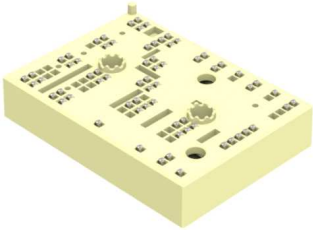
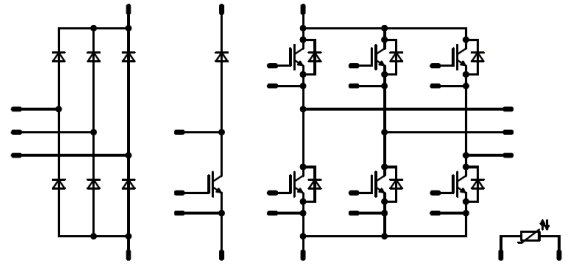




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MiniSkiiP®PIM 3	1200 V / 100 A
<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;">Features</div> <ul style="list-style-type: none"> IGBT Mitsubishi gen 7 technology with low V_{CESat} and improved EMC behavior Solder-free spring contact technology 	<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;">MiniSkiiP® 3 housing</div> 
<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;">Target applications</div> <ul style="list-style-type: none"> Industrial Drives 	<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;">Schematic</div> 
<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;">Types</div> <ul style="list-style-type: none"> 80-M312PMA100M7-K420A70 	

Maximum Ratings

$T_j = 25\text{ °C}$, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
Inverter/Brake Switch				
Collector-emitter voltage	V_{CES}		1200	V
Collector current	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	90	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	173	W
Gate-emitter voltage	V_{GES}		±20	V
Maximum junction temperature	T_{jmax}		175	°C



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Maximum Ratings

$T_j = 25\text{ °C}$, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
Inverter/Brake Diode				
Peak repetitive reverse voltage	V_{RRM}		1200	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	74	A
Repetitive peak forward current	I_{FRM}		200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	125	W
Maximum junction temperature	T_{jmax}		175	°C

Rectifier Diode

Peak Repetitive Reverse Voltage	V_{RRM}		1600	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	90	A
Surge (non-repetitive) forward current	I_{FSM}	$t_p = 10\text{ ms, sin } 180^\circ$ $T_j = 150\text{ °C}$	890	A
Surge current capability	I^2t		3960	A ² s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	99	W
Maximum Junction Temperature	T_{jmax}		150	°C

Module Properties

Thermal Properties

Storage temperature	T_{stg}		-40...+125	°C
Operation temperature under switching condition	T_{jop}		-40...(T _{jmax} - 25)	°C

Isolation Properties

Isolation voltage	V_{isol}	DC Test Voltage $t_p = 2\text{ s}$	4000	V
Creepage distance			min. 12,7	mm
Clearance			min. 12,7	mm
Comparative Tracking Index	CTI		> 200	



Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
		V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max		

Inverter/Brake Switch

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE} = V_{CE}$			0,01	25	5,4	6	6,6	V
Collector-emitter saturation voltage	V_{CESat}		15		100	25 125 150		1,61 1,82 1,91	2,05	V
Collector-emitter cut-off current	I_{CES}		0	1200		25			110	μA
Gate-emitter leakage current	I_{GES}		20	0		25			500	nA
Internal gate resistance	r_g							none		Ω
Input capacitance	C_{ies}							21000		pF
Output capacitance	C_{oes}		0	10		25		700		
Reverse transfer capacitance	C_{res}							280		
Gate charge	Q_g		15	600	100	25		650		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	Thermal grease thickness ≤ 50 μm λ = 1 W/mK						0,55		K/W
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Inverter/Brake Diode

Static

Forward voltage	V_F				100	25 125 150		1,82 1,96 1,97	2,1	V
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Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	Thermal grease thickness ≤ 50 μm λ = 1 W/mK						0,76		K/W
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Rectifier Diode

Static

Forward voltage	V_F				75	25 125		1,10 1,05	1,8	V
Reverse leakage current	I_r			1600		25 145			50 1100	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	Thermal grease thickness ≤ 50 μm λ = 1 W/mK						0,71		K/W
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Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
		V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_D [A]	I_C [A]	T_j [°C]	Min	Typ	

Thermistor

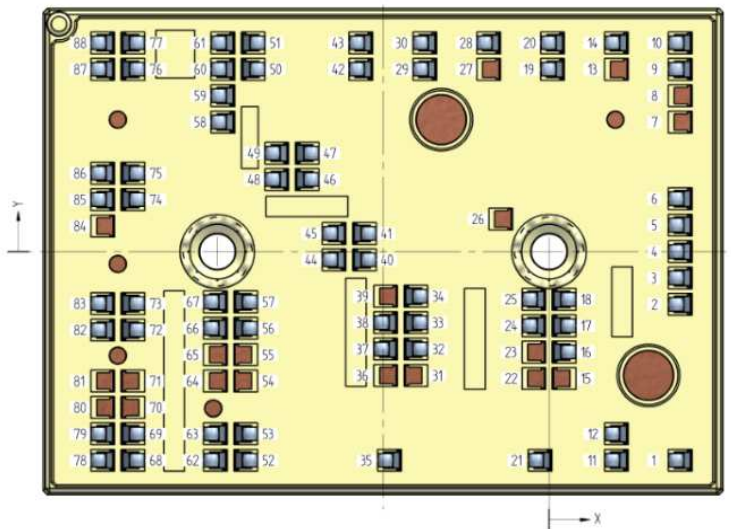
Rated resistance	R					25		1		kΩ
Deviation of R_{100}	$\Delta_{R/R}$	$R_{100} = 1670 \Omega$				100	-2		+2	%
R_{100}	R					100		1670		Ω
Power dissipation constant						25		0,76		mW/K
A-value	$A_{(25/50)}$					25		$7,635 \cdot 10^{-3}$		1/K
B-value	$B_{(25/100)}$					25		$1,731 \cdot 10^{-5}$		1/K ²
Vincotech PTC Reference									E	



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Ordering Code & Marking							
Version				Ordering Code			
with thermal paste with std lid (black V23990-K32-T-2-PM)				80-M312PMA100M7-K420A70-/1A/			
	Text	Name		Date code	UL & VIN	Lot	Serial
		NN-NNNNNNNNNNNNNN-TTTTTWW		WWYY	UL VIN	LLLLL	SSSS
		Datamatrix	Type&Ver	Lot number	Serial	Date code	
		TTTTTWW	LLLLL	SSSS	WWYY		

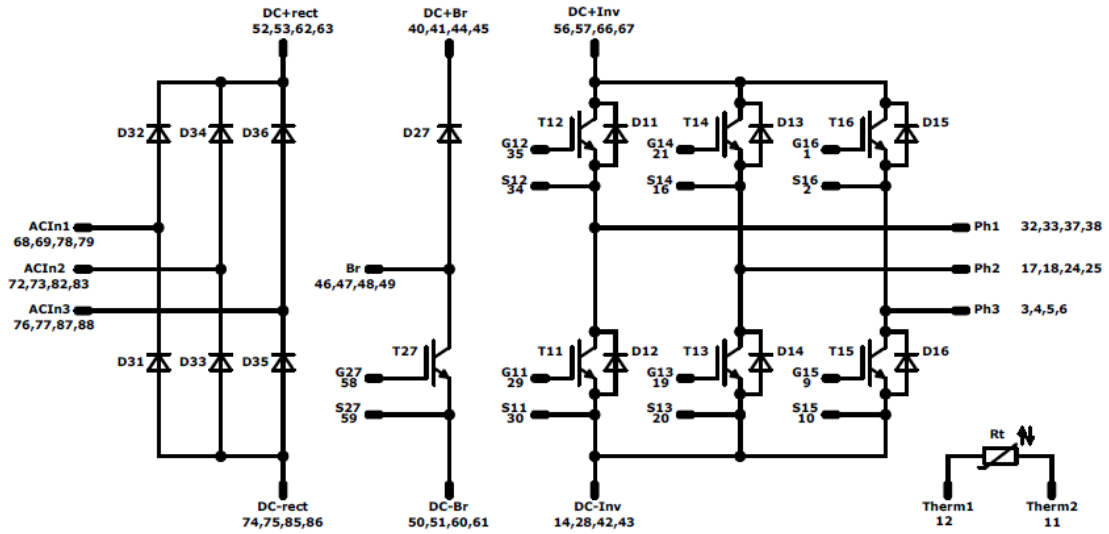
Outline							
PCB pad table [mm]				PCB pad table [mm]			
Pin	X	Y	Function	Pin	X	Y	Function
1	15,83	-25,3	G16	45	-25,9	2,2	DC+Br
2	15,83	-6,4	S16	46	10,82	8,74	Br
3	15,83	-3,2	Ph3	47	10,82	11,94	Br
4	15,83	0	Ph3	48	-32,82	8,74	Br
5	15,83	3,2	Ph3	49	-32,82	11,94	Br
6	15,83	6,4	Ph3	50	4,32	22,1	DC-Br
7	Not assembled			51	4,32	25,3	DC-Br
8	Not assembled			52	3,42	-25,3	DC+rect
9	15,83	22,1	G15	53	3,42	-22,1	DC+rect
10	15,83	25,3	S15	54	Not assembled		
11	8,13	-25,3	Therm2	55	Not assembled		
12	8,13	-22,1	Therm1	56	3,42	-9,3	DC+Inv
13	Not assembled			57	3,42	-6,1	DC+Inv
14	8,13	25,3	DC-Inv	58	-39,32	15,7	G27
15	Not assembled			59	-39,32	18,9	S27
16	41,82	-12,18	S14	60	-39,32	22,1	DC-Br
17	41,82	-8,98	Ph2	61	-39,32	25,3	DC-Br
18	41,82	-5,79	Ph2	62	-40,22	-25,3	DC+rect
19	0,43	22,1	G13	63	-40,22	-22,1	DC+rect
20	0,43	25,3	S13	64	Not assembled		
21	-1,07	-25,3	G14	65	Not assembled		
22	Not assembled			66	-40,22	-9,3	DC+Inv
23	Not assembled			67	-40,22	-6,09	DC+Inv
24	-1,82	-8,98	Ph2	68	-10,18	-25,3	ACIn1
25	-1,82	-5,79	Ph2	69	-10,18	-22,1	ACIn1
26	Not assembled			70	Not assembled		
27	Not assembled			71	Not assembled		
28	-7,27	25,3	DC-Inv	72	-10,18	-9,5	ACIn2
29	-14,97	22,1	G11	73	-10,18	-6,3	ACIn2
30	-14,97	25,3	S11	74	-10,18	6,3	DC-rect
31	Not assembled			75	-10,18	9,5	DC-rect
32	23,95	-11,82	Ph1	76	-10,18	22,1	ACIn3
33	23,95	-8,63	Ph1	77	-10,18	25,3	ACIn3
34	23,95	-5,42	S12	78	-53,82	-25,3	ACIn1
35	-19,22	-25,3	G12	79	-53,82	-22,1	ACIn1
36	Not assembled			80	Not assembled		
37	-19,7	-11,82	Ph1	81	Not assembled		
38	-19,7	-8,62	Ph1	82	-53,82	-9,5	ACIn2
39	Not assembled			83	-53,82	-6,3	ACIn2
40	17,74	-1	DC+Br	84	Not assembled		
41	17,74	2,2	DC+Br	85	-53,82	6,3	DC-rect
42	-22,67	22,1	DC-Inv	86	-53,82	9,5	DC-rect
43	-22,67	25,3	DC-Inv	87	-53,82	22,1	ACIn3
44	-25,9	-1	DC+Br	88	-53,82	25,3	ACIn3





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Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T11,T12,T13 T14,T15,T16	IGBT	1200 V	100 A	Inverter Switch	
D11,D12,D13 D14,D15,D16	FWD	1200 V	100 A	Inverter Diode	
T27	IGBT	1200 V	100 A	Brake Switch	
D27	FWD	1200 V	100 A	Brake Diode	
D31,D32,D33 D34,D35,D36	Diode	1600 V	75 A	Rectifier Diode	
Rt	Thermistor			Thermistor	




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Packaging instruction			
Standard packaging quantity (SPQ)	48	>SPQ	Standard
		<SPQ	Sample

Handling instruction
Handling instructions for MiniSkiiP® 3 packages see vincotech.com website.

Package data
Package data for MiniSkiiP® 3 packages see vincotech.com website.

UL recognition and file number
This device is certified according to UL 1557 standard, UL file number E192116. For more information see vincotech.com website. 

Document No.:	Date:	Modification:	Pages
80-M312PMA100M7-K420A70-T1-14	17 Okt. 2016		

Product status definition		
Datasheet Status	Product Status	Definition
Target	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice. The data contained is exclusively intended for technically trained staff.

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