



深圳市首韩科技有限公司

SHENZHEN SHOUHAN TECHNOLOGY CO., LTD

Tel: 0755-27597601 Fax: 0755-27597491 Email: shouhan2@so-han.com

承 认 书

SPECIFICATION FOR APPROVAL

产品编码
material code:

产品名称 Project:

轻触开关

规格型号 Part No:

TS263065A 330gf (7.5)
MSM BD Membrane Switch

贵公司承认印 Approval signatures

料 号/Part No.	签 章/Signatures

日期 Date:

拟制/Drawn	李春风	
审核/Check	钟华华	
批准/Approved	罗孝金	

Classification	REFERENCE SPECIFICATION	
Part Name	TS263065A 330gf (7.5) MSM BD Membrane Switch	Part No. EVPAFGB65

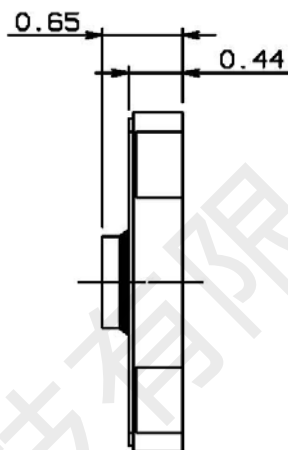
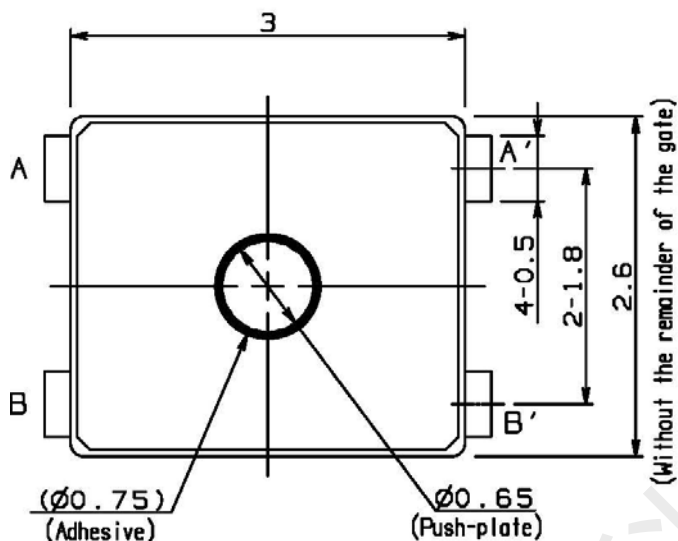
3. Dimension•Marking•Circuit diagram

Date code are indicated in the product.

General dimension tolerance: ± 0.1

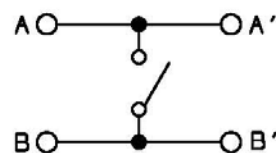
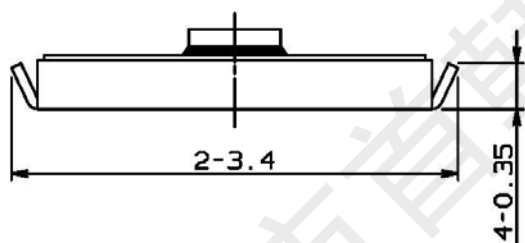
() dimensions are reference dimensions.

REFERENCE ONLY

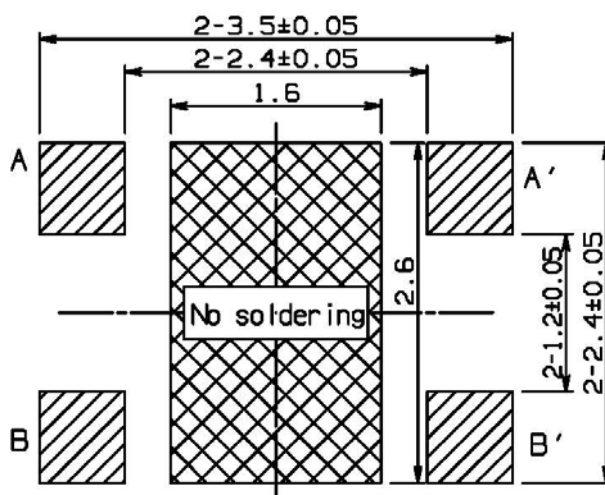
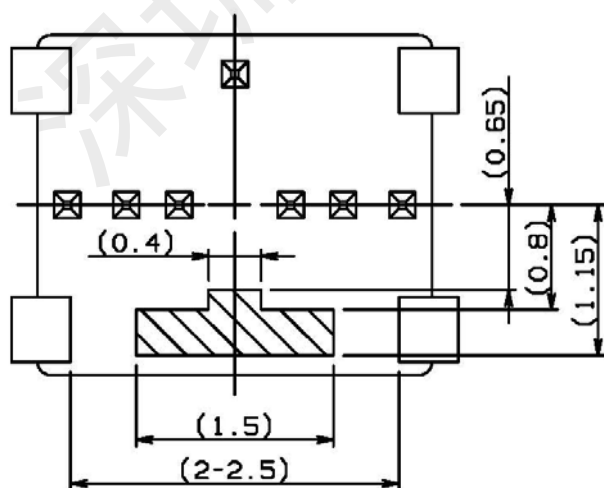


Piece weight : about 0.008g



Solder thickness $t = 0.10 \pm 0.02$



Circuit diagram

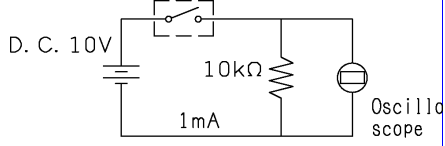


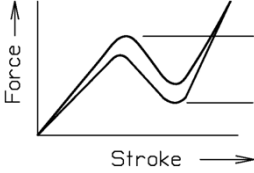
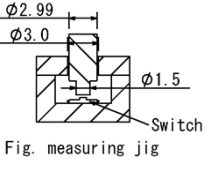
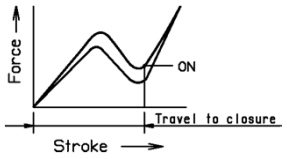
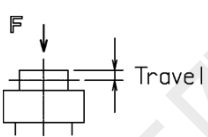
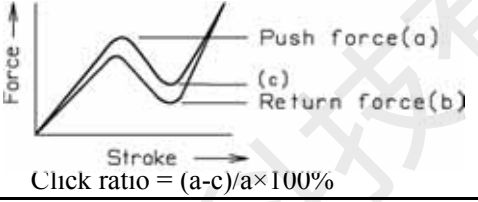
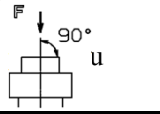
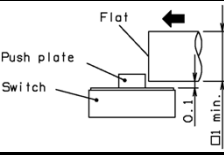
P.W.B. piercing diagram

Part of A-A' terminal is exposed at  area.
Any land pattern or vias shall not be provided at  area.



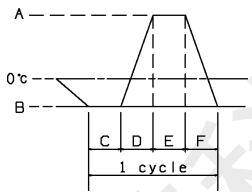
深圳市首韩科技有限公司

Classification		REFERENCE SPECIFICATION	
Part Name	TS263065A 330gf (7.5) MSM BD Membrane Switch	Part No.	EVPAFGB65
4. General specification			
4.1 Switch rating	DC 15 V 20 mA(max.) DC 2 V 10 μA(min.)		
4.2 Operation temperature range	-40 ~ + 85 °C		
4.3 Preservative temperature range	Single condition : - 40 ~ + 85 °C		
	Taping condition: - 20 ~ + 60 °C		
4.4 Standard conditions			
Unless otherwise specified, the test and measurements shall be carried out as follows.			
Ambient temperature : 5 ~ 35 °C			
Relative humidity : 45 ~ 85 %			
Atmospheric pressure : 86 ~ 106 kPa			
However, if doubt arises on the decision based on the measured values under the above-mentioned conditions, the following conditions shall be employed.			
Ambient temperature : 20 ± 2 °C			
Relative humidity : 65 ± 5 %			
Atmospheric pressure : 86 ~ 106 kPa			
5. Performance			
5.1 Electrical characteristics			
No.	ITEM	TEST CONDITION	PERFORMANCE
5.1.1	Contact resistance	Push force : {Operation force} × 2 Measurement tool : Contact resistance meter (Capable of 10 μA ~ 10 mA)	500 mΩ max.
5.1.2	Insulation resistance	DC 100 V (Between terminals)	50 MΩ min.
5.1.3	Withstand voltage	AC 250 V for 1 minute. (Between terminals)	No insulation destruction
5.1.4	Bouncing	Operation speed : 3~4 times/s <div> Switch Bouncing Test Circuit</div>	ON 10 ms max. OFF 10 ms max.

Classification		REFERENCE SPECIFICATION	
Part Name	TS263065A 330gf (7.5) MSM BD Membrane Switch	Part No.	EVPAFGB65
5.2 Mechanical characteristics			
No.	ITEM	TEST CONDITION	PERFORMANCE
5.2.1	Operation force	<p>Operation feeling shall be measured after 3 times pre-operations. Pre-operation condition :3 times, 1mm/s by 3 N Measurement speed : 0.5 mm/s</p>  	<p>Push force 1.6 ± 0.5 N</p> <p>Return force 0.1 N min</p>
5.2.2	Travel to closure	 	0.15 ± 0.1 mm
5.2.3	Click ratio	<p>Measurement condition: No.5.2.1</p> 	<p>Click ratio 30 % min. (before reflow soldering)</p>
5.2.4	Push strength	<p>50 N for 15 sec.</p> 	No damage (Electrical and mechanical)
5.2.5	Side push strength	<p>3 N, 15 sec. Initial product with 2 times reflow. (Reflow condition: see 6.1)</p> 	No damage (Electrical and mechanical)
5.2.6	Vibration test	<ol style="list-style-type: none"> Amplitude : 1.5 mm Sweep rate : 10-55-10Hz for 1 minute Sweep method : Logarithmic frequency sweep rate Vibration direction : X,Y,Z(3 directions) Time : Each direction 2 hours (Total 6 hours) 	No.5.1 and 5.2.1 to 5.2.2 shall be satisfied.
5.2.7	Soldering heat test	<p>Mount the switch on P.W.B by solder paste.</p> <ol style="list-style-type: none"> Reflow process 2 times. (Refer to section 6.1) Standard conditions after test : 1 hours 	<p>Contact resistance 500 mΩ max. No.5.1.2 to 5.1.4 and No.5.2.1 to 5.2.2 shall be satisfied.</p>
5.2.8	Solderability	<p>After spreading flux, the terminal is immersed in solder with following condition.</p> <p>Solder bar : M705/Sn-3.0Ag-0.5Cu (Senju Metal Industry Co.,Ltd.)</p> <p>Flux : CF-110VH-2A (tamura kaken)</p> <p>Soldering temperture : 260±5 °C</p> <p>Soldering time : 2±0.5 sec.</p>	95% or more of surface area(Excluding ruptured surface)where is immersed in solder shall be covered by new solder.



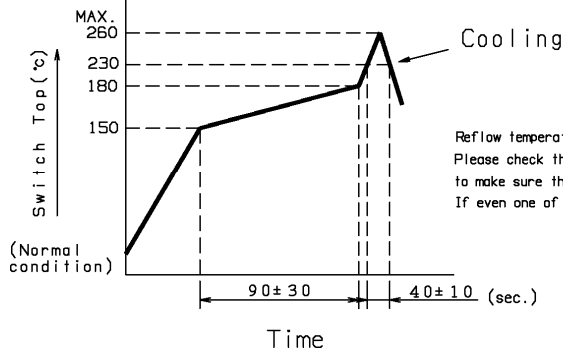
深圳市首韩科技有限公司

Classification		REFERENCE SPECIFICATION	
Part Name TS263065A 330gf (7.5) MSM BD Membrane Swi tch		Part No. EVPAFGB65	
5.3 Climatic characteristics			
No.	ITEM	TEST CONDITION	PERFORMANCE
5.3.1	Cold test	1) Temperature : -40±2 °C 2) Duration of test : 500h 3) Take off a drop water. 4) Standard conditions after test : 1 h	Contact resistance 1000 mΩ max. No.5.1.2 to 5.1.4 and No.5.2.1 to 5.2.2 shall be satisfied.
5.3.2	Heat test	1) Temperature : 85±2 °C 2) Duration of test : 500h 3) Standard conditions after test : 1 h	Contact resistance 1000 mΩ max. No.5.1.2 to 5.1.4 and No.5.2.1 to 5.2.2 shall be satisfied.
5.3.3	Heat shock test	1) Test cycles : 20 cycles 2) Standard conditions after test : 1 h  A: +85±2 °C B: -40±2 °C C: 1 hour D: 5 minutes max. E: 1 hour F: 5 minutes max.	Contact resistance 1000 mΩ max. No.5.1.2 to 5.1.4 and No.5.2.1 to 5.2.2 shall be satisfied.
5.3.4	Humidity test	1) Temperature : 60±2 °C 2) Relative humidity : 90~95 % 3) Duration of test : 500 h 4) Take off a drop water. 5) Standard conditions after test : 1 h	Contact resistance 1000 mΩ max. No.5.1.2 to 5.1.4 and No.5.2.1 to 5.2.2 shall be satisfied.
5.3.5	Endurance (Switching action)	1) DC 15 V 20 mA Resistance load 2) Operation speed : 2~3 times/s 3) Push force : Maximum value of operation force 4) Operation number : 100,000 times	Contact resistance 20 Ω max. Bouncing : 10 ms max. Variation rate of operation force shall be within ±30 % to the value before testing No.5.1.2 and 5.2.2 shall be satisfied.
5.3.6	Withstand H ₂ S	1) Density : 3±1ppm 2) Temperature : 40±2 °C 3) Relative humidity : 80~85 % 4) Duration of test : 24 h 5) Standard conditions after test : 1 h	Contact resistance 1000 mΩ max. No.5.1.2 to 5.1.4 and No.5.2.1 to 5.2.2 shall be satisfied.

Classification	REFERENCE SPECIFICATION	
Part Name TS263065A 330gf (7.5) MSM BD Membrane Switch	Part No. EVPAFGB65	

6. Prohibitions and precaution for handling

6.1 Reflow soldering condition



- 1) Two times max. with directing the switch mounting side of P.W.B up.
- 2) Re-soldering by soldering iron shall be allowed under 350 °C max. 3 sec. max. 1 time only and the tip of iron must not touch to terminals.
Soldering iron for re-soldering have to be 60 W max.

6.2 Design instructions

- 1) Please refer to the land pattern plan Panasonic recommends on the 2nd page.
- 2) Design key top as fig-1.(Recommended operation condition)
As the design of key top may affect operation feeling, please follow the directions stated below.
 - We recommend to use harder material such as resin for key top, and we do not recommend softer material such as rubber may affect operation feeling.
However in case if you still would like to use softer material, please consult with us beforehand.
 - Considering decentering between switch and key top, the key top shall be always positioned to be able to push the entire top surface of actuator.
 - Please design housing and key top not to produce friction to each other to avoid inhibition of operation feeling.
- 3) Please design your knob not to hit the switch film or case even when the switch is fully pushed.
- 4) Please pay attention not to add side force (static or impact) to the push plate of the switch, especially when the switch is being built into the products.(fig-2)

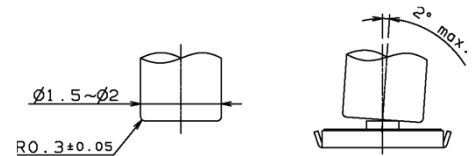


fig-1

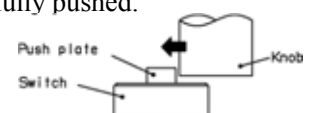


fig-2

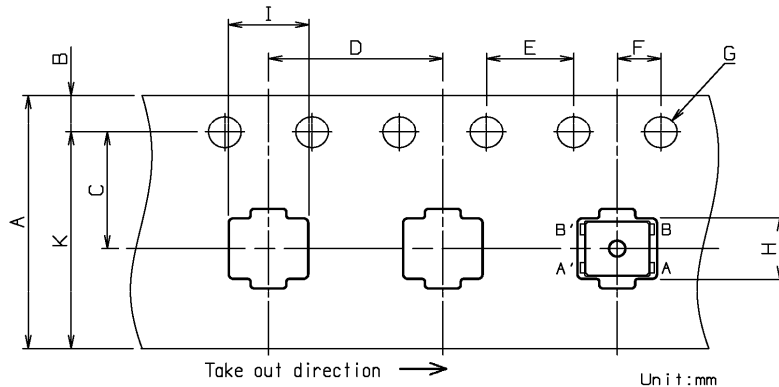
6.3 Note

- 1) Please be cautions not to give excessive static load or shock to switches.
- 2) Please be careful not to pile up P.W.B. after switches were soldered.
- 3) Preservation under high temperature and high humidity or corrosive gas should be avoided especially.
When you need to preserve for a long period, do not open the carton.
- 4) Avoid pressing the film portion of the product with sharp-edged object.
- 5) Cleaning
 - If flux or solder is scattered on the surface of P.W.B when soldering, characteristics of this product may be damaged.
 - Cleaning after soldering is not allowed. When cleaning is required this switch should be soldered after the cleaning.
- 6) Avoid the use of the switch under pushed ON condition is continued for a long time.
- 7) There is a possibility the flux from solder paste infiltrates into the body if plenty of solder paste was applied by switch on the P.W.B.
So we recommend to use our proposed land design in order to prevent above problem.
Also please avoid putting additional land by the switch on the P.W.B.

Classification	REFERENCE SPECIFICATION	
Part Name	TS263065A 330gf (7.5) MSM BD Membrane Switch	Part No. EVPAFGB65

7. Packing specification

Carrier tape



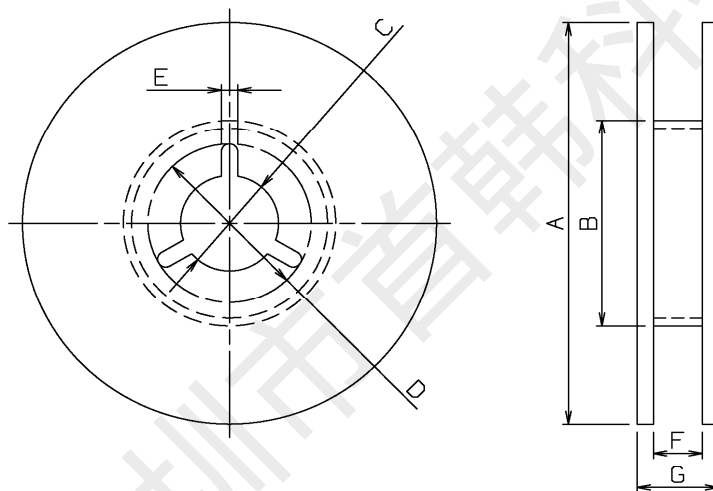
A	B	C	D	E	F	G	H	I	J	K	t
±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	±0.3	±0.2	±0.2	±0.2	(10.25)	±0.1
12	1.75	5.5	8	4	2	1.5	2.95	3.75	0.8		0.3

Taping condition : Lack of products in the middle of taping should be one MAX, but total quantity specified in the specifications should be secured.

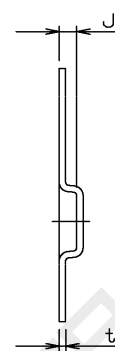
Peeling off strength of top tape : It should be within 0.2N to 1.0N at 165 degree in peeling off angle.

Joint of carrier tape : One joint per one reel may exist.

Reel (8000pcs./reel)

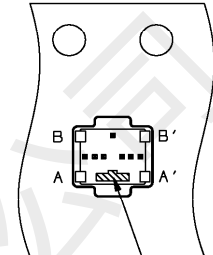


A	B	C	D	E	F	G
±2	±1	±0.5	±1	±0.5	±1	±1
φ380	φ80	φ13	φ21	2	13.5	17.5

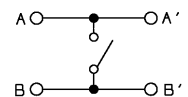


Product orientation direction

(Back side)



Terminal expose area



Circuit diagram



Classification		REFERENCE SPECIFICATION	
Part Name	TS263065A 330gf (7.5) MSM BD Membrane Swi tch	Part No.	EVPAFGB65
<p><Prohibitions and precaution for handling></p> <p>【Prohibited items on fire and smoking】</p> <ul style="list-style-type: none">• Absolutely avoid use of a product beyond its rated range because doing so may cause a fire. If misuse or abnormal use may result under conditions in which the product is used out of its rated range, take proper measures such as current interruption using a protective circuit.• The grade of nonflammability for resin used in product is "94HB, " which is based on UL94 Standards (flammability test for plastic materials). Prohibit use in a location where a spreading fire may be generated or prepare against a spreading fire. <p>【For use in equipment for which safety is requested】</p> <ul style="list-style-type: none">• Although care is taken to ensure product quality, inferior characteristics, short circuits, and open circuits are some problems that might be generated. To design an equipment which places maximum emphasis on safety, review the effect of any single fault of a product in advance and perform virtually fail-safe design to ensure maximum safety by:<ul style="list-style-type: none">• Preparing a protective circuit or a protective device to improve system safety, and equipment.• Preparing a redundant circuit to improve system safety so that the single fault of a product does not cause a dangerous situation. <p>【Attentions required for storage condition】</p> <ul style="list-style-type: none">• When this product is to be stored in the following circumstances and conditions, it may affect on the performance deteriorations and solderability etc., avoid storing in the following conditions.<ol style="list-style-type: none">(1) A place where the temperature is -10°C max., +40°C min. and the humidity is 85% min.(2) In the corrosive gas atmosphere.(3) Long-term storage for 6 months min.(4) A place where the product is exposed to direct sunlight.• Store in packed condition so that the load stress is not applied.• Please use this product as soon as possible, our recommendation is within 3 months and the limitation is 6 months.• If any remainder left after packing is opened, store it with proper moistureproofing and gasproofing, etc.,			