

YHM4202



Tiny Size, Dual Channel Bi-direction Voltage-Level Translator

Features

- Single 1.6V to 5.5V Supply Voltage
- Enable and High Voltage Supply from VCCEN
- Low Voltage Decided by Internal LDO, down to 0.9V
- Supports 10MHz Open-Drain Operation without external pull up resistor
- I2C Requirements for Standard, Fast, and High Speeds
- Low Transmission Gate Ron: 20Ω
- Pullup Resistor Enabled for High Voltage Side
- 1.3uA Supply Current
- Tiny 0.9mm x 1.1mm 6-pin DFN or 2.07mm x 2.30mm 6-pin SC70

Applications

- I2C, SMBus, PMBus, MDIO, UART, low-speed SDIO, GPIO, and other two-signal interfaces

General Description

The YHM4202 is a dual channel, bidirectional I2C, SMBus or GPIO voltage-level translator, designed specifically for low power consumption making it suitable for portable and battery powered equipment. Externally applied voltages, VH and VL, set the logic levels on either side of the device. A logic signal present on the VL side of the device appears as the same logic signal on the VH side of the device, and vice-versa.

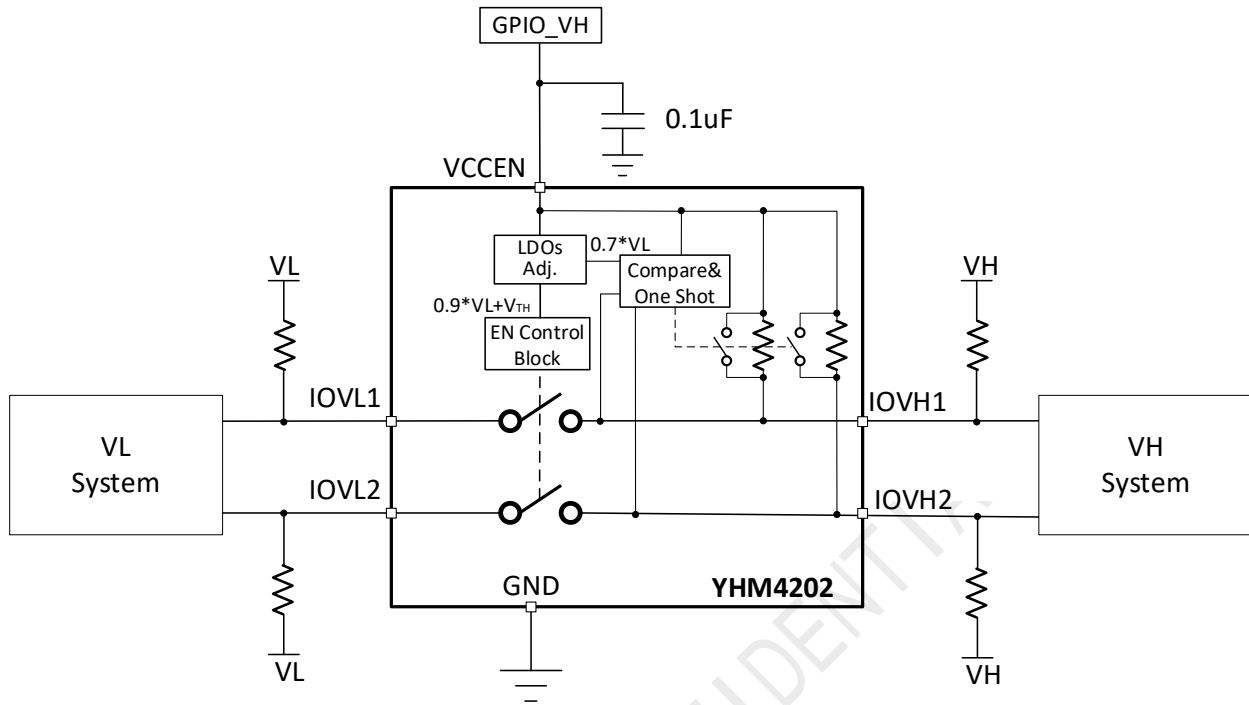
The device is operational from 0.9V to 3.3V VL and 1.6V to 5.5V VH, with only one VCCEN pin which is tied to VH for enable and internal LDO input. The VL is decided by internal LDO output, which can be used for 0.9V/1.2V/1.8V/2.5V/3V/3.3V IO by different device version A/B/C/D/E. When VCCEN is low, the translator switch is off, and a high-impedance state exists between ports.

The Device also integrate one shot block to reduce the rise time for high speed application.

The YHM4202 comes in a 6 PIN, 0.4mm Pitch, 0.9mmx1.1mm DFN-6 package or a 6 PIN, 2.07mm x 2.30mm SC70-6 package.

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*External pull resistor is optional

Fig 1. YHM4202 Internal Block Diagram

YHM4202

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YHM4202 DFN Pin Configurations

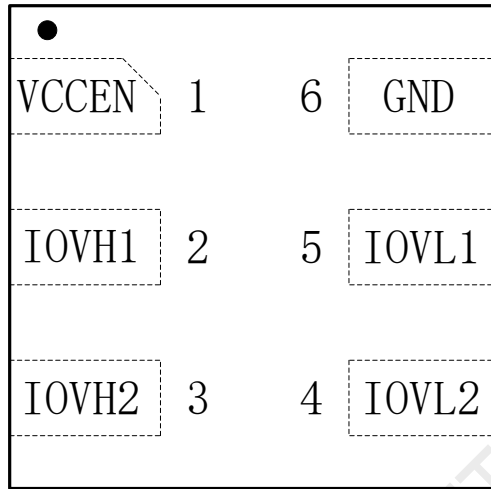


Fig 2. YHM4202 DFN-6 Pin Assignment(Top Through View)

YHM4202 DFN Pin Descriptions

DFN	Name	Description
1	VCCEN	Power Supply and Enable. Connect to VH GPIO. Bypass a 0.1uF capacitor.
2	IOVH1	High Voltage Input/Output 1. Reference to VH.
3	IOVH2	High Voltage Input/Output 2. Reference to VH.
4	IOVL2	Low Voltage Input/Output 2. Reference to VL.
5	IOVL1	Low Voltage Input/Output 1. Reference to VL.
6	GND	Ground.

YHM4202

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YHM4205 SC70 Pin Configurations

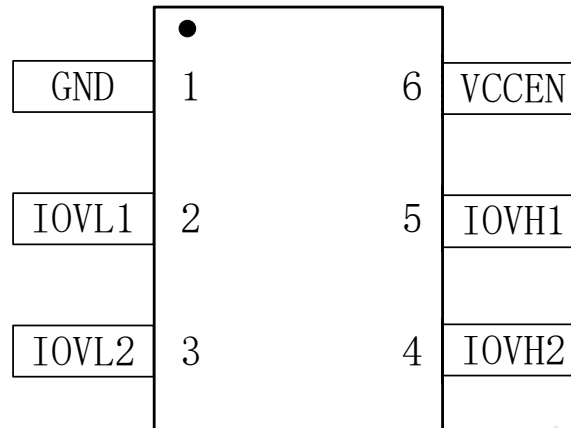


Fig 3. YHM4202 SC70-6 Pin Assignment(Top Through View)

YHM4205 SC70 Pin Descriptions

SC70	Name	Description
1	GND	Ground.
2	IOVL1	Low Voltage Input/Output1. Reference to VL.
3	IOVL2	Low Voltage Input/Output2. Reference to VL.
4	IOVH2	High Voltage Input/Output2. Reference to VH.
5	IOVH1	High Voltage Input/Output1. Reference to VH.
6	VCCEN	Power Supply and Enable. Connect to VH GPIO. Bypass a 0.1uF capacitor.

YHM4202



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1 Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Disclaimer: YHMICROS reserves the right to make any change in circuit design, specification or other related things if needed without notice at any time.

Symbol	Parameters	Min.	Max.	Unit
VCCEN	VCCEN to GND	-0.3	6	V
VIOVH	IOVH1/2 to GND	-0.3	6	V
VIOVL	IOVL1/2 to GND	-0.3	6	V
I _{VCCEN}	Continuous Input Current		100	mA
I _{IO}	Continuous channel current		±100	mA
t _{PD}	Total Power Dissipation at T _A =25°C			mW
T _{STG}	Storage Junction Temperature	-65	+150	°C
T _J	Operating Junction Temperature		+150	°C
T _L	Lead Temperature (Soldering, 10 Seconds)		+260	°C
θ _{JA}	Thermal Resistance, Junction-to-Ambient (100mm ² pad of 1 oz. copper)			°C/W
All Pins	Electrostatic Discharge Capability	Human Body Model, EIA/JESD22-A114	2	KV
		Charged Device Model, JESD22-C101	1	

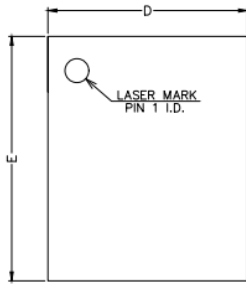
Note 1. Refer to JEDEC JESD51-7, use a 4-layerboard

YHM4202

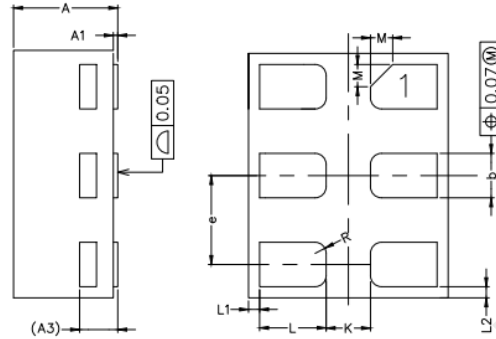
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Package Dimensions

DFN-6 0.9x1.1x0.55



TOP VIEW

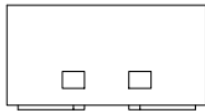


SIDE VIEW

BOTTOM VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.50	0.55	0.60
A1	0.00	0.02	0.05
A3	0.152REF		
b	0.15	0.20	0.25
D	0.85	0.90	0.95
E	1.05	1.10	1.15
e	0.35	0.40	0.45
K	0.15	0.20	0.25
L	0.25	0.30	0.35
L1	0.00	0.05	0.10
L2	0.00	0.05	0.10
M	0.10REF		
R	0.05REF		



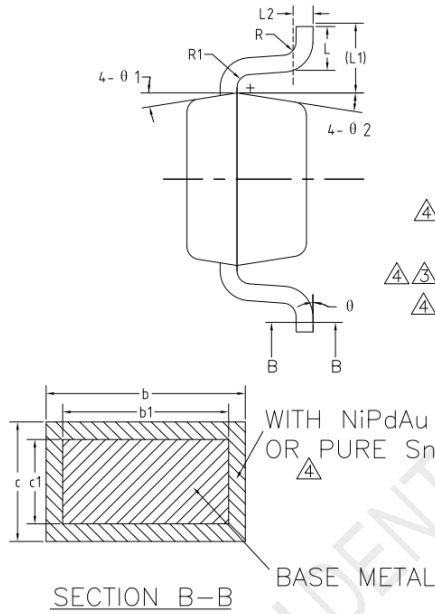
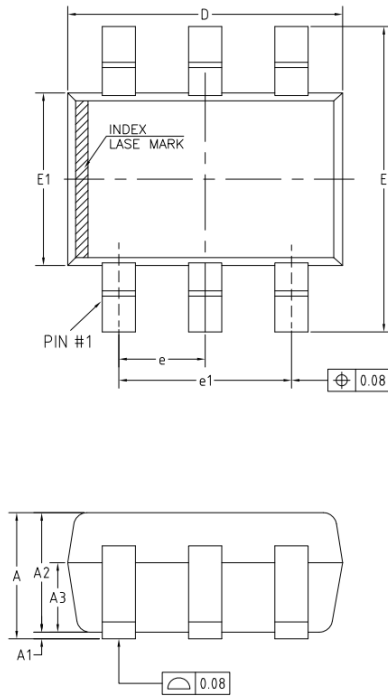
SIDE VIEW

NOTES:
ALL DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PROTRUSION.

YHM4202

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SC70-6 2.07 x 2.30 x 0.95



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.85	—	1.05
A1	0	—	0.10
A2	0.80	0.90	1.00
A3	0.47	0.52	0.57
b	NiPdAu 0.22	—	0.29
	PURE Sn 0.23	—	0.33
b1	0.22	0.25	0.28
c	NiPdAu 0.115	—	0.15
	PURE Sn 0.12	—	0.18
c1	0.115	0.13	0.14
D	2.02	2.07	2.12
E	2.20	2.30	2.40
E1	1.25	1.30	1.35
e	0.60	0.65	0.70
e1	1.20	1.30	1.40
L	0.28	0.33	0.38
L1	0.50REF		
L2	0.15BSC		
R	0.10	—	—
R1	0.10	—	0.25
0	0°	—	8°
0 1	6°	9°	12°
0 2	6°	9°	12°

NOTES:
ALL DIMENSIONS REFER TO JEDEC STANDARD MO-203 AB
DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
MOLD FLASH, PROTRUSIONS OR GATE BURRS WILL NOT EXCEED 0.15mm PER SIDE.

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Ordering Information

Part Number	Temp Range	Pin Package	Top Mark	MOQ
YHM4202AD6T	-40°C to 85°C	6 DFN	2A	3000
YHM4202BD6T	-40°C to 85°C	6 DFN	2B	3000
YHM4202CD6T	-40°C to 85°C	6 DFN	2C	3000
YHM4202DD6T	-40°C to 85°C	6 DFN	2D	3000
YHM4202ED6T	-40°C to 85°C	6 DFN	2E	3000
YHM4202AS6T	-40°C to 85°C	6 SC70	XXX2A	3000
YHM4202BS6T	-40°C to 85°C	6 SC70	XXX2B	3000
YHM4202CS6T	-40°C to 85°C	6 SC70	XXX2C	3000
YHM4202DS6T	-40°C to 85°C	6 SC70	XXX2D	3000
YHM4202ES6T	-40°C to 85°C	6 SC70	XXX2E	3000

T = Tape and reel.

XXX = The last three number of LOTID.

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