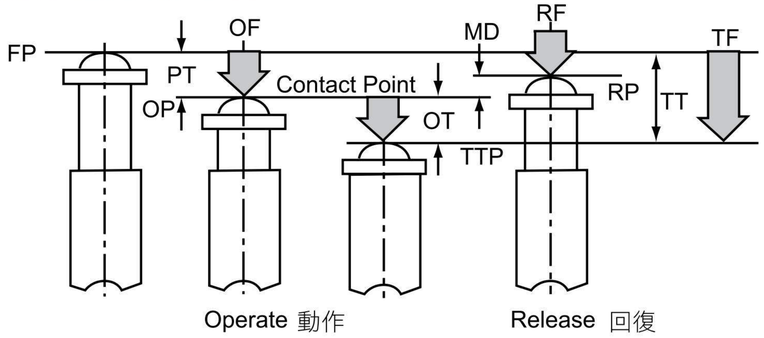
Micro Switch
Movement Characteristics

Switch Movement Characteristics



- **Operating Force (OF) 動作所需力量：**
  The force applied to the acturator reuired to operate the switch contacts.
  從自由位置到動作位置所需要加於傳動軸的力量。
- **Realease Force (RF) 復歸力：**
  The value of which the force on the actuator must be reduced to allow the contacts to reture to the normal position.
  從動作限度位置到復歸位置所需要加於傳動軸的力量。
- **Total Force (TF) 整體移動所需力量：**
  The force applied on the actuator required to reach the stopper from the "FP"
  從動作位置到動作限度位置所需要加於傳動軸的力量。
- **Free Position (FP) 自由位置：**
  The initial position on the actuator when there is no external force applied.
  未加外力時的傳動軸位置的力量。
- **Operation Position (OP) 動作位置：**
  The position of the actuator at which the contact snap to the operated contact position.
  加外力於傳動軸後，可動接點從自由位置狀態正好反轉時的傳動軸位置的力量。
- **Releasing Position (RP) 復歸位置：**
  The position of the actuator at which the contacts snap from the opereated contact position to their normal position.
  減輕加於傳動軸的外力後，可動接點從動作位置狀態正好反轉到自由位置時的傳動軸位置。
- **Total Travel Position (TTP) 動作限度位置：**
  The position of the actuator when it reach stopper.
  傳動軸到達傳動軸停止時的傳動軸位置。
- **Pretravel (PT) 動作前移動：**
  The distance of or angle through which the actuator moves from the "FP" to the "OP".
  從傳動軸的自由位置到動作位置間的移動距離或移動角度。
- **Overtravel (OT) 動作後移動：**
  The distance or angle of the actuator movement beyond the "OP".
  從傳動軸動作位置到動作限度位置的移動距離或移動角度。
- **Movement Differential (MD) 應差移動：**
  The distance or angle from "OP" to the "RP".
  從傳動軸動作位置到復歸位置的移動距離或移動角度。
- **Total Travel (TT) 整體移動：**
  The sum of "PT" and "OT" expressed by distance or angle.
  從傳動軸自由位置到動作限度位置的移動距離或移動角度。

Circuicity 端子代號和接觸形式

代號	端子腳位
COM	共同端子
NC	常時閉路端子
NO	常時開路端子

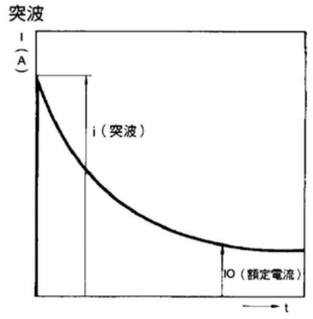
代號	接 點 形 式	符 號
SPDT	單極雙投型（c 接點）	
SPST-NC	單極常閉型（b 接點）	
SPST-NO	單極常開型（a 接點）	
SPDT	單極雙投型	
DPDT	雙極雙投型	
DPDT-DB	雙極雙投雙斷型	

Please follow drawing of Approved Sheet that catalog drawing only for reference.

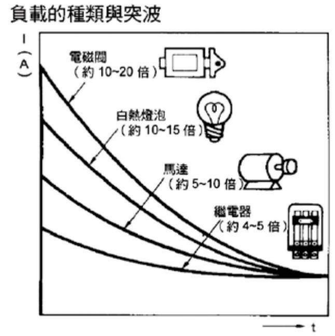
Micro Switch
Attention

Attention 微動開關用電注意事項

- **用電選擇條件：**
  - 因交流電和直流電的不同，其接點的開閉能力有很大的差異，在選用時務必核查“額定值”。
  - 特別在於微小電腦、電流時，務必選擇微小負載使用。
    務必確認衝擊電流、額定電流、衝擊時間。
  - 各型式“性能”項目中其接點電阻，利用DC6～8，1A的電壓降低法測定。（微小負載用則利用額定通電電壓降低法測定）



  - 由於負載的種類不同，額定電流和衝擊電流會產生很大差別，因此務請確認容許衝擊電流值。
  - 各機種的額定值取決於以下條件。
    - 【電感性負載】
      力率0.4以下（交流）
      額定時間7ms以下（直流）。
    - 【指示燈負載】
      具有10倍額定電流的衝擊電流。
    - 【起動電流】
      具有6倍額定電流的衝擊電流。



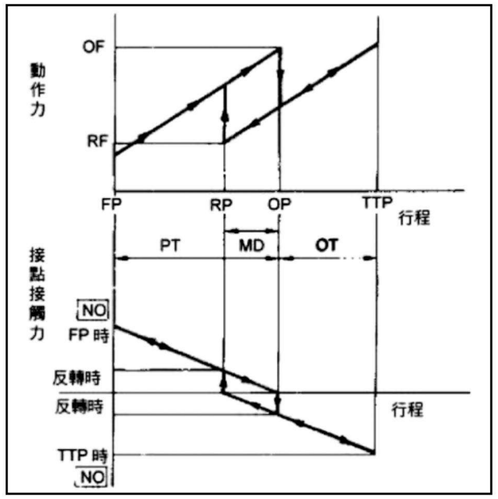
註：電感性負載在直流電路中經常會有問題產生，因此必須熟知負載的額定時間（L/R）。

Circuicity 機械性注意事項

- **動作量、行程、接觸特性：**
  - 設定行程為得到高可靠性的重點。
  - 右圖表示，動作量→行程→接點接觸力的相互關係。為得到高可靠性必須在適當的接觸力量範圍內使用。為此，使用常時閉路（NC）時，必須設定常時操作體使動作軸能返回自由位置。另外，使用常時開路（NO）時，重要的是將動作後移動（OT）按至規格值的70～100%，以吸收僅有的偏移和誤差。
  - 行程的設定若位於動作位置（OP）附近或復歸位置（RP），會造成接觸不穩定，若是在動作限度位置（TTP），則會因操作體的慣性力而破壞動作件和開關主體。為此，建議採取在安裝板和操作體上測調整行程的方法。
  - 右圖表示在行程增減的同時，動作量（接觸力）變化的代表例。在OP、RP點的設定，由於接觸力不穩定，故不能保持高可靠性，而且，不易耐受振幅和衝擊，應予以注意。
- **選擇時的機械性特性：**
  - 因操作方式不同，需要選擇傳動軸。
  - 務必不可在傳動軸上強行加力。
  - 請確認操作溫度（頻率）、各規格操作速度、頻率。

1. 操作溫度極緩慢時，會造成接點轉換不穩定導致接點不良及溶融等原因。
2. 操作速度極快時，會造成因衝擊性動作而破壞、頻率變高，使接點來不及轉換。

若使用時必須使操作速度極緩慢或需要將按鈕置於自由位置和動作位置中間時，請事先與敝公司商談。



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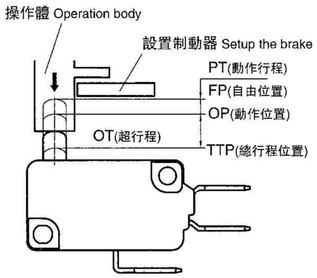
機械事項 Mechanical Issue

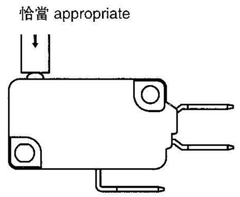
(1) 關于操作行程的設定 Concerning the operating travel setup

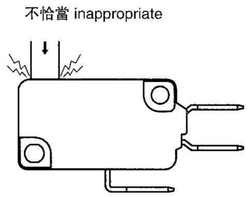
操作行程的設定將影響開關的可靠性，要得到高可靠性，開關必須在合適的接觸力範圍內使用 。因此安裝開關時，請特別注意：

The setup of operating travel will affect the reliability of the switch, if you want to obtain high reliability, the switch must be used in the appropriate contact force scope. Please pay special attention to the followings when installing the switch:

- 使用常閉(NC)觸點時，操作體設定必須保證驅動杆(按鈕或動臂)能返回到自由位置；使用常開(NO)觸點時，請以過行程(OT)值的70 ~ 100%爲標準來安裝。
  When using NC contact, operation body setup should ensure the driving rod (button or lever) can return to free position; When using NO contact, please install it according to 70 ~ 100% of the over travel(OT).
- 行程設定在動作位置(OP)和復位位置(RP)附近時，觸點間接觸力會較小且不穩定，無法保證較高的接觸可靠性，也容易由于振動和衝擊產生誤動作。
  When the travel setup is near the operating position (OP) and release position (RP), the contact force between the contacts will be small and unstable i.e. high contact reliability cannot be ensured and vibration and impact will cause wrong action easily
  行程設定超過了全行程，即操作體在全行程位置(TTP)之下時，可能由于操作體的慣性力造成驅動杆和開關本體的損壞，同時加到內部可動彈簧的應力也會變大，由此導致開關的壽命縮短。
  When the travel setup exceed the total travel i.e. the operation body is below the total travel position (TTP), may be the inertia force of the operation body caused damage to the driving rod and switch body and also the moving spring stress inside will be bigger,then the switch life will be shortened.







- 特別提醒：請正確理解“全行程位置”的含義，它是指驅動件(按鈕或動臂)允許到達的最低位置(此位置能保持開關特性正常)，而并非驅動件所能到達的機械極限位置(在這個位置，開關會受到損傷)。特別是在開關安裝有動臂(擺杆)的情況下，操作體如果强行將動臂驅動到超過全行程的位置，則不僅損傷開關內部零件，而且會使動臂嚴重變形，導致開關失效，請避免發生此現象。
  Special attention: please comprehend the meaning of “total travel position”correctly, it means the lowest position(the position can ensure normal switch specifications)of driving rod(button and lever)allowed,it does not mean the driving rod can reach mechanical limit position (switch will be damaged in this position). Especially under the condition of driving lever (rod) mounted on the switch, if operation body moves the lever to surpass the total travel position forcefully,not only the parts inside will be damaged,but also the lever will be distorted heavily, then the switch will fail, please avoid this situation.

(2) 關于操作速度和操作頻率 Concerning operation speed and operation frequency

操作速度和頻率的設定，會影響開關的性能。請注意以下要點：

Operation speed and operation frequency setup will affect switch functions. Please pay attention to the followings:

- 操作速度極慢，則觸點的切換將不穩定，可能導致接觸不良和熔接。
  If the operating speed is too slow, then the contact change will be unstable which may cause the bad contact and fusion.
- 操作速度極快，則會變成衝擊動作，引起早期損壞。
  If the operating speed is too fast which will turn to impact movement, and it will cause early damage.
- 操作頻率太高，則觸點的切換可能會跟不上。
  If the operating frequency is too high, then the contact change may not be able to follow up.
- 操作頻率極低(1次以下/月)，觸點表面會產生氧化膜，導致接觸不良。
  The operating frequency is extremely low (for less then 1 time/month), the contact surface will be oxide, which will cause bad contact.
  容許操作速度、容許工作頻率是用來保證開關的可靠性的，開關的壽命是在特定操作速度下的數值。
  Allowed operating speed & operating frequency is used to guarantee switch reliability; switch life is under the specific operating speed value.

(3) 關于使用狀態 Concerning the using status

請不要在一直按下的狀態下長期使用，否則會加快彈性零件的劣化，改變其特性。

Please avoid using it when pressing continuously for a long time, otherwise, it will speed up the deterioration of springiness parts and change its characteristic.

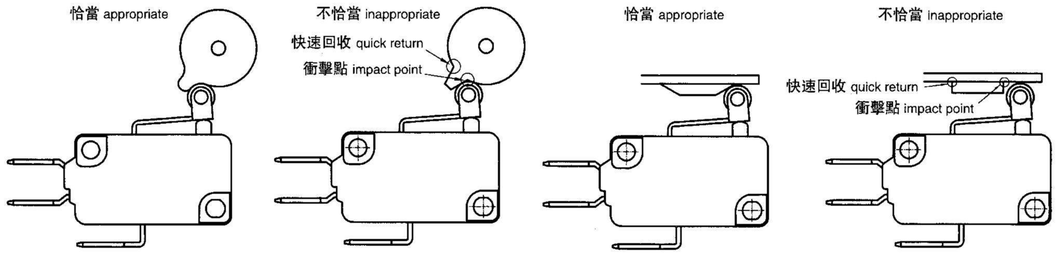
Please follow drawing of Approved Sheet that catalog drawing only for reference.

(4) 關于開關的操作方法 Concerning the way to how operate switch

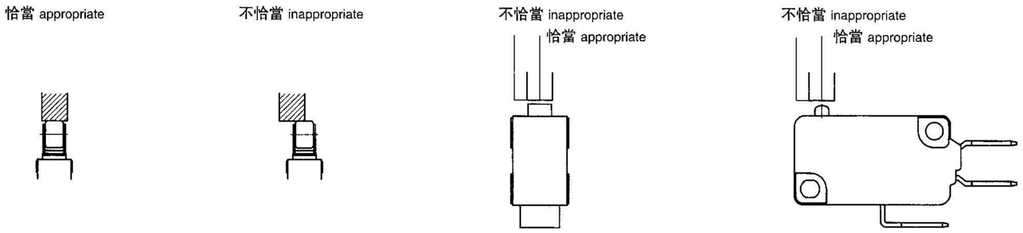
開關的操作方法直接影響開關的性能。操作時應注意：

Switch performance directly influence by the way to operate switch. Please pay attention to the followings when operating switch:

- 請使用形狀平滑的開關操作體(凸輪、擋塊等)。開關的驅動杆快速回收受到衝擊時，可能導致驅動杆的破損和壽命的縮短。
  Please use the smooth shaped switch operation body (cam,stop piece etc.).When switch driving rod return quickly under impact which may cause driving rod breakage and life reduction.

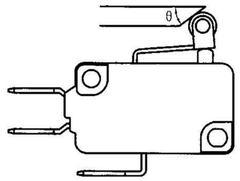


- 操作時請不要在驅動杆上施加偏負荷。否則，局部摩擦可能導致驅動杆的破損和壽命的縮短。
  Please do not add leaning load on the driving rod when it is in operation. Otherwise, the part friction may cause driving rod breakage and life reduction.



- 請根據驅動杆的動作方向進行操作。
  Please operate according to the movement direction of driving rod.

- 在針狀按鈕型中，請垂直按下按鈕。
  For the needle button type, please press button vertically.
- 滚輪擋塊的角度 θ 請設定在30° ~ 45° 的範圍內。角度過大，會對動臂造成异常的横向應力。
  The roller stop piece's angle θ please setup between 30° to 45°. If angle is oversized, it will cause moving arm unusual lateral force to the lever.



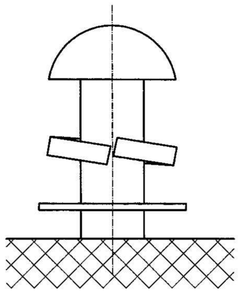
Please follow drawing of Approved Sheet that catalog drawing only for reference.

關於安裝 Concerning Installation

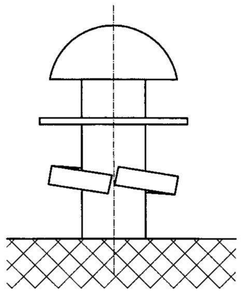
(1) 開關的固定 Switch fixing

- 安裝開關時，使用安裝螺釘應配合平墊圈和彈簧墊圈。不能將彈簧墊圈直接壓在開關外殼上,以免損壞外殼。此外,緊固螺釘時，轉矩過大會導致觸點黏着和開關破損 。請選用與開關安裝孔相應尺寸的螺釘，螺釘直徑太小會造成安裝位置的不一致性。
  When installing switch , mounting screw have to match with the plain washer and the spring washer . Do not press the spring washer directly to the switch cover,in order not to damage the cover. In addition, when fastening screw,torque oversized will cause the contact to stick together and switch breakage . Please choose corresponding sized screw with the switch mounting hole . If the screw diameter is too small, it will cause nonconformity of mounting position.

恰當 appropriate



不恰當 inappropriate



- 請不要對開關本體進行擴大安裝孔等加工。
  Please do not add processing on the switch body such as expand mounting hole.
- 關于固定劑的使用：使用黏合劑、固定劑時，請不要使其附着在開關的可動部位或進入開關內部，否則可能導致動作不良、接觸障礙。此外有些種類可能產生有毒氣體造成惡劣影響，因此請充分確認後使用。
  Concerning fixing dosage using : When use adhesive , fixing dosage , please do not let it stick to moving parts or enter into the switch , otherwise , it may cause bad movement & bad contact . In addition , it may produce harmful gas in some cases which cause bad influence, thus, please use it after full consideration.
- 配綫方法：配綫時請不要在導綫上施加拉力。
  Wiring method: When wiring, please do not add pulling force on the wire.
- 安裝場所：請安裝在不容易引起開關誤當作的場所。
  Install place: Please install it in place where it will not cause switch mis-operation easily.
- 維護、檢查：安裝時請確保其容易檢查，便于更換。
  Maintenance check: When installing, please guarantee that it is easy to check and changed easily.
- 安裝方向：在低荷重(動作力)型開關上安裝長動臂(擺杆)時,請注意安裝方向,應保證動臂的自重不會直接對按鈕產生壓力,否則可能導致開關復位不良。
  Install directions: When assembling the long lever (rod) on the switch which is low load (operating force) , please pay attention to install direction and should guarantee that the lever weight will not cause pressure to button directly , otherwise , it may cause bad release of the switch.

(2) 關于和端子的連接 Concerning the connection with terminals

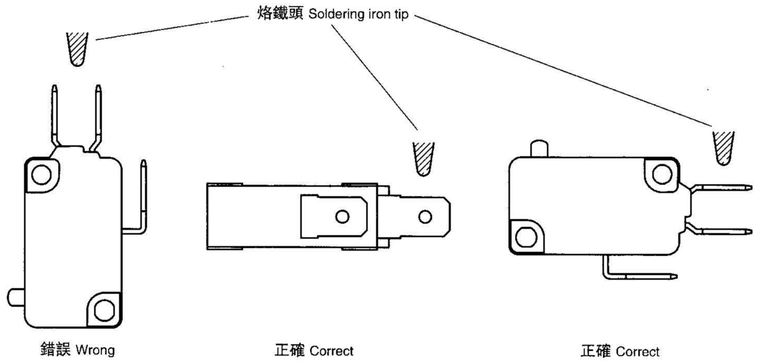
- 焊接端子：用烙鐵進行焊接時，烙鐵頭的溫度請控制在380℃以下。如果開關在焊接不良的情況下使用,可能會引起异常發熱，燒毀。焊接溫度和時間爲380℃・3s以內。長時間加熱可能導致外殼軟化熔解，導綫表皮燒焦和內部結構變化等,造成開關特性下降。
  Soldering terminal : When jointing with the soldering irons , please control the soldering iron tip , temperature below 380℃. If the switch uses in the bad jointing condition, it may cause exceptional heat, then burning. Jointing temperature and time: 380℃・3s. If it is heated for a long time , it may cause cover soften & melt , wire surface burn , the inside structure change and so on , will cause reduction in switch characteristics.
- 快接端子：請使用標準形狀的插套直向插入端子 。如果從端子的橫向或上下方向施加過大的外力 ，可能造成端子的變形和外殼破損。
  Quick connect terminal : Please use the standard shaped inserter to insert straightly to the terminal . If exert oversized external force transverse or above-below direction from the terminal, it may cause the terminal distort and the cover breakage.
- 隔板的使用：擔心絶緣距離無法確保或附近有其他金屬部件和銅綫時，請使用絶緣隔板來確保絶緣距離。
  Using of separator: If you’re worry that the insulation distance are unable to be guaranteed or there are other metal parts and the copper wire nearby, please use insulator board to guarantee the insulation distance.

Please follow drawing of Approved Sheet that catalog drawing only for reference.

(3) 焊接注意事項 Soldering issue

手工焊接時，將端子橫放(與地面平行)，用熱容量合適的電烙鐵和適量的焊錫迅速焊接，還要注意用換氣扇等排放焊劑揮發的氣體。防止烙鐵頭碰觸到開關本體等導致焊劑流入開關內部。焊劑氣體進入開關內部，可能引起接觸不良 。焊接後請不要立刻向導綫和端子部位施力。

When jointing with hands , please put the terminal flat (parallel with ground) , jointing rapidly with suitable thermal capacity electric soldering iron and suitable soldering tin , attention should be paid to use of ventilating fan so as to discharge the solder volatility gas. Avoid the soldering iron tip touch the switch body which will cause soldering dosage flows into switch inside. Soldering dosage gas enters into the switch may cause bad contact. After jointing, do not press the wire and terminal immediately.



自動焊接時，請調節好焊劑的量，不要讓焊劑漫到基板上。焊劑進入開關內部可能導致接觸不良。

When joint automatically, please measure the solder dosage quantity, do not let it flow to the base plate. Soldering dosage flow inside the switch may cause bad contact.

使用和儲存環境 Using and Storage Environment

(1) 關于使用 Concerning usage

請不要往按鈕部位、驅動部位等運動部位加油，否則可能引起工作失常、接觸不良。

Please do not oil on the button and driving part, otherwise, it maybe will cause switch works abnormally, bad contact.

(2) 關于使用環境 Concerning the using environment

一般開關都不是防水結構。因此在水等液體飛散、噴射的環境中請對開關采取保護措施。

Normal switch are not waterproof , thus , please take protective measures to switch against liquid such as water disperse or spraying environment.

請不要在對開關連續施加振動和衝擊的狀態下使用。隨着磨損粉屑的產生,可能導致觸點故障和工作失常、壽命縮短等。此外，如果施加過大的振動或衝擊，觸點可能發生誤動作、黏着、破損等。請在不產生共振的方向和沒有振動、衝擊的位置上安裝。

Please do not use the switch under condition of exert vibration and continuous impact . Attrition dust produce may cause contact failure , malfunction and life shortened etc . Furthermore , if there is oversized vibration or impact , the contact may be mis-operated , stick together, breakage and so on. Please install it in the position with no resonating direction, no vibration and no impact.

請不要在有硫化氣體(H_2S、SO_2)、氨氣(NH_3)、硝酸氣體(HNO_3)、氯氣(CL_2)等有害氣體和高温、高濕的環境中使用，否則可能會由于觸點接觸不良和腐蝕導致破損等功能故障。

Please do not use it with exposure to harmful gas such as H_2S、SO_2、NH_3、HNO_3、CL_2,high temperature and high humidity condition, otherwise, it may cause breakage and failures by bad contact and corrosion.

請在開關規定的使用温濕度範圍內使用。在高温下使用可能會導致特性改變。如果温度急劇變化,也會導致特性的變化。建議您盡量安裝在離熱源遠的地方以免受到影響。

Please use it in the stipulated temperature scope.If it is used in high temperature,the characteristic of switch will change.If temperature changed rapidly , it will also cause switch characteristic change . We suggest installing in place as far as possible from the heat in order to avoid the influence.

(3) 關于儲存環境 Concerning storage environment

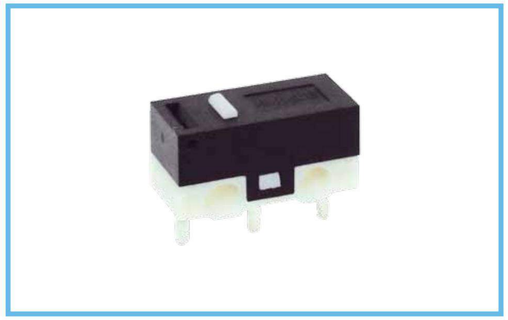
保存開關時，爲了防止由于鍍銀端子的硫化變色，請裝入聚乙烯袋中。

When keep switches, please pack it in polyethylene bag to prevent silver plated terminal vulcanization and change color.

請避免保存在會產生有害氣體的場所和高温、高濕度場所。在有些保存場所,建議您對出廠後超過3-6個月的產品進行重新檢查後再使用。

Please do not store it in places where there is harmful gas,high temperature and high humidity. In some storage places,we suggest you to re-inspect it before use when it is out of factory over 3-6 months.

Please follow drawing of Approved Sheet that catalog drawing only for reference.



Application 應用

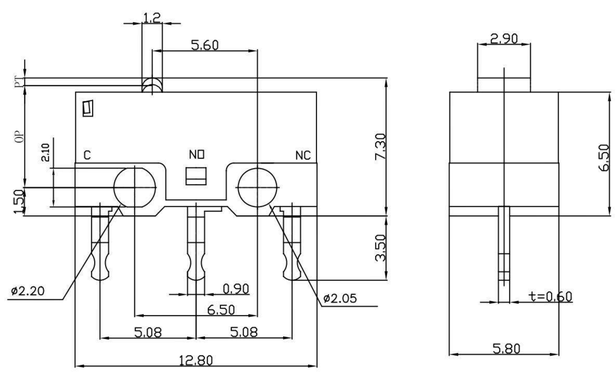
- Minitypebig current. Characteristic: small contact gap, quick action, high sensitivity and small operating travel.
  超小型，大電流。具有微小觸點間隙，快速動作，高靈敏度和微小動作行程的特點。
- Veriety of contact terminals.
  接線端子種類齊全。
- Widely used in appliance, electronic equipment, automatic machine, communication equipment, car electric, apparatus and instrument, electron motion tool etc.
  廣泛應用於各種家用電器、電子設備、自動化設備、通訊設備、汽車電子、儀器儀表、電動工具等領域。

Specifications 技術特性

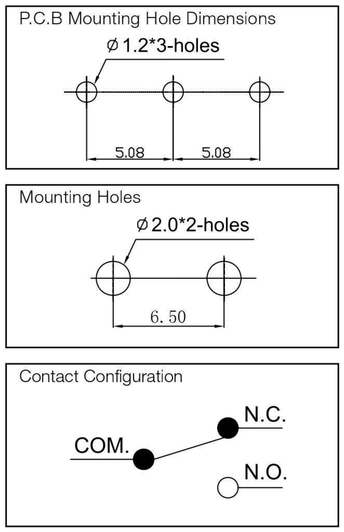
Items 項 目		Value 特性值
Operating Speed 工作速度		1mm～500m/s（Related with actuator forms）（與驅動方式有關）
Operating Frequency 工作頻率		Mechanical 120 cycles/min；Electrical 10 cycles/min ／機械120次/min；電氣10次/min
Insulation Resistance 絕緣電阻		≧100MΩ（500VDC）
Contact Resistance 接觸電阻		≦500mΩ（Intial value）/（初始值）
Test voltage 耐電壓	Between terminals of the same polarity 同級不相接端子間	AC1300V, 50/60Hz, 1min
	Between current-carrying metal parts and ground(case), and between each terminal and non-current-carrying metal parts. 帶電金屬零件與地(外殼)之間、接線端與不帶電金屬件之間	AC1500V, 50/60Hz, 1min
Vibration Resistance 抗振動		10～55Hz, 1.5mm Double amplitude / 雙振幅
Shock Resistance 抗沖擊		Malfunction：300m/s^2 (approx. 30G) max / 故障：300m/s^2 (約30G) 最大
Life Expectancy 壽命		Mechanical≧300,000 cycles / 機械≧300,000次 Electrical≧10,000 cycles / 電氣≧10,000次 Electrical≦10,000 cycles / 電氣≦10,000次

Dimension 尺寸

Outline Drawing 外型尺寸



Mounting Hole Dimension 安裝孔尺寸



❊ *Please follow drawing of Approved Sheet that catalog drawing only for reference.*

DM Series
Micro Switch Series

How to Order 型號命名規範

DM B 2 — L 00 V L 0 □ □

Series Prefix: DM

CODE	Rating Current
	3A 125VAC
B	1A 125VAC
C	100mA 5VDC

CODE	Operating Force
	150gf
L	90gf

CODE	Terminal Coating
	No Coating
2	Au Coating

CODE	Terminal Direction
	Normal
V	Right side
V1	Left side
E	None-standard

CODE	Lead Free
	None-Lead free
L	Lead free

CODE	Contact Type
0	SPDT
2	SPST NO
3	SPST NC

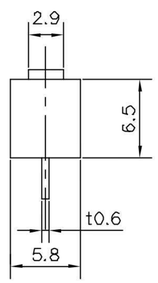
CODE	Case Material
	Thermoplastic
G	Thermosetting

CODE	Operating Temperature
	25T85
T	25T105

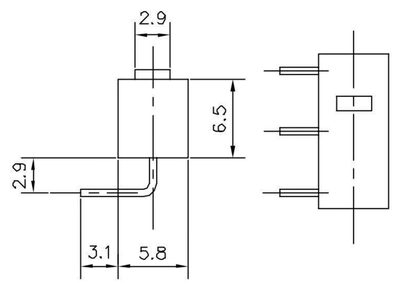
CODE	Actuator Type
	None-standard lever
00	No lever
01	Standard lever
02	Middle lever
03	Long lever
04	Arc lever
04A	Short arc lever
05	Short lever

Terminal Type 端腳尺寸圖

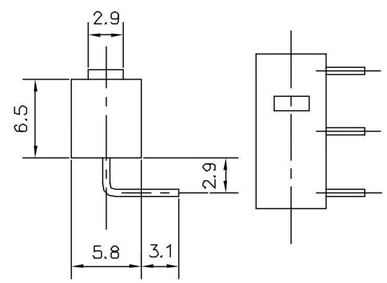
Under side PCB terminal



Left side PCB terminal

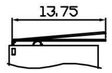
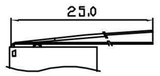
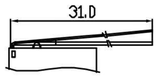
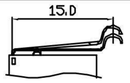
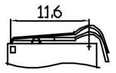
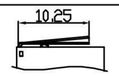
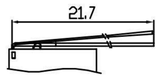


Right side PCB terminal



❊ *Please follow drawing of Approved Sheet that catalog drawing only for reference.*

Operating Characteristics 動作特性

NO.	Actuator Type	O.P. (mm)	P.T. Max (mm)	O.T. Min (mm)	M.D. Max (mm)	O.F. Max.(gf.) DM(B)	O.F. Max.(gf.) DM(B)L	O.F. Min.(gf.) DM(B)	O.F. Min.(gf.) DM(B)L
00		5.5±0.3	0.6	0.3	0.2	150	90	30	20
01		6.8±0.1	1.8	0.55	0.5	55	30	10	5
02		8.2±2.3	4.8	0.6	1.0	30	15	5	5
03		8.3±2.5	6.0	0.6	1.5	25	10	5	5
04		10±0.5	1.8	0.5	0.55	50	30	5	5
04A		7.5±0.5	1.8	0.5	0.55	55	30	10	5
05		7.0±0.6	1.2	0.5	0.5	60	40	10	10
09		7.6±1.8	3.5	0.5	1.0	50	20	5	5

Certificate Information 安規資訊

Certification 安規項目	Item 機種	Standard
UL & CUL	DM, DMB	3A 125VAC, 1A 125VAC, 6000 cycles, T105°C
ENEC	DM, DMB	3A 125VAC, 1A 125VAC, 10000 cycles, T105°C
CCC	DM, DMB	3A 125/250VAC, 1A 125/250VAC, 6050 cycles, T105°C

Please follow drawing of Approved Sheet that catalog drawing only for reference.

Application 應用

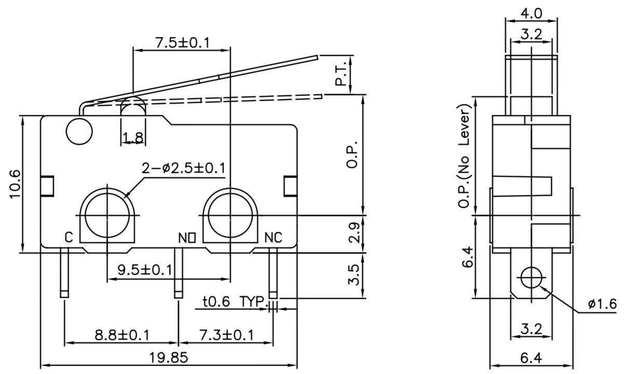
- Minitypebig current. Characteristic: small contact gap, quick action, high sensitivity and small operating travel.
  超小型，大電流。具有微小觸點間隙，快速動作，高靈敏度和微小動作行程的特點。
- Veriety of contact terminals.
  接線端子種類齊全。
- Widely used in appliance, electronic equipment, automatic machine, communication equipment, car electric, apparatus and instrument, electron motion tool etc.
  廣泛應用於各種家用電器、電子設備、自動化設備、通訊設備、汽車電子、儀器儀表、電動工具等領域。

Specifications 技術特性

Items 項 目		Value 特性值
Operating Speed 工作速度		0.1mm～1m/s（Related with actuator forms）（與驅動方式有關）
Operating Frequency 工作頻率		Mechanical 300 cycles/min；Electrical 10 cycles/min ／機械300次/min；電氣10次/min
Insulation Resistance 絕緣電阻		≧100MΩ（500VDC）
Contact Resistance 接觸電阻		≦30mΩ（Intial value）/（初始值）
Test voltage 耐電壓	Between terminals of the same polarity 同級不相接端子間	AC1500V, 50/60Hz, 1min
	Between current-carrying metal parts and ground(case), and between each terminal and non-current-carrying metal parts. 帶電金屬零件與地(外殼)之間、接線端與不帶電金屬件之間	AC2500V, 50/60Hz, 1min
Vibration Resistance 抗振動		10～55Hz, 1.5mm Double amplitude / 雙振幅
Shock Resistance 抗沖擊		Destruction：OF＞0.5N:1000m/s^2 (approx.100G) max / OF≦0.5N:500m/s^2 (approx.50G) max 破壞：動作力＞0.5N:1000m/s^2 (約100G) 最大 / 動作力≦0.5N:500m/s^2 (約50G) 最大 Malfunction：OF＞0.5N:300m/s^2 (approx.30G) max / OF≦0.5N:200m/s^2 (approx.20G) max 故障：動作力＞0.5N:300m/s^2 (約30G) 最大 / 動作力≦0.5N:200m/s^2 (約20G) 最大
Life Expectancy 壽命		Mechanical≧300,000 cycles / 機械≧300,000次 Electrical≧10,000 cycles / 電氣≧10,000次

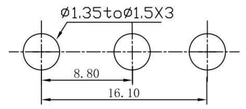
Dimension 尺寸

Outline Drawing 外型尺寸

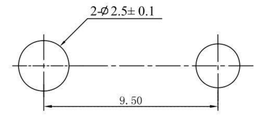


Mounting Hole Dimension 安裝孔尺寸

P.C.B Mounting Hole Dimensions



Mounting Holes



Contact Configuration

Please follow drawing of Approved Sheet that catalog drawing only for reference.

How to Order 型號命名規範

SM P1 □ – L 00 A 0 □ □ □

Series Prefix

CODE	Terminal Coating
	Ag Coating
2	Au Coating

CODE	Rating Current
P1	100mA 48VDC
05	5A 125/250VAC
06	6(5)A 125/250VAC

CODE	Operating Force
L	100gf
S	150gf
H	250gf

CODE	Actuator Type
	None-standard lever
00	No lever
01	Standard lever
02	Middle lever
03	Long lever
04	Arc lever
05	Short lever
06	Standard roller lever

CODE	Contact Type
0	SPDT
2	SPST NO
3	SPST NC

CODE	Terminal Type
A	Solder terminal
C	Quick-connect terminal #110
P	Under side PCB terminal
V1	Right side PCB terminal
V	Left side PCB terminal

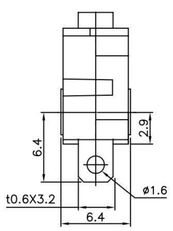
CODE	Case Material
	Thermoplastic
G	Thermosetting

CODE	Lead Free
	None-Lead free
L	Lead free

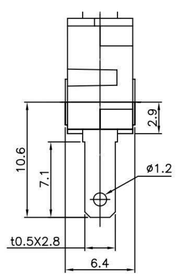
CODE	Operating Temperature
	40T105
T	25T125

Terminal Type 端腳尺寸圖

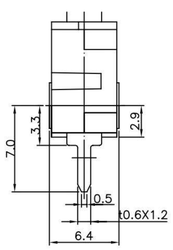
(A)Solder Terminal



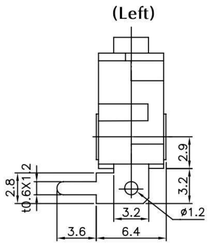
(C)Quick-Connect Terminal



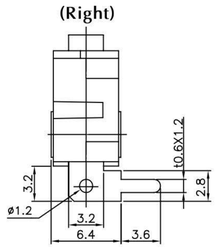
(P)P.C.B. Terminal



(V)P.C.B. Terminal



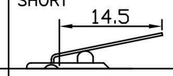
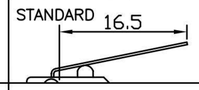
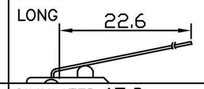
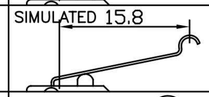
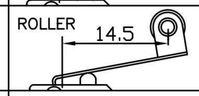
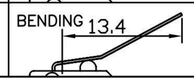
(V1)P.C.B. Terminal



Please follow drawing of Approved Sheet that catalog drawing only for reference.

SM Series
Micro Switch Series

Operating Characteristics 動作特性

NO.	Hinged Type	O.P. (mm)	P.T. Max (mm)	O.T. Min (mm)	M.D. Max (mm)	O.F. Max(gf.) N	O.F. Max(gf.) L	O.F. Max(gf.) S	O.F. Max(gf.) H
00	PIN PLUNGER	8.4±0.5	0.4	0.7	0.2	50	100	150	250
01	SHORT 14.5 	9.15±0.85	1.5	1.7	0.8	20	25	45	80
02	STANDARD 16.5 	9.3±0.9	1.8	2.3	0.8	20	20	45	80
03	LONG 22.6 	9.3±1.0	2.3	3.0	0.8	15	15	40	70
04	SIMULATED 15.8 	10.3±1.0	2.8	1.0	0.8	15	15	40	70
05	ROLLER 14.5 	14.3±1.0	2.5	1.5	0.8	15	15	40	70
06	BENDING 13.4 	12.55±1.25	2.0	1.5	0.8	15	15	40	70

Certificate Information 安規資訊

Certification 安規項目	Item 機種	Standard
UL & CUL	SM05,SM06	5A 125/250VAC,6000 cycles / 6A 125/250VAC, 10000 cycles, T105°C
ENEC	SM05,SM06	5(5)A 125/250VAC, 6(5)A 125/250VAC, 10000 cycles, T105°C
CCC	SM05,SM06	5A 125/250VAC, 6050 cycles, T105°C

Micro Switch

Please follow drawing of Approved Sheet that catalog drawing only for reference.

Application 應用

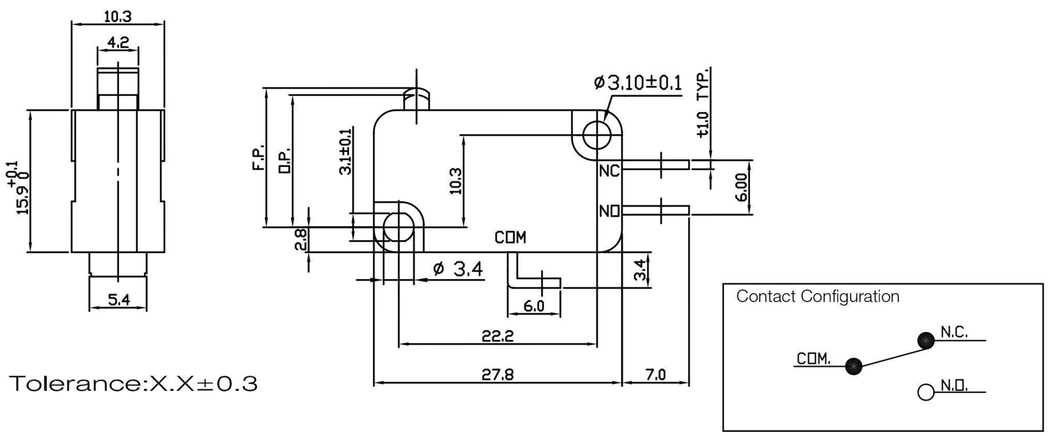
- Nice appearance, tight configuration. Characteristic: quick action and high sensitivity.
  外型美觀，結構緊湊。具有快速動作、高靈敏度的特點。
- Veriety of temperature degrees.
  多種溫度等級。
- Widely used in appliance, electronic equipment, automatic machine, communication equipment, car electric, apparatus and instrument, electron motion tool etc.
  廣泛應用於各種家用電器、電子設備、自動化設備、通訊設備、汽車電子、儀器儀表、電動工具等領域。

Specifications 技術特性

Items 項 目		Value 特性值
Operating Speed 工作速度		0.1mm～1m/s（Related with actuator forms）（與驅動方式有關）
Operating Frequency 工作頻率		Mechanical 300 cycles/min；Electrical 10 cycles/min ／機械300次/min；電氣10次/min
Insulation Resistance 絕緣電阻		≧100MΩ（500VDC）
Contact Resistance 接觸電阻		≦30mΩ（Intial value）/（初始值）
Test voltage 耐電壓	Between terminals of the same polarity 同級不相接端子間	AC1500V, 50/60Hz, 1min
	Between current-carrying metal parts and ground(case), and between each terminal and non-current-carrying metal parts. 帶電金屬零件與地(外殼)之間、接線端與不帶電金屬件之間	AC2500V, 50/60Hz, 1min
Vibration Resistance 抗振動		10～55Hz, 1.5mm Double amplitude / 雙振幅
Shock Resistance 抗沖擊		Destruction：OF＞0.5N:1000m/s^2 (approx.100G) max / OF≦0.5N:400m/s^2 (approx.40G) max 破壞：動作力＞0.5N:1000m/s^2 (約100G) 最大 / 動作力≦0.5N:400m/s^2 (約40G) 最大 Malfunction：OF＞0.5N:200m/s^2 (approx.20G) max / OF≦0.5N:100m/s^2 (approx.10G) max 故障：動作力＞0.5N:200m/s^2 (約20G) 最大 / 動作力≦0.5N:100m/s^2 (約10G) 最大
Life Expectancy 壽命		Mechanical≧300,000 cycles / 機械≧300,000次 Electrical≧60,000 / 10,000 / 50,000 cycles / 電氣≧60,000 / 10,000 / 50,000次

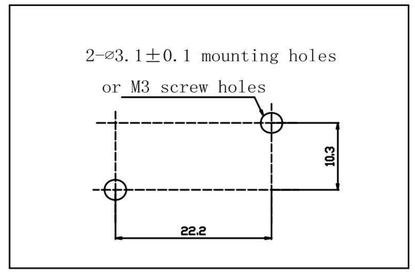
Dimension 尺寸

Outline Drawing 外型尺寸

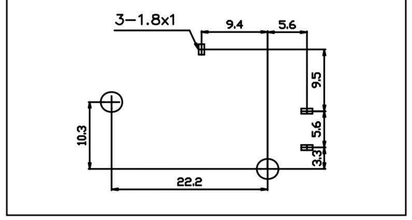


❊ *Please follow drawing of Approved Sheet that catalog drawing only for reference.*

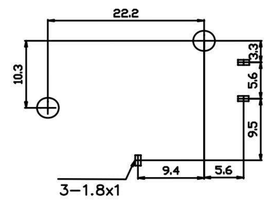
Mounting Hole Dimension 安裝孔尺寸



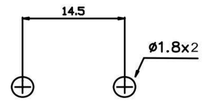
Right Side PCB Terminal 右側面PCB端子



Left Side PCB Terminal 左側面PCB端子



Under Side PCB Terminal 下側面PCB端子



How to Order 型號命名規範

VM P1 □ — L 00 A 0 □ □ □

Series Prefix

CODE	Rating Current
P1	100mA 48VDC
05	5A 125/250VAC
10	10A 125/250VAC

CODE	Terminal Coating
	Ag Coating
2	Au Coating

CODE	Operating Force
L	50gf
S	200gf
H	350gf

CODE	Actuator Type
00	No lever
01	Short lever
02	Standard lever
03	Long lever
04	Arc lever
05	Short roller lever
06	Standard roller lever
07	None-standard lever

CODE	Contact Type
0	SPDT
2	SPST NO
3	SPST NC

CODE	Terminal Type
A	Solder terminal
B	Screw terminal
C	Quick-connect terminal .250
C1	Quick-connect solder terminal .187
D	Quick-connect terminal .187
E	Under side PCB terminal
V1	Right side PCB terminal
V	Left side PCB terminal

CODE	Lead Free
	None Lead free
L	Lead free

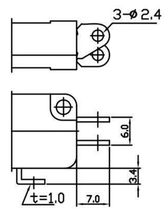
CODE	Case Material
	Thermoplastic
G	Thermosetting

CODE	Operating Temperature
	40T105
T	25T125

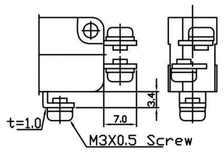
❊ *Please follow drawing of Approved Sheet that catalog drawing only for reference.*

Terminal Type 端腳尺寸圖

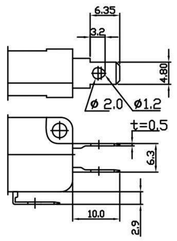
A : Solder Terminal



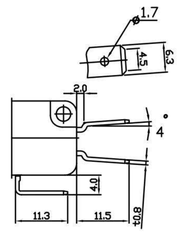
B : Screw Terminal



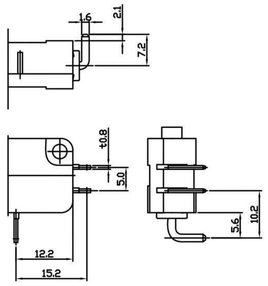
C1 : 187 Series Terminal



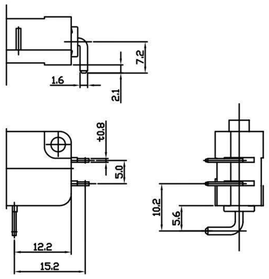
C : 250 Series Terminal



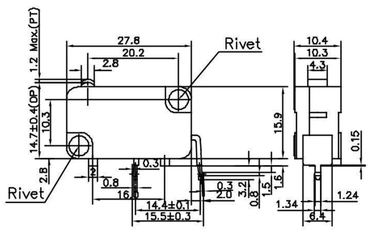
V1 : PCB Terminal



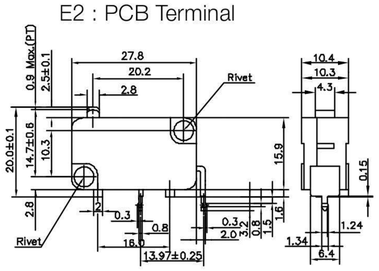
V : PCB Terminal



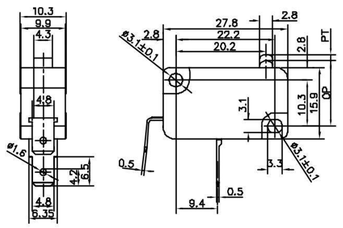
E1 : PCB Terminal



E2 : PCB Terminal

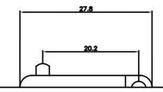
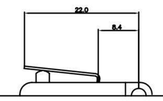
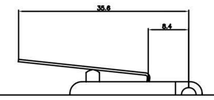
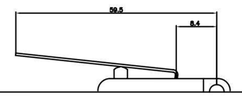
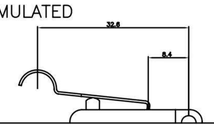
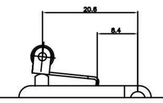
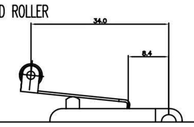
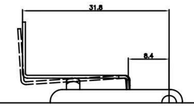


F : Quick-Common Terminal



VM Series
Micro Switch Series (Spring Structure)

Operating Characteristics 動作特性

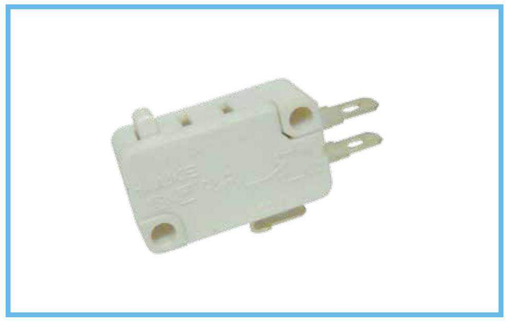
NO.	Hinged Type	O.P. (mm)	P.T. Max. (mm)	O.T. Min. (mm)	M.D. Max. (mm)	O.F. Max.(gf.) L	O.F. Max.(gf.) S	O.F. Max.(gf.) H
00	PIN PLUNGER 	14.75±0.45	1.2	1.0	0.3	50	200	300
01	SHORT 	15.2±0.5	1.6	0.8	0.5	50	200	300
02	STANDARD 	15.6±1.6	4.0	1.6	0.8	30	90	135
03	LONG 	15.7±3.1	9.0	3.2	2.0	15	50	70
04	SIMULATED 	18.75±1.25	4.0	1.6	0.8	30	100	150
05	SHORT ROLLER 	20.7±0.6	1.6	0.8	0.5	50	200	300
06	STANDARD ROLLER 	20.65±1.25	4.0	1.6	0.8	30	90	135
07	L Shape 	25.7±1.0	4.0	0.5	0.8	30	110	170

Certificate Information 安規資訊

Certification 安規項目	Item 機種	Standard
UL & CUL	VM05,VM10	2A,5A 125/250VAC, 10A 125/250VAC, 6000 cycles, T105°C
ENEC	VM05,VM10	2A,5A 125/250VAC,50000 cycles, T105°C / 10A 125/250VAC,10000 cycles, T105°C
CCC	VM05,VM10	2A,5A 125/250VAC, 10A 125/250VAC, 6050 cycles, T105°C

Micro Switch

❊ Please follow drawing of Approved Sheet that catalog drawing only for reference.



Application 應用

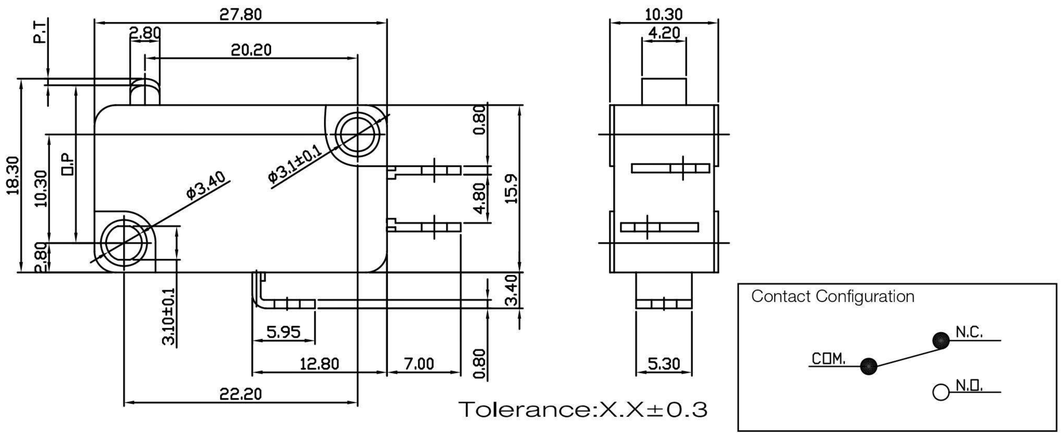
- Nice appearance, tight configuration. Characteristic: quick action and high sensitivity.
  外型美觀，結構緊湊。具有快速動作、高靈敏度的特點。
- Veriety of temperature degrees.
  多種溫度等級。
- Widely used in appliance, electronic equipment, automatic machine, communication equipment, car electric, apparatus and instrument, electron motion tool etc.
  廣泛應用於各種家用電器、電子設備、自動化設備、通訊設備、汽車電子、儀器儀表、電動工具等領域。

Specifications 技術特性

Items 項 目		Value 特性值
Operating Speed 工作速度		0.1mm～1m/s（Related with actuator forms）（與驅動方式有關）
Operating Frequency 工作頻率		Mechanical 120 cycles/min；Electrical 10 cycles/min ／機械120次/min；電氣10次/min
Insulation Resistance 絕緣電阻		≧100MΩ（500VDC）
Contact Resistance 接觸電阻		≦30mΩ（Intial value）/（初始值）
Test voltage 耐電壓	Between terminals of the same polarity 同級不相接端子間	AC1500V, 50/60Hz, 1min
	Between current-carrying metal parts and ground(case), and between each terminal and non-current-carrying metal parts. 帶電金屬零件與地(外殼)之間、接線端與不帶電金屬件之間	AC2500V, 50/60Hz, 1min
Vibration Resistance 抗振動		10～55Hz, 1.5mm Double amplitude / 雙振幅
Shock Resistance 抗沖擊		Destruction：OF＞0.5N:1000m/s^2 (approx.100G) max / OF≦0.5N:400m/s^2 (approx.40G) max 破壞：動作力＞0.5N:1000m/s^2 (約100G) 最大 / 動作力≦0.5N:400m/s^2 (約40G) 最大 Malfunction：OF＞0.5N:200m/s^2 (approx.20G) max / OF≦0.5N:100m/s^2 (approx.10G) max 故障：動作力＞0.5N:200m/s^2 (約20G) 最大 / 動作力≦0.5N:100m/s^2 (約10G) 最大
Life Expectancy 壽命		Mechanical≧300,000 cycles / 機械≧300,000次 Electrical≧6,000 / 10,000 cycles / 電氣≧6,000 / 10,000次

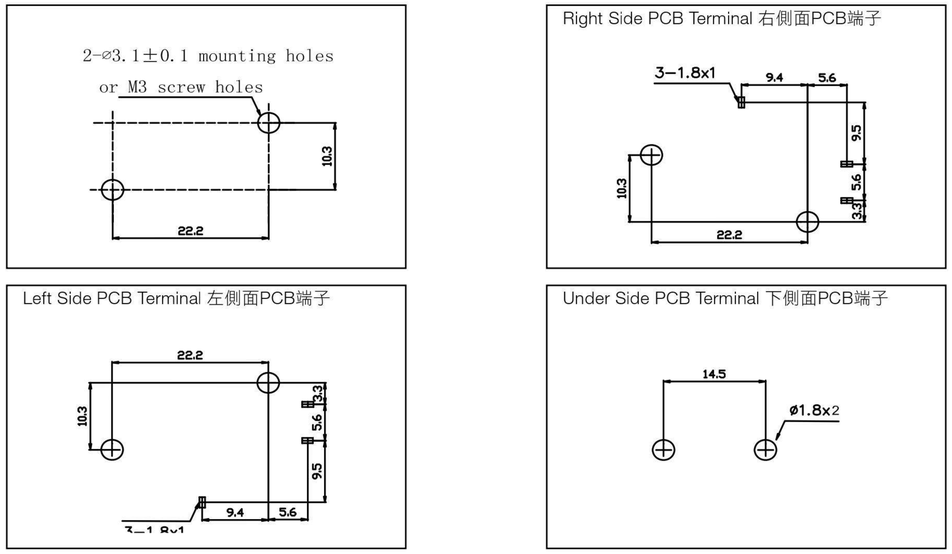
Dimension 尺寸

Outline Drawing 外型尺寸



Please follow drawing of Approved Sheet that catalog drawing only for reference.

Mounting Hole Dimension 安裝孔尺寸



How to Order 型號命名規範

V3 P1 □ — L 00 A 0 □ □ □

Series Prefix: V3

CODE	Rating Current
P1	100mA 48VDC
05	5A 125/250VAC
10	10A 125/250VAC

CODE	Terminal Coating
	Ag Coating
2	Au Coating

CODE	Operating Force
L	50gf
S	200gf
H	350gf

CODE	Actuator Type
	None-standard lever
00	No lever
01	Short lever
02	Standard lever
03	Long lever
04	Arc lever
05	Short roller lever
06	Standard roller lever

CODE	Terminal Type
A	Solder terminal
B	Screw terminal
C	Quick-connect terminal .250
C1	Quick-connect solder terminal .187
D	Quick-connect terminal .187
E	Under side PCB terminal
V1	Right side PCB terminal
V	Left side PCB terminal

CODE	Contact Type
0	SPDT
2	SPST NO
3	SPST NC

CODE	Case Material
	Thermoplastic
G	Thermosetting

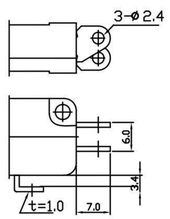
CODE	Lead Free
	None-Lead free
L	Lead free

CODE	Operating Temperature
	40T105
T	25T125

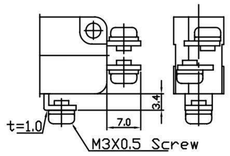
Please follow drawing of Approved Sheet that catalog drawing only for reference.

Terminal Type 端腳尺寸圖

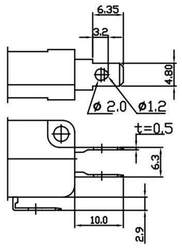
A : Solder Terminal



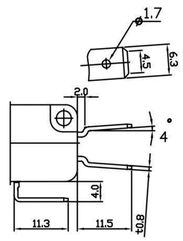
B : Screw Terminal



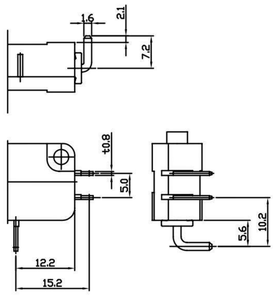
C1 : 187 Series Terminal



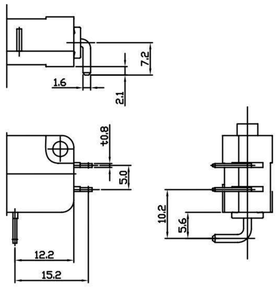
C : 250 Series Terminal



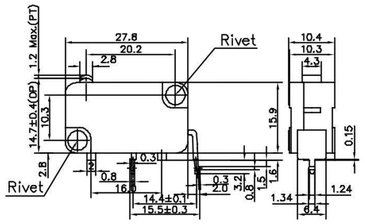
V1 : PCB Terminal



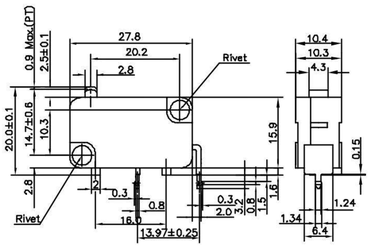
V : PCB Terminal



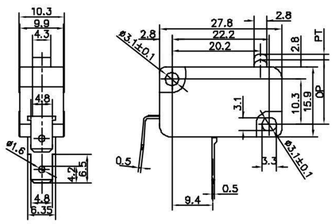
E1 : PCB Terminal



E2 : PCB Terminal

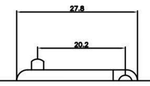
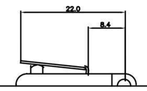
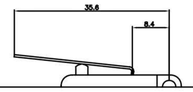
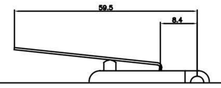
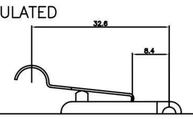
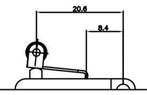
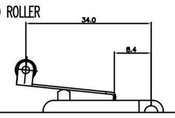
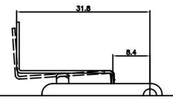


F : Quick-Common Terminal



❊ *Please follow drawing of Approved Sheet that catalog drawing only for reference.*

Operating Characteristics 動作特性

NO.	HINGED TYPE	O.P. (mm)	P.T. Max. (mm)	O.T. Min. (mm)	M.D. Max. (mm)	O.F. Max.(gf.) L	O.F. Max.(gf.) S	O.F. Max.(gf.) H
00	PIN PLUNGER 	14.7±0.4	1.2	1.0	0.3	150±50	250±50	350±50
01	SHORT 	15.2±0.5	1.6	0.8	0.5	150±50	250±50	350±50
02	STANDARD 	15.2±1.2	4.0	1.6	0.8	70	90	135
03	LONG 	15.2±2.6	9.0	3.2	2.0	15	70	100
04	SIMULATED 	18.7±1.2	4.0	1.6	0.8	30	100	150
05	SHORT ROLLER 	20.7±0.6	1.6	0.8	0.5	150±50	250±50	350±50
06	STANDARD ROLLER 	20.7±1.2	4.0	1.6	0.8	30	90	135
07	L Shape 	24.4±1.0	4.0	0.5	0.8	30	110	170

Certificate Information 安規資訊

Certification 安規項目	Item 機種	Standard
UL & CUL	V316	16(16)A 125/250VAC, 6000 cycles, T105°C
ENEC	V316	16(16)A 125/250VAC, 10000 cycles, T105°C
CCC	V316	16A 125/250VAC, 6050 cycles, T105°C

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