

Accessories

Thermal Interface Materials

SEMIKRON was the first power module manufacturer on the market to offer power modules with pre-applied thermal interface material. With more than two decades of field experience and more than twelve million pre-printed modules in the field, benchmarks are being set. The modules with pre-applied TIM are printed in a clean environment on an automated and SPC controlled silk screen and stencil printing line.

For each requirement SEMIKRON offers the right choice of material. In addition to the standard silicone thermal grease, a phase change material and high performance thermal paste with improved thermal performance are also available.

A thermal grease or a phase change material is recommended for the given customer needs for handling and module performance as well as for module type (with baseplate, baseplate-less).

Phase change materials with a rigid consistency at room temperatures can fully exploit the advantages that a non-smearing TIM layer offers on modules without any other drawbacks. Modules with no baseplate, on the other hand, usually require a lower-viscosity material to help improve robustness during assembly. Here, thermal grease is the preferred solution.

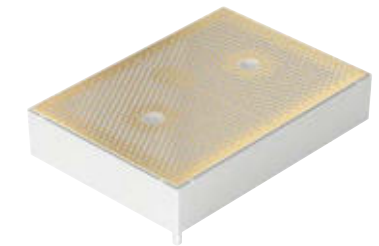
Thermal Interface Materials

Without baseplate

High Performance Thermal Paste

Standard Grease Silicone-based

Phase Change Material



e.g. MiniSKiP

Baseplate

Phase Change Material



e.g. SEMiX Press-Fit

Accessories / Thermal Interface Materials

Type				
	Case	TiM material	Thermal conductance	
			W/m²K	
High Performance Thermal Paste				
TP(HPTP)Mini0	0 II	High Performance Thermal Paste	2.5	
TP(HPTP)Mini1II.Gen	1 II	High Performance Thermal Paste	2.5	
TP(HPTP)Mini2II.Gen	2 II	High Performance Thermal Paste	2.5	
TP(HPTP)Mini3II.Gen	3 II	High Performance Thermal Paste	2.5	
TP(HPTP)Mini2GB	2 II	High Performance Thermal Paste	2.5	
TP(HPTP)Mini3GB	3 II	High Performance Thermal Paste	2.5	
TP(HPTP)Mini8AxB	8 I	High Performance Thermal Paste	2.5	
TP(HPTP)Mini8AC	8 I	High Performance Thermal Paste	2.5	
TP(HPTP)SEMITOP3 2)	3	High Performance Thermal Paste	2.5	
TP(HPTP)SEMITOP4 2)	4	High Performance Thermal Paste	2.5	
TP(HPTP)SEMITOP_E2 1)	E2	High Performance Thermal Paste	2.5	
TP(HPTP)SKiM4	4	High Performance Thermal Paste	2.5	
TP(HPTP)SKiM5	5	High Performance Thermal Paste	2.5	
TP(HPTP)SKiM63	63	High Performance Thermal Paste	2.5	
TP(HPTP)SKiM93	93	High Performance Thermal Paste	2.5	
Standard Grease silicone based				
TP(P12)Mini0	0 II	Wacker P12	0.8	
TP(P12)Mini1II.Gen	1 II	Wacker P12	0.8	
TP(P12)Mini2I.Gen	2 I	Wacker P12	0.8	
TP(P12)Mini2II. Gen	2 II	Wacker P12	0.8	
TP(P12)Mini3I.Gen	3 I	Wacker P12	0.8	
TP(P12)Mini3II.Gen	3 II	Wacker P12	0.8	
TP(P12)Mini2 GB	2 II	Wacker P12	0.8	
TP(P12)Mini3 GB	3 II	Wacker P12	0.8	
TP(P12)Mini8AC	8 I AC	Wacker P12	0.8	
TP(P12)Mini8AxB	8 I AB	Wacker P12	0.8	
TP(P12)SEMITOP2	2	Wacker P12	0.8	
TP(P12)SEMITOP3	3	Wacker P12	0.8	
TP(P12)SEMITOP4	4	Wacker P12	0.8	
TP(P12)SKiM4	4	Wacker P12	0.8	
TP(P12)SKiM63	63	Wacker P12	0.8	
TP(P12)SKiM93	93	Wacker P12	0.8	
Phase Change Material				
TP(HALA P8) SEMiX 2s 2)	2	HALA TPC-Z-PC-P8	3.4	
TP(HALA P8) SEMiX 13	13	HALA TPC-Z-PC-P8	3.4	
TP(HALA P8) SEMiX 3s	3s	HALA TPC-Z-PC-P8	3.4	
TP(HALA P8) SEMiX 3p	3p	HALA TPC-Z-PC-P8	3.4	
TP(HALA HT) SEMiX 3p 2)	3p	HALA TPC-V-PC-P-HT	3.0	
TP(HALA HT) SEMiX 4s 2)	4	HALA TPC-V-PC-P-HT	3.0	
TP(HALA P8) SEMiX 5p	5p	HALA TPC-Z-PC-P8	3.4	
TP(HALA P8) SEMiX 33 2)	33	HALA TPC-Z-PC-P8	3.4	
TP(HALA HT) SEMITRANS 2 2)	10	HALA TPC-V-PC-P-HT	3.0	
TP(HALA P8) SEMITRANS 3	3	HALA TPC-Z-PC-P8	3.4	
TP(HALA HT) SEMITRANS 10	10	HALA TPC-V-PC-P-HT	3.0	
TP(HALA HT) SEMIPACK 2 2)	2	HALA TPC-V-PC-P-HT	3.0	

Footnotes: 1) Sample status / 2) In production new

Accessories

Heatsinks / Fans

Heatsinks – SEMIKRON offers a wide range of heat sinks including forced and natural air cooling. The heatsinks are available for capsules, insulated base modules or IPMs.

Fans – SEMIKRON offers a broad range of axial, centrifugal and radial fans for different inverter designs.

Heatsinks	224
Fans	226

For detailed information please refer to data sheets.

Further information
www.semikron.com/heatsinks
www.semikron.com/fans

Heatsinks

Forced air-cooled



Natural cooled



Fans

Axial



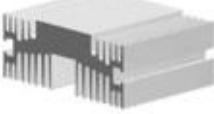
Centrifugal



Radial

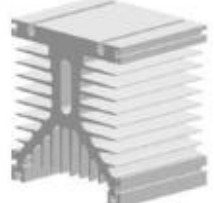
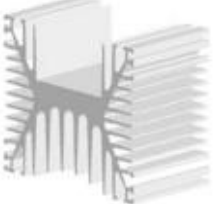


Accessories / Heatsinks

Type							
	Suitable for	R_{thsa} natural cooling	R_{thsa} forced air cooling	Weight	Weight		
		K/W	K/W	kg	kg/m	Produkt Picture	
Forced-air cooled							
N 4	Capsules	-	0.04	6.3	25.1		
P 11	Capsules	0.2	0.05	3.8	15		
P 17	Capsules	0.45	0.12	1.5	10.6		
P 18	Capsules	0.37	0.08	1.6	12.2		
P 8 ⁹⁾	Capsules	0.35	0.07	1.7	9.6		
P 8,5 ⁹⁾	Capsules	0.3	0.08	1.5	9.5		
P 9 ⁹⁾	Capsules	0.21	0.06	4.1	17.8		
U 3	Capsules	0.14	0.06	7.1	23.7		
P 21 ⁹⁾	Isolated base modules	-	0.02	4.1	40.8		
R 4A	Isolated base modules	1.4	0.38	0.6	-		

Footnotes: 9) Non standard item, available on request only, typical minimum batch quantities of 60 pieces will apply

Accessories / Heatsinks

Type							
	Suitable for	R_{thsa} natural cooling	R_{thsa} forced air cooling	Weight	Weight		
		K/W	K/W	kg	kg/m	Produkt Picture	
Forced-air cooled							
P 16	SKiiP or modules	-	0.06	1.3	23.5		
Px 308 ⁹⁾	SKiiP or modules	-	0.013	2	12.2		
P 1	Studs or modules	0.7	0.4	0.8	11.3		
P 3	Isolated base modules	0.45	0.14	0.7	17.6		
Natural cooled							
P 4 ⁹⁾	Stud device	0.27	-	4.1	20.6		

Footnotes: 9) Non standard item, available on request only, typical minimum batch quantities of 60 pieces will apply



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Accessories / Fans

Type								
	V_{in} V	f Hz	V_{air}/t m³/h	P_{max} W	T_{Amax} °C	Weight kg	Noise dB	Produkt Picture
Axial Fans								
SKF 3-230-01	230	50 / 60	150 / 174	15 / 14	70	0.55	37 / 41	
SKF RE-024-01	24	-	500	90	75	0.43	76	
SKF SR-024-01	24	-	56	3.6	70	0.085	43	
SKF 9-230-01	230	50 / 60	375 / 440	24 / 26	70	1	54 / 60	
SKF 8-230-01	230	50 / 60	325 / 380	45 / 39	50 / 70	1.1	49 / 53	
Centrifugal Fans								
SKF 17A-230-11	230	50 / 60	850 / 930	110 / 120	70	2	74	
SKF 17B-230-12	230	50 / 60	1175 / 1300	230	70	6.1	73 / 76	
Radial Fans								
SKF 16A-230-01	230	50 / 60	630 / 590	130 / 140	60 / 50	3.3	59	
SKF 16P-230-01	230	50 / 60	1125	165	60	3.9	-	
SKF 16B-230-01	230	50 / 60	640 / 580	167 / 191	70 / 50	3.75	58 / 57	
SKF 16A-230-11	230	50 / 60	630 / 590	130 / 140	60 / 50	3.3	59	
								