

Order code	Manufacturer code	Description
38-0350	VO SOFT 0.02_ 4X4	GAP-PAD 0.5MM
38-0352	VO SOFT 0.04_ 4X4	GAP-PAD 1.0MM
38-0354	VO SOFT 0.06_ 4X4	GAP-PAD 1.5MM
38-0356	VO SOFT 0.10_ 4X4	GAP-PAD 2.5MM

	Page 1 of 3
The enclosed information is believed to be correct, Information may change 'without notice' due to product improvement. Users should ensure that the product is suitable for their use. E. & O. E.	Revision A 04/07/2003

Gap-Pad V0 Soft

Bergquist Gap Pad V0 Soft

Gap Pad V0 Soft is recommended for low stress applications. These include applications where the material is used as an interface and one side is in contact with a leaded device.

Gap Pad V0 Soft is a thermally conductive material that acts as an interface between a heat sink and an electronic device. The conformable nature of Gap Pad V0 Soft allows the pad to fill in air gaps between PCB's and heat sinks or a metal chassis.

Gap Pad V0 Soft is a highly conformable, low modulus silicone polymer filled with alumina on a fibreglass carrier. The material is available in thickness from 0.020" to 0.160" with a liner applied to the pink side of the material. The range in thickness and the materials flexibility allow Gap Pad V0 Soft to be used in a variety of applications where surface textures vary and the space between surfaces is uneven.

PROPERTY	Value	Value	TEST METHOD
Mechanical Properties			
Thickness inches	0.02" to 0.160"		ASTM D374
Colour	Mauve/Pink		Visual
Specific Gravity	1.6		ASTM D792
Heat Capacity J/g-K	1		ASTM C351
Continuous Use	-60 to +200C		
Hardness, entire composite	<u>vs. Thickness (in)</u>	<u>Type (00)</u>	ASTM D2240
	0.020	65	
	0.040	50	
	0.060	45	
	0.080	40	
	0.100	35	
	0.125	35	
0.160	25		
Young's Modulus (psi) vs. Rate of Strain (inches/minute)* Area=0.5 in ²	<u>Rate</u>	<u>Modulus</u>	ASTM D575
Low Modulus Portion Only	0.01	100	
	0.1	150	
	1.0	200	
	10.0	400	

Stress vs. strain and resultant deflection in mils for each Gap Pad V0 Soft thickness.

Example: Rate = 1 in/min. Modulus = stress/strain = 200 psi, Area = 0.5 in², Low Modulus Portion Only:

Stress	Strain	20 mil	40 mil	60 mil	80 mil	100 mil	125 mil	160 mil	
2 psi	1%	0.15	0.35	0.55	0.71	0.91	1.16	1.51	ASTM D575
4 psi	2%	0.30	0.70	1.10	1.42	1.82	2.32	3.02	
10 psi	5%	0.75	1.75	2.75	3.55	4.55	5.80	7.55	
20 psi	10%	1.50	3.50	5.50	7.10	9.10	11.6	15.1	
40 psi	20%	3.00	7.00	11.0	14.2	18.2	23.2	30.2	
100 psi	50%	7.50	17.5	27.5	35.5	45.5	58.0	75.5	

PROPERTY	Value	Value	TEST METHOD
Electrical Properties			
Dielectric Constant	5.5		ASTM D150
Dielectric Breakdown Voltage kV-AC	>6		ASTM D149
Volume Resistivity, Ohm-meters	10^{11}		ASTM D257
Thermal Properties			
Thermal Conductivity @ 10 psi, W/m-K	0.8		ASTM D5470
Thermal Impedance** vs.	Thickness (in)	(C-in ² /W)	
Entire composite	0.020	1.0	ASTM D5470
	0.040	2.0	
	0.060	3.0	
	0.080	4.0	
	0.100	5.0	
	0.125	6.2	
	0.160	8.0	

UL File Number E59150

MODULUS * The modulus of Gap Pad V0 Soft is shown as being rate dependant because Gap Pad V0 Soft is viscoelastic. At high rates of compression Gap Pad V0 Soft is elastic and at low rates it is viscous. Elastic strain is instantaneous, independent of time. The total deformation occurs at the instant the stress is applied and is completely recovered when the stress is released. Viscous strain is time dependant. The deformation is not instantaneous but occurs over time and is not completely recovered after the stress is removed. As an example, if the low modulus Gap Pad V0 Soft rubber is molded into a ball and dropped on the floor it will bounce. However, if a load is placed on the ball for a long period of time it will flatten out to a certain extent and will not recover completely to it's original shape after the load has been removed.

THERMAL IMPEDANCE ** With Gap Pad V0 Soft, the thermal impedance is dependant on the gap between the device and the heatsink. The engineer can minimise the thermal impedance by designing the gap as small as possible. A Gap Pad V0 Soft thickness is then chosen to be just thick enough to fill the largest gaps while minimising the deflection needed in the smallest gaps to decrease the stress exerted on the devices. If the size of the gaps are known, the thermal impedance across each gap is determined from the table of thermal impedance vs. thickness.