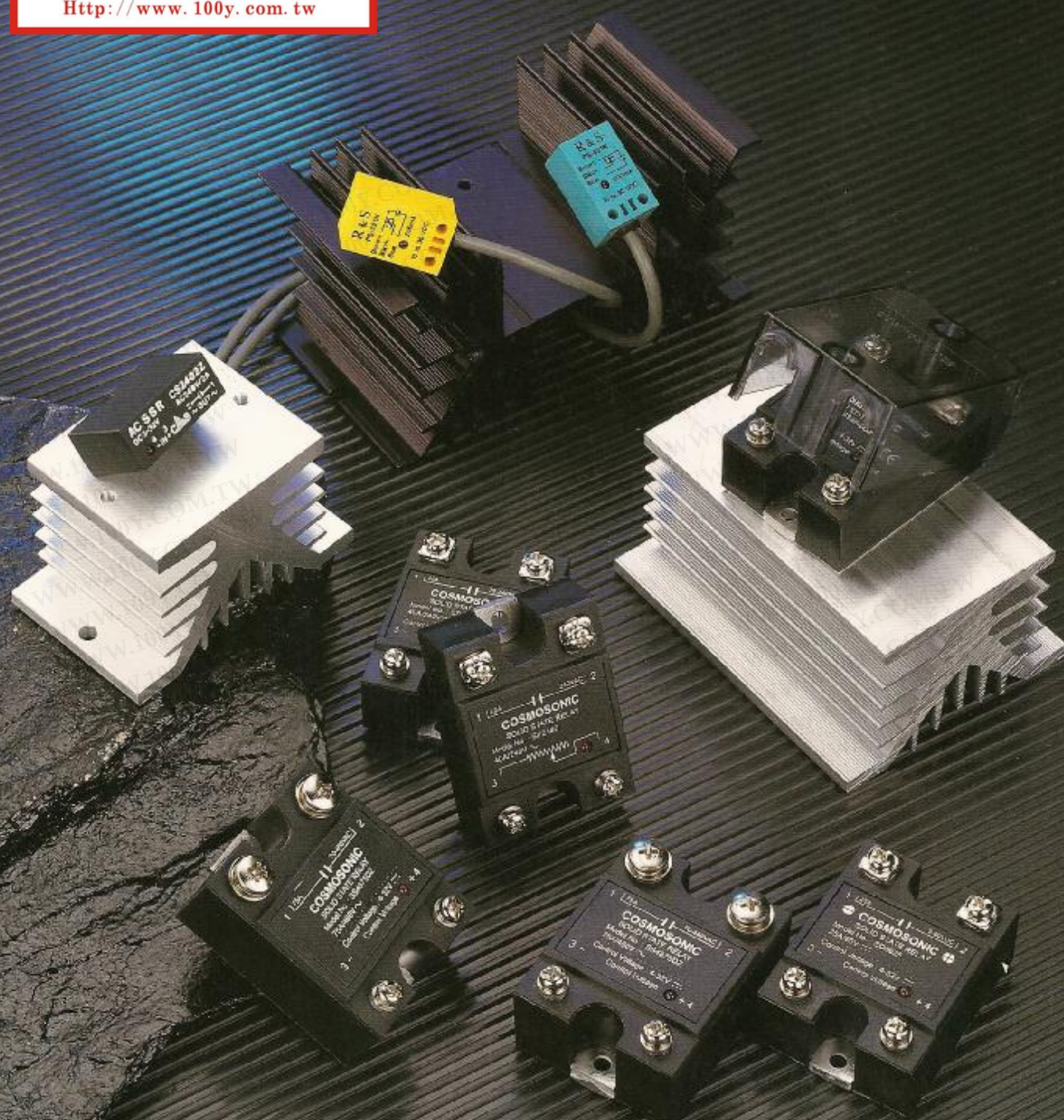


勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-34970699
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

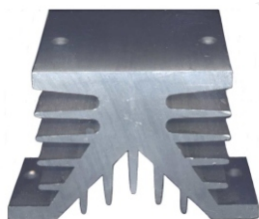


SOLID STATE RELAYS

選擇速覽表

SSR 固態繼電器							
輸入 Input CIRCUIT		輸出 Output CIRCUIT				規格/型號 Model Number	外型 (Package NO)
電壓 VoltageRange	電流 Current	電壓範圍 VoltageRange	最大電流 Current	零位觸發型 Zero Voltage Switching	隨機觸發型 Random Switching		
4-32VDC	8-10mA(DC)	70-240VAC	2A	SS2402DZ	x		1
			3A	SS2403DZ	x		1
			10A	SS2410DZ	SS2410DR		2
			15A	SS2415DZ	SS2415DR		2
			20A	SS2420DZ	SS2420DR		2
			25A	SS2425DZ	SS2425DR		2
			40A	SS2440DZ	SS2440DR		2
			60A~75A	SS2460DZS~2475DZS	x		2
		70-480VAC	60A	SS2465DZ	x		3
			75A	SS2470DZ	x		3
			10A	SS4810DZ	x		2
			25A	SS4825DZ	X		2
			40A	SS4840DZ	x		2
			60A~75A	SS4860DZS~4875DZS	x		2
			65A	SS4865DZ	x		3
			75A	SS4875DZ	x		3
70-240VAC	2-5mA(AC)	70-240VAC	10A	SS2410A	x		2
			15A	SS2415A	x		2
			20A	SS2420A	x		2
			25A	SS2425A	x		2
			40A	SS2440A	x		2
70-480VAC		40A	SS4840A	x		2	
4-32VDC	8-10mA(DC)	3~60VDC	3A ~25A	(SCR 輸出)	SD0603 SD0610 SD0625		2
			10A~60A	(MOSFET 輸出-低壓降)	MD0610~ MD0640		2
		3~150VDC	10A	x	SD1510		2
相位控制器 PHASE CONTROLLER							
輸入Input Circuit		輸出Output Circuit		規格/型號Model Number		外型 Package	
輸入電阻Input Resistor		電壓範圍Voltage Range	最大電流 Current				
100K-ohms Varistor (500K-ohms Varistor)		70-240VAC	10A	SP2410	2		
			15A	SP2415	2		
			20A	SP2420	2		
			25A	SP2425	2		
			40A	SP2440	2		

Heatsink Rth=3.3



寬:80 x 高50 x 長50 (mm)
寬:80 x 高50 x 長100 (mm)
寬:80 x 高50 x 長150 (mm)
寬:80 x 高50 x 長200 (mm)

Package 3



57.5 x 46.3 x 26.7 (mm)

Package 2



57 x 43.6 x 23.3 (mm)

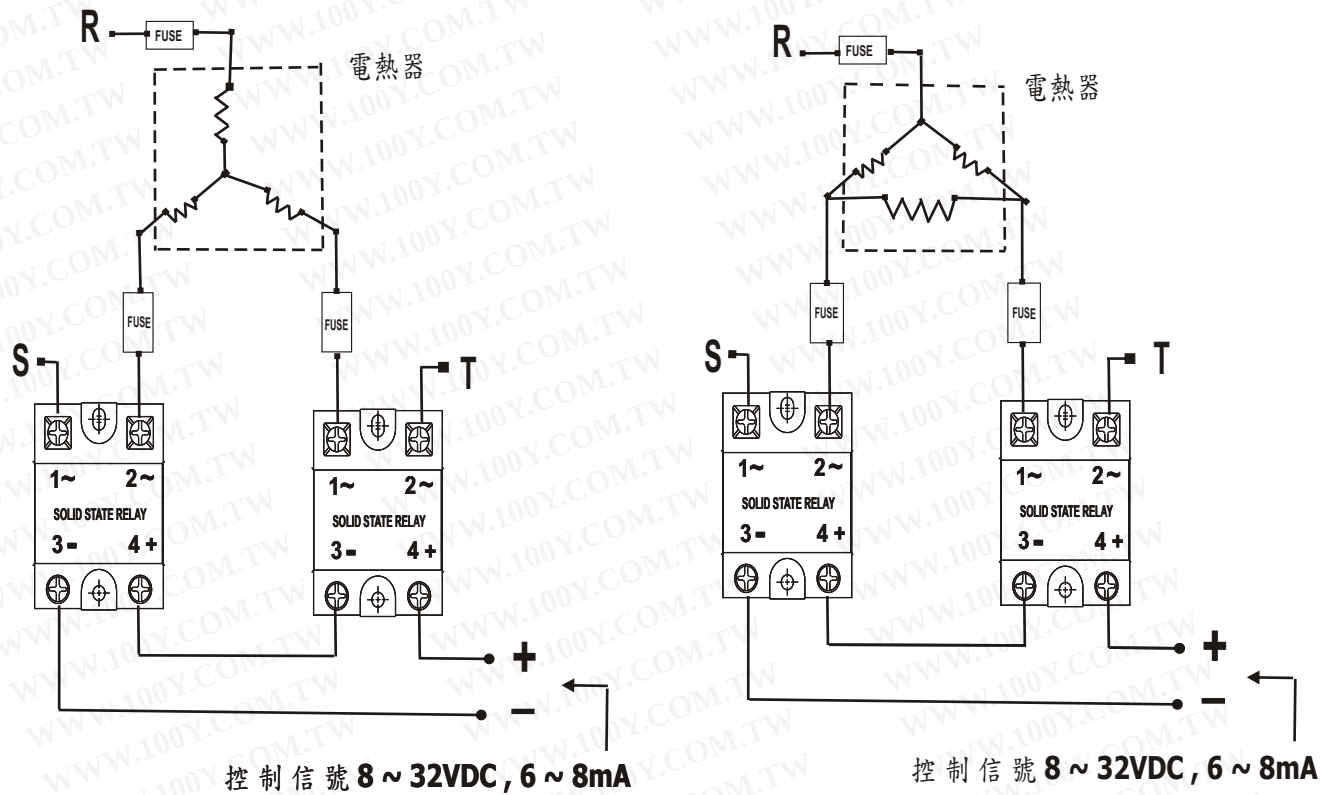
Package 1



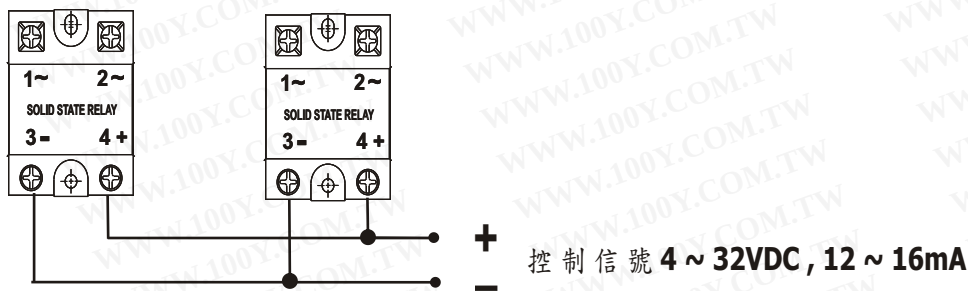
35 x 14.2 x 22.2 (mm)

使用說明

如何用單相 SSR 控制三相電熱器



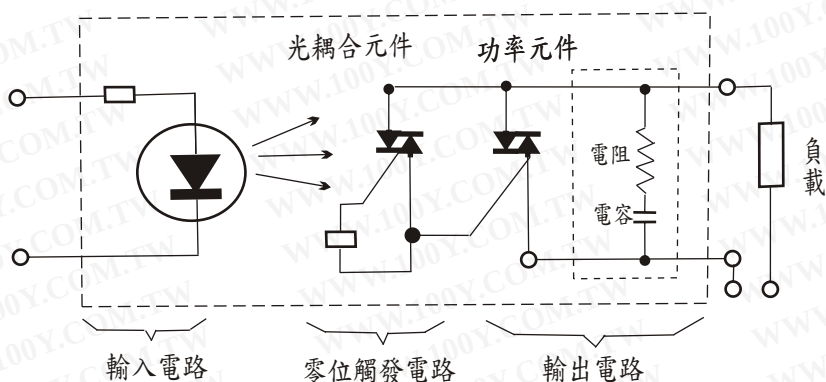
如果控制電壓 < 8VDC



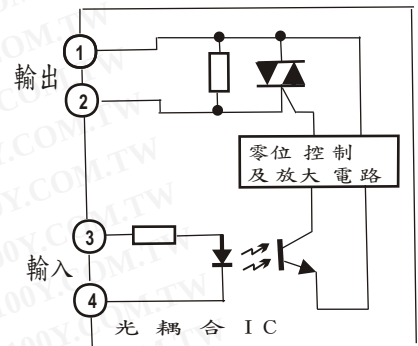
優點 (與三相SSR比較)

1. 價格較便宜.
2. 熱量損耗較低(約 2 / 3).
3. 可以切換全載輸出(2個 SSR ON)及1/3輸出(1個 SSR ON).
4. 單相損壞只需更換該只 SSR 若是使用三相 SSR ,任何一相損壞就要整顆換掉.

固態繼電器（SSR）漏電的說明



(圖一)



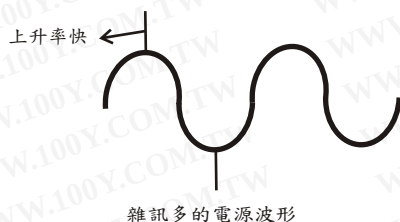
(圖二)

如上圖一為我們的SSR迴路結構圖，圖中小虛線框內有電阻與電容器組成的電路。此電路與輸出端並聯，因此在 SSR 尚未觸發時會有一小量的電流流過負載。此現象會使人懷疑在輸出端尚未ON的情況下怎麼會漏電，是否品質有問題。

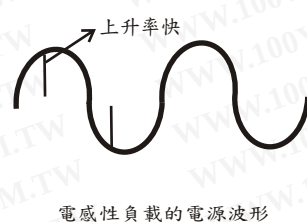
原因如下：

圖內(圖一)標示的功率元件以及光耦合元件有一個特性就是當電源在一定時間快速上升達到某一定值時，元件便會自行觸發。當電源有大的雜訊或負載為高電感性時 SSR 便極容易誤動作。而且也容易損壞。此種現象無論是國產品或進口貨皆無法避免，因為這是元件的特性使然。

如下圖：



雜訊多的電源波形



電感性負載的電源波形

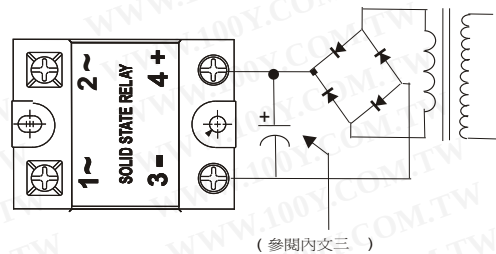
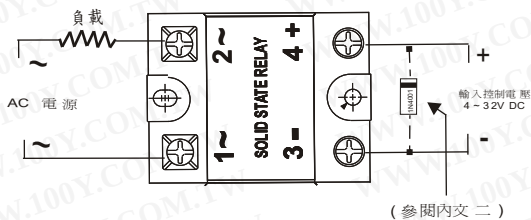
此必須在元件加上電容器以降低電源的上升速率，來避免干擾產生的誤動作。電阻則是限制電容器的充放電電流。電容器的性質能通過交流電，而且對頻率愈高的交流電通過的能力愈佳（阻力愈低）。這意味著像極高頻率的雜訊電壓很容易為電容器所吸收。因此可以降低雜訊電壓的幅度，同時也使雜訊電壓或電感性負載所產生的電壓上升速率減低。

但缺點就是會流通少量的電流（常態值220V的機種約4.5ma，480V的機種約9ma）。因此只要負載電流大於漏電電流的10~20倍以上對動作就不會有任何的影響，這也就是SSR製造廠會在規格書上面標示最小使用電流的原因。

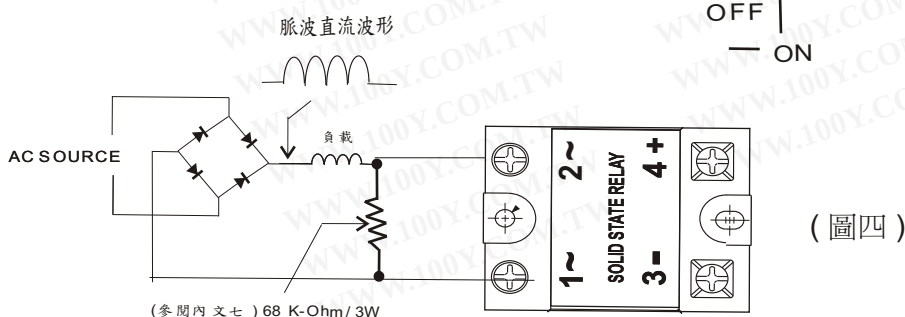
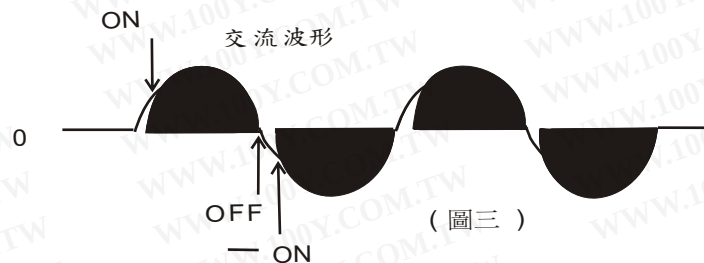
再如圖二為市面上某些廠牌的迴路結構，如果它號稱不漏電那一定是未裝電阻電容。而其標示零位控制及放大電路的部份使用到一顆小型開流體以推動功率元件。此元件 dv/dt 的值約20V/us，可以說是相當的低。而我們的光耦合元件為200V/us，至於功率元件國內的廠家皆使用相同的廠牌其值約為500V/us。因此要不漏電很容易，而且又節省成本，但並非正確的方式。

DC-AC SSR 使用要點

- 一、3-4 為輸入端接輸入控制電壓，電壓極性 3 為負 4 為正，極性請勿錯誤。
輸入控制電壓範圍為 4~32V DC 請勿超過，否則會導致輸入端燒燬。
- 二、本 SSR 輸入端雖有防止電壓極性逆接的保護電路，但如有必要在輸入端子同時接上 Relay 以作為其他控制使用時，請在輸入端併聯一個二極體 1N 4001（如圖一虛線的部份）以吸收 Relay 釋放出的逆相回饋電壓。因為回饋電壓有可能高達 200V 以上，以如此高的電壓極有可能將輸入端擊穿。
- 三、輸入控制電壓必須為純淨的直流電方可正確的觸發 SSR。如觸發電源由變壓器次級經整流器取得，請記得在整流電路加上濾波電容。未加上濾波電容為不純的直流電（我們稱作脈波直流）它是無法正確的觸發 SSR 的。
如圖二。



- 四、配線時請注意確認輸入、輸出端勿錯誤。如將輸入端錯當輸出端接上 AC 高壓，則輸入端將立即燒燬。（使用者常犯這項錯誤所以千萬拜託！）
- 五、1-2 為輸出端因內含電容器的電路（必要的），在未觸發時就會有少量的漏電流（約 4ma 於 240 VAC 時）故負載電流必須大於 50 ma 否則會影響動作的確實性。例如負載為 Relay 時就有可能吸著不放。
- 六、AC 輸出的 SSR 不能使用在 DC 的電源裡。因為內部元件一經觸發便會自鎖（一直保持 ON 的狀態）待電源電壓為零時才會關斷（OFF）。如圖三陰影的部份。
- 七、如圖四的使用方式是被允許的，常見於直流煞車的控制。只是因 SSR 內部含有電容器會使電源無法歸零，因此必須在輸出端併聯一個電阻作為電容器放電之用，才不致於無法將 SSR 關斷。



(參閱內文七) 68 K-Ohm / 3W

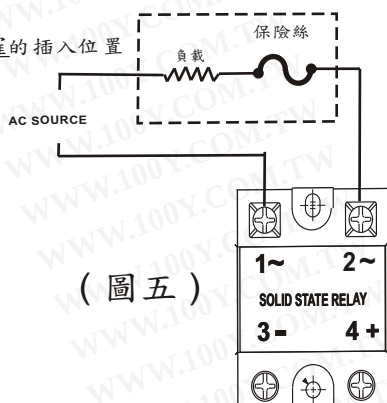
八、SSR 使用電流超過 3A 時就必須加裝散熱片, 否則輸出端會因過熱而損壞. 一般 SSR 內部的功率元件於最大的負載電流之下所允許的最高溫度大約在 80°C , 因此功率元件允許的溫升等於 80°C 減使用環境溫度由此可見降低環境溫度的重要性。如果 SSR 在冬天的故障率低於夏天的故障率, 就必須考慮是否散熱不足或環境溫度過高所造成. 要判斷散熱片是否足夠可以測量散熱片的溫度不要高於 60°C 即可。

PS. 隨 SSR 附送的灰色軟墊片為墊在 SSR 與散熱片之間, 作為熱傳導之用。
(可取代散熱膏)

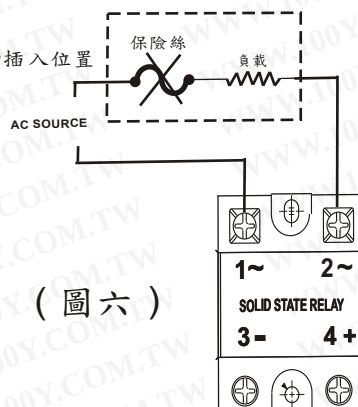
九、SSR 極怕負載短路如果負載短路則在 2 ms 以內就會燒燬。因此強烈建議使用者輸出端使用半導體專用的保險絲保護, 否則最起碼也得用一般的保險絲. 使用一般的保險絲雖無法保護 SSR 但可防止著火的危險。下圖五為保險絲的正確使用方法. 圖六為錯誤的裝法, 原因是萬一負載漏電時電流就不經過保險絲。

十、SSR 無法用電錶跨接在輸出端測試動作, 必須接上負載及電源才能測試(如圖七所示為錯誤測量方式), 且不能直接使用電錶的 AC 檔當成負載, 原因如內文五所述。

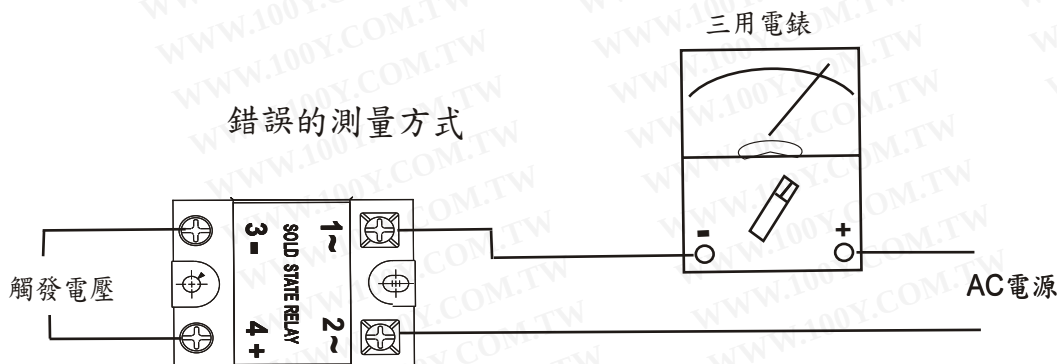
* 保險絲正確的插入位置



* 保險絲錯誤的插入位置



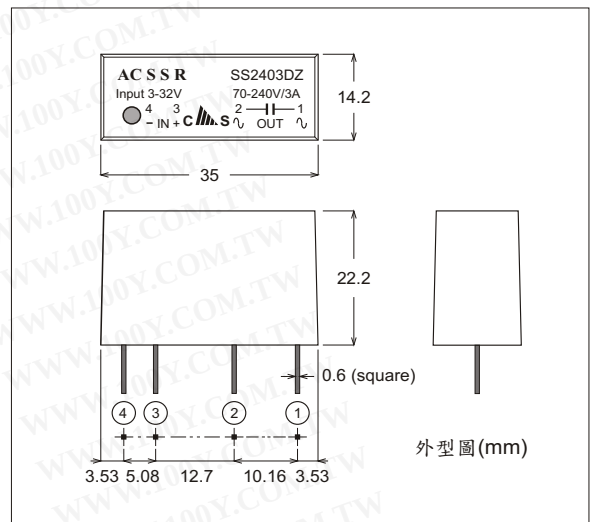
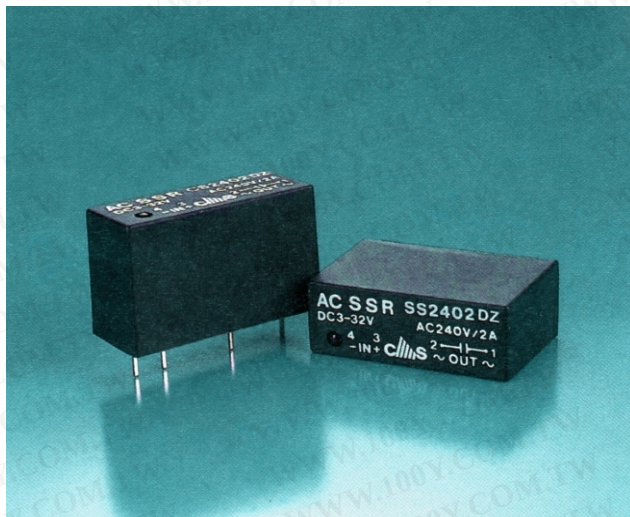
錯誤的測量方式



(圖七)

SSR 固態繼電器

DC 控制 AC輸出 2A~3A 70Vac~480Vac



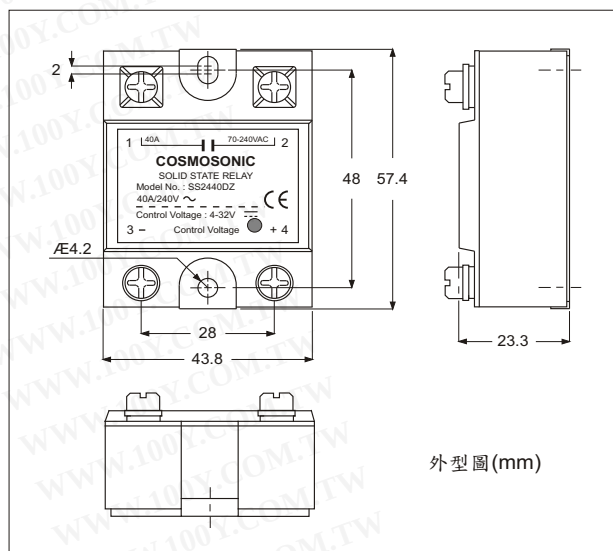
特性：

1. 無機械接點,輸出輸入以光耦合隔離,絕緣耐壓2500VAC.
2. 零位導通,減少雜訊產生.
3. 控制輸入電壓範圍大,定電流驅動,可由IC直接驅動.
4. 輸出回路內含突波吸收器及減振回路可適用於電感性負載.
5. LED顯示開、關狀態.
6. 壽命長,信賴度高.

規格	型號	SS2402DZ	SS2403DZ	SS4803DZ
輸入端特性規格				
控制電壓範圍(Vdc)	3-32 Vdc			
輸入電流	8mA(4Vdc)~10mA(32Vdc)			
確保接通電壓	3 V Max			
確保關斷電壓	2 V Min			
輸出端特性規格				
使用電壓範圍 (Vac)	70-240 Vrms			70-480 Vrms
最大峰值耐電壓（一分鐘）	600 Vdc			800Vdc
最大工作電流 (RMS)	2 A	3 A		
最大泳浪電流（60Hz 一週）	50A / 10A ² s	60A / 15A ² s		
開路洩漏電流（使用最大電壓時）	6 mArms (at Vmax and T=25°C)			
導通時最大壓降 （最大工作電流25C時）	1.6V			
一般參數				
反應時間	1/2 cycle + 1mSec. (60Hz)			
輸入至輸出端絕緣阻抗	> 10 ⁸ ohms			
輸入至輸出端隔離耐電壓	2500 Vrms			
輸入至輸出端雜散電容量	< 10pf			
動作溫度範圍	-20°C to +80°C			
保存溫度範圍	-40°C to +100°C			
重量（概略值）	20 g			

SSR 固態繼電器

DC 控制 AC輸出 10A~40A 70Vac~240Vac



外型圖(mm)

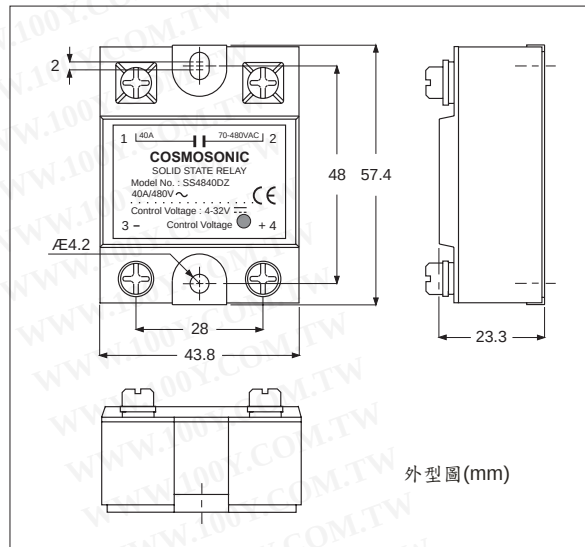
特性：

1. 無機械接點,輸出輸入以光耦合隔離,絕緣耐壓2500VAC.
2. 零位導通,減少雜訊產生.
3. 控制輸入電壓範圍大,定電流驅動,可由IC直接驅動.
4. 輸出回路內含突波吸收器及減振回路可適用於電感性負載.
5. LED顯示開、關狀態.
6. 壽命長,信賴度高.

規格	型號	SS2410DZ	SS2415DZ	SS2420DZ	SS2425DZ	SS2440DZ
輸入端特性規格		SS2410DZ (LS)				
控制電壓範圍(Vdc)		4-32 Vdc				
輸入電流		8mA(4Vdc)~10mA(32Vdc)				
確保接通電壓		4.0 V MAX				
確保關斷電壓		2.0 V MIN				
輸出端特性規格						
使用電壓範圍 (Vac)		70-240 Vrms				
最大峰值耐電壓 (一分鐘)		600 Vdc				
最大工作電流 (RMS)		10 A	15 A	20 A	25 A	40 A
最大泳浪電流 (60Hz 一週)		126A / 66A ²	160A / 106A ²	220A / 201A ²	250A / 260A ²	400A / 666A ²
開路洩漏電流 (最大使用電壓)		8 mArms (at Vmax and T=25°C)				
導通時最大壓降 (最大工作電流25°C時)		1.6V				
熱阻值 (功率元件至鋁片)		2.4	2.2	2.1	2.1	1.0
一般參數						
反應時間		1/2 cycle + 1mSec. (60Hz)				
輸入至輸出端絕緣阻抗		> 10 ⁸ ohms				
輸入至輸出端隔離耐電壓		2500 Vrms				
輸入, 輸出端至鋁片隔離耐電壓		2500 Vrms				
輸入至輸出端雜散電容量		< 10pf				
動作溫度範圍		-20°C to +80°C				
保存溫度範圍		-40°C to +100°C				
重量 (概略值)		110 g				

SSR固態繼電器

DC 控制 AC輸出 10A~40A 70Vac~480Vac



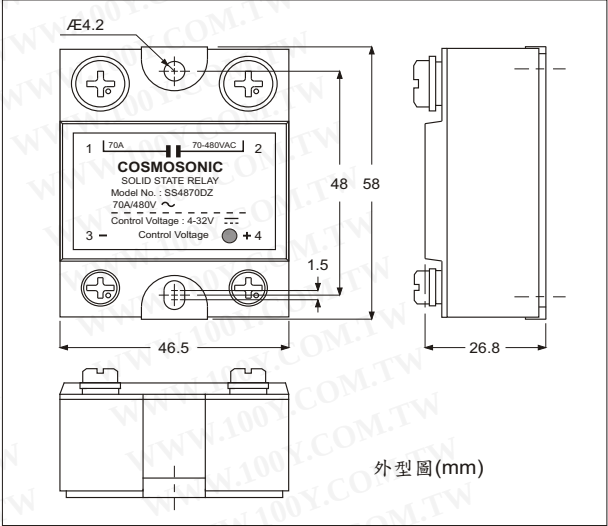
特 性：

1. 無機械接點,輸出輸入以光耦合隔離,絕緣耐壓2500VAC.
2. 零位導通,減少雜訊產生.
3. 控制輸入電壓範圍大,定電流驅動,可由IC直接驅動.
4. 輸出回路內含突波吸收器及減振回路可適用於感性負載.
5. LED顯示開.關狀態.
6. 壽命長,信賴度高.

規格	型號	SS4810DZ	SS4825DZ	SS4840DZ
輸入端特性規格				
控制電壓範圍(Vdc)	4-32 V			
輸入電流	8mA(4Vdc)~15 mA(32Vdc)			
確保接通電壓	4 V			
確保關斷電壓	2.5 V			
輸出端特性規格				
使用電壓範圍 (Vac)	70-480 Vrms			
最大峰值耐電壓 (一分鐘)	1200 V			
最大工作電流 (RMS)	10 A	25 A	40 A	
最大泳浪電流 (60Hz 一週)	160A / 106A ² s	250A / 260A ² s	400A / 666A ² s	
開路洩漏電流 (最大使用電壓)	5.8 mArms (at Vmax and T=25°C)			
導通時最大壓降 (最大工作電流25C°時)	1.6V			
熱阻值 (功率元件至鋁片)	2.1	2.1	2.1	
一般參數				
反應時間	<1/2 cycle + 1mSec. (60Hz)			
輸入至輸出端絕緣阻抗	> 10 ⁸ ohms			
輸入至輸出端隔離耐電壓	2500 Vrms			
輸入, 輸出端至鋁片隔離耐電壓	2500 Vrms			
輸入至輸出端雜散電容量	< 10pf			
動作溫度範圍	-20°C to +80°C			
保存溫度範圍	-40°C to +100°C			
重量 (概略值)	110 g			

SSR 固態繼電器

DC 控制 AC輸出 60A~75A 70Vac~240Vac

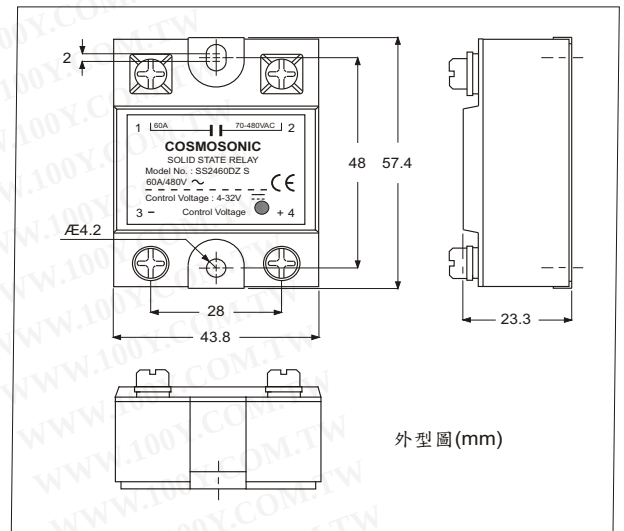


- 特 性：
- 1. 無機械接點,輸出輸入以光耦合隔離,絕緣耐壓2500VAC.
 - 2. 零位導通,減少雜訊產生.
 - 3. 控制輸入電壓範圍大,定電流驅動,可由IC直接驅動.
 - 4. 輸出回路內含突波吸收器及減振回路可適用於電感性負載.
 - 5. LED顯示開.關狀態.
 - 6. 壽命長,信賴度高.

規格	型號	SS2465DZ	SS2475DZ	SS4865DZ	SS4875DZ
輸入端特性規格					
控制電壓範圍(Vdc)	4~32 Vdc				
輸入電流	8mA(4Vdc)~10mA(32Vdc)				
確保接通電壓	4 V MAX				
確保關斷電壓	3 V MIN				
輸出端特性規格					
使用電壓範圍 (Vac)	70-240 Vrms			70-480 Vrms	
最大峰值耐電壓 (一分鐘)	600 Vdc			1000 Vdc	
最大工作電流 (RMS)	65 A	75 A	65 A	75 A	
最大泳浪電流 (60Hz 一週)	650A / 1750A ² s	950A / 3760A ² s	650A / 1750A ² s	950A / 3760A ² s	
開路洩漏電流 (最大使用電壓)	15 mArms (at Vmax and T=25°C)				
導通時最大壓降 (最大工作電流25C時)	1.6V				
熱阻值 (功率元件至鋁片)	0.9	0.75	0.9	0.75	
一般參數					
反應時間	<1/2 cycle + 1mSec. (60Hz)				
輸入至輸出端絕緣阻抗	> 10 ⁸ ohms				
輸入至輸出端隔離耐電壓	2500 Vrms				
輸入, 輸出端至鋁片隔離耐電壓	2500 Vrms				
動作溫度範圍	-20°C to +80°C				
保存溫度範圍	-40°C to +100°C				
重量 (概略值)	150 g				

SSR 固態繼電器

DC 控制 AC輸出 60A~75A 70~480Vac

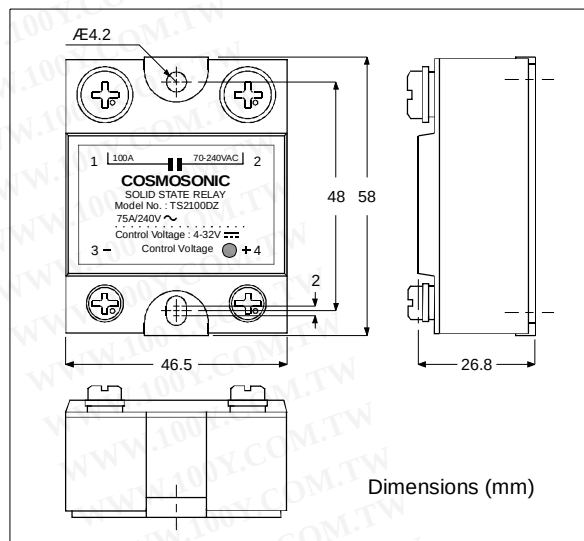


特 性：

1. 無機械接點,輸出輸入以光耦合隔離,絕緣耐壓2500VAC.
2. 零位導通,減少雜訊產生.
3. 控制輸入電壓範圍大,定電流驅動,可由IC直接驅動.
4. 輸出回路內含突波吸收器及減振回路可適用於電感性負載.
5. LED顯示開.關狀態.
6. 壽命長,信賴度高.

規格	型號	SS2460DZS	SS2475DZS	SS4860DZS	SS4875DZS
輸入端特性規格					
控制電壓範圍(Vdc)	4-32 Vdc				
輸入電流	8mA(4Vdc)~15mA(32Vdc)				
確保接通電壓	4 Vdc MAX				
確保關斷電壓	3 Vdc MIN				
輸出端特性規格					
使用電壓範圍 (Vac)	70-240 Vrms			70-480 Vrms	
最大峰值耐電壓 (一分鐘)	600 Vdc			800 Vdc	
最大工作電流 (RMS)	60 A	75 A	60 A	75A	
最大泳浪電流 (60Hz 一週)	600A / 1500A ² s	750A / 2343A ² s	600A / 1500A ² s	750A / 2343A ² s	
開路洩漏電流 (最大使用電壓)	15 mArms (at Vmax and T=25°C)				
導通時最大壓降 (最大工作電流25°C時)	1.8V				
熱阻值 (功率元件至鋁片)	1.0	1.0	1.0	1.0	
一般參數					
反應時間	<1/2 cycle + 1mSec.				
輸入至輸出端絕緣阻抗	> 10 ⁸ ohms				
輸入至輸出端隔離耐電壓	2500 Vrms				
輸入, 輸出端至鋁片隔離耐電壓	2500 Vrms				
動作溫度範圍	-20°C to +80°C				
保存溫度範圍	-40°C to +100°C				
重量 (概略值)	110 g				

AC SOLID STATE RELAY



FEATURES:

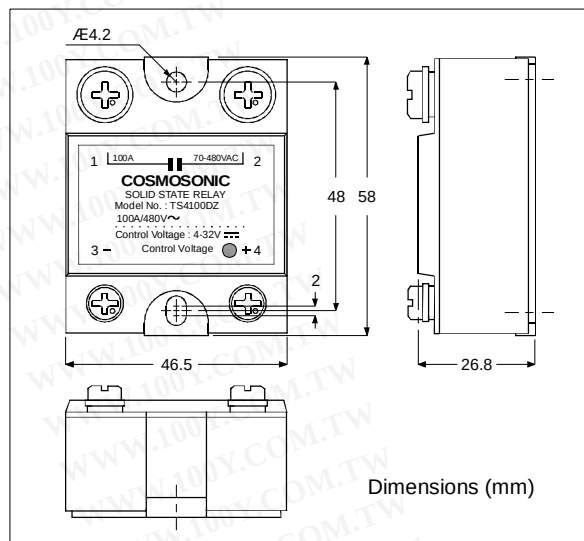
1. All solid state, optically coupled for 2500 VAC isolation between input and output circuit.
2. Load current of 60, 80, 100 Amperes.
3. Able to be driven by IC such as TTL & CMOS.
4. Internally mounted snubber circuit protection for huge current (dv/dt) application.
5. A LED can indicate the operating of devices.
6. Long service life and high reliability.

Input Specifications	
Control Voltage Range (Vdc)	4-32V
Current	10mA(at 4V) 15mA(at 32V)
Maximum pickup voltage	4V
Minimum dropout voltage	2V

General Characteristics	
Response time	1/2 cycle + 1mSec. (50Hz)
Input to output dielectric strength	$> 10^8$ ohms
Input to output isolation voltage	2500Vrms
Input/Output to baseplate isolation voltage	2500 Vrms
Input/output capacitance	< 10 pf
Operating temperature	-20°C to +80°C
Storage temperature	-40°C to +100°C
Weight (approx.)	110g

Output Specifications	TS2460DZ	TS2480DZ	TS2100DZ
Voltage Range (Vac)	70-240 Vrms		
Peak voltage (t=1min.)	600 V		
Maximum current (Arms)	60 A	80 A	100 A
Max.1-cycle surge (50Hz)	600A	800A	1000A
$I^2 t$ (t=10ms)A ² s	1600A ² s	3600A ² s	6400A ² s
Maximum off-state leakage (T=25°C)	1.77mArms (at 120VAC) 3.54 mArms (at 240VAC)		
Max. on-state voltage drop at I _{max} and T=25°C	1.5V		
Thermal resistance (junction to baseplate)	0.9	0.9	0.9

AC SOLID STATE RELAY



FEATURES:

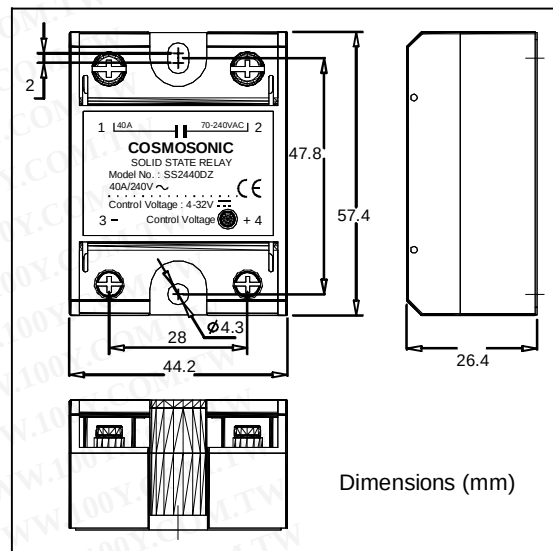
1. All solid state, optically coupled for 2500 VAC isolation between input and output circuit.
2. Load current of 60, 80, 100 Amperes.
3. Able to be driven by IC such as TTL & CMOS.
4. Internally mounted snubber circuit protection for huge current (dv/dt) application.
5. A LED can indicate the operating of devices.
6. Long service life and high reliability.

Input Specifications	
Control Voltage Range (Vdc)	4-32V
Current	10mA(at 4V) 15mA(at 32V)
Maximum pickup voltage	4V
Minimum dropout voltage	2V

General Characteristics	
Response time	1/2 cycle + 1mSec. (50Hz)
Input to output dielectric strength	$> 10^8$ ohms
Input to output isolation voltage	2500Vrms
Input/Output to baseplate isolation voltage	2500 Vrms
Input/output capacitance	< 10 pf
Operating temperature	-20°C to +80°C
Storage temperature	-40°C to +100°C
Weight (approx.)	110g

Output Specifications	TS4860DZ	TS4880DZ	TS4100DZ
Voltage Range (Vac)	70-480 Vrms		
Peak voltage (t=1min.)	800 V		
Maximum current (Arms)	60 A	80 A	100 A
Max.1-cycle surge (50Hz)	600A	800A	1000A
$I^2 t$ (t=10ms)A ² s	1600A ² s	3600A ² s	6400A ² s
Maximum off-state leakage (T=25°C)	3.93mArms (at 380VAC) 4.97 mArms (at 480VAC)		
Max. on-state voltage drop at I _{max} and T=25°C	1.5V		
Thermal resistance (junction to baseplate)	0.9	0.9	0.9

AC SOLID STATE RELAY



FEATURES:

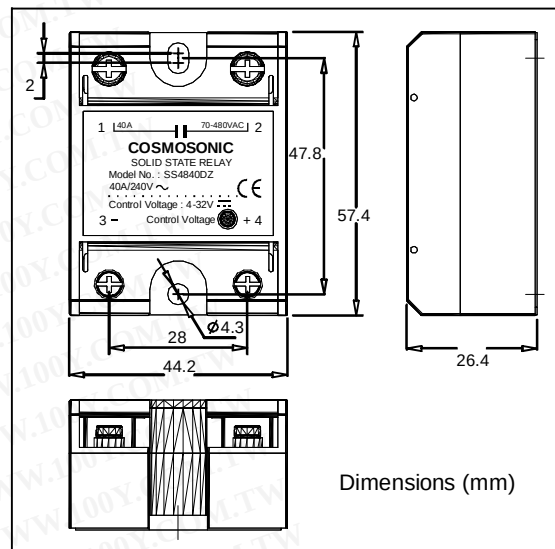
1. All solid state, optically coupled for 2500 VAC isolation between input and output circuit.
2. Removable protective cover(IP20) can easily apply ring terminals.
3. Able to be driven by IC such as TTL & CMOS.
4. Built-in sunbber and MOV to prevent false trigger.
5. A LED can indicate the operating of devices.
6. Zero crossing AC output can reduce EMI noise.

Input Specifications	
Control Voltage range (Vdc)	4-32V
current	5mA(at 4V) 15 mA(at 32V)
Maximum pickup voltage	4V
Minimum dropout voltage	2V

General Characteristics	
Response time	1/2 cycle + 1mSec. (50Hz)
Input to output dielectric strength	$> 10^8$ ohms
Input to output isolation voltage	2500 Vrms
Input/Output to baseplate isolation voltage	2500 Vrms
Operating temperature	-20°C to +80°C
Storage temperature	-40°C to +100°C

Output Specifications	US2410DZ	US2415DZ	US2420DZ	US2425DZ	US2440DZ
Voltage Range (Vac)	70-340 Vrms				
Peak voltage (t=1min.)	600 V				
Maximum current (Arms)	10 A	15 A	20 A	25 A	40 A
Max.1-cycle surge (50Hz)	100A	160A	210A	260A	410A
$I^2 t$ (t=10ms)A ² s	78A ² s	144A ² s	200A ² s	340A ² s	880A ² s
Maximum off-state leakage (T=25°C)	1.8mArms (at 120VAC) 3.5 mArms (at 240VAC) 5mArms (at 340VAC)				
Max. on-state voltage drop	1.5V (at I _{max} and T=25°C)				
Thermal resistance (junction to baseplate)	2.1	2.05	0.9	0.9	0.9

AC SOLID STATE RELAY



FEATURES:

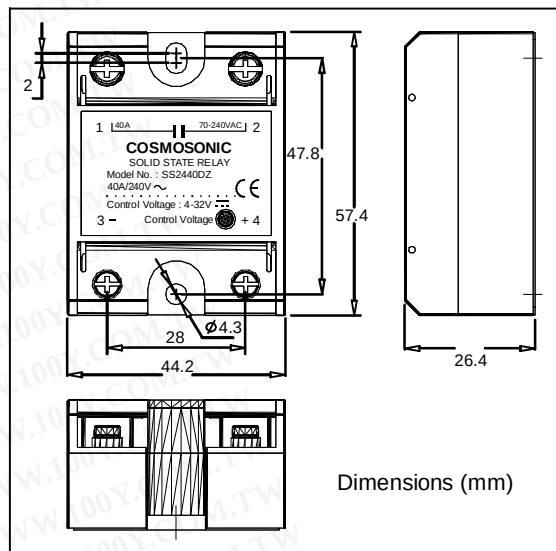
1. All solid state, optically coupled for 2500 VAC isolation between input and output circuit.
2. Removable protective cover(IP20) can easily apply ring terminals.
3. Able to be driven by IC such as TTL & CMOS.
4. Built-in sunbber and MOV to prevent false trigger.
5. A LED can indicate the operating of devices.
- 6.Zero crossing AC output can reduce EMI noise.

Input Specifications	
Control Voltage range (Vdc)	4-32V
current	5mA(at 4V) 15 mA(at 32V)
Maximum pickup voltage	4V
Minimum dropout voltage	2V

General Characteristics	
Response time	1/2 cycle + 1mSec. (50Hz)
Input to output dielectric strength	> 10 ⁸ ohms
Input to output isolation voltage	2500 Vrms
Input/Output to baseplate isolation voltage	2500 Vrms
Operating temperature	-20°C to +80°C
Storage temperature	-40°C to +100°C

Output Specifications	US4810DZ	US4815DZ	US4820DZ	US4825DZ	US4840DZ
Voltage Range (Vac)	70-560 Vrms				
Peak voltage (t=1min.)	800 V				
Maximum current (Arms)	10 A	15 A	20 A	25 A	40 A
Max.1-cycle surge (50Hz)	100A	160A	210A	260A	410A
I ² t (t=10ms)A ² s	78A ² s	144A ² s	200A ² s	340A ² s	880A ² s
Maximum off-state leakage (T=25°C)	3.9mArms (at 380VAC) 5 mArms (at 480VAC) 5.8mArms (at 560VAC)				
Max. on-state voltage drop at I _{max} and T=25°C	1.5V (at I _{max} and T=25°C)				
Thermal resistance (junction to baseplate)	2.1	2.05	0.9	0.9	0.9

AC SOLID STATE RELAY(固態繼電器)



特性:

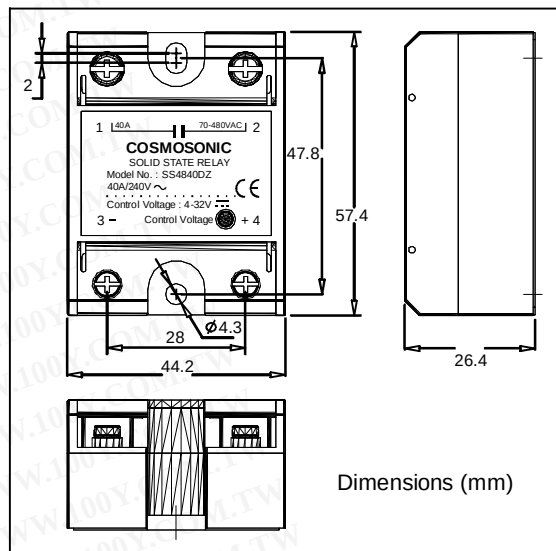
1. 無機械接點，輸出輸入以光耦合隔離，絕緣耐壓2500VAC
2. IP20等級保護蓋，可翻起安裝O型端子
3. 輸入電壓範圍大，定電流驅動，可由IC直接驅動
4. 輸出迴路內含突波吸收器及減振迴路，可適用於電感性負載
5. LED顯示開、關狀態
6. 零點觸發，減少雜訊

輸入端特性規格	
控制電壓範圍(Vdc)	4-32V
輸入最大消耗電流	5mA(at 4V) 15 mA(at 32V)
OFF-ON 最大輸入電壓 (動作)	4V
ON-OFF 最小輸入電壓 (復歸)	2V

一般參數	
回應時間	1/2 cycle + 1mSec. (50Hz)
輸入至輸出端絕緣阻抗	> 10 ⁸ ohms
輸入至輸出端隔離耐電壓	2500 Vrms
輸入, 輸出端至鋁片隔離耐電壓	2500 Vrms
動作溫度範圍	-20°C to +80°C
保存溫度範圍	-40°C to +100°C

輸出端特性規格	US2410DZ	US2415DZ	US2420DZ	US2425DZ	US2440DZ
使用電壓範圍 (Vac)	70-340 Vrms				
最大峰值耐電壓 (一分鐘)	600 V				
最大工作電流 (有效值)	10 A	15 A	20 A	25 A	40 A
最大耐衝擊電流 (50Hz一週)	100A	160A	210A	260A	410A
I ² t (t=10ms)A ² s	78A ² s	144A ² s	200A ² s	340A ² s	880A ² s
開路洩漏電流	1.8mArms (at 120VAC) 3.5 mArms (at 240VAC) 5mArms (at 340VAC)				
閉路殘餘電壓 (最大工作電流,25°C時)	1.5V(註:全數轉換為熱損失)				
熱阻值 (功率元件至鋁片)	2.1	2.05	0.9	0.9	0.9

AC SOLID STATE RELAY(固態繼電器)



特性:

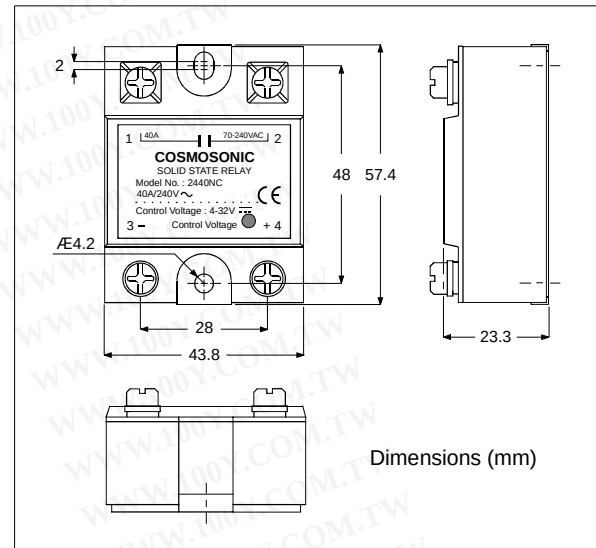
1. 無機械接點，輸出輸入以光耦合隔離，絕緣耐壓2500VAC
2. IP20等級保護蓋，可翻起安裝O型端子
3. 輸入電壓範圍大，定電流驅動，可由IC直接驅動
4. 輸出迴路內含突波吸收器及減振迴路，可適用於電感性負載
5. LED顯示開、關狀態
6. 零點觸發，減少雜訊

輸入端特性規格	
控制電壓範圍(Vdc)	4-32V
輸入最大消耗電流	5mA(at 4V) 15 mA(at 32V)
OFF-ON 最大輸入電壓 (動作)	4V
ON-OFF 最小輸入電壓 (復歸)	2V

一般參數	
回應時間	1/2 cycle + 1mSec. (50Hz)
輸入至輸出端絕緣阻抗	> 10 ⁸ ohms
輸入至輸出端隔離耐電壓	2500 Vrms
輸入, 輸出端至鋁片隔離耐電壓	2500 Vrms
動作溫度範圍	-20°C to +80°C
保存溫度範圍	-40°C to +100°C

輸出端特性規格	US4810DZ	US4815DZ	US4820DZ	US4825DZ	US4840DZ
使用電壓範圍 (Vac)	70-560 Vrms				
最大峰值耐電壓 (一分鐘)	800 V				
最大工作電流 (有效值)	10 A	15 A	20 A	25 A	40 A
最大耐衝擊電流 (50Hz一週)	100A	160A	210A	260A	410A
I ² t (t=10ms)A ² s	78A ² s	144A ² s	200A ² s	340A ² s	880A ² s
開路洩漏電流 (最大使用電壓)	3.9mArms (at 380VAC)		5 mArms (at 480VAC)		5.8mArms (at 560VAC)
閉路殘餘電壓 (最大工作電流,25°C時)	1.5V(註:全數轉換為熱損失)				
熱阻值 (功率元件至鋁片)	2.1	2.05	0.9	0.9	0.9

AC Solid State Relay(Normal Close)



FEATURES:

- 1.Reverse Ouput Action as Normal-Close Switch
2. All solid state, optically coupled for 2500 VAC isolation between input and output circuit.
3. Load current of 10, 15, 20, 25, 40 Amperes.
4. Able to be driven by IC such as TTL & CMOS.
5. Internally mounted snubber circuit protection for huge current (dv/dt) application.
6. A LED can indicate the operating of devices.
7. Long service life and high reliability.

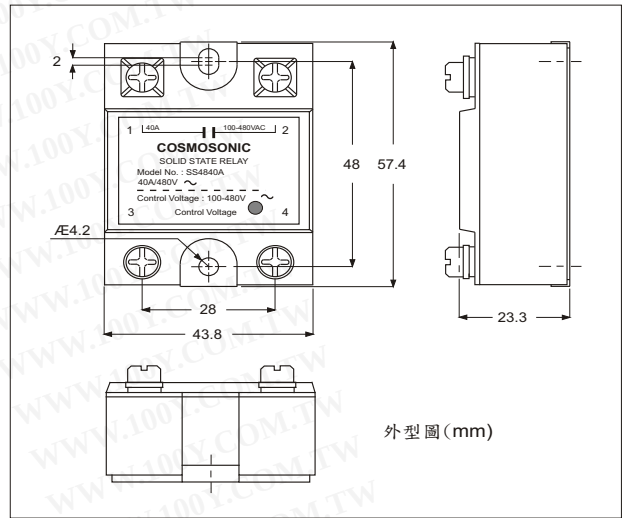
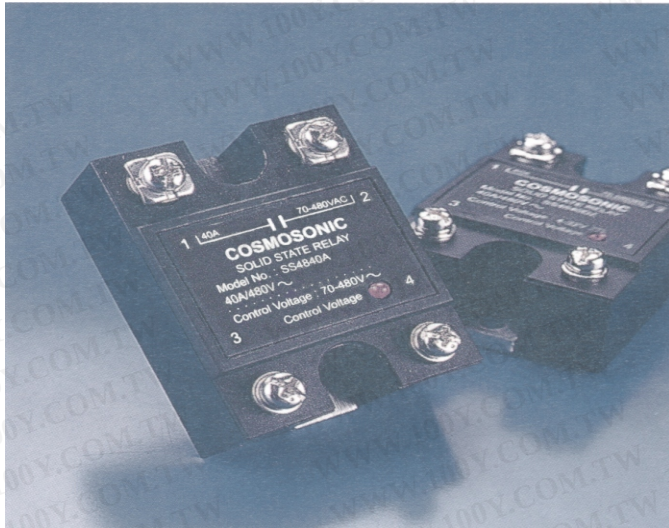
Input Specifications	
Control Voltage range (Vdc)	4-32V
current	3mA(at 4V) 6 mA(at 32V)
Maximum pickup voltage	4V
Minimum dropout voltage	2V

General Characteristics	
Response time	1/2 cycle + 1mSec. (50Hz)
Input to output dielectric strength	> 10 ⁸ ohms
Input to output isolation voltage	2500 Vrms
Input/Output to baseplate isolation voltage	2500 Vrms
Operating temperature	-20°C to +80°C
Storage temperature	-40°C to +100°C

Output Specifications	SS2410DZ(NC)	SS2415DZ(NC)	SS2420DZ(NC)	SS2425DZ(NC)	SS2440DZ(NC)
Voltage Range (Vac)	70-240 Vrms				
Peak voltage (t=1min.)	600 V				
Maximum current (Arms)	10 A	15 A	20 A	25 A	40 A
Max.1-cycle surge (50Hz)	100A	160A	170A	260A	410A
I ² t (t=10ms)A ² s	50A ² s	128A ² s	144A ² s	338A ² s	840A ² s
Maximum off-state leakage (T=25°C)	1.8mArms (at 120VAC) 3.5 mArms (at 240VAC)				
Max. on-state voltage drop at I _{max} and T=25°C	1.5V				
Thermal resistance (junction to baseplate)	2.05	2.1	0.9	0.9	0.9

SSR 固態繼電器

AC 控制 AC輸出 10A~40A 70V~240Vac



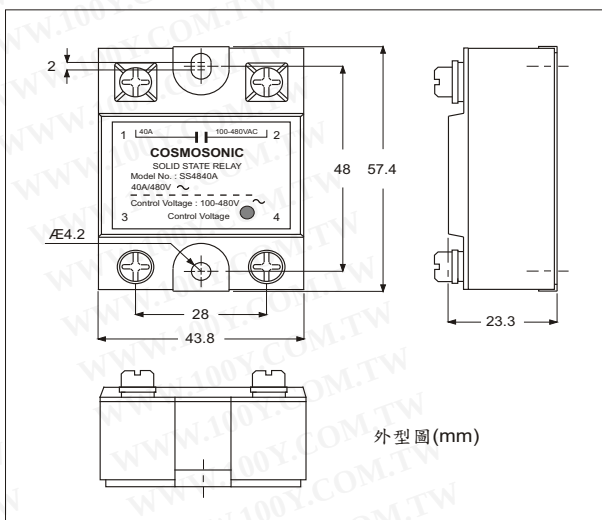
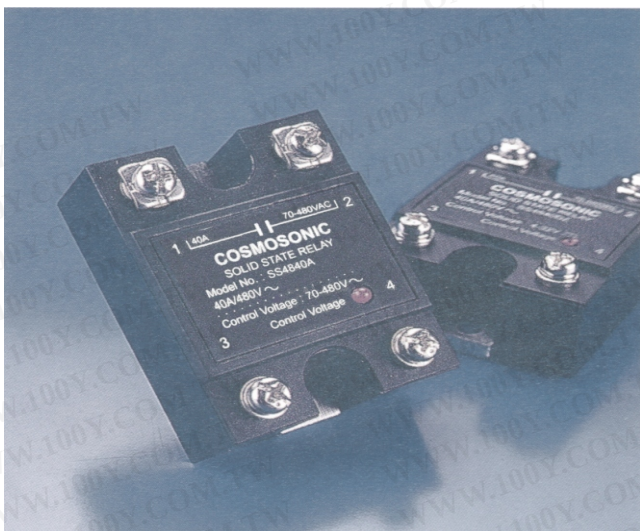
特性：

1. 無機械接點,輸出輸入以光耦合隔離,絕緣耐壓2500VAC.
2. 零位導通,減少雜訊產生.
3. 控制輸入電壓範圍大,定電流驅動,可由IC直接驅動.
4. 輸出回路內含突波吸收器及減振回路可適用於電感性負載.
5. LED顯示開、關狀態.
6. 壽命長,信賴度高.

規格	型號	SS2410A	SS2415A	SS2420A	SS2425A	SS2440A
輸入端特性規格						
控制電壓範圍(Vdc)	70~240Vac					
輸入電流	2~5 mA					
確保接通電壓	70Vac					
確保關斷電壓	40 Vac					
輸出端特性規格						
使用電壓範圍 (Vac)	70-240 Vrms					
最大峰值耐電壓 (一分鐘)	1000 Vdc					
最大工作電流 (RMS)	10 A	15 A	20 A	25 A	40 A	
最大泳浪電流 (60Hz 一週)	126A / 66A ²	160A / 106A ²	220A / 201A ²	250A / 260A ²	400A / 666A ²	
開路洩漏電流 (最大使用電壓)	8 mArms (at Vmax and T=25°C)					
導通時最大壓降 (最大工作電流25C時)	1.6V					
熱阻值 (功率元件至鋁片)	3.1	2.8	1.7	1.5	1.3	
一般參數						
反應時間	2/3 cycle + 1mSec. (60Hz)					
輸入至輸出端絕緣阻抗	> 10 ⁸ ohms					
輸入至輸出端隔離耐電壓	2500 Vrms					
輸入, 輸出端至鋁片隔離耐電壓	2500 Vrms					
輸入至輸出端雜散電容量	< 10pf					
動作溫度範圍	-20°C to +80°C					
保存溫度範圍	-40°C to +100°C					
重量 (概略值)	110 g					

SSR 固態繼電器

AC 控制 AC輸出 10A~40A 70V~480Vac



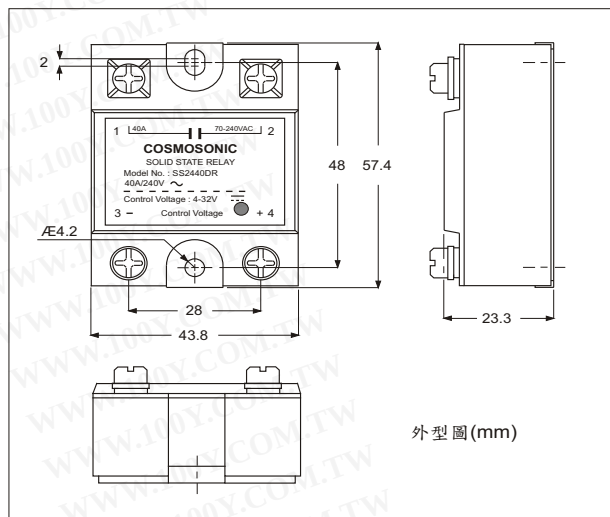
特 性：

1. 無機械接點,輸出輸入以光耦合隔離,絕緣耐壓2500VAC.
2. 零位導通,減少雜訊產生.
3. 控制輸入電壓範圍大,定電流驅動,可由IC直接驅動.
4. 輸出回路內含突波吸收器及減振回路可適用於電感性負載.
5. LED顯示開.關狀態.
6. 壽命長,信賴度高.

規格	型號	SS4810A	SS4825A	SS4840A
輸入端特性規格				
控制電壓範圍(Vdc)	100-480 Vac			
輸入電流	4 mA			
確保接通電壓	100 Vac			
確保關斷電壓	60 Vac			
輸出端特性規格				
使用電壓範圍 (Vac)	100-480 Vrms			
最大峰值耐電壓 (一分鐘)	1000 Vdc			
最大工作電流 (RMS)	10 A	25 A	40 A	
最大泳浪電流 (60Hz 一週)	160A / 106A ² s	250A / 260A ² s	400A / 666A ² s	
開路洩漏電流 (最大使用電壓)	8 mArms (at Vmax and T=25°C)			
導通時最大壓降 (最大工作電流25C時)	1.6 V			
熱阻值 (功率元件至鋁片)	2.1	2.1	1.1	
一般參數				
反應時間	2/3 cycle + 1mSec. (60Hz)			
輸入至輸出端絕緣阻抗	> 10 ⁸ ohms			
輸入至輸出端隔離耐電壓	2500 Vrms			
輸入, 輸出端至鋁片隔離耐電壓	2500 Vrms			
輸入至輸出端雜散電容量	< 10pf			
動作溫度範圍	-20°C to +80°C			
保存溫度範圍	-40°C to +100°C			
重量 (概略值)	110 g			

SSR 隨機觸發型固態繼電器

DC 控制 AC輸出 10A~40A 70V~240Vac



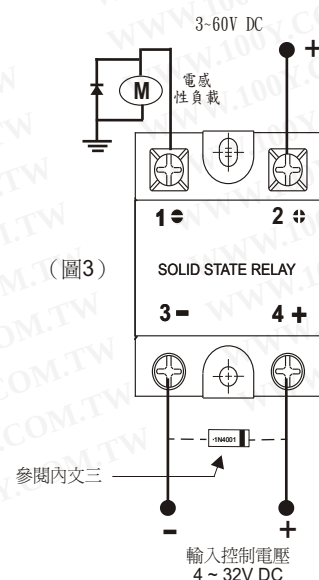
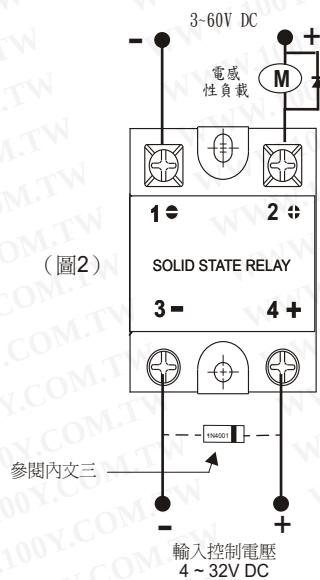
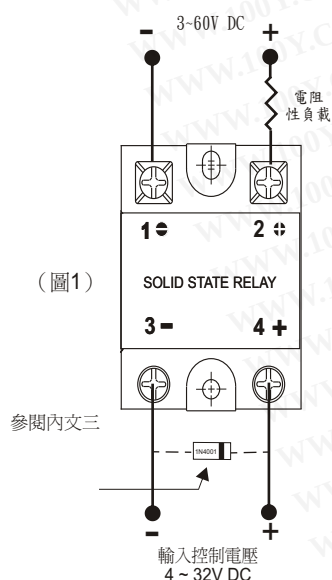
特 性：

1. 無機械接點,輸出輸入以光耦合隔離,絕緣耐壓2500VAC.
2. 隨機觸發型固態繼電器..
3. 控制輸入電壓範圍大,定電流驅動,可由IC直接驅動.
4. 輸出回路內含突波吸收器及減振回路可適用於電感性負載.
5. LED顯示開.關狀態.
6. 壽命長,信賴度高.

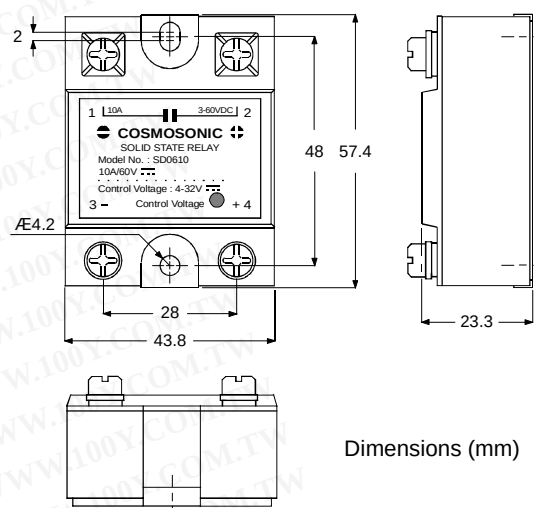
規格	型號	SS2410DR	SS2415DR	SS2420DR	SS2425DR	SS2440DR
輸入端特性規格						
控制電壓範圍(Vdc)	3-32 Vdc					
輸入電流	8mA(4Vdc)~15mA(32Vdc)					
確保接通電壓	3 V max					
確保關斷電壓	2 V min					
輸出端特性規格						
使用電壓範圍 (Vac)	70-240 Vrms					
最大峰值耐電壓 (一分鐘)	600 Vdc					
最大工作電流 (Arms)	10 A	15 A	20 A	25 A	40 A	
最大泳浪電流 (60Hz 一週)	126A / 66A ²	160A / 106A ²	220A / 201A ²	250A / 260A ²	400A / 666A ²	
開路洩漏電流 (最大使用電壓)	8 mArms (at Vmax and T=25°C)					
導通時最大壓降 (最大工作電流25C時)	1.6V					
熱阻值 (功率元件至鋁片)	2.4	2.2	2.1	2.1	1.0	
一般參數						
反應時間	10uSec.					
輸入至輸出端絕緣阻抗	> 10 ⁸ ohms					
輸入至輸出端隔離耐電壓	2500 Vrms					
輸入, 輸出端至鋁片隔離耐電壓	2500 Vrms					
輸入至輸出端雜散電容量	< 10pf					
動作溫度範圍	-20°C to +80°C					
保存溫度範圍	-40°C to +100°C					
重量 (概略值)	110 g					

DC-DC SSR 使用要點

- 一. 1-2 為輸出端接負載電壓-電壓極性 1 為負 2 為正極性請勿錯誤, 否則會導致燒燬。
- 二. 3-4 為輸入端接輸入控制電壓-電壓極性 3 為負 4 為正極性請勿錯誤. 輸入控制電壓範圍為 4~32V DC 請勿超過, 否則輸入端會過熱燒燬.
- 三. 本 SSR 輸入端雖有防止電壓極性逆接的保護電路, 但如有必要在輸入端子同時接上 Relay 以作為其他控制使用時, 請在輸入端併聯一個二極體 1N4001 (如下圖虛線的部份), 以吸收 Relay 釋放出的逆相回饋電壓. 因為回饋電壓有可能高達 200V 以上, 以如此高的電壓極有可能將輸入端擊穿.
- 四. 配線時請注意確認輸入輸出端. 如將輸入端錯當輸出端接上高壓, 則輸入端將立即燒燬. 而輸出端接到控制電源, 當控制開關一導通瞬間即讓輸出端電流變成無限大, 則不是 SSR 燒毀就是開關燒毀. (使用者常犯這項錯誤, 所以千萬拜託)
- 五. 電晶體型 SSR 輸出端於最大電流時電壓壓降約為 1.5V, 所以傳送到負載的電壓會等於電源電壓減去 1.5V. 如使用的負載電壓較低時, 就必須考慮將負載的電源電壓增加 1.5V. 下例圖一為參考配線圖.
- 六. MOSFET 型: 所使用的 MOSFET (IRFP064V), 在導通時會產生一內阻 $R_{ds(on)} = 5.5m(\Omega)$. 所以會產生的電壓為 $V_{ds(on)} = R_{ds(on)} * I_d$
例如: 使用一負載, 而流過 SSR 的電流為 30A. 而產生的導通電壓 V_{ds} 為?
 $V_{ds(on)} = R_{ds(on)} * I_d = 5.5m(\Omega) * 30A = 0.165V$
所以導通電壓 $V_{ds(on)}$ 為 0.165V
* 使用電感性負載, 請一定要加裝二極體來釋放電感性負載的回饋電壓, 而不致於逆向擊穿電晶體. 如下圖 2 圖 3 為參考配線圖.
- 八. SSR 使用電流超過 3A 時就必須加裝散熱片, 否則會因過熱而損壞.



DC SOLID STATE RELAY



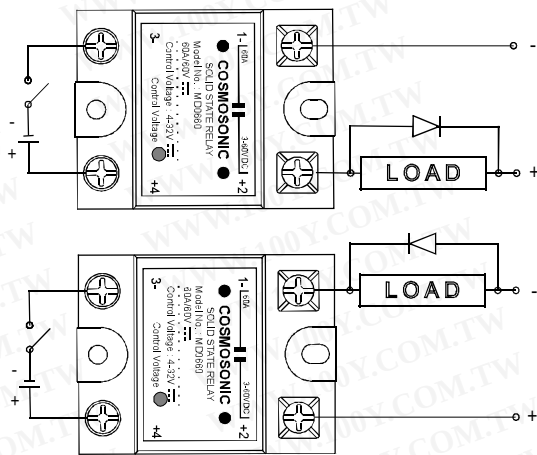
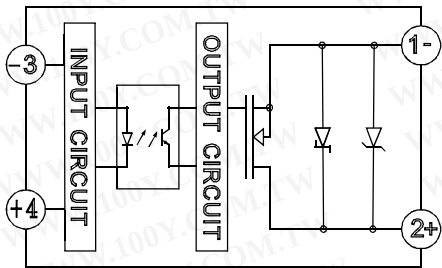
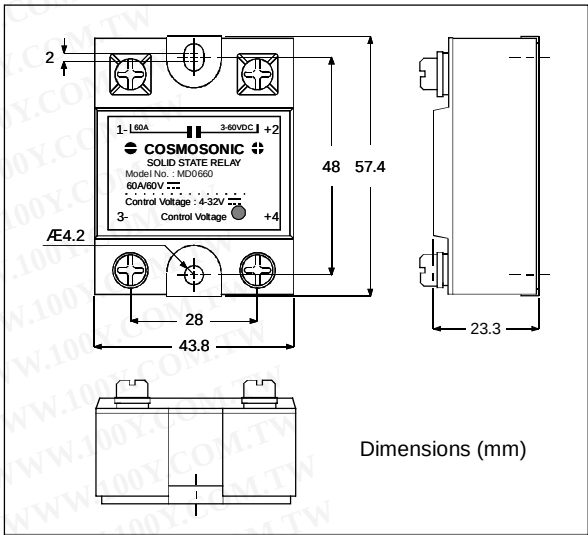
Dimensions (mm)

FEATURES:

1. All solid state, optically coupled for 2500 VAC isolation between input and output circuit.
2. Load current of 10, 25 Amperes.
3. A LED can indicate the operating of devices.
4. Long service life and high reliability.

Data	Model	SD0610	SD0625
Input Specifications			
Control Voltage range (Vdc)	4-32 V		
Attrition current	1-15 mA		
Maximum pickup voltage	4 V		
Minimum dropout voltage	2.5 V		
Output Specifications			
Voltage Range (Vdc)	3-60 V		
Peak voltage (t=1min.)	100 V		
Maximum current	10 A	25 A	
Thermal resistance (junction to baseplate)	1.3	1.1	
Maximum off-state leakage	2 mA (at Vmax and T=25°C)		
Max. on-state voltage drop at Imax and T=25°C	1.6V		
General Characteristics			
Response time	< 0.1m Sec.		
Input to output dielectric strength	> 10 ⁸ ohms		
Input to output isolation voltage	2500 Vrms		
Input/output capacitance	< 10pf		
Operating temperature	-20°C to +80°C		
Storage temperature	-40°C to +100°C		
Weight (approx.)	110 g		

DC SOLID STATE RELAY(MOSFET)



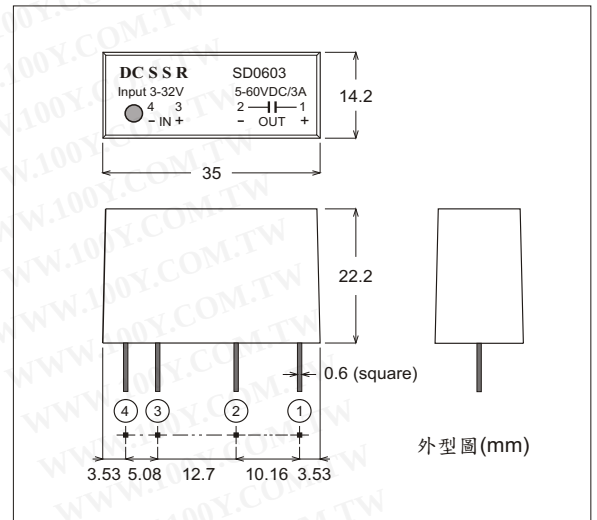
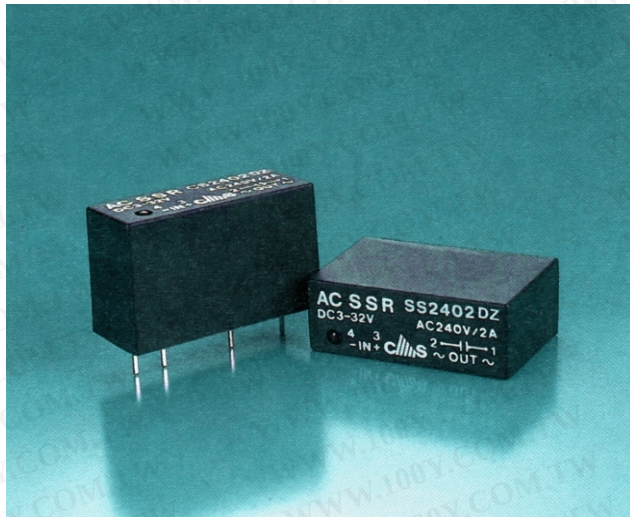
輸入特性	
控制電壓 (VDC)	4-32 V
消耗電流	10mA(4V) ~15mA(32V)
動作電壓	4 V
復歸電壓	2 V

其他	
輸入輸出絕緣阻抗	$> 10^8$ ohms
輸入輸出絕緣耐壓	2500 Vrms
動作溫度範圍	-20°C to +80°C
保存溫度範圍	-40°C to +100°C

輸出特性					
	MD0610	MD0625	MD0640	MD0650	MD0660
工作電壓	0-60 V	0-60 V	0-60 V	0-60 V	0-60 V
最大耐壓	60 V	60 V	60 V	60 V	60 V
最大電流 (T=25°C)	10 A	20 A	40 A	50 A	60 A
熱阻	1.2	1	0.6	0.6	0.6
最大殘留電壓 at I _{max} and T=25°C	0.25V	0.5V	0.55V	0.6V	0.65V
導通電阻	22mR	16mR	14mR	12mR	11mR
最大瞬間電流 (10mS)	40 A	60 A	75A	110A	130A
最大洩漏電流	<1 mA (at V _{max} and T=25°C)				
最大反應時間 (Trun On)	<2m Sec				
最大反應時間 (Trun Off)	<0.5m Sec				

SSR 固態繼電器

DC 控制 DC輸出 2A~3A(0V~60Vdc)



特 性：

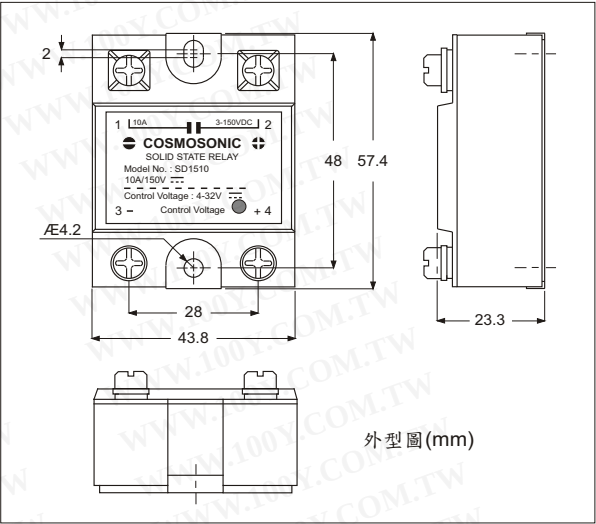
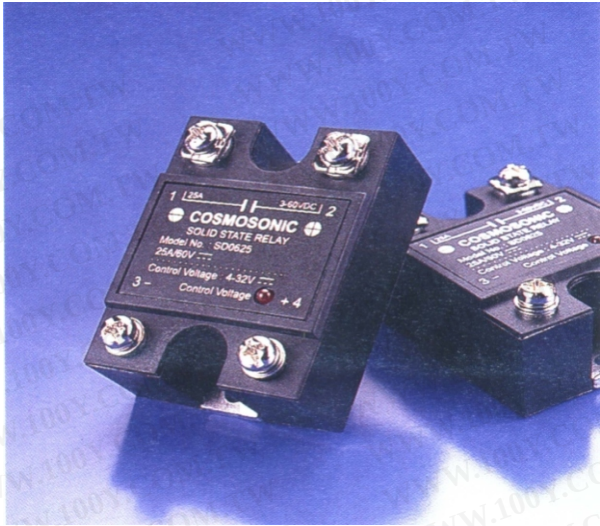
1. 無機械接點,輸出輸入以光耦合隔離,絕緣耐壓2500VAC.
2. 輸出回路內含突波吸收器及減振回路可適用於電感性負載.
3. LED顯示開、關狀態.
4. 壽命長,信賴度高.

電感性負載加DIODE

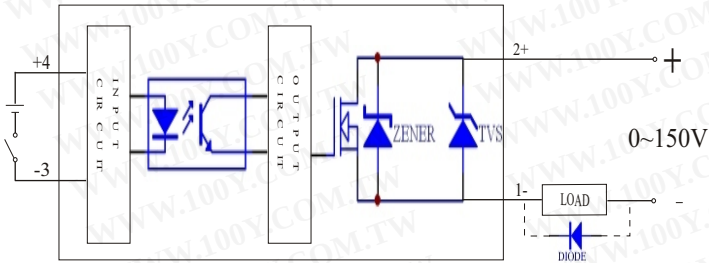
Data	Model	SD0602	SD0603
輸入特性			
控制電壓 (VDC)	3-32 V		
消耗電流	2.5~6 mA		
動作電壓	3 V		
復歸電壓	2.5 V		
輸出特性			
工作電壓	5-60 V		
最大耐壓 (t=1min)	80 V		
最大電流	2 A	3 A	
熱阻抗	0.9		
最大洩漏電流	1 mA (at Vmax and T=25C)		
最大殘留電壓 at Imax and T=25C	0.285V	0.38V	0.65V
其它			
反應時間	< 0.1 m Sec.		
輸入輸出絕緣阻抗	> 10 ⁸ Ohms		
輸入輸出絕緣耐壓	2500 Vrms		
動作溫度範	-20C to +80C		
保存溫度範	-40C to +100C		
重量 (approx.)	110 g		

SSR 固態繼電器

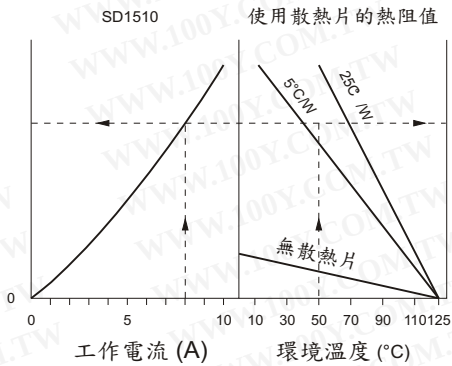
DC 控制 DC輸出 10A 0V~150Vdc



外型圖(mm)



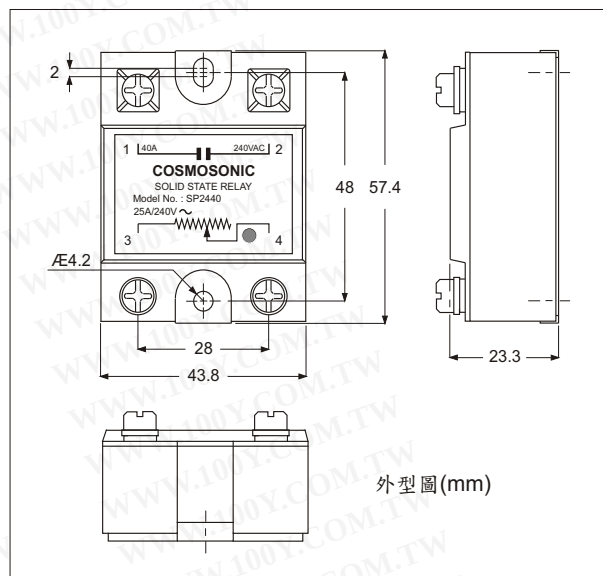
電感性負載加DIODE



Data	Model	SD1510
輸入特性		
控制電壓 (VDC)		3-32 Vdc
消耗電流		8mA(4Vdc)~10mA(32Vdc)
動作電壓		3 Vdc max
復歸電壓		2.5 Vdc
輸出特性		
工作電壓		0-150 Vdc
最大耐壓		200 Vdc
最大電流		10 A
熱阻抗		1.3
最大洩漏電流		0.1 mA (at Vmax and T=25°C)
最大殘留電壓 at Imax and T=25°C		< 1.6V
其它		
反應時間		< 80u Sec.
輸入輸出絕緣阻抗		> 10 ⁸ ohms
輸入輸出絕緣耐壓		2500 Vrms
動作溫度範圍		-20°C to +80°C
保存溫度範圍		-40°C to +100°C
重量 (approx.)		110 g

相位控制可調式固態繼電器

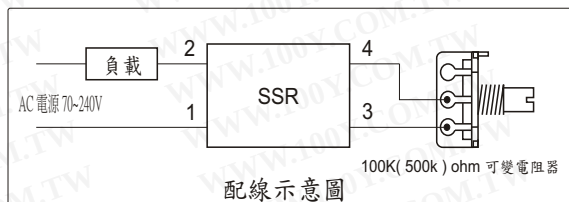
10A~40A 100~240Vac



特性：

1. 無機械接點,輸出輸入以光耦合隔離,絕緣耐壓2500VAC.
2. 控制輸入電壓範圍大,定電流驅動,可由IC直接驅動.
3. 輸出回路內含突波吸收器及減振回路可適用於電感性負載.
4. 本產品不可使用電感性負載. 如馬達, 變壓器等...
5. LED顯示開.關狀態.
6. 壽命長,信賴度高.

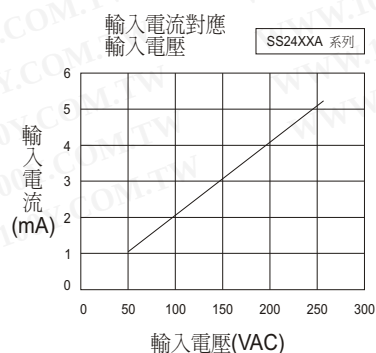
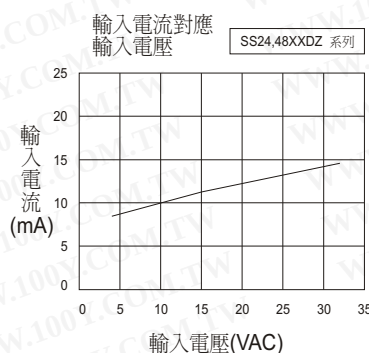
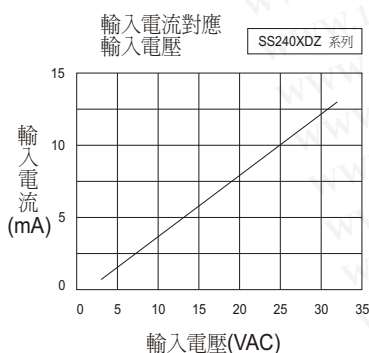
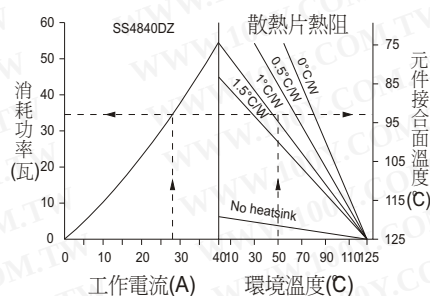
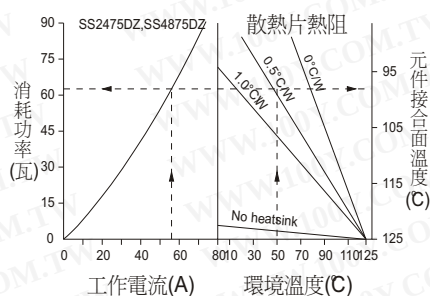
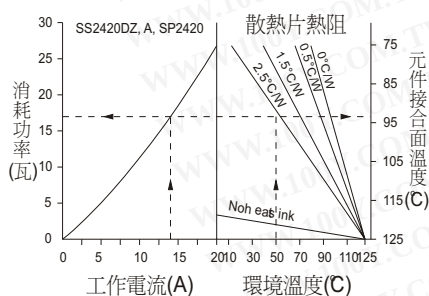
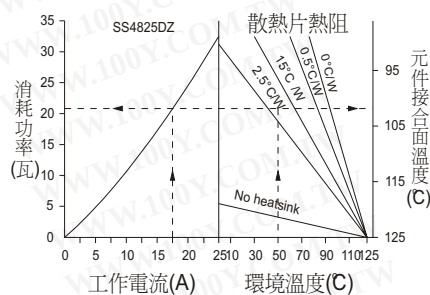
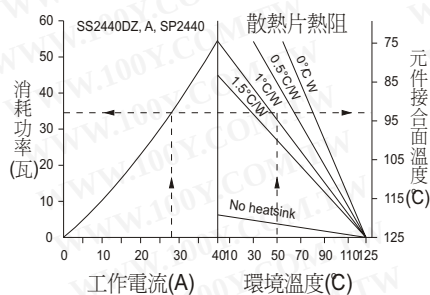
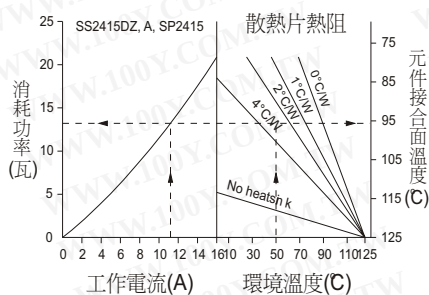
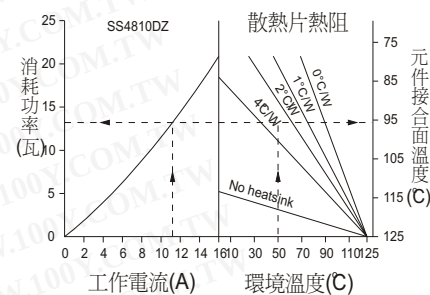
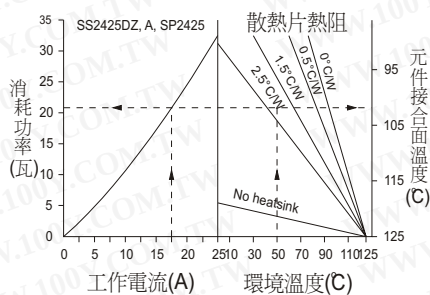
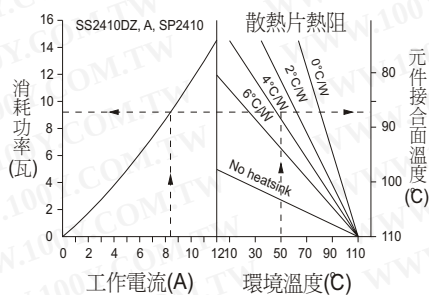
本產品不可使用電感性負載,如馬達.變壓器等.



規格	型號	SP2410	SP2415	SP2420	SP2425	SP2440
輸入特性						
輸入電阻	100K (500k)-ohms Varistor (B-Type)					
輸出特性						
控制電壓範圍	7-95 %					
使用電壓範圍 (Vac)	100-240 Vrms					
最大峰值耐電壓 (一分鐘)	600 V					
最大工作電流 (Arms)	10 A	15 A	20 A	25 A	40 A	
最大泳浪電流 (60Hz 一週)	126A / 66A ² s	160A / 106A ² s	220A / 201A ² s	250A / 260A ² s	400A / 666A ² s	
開路洩漏電流 (最大使用電壓)	8 mArms (at Vmax and T=25°C)					
最大殘留電壓 at I _{max} and T=25°C	1.6V					
熱阻值 (功率元件至鋁片)	2.4	2.2	2.1	2.1	1.0	
一般參數						
輸入, 輸出端至鋁片隔離耐電壓	2500 Vrms					
動作溫度範圍	-20°C to +80°C					
保存溫度範圍	-40°C to +100°C					
重量(概略值)	110 g					

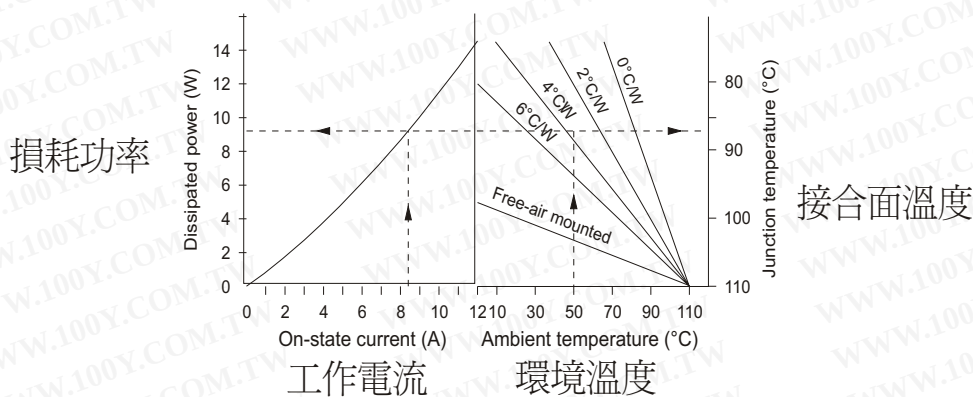
散熱

避免SSR內部溫度可能過高以致損壞, 因此加裝適當的散熱裝置是必要的. 所以我們提供個別的曲線以供選擇散熱片.



計算所需要的散熱片熱阻：

1. 從已知的工作電流(最好設在SSR最大工電流的三分 之二)畫一垂直線與損耗功率曲線相交點向左熱對應消耗處, 便可看出消耗的功率, 此消耗的功率全數轉變為熱.
2. 再向右延伸畫水平線至接合面溫度處. 然後設定工作的環境溫度(一般為50度), 從環境溫度處畫垂線往上與水平線相交, 從相交點便可看出散熱片的熱阻值約是多少.
3. 以下圖為例, 設定工作電流為8.4A, 對應約9.2瓦的消耗功率. 對應處往右畫水平線與元件接合面溫度相交, 設定環境溫度為50度, 往上畫垂線與水平線相交. 相交點位於2CW與4CW之間, 但極為靠近4CW, 因此大約為3.6CW.



4. 實際應用時可以將散熱片體積縮小為2/3.
5. 機箱必需加裝風扇, 以降低環境溫度.
6. 電流超過30A請考慮散熱片加裝風扇, 因計算出的散熱片實在是太大了.
7. SSR底板必需先塗上散熱膏才固定在散熱片上, 否則散熱效果會大打折扣.
8. 一般散熱片工廠並不提供散熱片的熱阻值, 故必需實際測試, 或逆推計算.

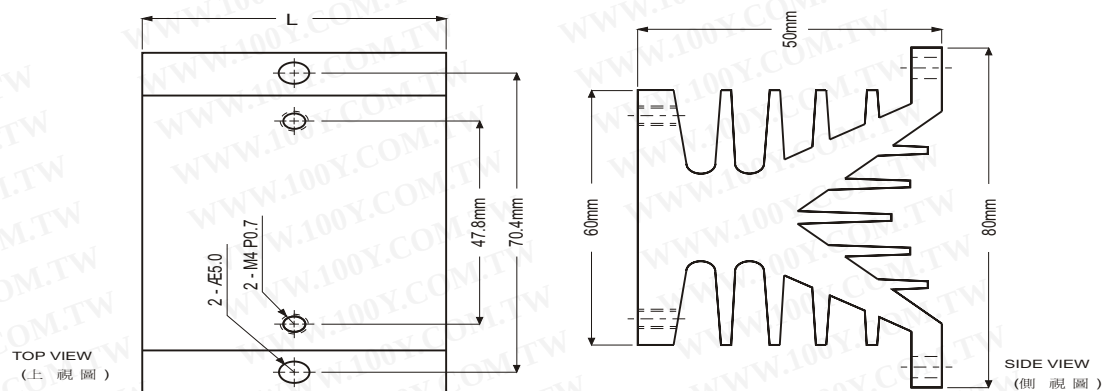
或讓SSR工作最少4小時, 再測量散熱片的溫度(必需靠近SSR的底板長端的中央處)

以夏天不超過60度, 冬天不超過45-50度即可.

80x50x50單點散熱片熱阻3.3

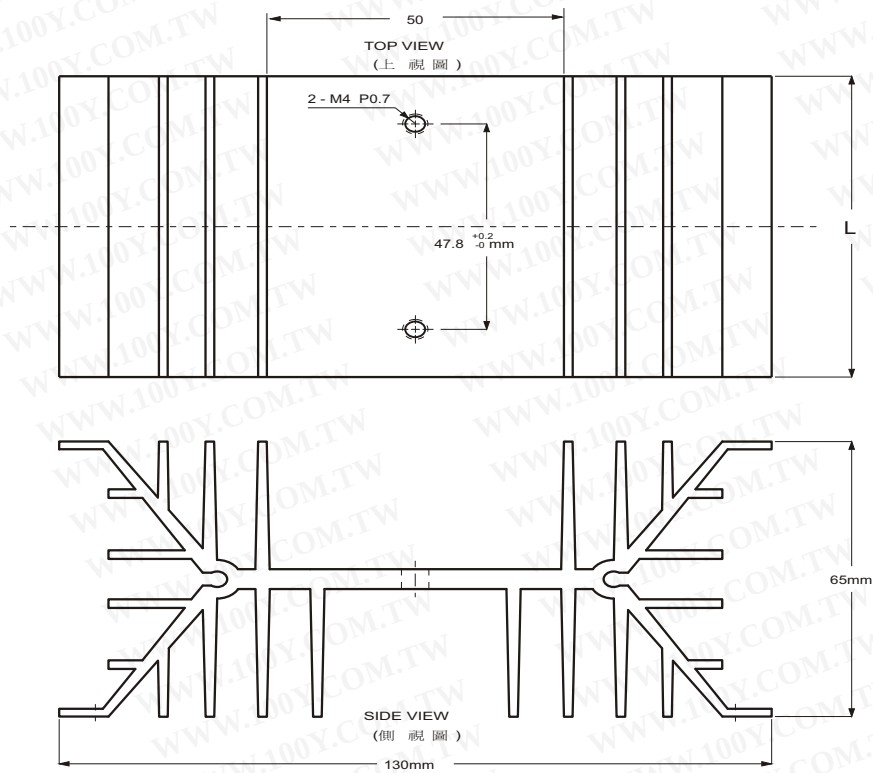
80x150x50三點散熱片熱阻2

HEATSINK (散熱片) M/N: 219-1-L(長度) COLOR: WHITE



型 號	長度(L)	備 註
219-1-50	50mm	
219-1-100	100mm	
219-1-150	150mm	
219-1-200	200mm	
219-1-250	250mm	

HEATSINK (散熱片) M/N: K100-L(長度) COLOR: BLACK

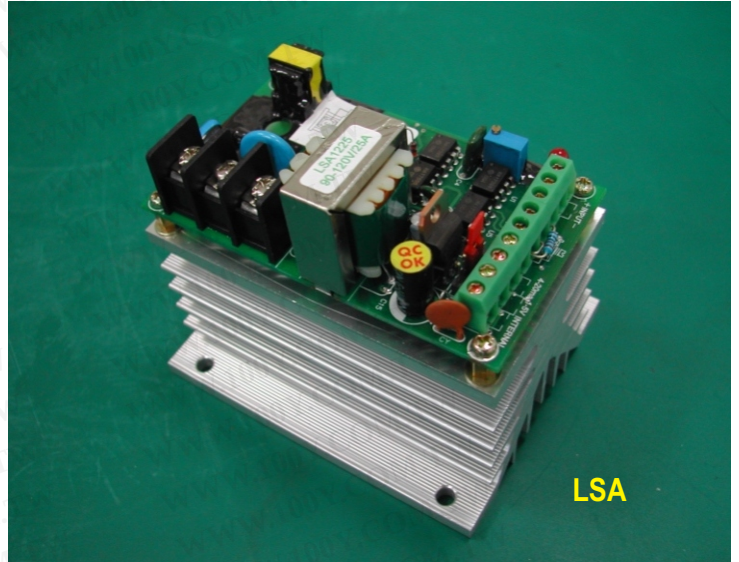


型 號	長度(L)	熱阻(度C / W)
k110-70	70mm	
k110-100	100mm	

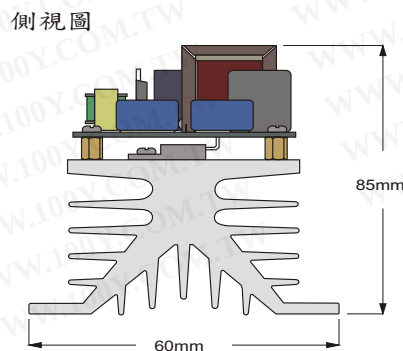
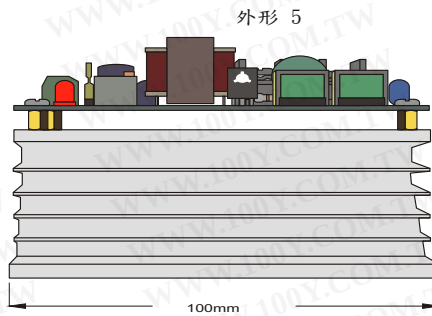
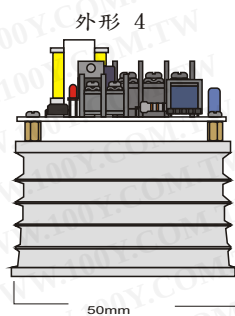
相位控制 SSR

LSR 可調式 電力調整器

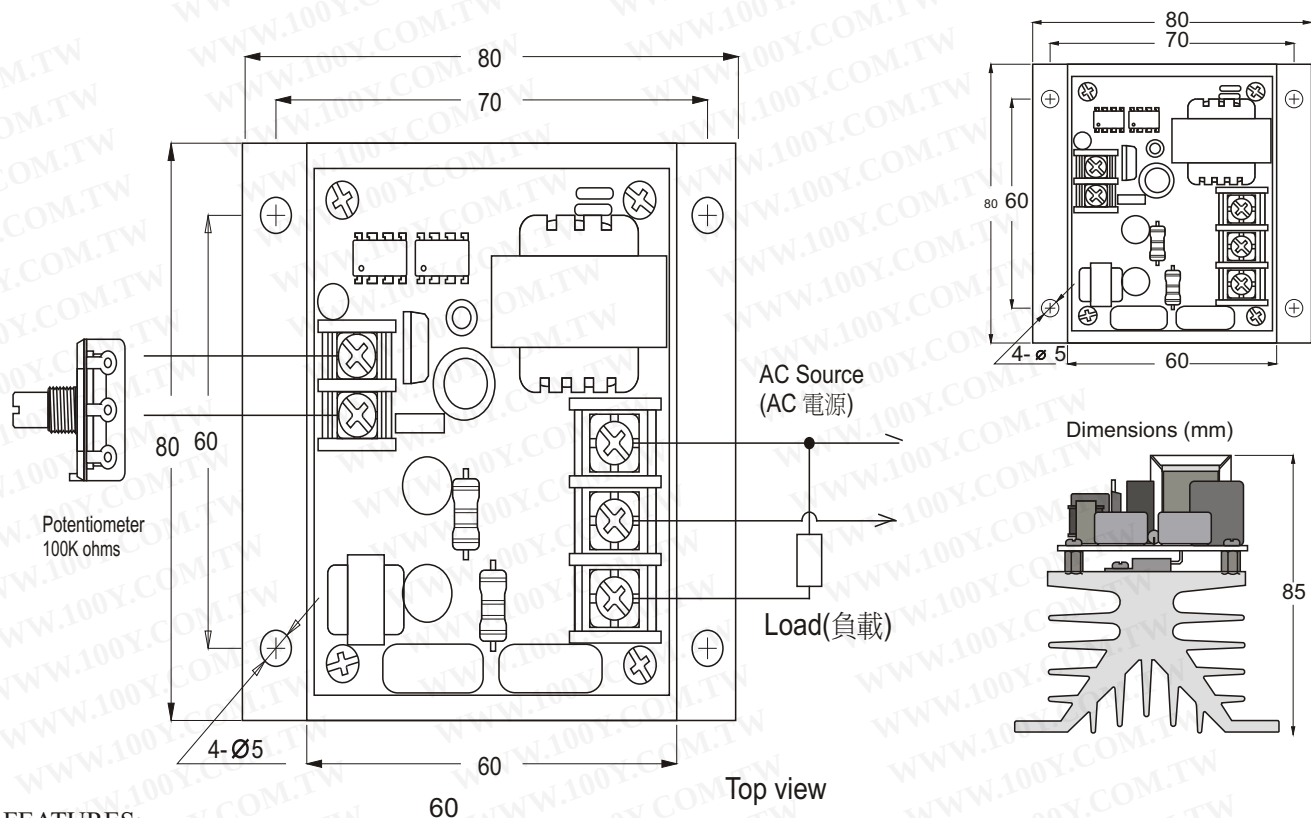
LSA PID 輸入式相位切割電力調整器



規格	SCR24XX ~SCR44XX Series	LSR24XX ~LSR48XX Series	CL24XX~CL44XX Series	LSA24XX~LSA48XX Series
外型	4	4	4	5
			For Vibratory Feeder	(1-5 V, 4-20ma) PID Single
可調阻值	100K-ohms Varistor	100K-ohms Varistor	100K-ohms Varistor	10K-ohms Varistor
最大耐壓	800 V	800 V	600 V	800 V
重量	590g	590g	590g	1000g
	燈管控制	外部電阻控制式	震動盤馬達控制用	外部電阻控制+電壓+電流控制

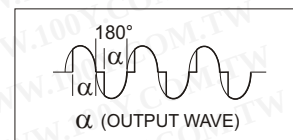


AC SOLID STATE RELAY (Dual SCR)



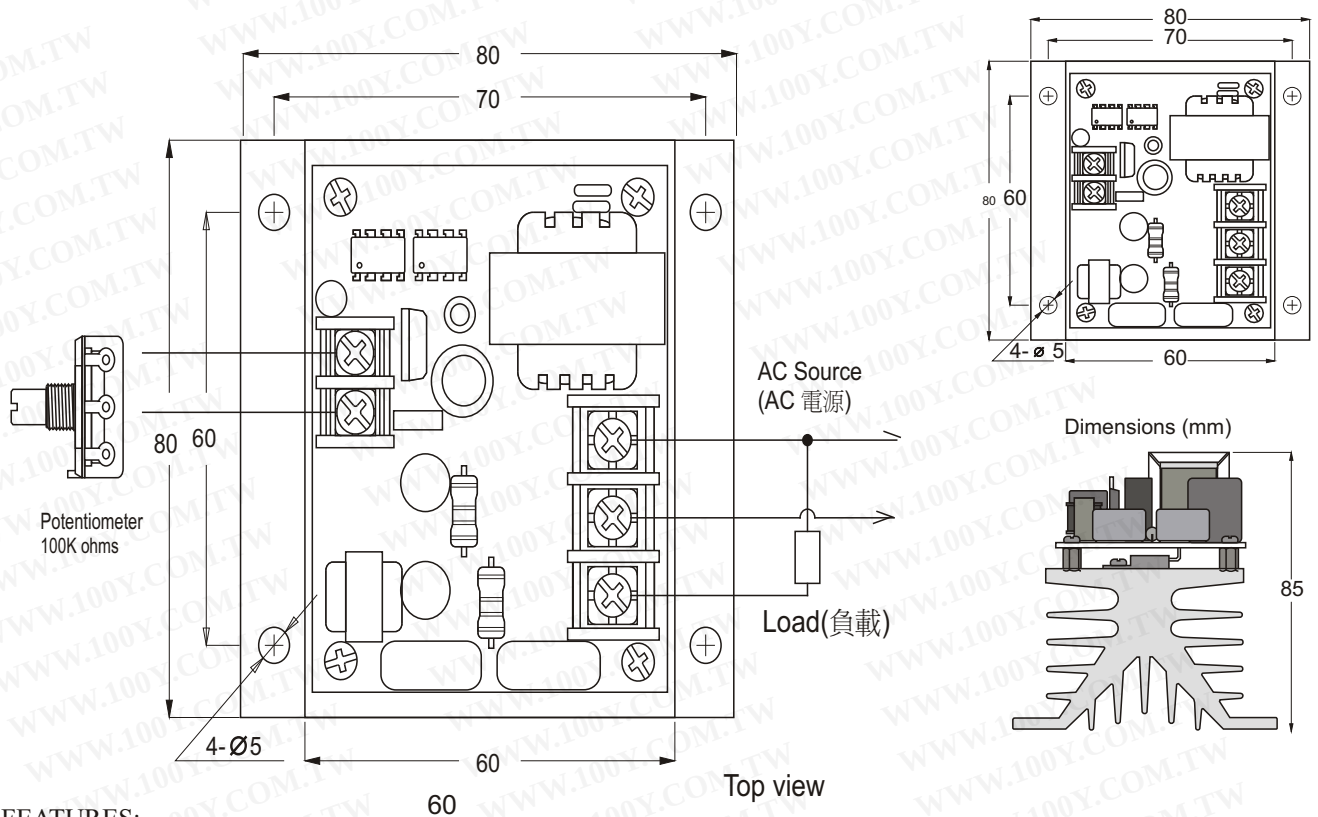
FEATURES:

1. All solid state.
2. Output provides excellent linearity.
3. Internally mounted snubber circuit protection for huge current (dv/dt) application.
4. A LED can indicate the operating of devices.
5. Long service life and high reliability.
6. Dual SCR AC Output can deliver higher surge current.



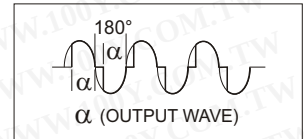
Data	Model	SCR3825	SCR3840	SCR4425	SCR4440	SCR4825	SCR4840
Input Specifications							
Control voltage range (VDC)	-						
Power adjust resistor	100 K-ohms (B type)						
Output Specifications							
Voltage range (VAC)	320-380 Vrms		380-440 Vrms		420-480 Vrms		
Maximum current (Arms)	25 A	40 A	25 A	40 A	25 A	40 A	
Max. 1-cycle surge (60Hz) / $I^2 t$ (t=8.3ms)As ²	350A / 1000A ² s	600A / 3000A ² s	350A / 1000A ² s	600A / 3000A ² s	350A / 1000A ² s	600A / 3000A ² s	
Applicable load	Resistance load						
Minimum load current	150 ma						
Output power range	5 - 97% (linear)						
General Characteristics							
Input to output isolation voltage	2500 Vrms						
Operating temperature	-20C to +55C						
Weight (approx.)	590 g						

AC SOLID STATE RELAY (Dual SCR)



FEATURES:

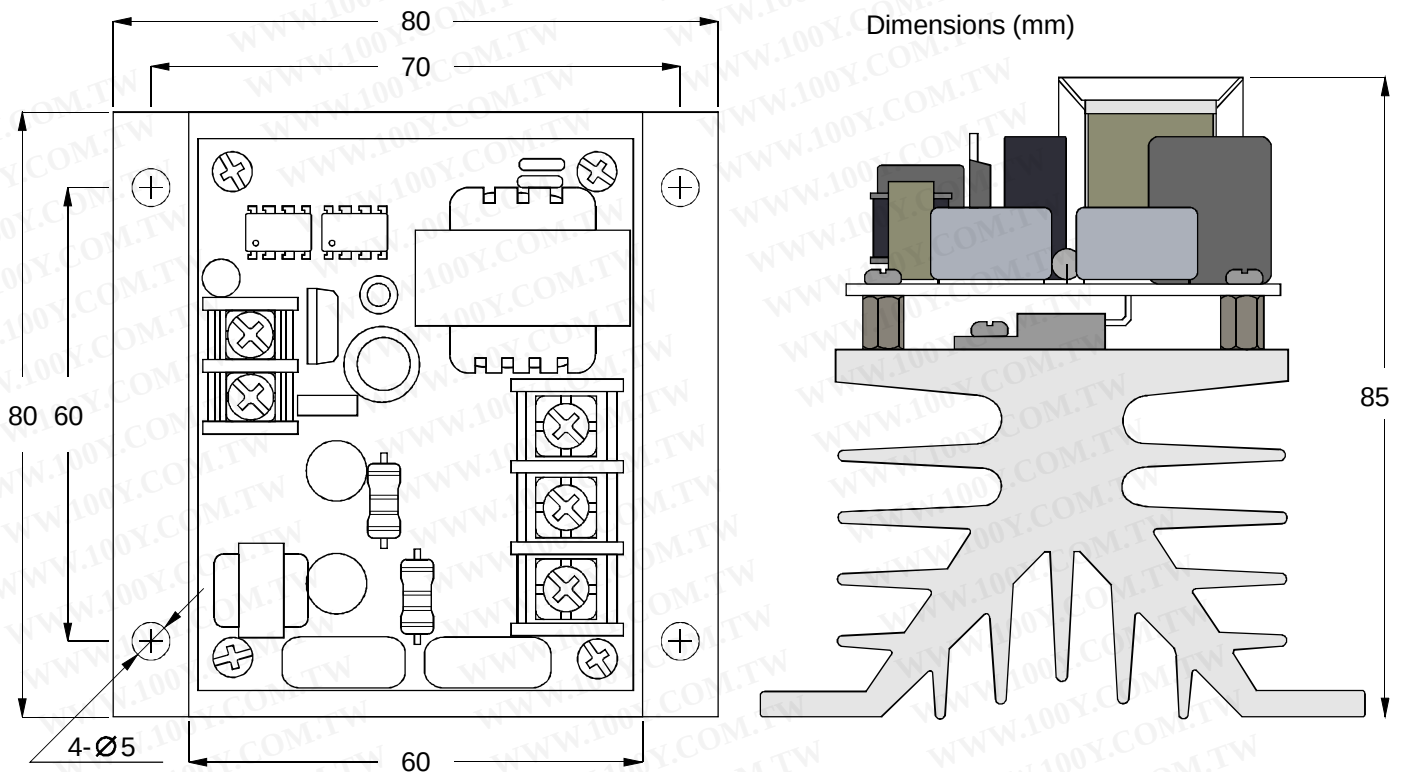
1. All solid state.
2. Output provides excellent linearity.
3. Internally mounted snubber circuit protection for huge current (dv/dt) application.
4. A LED can indicate the operating of devices.
5. Long service life and high reliability.
6. Dual SCR AC Output can deliver higher surge current.



Data	Model	SCR1225	SCR1240	SCR2425	SCR2440	SCR2625	SCR2640
Input Specifications							
Control voltage range (VDC)	-						
Power adjust resistor	100 K-ohms (B type)						
Output Specifications							
Voltage range (VAC)	320-380 Vrms		380-440 Vrms		420-480 Vrms		
Maximum current (Arms)	25 A	40 A	25 A	40 A	25 A	40 A	
Max.1-cycle surge (60Hz) / I^2t (t=8.3ms)A ² s	350A / 1000A ² s	600A / 3000A ² s	350A / 1000A ² s	600A / 3000A ² s	350A / 1000A ² s	600A / 3000A ² s	
Applicable load	Resistance load						
Minimum load current	150 ma						
Output power range	5 - 97% (linear)						
General Characteristics							
Input to output isolation voltage	2500 Vrms						
Operating temperature	-20°C to +55°C						
Weight (approx.)	590 g						

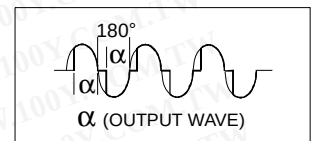
PHASE CONTROLLER

AC SOLID STATE RELAY



FEATURES:

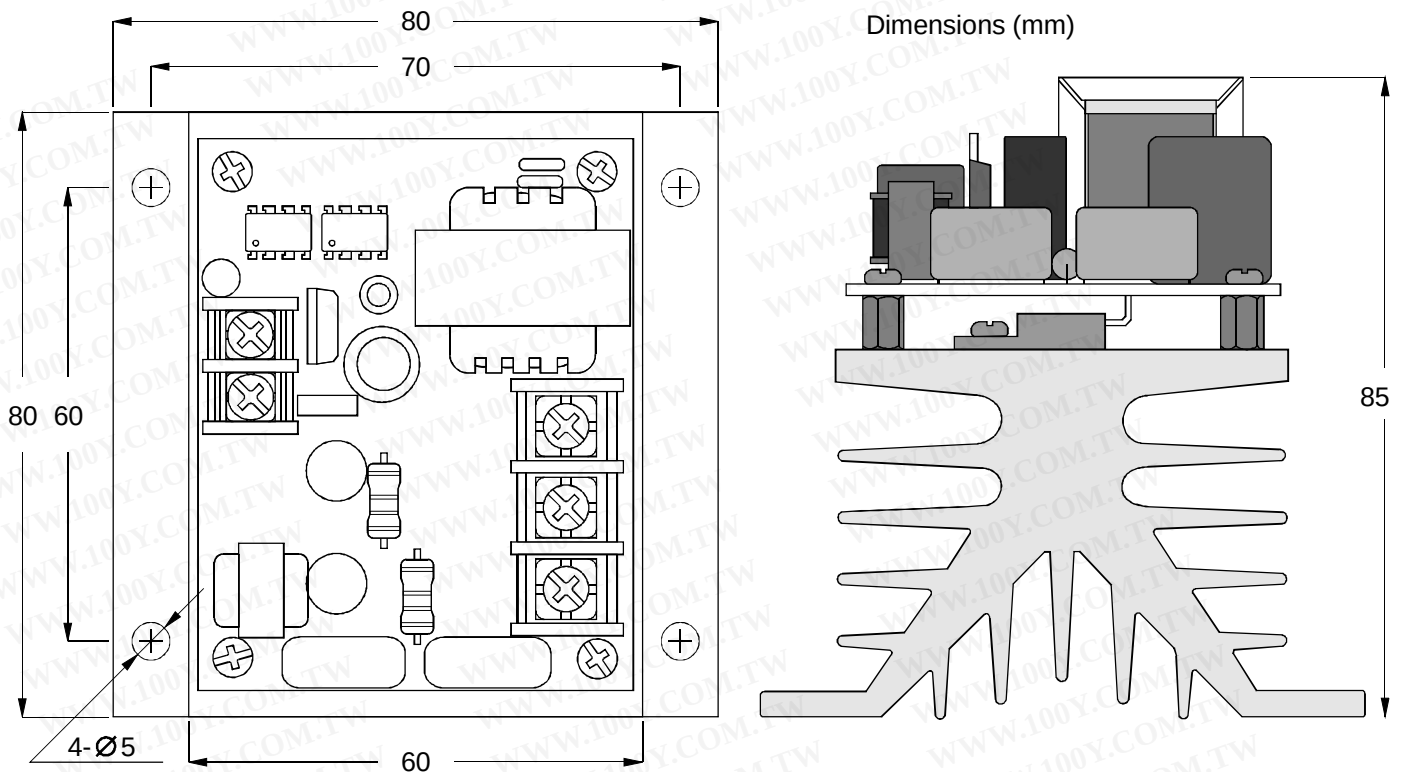
1. All solid state.
2. Output provides excellent linearity.
3. Internally mounted snubber circuit protection for huge current (dv/dt) application.
4. A LED can indicate the operating of devices.
5. Long service life and high reliability.



Data	Model	LSR1225	LSR1240	LSR2425	LSR2440	LSR2625	LSR2640
Input Specifications							
Control voltage range (VDC)	-						
Power adjust resistor	100 K-ohms (B type)						
Output Specifications							
Voltage range (VAC)	80-120 Vrms			180-240 Vrms		200-260 Vrms	
Maximum current (Arms)	25 A	40 A	25 A	40 A	25 A	40 A	
Max.1-cycle surge (60Hz) / I^2t (t=8.3ms) A^2s	250A / 400A ² s	400A / 664A ² s	250A / 400A ² s	400A / 664A ² s	250A / 400A ² s	400A / 664A ² s	
Applicable load	Resistance load						
Minimum load current	100 ma						
Output power range	5 - 97% (linear)						
General Characteristics							
Input to output isolation voltage	2500 Vrms						
Operating temperature	-20°C to +55°C						
Weight (approx.)	590 g						

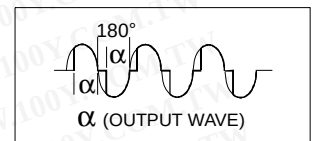
PHASE CONTROLLER

AC SOLID STATE RELAY



FEATURES:

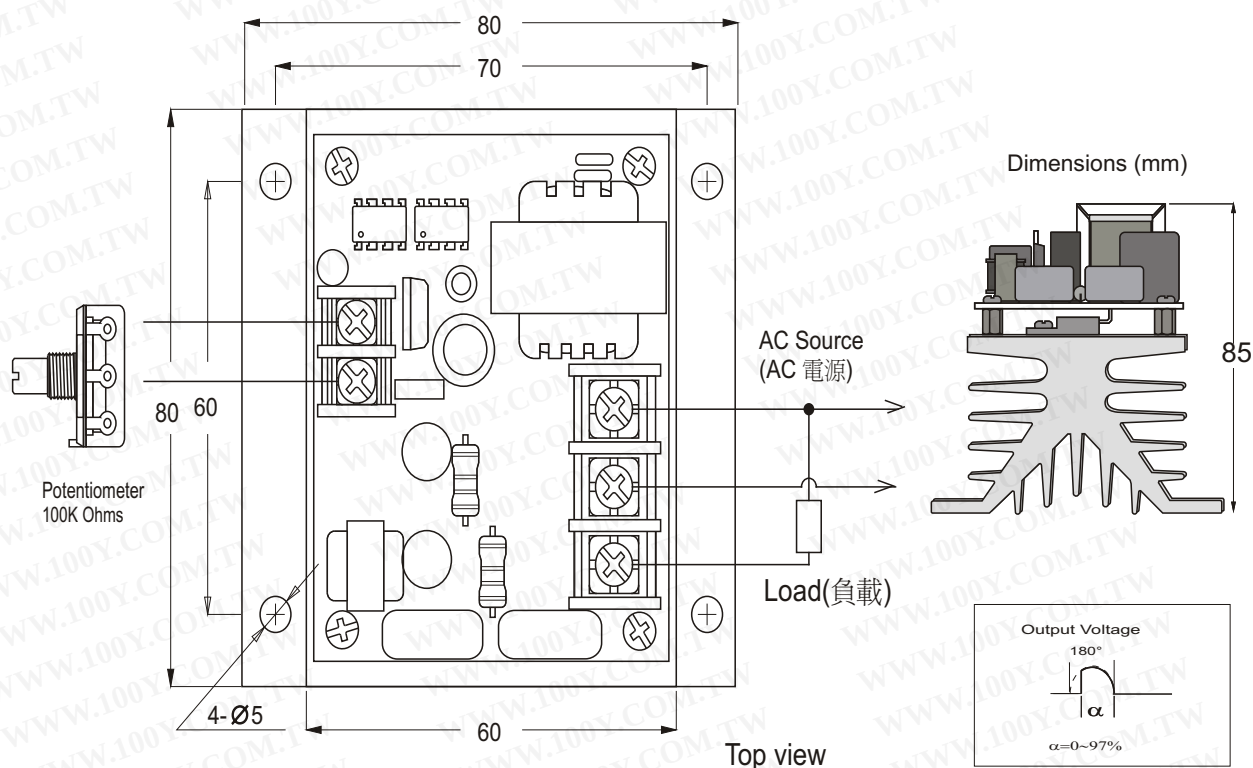
1. All solid state.
2. Output provides excellent linearity.
3. Internally mounted snubber circuit protection for huge current (dv/dt) application.
4. A LED can indicate the operating of devices.
5. Long service life and high reliability.



Data	Model	LSR3825	LSR3840	LSR4425	LSR4440	LSR4825	LSR4840
Input Specifications							
Control voltage range (VDC)	-						
Power adjust resistor	100 K-ohms (B type)						
Output Specifications							
Voltage range (VAC)	320-380 Vrms			380-440 Vrms		420-480 Vrms	
Maximum current (Arms)	25 A	40 A	25 A	40 A	25 A	40 A	
Max.1-cycle surge (60Hz) / I^2t (t=8.3ms) A^2s	250A / 664 A^2s	400A / 1120 A^2s	250A / 664 A^2s	400A / 1120 A^2s	250A / 664 A^2s	400A / 1120 A^2s	
Applicable load	Resistance load						
Minimum load current	100 ma						
Output power range	5 - 97% (linear)						
General Characteristics							
Input to output isolation voltage	2500 Vrms						
Operating temperature	-20°C to +55°C						
Weight (approx.)	590 g						

PHASE CONTROLLER

For Vibratory Feeder



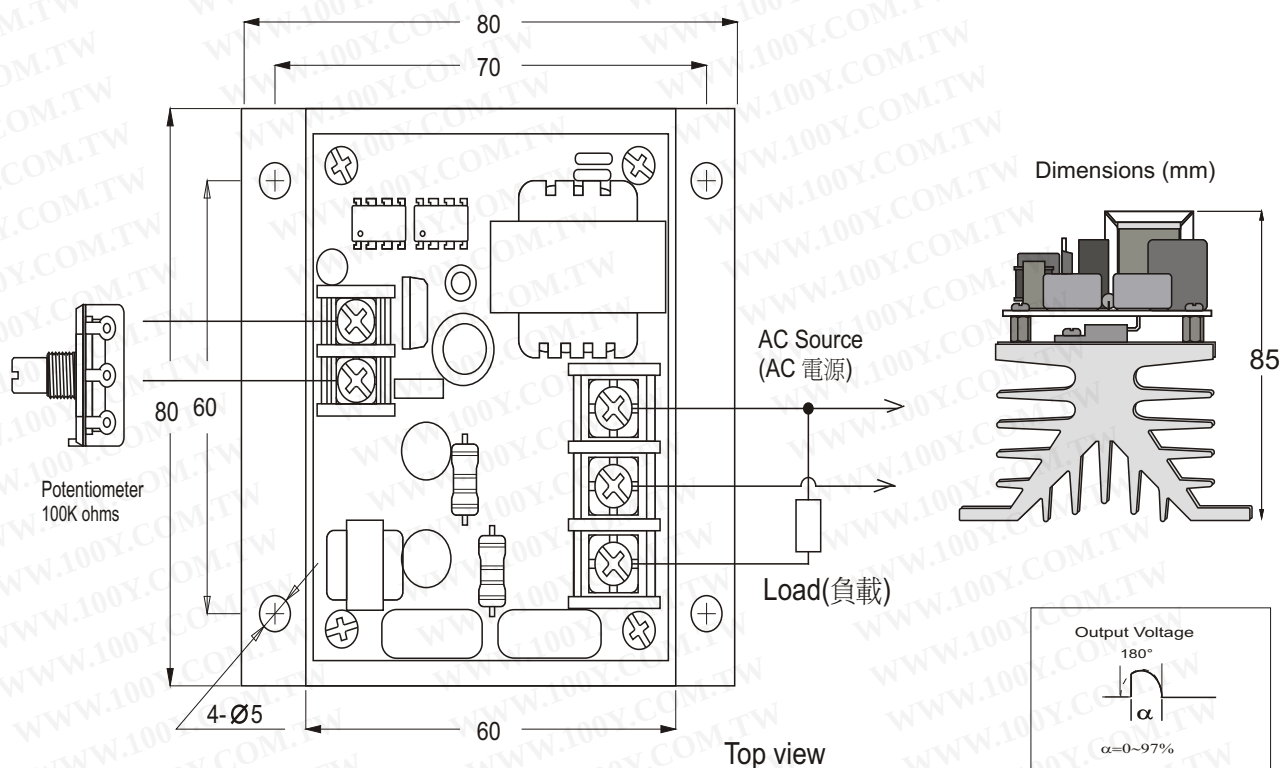
FEATURES:

1. All solid state.
2. Output provides excellent linearity.
3. Internally mounted snubber circuit protection for huge current (dv/dt) application.
4. A LED can indicate the operating of devices.
5. Long service life and high reliability.

Data	Model	CL2425	CL2440
Input Specifications			
Control voltage range (VDC)	-		
Power adjust resistor	100 K-Ohms (B type)		
Output Specifications			
Voltage range (VAC)	180-240 Vrms		
Maximum current (Arms)	25 A	40 A	
Max. 1/2-cycle surge (60Hz) / I_t^2 (t=8.3ms)As ²	250A / 400A ²	400A / 664A ²	
Applicable load	Vibrator Transformer		
Minimum load current	100 mA		
Output power range	0 - 97% (linear)		
General Characteristics			
Input to output isolation voltage	2500 Vrms		
Operating temperature	-20°C to +55°C		
Weight (approx.)	590 g		

PHASE CONTROLLER

For Vibratory Feeder



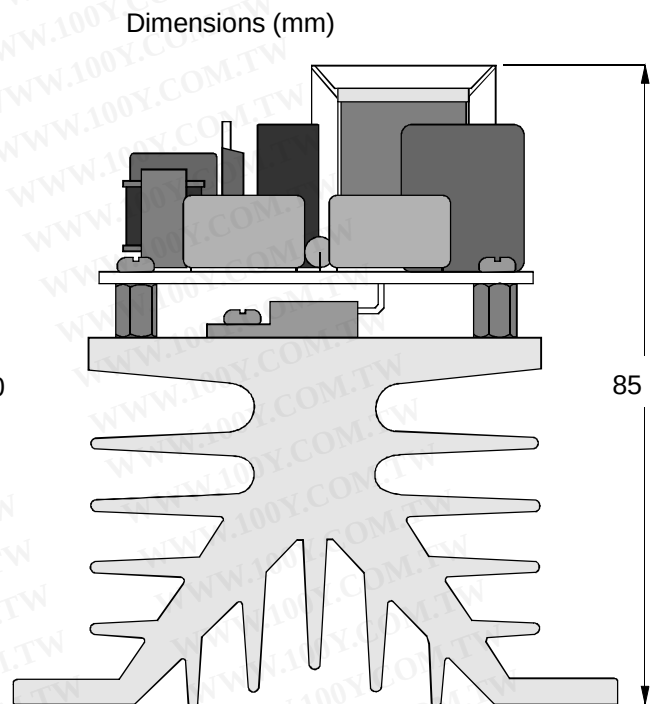
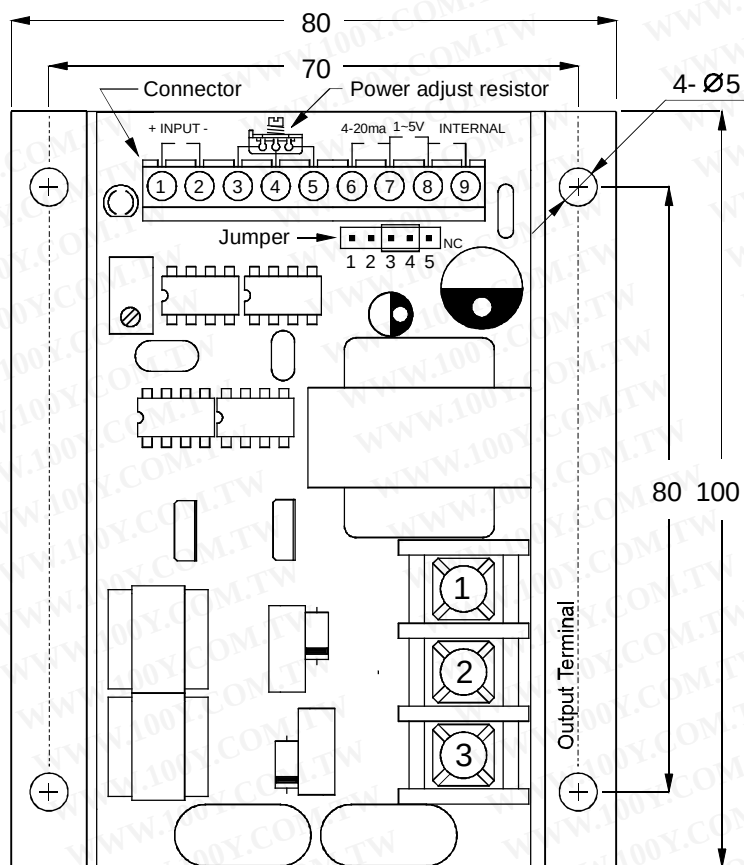
FEATURES:

1. All solid state.
2. Output provides excellent linearity.
3. Internally mounted snubber circuit protection for huge current (dv/dt) application.
4. A LED can indicate the operating of devices.
5. Long service life and high reliability.

Data	Model	CL4425	CL4440
Input Specifications			
Control voltage range (VDC)	-		
Power adjust resistor	100 K-Ohms (B type)		
Output Specifications			
Voltage range (VAC)	380-440 V rms		
Maximum current (Arms)	25 A	40 A	
Max. 1/2-cycle surge (60Hz) / I_t^2 (t=8.3ms)As ²	250A / 664A ²	400A / 1120A ²	
Applicable load	Vibrator Transformer		
Minimum load current	100 mA		
Output power range	0 - 97% (linear)		
General Characteristics			
Input to output isolation voltage	2500 Vrms		
Operating temperature	-20°C to +55°C		
Weight (approx.)	590 g		

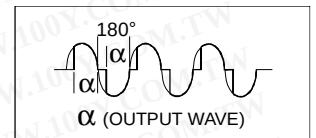
PHASE CONTROLLER

AC SOLID STATE RELAY



Input	PIN	Connector				Jumper			
		1-2	6-7	7-8	8-9	1-2	2-3	3-4	4-5
4-20ma (PID)	Input	ON	-	-	-	-	-	-	ON
1-5VDC (PID)	Input	-	ON	-	-	-	-	-	ON
10-24VDC (ON-OFF)	Input	-	-	-	-	ON	-	-	-
Internal control	N.C.	-	-	ON	-	-	-	ON	-

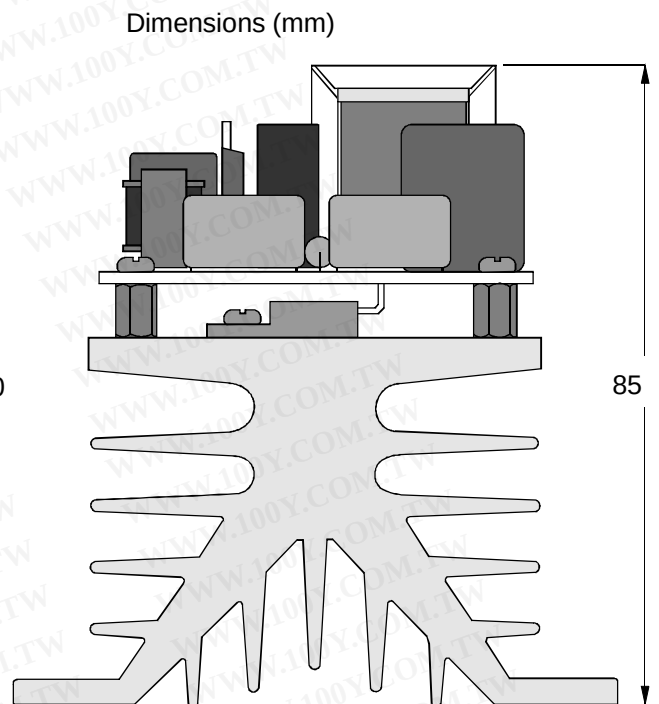
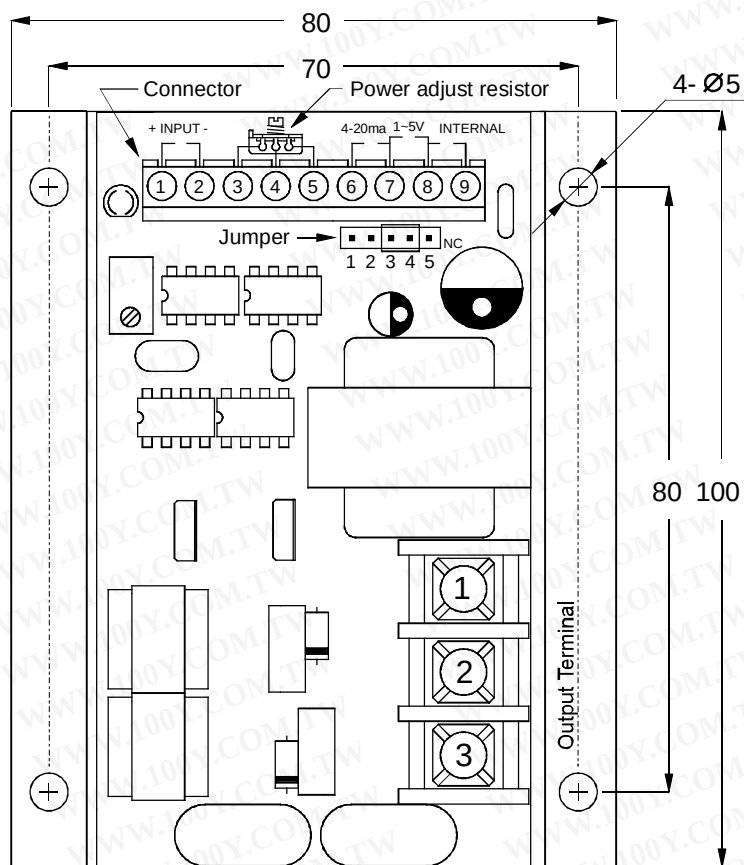
☐ ON Input select by Connector
☒ ON Input select by Jumper
 Output Terminal 1-2 (AC Source)
 Output Terminal 1-3 (Load)



Data	Model	LSA1225	LSA1240	LSA2425	LSA2440	LSA2625	LSA2640
Input Specifications							
Control Input (VDC)	4-20ma (Analog), 1-5VDC (Analog), 5-24VDC (ON-OFF), External potentiometer,on-board potentiometer						
Power adjust resistor	10 K-ohms (B type)						
Output Specifications							
Voltage range (VAC)	80-120 Vrms			180-240 Vrms		200-260 Vrms	
Maximum current (Arms)	25 A	40 A	25 A	40 A	25 A	40 A	
Max.1-cycle surge (60Hz) / I ² t (t=8.3ms)A ² s	250A / 400A ² s	400A / 664A ² s	250A / 400A ² s	400A / 664A ² s	250A / 400A ² s	400A / 664A ² s	
Applicable load	Resistance load						
Minimum load current	100 ma						
Output power range	0 - 97% (linear)						
General Characteristics							
Input to output isolation voltage	2500 Vrms						
Operating temperature	-20°C to +55°C						
Weight (approx.)	590 g						

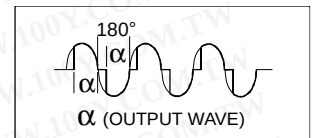
PHASE CONTROLLER

AC SOLID STATE RELAY



Input	PIN	Connector				Jumper			
		1-2	6-7	7-8	8-9	1-2	2-3	3-4	4-5
4-20ma (PID)	Input	ON	-	-	-	-	-	-	ON
1-5VDC (PID)	Input	-	ON	-	-	-	-	-	ON
10-24VDC (ON-OFF)	Input	-	-	-	-	ON	-	-	-
Internal control	N.C.	-	-	ON	-	-	-	ON	-

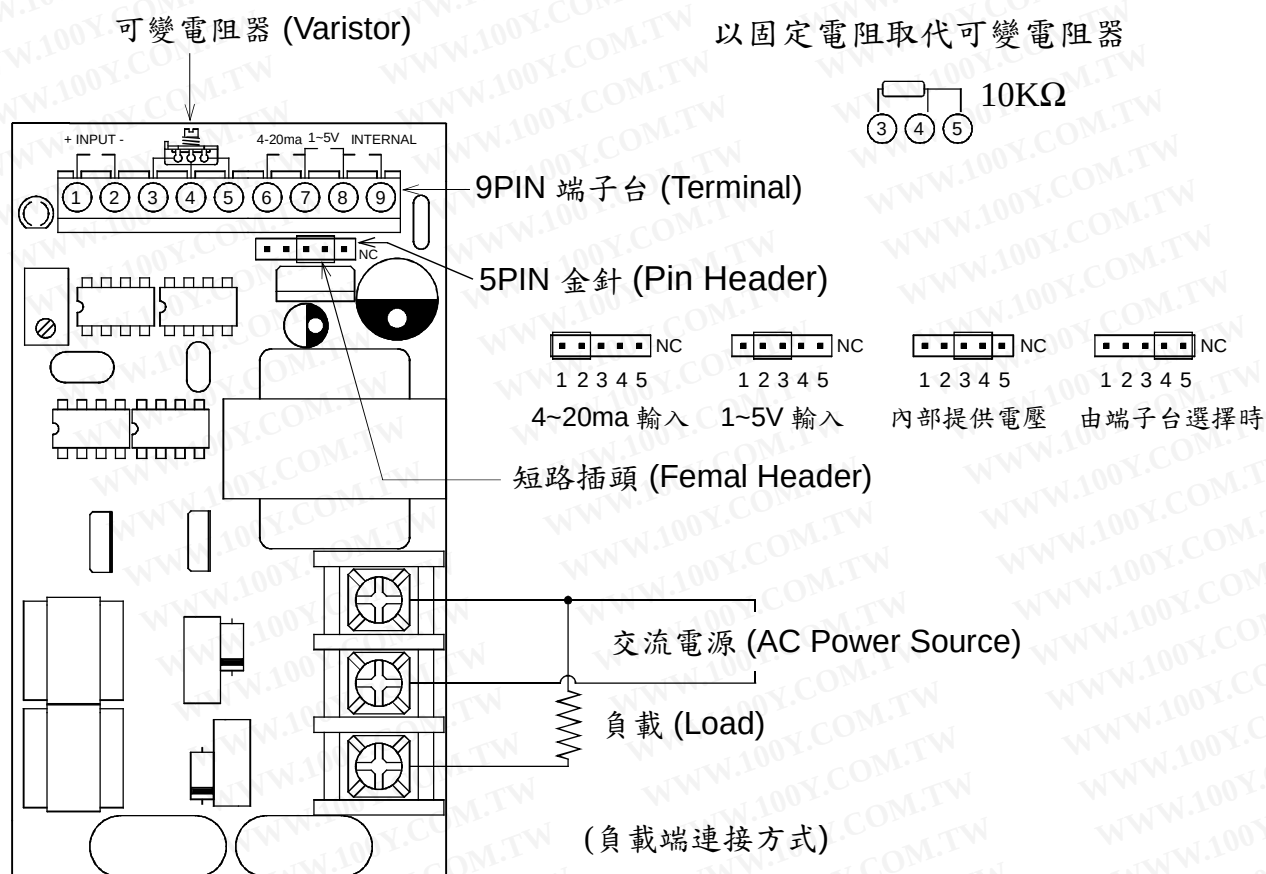
☐ ON Input select by Connector
☒ ON Input select by Jumper
 Output Terminal 1-2 (AC Source)
 Output Terminal 1-3 (Load)



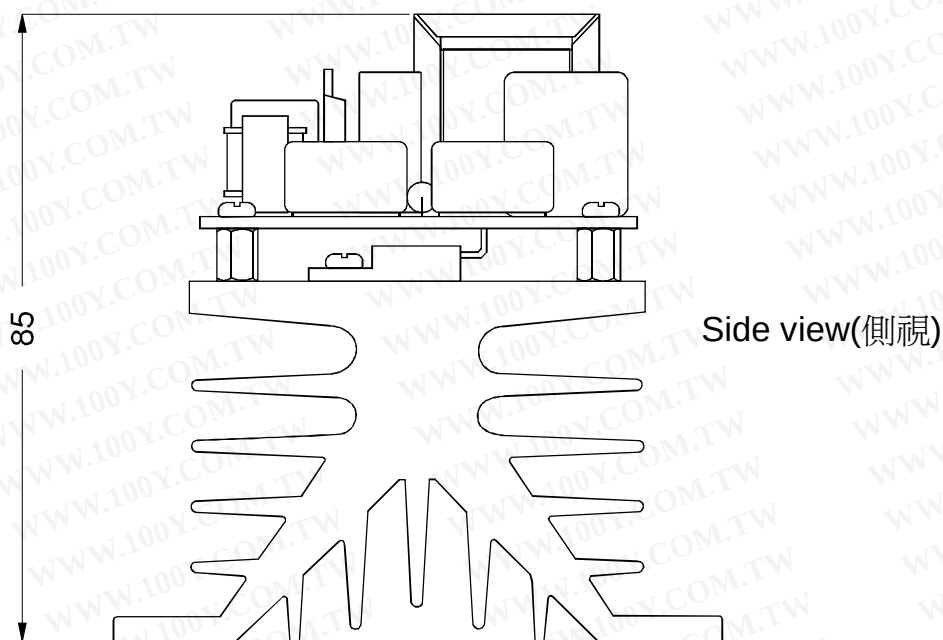
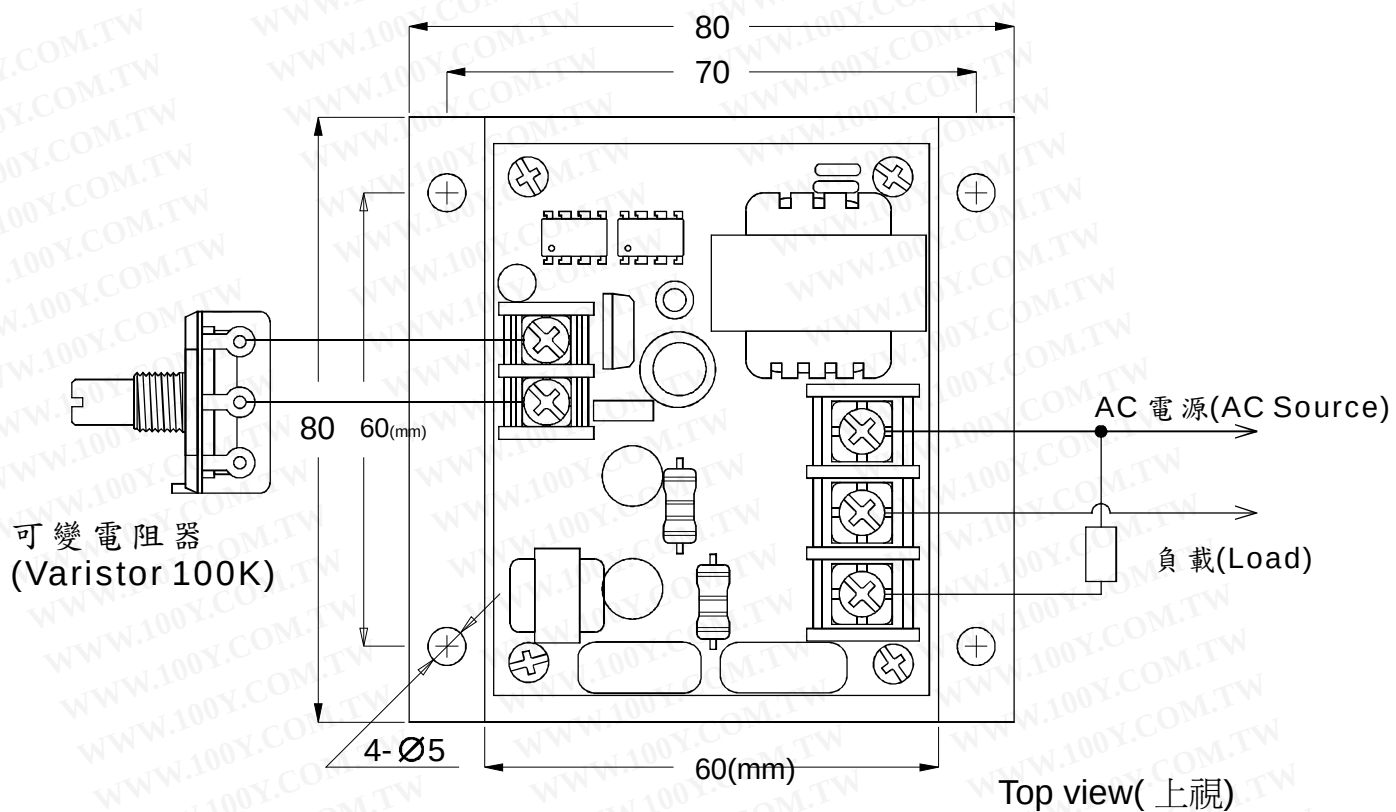
Data	Model	LSA3825	LSA3840	LSA4425	LSA4440	LSA4825	LSA4840
Input Specifications							
Control Input (VDC)	4-20ma (Analog), 1~5VDC (Analog), 5-24VDC (ON-OFF), External potentiometer,on-board potentiometer						
Power adjust resistor	10 K-ohms (B type)						
Output Specifications							
Voltage range (VAC)	320-380 Vrms		380-440 Vrms		420-480 Vrms		
Maximum current (Arms)	25 A	40 A	25 A	40 A	25 A	40 A	
Max.1-cycle surge (60Hz) / I^2t (t=8.3ms) A^2s	250A / 664 A^2s	400A / 1120 A^2s	250A / 664 A^2s	400A / 1120 A^2s	250A / 664 A^2s	400A / 1120 A^2s	
Applicable load	Resistance load						
Minimum load current	100 ma						
Output power range	0 - 97% (linear)						
General Characteristics							
Input to output isolation voltage	2500 Vrms						
Operating temperature	-20℃ to +55℃						
Weight (approx.)	590 g						

PID 輸入式相位切割電力調整器使用及配線

1. 下圖 9PIN綠色端子台 1-2PIN 為控制訊號輸入端. 極性 1 為正, 2 為負.
2. PIN 3-4-5 接可變電阻器.(依照圖的方向)
3. PIN 6-7 短路為接受 4~20ma 輸入控制訊號的功能. 此時 1-2 PIN 的訊號必須為 4~20ma 的訊號.
4. PIN 7-8 短路為接受 1~5V 輸入控制訊號的功能. 此時 1-2 PIN 的訊號必須為 1~5V 的訊號.
5. PIN 8-9 短路為由內部提供輸入控制訊號的功能.此時 1-2 PIN 不必接輸入控制電壓.
6. 5PIN 的金針 1-2-3-4 對應 9PIN 端子台的 6-7-8-9 如果使用端子台, 請將 5PIN 金針的短路插頭插在 4-5 的位置. (取消 5PIN 金針的作用)
7. 如果使用 5PIN 金針作輸入訊號的選擇, 則 9PIN 端子台的 6-7-8-9 就不能接線, 否則會衝突.
8. 如果不使用可變電阻器則必須以一個固定電阻取代, 其連接方式請參看右圖.
9. 如需用2~10V輸入控制訊號的功能, 本公司可另行訂做。

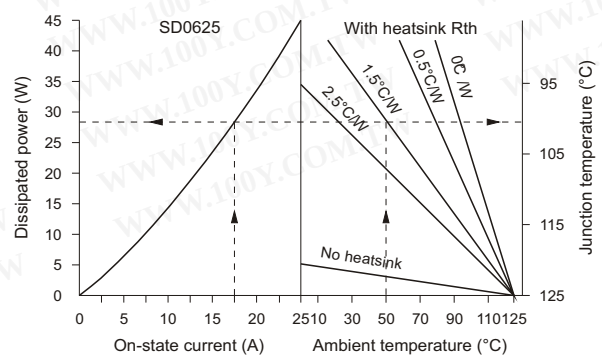
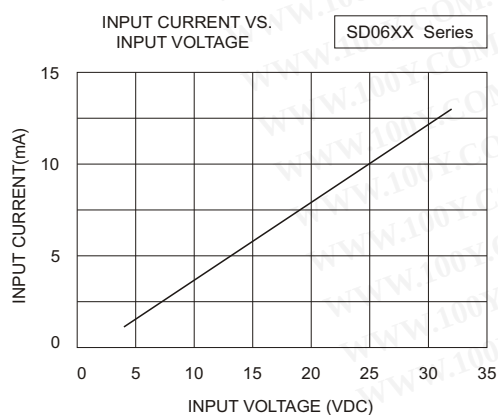
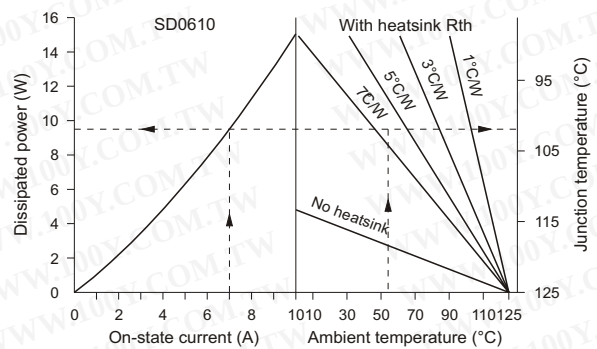
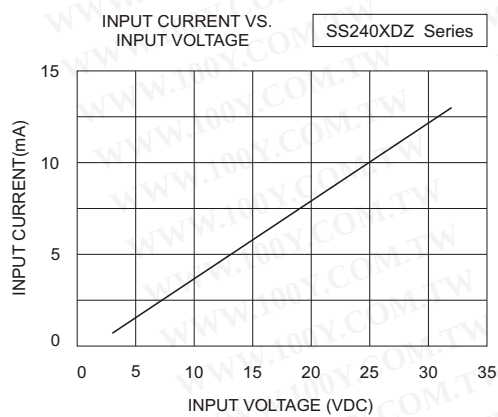
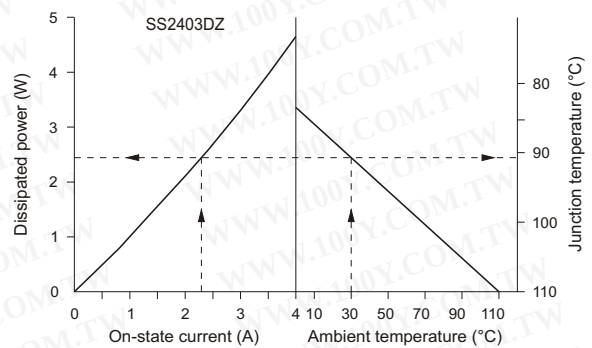
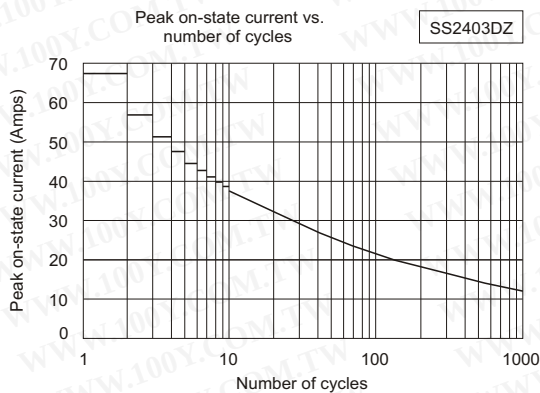
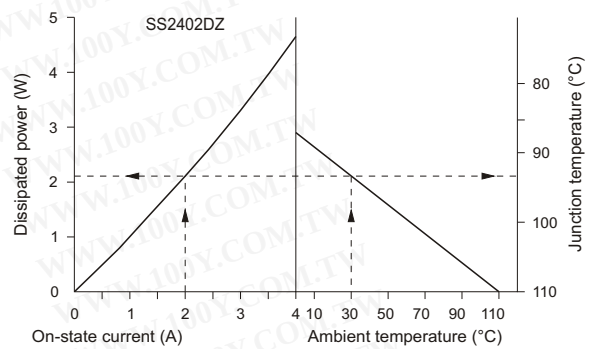
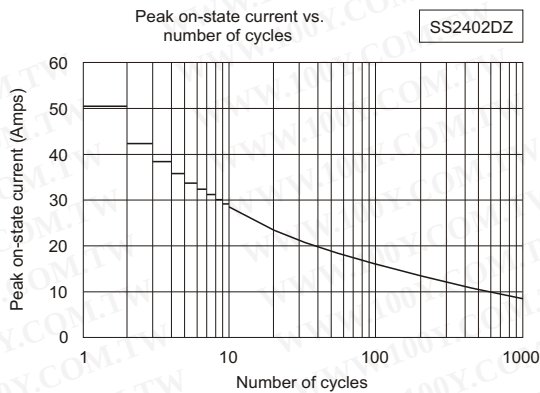


LSR配線及孔位圖

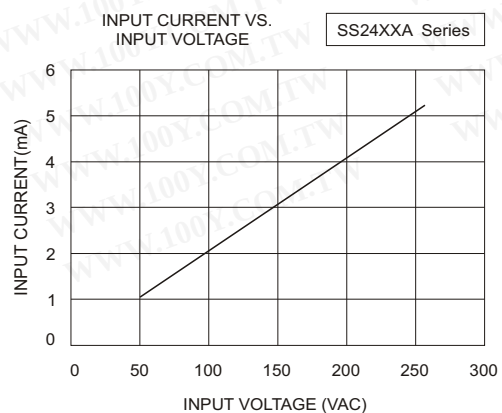
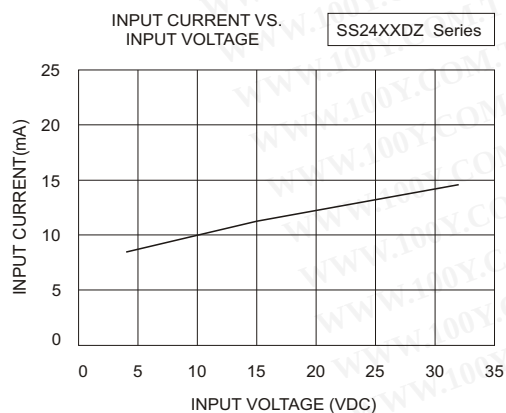
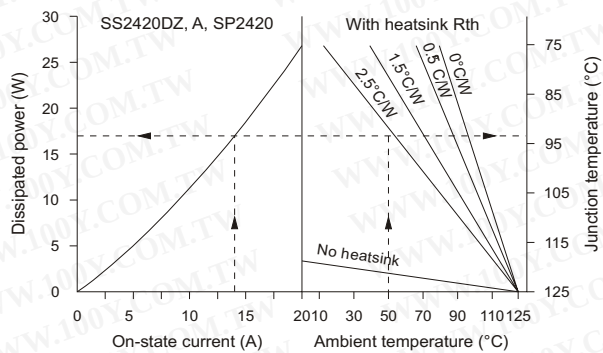
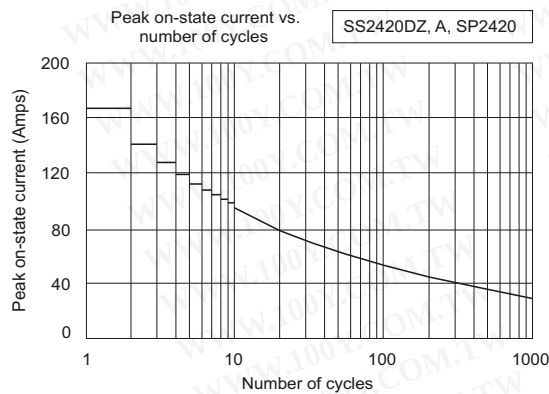
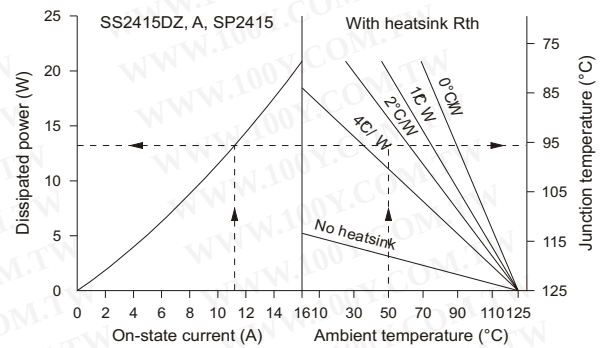
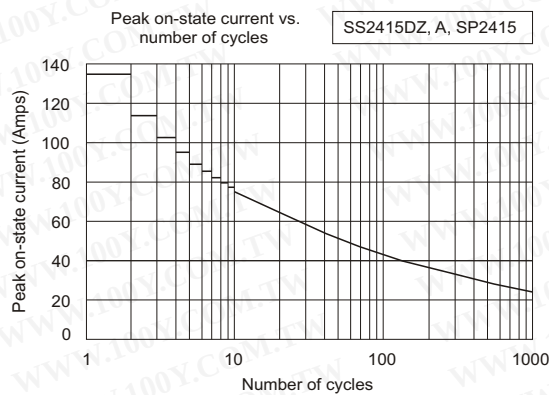
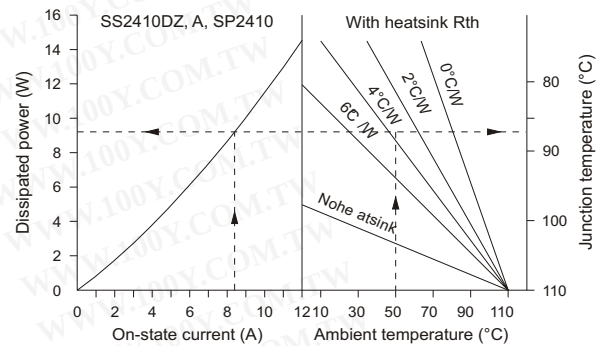
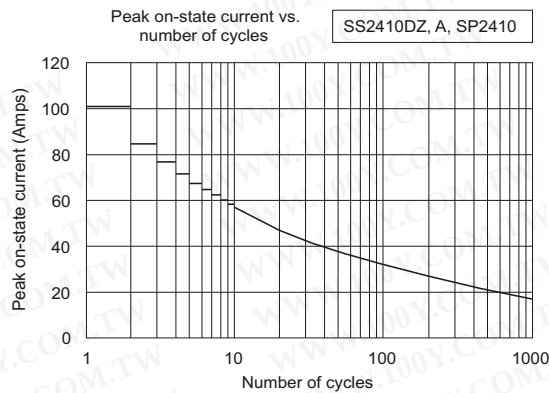


外觀尺寸 & 配線圖(單位mm)

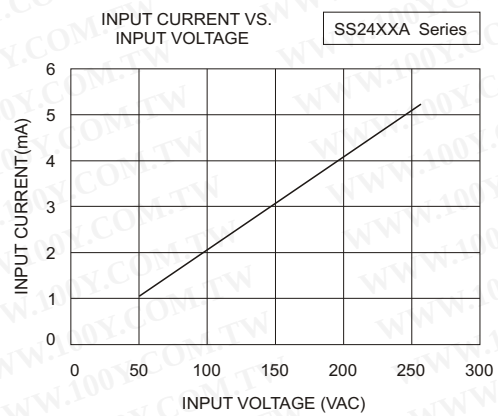
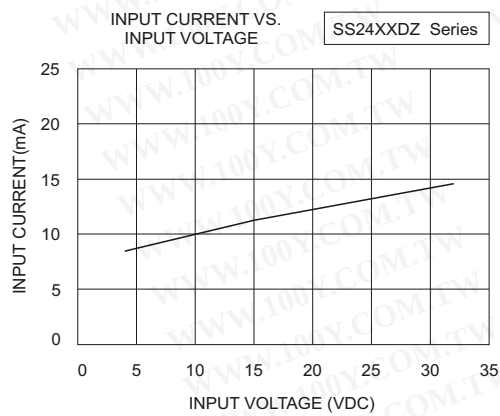
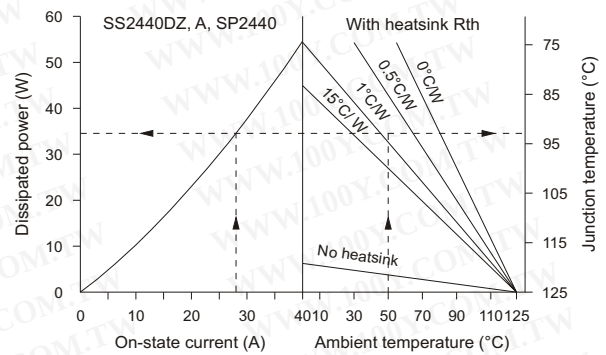
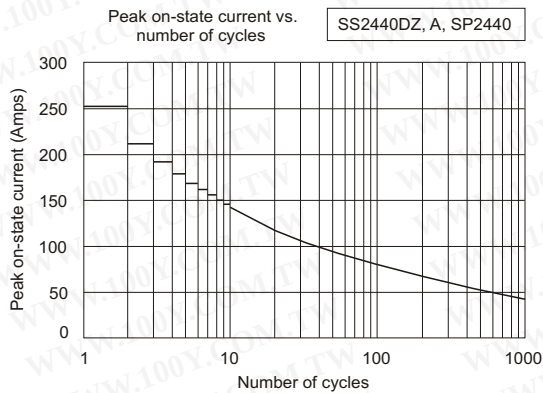
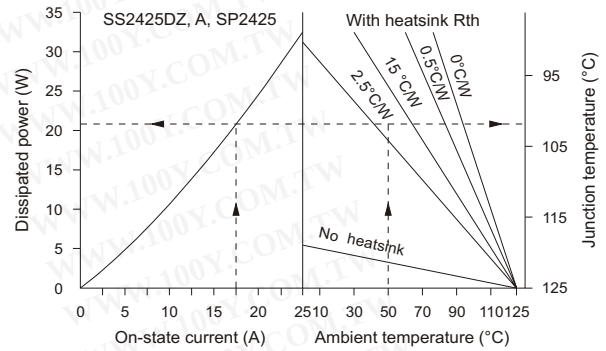
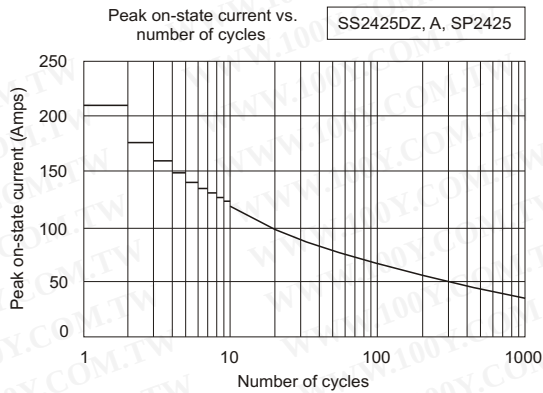
CHARACTERISTIC CURVES



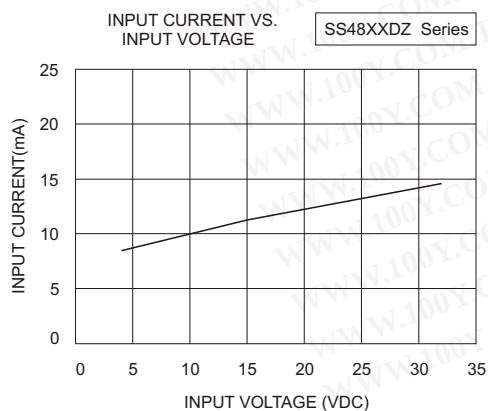
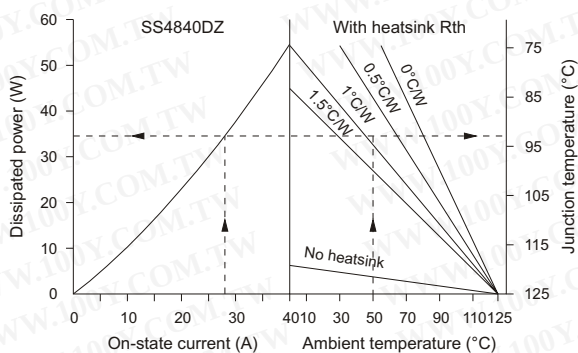
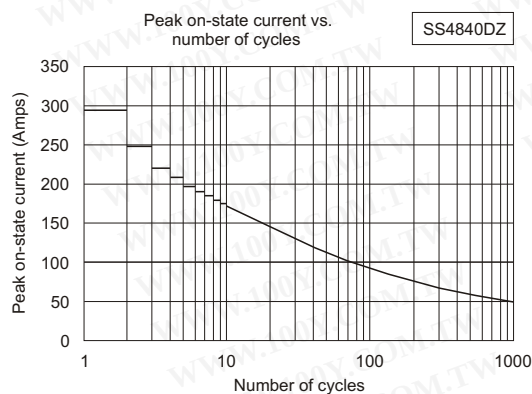
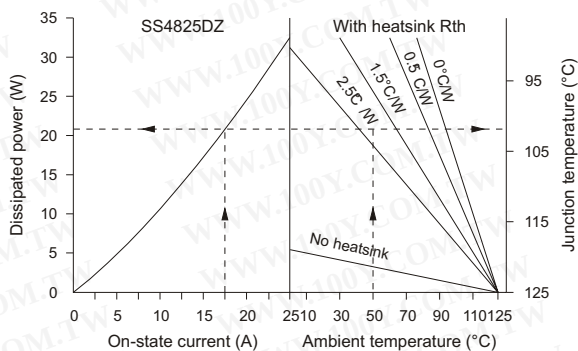
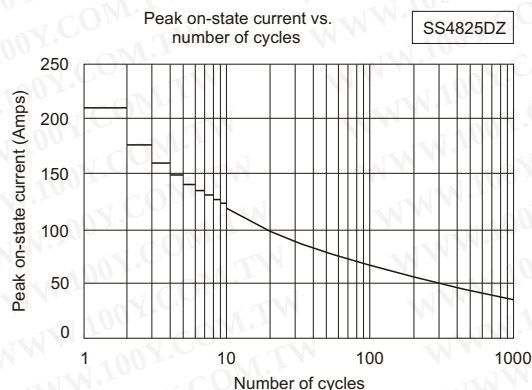
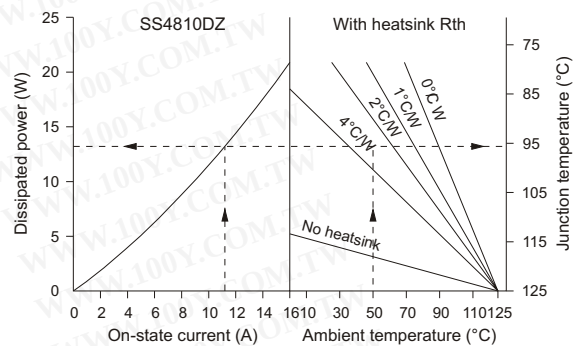
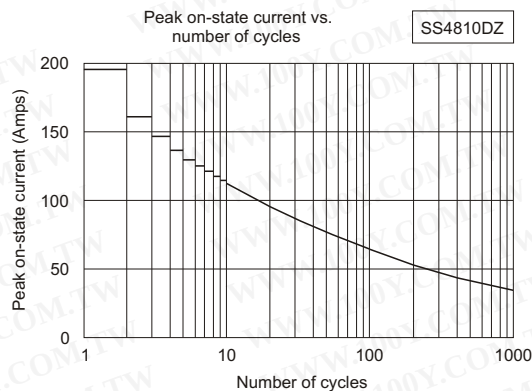
CHARACTERISTIC CURVES



CHARACTERISTIC CURVES

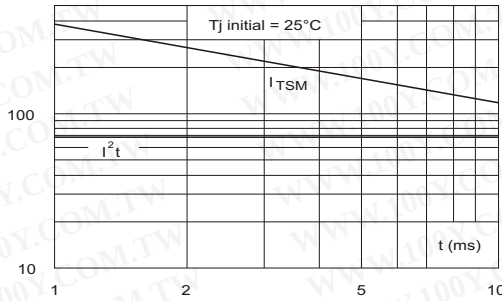


CHARACTERISTIC CURVES



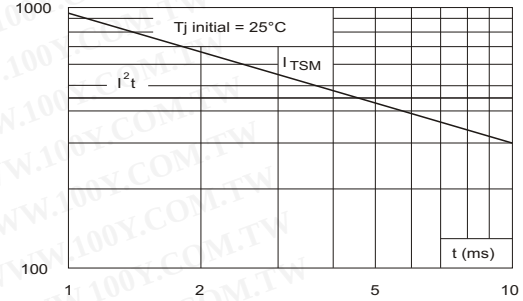
CHARACTERISTIC CURVES

$I_{TSM}(A)$, $I t^2(A S^2)$ SS2410DZ, A, SP2410



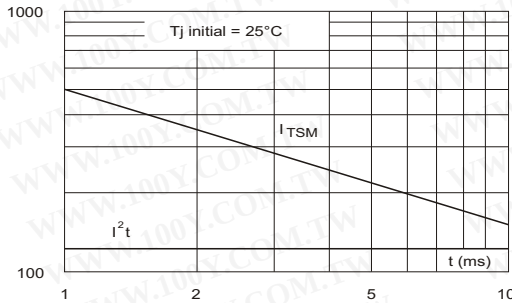
Non repetitive surge peak on-state current for a sinusoidal pulse with : $t \leq 10$ ms, and corresponding value of $I t^2$.

$I_{TSM}(A)$, $I t^2(A S^2)$ SS2440DZ, A, SP2440



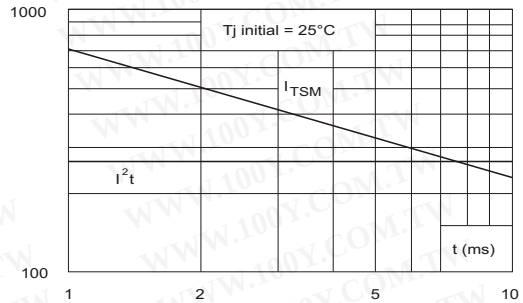
Non repetitive surge peak on-state current for a sinusoidal pulse with : $t \leq 10$ ms, and corresponding value of $I t^2$.

$I_{TSM}(A)$, $I t^2(A S^2)$ SS2415DZ, A, SP2415



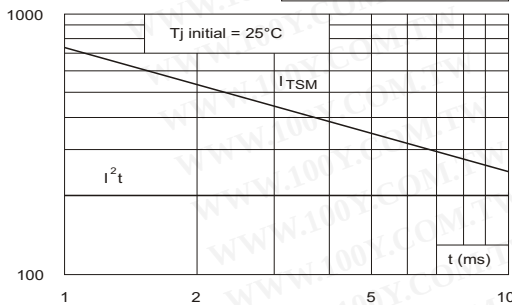
Non repetitive surge peak on-state current for a sinusoidal pulse with : $t \leq 10$ ms, and corresponding value of $I t^2$.

$I_{TSM}(A)$, $I t^2(A S^2)$ SS4810DZ



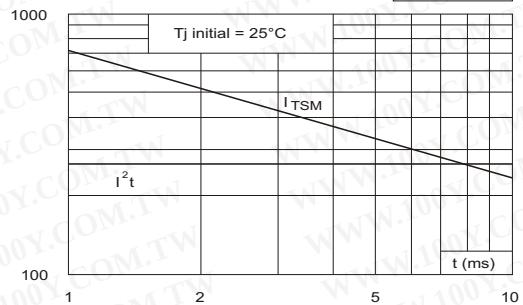
Non repetitive surge peak on-state current for a sinusoidal pulse with : $t \leq 10$ ms, and corresponding value of $I t^2$.

$I_{TSM}(A)$, $I t^2(A S^2)$ SS2420DZ, A, SP2420



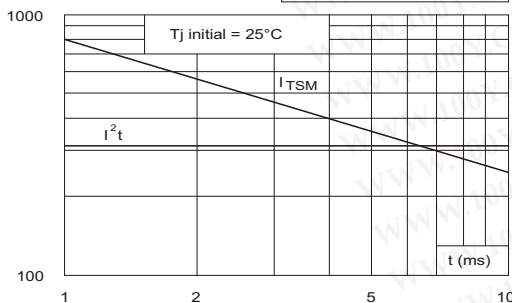
Non repetitive surge peak on-state current for a sinusoidal pulse with : $t \leq 10$ ms, and corresponding value of $I t^2$.

$I_{TSM}(A)$, $I t^2(A S^2)$ SS4825DZ



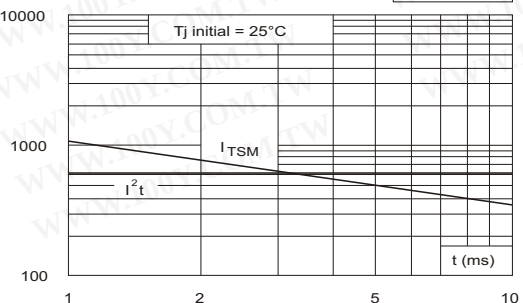
Non repetitive surge peak on-state current for a sinusoidal pulse with : $t \leq 10$ ms, and corresponding value of $I t^2$.

$I_{TSM}(A)$, $I t^2(A S^2)$ SS2425DZ, A, SP2425



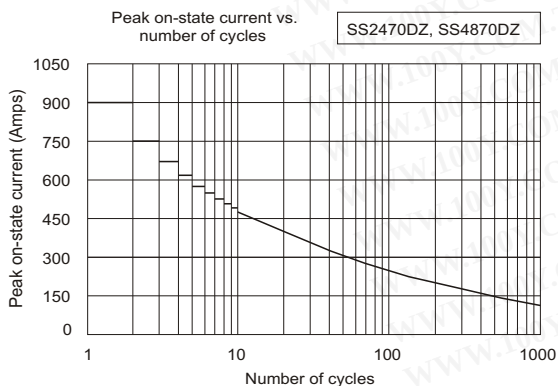
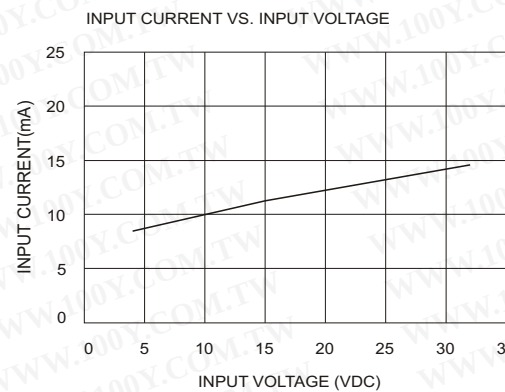
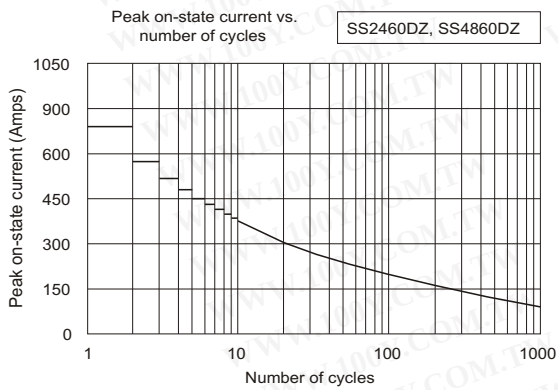
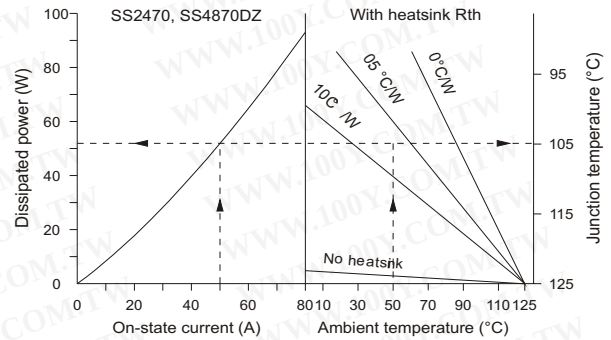
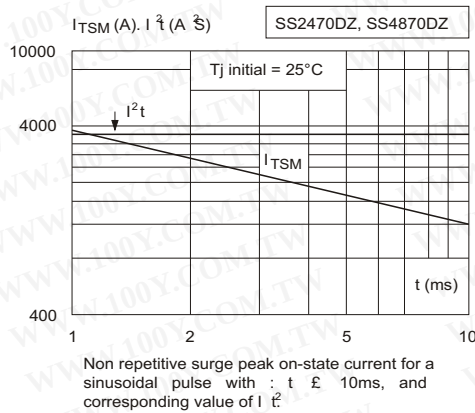
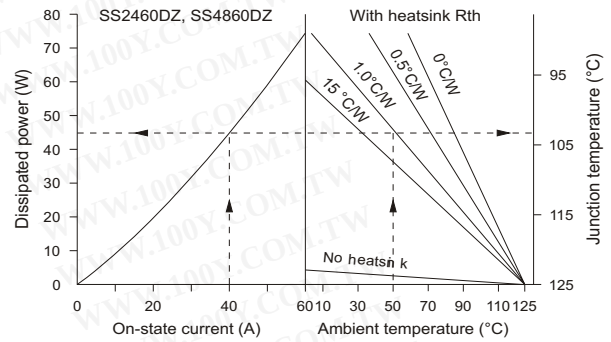
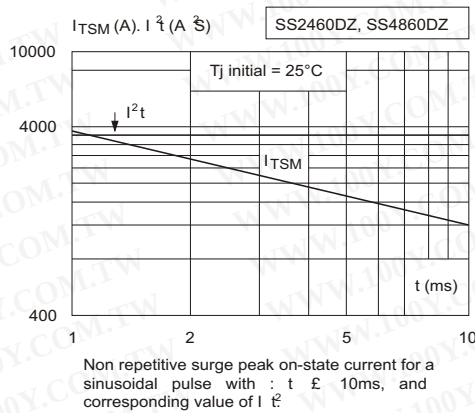
Non repetitive surge peak on-state current for a sinusoidal pulse with : $t \leq 10$ ms, and corresponding value of $I t^2$.

$I_{TSM}(A)$, $I t^2(A S^2)$ SS4840DZ



Non repetitive surge peak on-state current for a sinusoidal pulse with : $t \leq 10$ ms, and corresponding value of $I t^2$.

CHARACTERISTIC CURVES



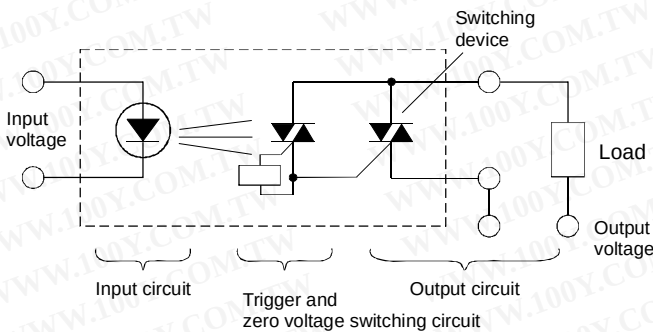
1 - Inside of SSR

Solid state relay are device which can be used to switch high loads (up to 100 A) by solid state way, i.e. without the use of moving parts.

Among the advantages of solid state relays are these:

- a long working life
- power circuits can be controlled by low-level signals
- high switching rates are possible
- no noise
- good resistance to vibration
- high loads can be switched
- electromagnetic interference is cut down.

The parts of a solid state relay are as shown below:



Input circuit

Provides the input signal and switches the output circuit. Particularly with zero voltage turn-on (see below for explanation), it is this circuit which ensures that switching takes place at the next voltage zero.

Output circuit

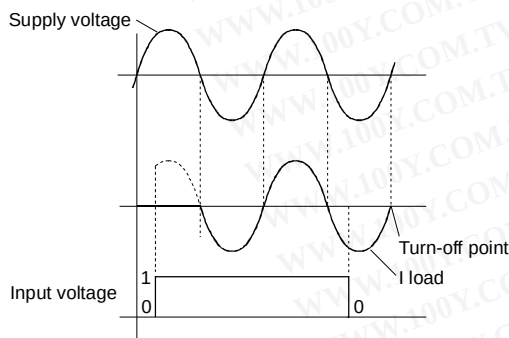
Here is the power switching device. This may be either a Triac or back-to-back SCR's. For switching DC loads, the switching device is transistor.

2 - Different switching (DZ v.s. DR)

Solid state relays have two types of switching. :

Zero-cross switching (DZ)

In DZ model, switching takes place when the voltage in the load passes through zero. The diagram below shows the relationship between input and output.



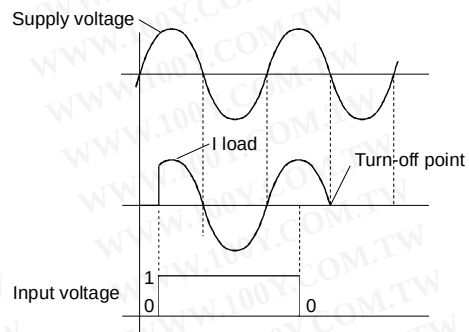
The benefit of this mode of switching is that the voltage is applied to the load terminals smoothly. it is suitable for resistive loads (lamps, resistance heaters) and for lamps in particular it allows life to be extended.

This mode of switching is also suitable for capacitive loads.

Under no circumstances should this mode of switching be used in applications where the power factor is < 0.5 .

Random switching (DR)

In DR model, the output is active right after the control signal is applied. The diagram below shows the relationship between input and output.



This mode of switching is particularly suitable for inductive loads (motors, etc.).

3 - Protective arrangements

RC filter

RC filter limits voltage changes at the terminals of the switching device. In this way, rush voltage variations on the supply are reduced to prevent the switching device is false-triggered.

All our solid state relays have built-in RC filter.

Varistor

Provides protection for the Triac or SCR against transient high voltage.

All our solid state relays have built-in varistor.

Fuses

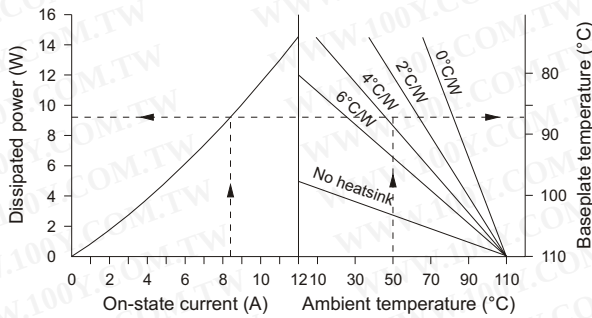
It is important to choose right fuses for protecting solid state relays. We recommend using quick-blow fuses. The I^2t of the SSR is shown in the datasheet and you should select a fuse whose I^2t is lower than SSR.

4 - Cooling

The temperature rises in solid state relays may be high and it is therefore important for them to be adequately heatsinked.

For each relay we give curves for heatsink selection.

Using the curves:



1 - From the know on-state current on the x-axis, draw a vertical line to the power dissipation curve. From the intersection with the curve, read off the power dissipated from the left-hand y-axis.

2 - From the point on the left-hand y-axis, draw a horizontal line across to the right-hand y-axis.

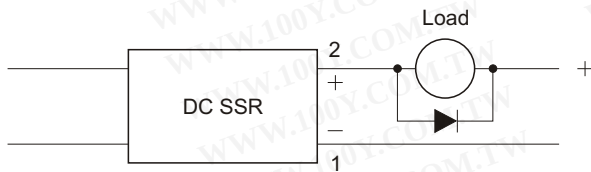
3 - From the know ambient temperature on the x-axis, draw a vertical line to the point where this line intersects with the horizontal line draw previously. Select a heatsink whose thermal resistance is in the part of the graph above the point of intersection (shown hatched).

Example: For an on-state current of 9A and an ambient temperature of 30°C, the heatsink selected should have a thermal resistance of less than 7°C.

5 - Application tips

Controlling DC loads

Where inductive DC loads are begin controlled, it is advisable to connect a diode in parallel with the load:



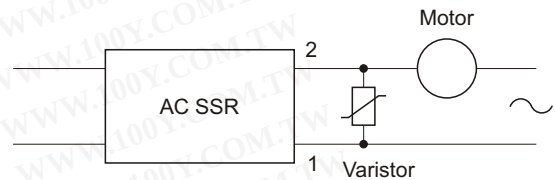
勝特力材料 86-3-5753170
勝特力电子(上海) 86-21-34970699
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Controlling motors

Check that the starting current drawn by the motor is less than the maximum on-state current quoted (10-40A).

For each relay we give curves for heatsink selection.

Fit an external varistor if the overvoltages likely to occur are high.



Protect relays with quick-blow fuses suited to the I^2t 's quoted for the relays.