

Fujipoly Data Sheet

SARCON[®] QR series


Rubber Type

FEATURES

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

- SARCON QR is available in press moldings, die-cut Gaskets, extrusion shapes and more with desired designs.
- UL 94 V-0 and UL 746 150°C certified.

CONSTRUCTIONS

Series	Characteristics	Constructions
SARCON[®] QR	Fine heat conductive particles are mixed with insulative silicone rubber to produce this excellent insulative, high heat conductive silicone material : 1.1W/mK (by Hot Wire)	 Plain Type

THERMAL RESISTANCE

Unit : K-cm²/W (K-in²/W)

Clamping Torque	30Q (0.3mmT)	45Q (0.45mmT)	85Q (0.85mmT)
0.29Nm / 0.22lbf-ft	3.9 (0.61)	5.4 (0.83)	9.2 (1.42)
0.49Nm / 0.36lbf-ft	3.7 (0.57)	5.0 (0.77)	8.1 (1.25)
0.69Nm / 0.51lbf-ft	3.4 (0.52)	4.6 (0.71)	7.6 (1.18)

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.

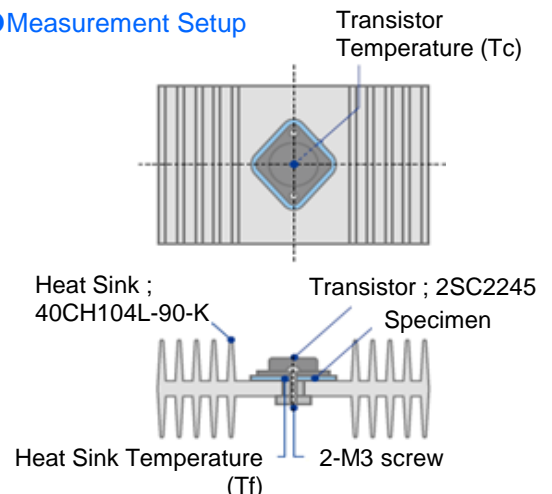
2. Principle

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	QR			Test method		
		30Q	45Q	85Q			
Physical Properties	Color	-	Black			Visual	
	Thickness	mm	0.3 +0.1/-0	0.45 ±0.05	0.85 ±0.05	ISO 463:2006	
	Specific Gravity	-	2.2			ASTM D792	
	Hardness Highest Value	IRHD	55	55	55	ISO 7619	
	Tensile Strength	MPa	2.2	2.2	2.3	ASTM D412	
		psi	319	319	334		
	Elongation	%	250	250	250	ASTM D412	
Tear Strength	N/mm	5 (Die-B)	6 (Die-B)	11 (Die-B)	ASTM D624		
Electrical Properties	Volume Resistivity	Ohm-m	1x10 ¹²	1x10 ¹²	1x10 ¹²	ASTM D257	
	Breakdown Voltage	kV(AC)	11	12	16	ASTM D149	
	Dielectric Strength	kV(AC)	7	8	11	ASTM D149	
	Dielectric Constant	-	50Hz	4.2	4.3	4.9	ASTM D150
			1kHz	4.1	4.2	4.9	
			1MHz	4.1	4.2	4.9	
	Dissipation Factor	-	50Hz	0.006	0.006	0.007	ASTM D150
1kHz			0.004	0.004	0.003		
1MHz			0.002	0.002	0.002		
Thermal Properties	Thermal Conductivity	W/m-K	1.1			ASTM D2326 (Hot Wire)	
	Recommended Operating Temp.	°C	-40 to +150			-	
		°F	-40 to +302				
	Relative Thermal Index	°C	150			UL 746	
Flame Retardant	UL94	V-0			UL 94		

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

Properties	unit	30Q			45Q			85Q		
		Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs
Hardness	IRHD	66	69	73	58	66	69	55	63	66
Tensile Strength	Mpa	3.4	4.2	4.5	2.6	3.9	4.4	2.9	4.0	4.6
Elongation	%	168	118	103	207	140	117	196	130	113
Volume Resistivity	Ohm-m	5.6×10^{12}	2.0×10^{13}	3.2×10^{13}	4.1×10^{12}	2.4×10^{13}	4.3×10^{13}	4.6×10^{12}	3.2×10^{13}	4.1×10^{13}
Breakdown Voltage	kV	11	11	10	12	12	12	16	16	16
Dielectric Constant	50Hz	4.2	4.1	4.0	4.3	4.2	4.2	4.9	4.9	4.9
	1kHz	4.1	4.1	4.0	4.2	4.2	4.2	4.9	4.9	4.8
	1MHz	4.1	4.1	4.0	4.2	4.2	4.2	4.9	4.8	4.8
Dissipation Factor	50Hz	0.006	0.004	0.004	0.006	0.003	0.003	0.007	0.003	0.003
	1kHz	0.004	0.003	0.003	0.004	0.002	0.002	0.003	0.003	0.002
	1MHz	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002

Heat Aging Test : 200°C (390°F)

Properties	unit	30Q			45Q			85Q		
		Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs
Hardness	IRHD	66	76	80	58	80	82	55	76	78
Tensile Strength	Mpa	3.4	4.5	5.0	2.6	5.0	5.4	2.9	5.6	5.3
Elongation	%	168	90	70	207	77	77	196	117	77
Volume Resistivity	Ohm-m	5.6×10^{12}	3.6×10^{13}	7.5×10^{13}	4.1×10^{12}	4.4×10^{13}	6.5×10^{13}	4.6×10^{12}	5.8×10^{13}	8.0×10^{13}
Breakdown Voltage	kV	11	10	11	12	13	13	16	17	18
Dielectric Constant	50Hz	4.2	4.0	3.9	4.3	4.3	4.2	4.9	4.9	4.9
	1kHz	4.1	4.0	3.9	4.2	4.3	4.2	4.9	4.9	4.9
	1MHz	4.1	3.9	3.9	4.2	4.2	4.2	4.9	4.9	4.9
Dissipation Factor	50Hz	0.006	0.003	0.004	0.006	0.003	0.003	0.007	0.003	0.002
	1kHz	0.004	0.003	0.003	0.004	0.003	0.003	0.003	0.003	0.003
	1MHz	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003

Humidity Test : 60°C (140°F) / 95%RH

Properties	unit	30Q			45Q			85Q		
		Before	250hrs	500hrs	Before	250hrs	500hrs	Before	250hrs	500hrs
Hardness	IRHD	66	62	63	58	59	60	55	56	54
Tensile Strength	Mpa	3.4	3.4	3.6	2.6	2.6	2.8	2.9	3.2	2.9
Elongation	%	168	157	147	207	202	183	196	198	173
Volume Resistivity	Ohm-m	5.6×10^{12}	2.9×10^{12}	2.8×10^{12}	4.1×10^{12}	2.5×10^{12}	1.9×10^{12}	4.6×10^{12}	3.5×10^{12}	3.5×10^{12}
Breakdown Voltage	kV	11	11	11	12	12	12	16	17	17
Dielectric Constant	50Hz	4.2	4.1	4.2	4.3	4.2	4.3	4.9	4.9	4.9
	1kHz	4.1	4.0	4.1	4.2	4.2	4.3	4.9	4.9	4.9
	1MHz	4.1	4.0	4.1	4.2	4.2	4.2	4.9	4.9	4.9
Dissipation Factor	50Hz	0.006	0.012	0.013	0.006	0.010	0.014	0.007	0.009	0.010
	1kHz	0.004	0.006	0.007	0.004	0.003	0.007	0.003	0.005	0.005
	1MHz	0.002	0.003	0.003	0.002	0.002	0.003	0.002	0.002	0.002

Chemical Resistance Test : (Chemical : HCFC AK-225 (Substitutive Freon))

Properties	unit	30Q		45Q		85Q	
		Before	24hrs	Before	24hrs	Before	500hrs
Volume Resistivity	Ohm-m	5.6×10^{12}	6.7×10^{11}	4.1×10^{12}	3.7×10^{11}	4.6×10^{12}	4.0×10^{12}
Breakdown Voltage	kV	11	11	12	12	16	17
Thermal Resistance	K-in ² /W	0.57	0.57	0.77	0.78	1.25	1.24

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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