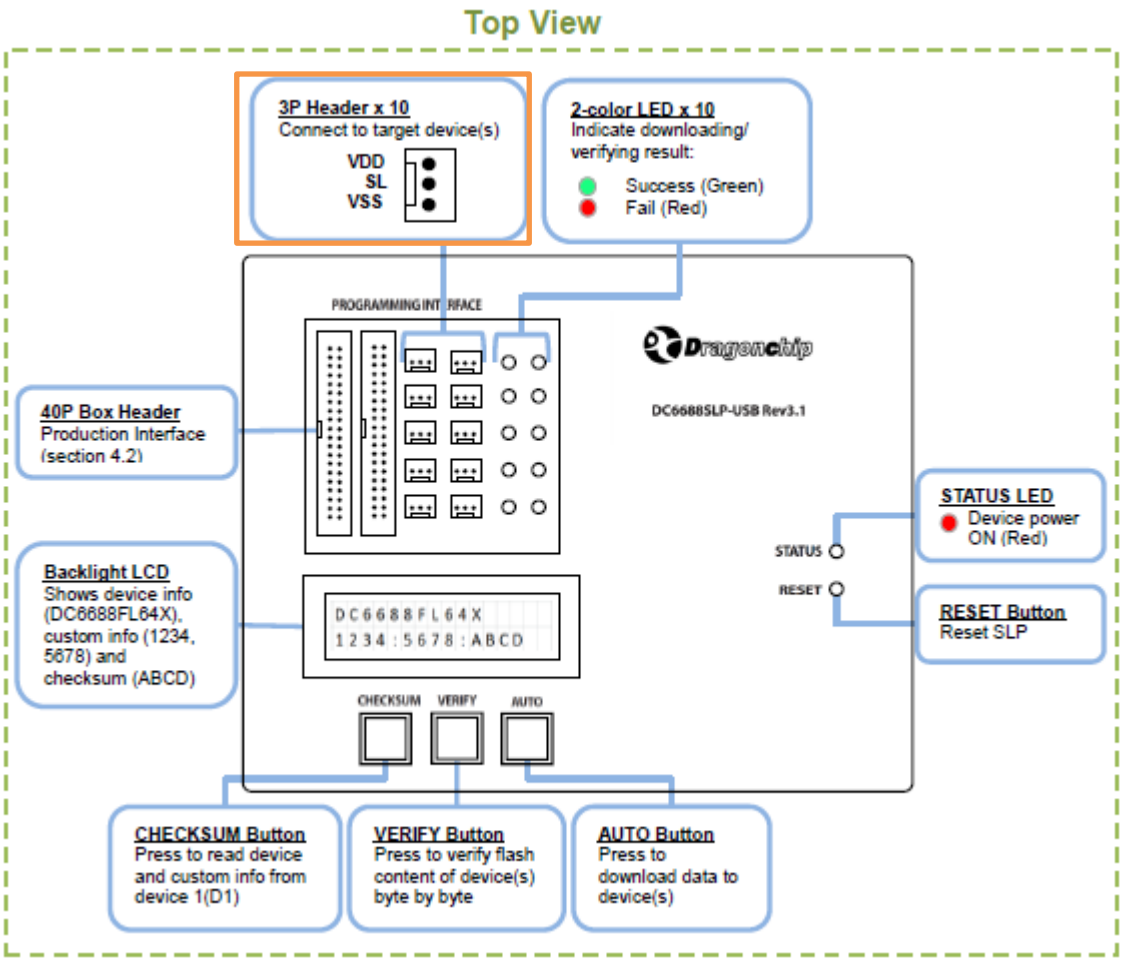
Pin	Name	Connection	Pin	Name	Connection
1	NC	-	2	GND	GND
3	NC	-	4	NC	-
5	NC	-	6	NC	-
7	NC	-	8	NC	-
9	NC	-	10	NC	-
11	NC	-	12	NC	-
13	NC	-	14	NC	-
15	NC	-	16	NC	-
17	NC	-	18	GND	GND
19	GND	GND	20	NC	-
21	XIN1	D1 XIN / XIN2 pin	22	GND	GND
23	XIN2	D2 XIN / XIN2 pin	24	GND	GND
25	XIN3	D3 XIN / XIN2 pin			
27	XIN4	D4 XIN / XIN2 pin			
29	XIN5	D5 XIN / XIN2 pin			
31	XIN6	D6 XIN / XIN2 pin	32	GND	GND
33	XIN7	D7 XIN / XIN2 pin	34	GND	GND
35	XIN8	D8 XIN / XIN2 pin	36	GND	GND
37	XIN9	D9 XIN / XIN2 pin	38	GND	GND
39	XIN10	D10 XIN / XIN2 pin	40	GND	GND

Each XIN pin for 1 IC's ECLK

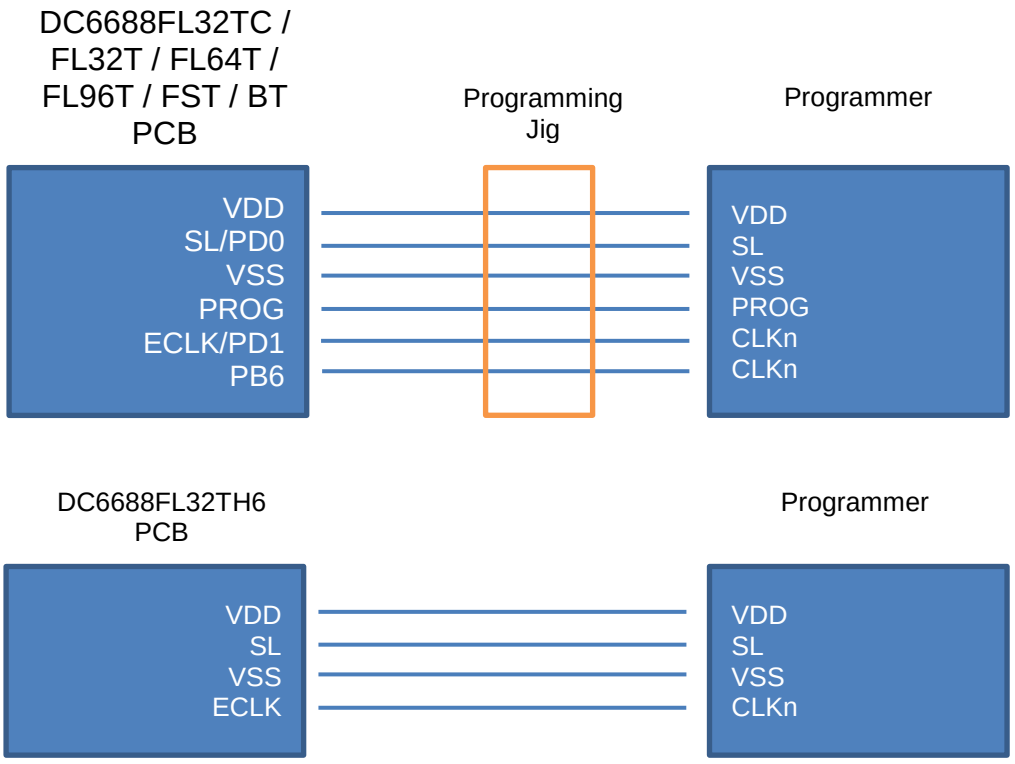
J12 pin assignment

Pin	Name	Connection	Pin	Name	Connection
1	NC	-	2	GND	GND
3	MODE	Programming mode	4	NC	-
5	NC	-	6	NC	-
7	NC	-	8	NC	-
9	NC	-	10	NC	-
11	NC	-	12	NC	-
13	NC	-	14	NC	-
15	NC	-	16	NC	-
17	NC	-	18	NC	-
19	GND	GND	20	NC	-
21	NC	-	22	GND	GND
23	NC	-	24	GND	GND
25	NC	-	26	GND	GND
27	KEY_CS	CHECKSUM Key (short to GND)	28	LED_G_10	Red LED cathode for D10
29	VCC_LED	Power supply for LED	30	GND	GND
31	VCC_LED	Power supply for LED	32	KEY_VF	VERIFY Key (short to GND)
33	VCC_LED	Power supply for LED	34	KEY_AUTO	AUTO Key (short to GND)
35	VCC_LED	Power supply for LED	36	NC	-
37	VCC_LED	Power supply for LED	38	NC	-
39	NC	-	40	GND	GND

VDD / SL / VSS pins connection is shown below.

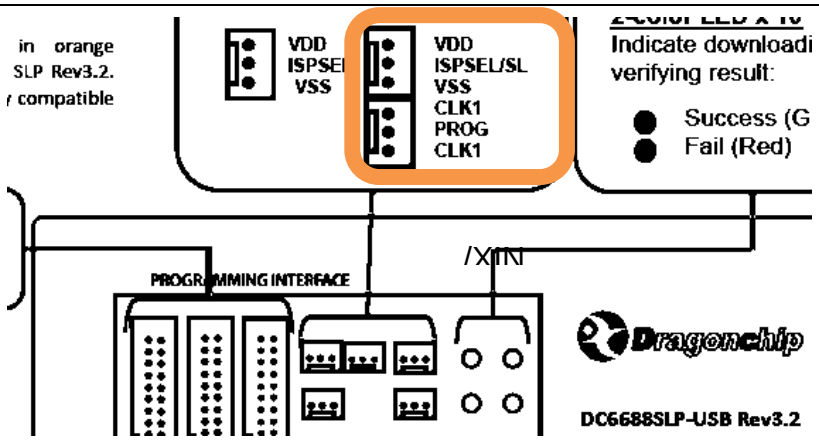

Top View
3P Header x 10
Connect to target device(s)
VDD
SL
VSS
2-color LED x 10
Indicate downloading/ verifying result:
Success (Green)
Fail (Red)
PROGRAMMING INTERFACE
DC6688SLP-USB Rev3.1
40P Box Header
Production Interface (section 4.2)
Backlight LCD
Shows device info (DC6688FL64X), custom info (1234, 5678) and checksum (ABCD)
DC6688FL64X
1234:5678:ABCD
STATUS
RESET
STATUS LED
Device power ON (Red)
RESET Button
Reset SLP
CHECKSUM
VERIFY
AUTO
CHECKSUM Button
Press to read device and custom info from device 1(D1)
VERIFY Button
Press to verify flash content of device(s) byte by byte
AUTO Button
Press to download data to device(s)

4 DC6688SLP-USB Rev3.2

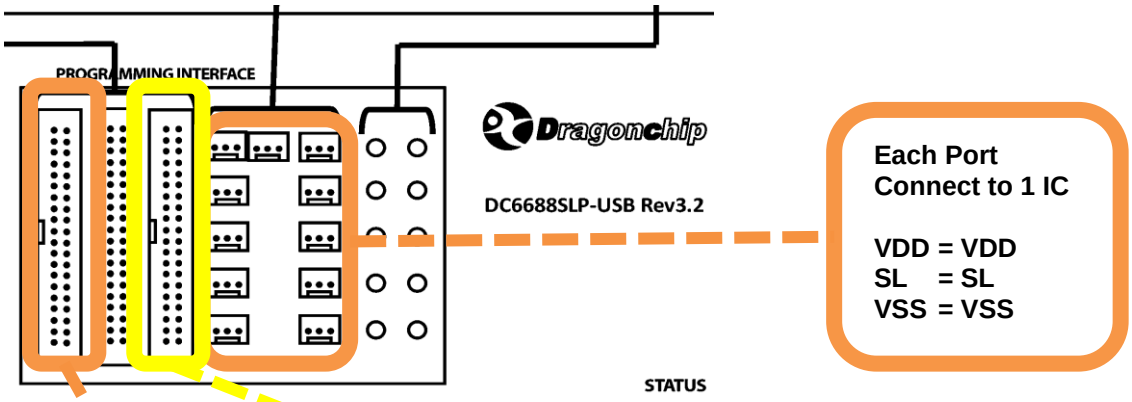


DC6688FL32TH6 only requires 4 pads.

4.1 Single Device Mode



4.2 Multiple Devices Mode



J26 Pin Assignment

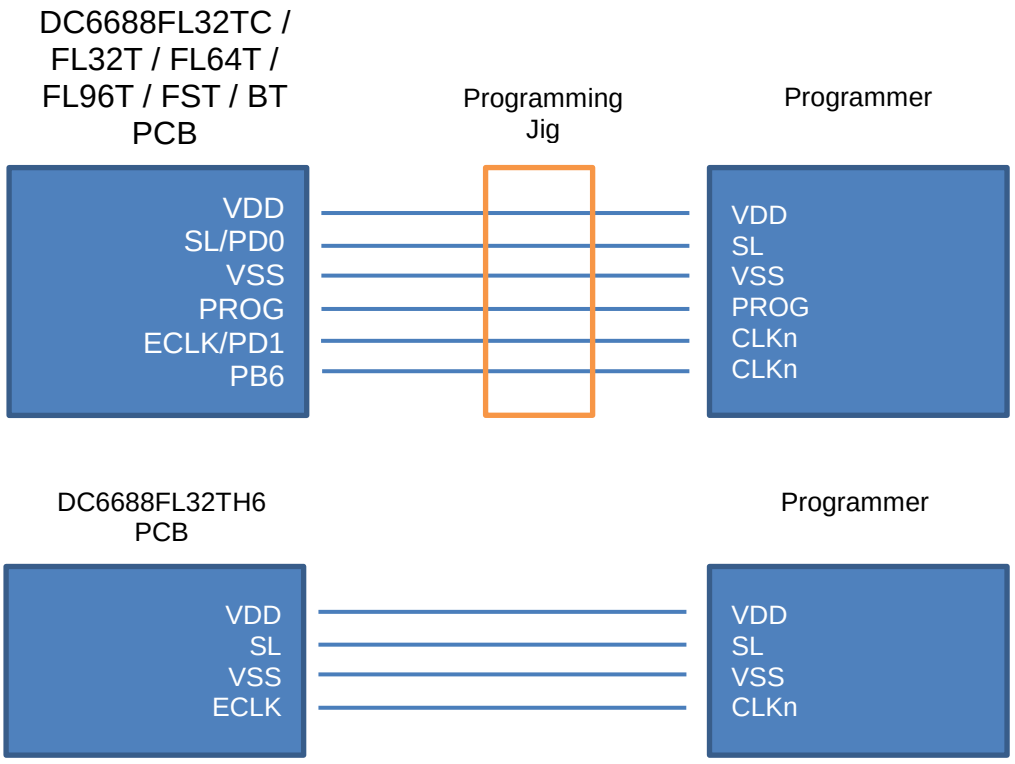
Pin	Name	Connection	Pin	Name
1	LCD_P	LCD module pin 9 (DB2)	2	GND
3	LCD_P8	LCD module pin 8 (DB1)	4	LCD
5	LCD_P7	LCD module pin 7 (DB0)	6	LCD
7	LCD_P6	LCD module pin 6 (E)	8	LCD
9	LCD_P5	LCD module pin 5 (R/W)	10	LCD
11	LCD_P4	LCD module pin 4 (RS)	12	LCD
13	LCD_P3	LCD module pin 3 (VEE)	14	LCD
15	LCD_P2	LCD module pin 2 (VCC)	16	LCD
17	LCD_P1	LCD module pin 1 (VSS)	18	GND
19	GND	GND	20	NC
21	CLK1	D1 XIN/ ECLK pin	22	GND
23	CLK2	D2 XIN/ ECLK pin	24	GND
25	CLK3	D3 XIN/ ECLK pin	26	GND
27	CLK4	D4 XIN/ ECLK pin	28	GND
29	CLK5	D5 XIN/ ECLK pin	30	GND
31	CLK6	D6 XIN/ ECLK pin	32	GND
33	CLK7	D7 XIN/ ECLK pin	34	GND
35	CLK8	D8 XIN/ ECLK pin	36	GND
37	CLK9	D9 XIN/ ECLK pin	38	GND
39	CLK10	D10 XIN/ ECLK pin	40	GND

Each XIN pin for 1 IC's ECLK

J27 Pin Assignment

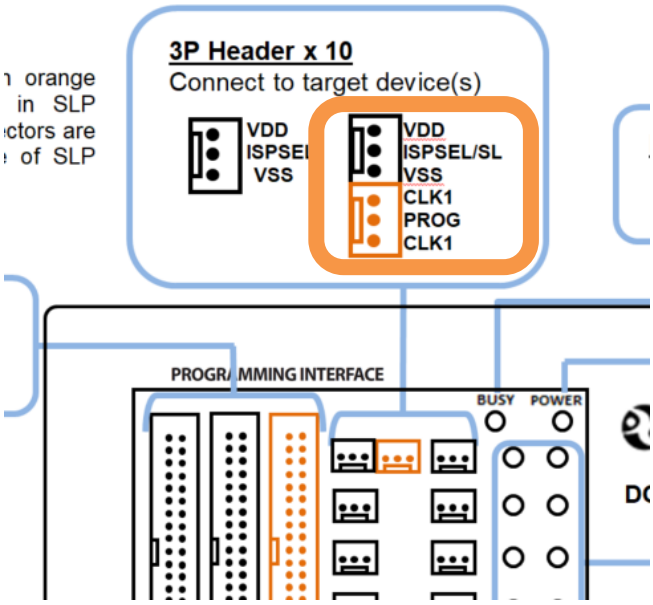
Pin	Name	Connection
1	NC	NC
3	NC	NC
5	NC	NC
7	NC	NC
9	NC	NC
11	NC	NC
15	PROG_A	PROG of D1-D5
17	PROG_B	PROG of D6-D10
19	GND	GND

5 DCT-SLP Rev3.3

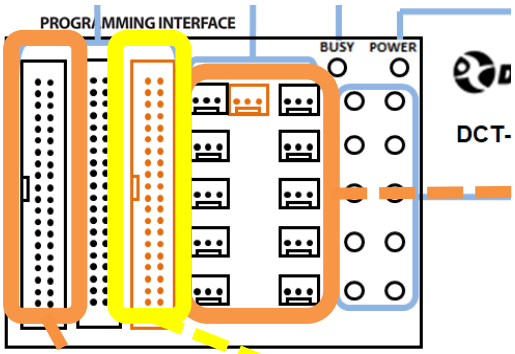


DC6688FL32TH6 only requires 4 pads.

5.1 Single Device Mode



5.2 Multiple Devices Mode



Each Port Connect to 1 IC

VDD = VDD
SL = SL
VSS = VSS

J26 Pin Assignment

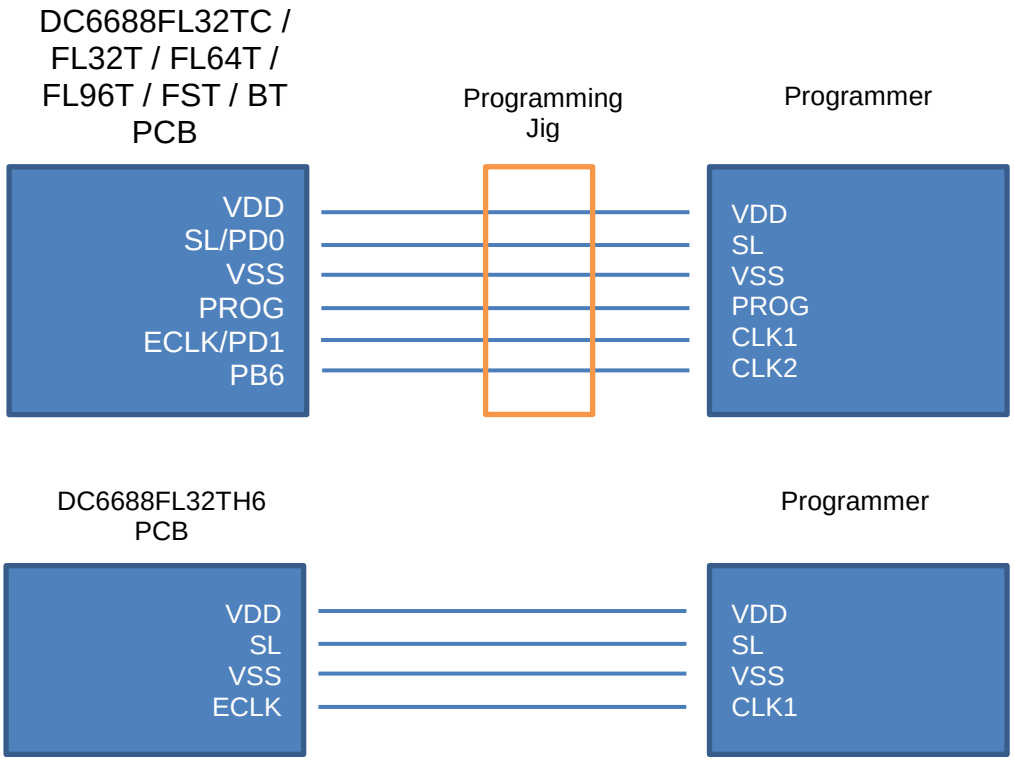
Pin	Name	Connection	Pin	Name
1	LCD_P9	LCD module pin 9 (DB2)	2	GND
3	LCD_P8	LCD module pin 8 (DB1)	4	LCD
5	LCD_P7	LCD module pin 7 (DB0)	6	LCD
7	LCD_P6	LCD module pin 6 (E)	8	LCD
9	LCD_P5	LCD module pin 5 (R/W)	10	LCD
11	LCD_P4	LCD module pin 4 (RS)	12	LCD
13	LCD_P3	LCD module pin 3 (VEE)	14	LCD
15	LCD_P2	LCD module pin 2 (VCC)	16	LCD
17	LCD_P1	LCD module pin 1 (VSS)	18	GND
19	GND	GND	20	NC
21	CLK1	D1 XIN/ ECLK pin	22	GND
23	CLK2	D2 XIN/ ECLK pin	24	GND
25	CLK3	D3 XIN/ ECLK pin	26	GND
27	CLK4	D4 XIN/ ECLK pin	28	GND
29	CLK5	D5 XIN/ ECLK pin	30	GND
31	CLK6	D6 XIN/ ECLK pin	32	GND
33	CLK7	D7 XIN/ ECLK pin	34	GND
35	CLK8	D8 XIN/ ECLK pin	36	GND
37	CLK9	D9 XIN/ ECLK pin	38	GND
39	CLK10	D10 XIN/ ECLK pin	40	GND

Each XIN pin for 1 IC's ECLK

J27 Pin Assignment

Pin	Name	Connection
1	NC	NC
3	NC	NC
5	NC	NC
7	NC	NC
9	NC	NC
11	NC	NC
15	PROG_A	PROG of D1-D5
17	PROG_B	PROG of D6-D10

6 DCT-EDP Rev3.x



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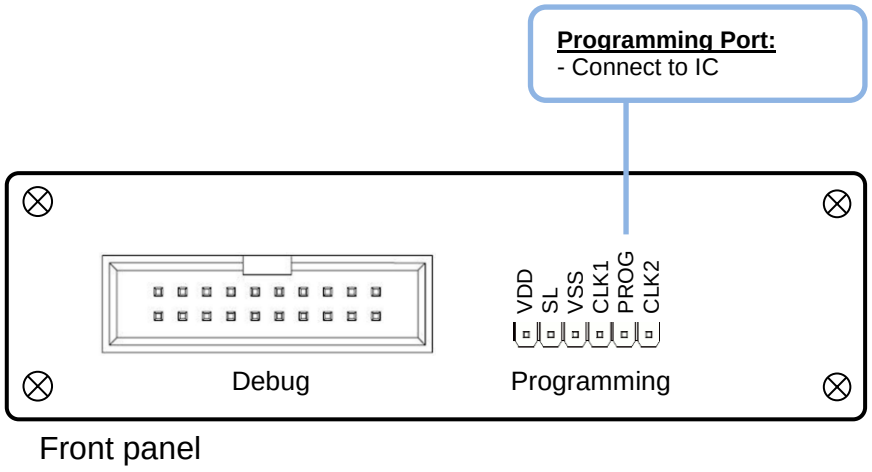

Front panel

Revision History

Document Rev. No.	Issued Date	Section	Page	Description	Edited By	Reviewed By
1.0	Apr, 2014			First release	Philip Hung	Danny Ho
1.1	May, 2014	2	5	Added FL32TT package	Philip Hung	Danny Ho
1.2	May, 2015			Revise 'MODE' pin on DC6688SLP-USB Rev3.1 Added FL32TH6 package Added FL96TT	Danny Ho	Philip Hung
1.3	Oct, 2015			Added DC6688SLP-USB Rev3.2	Danny Ho	Celia Ki
1.4	May, 2016	2		Rename Pin ISPSEL to PROG	Danny Ho	Patrick Li
		4.2		Revise PROG description		
1.5	Dec, 2017			Update cover page	Danny Ho	Patrick Li
1.6	Mar, 2018	2		Added DC6688BT	Danny Ho	Patrick Li
1.7	Jan, 2020	5		Added DCT-SLP Rev3.3	Danny Ho	Patrick Li
		6		Added DCT-EDP Rev3.x		

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