

Fujipoly Data Sheet

SARCON[®] GSR series

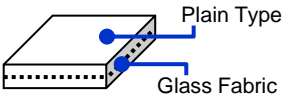
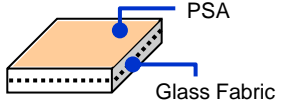
Higher Performance Rubber Type

FEATURES

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

- Heat conductive silicone rubber within glass fiber cloth has excellent mechanical and physical characteristics.
- UL 94 V-0 and UL 746 150°C certified.

CONSTRUCTIONS

Series	Characteristics	Constructions
SARCON[®] GSR	Fine heat conductive particles are mixed with insulative silicone rubber to produce this excellent insulative, high heat conductive silicone material within Glass Fiber Cloth : 2.9W/mK (by Hot Wire)	 Plain Type Glass Fabric
SARCON[®] GSR-AD	SARCON GSR is available with a PSA (Pressure Sensitive Adhesive) mounting option, simply remove the protective liner and press into position to attach.	 PSA Glass Fabric

THERMAL RESISTANCE

Unit : K-cm²/W (K-in²/W)

Clamping Torque	20GSR (0.2mmT)	30GSR (0.3mmT)	45GSR (0.45mmT)	85GSR (0.85mmT)
0.29Nm / 0.22lbf-ft	2.0 (0.31)	2.4 (0.37)	2.6 (0.40)	3.4 (0.52)
0.49Nm / 0.36lbf-ft	1.9 (0.30)	2.2 (0.34)	2.5 (0.39)	3.3 (0.51)
0.69Nm / 0.51lbf-ft	1.9 (0.30)	2.1 (0.33)	2.4 (0.37)	3.3 (0.50)

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.

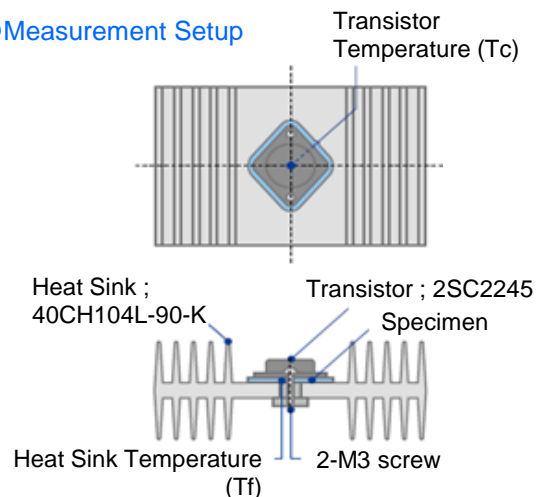
2. Principle

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	GSR				Test method		
		20GSR	30GSR	45GSR	85GSR			
Physical Properties	Color	-	White				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	-	1.7				ASTM D792	
	Hardness Highest Value	IRHD	90	90	90	88	ISO 7619	
	Tensile Strength	MPa	68.6	42.0	39.2	17.3	ASTM D1458	
		psi	9947	6090	5684	2508		
Elongation	%	3 or less	3 or less	3 or less	3 or less	ASTM D412		
Electrical Properties	Volume Resistivity	Ohm-m	1x10 ¹³	1x10 ¹³	1x10 ¹³	1x10 ¹³	ASTM D257	
	Breakdown Voltage	kV(AC)	6	10	15	20	ASTM D149	
	Dielectric Strength	kV(AC)	3	5	7	10	ASTM D149	
	Dielectric Constant	-	50Hz	2.6	3.0	3.2	3.7	ASTM D150
			1kHz	2.6	3.0	3.2	3.7	
			1MHz	2.6	3.0	3.2	3.7	
	Dissipation Factor	-	50Hz	0.0030	0.0020	0.0020	0.0013	ASTM D150
1kHz			0.0007	0.0005	0.0001	0.0004		
1MHz			0.0004	0.0003	0.0002	0.0009		
Thermal Properties	Thermal Conductivity	W/m-K	2.9				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	20GSR			30GSR			45GSR			85GSR		
		Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs	Before	500hrs	1,000hrs
Hardness	IRHD	90	90	88	90	91	90	90	92	90	88	92	90
Tensile Strength	Mpa	68.6	68.6	29.4	42.0	39.2	19.6	39.2	34.8	30.5	17.3	20.8	19.6
Elongation	%	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less
Volume Resistivity	Ohm-m	2.9x10 ¹³	8.4x10 ¹⁴	2.6x10 ¹³	2.5x10 ¹³	3.3x10 ¹⁴	1.1x10 ¹⁴	3.3x10 ¹³	3.9x10 ¹⁴	1.5x10 ¹³	2.1x10 ¹³	2.3x10 ¹⁴	1.2x10 ¹⁴
Breakdown Voltage	kV	6	6	6	10	14	14	15	16	17	20	20	22
Dielectric Constant	50Hz	2.0	1.8	1.9	3.0	2.9	2.9	3.2	3.1	3.1	3.7	3.6	3.6
	1kHz	2.0	1.8	1.9	3.0	2.9	2.9	3.2	3.1	3.1	3.7	3.6	3.6
	1MHz	2.0	1.9	1.9	3.0	2.9	2.9	3.2	3.1	3.1	3.7	3.6	3.7
Dissipation Factor	50Hz	0.0023	0.0004	0.0015	0.0024	0.0007	0.0011	0.0028	0.0005	0.0011	0.0019	0.0006	0.0007
	1kHz	0.0010	0.0001	0.0005	0.0010	0.0001	0.0005	0.0009	0.0000	0.0003	0.0004	0.0006	0.0001
	1MHz	0.0014	0.0004	0.0006	0.0009	0.0007	0.0005	0.0006	0.0004	0.0002	0.0001	0.0005	0.0004

Humidity Test : 60°C (140°F) / 95%RH

Properties	unit	20GSR			30GSR			45GSR			85GSR		
		Before	250hrs	500hrs	Before	250hrs	500hrs	Before	250hrs	500hrs	Before	250hrs	500hrs
Hardness	IRHD	90	86	85	90	88	85	90	90	91	88	87	89
Tensile Strength	Mpa	68.6	58.8	78.4	42.0	50.4	44.8	39.2	39.2	39.2	17.3	20.8	19.6
Elongation	%	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less	3 or less
Volume Resistivity	Ohm-m	2.9x10 ¹³	4.7x10 ¹³	8.4x10 ¹³	2.5x10 ¹³	6.5x10 ¹²	8.4x10 ¹³	3.3x10 ¹³	9.1x10 ¹²	0.9x10 ¹³	2.1x10 ¹³	9.2x10 ¹²	3.6x10 ¹²
Breakdown Voltage	kV	6	6	5	10	11	7	15	17	18	20	22	20
Dielectric Constant	50Hz	2.0	1.9	2.1	3.0	3.0	3.0	3.2	3.2	3.2	3.7	3.7	3.7
	1kHz	2.0	1.9	1.8	3.0	3.0	3.0	3.2	3.2	3.1	3.7	3.7	3.7
	1MHz	2.0	1.9	1.9	3.0	3.0	3.0	3.2	3.2	3.1	3.7	3.7	3.7
Dissipation Factor	50Hz	0.0023	0.0030	0.0004	0.0024	0.0052	0.0062	0.0028	0.0052	0.0059	0.0019	0.0042	0.0047
	1kHz	0.0010	0.0011	0.0001	0.0010	0.0015	0.0025	0.0009	0.0018	0.0024	0.0004	0.0013	0.0018
	1MHz	0.0014	0.0011	0.0004	0.0009	0.0009	0.0014	0.0006	0.0009	0.0011	0.0001	0.0004	0.0007

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

Properties	unit	20GSR		30GSR		45GSR		85GSR	
		Before	24hrs	Before	24hrs	Before	24hrs	Before	24hrs
Volume Resistivity	Ohm-m	2.9x10 ¹³	3.9x10 ¹³	2.5x10 ¹³	1.8x10 ¹³	3.3x10 ¹³	5.6x10 ¹²	2.1x10 ¹³	1.1x10 ¹³
Breakdown Voltage	kV	6	5	10	9	15	13	20	19
Thermal Resistance	K-in ² /W	0.30	0.28	0.34	0.32	0.39	0.38	0.51	0.54

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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