用芯爱世界

ICSPRING

DATASHEET

12-Channel 1:2 MUX/DEMUX

IC9642

Revision V0.1

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中国·深圳
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USING THIS DOCUMENT

This document is intended for the hardware and software engineer’s general information on the IcSpring IC9642 12-Channel 1:2 MUX/DEMUX IC.

Though every effort has been made to ensure that this document is current and accurate, more information may have become available subsequent to the production of this guide. In that event, please contact your IcSpring representative for additional information that may help in the development process.

REVISION HISTORY

Revision	data	Summary
V1.0	2023.02.22	Draft released

Table of Contents

1.Introduction

1.1 Description

The IC9642 is a 12 channel 1:2 or 2:1 bidirectional multiplexer/demultiplexer. The IC9642 operates 3.3V and offers low resistance to achieve a typical bandwidth of up to 6.9 GHz. The device provides the high bandwidth necessary for HDMI 2.0 applications. The IC9642 offers a power down mode to operate minimal power consumption.

2.Features

2.1. General System Features

- 2:1 multiplexer
- 1:2 demultiplexer
- VCC: 3.3V
- I/O: 0 ~ 5V
- Support HDMI 2.0 up to 4K 60Hz
- ESD Performance

– 2KV Human Body Model

- 42-pin WQFN Package (9 mm x 3.5 mm, 0.5 mm pitch)

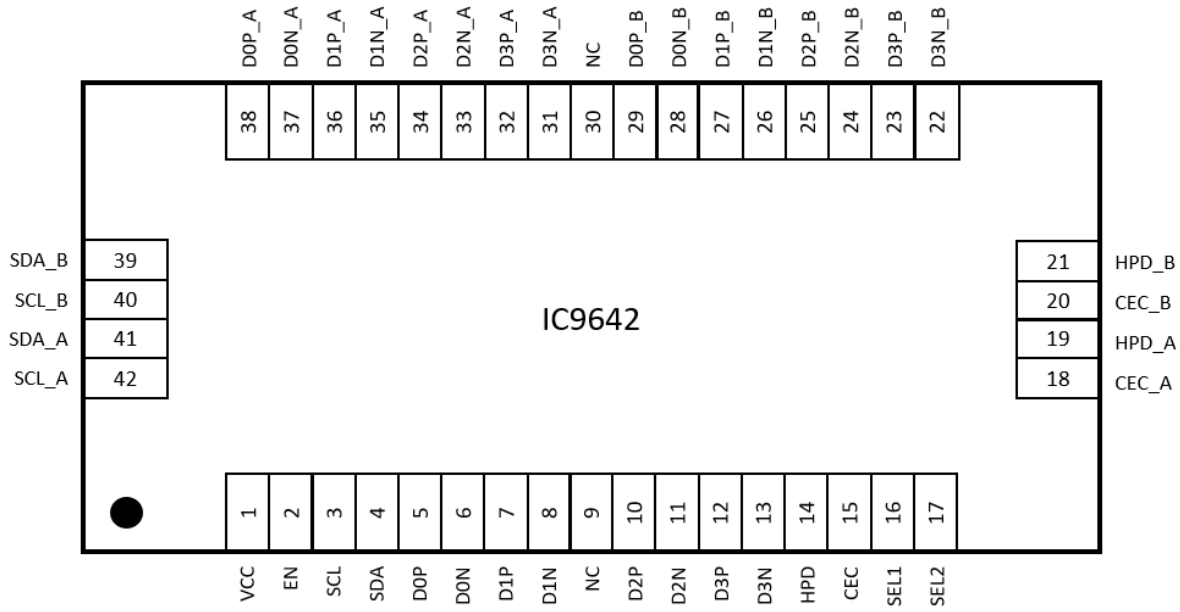
2.2 Applications

- General Purpose DVI 1.0
- DisplayPort
- TMDS
- LVDS
- High-Speed
- HDMI Signal Switching

3. Pin Assignment

3.1 Pin Assignment

Figure 3.1 Pin Assignment Diagram



3.2 Pin Descriptions

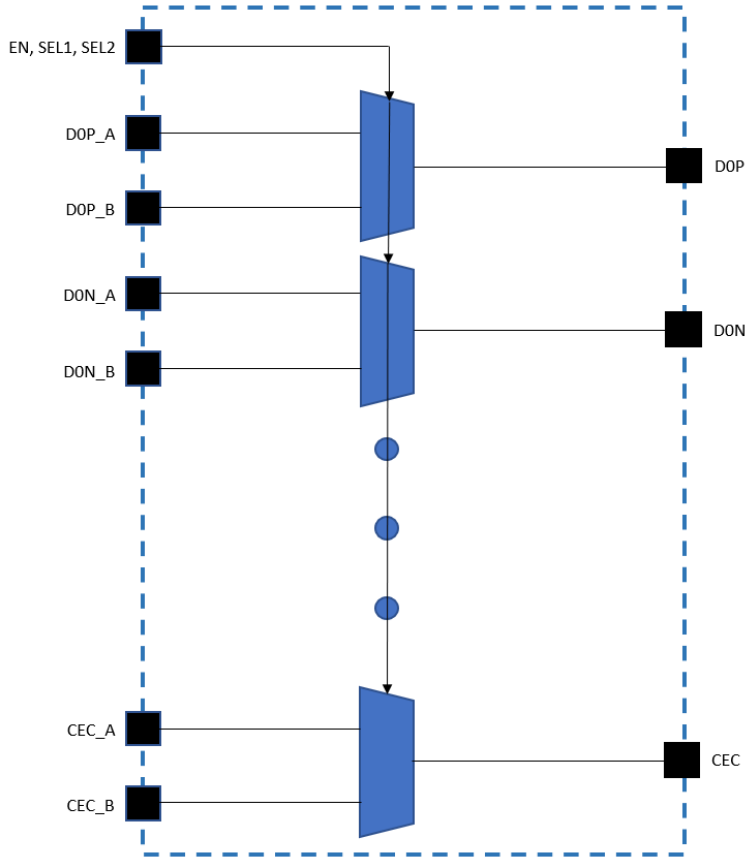
PIN	Pin Name	I/O	Description
1	VCC	Power	Supply Voltage
2	EN	I	Output Enable
3	SCL	I/O	Common Port, DDC Clock
4	SDA	I/O	Common Port, DDC Data
5	D0P	I/O	Common Port, Channel 0, positive signal
6	D0N	I/O	Common Port, Channel 0, negative signal
7	D1P	I/O	Common Port, Channel 1, positive signal
8	D1N	I/O	Common Port, Channel 1, negative signal
9	NC	NC	No Connect
10	D2P	I/O	Common Port, Channel 2, positive signal
11	D2N	I/O	Common Port, Channel 2, negative signal
12	D3P	I/O	Common Port, Channel 3, positive signal
13	D3N	I/O	Common Port, Channel 3, negative signal
14	HPD	I/O	Common Port, Hot Plug Detects
15	CEC	I/O	Common Port, Consumer Electronics Control
16	SEL1	I	Select Input1
17	SEL2	I	Select Input2
18	CEC_A	I/O	Port A, Consumer Electronics Control
19	HPD_A	I/O	Port A, Hot Plug Detects
20	CEC_B	I/O	Port B, Consumer Electronics Control
21	HPD_B	I/O	Port B, Hot Plug Detects
22	D3N_B	I/O	Port B, Channel 3, negative signal
23	D3P_B	I/O	Port B, Channel 3, positive signal
24	D2N_B	I/O	Port B, Channel 2, negative signal
25	D2P_B	I/O	Port B, Channel 2, positive signal

26	D1N_B	I/O	Port B, Channel 1, negative signal
27	D1P_B	I/O	Port B, Channel 1, positive signal
28	D0N_B	I/O	Port B, Channel 0, negative signal
29	D0P_B	I/O	Port B, Channel 0, positive signal
30	NC	NC	No Connect
31	D3N_A	I/O	Port A, Channel 3, negative signal
32	D3P_A	I/O	Port A, Channel 3, positive signal
33	D2N_A	I/O	Port A, Channel 2, negative signal
34	D2P_A	I/O	Port A, Channel 2, positive signal
35	D1N_A	I/O	Port A, Channel 1, negative signal
36	D1P_A	I/O	Port A, Channel 1, positive signal
37	D0N_A	I/O	Port A, Channel 0, negative signal
38	D0P_A	I/O	Port A, Channel 0, positive signal
39	SDA_B	I/O	Port B, DDC Data
40	SCL_B	I/O	Port B, DDC Clock
41	SDA_A	I/O	Port A, DDC Data
42	SCL_A	I/O	Port A, DDC Clock
GND	Thermal Pad	GND	Ground

4. System Functional Descriptions

4.1 Functional Block Diagram

Figure 4.1 IC9642 Block Diagram

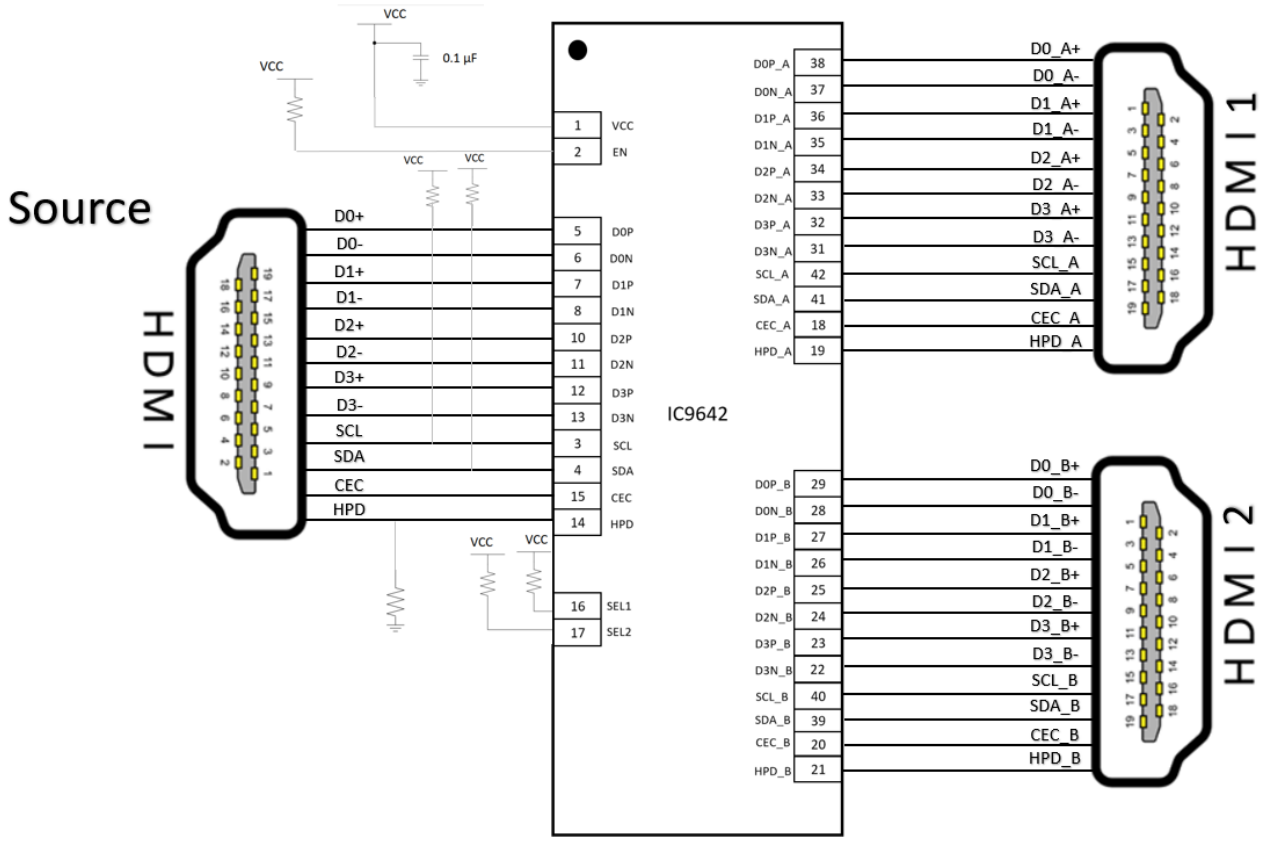


4.2 Device Functional Modes

Figure 4.2 Functional Table

EN	SEL1	SEL2	FUNCTION
L	X	X	Switch disabled. All channels are Hi-Z.
H	L	L	Channel D0P/D0N to D0P_A / D0N_A is ON. All the other channels are Hi-Z.
H	L	H	Channel D0P/D0N to D0P_B / D0N_B is ON. All the other channels are Hi-Z.
H	H	L	All A channels are enabled. All B channels are Hi-Z.
H	H	H	All B channels are enabled. All A channels are Hi-Z.

4.3 HDMI Application Schematic



5. Electrical Characteristics

5.1 Absolute Maximum Ratings

Table 5.1. Absolute Maximum Ratings

Parameter		Ratings
VCC		-0.5 V to 3.6 V
VI/O	ALL I/O	-0.5 V to 3.6 V
VIN	SEL1, SEL2, EN	-0.5 V to 3.6 V
Operating temperature (TA)		0°C ~80°C
Storage temperature range (TSTG)		-60°C ~150°C
	ESD (Electrostatic Discharge, Human Body Mode)	
All Pin Susceptibility Voltage		2KV

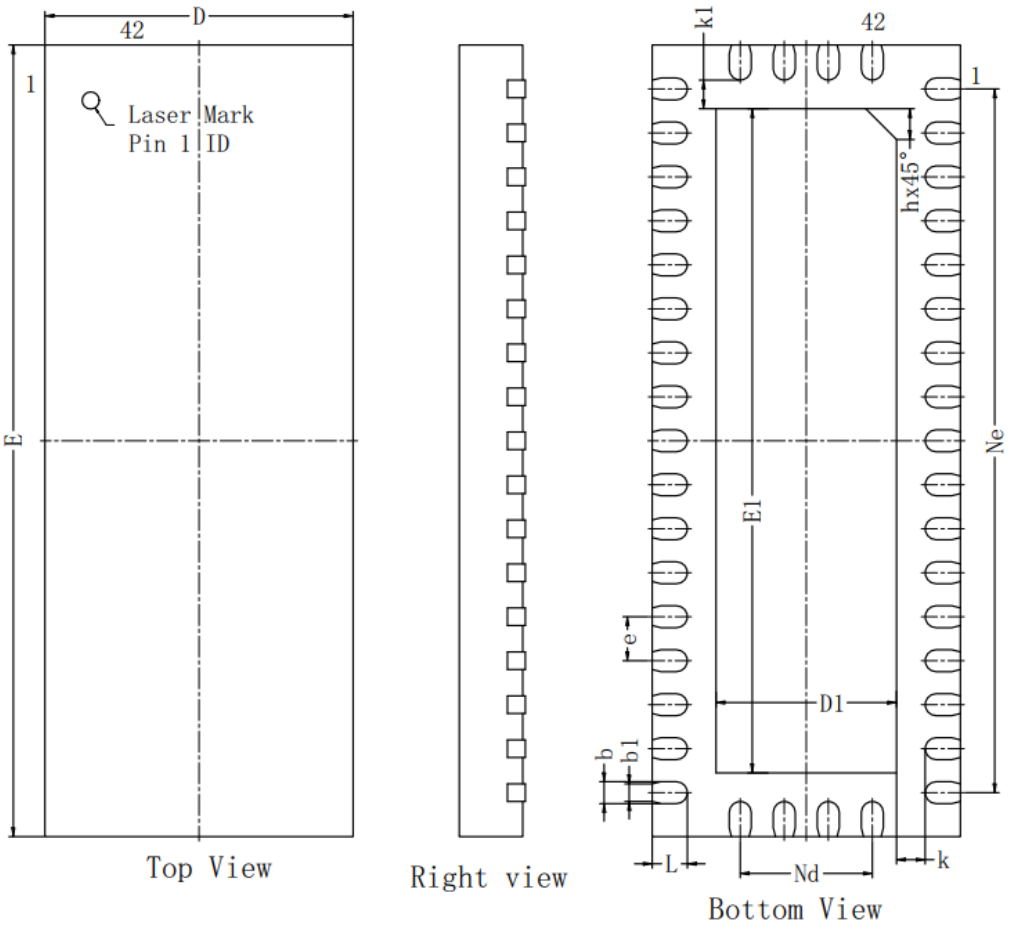
5.2 DC Characteristics

Table 5.2 General DC Characteristics

PARAMETER	TEST CONDITIONS		MIN	TYP	MAX	UNIT
PORT A						
I_{OFF}	All outputs	V_{CC} = 0 V, $V_{I/O}$ = 0 to 3.6 V, V_{IN} = 0 V to 3.6 V			±10	µA
PORT B						
I_{OFF}	All outputs	V_{CC} = 0 V, $V_{I/O}$ = 0 V to 3.6 V, V_{IN} = 0 V to 3.6 V			±10	µA
DIGITAL INPUTS (SEL1, SEL2, EN)						
V_{IH}	SEL1, SEL2, EN		1.4			V
V_{IL}	SEL1, SEL2, EN				0.5	V
I_{IH}	SEL1, SEL2, EN	V_{CC} = 3.6 V, V_{IN} = 3.6V			±10	µA
I_{IL}	SEL1, SEL2, EN	V_{CC} = 3.6 V, V_{IN} = GND			±10	µA
SUPPLY						
V_{CC}				3.3		V
I_{CC}		V_{CC} = 3.6 V, $I_{I/O}$ = 0, Normal Operation Mode, EN = H			50	µA
I_{CC}, PD		V_{CC} = 3.6 V, $I_{I/O}$ = 0, EN = L			10	µA

6. Mechanical Information

Figure 6.1 Mechanical Information Diagram



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	/	0.05
A2		0.203 REF	
b	0.20	0.25	0.30
b1		0.20 REF.	
D	3.40	3.50	3.60
D1	1.95	2.05	2.15
E	8.90	9.00	9.10
E1	7.45	7.55	7.65
e		0.50 BSC	
Nd		1.50 BSC	
Ne		8.00 BSC	
h		0.35 REF.	
k		0.325 REF.	
k1		0.325 REF.	
L	0.30	0.40	0.50