

Application

- Industrial control signal transmission
- Grid relay protection device
- Isolated power control
- Replace Optocoupler
- Industrial motor control
- Solar inverter

Features

- 2.5V-5.5V power supply
- Isolation voltage is 3kV RMS
- The CMTI of common mode transient suppression was up to 150KV/uS
- 2.1V undervoltage protection
- Maximum signal transmission is 90Mbps
- Transmission latency is as low as 10nS

Product description

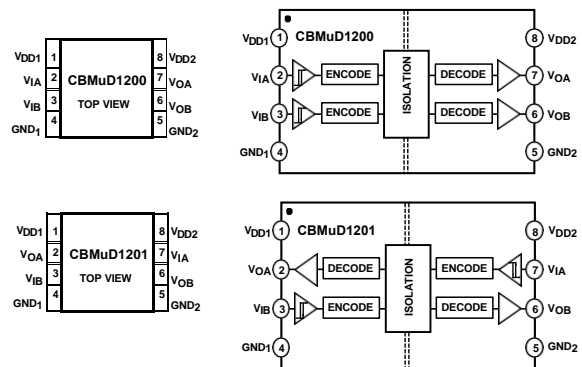
- The CbMuD120X series is a high-speed 2-channel digital isolator.
- Integrated high-performance capacitive isolation technology.
- The maximum signal transmission rate is up to 90Mbps, with small pulse width distortion.
- The device can withstand a high isolation voltage and meets the conventional one Test Specifications (UL Standards).
- No requirements for the external electromagnetic field environment

Device selection information

Product model	Function definition	Default output
CBMuD1201L	Two-way	The default output is low
CBMuD1201H	Two-way	The default output is high
CBMuD1200L	One-way	The default output is low
CBMuD1200H	One-way	The default output is high

- Pulse width distortion was as low as 5nS
- Static power consumption is as low as 300uA
- The dynamic power consumption is 6mA / channel
- Operating temperature support from -40°C to +85°C

Quin brief & function box diagram



Electrical parameters

Absolute electrical parameters

Symbol	Parameters	Min	Max	Units
V _{CC}	Supply voltage	-0.3	6	V
V _{IO}	I/O service voltage	GND-0.3	V _{CC} +0.5	
I _O	I/O port maximum output current	-50	+50	mA
T _J	Junction temperature		150	°C
T _S	Storage temperature	-50	150	°C
T _J	Junction temperature	-	150	°C

Electrostatic protection parameters

Symbol	Parameters		Units
VESD-HBM	Human Body Model, per ANSI/ESDA/JEDEC JS-001	±3000	V
VESD-CDM	Charged Device Model, per JEDEC specification JESD22-C101	±500	V

Recommended working parameters and electrical parameters

At T_A = -40°C to 85°C, V_S = 2.5V to 5.5V (unless otherwise specified)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V _{DD}	Supply Voltage	Operating	2.5	-	5.5	
V _{IH}	Logic input is a high level		0.7xV _{DD}			V
V _{IL}	Logical low-level input				0.3xV _{DD}	V
	Rated electrolyte isolation voltage	For 1 minute	3000			V RMS
	Minimum external creepage distance	Measure input to output, the shortest distance along the shell	3.9			mm
	Minimum gap between PCB layers	The shortest distance of each layer of PCB power domain	3.9			mm

Performance parameters under 2.5V power supply (At $T_A = -40^{\circ}\text{C}$ to 85°C , $V_{DD1}=V_{DD2} = 2.5\text{V}$)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
DR	Data rate			90		Mbps
t_{PHL}	High to low transmission latency	50% input to 50% output		10	13	ns
t_{PLH}	Low to high transmission latency	50% input to 50% output		10	13	ns
PW	Minimum pulse width		10			ns
t_M	Channel matching				3	ns
PWD	Pulse distortion				6	ns
t_r	Output up time	Output rise time, 10%~90% 10pF load	1.5	2	3	ns
t_f	Output drop time	Lower up time, 90%~10% 10pF load	1.5	2	3	ns
IDDI(Q)	Power static current	Enter the suspension		280		$\mu\text{A}/$ channel
IDDI(D)	Dynamic power current	The input signal is 2Mbps, $CL=10\text{pF}$	2.5	3.2	4.4	$\text{mA}/$ channel
IDDI(D)	Dynamic power current	The input signal is 20Mbps, $CL=10\text{pF}$	6.6	8	9.2	$\text{mA}/$ channel
IDDI(D)	Dynamic power current	The input signal is 60Mbps, $CL=10\text{pF}$	10.3	12.7	15.2	$\text{mA}/$ channel

Performance parameters under 3.3V power supply (At $T_A = -40^{\circ}\text{C}$ to 85°C , $V_{DD1}=V_{DD2} = 3.3\text{V}$)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
DR	Data rate			90		Mbps
t_{PHL}	High to low transmission latency	50% input to 50% output		7	12	ns
t_{PLH}	Low to high transmission latency	50% input to 50% output		7	12	ns
PW	Minimum pulse width		10			ns
t_M	Channel matching				3	ns
PWD	Pulse distortion				6	ns
t_r	Output up time	Output rise time, 10%~90% 10pF load	1.5	2	3	ns
t_f	Output drop time	Lower up time, 90%~10% 10pF load	1.5	2	3	ns

CBMuD1200 CbMuD1201

High common-mode transient interference, high speed, low power consumption, 2 channel digital isolator

IDDI(Q)	Power static current	Enter the suspension		290		uA/ channel
IDDI(D)	Dynamic power current	The input signal is 2Mbps, CL=10pF	4.9	6.1	7.2	mA/ channel
IDDI(D)	Dynamic power current	The input signal is 20Mbps, CL=10pF	7.5	9.3	11	mA/ channel
IDDI(D)	Dynamic power current	The input signal is 60Mbps, CL=10pF	13.5	16.2	19	mA/ channel

Performance parameters under 5V power supply (At $T_A = -40^{\circ}\text{C}$ to 85°C , $V_{DD1}=V_{DD2} = 5\text{V}$)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
DR	Data rate			90		Mbps
t_{PHL}	High to low transmission latency	50% input to 50% output		5	8	ns
t_{PLH}	Low to high transmission latency	50% input to 50% output		5	8	ns
PW	Minimum pulse width		10			ns
t_M	Channel matching				3	ns
PWD	Pulse distortion				6	ns
t_r	Output up time	Output rise time, 10%~90% 10pF load	1.5	2	3	ns
t_f	Output drop time	Lower up time, 90%~10% 10pF load	1.5	2	3	ns
IDDI(Q)	Power static current	Enter the suspension		300		uA/ channel
IDDI(D)	Dynamic power current	The input signal is 2Mbps, CL=10pF	5.6	9.4	11.4	mA/ channel
IDDI(D)	Dynamic power current	The input signal is 20Mbps, CL=10pF	10.1	12.1	14.5	mA/ channel
IDDI(D)	Dynamic power current	The input signal is 60Mbps, CL=10pF	18.1	22	26	mA/ channel



CBMuD1200 CbMuD1201

High common-mode transient interference, high speed, low power consumption, 2 channel digital isolator

Chip true value table

CBMuD1200H, CbMuD1201H Truth table

VIA Input	VIB Input	VDD1 Status	VDD2 Status	VOA Output	VOB Output
H	H	Power on	Power on	H	H
L	L	Power on	Power on	L	L
H	L	Power on	Power on	H	L
L	H	Power on	Power on	L	H
X	X	Not powered on	Power on	H	H
X	X	Power on	Not powered on	X	X

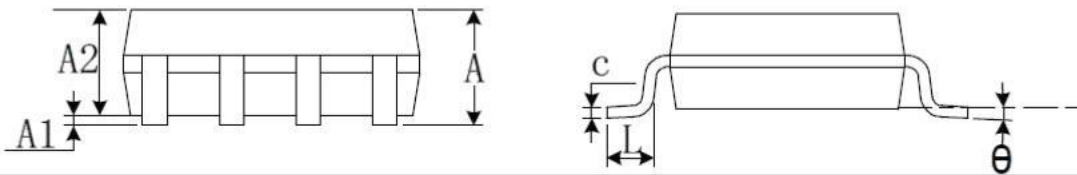
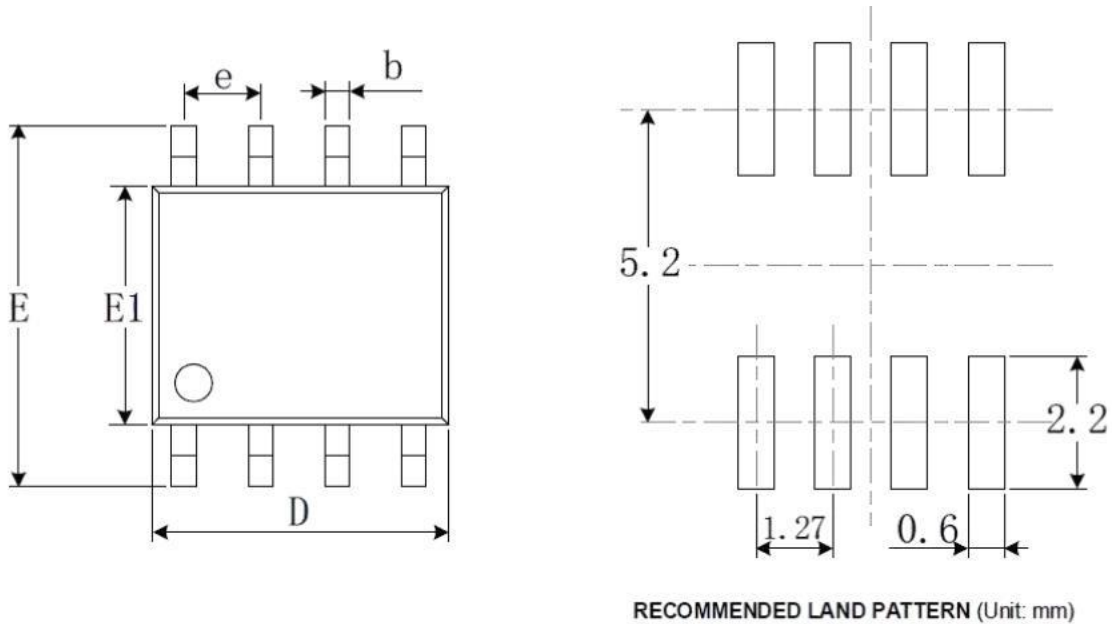
CBMuD1200L, CbMuD1201L Truth table

VIA Input	VIB Input	VDD1 Status	VDD2 Status	VOA Output	VOB Output
H	H	Power on	Power on	H	H
L	L	Power on	Power on	L	L
H	L	Power on	Power on	H	L
L	H	Power on	Power on	L	H
X	X	Not powered on	Power on	L	L
X	X	Power on	Not powered on	X	X

According to the following standards, insulation certification has been passed and safety has been confirmed.

Item	Electrical safety standard	Description
1	UL 1577	Standard for safety: <u>Optical isolators</u>
2	IEC 60601-1	Medical electrical equipment-Part 1: General requirements for basic safety and essential performance
3	IEC 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use-Part1: General requirements
4	IEC 60950-1	Information technology equipment-Safety -Part 1: General requirements
5	GB 4943.1-2011	Information technology equipment-Safety -Part 1: General Requirements
6	DIN VDE V 0884-11(VDE V 0884-11):2017-01	Magnetic and <u>capacitive coupler</u> for basic and reinforced isolation

Product packaging (SOP-8)



Symbol	Dimensions In Millimeters		Dimensions Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
e	1.270 BSC		0.050 BSC	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Package/Ordering Information

PRODUCT TYPE	OPERATING TEMPERATURE	PACKAGE	PACKAGE MARKING	NUMBER OF PACKAGES
CBMuD1200LAS8	-40°C~85°C	SOP-8	1200LA	Tape and Reel, 2500
CBMuD1200LAS8-RL	-40°C~85°C	SOP-8	1200LA	Tape and Reel, 3000
CBMuD1200LAS8-RL	-40°C~85°C	SOP-8	1200LA	Tape and Reel, 4000
CBMuD1200HAS8	-40°C~85°C	SOP-8	1200HA	Tape and Reel, 2500
CBMuD1200HAS8-RL	-40°C~85°C	SOP-8	1200HA	Tape and Reel, 3000
CBMuD1200HAS8-RL	-40°C~85°C	SOP-8	1200HA	Tape and Reel, 4000
CBMuD1201LAS8	-40°C~85°C	SOP-8	1201LA	Tape and Reel, 2500
CBMuD1201LAS8-RL	-40°C~85°C	SOP-8	1201LA	Tape and Reel, 3000
CBMuD1201LAS8-RL	-40°C~85°C	SOP-8	1201LA	Tape and Reel, 4000
CBMuD1201HAS8	-40°C~85°C	SOP-8	1201HA	Tape and Reel, 2500
CBMuD1201HAS8-RL	-40°C~85°C	SOP-8	1201HA	Tape and Reel, 3000
CBMuD1201HAS8-RL	-40°C~85°C	SOP-8	1201HA	Tape and Reel, 4000