

STRUCTURE	Silicon Monolithic integrated circuit
PRODUCTS	Input switching interface LSI for the DVD recorder
TYPE	B H 7 6 2 5 K S 2
PACKAGE	Figure-1 S Q F P - T 5 2 (Plastic Mold)
BLOCK DIAGRAM	Figure-2

Features

- 1) Built-in-5 input Video switch, Y switch and 5-input C switch
- 2) Input terminal of the S2 standard suitability
- 3) I²C BUS control (High impedance when power source off)
- 4) 0/3dB switch AMP built-in (CVBS OUT, C OUT)
- 5) 0/6dB switch AMP built-in (Y/CVBS OUT)
- 6) Synchronization isolation circuit built-in (2 circuits SYNC OUT, V SYNC OUT)
- 7) Synchronization detection circuit built-in (2 circuits)
- 8) 3LPF circuits built-in (4 order + TRAP)

Absolute maximum ratings (T_a = 25 °C)

Item	Symbol	Rating	Unit
Power supply voltage	V	7 . 0	V
Power dissipation	P _d	※1 1 3 0 0	mW
Operating temperature range	T _{opr}	-25 ~ +75	°C
Storage temperature range	T _{stg}	-55 ~ +125	°C

※1 When absolute temperature exceeds T_a=25°C, the rated value is reduced at unit of 14mW/°C.

Operation range (T_a = 25 °C)

Item	Symbol	Rating	Unit
Supply Voltage	VCC1,VCC2, VCC3,DVCC, SYNC,VCC,VCC	4 . 5 ~ 5 . 5	V

- ※ This product is not designed for protection against radioactive rays.
- ※ VCC1、VCC2、VCC3、DVCC、SYNC VCC、VCC should use the same power source.
- ※ Improper operation will result if the input and/ or output terminal is connected either to the supply

Application example

The application circuit is recommended for use. Make sure to confirm the adequacy of the characteristics.

When using the circuit with changes to the external circuit constants, make sure to leave an adequate margin for external components including static and transitional characteristics as well as dispersion of the IC.

Note that ROHM cannot provide adequate confirmation of patents.

The product described in this specification is designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automatic equipment, communications devices, electrical appliance, and electronic toys). Should you intend to use this product 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.

ROHM assumes no responsibility for use of any circuits described herein, conveys no license under any patent or other right, and makes no representations that the circuits are free from patent infringement.

■ Electrical characteristics (Unless otherwise specified, VCC=5.0V, Ta=25°C)

Item	Symbol	Limit			Unit	Conditions	
		MIN.	TYP.	MAX.			
<All Circuits>							
VCC Circuit Current	I _{CC}	71	95	128	mA	Normal Condition	
VCC STBY Circuit Current	I _{CCST}	9.38	12.5	16.9	mA	Standby Condition	
VCC PD Circuit Current	I _{CCPD}	—	0	10	μA	Power Down Condition	
<SW Part>							
CVBS OUT Cb OUT	Voltage Gain H	G _{V1H}	2.4	2.9	3.4	dB	Vin=1.0Vpp, f=100kHz, LPF OFF
CVBS OUT Cb OUT	Voltage Gain L	G _{V1L}	—0.7	—0.2	0.3	dB	Vin=1.0Vpp, f=100kHz, LPF OFF
Y/CVBS OUT Cy OUT	Voltage Gain H	G _{V2H}	5.5	6.0	6.5	dB	Vin=1.0Vpp, f=100kHz, LPF OFF
Y/CVBS OUT Cy OUT	Voltage Gain L	G _{V2L}	—0.7	—0.2	0.3	dB	Vin=1.0Vpp, f=100kHz, LPF OFF
C OUT Cr OUT	Voltage Gain H	G _{V3H}	2.4	2.9	3.4	dB	Vin=1.0Vpp, f=100kHz, LPF OFF
C OUT Cr OUT	Voltage Gain L	G _{V3L}	—0.7	—0.2	0.3	dB	Vin=1.0Vpp, f=100kHz, LPF OFF
CVBS OUT Cb OUT	Voltage Gain H	G _{V4H}	2.2	2.7	3.2	dB	Vin=1.0Vpp, f=100kHz, LPF ON
CVBS OUT Cb OUT	Voltage Gain L	G _{V4L}	—0.9	—0.4	0.1	dB	Vin=1.0Vpp, f=100kHz, LPF ON
Y/CVBS OUT Cy OUT	Voltage Gain H	G _{V5H}	5.3	5.8	6.3	dB	Vin=1.0Vpp, f=100kHz, LPF ON
Y/CVBS OUT Cy OUT	Voltage Gain L	G _{V5L}	—0.9	—0.4	0.1	dB	Vin=1.0Vpp, f=100kHz, LPF ON
C OUT Cr OUT	Voltage Gain H	G _{V6H}	2.2	2.7	3.2	dB	Vin=1.0Vpp, f=100kHz, LPF ON
C OUT Cr OUT	Voltage Gain L	G _{V6L}	—0.9	—0.4	0.1	dB	Vin=1.0Vpp, f=100kHz, LPF ON
CVBS OUT Cb OUT	Maximum Output Level	V _{OM1}	2.6	3.0	—	Vpp	f=100kHz(10kHz), THD=1%
Y/CVBS OUT Cy OUT	Maximum Output Level	V _{OM2}	2.6	3.0	—	Vpp	f=100kHz(10kHz), THD=1%
C OUT Cr OUT	Maximum Output Level	V _{OM3}	2.6	3.0	—	Vpp	f=100kHz(10kHz), THD=1%
<SW Part>							
CVBS OUT Cb OUT	Frequency Characteristics 1	G _{F11}	—1.5	—0.5	0.5	dB	Vin=1.0Vpp Gain=3dB Vin=2.0Vpp Gain=0dB f=6.75MHz/100kHz (LPF ON)
CVBS OUT Cb OUT	Frequency Characteristics 2	G _{F12}	—	—38	—27	dB	Vin=1.0Vpp Gain=3dB Vin=2.0Vpp Gain=0dB f=27MHz/100kHz (LPF ON)
CVBS OUT Cb OUT	Frequency Characteristics 3	G _{F13}	—1.0	0	1.0	dB	Vin=1.0Vpp Gain=3dB Vin=2.0Vpp Gain=0dB f=7MHz/100kHz (Through)
Y/CVBS OUT Cy OUT	Frequency Characteristics 1	G _{F21}	—1.5	—0.5	0.5	dB	Vin=1.0Vpp Gain=6dB Vin=2.0Vpp Gain=0dB f=6.75MHz/100kHz (LPF ON)
Y/CVBS OUT Cy OUT	Frequency Characteristics 2	G _{F22}	—	—38	—27	dB	Vin=1.0Vpp Gain=6dB Vin=2.0Vpp Gain=0dB f=27MHz/100kHz (LPF ON)
Y/CVBS OUT Cy OUT	Frequency Characteristics 3	G _{F23}	—1.0	0	1.0	dB	Vin=1.0Vpp Gain=6dB Vin=2.0Vpp Gain=0dB f=7MHz/100kHz (Through)
C OUT Cr OUT	Frequency Characteristics 1	G _{F31}	—1.5	—0.5	0.5	dB	Vin=1.0Vpp Gain=3dB Vin=2.0Vpp Gain=0dB f=6.75MHz/100kHz (LPF ON)
C OUT Cr OUT	Frequency Characteristics 2	G _{F32}	—	—38	—27	dB	Vin=1.0Vpp Gain=3dB Vin=2.0Vpp Gain=0dB f=27MHz/100kHz (LPF ON)
C OUT Cr OUT	Frequency Characteristics 3	G _{F33}	—1.0	0	1.0	dB	Vin=1.0Vpp Gain=3dB Vin=2.0Vpp Gain=0dB f=7MHz/100kHz (Through)
C IN Input Impedance	Z _{CIN}	12.5	18.0	23.5	kΩ		
<SYNC DETECTOR Part>							
Min Synchronization Isolation Level	SL _{MIN}	—	0.08	0.12	Vpp	LPF Condition “000”	
C, V SYNC, SYNC DET OUT Output Voltage H	V _{VCH}	Vcc-0.5	Vcc-0.1	Vcc	V	No Load	
C, V SYNC, SYNC DET OUT Output Voltage L	V _{VCL}	—	0.1	0.5	V	No Load	
<I2C-BUS Control>							
S1/S2 DET Detection Level H	DL _H	3.4	—	Vcc	V	16:9 Squeeze Signal	
S1/S2 DET Detection Level M	DL _M	1.3	1.9	2.5	V	4:3 Letter Box Signal	
S1/S2 DET Detection Level L	DL _L	0.0	—	0.7	V	4:3 Video Signal, No Signal	

■ Electrical Characteristics (Unless otherwise specified, $V_{CC}=5.0V$, $T_a=25^\circ C$)

Item	Symbol	Limit			Unit	Conditions
		MIN.	TYP.	MAX.		
<SCL, SDA, ADR>						
Input Voltage H	V_{IHIC}	2.0	—	V_{CC}	V	
Input Voltage L	V_{ILIC}	0.0	—	1.0	V	
Input Bias Current (SCL, SDA)	I_{BIC}	0	—1	—10	μA	
Input Impedance (ADR)	Z_{INADR}	65	100	135	$k\Omega$	Pull Down Resistance
<PD>						
Input Voltage H	V_{IHPD}	2.0	—	V_{CC}	V	
Input Voltage L	V_{ILPD}	0.0	—	0.7	V	
Input Impedance	Z_{INPD}	65	100	135	$k\Omega$	Pull Down Resistance
<PD>						
Input Voltage H	V_{IHPD}	2.0	—	V_{CC}	V	
Input Voltage L	V_{ILPD}	0.0	—	0.7	V	
Input Impedance	Z_{INPD}	65	100	135	$k\Omega$	Pull Down Resistance

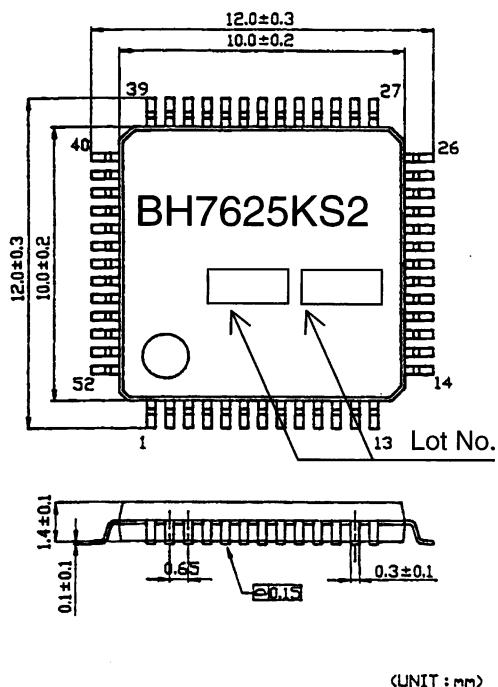
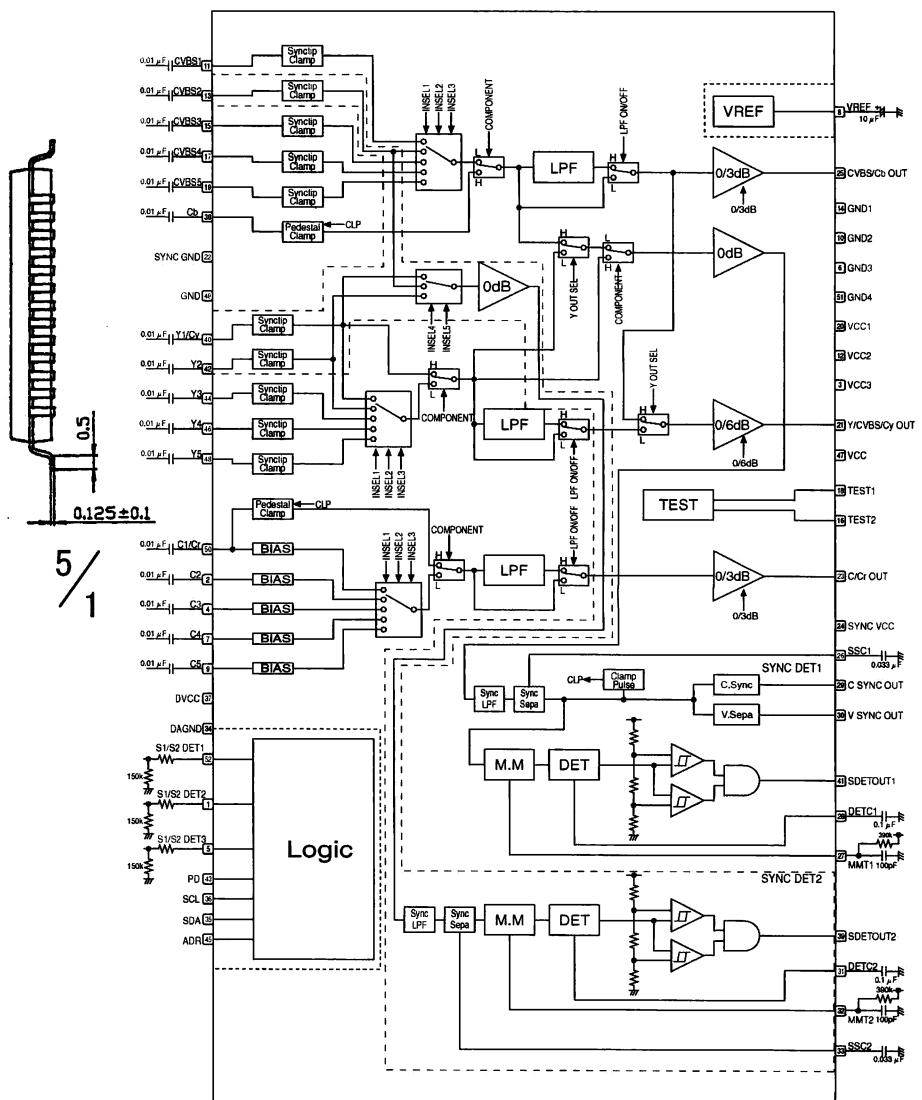
Figure - 1 PACKAGE
(S Q F P - T 5 2)

Figure - 2 . BLOCK Diagram

■ PIN Assignment

PIN NO.	PIN NAME	PIN NO.	PIN NAME	PIN NO.	PIN NAME	PIN NO.	PIN NAME
1	S1_S2_DET2	14	GND1_2	27	MMT1	40	Y1_Cy
2	C2	15	CVBS3	28	DETC1	41	SDETOUT2
3	VCC3_1	16	TEST2	29	C_SYNC_OUT	42	Y2
4	C3	17	CVBS4	30	V_SYNC_OUT	43	PD
5	S1_S2_DET3	18	TEST1	31	DETC2	44	Y3
6	GND3_1	19	CVBS5	32	MMT2	45	ADR
7	C4	20	VCC1_2	33	SSC2	46	Y4
8	VREF	21	Y_CVBS_Cy_OUT	34	DAGND_1	47	VCC4_1
9	C5	22	SYNC_GND	35	SDA	48	Y5
10	GND2_1	23	C_Cr_OUT	36	SCL	49	GND4_1
11	CVBS1	24	SYNC_VCC	37	DVCC_1	50	C1_Cr
12	VCC2_1	25	CVBS_Cb_OUT	38	Cb	51	SYNC_GND
13	CVBS2	26	SSC1	39	SDETOUT1	52	S1_S2_DET1

■ Cautions on use

- (1) Numbers and data in entries are representative design values and are not guaranteed values of items.
- (2) Although we are confident in recommending the sample application circuits, carefully check their characteristics further when using them. When modifying externally attached component constants before use, determine them so that they have sufficient margins by taking into account variations in externally attached components and the Rohm LSI, not only for static characteristics but also including transient characteristics.
- (3) Absolute maximum ratings

If applied voltage, operating temperature range, or other absolute maximum ratings are exceeded, the LSI may be damaged. Do not apply voltages or temperatures that exceed the absolute maximum ratings. If you think of a case in which absolute maximum ratings are exceeded, enforce fuses or other physical safety measures and investigate how not to apply the conditions under which absolute maximum ratings are exceeded to the LSI.
- (4) GND potential

Make the GND pin voltage such that it is the lowest voltage even when operating below it. Actually confirm that the voltage of each pin does not become a lower voltage than the GND pin, including transient phenomena.
- (5) Thermal design

Perform thermal design in which there are adequate margins by taking into account the allowable power dissipation in actual states of use.
- (6) Shorts between pins and misinstallation

When mounting the LSI on a board, pay adequate attention to orientation and placement discrepancies of the LSI. If it is misinstalled and the power is turned on, the LSI may be damaged. It also may be damaged if it is shorted by a foreign substance coming between pins of the LSI or between a pin and power supply or a pin a GND.
- (7) Operation in strong magnetic fields

Adequately evaluate use in a strong magnetic field, since there is a possibility of malfunction.
- (8) Supply voltage of operation

Although basic circuit function is guaranteed within the limits of supply voltage (4.5V~5.5V) of operation.
- (9) Please lay out outside parts nearest IC, and set lines from output amplifier short.
- (10) Please lay out the coupling capacitor nearest IC and each pin.
- (11) VCC for this IC should use the same power source. And impedance should connect as well as possible for each VCC pin, for each GND pin.

Appendix

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, Shiokujidori, 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
----------	-----------------------	------------------------