

# XL-25 陶瓷散熱片 Ceramic Heat Spreader



## 產品特性 Features

- Open porous structure increases air contact area  
開放性多孔結構增加接觸空氣面積
- Low mass decreases space 體積輕薄，減低安裝空間
- High voltage breakdown/ high resistance 高耐電壓及高表面阻抗
- Easy to assemble 容易施工
- Good thermal conduction/ Low thermal expansion coefficient  
導熱性能佳/低熱膨脹係數
- EMI reduction 降低電磁干擾
- High reliability 冷熱衝擊性佳，可適應環境劇烈變動

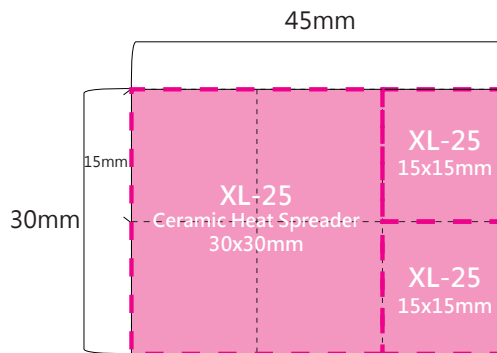
## 產品應用端 Applications

LED, Notebook, PC, M/B, Power Transistor, Power Module, CPU, Chip IC.....etc

## 選擇尺寸 Standard Sizes (mm)

- |                        |                        |
|------------------------|------------------------|
| 01. 10x10x2.0(平板/flat) | 08. 30x30x2.5(平板/flat) |
| 02. 15x15x2.0(平板/flat) | 09. 40x40x2.0(平板/flat) |
| 03. 15x15x2.5(平板/flat) | 10. 40x40x2.5(平板/flat) |
| 04. 20x15x2.0(平板/flat) | 11. 40x40x3.0(凸點/dot)  |
| 05. 20x20x2.0(平板/flat) | 12. 25x25x5.0(鱸片/fin)  |
| 06. 20x20x2.5(平板/flat) | 13. 38x38x11.5(鱸片/fin) |
| 07. 30x30x2.0(平板/flat) | 14. 50x50x3.0(凸點/dot)  |

## 陶瓷散熱片拼組示意圖

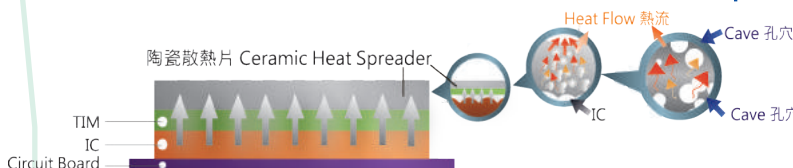


## 產品物性 Properties

Properties	XL-25	Unit	Tolerance	Test Method
Thermal Conductivity 導熱係數	6.79	W / mK	±0.67	ASTM D5470
Color 顏色	Gray灰/Green綠	-	-	Visual目視
Insulation Strength耐電壓	500	Voltage	-	ASTM D149
Specific Gravity比重	1.89	G / cm <sup>3</sup>	±0.18	CNS 619
Surface Resistance表面阻抗	>10	Ohm	-	ASTM D257
Flexural Strength彎曲強度	47.5	Kgf / cm <sup>2</sup>	-	CNS 12701
Porosity孔隙度	30	%	-	CNS 619
Working Temperature工作溫度	<500	°C	-	-
Linear Temperature Expansion Coefficient熱膨脹係數	4.13	10-6	-	RT~300°C
Main Composition主要成分	SiC / Al <sub>2</sub> O <sub>3</sub> / SiO <sub>2</sub>	-	-	-
Hardness硬度	5~6	Moh' s	±0.6	DIN En101-1992

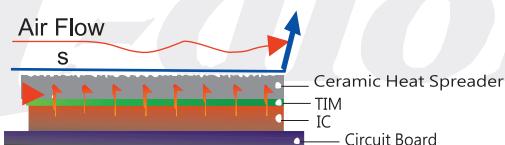
## 陶瓷散熱片的散熱機制

## Ceramic Heat Spreader Mechanism



$Q_t \propto S \times A$  : 散熱效能與風速及接觸面積成正比。  
 $Q_t$  : The heat would be taken by air flow. 經由空氣接觸所帶走的熱能。  
 $S$  : Air flow (m/s) 風速。  $A$  : Air contact area (m<sup>2</sup>) 接觸面積。

$A_{ca}$ : Air contact area of Ceramic Heat Spreader  
 陶瓷散熱片的空氣接觸面積



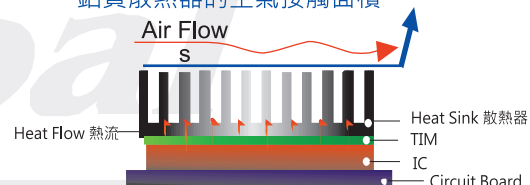
$A_{ca} \approx 5 \times A_{al}$

The air-contact area of ceramic heat spreader is nearly 5 times of aluminum heat sink, when they have the same volume.  
 同樣體積的陶瓷散熱片的空氣接觸面積約等於五個同體積鋁質散熱器的空氣接觸面積之總和。

In the same air flow, ceramic heat spreaders can provide more air-contact area.

在一樣的風速下，陶瓷散熱片能提供更多的空氣接觸面積。  
 When A is bigger,  $Q_t$  would be bigger.  
 當接觸面積越大，熱能被帶走的量越大。

$A_{ca}$ : Air contact area of Aluminum  
 鋁質散熱器的空氣接觸面積



V.S.