

# TIC-PAD Series

Thermal and EMI Solution



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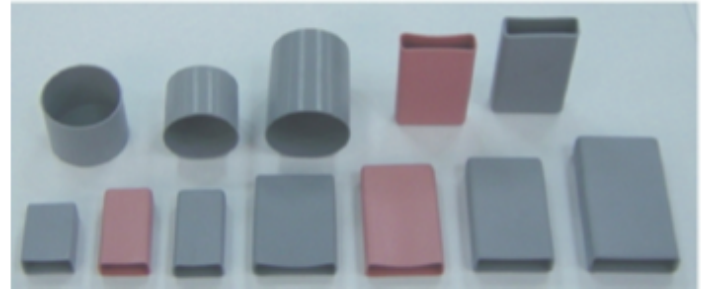
[www.techcomp.com.tw](http://www.techcomp.com.tw)

## Thermally Conductive Insulator



導熱矽膠

Major conductive filler :  $Al_2O_3$ , BN,  $(Al(OH)_3)$ ,  
ZnO,  $Ye_2O_3$ , MgO, MnO,  $Mg(OH)_2$ , ...etc.



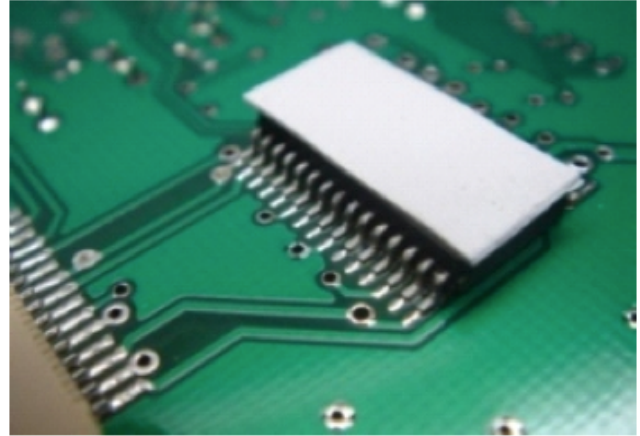
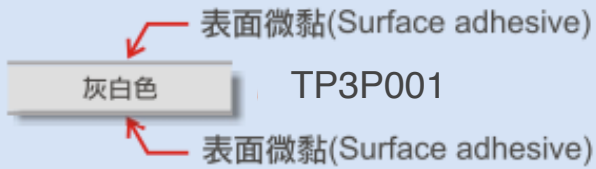
產品說明:

TP1P00提供良好的導熱性和黏著力,是高壓絕緣和低熱阻的矽膠絕緣材料,有纖維和無纖兩種介質選擇,有添加纖維的絕緣片可增加抗拉強度和防止穿刺及撕裂,用以取代傳統的雲母片,可以廣泛應用在需要導熱絕緣的機構中。

Type	25TR-A	30TR-A	40TR-A	45TR-A	20TR-B	25TR-B	30TR-B	40TR-B	45-TR-B	Test Method
Appearance	All	All	All	All	All	All	All	All	All	
Thickness (mm)	0.25±0.03	0.3±0.03	0.4±0.03	0.45±0.03	0.2±0.03	0.25±0.03	0.3±0.03	0.4±0.03	0.45±0.03	
Hardness(shore A)	80±3°	80±3°	80±3°	80±3°	85±3°	85±3°	85±3°	85±3°	85±3°	ASTM D2240
Tensile Strength(kg/cm <sup>2</sup> )	20	20	20	20	20	20	20	20	20	ASTM D412
Elongation(%)	60	60	60	60	60	60	60	60	60	ASTM D412
Volume Resistance (Ω-cm)	1*10 <sup>15</sup>	1*10 <sup>15</sup>	1*10 <sup>15</sup>	1*10 <sup>15</sup>	1*10 <sup>15</sup>	1*10 <sup>15</sup>	1*10 <sup>15</sup>	1*10 <sup>15</sup>	1*10 <sup>15</sup>	ASTM D257
Dielectric Breakdown Voltage(kv)	4	6	7	9	3.5	4	6	7	9	ASTM D149
Voltage Endurance (kv)	4	4	5	6	2.5	3	3	4	5	
Thermal Conductivity (k.cal/m.h. °C)	1.38	1.38	1.38	1.38	1.9	1.9	1.9	1.9	1.9	
Thermal Resistance °C/w (Based on The Third Minute)	0.35	0.36	0.38	0.4	0.3	0.31	0.32	0.35	0.4	-
Flammability UL94	94 V-0	94 V0	94 V0	94 V0	94 V0	94 V0	94 V0	94 V0	94 V0	UL 94
Dielectric Constant (ε)	60Hz	4.5	4.5	4.5	4.5	3.6	3.6	3.6	3.6	ASTM 150
	103Hz	4.4	4.5	4.5	4.5	3.6	3.6	3.6	3.6	
	106Hz	4.4	4.4	4.4	4.4	3.5	3.5	3.5	3.5	
Dissipation Factor (tan δ)	60Hz	0.01	0.01	0.01	0.01	0.012	0.012	0.012	0.012	ASTM 150
	103Hz	0.008	0.008	0.008	0.008	0.009	0.009	0.009	0.009	
	106Hz	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.005	
RoHS	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
Halogen free	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	

註: 使用溫度範圍-50°C~200°C (顏色可依照客戶區別調整)  
P.S.: Temperature Range: -50°C~200°C (colors adjustable to differences)

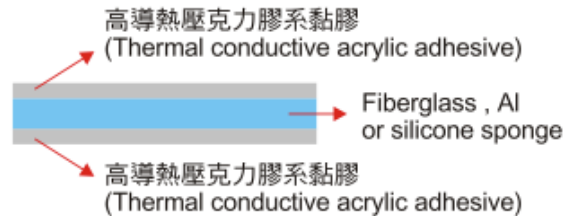
## Soft Thermal Conductive Silicone



應用: 一般多應用於半導體器件PCB和  
 母板、框架或導熱板之間，另外  
 在TFT、電源供應器、遊戲機光  
 碟系統、電漿電視..等應用上的  
 導熱效果也非常顯著。

PROPERTY	TP3P001	Test Method
Thickness (mm)	0.2~6.0	ASTM D374
Specific Gravity	2.2	ASTM D792
Hardness (Shore A)	15±5	ASTM D2240
Tensile Strength(Kgf/cm <sup>2</sup> )	2	ASTM D412
Elongation(%)	60	ASTM D412
Continuous Use Temp(°C)	-40~180	----
Thermal Conductivity (W/mK)	1.3	ASTM E1530
Breakdown Voltage (kv/mm)	15 ↑	ASTM D149
Volume Resistance (Ω-cm)	10 <sup>14</sup> ↑	ASTM D257
Dielectric Constant (ε)	60 Hz	6.3
	1K Hz	5.7
	1M Hz	5.3
UL File Number	94V-0	E153203
RoHS	PASS	SGS ICP Test
Halogen free	PASS	SGS Test

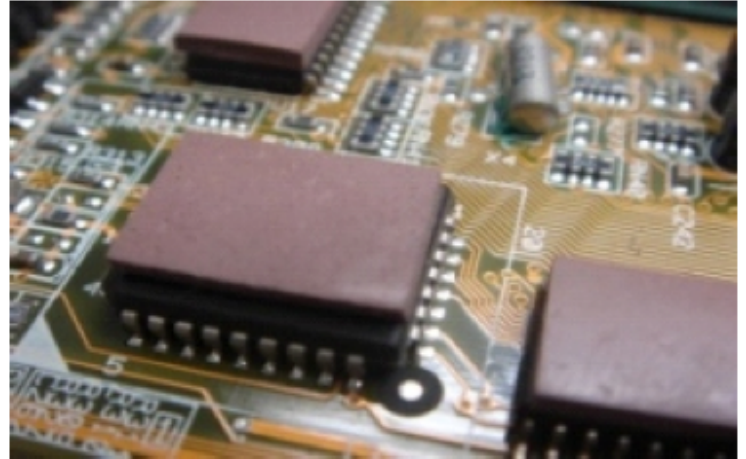
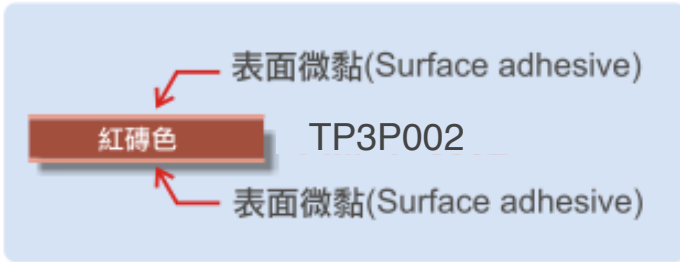
## Thermal Conductive Double Sided Adhesive Tape



### TP1P100 Datasheet

Item	Value			Test Method
Product	TP1P100 (Sponge)	TP1P100 (Al)	TP1P100 (Fiberglass)	
Construction	Silicone Sponge /Acrylic Adhesive	Al /Acrylic Adhesive	Fiberglass /Acrylic Adhesive	
Color	White	White	White	
Peel Adhesion (kg/25mm)	2.0 ↑	1.1 ↑	1.7 ↑	ASTM D 1000
Thermal Conductivity (W/mK)	1.4	1.9	1.2	ASTM E 1530
Volume Resistance (Ω-cm)	10 <sup>12</sup> ↑	10 <sup>12</sup> ↑	10 <sup>12</sup> ↑	ASTM D 257
Breakdown Voltage (KV)	2.0 ↑	0.8 ↑	2.5 ↑	ASTM D 149
Tensile Strength (kg/cm <sup>2</sup> )	5.6	215	440	ASTM D 412
Elongation(%)	600	15	23	ASTM D 412
Dielectric Constant ( ε )	60 Hz	4.7	13.7	ASTM D 150
	1K Hz	4.8	13.3	
	1M Hz	4.1	11.1	
Dielectric Dissipation Factor ( tan δ )	60 Hz	0.021	0.041	ASTM D 150
	1K Hz	0.014	0.029	
	1M Hz	0.059	0.053	
Holding Strength 1kg@room Temp(°C)	Pass	Pass	Pass	1 week for using 1 in <sup>2</sup>
Holding Strength 1kg@high Temp(°C)	Pass(90°C)	Pass(90°C)	Pass(100°C)	1 week for using 1 in <sup>2</sup>
UL File Number	E 247153			
RoHS	Pass	Pass	Pass	SGS ICP Test
Halogen free	Pass	Pass	Pass	SGS Test
Characteristic & Application	耐電壓 (High Breakdown Voltage) 適用於需減振與耐衝擊的導熱黏著 (Suitable for vibration/shock isolated requirement thermal conductive adhesive)	導熱特性較好，耐電壓較低 (High thermal conductivity, lower breakdown Voltage) 適用於耐電壓要求不高，需減高黏性的導熱黏著 (Suitable for lower breakdown voltage requirement, but high thermal conductive adhesion)	高耐電壓特性 (High Breakdown Voltage) 適用於需高黏性導熱黏著 (Suitable for high adhesive strength requirement thermal conductive adhesive)	

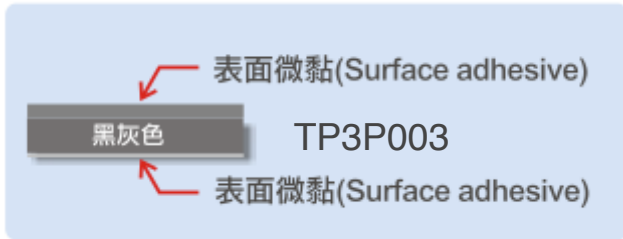
## Soft Thermal Conductive Silicone



應用: 一般多應用於半導體器件PCB和  
 母板、框架或導熱板之間，另外  
 在TFT、電源供應器、遊戲機光  
 碟系統、電漿電視..等應用上的  
 導熱效果也非常顯著。

PROPERTY		TP3P002	Test Method
Thickness (mm)		0.2~6.0	ASTM D374
Specific Gravity		2.4	ASTM D792
Hardness (Shore A)		20±5	ASTM D2240
Tensile Strength(Kgf/cm <sup>2</sup> )		6.4	ASTM D412
Elongation(%)		553	ASTM D412
Continuous Use Temp(°C)		-40~180	----
Thermal Conductivity (W/mK)		1.9	ASTM E1530
Breakdown Voltage (kv/mm)		15 ↑	ASTM D149
Volume Resistance (Ω-cm)		10 <sup>14</sup> ↑	ASTM D257
Dielectric Constant (ε)	60 Hz	5.5	ASTM D150
	1K Hz	5.2	
	1M Hz	5.1	
UL File Number		94V-0	E153203
RoHS		PASS	SGS ICP Test
Halogen free		PASS	SGS Test

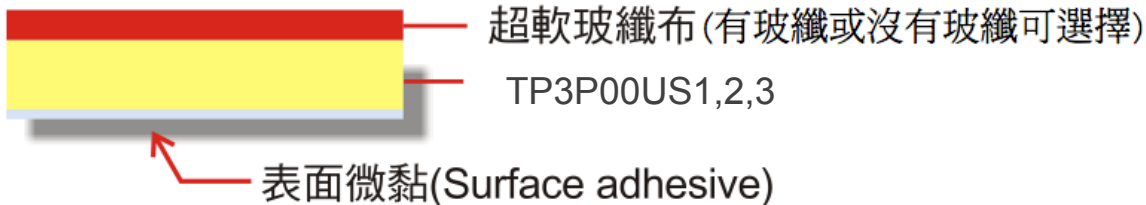
## Soft Thermal Conductive Silicone



應用: 一般多應用於半導體器件PCB和  
 母板、框架或導熱板之間，另外  
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PROPERTY		TP3P003	TP3P003-J	Test Method
Thickness (mm)		0.2~6.0	0.2~6.0	ASTM D374
Specific Gravity		2.2	2.5	ASTM D792
Hardness		15±5 (Shore A)	65±10 (Shore 00)	ASTM D2240
Tensile Strength(Kgf/cm <sup>2</sup> )		45 ↑	10 ↑	ASTM D412
Elongation(%)		5 ↑	5 ↑	ASTM D412
Continuous Use Temp(°C)		-40~180	-40~180	----
Thermal Conductivity (W/mK)		2.8	3.2	ASTM E1530
Breakdown Voltage (kv/mm)		15 ↑	15 ↑	ASTM D149
Volume Resistance (Ω-cm)		10 <sup>14</sup> ↑	10 <sup>14</sup> ↑	ASTM D257
Dielectric Constant (ε)	60 Hz	5.5	5.8	ASTM D150
	1K Hz	5.2	5.4	
	1M Hz	5.1	5.0	
UL File Number		94V-0	94V-0	E153203
RoHS		PASS	PASS	SGS ICP Test
Halogen free		PASS	PASS	SGS Test

## Ultra Soft Thermal Conductive Silicone



### TP3P00US Physical Property

PROPERTY	TP3P00US1	TP3P00US2	TP3P00US3	Test Method
Thickness (mm)	0.5~3.0	0.5~3.0	0.5~3.0	Thickness Gauge
Color	Gray	Gray	Gray	Visual
Specific Gravity	2.27	2.27	2.7	ASTM D 729
Hardness (Shore 00)	30± 10	40± 10	50± 10	ASTM D 2240
Tensile Strength(Kgf/cm <sup>2</sup> )	35	35	38	ASTM D 412
Elongation(%)	9	9	10	ASTM D 412
Continuous Temp(°C)	-60~200			----
Thermal Conductivity (W/mK)	1.8 ↑	2.4 ↑	3.0 ↑	ASTM E 1530
Breakdown Voltage(KV/mm)	15 ↑	15 ↑	15 ↑	ASTM D 149
Volume Resistance (Ω-cm)	10 <sup>12</sup> ↑	10 <sup>12</sup> ↑	10 <sup>12</sup> ↑	ASTM D 257
Dielectric Constant (ε)	60 Hz	5.5	5.5	ASTM D 150
	1K Hz	5.2	5.2	
	1M Hz	5.0	5.0	
UL File Number	94 V-0	94 V-0	94 V-0	E153203
RoHS	PASS	PASS	PASS	SGS ICP Test
Halogen free	PASS	PASS	PASS	SGS Test

## Ultra Soft Thermal Conductive Silicone

### TP3P00US-A6 & A7 Datasheet

PROPERTY	TP3P00US-A6	TP3P00US-7	Test Method
	表面黏貼(Surface adhesive) <b>Thermal conductive rubber</b> 表面黏貼(Surface adhesive)	表面黏貼(Surface adhesive) <b>Soft Thermal conductive rubber</b> 表面黏貼(Surface adhesive)	
顏色 Color	Dark Red	Pink	
厚度 Thickness (mm)	0.5~10	0.5~10	ASTM D374
比重 Specific Gravity	2.4	2.3	ASTM D 729
硬度 Hardness (Shore 00)	60	45	ASTM D 2240
抗張強度 Tensile Strength(Kgf/cm <sup>2</sup> )	6.8	5.4	ASTM D 412
伸長率 Elongation(%)	72	78	ASTM D 412
使用溫度 Continuous Use Temp(°C)	-50~200	-50~200	----
熱傳系數 Thermal Conductivity (W/mK)	4.0	4.0	ASTM E 1530
破壞電壓 Breakdown Voltage(KV/mm)	15 ↑	15 ↑	ASTM D149
體積電阻 Volume Resistance (Ω-cm)	10 <sup>12</sup> ↑	10 <sup>12</sup> ↑	ASTM D 257
介電常數 Dielectric Constant (ε)	60 Hz	5.5	ASTM D 150
	1K Hz	5.3	
	1M Hz	5.0	
耐燃等級 UL File Number	V-0	V-0	E153203 UL 94
有害物質檢測 RoHS	PASS	PASS	SGS ICP Test
無鹵素檢測 Halogen free	PASS	PASS	SGS Test



## Ultra Soft Thermal Conductive Silicone

### TP3P00US-10 & 11 Datasheet

PROPERTY	TP3P00US-10 表面微黏(Surface adhesive)		TP3P00US-11 表面微黏(Surface adhesive)		Test Method
	Thermal conductive rubber	Fiberglass	Thermal conductive rubber	Fiberglass	
顏色 Color	Gray		Blue		
厚度 Thickness (mm)	0.2~0.75		0.2~0.75		ASTM D374
比重 Specific Gravity	2.3		2.3		ASTM D 729
硬度 Hardness (Shore 00)	45		45		ASTM D 2240
抗張強度 Tensile Strength(Kgf/cm <sup>2</sup> )	58		50		ASTM D 412
伸長率 Elongation(%)	12		12		ASTM D 412
使用溫度 Continuous Use Temp(°C)	-50~200		-50~200		----
熱傳系數 Thermal Conductivity (W/mK)	4.0		4.5		ASTM E 1530
破壞電壓 Breakdown Voltage(KV/mm)	10 ↑		10 ↑		ASTM D149
體積電阻 Volume Resistance (Ω-cm)	10 <sup>12</sup> ↑		10 <sup>12</sup> ↑		ASTM D 257
介電常數 Dielectric Constant ( ε )	60 Hz	4.3	4.3	ASTM D 150	
	1K Hz	4.1	4.4		
	1M Hz	4.1	4.6		
耐燃等級 UL File Number	V-0		V-0		E153203 UL 94
有害物質檢測 RoHS	PASS		PASS		SGS ICP Test
無鹵素檢測 Halogen free	PASS		PASS		SGS Test

## Soft Thermal Conductive Silicone

### 產品結構(Product structure)



### 主要特性 Characteristics :

1. 填充奈米級高導熱劑，具高導熱的特性。 Fill with nano-level high thermal conductive agent, has high thermal conductivity characteristic.
2. 具備良好的耐溫性與耐久性。 Good heat-resistance, good long-term stability.
3. 具有不出油特性，不會產生沾粘現象或油污污染。 No oil-bleeding, no oil contamination.
4. 具有微軟彈性表面及優良熱傳導特性，可協助熱能迅速的傳導。 Slightly soft surface, good thermal conductivity, can transfer the heat rapidly.

		TP3P00K-2.0	TP3P00K-2.0
顏色	Color	All Color	Visual
厚度	Thickness (mm)	0.5 ~ 6.0	ASTM D374
熱傳導係數	Thermal conductivity (W/mk)	2.0	Hot disk 22007
體積電阻值	Volume resistance ( $\Omega$ -cm)	$1 \times 10^{12} \uparrow$	ASTM D257
抗電強度	Breakdown Voltage (KV/mm)	10 $\uparrow$	ASTM D149
抗張強度	Tensile strength (kgf/cm <sup>2</sup> )	1.4 $\uparrow$	ASTM D412
伸長率	Elongation (%)	90 $\uparrow$	ASTM D412
硬度	Hardness (Shore 00)	40 $\pm$ 10	ASTM D2240
比重	Specific gravity	2.7	ASTM D792
介電常數 Dielectric constant ( $\epsilon$ )	60 Hz	8.9	ASTM D150
	1K Hz	6.7	
	1M Hz	4.9	
耐燃等級	Flammability	UL-94 V-0	E153203
長期使用溫度	Continuous Use Temp (°C)	-40~200	-
有害物質檢測 ROHS		PASS	SGS ICP Test
無鹵素檢測 Halogens free		PASS	SGS Test

## Soft Thermal Conductive Silicone

### 產品結構(Product structure)

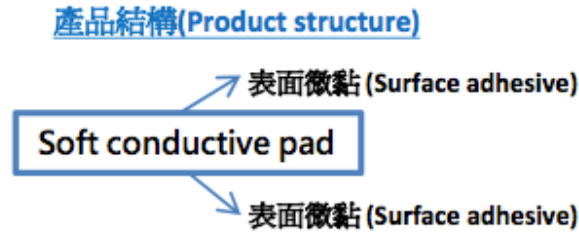


### 主要特性 Characteristics :

1. 填充奈米級高導熱劑，具高導熱的特性。 Fill with nano-level high thermal conductive agent, has high thermal conductivity characteristic.
2. 具備良好的耐溫性與耐久性。 Good heat-resistance, good long-term stability.
3. 具有不出油特性，不會產生沾粘現象或油污污染。 No oil-bleeding, no oil contamination.
4. 具有微軟彈性表面及優良熱傳導特性，可協助熱能迅速的傳導。 Slightly soft surface, good thermal conductivity, can transfer the heat rapidly.

		TP3P00K-3.0	TP3P00K-3.0
顏色	Color	All Color	Visual
厚度	Thickness (mm)	0.5 ~ 6.0	ASTM D374
熱傳導係數	Thermal conductivity (W/mk)	3.07	Hot disk 22007
體積電阻值	Volume resistance ( $\Omega$ -cm)	$1 \times 10^{12} \uparrow$	ASTM D257
抗電強度	Breakdown Voltage (KV/mm)	10 $\uparrow$	ASTM D149
抗張強度	Tensile strength (kgf/cm <sup>2</sup> )	1.4 $\uparrow$	ASTM D412
伸長率	Elongation (%)	90 $\uparrow$	ASTM D412
硬度	Hardness (Shore 00)	65 $\pm$ 10	ASTM D2240
比重	Specific gravity	2.8	ASTM D792
介電常數 Dielectric constant ( $\epsilon$ )	60 Hz	8.9	ASTM D150
	1K Hz	6.7	
	1M Hz	4.9	
耐燃等級	Flammability	UL-94 V-0	E153203
長期使用溫度	Continuous Use Temp (°C)	-----	-
有害物質檢測 ROHS		PASS	SGS ICP Test
無鹵素檢測 Halogens free		PASS	SGS Test

## Soft Thermal Conductive Silicone



### 主要特性 Characteristics :

1. 填充奈米級高導熱劑，具高導熱的特性。 Fill with nano-level high thermal conductive agent, has high thermal conductivity characteristic.
2. 具備良好的耐溫性與耐久性。 Good heat-resistance, good long-term stability.
3. 具有不出油特性，不會產生沾粘現象或油污污染。 No oil-bleeding, no oil contamination.
4. 具有微軟彈性表面及優良熱傳導特性，可協助熱能迅速的傳導。 Slightly soft surface, good thermal conductivity, can transfer the heat rapidly.

		TP3P00K-3.5	TP3P00K-3.5
顏色	Color	All Color	Visual
厚度	Thickness (mm)	0.5 ~ 6.0	ASTM D374
熱傳導係數	Thermal conductivity (W/mk)	3.7	Hot disk (ISO 22007)
體積電阻值	Volume resistance ( $\Omega$ -cm)	$1 \times 10^{12} \uparrow$	ASTM D257
抗電強度	Breakdown Voltage (KV/mm)	6 $\uparrow$	ASTM D149
抗張強度	Tensile strength (kgf/cm <sup>2</sup> )	3 $\uparrow$	ASTM D412
伸長率	Elongation (%)	40 $\uparrow$	ASTM D412
硬度	Hardness (Shore 00)	75 $\pm$ 10	ASTM D2240
比重	Specific gravity	3.4	ASTM D792
耐燃等級	Flammability	UL-94 V-0	E153203
長期使用溫度	Continuous Use Temp (°C)	-40~200	-
有害物質檢測 ROHS		PASS	SGS ICP Test
無鹵素檢測 Halogens free		PASS	SGS Test