Fujipoly Data Sheet

SARCON® YR-a series

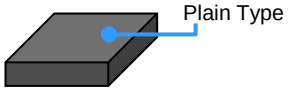
Higher Performance Rubber Type

FEATURES

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

- SARCON YR-a is available in die-cut Gaskets, extrusion shapes and more with desired designs.
- UL 94 V-0 and UL 746 150℃ certified.

CONSTRUCTIONS

Series	Characteristics	Constructions
SARCON® YR-a	Fine heat conductive particles are mixed with insulative silicone rubber to produce this excellent insulative, high heat conductive silicone material : 2.2W/mK (by Hot Wire)	 Plain Type

THERMAL RESISTANCE

Unit : K-cm^2/W (K-in^2/W)

Clamping Torque	20Y-a (0.2mmT)	30Y-a (0.3mmT)	45Y-a (0.45mmT)	85Y-a (0.85mmT)
0.29Nm / 0.22lbf-ft	1.8 (0.28)	2.2 (0.34)	2.5 (0.39)	4.0 (0.62)
0.49Nm / 0.36lbf-ft	1.7 (0.27)	1.9 (0.30)	2.3 (0.35)	3.6 (0.56)
0.69Nm / 0.51lbf-ft	1.7 (0.26)	1.8 (0.28)	2.1 (0.33)	3.4 (0.53)

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.

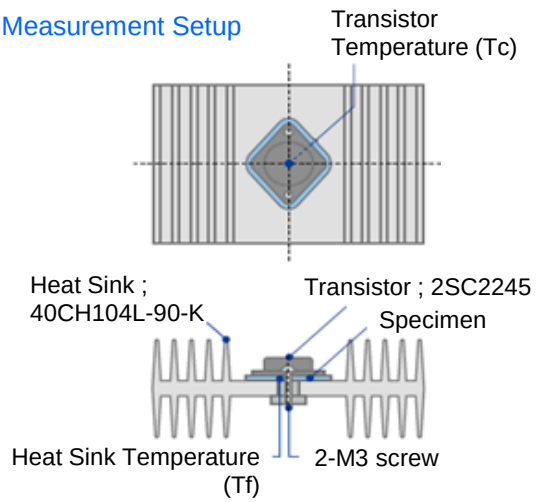
2.Principle

A thermal impedance is given by the equation below.

$Rt = (Tc - Tf) / P_0$

Rt : Thermal resistance (K/W)
Tc : Transistor temperature (K)
Tf : Heat sink temperature (K)
P_0 : Heat Flow (W)

●Measurement Setup



TYPICAL PROPERTIES

Properties		unit		YR-a				Test method
				20Y-a	30Y-a	45Y-a	85Y-a	
Physical Properties	Color	-		Dark 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		85	86	89	87	ISO 7619
	Tensile Strength	MPa		14.2	4.5	4.6	4.0	ASTM D412
		psi		2059	652	667	580	
	Elongation	%		50	73	80	80	ASTM D412
Electrical Properties	Volume Resistivity	Ohm-m		$1x10^{12}$	$1x10^{13}$	$1x10^{13}$	$1x10^{13}$	ASTM D257
	Breakdown Voltage	kV(AC)		6	10	11	14	ASTM D149
	Dielectric Strength	kV(AC)		3	7	8	10	ASTM D149
	Dielectric Constant	-	50Hz	-	6.2	6.3	6.0	ASTM D150
			1kHz	-	5.8	5.9	5.7	
			1MHz	-	5.6	5.7	5.4	
	Dissipation Factor	-	50Hz	-	0.030	0.030	0.028	ASTM D150
			1kHz	-	0.025	0.025	0.023	
			1MHz	-	0.010	0.010	0.010	
Thermal Properties	Thermal Conductivity	W/m-K		2.2				ASTM D2326 (Hot Wire)
	Recommended Operating Temp.	℃		-40 to +150				-
		°F		-40 to +302				
	Relative Thermal Index	℃		150				UL 746
	Flame Retardant	UL94		V-0				UL 94

DURABILITY

Heat Aging Test : 150℃ (300°F)

Properties	unit	30Y-a			45Y-a			85Y-a		
		Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs
Hardness	IRHD	86	93	94	89	93	94	87	93	95
Tensile Strength	Mpa	4.5	5.3	5.3	4.6	5.0	5.0	4.0	4.0	4.5
Elongation	%	73	50	40	80	65	50	80	65	50
Volume Resistivity	Ohm-m	$1x10^{13}$	$1x10^{13}$	$1x10^{13}$	$7x10^{12}$	$1x10^{13}$	$1x10^{13}$	$6x10^{12}$	$2x10^{13}$	$1x10^{13}$
Breakdown Voltage	kV	10	9	10	11	11	12	14	15	16
Dielectric Constant	50Hz	6.2	6.2	6.4	6.3	6.3	6.1	6.0	6.5	6.5
	1kHz	5.8	5.8	6.0	5.9	5.9	5.7	5.7	6.2	6.2
	1MHz	5.6	5.6	5.8	5.7	5.7	5.5	5.4	5.9	5.9
Dissipation Factor	50Hz	0.030	0.029	0.028	0.030	0.029	0.029	0.028	0.029	0.028
	1kHz	0.025	0.024	0.024	0.025	0.024	0.025	0.023	0.025	0.025
	1MHz	0.010	0.010	0.006	0.010	0.010	0.010	0.010	0.011	0.010

Heat Aging Test : 200℃ (390°F)

Properties	unit	30Y-a			45Y-a			85Y-a		
		Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs
Hardness	IRHD	86	98	99	89	98	98	87	98	99
Tensile Strength	Mpa	4.5	5.9	5.6	4.6	5.4	5.4	4.0	4.7	4.7
Elongation	%	73	30	20	80	30	20	80	35	22
Volume Resistivity	Ohm-m	$1x10^{13}$	$2x10^{13}$	$3x10^{13}$	$7x10^{12}$	$2x10^{13}$	$2x10^{13}$	$6x10^{12}$	$2x10^{13}$	$3x10^{13}$
Breakdown Voltage	kV	10	10	10	11	12	11	14	16	14
Dielectric Constant	50Hz	6.2	6.1	6.4	6.3	6.1	6.1	6.0	6.3	6.5
	1kHz	5.8	5.8	6.0	5.9	5.8	5.7	5.7	5.9	6.2
	1MHz	5.6	5.5	5.8	5.7	5.5	5.5	5.4	5.7	5.9
Dissipation Factor	50Hz	0.030	0.028	0.028	0.030	0.028	0.029	0.028	0.028	0.028
	1kHz	0.025	0.024	0.024	0.025	0.024	0.025	0.023	0.024	0.025
	1MHz	0.010	0.010	0.006	0.010	0.010	0.010	0.010	0.010	0.010

Humidity Test : 60℃ (140°F) / 95%RH

Properties	unit	30Y-a			45Y-a			85Y-a		
		Before	250hrs	500hrs	Before	250hrs	500hrs	Before	250hrs	500hrs
Hardness	IRHD	86	88	89	89	89	90	87	89	92
Tensile Strength	Mpa	4.5	4.5	4.5	4.6	4.4	4.4	4.0	4.0	4.0
Elongation	%	73	75	75	80	75	75	80	75	75
Volume Resistivity	Ohm-m	$1x10^{13}$	$3x10^{12}$	$3x10^{12}$	$7x10^{12}$	$3x10^{12}$	$3x10^{12}$	$6x10^{12}$	$4x10^{12}$	$4x10^{12}$
Breakdown Voltage	kV	10	9	10	11	12	12	14	16	16
Dielectric Constant	50Hz	6.2	6.4	6.4	6.3	6.5	6.4	6.0	6.4	6.6
	1kHz	5.8	6.0	6.0	5.9	6.0	5.0	5.7	6.0	6.2
	1MHz	5.6	5.7	5.7	5.7	5.7	4.8	5.4	5.7	5.9
Dissipation Factor	50Hz	0.030	0.035	0.036	0.030	0.035	0.035	0.028	0.032	0.034
	1kHz	0.025	0.029	0.029	0.025	0.028	0.029	0.023	0.026	0.028
	1MHz	0.010	0.011	0.011	0.010	0.011	0.011	0.010	0.011	0.011

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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