

## Fujipoly Data Sheet

# SARCON<sup>®</sup> YR-c series

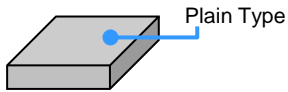
## Highest Performance Rubber Type

### FEATURES

**Thin Film with Higher Thermal Conductivity , Electric Isolation and Non-Flammable.**

- SARCON YR-c has an excellent cushion effect. Attached to devices like transistors and FETs.
- SARCON YR-c is available in tube, die-cut Gaskets, extrusion shapes and more with desired designs.

### CONSTRUCTIONS

Series	Characteristics	Constructions
<b>SARCON<sup>®</sup> YR-c</b>	Fine heat conductive particles are mixed with insulative silicone rubber to produce this excellent insulative, high heat conductive silicone material : 4.0W/mK (by Hot Wire)	

### THERMAL RESISTANCE

Unit : K-cm<sup>2</sup>/W (K-in<sup>2</sup>/W)

Clamping Torque	20Y-c (0.2mmT)	30Y-c (0.3mmT)	45Y-c (0.45mmT)
0.29Nm / 0.22lbf-ft	0.8 (0.12)	1.4 (0.21)	1.4 (0.22)
0.49Nm / 0.36lbf-ft	0.6 (0.09)	1.0 (0.15)	1.1 (0.17)
0.69Nm / 0.51lbf-ft	0.5 (0.08)	0.9 (0.14)	1.0 (0.15)

#### 1. Test Method by FTM P-3010

Fujipoly test method FTM P-3010 which gives ASTM D5470 equivalent value. Punched-out specimen in TO-3 package is located between a transistor and heat sink, and secured them by using a screwdriver. 20watt power is applied to the transistor. After three minutes, the thermal resistance is calculated based on the following formula.

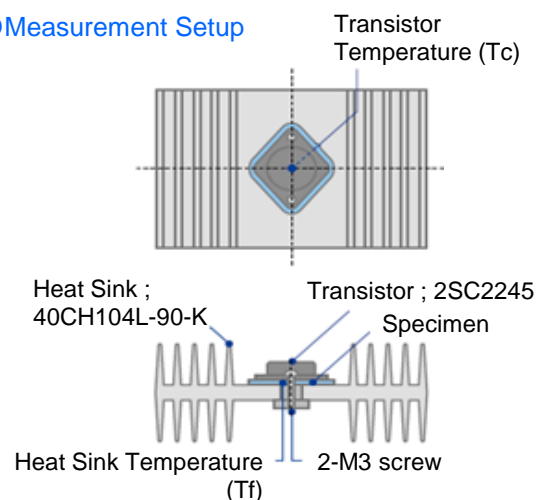
#### 2. Principle

A thermal impedance is given by the equation below.

$$R_t = (T_c - T_f) / P_0$$

$R_t$  : Thermal resistance(K/W)  
 $T_c$  : Transistor temperature(K)  
 $T_f$  : Heat sink temperature(K)  
 $P_0$  : Heat Flow(W)

#### ● Measurement Setup



**TYPICAL PROPERTIES**

Properties	unit	YR-c			Test method		
		20Y-c	30Y-c	45Y-c			
Physical Properties	Color	-	Light Gray			Visual	
	Thickness	mm	0.2 ±0.05	0.3 +0.1/-0	0.45 ±0.05	ISO 463:2006	
	Specific Gravity	-	2.8			ASTM D792	
	Hardness Highest Value	IRHD	75	80	80	ISO 7619	
	Tensile Strength	MPa	2.0	2.1	2.1	ASTM D412	
		psi	290	305	305		
Elongation	%	50	67	74	ASTM D412		
Electrical Properties	Volume Resistivity	Ohm-m	$1 \times 10^{13}$	$1 \times 10^{13}$	$1 \times 10^{13}$	ASTM D257	
	Breakdown Voltage	kV(AC)	7	12	13	ASTM D149	
	Dielectric Strength	kV(AC)	5	9	9	ASTM D149	
	Dielectric Constant	-	50Hz	9.6			ASTM D150
			1kHz	8.5			
			1MHz	7.6			
	Dissipation Factor	-	50Hz	0.061			ASTM D150
1kHz			0.054				
1MHz			0.021				
Thermal Properties	Thermal Conductivity	W/m-K	4.0			ASTM D2326 (Hot Wire)	
	Recommended Operating Temp.	°C	-40 to +150			-	
		°F	-40 to +302				
Flame Retardant	UL94	V-0			UL 94		

**DURABILITY****Heat Aging Test : 150°C(300°F)**

Properties	unit	20Y-c			30Y-c			45Y-c		
		Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs
Hardness	ASKER A	75	83	90	75	83	90	75	83	90
Tensile Strength	Mpa	2.0	3.4	3.6	2.1	3.3	2.9	2.1	3.6	3.9
Elongation	%	50	43	29	67	46	33	74	54	36
Volume Resistivity	Ohm-m	2x10 <sup>13</sup>	3x10 <sup>13</sup>	3x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	3x10 <sup>13</sup>	2x10 <sup>13</sup>
Breakdown Voltage	kV	7	8	7	13	14	12	13	16	14

**Heat Aging Test : 200°C(390°F)**

Properties	unit	20Y-c			30Y-c			45Y-c		
		Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs
Hardness	ASKER A	72	91	97	72	91	97	72	91	97
Tensile Strength	Mpa	1.5	5.4	4.5	1.5	5.1	5.4	1.5	5.4	5.9
Elongation	%	50	25	13	67	25	18	74	28	21
Volume Resistivity	Ohm-m	1x10 <sup>13</sup>	4x10 <sup>13</sup>	3x10 <sup>13</sup>	1x10 <sup>13</sup>	4x10 <sup>13</sup>	3x10 <sup>13</sup>	2x10 <sup>13</sup>	3x10 <sup>13</sup>	3x10 <sup>13</sup>
Breakdown Voltage	kV	7	7	7	13	13	12	13	15	15

**Cold Test : -40°C (-40°F)**

Properties	unit	20Y-c			30Y-c			45Y-c		
		Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs
Hardness	ASKER A	73	73	72	73	73	72	73	73	72
Tensile Strength	Mpa	2.0	2.2	2.2	2.1	2.3	2.2	2.1	2.2	2.0
Elongation	%	50	54	53	67	72	71	74	64	59
Volume Resistivity	Ohm-m	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>
Breakdown Voltage	kV	7	7	6	13	13	13	13	14	12

**Humidity Test : 60°C(140°F) / 95%RH**

Properties	unit	20Y-c			30Y-c			45Y-c		
		Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs
Hardness	ASKER A	73	70	70	73	70	70	73	70	70
Tensile Strength	Mpa	2.0	1.7	1.7	2.1	2.0	1.8	2.1	2.0	1.8
Elongation	%	50	48	52	67	63	63	74	72	70
Volume Resistivity	Ohm-m	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	1x10 <sup>13</sup>	1x10 <sup>13</sup>	2x10 <sup>13</sup>	1x10 <sup>13</sup>	1x10 <sup>13</sup>
Breakdown Voltage	kV	7	7	6	13	13	12	13	13	13

**Heat Shock Test : -40°C (-40°F)/30min ↔ 125°C (257°F)/30min**

Properties	unit	20Y-c			30Y-c			45Y-c		
		Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs
Hardness	ASKER A	73	77	81	73	77	81	73	77	81
Tensile Strength	Mpa	2.0	2.4	2.6	2.1	2.3	2.2	2.1	2.2	2.0
Elongation	%	50	41	43	67	72	71	74	64	59
Volume Resistivity	Ohm-m	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>	2x10 <sup>13</sup>
Breakdown Voltage	kV	7	7	7	13	13	13	13	14	14

## **HANDLING NOTES**

- It is recommended to compress the material with the equal ratio on the whole surface. Partial excessive stress may also result in excessive silicone oil exudation.

## **WARRANTY STATEMENT**

- Properties of the products may be revised due to some changes for improving performance.
- Properties values in this document are not specification or guaranteed.
- This product is made of silicone, and silicone oil may exude from the product.
- This product is made of silicone, and low molecular siloxane may vaporize depending on operating conditions.
- The product is designed, developed, and manufactured for general industrial use only. Never use for medical, surgical, and/or relating purposes. Never use for the purpose of implantation and/or other purposes by which a part of or whole product remains in human body.
- Before using, a safety must be evaluated and verified by the purchaser.
- Contents described in the document do not guarantee the performances and qualities required for the purchaser's specific purposes. The purchaser is responsible for pre-testing the product under the purchaser's specific conditions and for verifying the expected performances.
- Statements concerning possible or suggested uses made herein may not be relied upon, or be constructed, as a guaranty of no patent infringement.
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