High performance video signal Switcher

Triple Circuits Video Signal Switchers

BA7602F, 03F, 06F/FS, 07F, 09F, 27FV

●Description

These video switching ICs, which contain two or three 2-input circuits, were developed for switching TV, DVD, and other video signals. Input pin formats can be selected from bias mode (R=20 kΩ), sync-tip mode, and pedestal clamp mode. Having a large dynamic range and broad frequency characteristics, these switches are suited to a wide range of applications from audio signals to video signals.

●Features

1) Contain three 2-input, 1-output switch circuits (BA7602F,03F,06F/06FS,07F,09F,27FV)
2) Power supply voltage (4.5~5.5 V)
3) Low power consumption
4) Good frequency characteristics
5) Large dynamic range
6) Bias input (BA7602F)
   Sync-tip clamp input (BA7603F)
   Pedestal clamp input (BA7606F/06FS)
   Bias input + sync-tip clamp input (BA7607F,09F, 27FV)
7) Large input impedance (Typ.20kΩ)
8) Fast switching speed (Typ. 50ns)

●Use

For switching TV, DVD, and Other video signals

●Lineup

Part No.	Circuit current (mA)	Built-in circuit	Input type	Distortion (%)	Maximum output level (V_{P-P})	Package
BA7602F	14.0	2 in 3 circuits	Bias	—	3.1	SOP16
BA7603F	13.0	2 in 3 circuits	Clamp	—	2.9	SOP16
BA7606F/FS	15.0	2 in 3 circuits	Pedestal Clamp	—	2.6	SOP16/ SSOP-A16
BA7607F	12.5	2 in 3 circuits	Clamp 2 Bias1	0.007	3.0	SOP16
BA7609F	12.5	2 in 3 circuits	Clamp 1 Bias 2	0.007	3.0	SOP16
BA7627FV	12.5	2 in 3 circuits	Clamp 2 Bias1	0.007	3.0	SSOP-B16

Aug. 2008

●Absolute Maximum Ratings（Ta=25℃）

Parameter		Symbol	Limits	Unit
Supply voltage		Vcc	9	V
Power dissipation	BA7602F BA7603F BA7606F BA7607F BA7609F	Pd	500 *1	mW
	BA7606FS		650 *2	
	BA7627FV		450 *1	
Operating temperature		Topr	−40～＋85	℃
Storage temperature		Tstg	−55～＋125	℃

*1 Deratings is done at 5.0mW/℃ above Ta=25℃.（BA7604N, 05N ,02F, 03F, 06F, 07F, 09F, 27FV）

*2 Deratings is done at 6.5mW/℃ above Ta=25℃.（BA7606FS）

●Operating Range（Ta=25℃）

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	Vcc	4.5	5.0	5.5	V

●Electrical characteristics (Unless otherwise noted, Ta=25℃ and Vcc=5.0V)

Parameter		Symbol	Typical value						Unit	Conditions
			02F	03F	06F/FS	07F	09F	27FV		
Circuit current		Icc	14.0	13.0	15.0	12.5			mA	—
Maximum output level1	Clamp	Vom1	—	2.9	—	2.9			V_{P-P}	f=1kHz, THD=0.5%, with clamp
Maximum output level2	Bias	Vom2	3.1	—	—	3.0			V_{P-P}	f=1kHz, THD=0.5%, without clamp
Maximum output level U	Pedestal clamp	VomU	—		1.65	—			V_{P-P}	Dynamic range on positive side of clamp level
Maximum output level D	Pedestal clamp	VomD	—		0.95	—			V_{P-P}	Dynamic range on negative side of clamp level
Voltage gain		Gv	0						dB	f =1MHz, V_{IN}＝1 V_{P-P}
Interchannel crosstalk		C_T	-65						dB	f =4.43MHz, V_{IN}=1 V_{P-P}
Frequency characteristic		Gf	0		-1	0			dB	10MHz/1MHz, V_{IN}= V_{P-P}
Total harmonic distortion		THD	—			0.007			%	f =1kHz, 1Vp-p, Bias type
CTL pin switching level		V_{TH}	2.5						V	H: IN1 L: IN2
Clamp input level		V_{ct}	L≦0.75 H≧2.2						V	Only BA7606F/FS

●Cautions on use

1) Numbers and data in entries are representative design values and are not guaranteed values of the 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 a power supply or a pin and a GND.
7) Operation in strong magnetic fields
   Adequately evaluate use in a strong magnetic field, since there is a possibility of malfunction.
8) A bias input coupling capacitor on the order of 10 μF~33 μF is appropriate.
9) A clamp input coupling capacitor on the order of 0.1 μF~1 μF is appropriate.
10) Make the clamp pulse width of the BA7606F/FS at least 1 μs.

●Block diagram

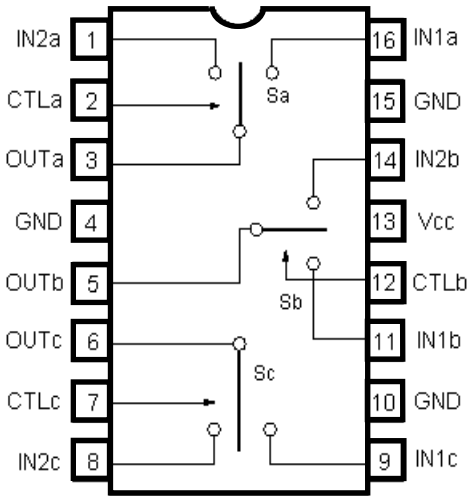


Fig.1 BA7602F

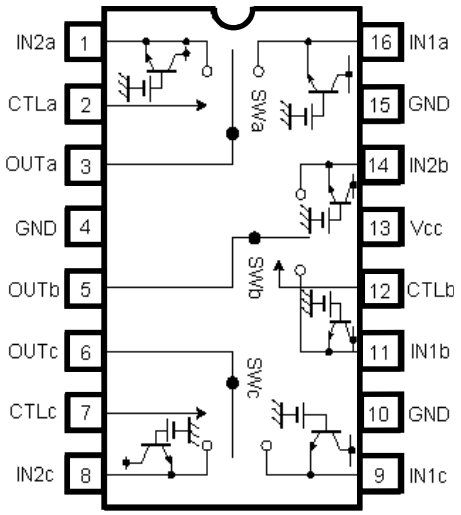


Fig.2 BA7603F

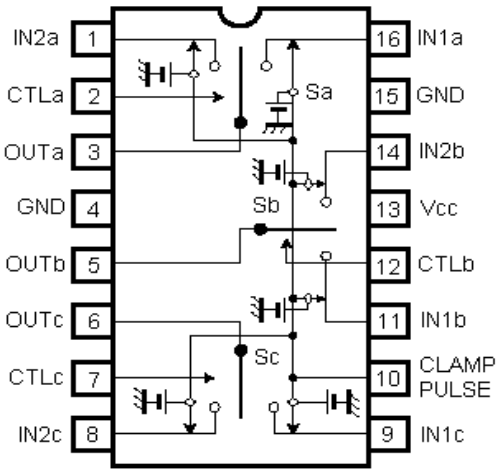


Fig.3 BA7606F/FS

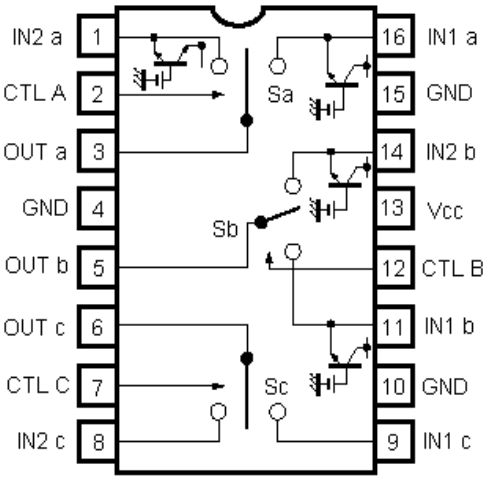


Fig.4 BA7607F, BA7627FV

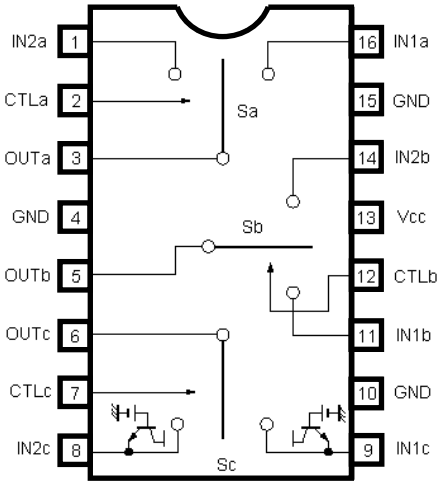


Fig.5 BA7609F

CTL pin settings

CTL	OUTPUT
L	IN2
H	IN1

●Reference data

Pin DC voltage（VCC=5V, Ta=25℃）

Pin No.	Pin DC voltage (V)				
	BA7602F	BA7603F	BA7606F/FS	BA7607F BA7627FV	BA7609F
1	3.27	2.05	2.96	2.05	2.48
2	4.91	4.91	4.91	4.91	4.91
3	1.84	0.65	1.54	0.65	1.76
4	0	0	0	0	0
5	1.84	0.65	1.54	0.65	1.76
6	1.84	0.65	1.54	1.76	0.65
7	4.91	4.91	4.91	4.91	4.91
8	3.27	2.05	2.96	2.48	2.05
9	3.27	2.05	2.96	2.48	2.05
10	0	0	4.97	0	0
11	3.27	2.05	2.96	2.05	2.48
12	4.91	4.91	4.91	4.91	4.91
13	5.00	5.00	5.00	5.00	5.00
14	3.27	2.05	2.96	2.05	2.48
15	0	0	0	0	0
16	3.27	2.05	2.96	2.05	2.48

Input/Output impedance

Parameter		Limits (Typical)					Unit
		02F	03F	06F/FS	07F/27FV	09F	
Input impedance	Bias	20k	—	—	20k		Ω
Input impedance	Clamp	—	1.7M				Ω
Output impedance		30		30※	30		Ω

※The 6pin output impedance in the BA7606F/FS is 130Ω.

●Measurement circuit 1/2 (BA7602F,BA7603F,BA7607F, BA7609F)

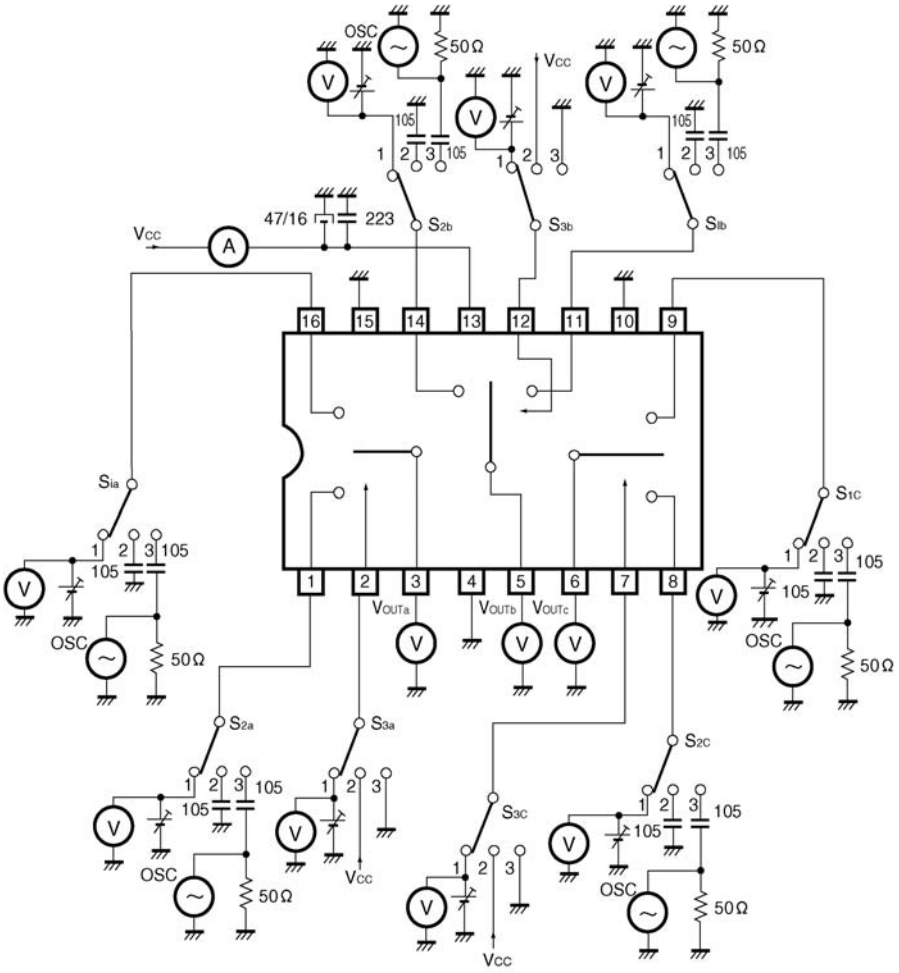


Fig.6 BA7602F, BA7603F, BA7607F, BA7609F, BA7627FV

●Measurement circuit 2/2 (BA7606F/FS)

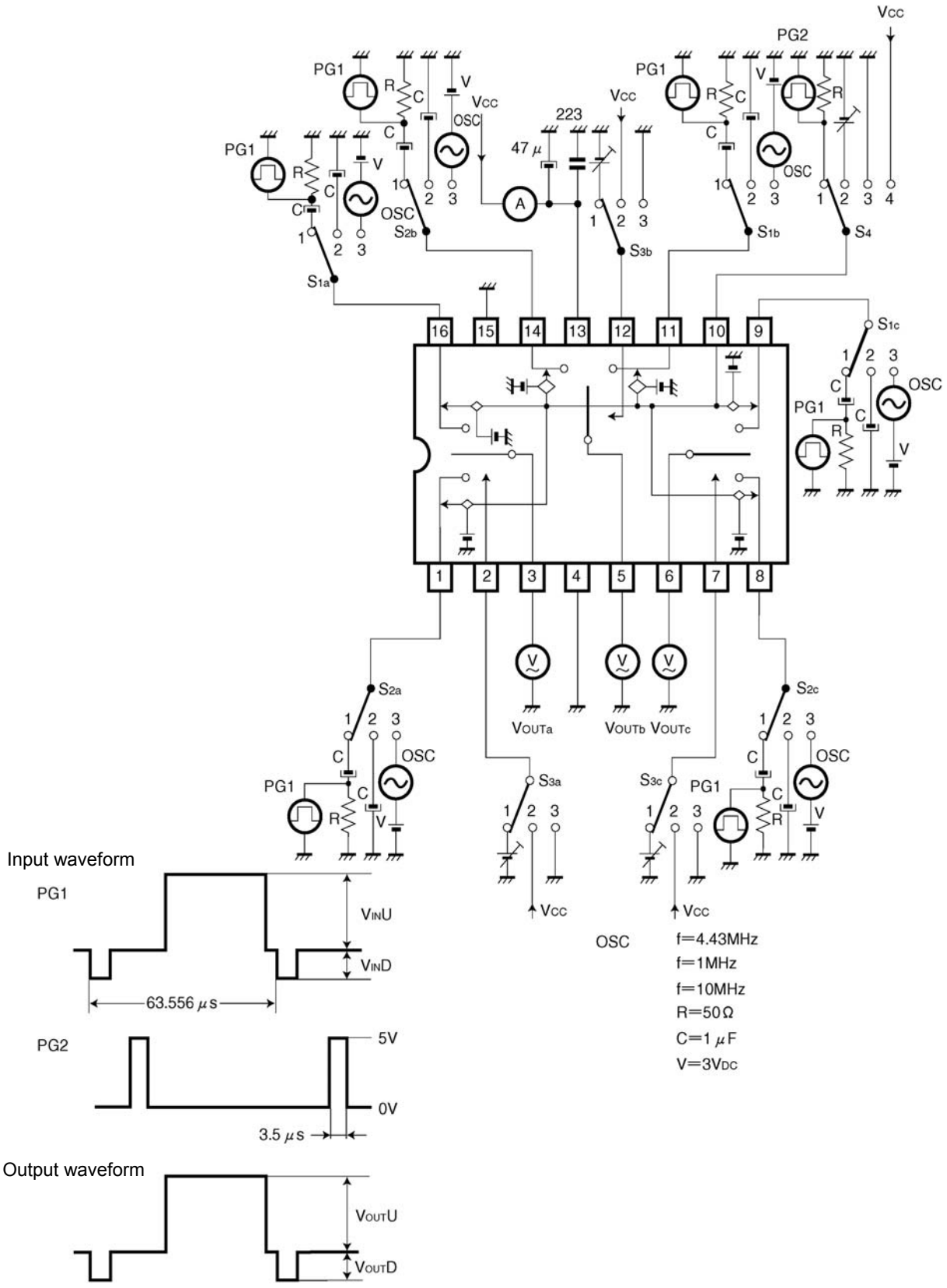


Fig.7 BA7606F/FS

●Reference data

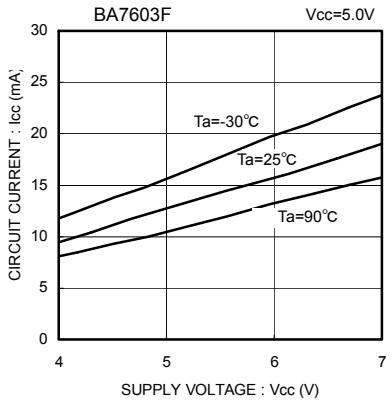


Fig.8 Circuit current vs. Supply voltage

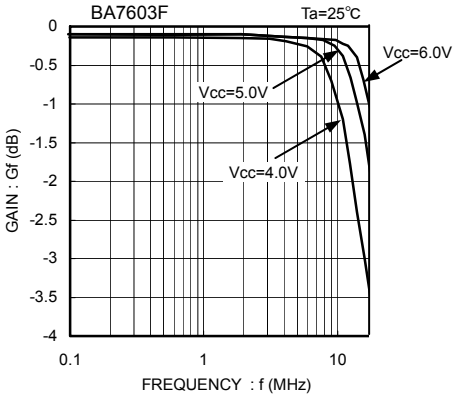


Fig.9 Frequency characteristics vs. Supply voltage

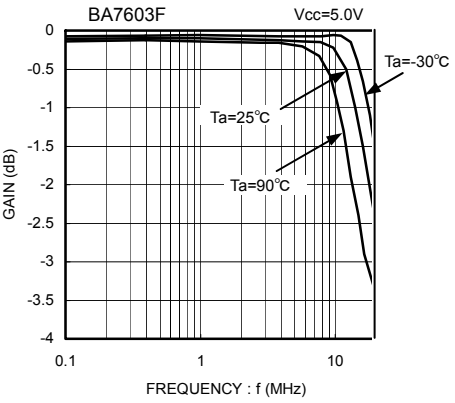


Fig.10 Frequency characteristics vs. temperature

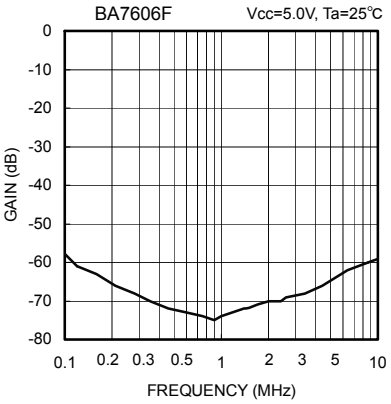


Fig.11 Interchannel crosstalk

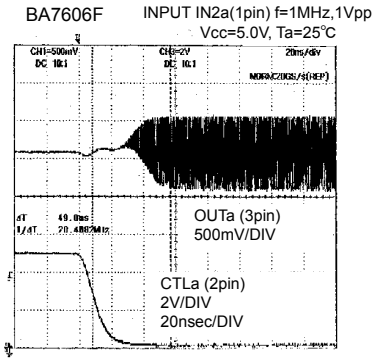


Fig.12 Switching characteristics1

OFF→ON

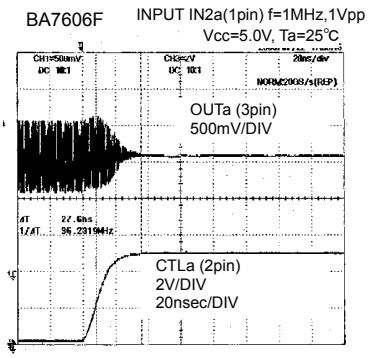


Fig.13 Switching characteristics2

ON→OFF

●Selection of order type

B	A	7	6	0	2	F	—	E	2

Part. No

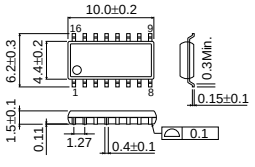
BA7602F
BA7603F
BA7606F/FS
BA7607F
BA7609F
BA7627FV

Tape and Reel information

BA7602F	E2
BA7603F	E2
BA7606F/FS	E2
BA7607F	E2
BA7609F	E2
BA7627FV	E2

SOP16

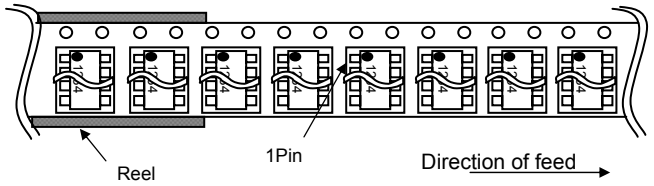
<Dimension>



(Unit:mm)

<Tape and Reel information>

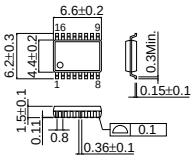
Tape	Embossed carrier tape
Quantity	2500pcs
Direction of feed	E2 (The direction is the 1pin of product is at the upper left when you hold reel on the left hand and you pull out the tape on the right hand)



※When you order , please order in times the amount of package quantity.

SSOP-A16

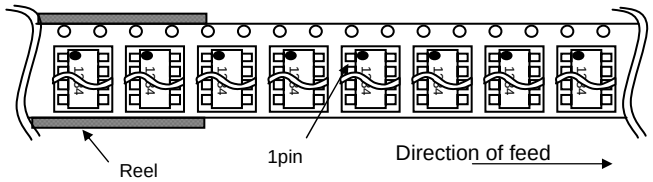
<Dimension>



(Unit:mm)

<Tape and Reel information>

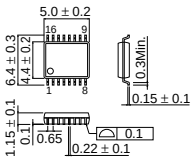
Tape	Embossed carrier tape
Quantity	2500pcs
Direction of feed	E2 (The direction is the 1pin of product is at the upper left when you hold reel on the left hand and you pull out the tape on the right hand)



※When you order , please order in times the amount of package quantity.

SSOP-B16

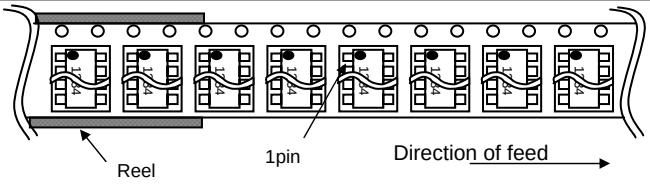
<Dimension>



(Unit:mm)

<Tape and Reel information>

Tape	Embossed carrier tape
Quantity	2500pcs
Direction of feed	E2 (The direction is the 1pin of product is at the upper left when you hold reel on the left hand and you pull out the tape on the right hand)



※When you order , please order in times the amount of package quantity.

Excellence in Electronics

ROHM CO., LTD.

21 Saiin Mizosaki-cho, Ukyo-ku, Kyoto
615-8585, Japan
TEL: +81-75-311-2121 FAX: +81-75-315-0172
URL http: // www. rohm. com

Published by
KTC LSI Development Headquarters
LSI Business Pomotion Group

Contact us for further information about the products.

San Diego	TEL: +1-858-625-3630	FAX: +1-858-625-3670
Atlanta	TEL: +1-770-754-5972	FAX: +1-770-754-0691
Boston	TEL: +1-978-371-0382	FAX: +1-928-438-7164
Chicago	TEL: +1-847-368-1006	FAX: +1-847-368-1008
Dallas	TEL: +1-469-287-5366	FAX: +1-469-362-7973
Denver	TEL: +1-303-708-0908	FAX: +1-303-708-0858
Detroit	TEL: +1-248-348-9920	FAX: +1-248-348-9942
Nashville	TEL: +1-615-620-6700	FAX: +1-615-620-6702
Mexico	TEL: +52-33-3123-2001	FAX: +52-33-3123-2002
Düsseldorf	TEL: +49-2154-9210	FAX: +49-2154-921400
Munich	TEL: +49-8999-216168	FAX: +49-8999-216176
Stuttgart	TEL: +49-711-7272-370	FAX: +49-711-7272-3720
France	TEL: +33-1-5697-3060	FAX: +33-1-5697-3080
United Kingdom	TEL: +44-1-908-306700	FAX: +44-1-908-235788
Denmark	TEL: +45-3694-4739	FAX: +45-3694-4789
Espoo	TEL: +358-9725-54491	FAX: +358-9-7255-4499
Salo	TEL: +358-2-7332234	FAX: +358-2-7332237
Oulu	TEL: +358-8-5372930	FAX: +358-8-5372931
Barcelona	TEL: +34-9375-24320	FAX: +34-9375-24410
Hungary	TEL: +36-1-4719338	FAX: +36-1-4719339
Poland	TEL: +48-22-5757213	FAX: +48-22-5757001
Russia	TEL: +7-495-739-41-74	FAX: +7-495-739-41-74
Seoul	TEL: +82-2-8182-700	FAX: +82-2-8182-715
Masan	TEL: +82-55-240-6234	FAX: +82-55-240-6236
Dalian	TEL: +86-411-8230-8549	FAX: +86-411-8230-8537
Beijing	TEL: +86-10-8525-2483	FAX: +86-10-8525-2489
Tianjin	TEL: +86-22-23029181	FAX: +86-22-23029183
Shanghai	TEL: +86-21-6279-2727	FAX: +86-21-6247-2066
Hangzhou	TEL: +86-571-87658072	FAX: +86-571-87658071
Nanjing	TEL: +86-25-8689-0015	FAX: +86-25-8689-0393
Ningbo	TEL: +86-574-87654201	FAX: +86-574-87654208
Qingdao	TEL: +86-532-5779-312	FAX:+86-532-5779-653
Suzhou	TEL: +86-512-6807-1300	FAX: +86-512-6807-2300
Wuxi	TEL: +86-510-82702693	FAX: +86-510-82702992
Shenzhen	TEL: +86-755-8307-3008	FAX: +86-755-8307-3003
Dongguan	TEL: +86-769-8393-3320	FAX: +86-769-8398-4140
Fuzhou	TEL: +86-591-8801-8698	FAX: +86-591-8801-8690
Guangzhou	TEL: +86-20-3878-8100	FAX: +86-20-3825-5965
Huizhou	TEL:+86-752-205-1054	FAX: +86-752-205-1059
Xiamen	TEL: +86-592-238-5705	FAX: +86-592-239-8380
Zhuhai	TEL: +86-756-3232-480	FAX: +86-756-3232-460
Hong Kong	TEL: +852-2-740-6262	FAX: +852-2-375-8971
Taipei	TEL: +886-2-2500-6956	FAX: +886-2-2503-2869
Kaohsiung	TEL: +886-7-237-0881	FAX: +886-7-238-7332
Singapore	TEL: +65-6332-2322	FAX: +65-6332-5662
Philippines	TEL: +63-2-807-6872	FAX: +63-2-809-1422
Thailand	TEL: +66-2-254-4890	FAX: +66-2-256-6334
Kuala Lumpur	TEL: +60-3-7958-8355	FAX: +60-3-7958-8377
Penang	TEL: +60-4-2286453	FAX: +60-4-2286452
Kyoto	TEL: +81-75-365-1218	FAX: +81-75-365-1228
Yokohama	TEL: +81-45-476-2290	FAX: +81-45-476-2295

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.
It is our top priority to supply products with the utmost quality and reliability. However, there is always a chance of failure due to unexpected factors. Therefore, please take into account the derating characteristics and allow for sufficient safety features, such as extra margin, anti-flammability, and fail-safe measures when designing in order to prevent possible accidents that may result in bodily harm or fire caused by component failure. ROHM cannot be held responsible for any damages arising from the use of the products under conditions out of the range of the specifications or due to non-compliance with the NOTES specified in this catalog.

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

ROHM Customer Support System

THE AMERICAS / EUROPE / ASIA / JAPAN

www.rohm.com

Contact us : webmaster@rohm.co.jp

ROHM CO., LTD. 21 Saiin Mizosaki-cho, Ukyo-ku, Kyoto 615-8585, Japan
TEL : +81-75-311-2121
FAX : +81-75-315-0172