

- ◇ STRUCTURE                                      Silicon Monolithic Integrated Circuit
- ◇ PRODUCT                                        DDC2™ DISPLAY ID ROM
- ◇ PART NUMBER                                 BU9882-W Series

PART NUMBER	PACKAGE
BU9882-W	DIP14
BU9882F-W	SOP14
BU9882FV-W	SSOP14

- ◇ FEATURES                                      For DDC2™  
    2kbit (128word × 8bit × 2port) EEPROM  
    Single power supply (2.5V~5.5V)  
    100,000 erase/write cycles endurance

◇ ABSOLUTE MAXIMUM RATING (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage	Vcc	-0.3~6.5	V
Power Dissipation	Pd	950 (BU9882-W)    *1	mW
		450 (BU9882F-W)   *2	
		350 (BU9882FV-W) *3	
Storage Temperature	Tstg	-65~125	°C
Operating Temperature	Topr	-40~85	°C
Terminal Voltage	—	-0.3~Vcc+1.0    *4	V

\* Degradation is done at 9.5mW/°C(\*1), 4.5mW/°C(\*2), 3.5mW/°C(\*3) for operation above 25°C  
 \*4 Max 6.8V

◇ RECOMMENDED OPERATING CONDITION

Parameter	Symbol	Rating	Unit
Supply Voltage	Vcc	2.5~5.5	V
Input Voltage	VIN	0~Vcc+1.0	V

Status of this document

The Japanese version of this document is the formal specification.  
 A customer may use this translation version only for a reference to help reading the formal version.  
 If there are any differences in translation version of this document, formal version takes priority.

◇MEMORY CELL CHARACTERISTICS(Ta=25°C,Vcc=2.5~5.5V)

Parameter		Specification			Unit
		Min.	Typ.	Max.	
Write/Erase Cycle	*1	100,000	-	-	Cycle
Data Retention	*1	10	-	-	Year

○Initial Data:Memory array FFh \*1 Not 100% TESTED

◇ DC OPERATING CHARACTERISTICS  
(Unless otherwise specified Ta=-40~85°C, Vcc=2.5~5.5V)

Parameter	Symbol	Specification			Unit
		Min.	Typ.	Max.	
"H" Input Voltage1	VIH1	2	-	-	V
"L" Input Voltage1	VIL1	-	-	0.8	V Vcc≥4.0V
"L" Input Voltage2	VIL2	-	-	0.2Vcc	V Vcc<4.0V
"L" Output Voltage	VOL	-	-	0.4	V SDA_PC0/1, IOL=3.0mA *1
Input Leakage Current1	IL11	-1	-	1	μA SCL_PC0/1, DDCENA, BANKSEL VIN=0V~Vcc+1.0
Input Leakage Current2	IL12	-1	-	50	μA WPB
Output Leakage Current	ILO	-1	-	1	μA SDA_PC0/1,SCL/SDA_MON(DDCENA=GND); VOUT=0V~Vcc+1.0
Operating Current	ICC	-	1.5	3	mA fSCL=400kHz, Vcc=5.5V tWR=10ms
Standby Current	ISB	-	0.1	5	μA SCL/SDA_PC0/1=Vcc SCL/SDA_MON=High-Z DDCENA=WPB=BANKSEL=GND DUALPCB=Vcc

◇ AC OPERATING CHARACTERISTICS  
(Unless otherwise specified Ta=-40~85°C)

Parameter	Symbol	Fast-mode 2.5≤Vcc≤5.5V			Standard-mode 2.5≤Vcc≤5.5V			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Clock Frequency	fSCL	-	-	400	-	-	100	kHz
Data Clock High Period	tHIGH	0.6	-	-	4.0	-	-	μs
Data Clock Low Period	tLOW	1.3	-	-	4.7	-	-	μs
SDA and SCL Rise Time	tR	-	-	0.3	-	-	1.0	μs
SDA and SCL Fall Time	tF	-	-	0.3	-	-	0.3	μs
Start Condition Hold Time	tHD:STA	0.6	-	-	4.0	-	-	μs
Start Condition Setup Time	tSU:STA	0.6	-	-	4.7	-	-	μs
Input Data Hold Time	tHD:DAT	0	-	-	0	-	-	ns
Input Data Setup Time	tSU:DAT	100	-	-	250	-	-	ns
Output Data Delay Time	tPD	-	-	0.9	-	-	3.5	μs
Stop Condition Setup Time	tSU:STO	0.6	-	-	4.0	-	-	μs
Bus Free Time	tBUF	1.3	-	-	4.7	-	-	μs
Write Cycle Time	tWR	-	-	10	-	-	10	ms
Noise Spike Width (SDA and SCL)	tl	-	-	0.1	-	-	0.1	μs

○This product is not designed for protection against radioactive rays.

\*1 IOL at monitor mode (DDCENA=HIGH) is sum of current flowed from Pull up resistor on SDA\_MON Side, and Pull up resistance on SDA\_PC0/PC1.

◇ BLOCK DIAGRAM

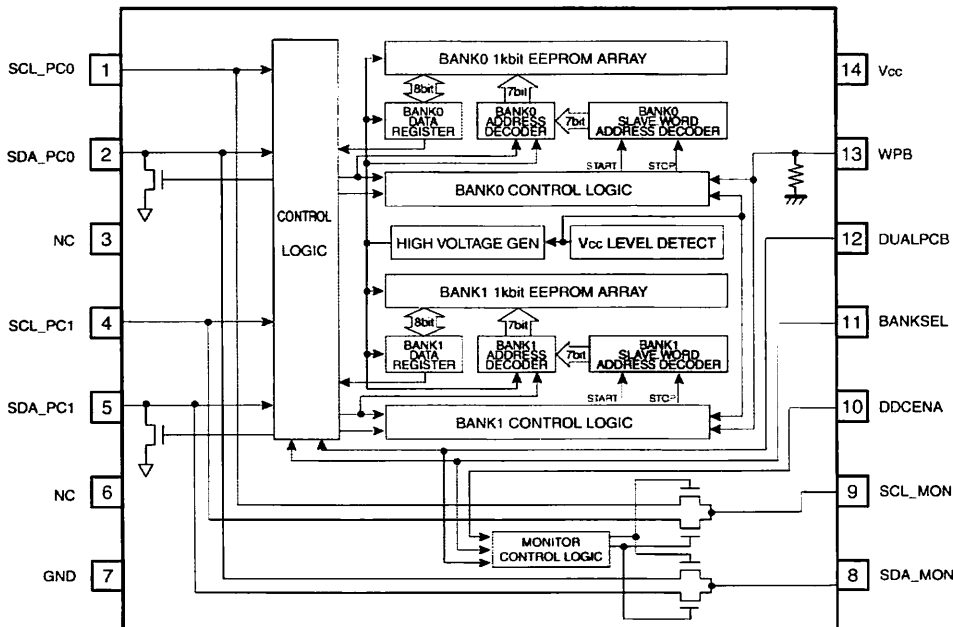


Fig.1 BLOCK DIAGRAM

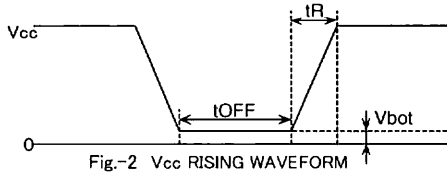
◇ PIN No./PIN NAME

PIN No.	PIN NAME
1	SCL_PC0
2	SDA_PC0
3	NC
4	SCL_PC1
5	SDA_PC1
6	NC
7	GND
8	SDA_MON
9	SCL_MON
10	DDCENA
11	BANKSEL
12	DUALPCB
13	WPB
14	Vcc

◇NOTES FOR POWER SUPPLY

Vcc rises through the low voltage region in which internal circuit of IC and the controller are unstable, so that device may not work properly due to an incomplete reset of internal circuit. To prevent this, the device has the feature of P.O.R. and LVCC. In the case of power up, keep the following conditions to ensure functions of P.O.R. and LVCC.

1. It is necessary for SDA\_PC0 and SDA\_PC1 to be "HIGH", for SCL\_PC0 and SCL\_PC1 to be either "HIGH" or "LOW".
2. Follow the recommended conditions of tR, tOFF, Vbot for the function of P.O.R. during power up.



◇Recommended conditions of tR, tOFF, Vbot

tR	tOFF	Vbot
Below 10ms	Above 10ms	Below 0.2V
Below 100ms	Above 10ms	Below 0.1V

3. Prevent SDA\_PC0, SDA\_PC1, SCL\_PC0 and SCL\_PC1 from being "High-Z".

In case that condition 1. and/or 2. cannot be met, take following actions.

- A) Unable to keep condition 1. (SDA\_PC0 is "LOW" during power up, for example.)

→ Control SDA\_PC0 and SCL\_PC0 to be "HIGH" as figure below.

It applies to SDA\_PC1 and SCL\_PC1 also.

- B) Unable to keep condition 2.

→ After power becomes stable, execute software reset.

- C) Unable to keep both conditions 1 and 2.

→ Follow the instruction A first, then the instruction B.

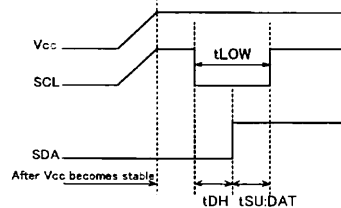


Fig.3-(a) SCL\_PC0/1='H' and SDA\_PC0/1='L'

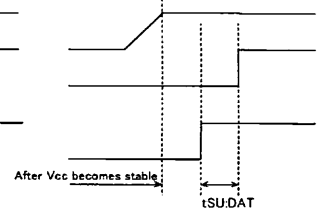


Fig.3-(b) SCL\_PC0/1='L' and SDA\_PC0/1='L'

◇CAUTIONS ON USE

- (1) Absolute maximum ratings

If the absolute maximum ratings such as impressed voltage and operating temperature range and so forth are exceeded, LSI may be destructed. Do not impress voltage and temperature exceeding the absolute maximum ratings. In the case of fear exceeding the absolute maximum ratings, take physical safety countermeasures such as fuses, and see to it that conditions exceeding the absolute maximum ratings should not be impressed to LSI.

- (2) GND electric potential

Set the voltage of GND terminal lowest at any action condition. Make sure that each terminal voltages is lower than that of GND terminal.

- (3) Heat design

In consideration of permissible dissipation in actual use condition, carry out heat design with sufficient margin.

- (4) Terminal to terminal shortcircuit and wrong packaging

When to package LSI onto a board, pay sufficient attention to LSI direction and displacement. Wrong packaging may destruct LSI. And in the case of shortcircuit between LSI terminals and terminals and power source, terminal and GND owing to foreign matter, LSI may be destructed.

- (5) Strong electromagnetic field

Use in a strong electromagnetic field may cause malfunction, therefore, evaluated design sufficiently.

◇ PHYSICAL DIMENSION

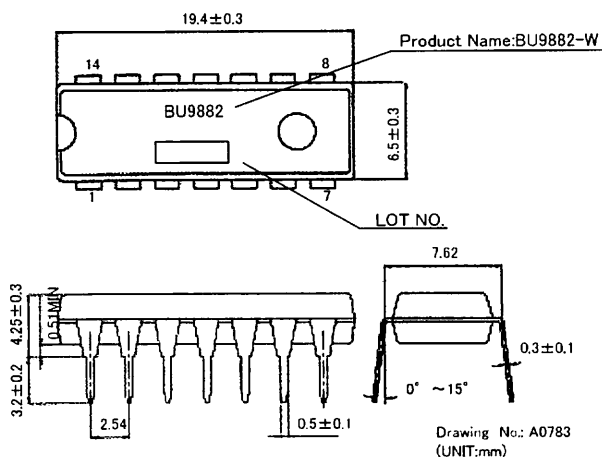


Fig.4-(a) PHYSICAL DIMENSION  
DIP14 (BU9882-W)

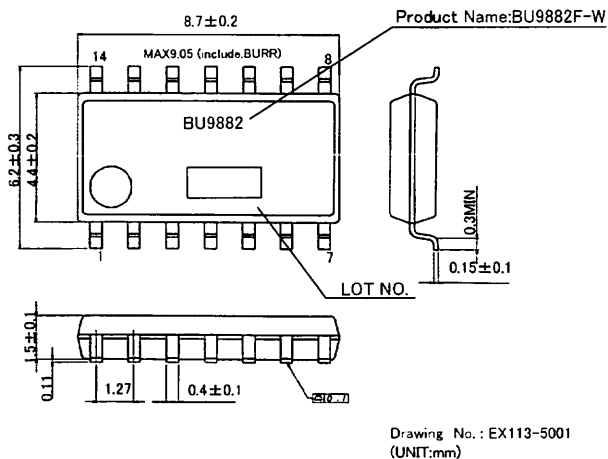


Fig.4-(b) PHYSICAL DIMENSION  
SOP14 (BU9882F-W)

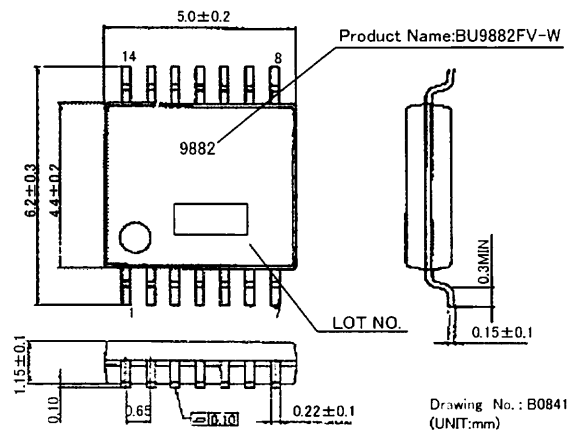


Fig.4-(c) PHYSICAL DIMENSION  
SSOP14 (BU9882FV-W)

### Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or otherwise dispose of the same, no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document are no antiradiation design.

The products listed in this document are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys).

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

#### About Export Control Order in Japan

Products described herein are the objects of controlled goods in Annex 1 (Item 16) of Export Trade Control Order in Japan.

In case of export from Japan, please confirm if it applies to "objective" criteria or an "informed" (by MITI clause) on the basis of "catch all controls for Non-Proliferation of Weapons of Mass Destruction.

Thank you for your accessing to ROHM product informations.  
More detail product informations and catalogs are available,  
please contact your nearest sales office.

Please contact our sales offices for details ;

U.S.A / San Diego	TEL : +1(858)625-3630	FAX : +1(858)625-3670
Atlanta	TEL : +1(770)754-5972	FAX : +1(770)754-0691
Dallas	TEL : +1(972)312-8818	FAX : +1(972)312-0330
Germany / Dusseldorf	TEL : +49(2154)9210	FAX : +49(2154)921400
United Kingdom / London	TEL : +44(1)908-282-666	FAX : +44(1)908-282-528
France / Paris	TEL : +33(0)1 56 97 30 60	FAX : +33(0) 1 56 97 30 80
China / Hong Kong	TEL : +852(2)740-6262	FAX : +852(2)375-8971
Shanghai	TEL : +86(21)6279-2727	FAX : +86(21)6247-2066
Dilian	TEL : +86(411)8230-8549	FAX : +86(411)8230-8537
Beijing	TEL : +86(10)8525-2483	FAX : +86(10)8525-2489
Taiwan / Taipei	TEL : +866(2)2500-6956	FAX : +866(2)2503-2869
Korea / Seoul	TEL : +82(2)8182-700	FAX : +82(2)8182-715
Singapore	TEL : +65-6332-2322	FAX : +65-6332-5662
Malaysia / Kuala Lumpur	TEL : +60(3)7958-8355	FAX : +60(3)7958-8377
Philippines / Manila	TEL : +63(2)807-6872	FAX : +63(2)809-1422
Thailand / Bangkok	TEL : +66(2)254-4890	FAX : +66(2)256-6334

Japan /  
(Internal Sales)

Tokyo	2-1-1, Yaesu, Chuo-ku, Tokyo 104-0082	TEL : +81(3)5203-0321	FAX : +81(3)5203-0300
Yokohama	2-4-8, Shin Yokohama, Kohoku-ku, Yokohama, Kanagawa 222-8575	TEL : +81(45)476-2131	FAX : +81(45)476-2128
Nagoya	Dainagayo Building 9F 3-28-12, Meieki, Nakamura-ku, Nagoya, Aichi 450-0002	TEL : +81(52)581-8521	FAX : +81(52)561-2173
Kyoto	579-32 Higashi Shiokouji-cho, Karasuma Nishi-iru, Shiokoujidori, Shimogyo-ku, Kyoto 600-8216	TEL : +81(75)311-2121	FAX : +81(75)314-6559

(Contact address for overseas customers in Japan)

Yokohama	TEL : +81(45)476-9270	FAX : +81(045)476-9271
----------	-----------------------	------------------------