

Fujipoly Data Sheet

SARCON[®] YR-b series

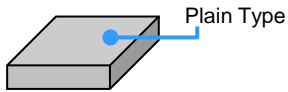
Highest Performance Rubber Type

FEATURES

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

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

CONSTRUCTIONS

Series	Characteristics	Constructions
SARCON[®] YR-b	Fine heat conductive particles are mixed with insulative silicone rubber to produce this excellent insulative, high heat conductive silicone material : 3.9W/mK (by Hot Wire)	 Plain Type

THERMAL RESISTANCE

Unit : K-cm²/W (K-in²/W)

Clamping Torque	20Y-b (0.2mmT)	30Y-b (0.3mmT)	45Y-b (0.45mmT)	85Y-b (0.85mmT)
0.29Nm / 0.22lbf-ft	0.8 (0.13)	1.4 (0.22)	1.5 (0.23)	2.9 (0.45)
0.49Nm / 0.36lbf-ft	0.7 (0.11)	1.2 (0.18)	1.2 (0.18)	2.5 (0.39)
0.69Nm / 0.51lbf-ft	0.6 (0.09)	1.0 (0.16)	1.0 (0.16)	2.3 (0.36)

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.

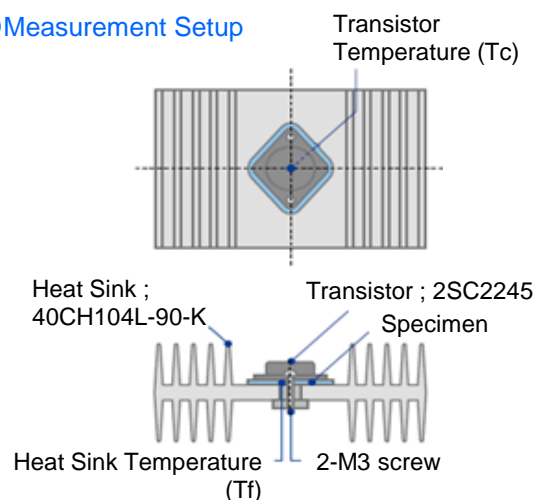
2. Principle

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-b				Test method		
		20Y-b	30Y-b	45Y-b	85Y-b			
Physical Properties	Color	-	Gray				Visual	
	Thickness	mm	0.2 ±0.05	0.3 +0.1/-0	0.45 ±0.05	0.85 ±0.05	ISO 463:2006	
	Specific Gravity	-	2.6				ASTM D792	
	Hardness Highest Value	IRHD	68	74	72	74	ISO 7619	
	Tensile Strength	MPa	2.0	2.8	2.8	2.9	ASTM D412	
		psi	290	406	406	421		
Elongation	%	78	72	90	88	ASTM D412		
Electrical Properties	Volume Resistivity	Ohm-m	1×10^{13}	1×10^{13}	1×10^{13}	1×10^{13}	ASTM D257	
	Breakdown Voltage	kV(AC)	10	14	15	18	ASTM D149	
	Dielectric Strength	kV(AC)	6	11	12	15	ASTM D149	
	Dielectric Constant	-	50Hz	2.8	3.6	4.1	4.8	ASTM D150
			1kHz	2.8	3.6	4.1	4.8	
			1MHz	2.8	3.6	4.1	4.8	
	Dissipation Factor	-	50Hz	0.010	0.007	0.007	0.003	ASTM D150
1kHz			0.003	0.005	0.003	0.001		
1MHz			0.003	0.001	0.001	0.001		
Thermal Properties	Thermal Conductivity	W/m-K	3.9				ASTM D2326 (Hot Wire)	
	Recommended Operating Temp.	°C	-40 to +150				-	
		°F	-40 to +302					
Flame Retardant	UL94	V-0 equivalent				UL 94		

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

Properties	unit	20Y-b			30Y-b			45Y-b			85Y-b		
		Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs
Hardness	IRHD	68	77	91	74	86	92	72	82	89	74	81	92
Tensile Strength	Mpa	2.0	2.5	3.4	2.8	3.4	3.6	2.8	3.3	3.7	2.9	3.3	3.6
Elongation	%	78	40	32	72	32	45	90	43	52	88	42	53
Volume Resistivity	Ohm-m	1x10 ¹³	5x10 ¹³	8x10 ¹²	5x10 ¹²	2x10 ¹²	4x10 ¹²	1x10 ¹²	6x10 ¹³	1x10 ¹³	5x10 ¹²	3x10 ¹³	8x10 ¹²
Breakdown Voltage	kV	10	11	11	14	14	15	15	18	18	18	21	22
Dielectric Constant	50Hz	2.8	2.7	2.6	3.6	3.5	3.5	4.1	4.0	4.0	4.8	4.7	4.8
	1kHz	2.8	2.7	2.6	3.6	3.4	3.4	4.1	4.0	4.0	4.8	4.7	4.8
	1MHz	2.8	2.8	2.6	3.6	3.4	3.4	4.1	4.0	4.0	4.8	4.7	4.8
Dissipation Factor	50Hz	0.010	0.006	0.006	0.007	0.007	0.008	0.007	0.005	0.004	0.003	0.003	0.002
	1kHz	0.003	0.002	0.002	0.005	0.003	0.004	0.003	0.002	0.002	0.001	0.001	0.001
	1MHz	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Heat Aging Test : 200°C(390°F)

Properties	unit	20Y-b			30Y-b			45Y-b			85Y-b		
		Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs
Hardness	IRHD	68	84	92	74	92	94	72	92	94	74	94	95
Tensile Strength	Mpa	2.0	3.9	4.4	2.8	4.2	5.3	2.8	4.1	5.0	2.9	4.6	5.3
Elongation	%	78	17	17	72	20	27	90	25	32	88	28	25
Volume Resistivity	Ohm-m	1x10 ¹³	7x10 ¹³	1x10 ¹³	5x10 ¹²	3x10 ¹⁴	2x10 ¹³	1x10 ¹²	9x10 ¹³	4x10 ¹³	5x10 ¹²	2x10 ¹⁴	1x10 ¹³
Breakdown Voltage	kV	10	11	10	14	14	14	15	17	16	18	21	21
Dielectric Constant	50Hz	2.8	2.7	2.5	3.6	3.5	3.2	4.1	4.0	3.9	4.8	4.8	4.7
	1kHz	2.8	2.6	2.4	3.6	3.5	3.2	4.1	4.0	3.9	4.8	4.8	4.7
	1MHz	2.8	2.7	2.5	3.6	3.5	3.2	4.1	4.0	3.9	4.8	4.8	4.7
Dissipation Factor	50Hz	0.010	0.005	0.005	0.007	0.002	0.003	0.007	0.004	0.003	0.003	0.002	0.002
	1kHz	0.003	0.002	0.002	0.005	0.001	0.002	0.003	0.002	0.001	0.001	0.001	0.001
	1MHz	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Humidity Test : 60°C(140°F) / 95%RH

Properties	unit	20Y-b			30Y-b			45Y-b			85Y-b		
		Before	250hrs	500hrs	Before	250hrs	500hrs	Before	250hrs	500hrs	Before	250hrs	500hrs
Hardness	IRHD	68	73	70	74	73	69	74	72	69	74	70	72
Tensile Strength	Mpa	2.0	2.5	2.0	2.8	3.1	2.8	2.8	2.4	2.4	2.9	2.7	2.7
Elongation	%	78	75	80	72	63	62	88	77	77	88	73	77
Volume Resistivity	Ohm-m	1x10 ¹³	1x10 ¹³	7x10 ¹²	5x10 ¹²	7x10 ¹³	2x10 ¹³	1x10 ¹²	4x10 ¹²	3x10 ¹²	5x10 ¹²	2x10 ¹³	2x10 ¹³
Breakdown Voltage	kV	10	9	10	14	14	13	15	15	16	18	21	20
Dielectric Constant	50Hz	2.8	2.9	3.0	3.6	3.8	3.7	4.1	4.1	4.2	4.8	4.9	4.9
	1kHz	2.8	2.8	2.9	3.6	3.7	3.6	4.1	4.0	4.1	4.8	4.8	4.8
	1MHz	2.8	2.8	2.8	3.6	3.6	3.6	4.1	4.0	4.1	4.8	4.8	4.8
Dissipation Factor	50Hz	0.010	0.014	0.013	0.007	0.011	0.011	0.007	0.008	0.007	0.003	0.006	0.006
	1kHz	0.003	0.012	0.007	0.005	0.010	0.010	0.003	0.008	0.005	0.001	0.005	0.004
	1MHz	0.003	0.003	0.003	0.001	0.002	0.002	0.001	0.002	0.001	0.001	0.001	0.001

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.
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