



MEMBRANE SWITCH SPECIFICATIONS

Membrane Switch Design Options and Features

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Construction	
Name Plate and Circuit Only	There is only overlay or circuit layer
Flat Type without Tactile Effect	Overlay and circuit are all flat without tactile effect
Embossed Key Type with Tactile Effect	Emboss of keys: Rim, deboss, pillow, dome and dimple emboss. Tactile effect: Poly Dome of upper circuit
Embossed Key Type with Metal Dome Type	Emboss of Keys: Rim, deboss, pillow, dome and dimple emboss. Metal dome shape: Four legs, triangle, rectangle, Round metal dome coating: Nickel or gold plated
Finished with Electronic Component	Electronic component: LED, Resistors, Light Sensors and Capacitances
Finished with Silicon Rubber Keypad	Rubber keypad provides excellent tactile effect Tactile Effect: Metal Dome or Poly Dome of Upper Circuit
Finished with Flexible FPC or PCB	FPC or PCB often solder LED, resistors, light sensors, capacitances IC and tail (Only PCB)
Finished with EL Plate	EL plate can illuminate the area such as keys, graphics and texts
Finished with Touch Panel	Membrane switch contain touch panel on the display window
Duraswitch Type	Duraswitch type is Push gate technology, thin coder RT and magnetic construction
Finished with LGF	LGF (Light Guide Layer) can illuminate the area such as keys, graphics and text and must place the side view LED
Overlays and Graphics	
Lexan and Polyester (Normal & UV Resistant)	Self-textured, gloss and semi-gloss
Embossing	Rim, deboss, pillow, dome and dimple Emboss
Printing	
Selective Surface Lacquers	Texture, gloss, semi-gloss and matte
Image Graphics	Matched to specific requirements
Display Filter Windows	Translucent, transparent and dead front windows to accommodate LED, LCD, VFD, CRT, ETC.
Other Features	
Support Panels	Aluminium, Steel, Plastic, Fibreboard and ABS
Chemical Resistance	A Combination of Polyester Materials and Coatings can provide enhanced resistance to a variety of chemicals, solvents and cleaning fluids
Environmental Sealing	Sealing can be improved subject to design considerations

Electrical Properties

	Non-Tactile (Flat)	Metal Dome	Poly Dome	Duraswitch
Contact Bounce Time	< 5ms	< 5ms	< 5ms	< 5ms
Closed Switch Loop Resistance	Normal printing circuit with cross-over or through hole design: 100-5000 (Varies from the traces length and conductive ink type) FPC and PCB circuit < 200			
LED Typical Operating Voltage	2.1-3 5V	2.1-3 5V	2.1-3 5V	2.1-3 5V
LED Typical Operating Current	3-5mA	3-5mA	3-5mA	3-5mA
Operating (Switched) Voltage	35V (DC) Max	35V (DC) Max	35V (DC) Max	35V (DC) Max
Operating (Switched) Current	100mA Max	100mA Max	100mA Max	100mA Max
Operating (Switched) Power	1W Max	1W Max	1W Max	1W Max
Insulation Resistance	100mΩ 50V	100mΩ 50V	100mΩ 50V	100mΩ 50V



Mechanical Properties				
	Non-Tactile (Flat)	Metal Dome	Poly Dome	Duraswitch
Dimensional Tolerance	General Knife Tooling: $\pm 0.25\text{mm}$, $\pm 0.2\text{mm}$ Min General Steel Tooling: $\pm 0.1\text{mm}$			
Key Travel	0.1-1.5mm	0.1-1.5mm	0.1-1.5mm	0.1-1.5mm
Life Expectancy	≥ 5 Million Times	≥ 1 Million Times	≥ 1 Million Times	≥ 10 Million Times (Pushgate) $\geq 100,000$ Times (Thin Coder RT)
Contact Surface	Customer Specification: - Flexible base and Top Circuit: Silver or Carbon Customer Specification- FPC and PCB Base Circuit: Tin, Nickel or Gold Plated Customer - Metal Domes: Nickel or Gold Plated			
Actuation Force	2-10oz	7-14oz	7-15oz	6-12oz
Emboss Height (LED Window) Not Include the material thickness	Not Recommended	0.25-0.35mm	0.25-0.35mm	Not Recommended
Key Spacing (Edge to Edge)	Not Recommended	$\geq 2.5\text{mm}$	$\geq 2.5\text{mm}$	Not Recommended
Embossing Size of Keys	Round Keys: $\geq \text{Ø}6\text{mm}$, Square Keys: $\geq 8 \times 8\text{mm}$, Minimum Width of Rim Embossing: 1mm Poly Dome of Top Circuit: $\geq \text{Ø}5\text{mm}$, Dimple Emboss: $\geq \text{Ø}1\text{mm}$			
Minimum Bend Radius Tail	R3.0mm	R3.0mm	R3.0mm	R3.0mm

Environmental Properties				
	Flat Type without Tactile Effect	Flat Type with Metal Dome	Embossed Keys Type with Tactile Effect	Duraswitch Type without Embossed Keys
Storage Temperature	-40 to 80°C	-40 to 80°C	Lexan: -40 to 80°C Polyester: -40 to 60°C	-40 to 80°C
Operating Temperature	-20 to 80°C	-20 to 80°C	Lexan: -40 to 70°C Polyester: -20 to 55°C	-20 to 80°C
Humidity	40°C, 90%-95%RH, 240 Hours	40°C, 90%-95%RH, 240 Hours	40°C, 90%-95%RH, 240 Hours	40°C, 90%-95%RH, 240 Hours
Storage Humidity	$\leq 80\%$	$\leq 80\%$	$\leq 80\%$	$\leq 80\%$
Vibration	20G, Max (10-200Hz, MIL-STD-202, M204.Condition B)			
Shielding & Protection				
Environmental	Sealing to IP65 can be achieved, but switch must have perimeter layer, minimum width of perimeter: 5mm			
ESD Protection	$\leq 5\text{KV}$, Switch Must Contain the ESD Layer (Silver or Carbon Printing and Aluminium Foil)			
EMI / RFI	Design Specific			

Fitting Instructions	
1	Please keep the housing clean, flat and without oil stain, impurity, hards and so on before assembling the membrane switch on it, or it will affect the bind ability of the adhesive and the function also.
2	Please do not bend the product, especially the part with electronic components, such as led, el, ic soldering parts, or it will be ruptured and affect the function
3	When fixing the part, you should attach it once. This cannot be taken off and placed back on again This process will affect the bind ability of the adhesive and the function also.
4	The products with metal domes, they should be assembled correctly and be attached once on the housing. If removed, the metal dome will be compromised and lose its functionality. This can lead the parts being defective.
5	The products with PINs should be inserted vertically. They can't move in different directions, or will make the connector larger and affect the connection.
6	The products with electronic components must be in an anti-static environment during application to avoid the components to be contaminated by the static.
7	The products with tail, it can be dragged vertically, and try to keep on radian bending, avoiding the rip on the root of the tail and the internal break in conductive circuit.