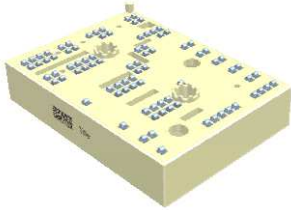
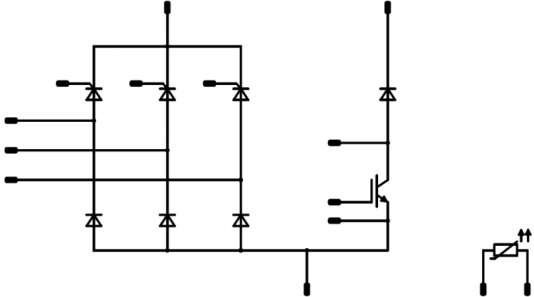




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MiniSkiiP® CON 3	1200 V / 125 A
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; margin: 0;">Features</p> <ul style="list-style-type: none"> 3-phase half controlled input rectifier with brake chopper Fast Trench IGBT Temperature sensor integrated </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; margin: 0;">Target applications</p> <ul style="list-style-type: none"> Industrial Drives Embedded Drives </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Types</p> <ul style="list-style-type: none"> 80-M3166BA125AS-K489G30-/1A/ </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; margin: 0;">MiniSkiiP® 3 housing</p>  </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Schematic</p>  </div>

Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
Brake Switch				
Collector-emitter voltage	V_{CES}		1200	V
Collector current	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	138	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	280	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	259	W
Gate-emitter voltage	V_{GES}		±20	V
Maximum junction temperature	T_{jmax}		150	°C



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Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
Brake Diode				
Peak repetitive reverse voltage	V_{RRM}		1200	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	108	A
Surge (non-repetitive) forward current	I_{FSM}	50 Hz Single Half Sine Wave $t_p = 10\text{ ms}$ $T_j = 150\text{ °C}$	900	A
Surge current capability	I^2t		4050	A ² s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	175	W
Maximum junction temperature	T_{jmax}		175	°C
Rectifier Diode				
Peak repetitive reverse voltage	V_{RRM}		1600	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	106	A
Surge (non-repetitive) forward current	I_{FSM}	50 Hz Single Half Sine Wave $t_p = 10\text{ ms}$ $T_j = 150\text{ °C}$	1380	A
Surge current capability	I^2t		9520	A ² s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	131	W
Maximum junction temperature	T_{jmax}		150	°C
Rectifier Thyristor				
Repetitive peak reverse voltage	V_{RRM}		1600	V
Forward average current	I_{FAV}	sine, $d = 0,5$ $T_j = T_{jmax}$ $T_s = 80\text{ °C}$	106	A
Surge forward current	I_{FSM}	$t_p = 10\text{ ms}$ $T_j = 130\text{ °C}$	1250	A
I^2t value	I^2t		7810	A ² s
Power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	107	W
Maximum Junction Temperature	T_{jmax}		130	°C



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Maximum Ratings

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

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

Brake Switch

Static

Parameter	Symbol	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	Unit	
Gate-emitter threshold voltage	$V_{GE(th)}$		$V_{GE} = V_{CE}$			0,006	25	5	5,8	6,5	V
Collector-emitter saturation voltage	V_{CEsat}			0		140	25	1,35	1,70	2,05	V
Collector-emitter cut-off current	I_{CES}			0	1200		25			1000	μA
Gate-emitter leakage current	I_{GES}			20	0		25			2400	nA
Internal gate resistance	r_g							1,5			Ω
Input capacitance	C_{ies}							10120			pF
Output capacitance	C_{oes}	$f = 100$ KHz	0	25		25		528			
Reverse transfer capacitance	C_{res}							460			

Thermal

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Thermal resistance junction to sink	$R_{th(j-s)}$	Thermal grease thickness ≤ 50 μm $\lambda = 1$ W/mK		0,27		K/W

Brake Diode

Static

Parameter	Symbol	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	Unit
Forward voltage	V_F				150	25		2,14	2,7	V
Reverse leakage current	I_R				1200	25			180	μA
						150			28000	

Thermal

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Thermal resistance junction to sink	$R_{th(j-s)}$	Thermal grease thickness ≤ 50 μm $\lambda = 1$ W/mK		0,54		K/W

Rectifier Diode

Static

Parameter	Symbol	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	Unit
Forward voltage	V_F				140	25		1,46		V
Reverse leakage current	I_R				1600	25			50	μA
						150			1100	

Thermal

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Thermal resistance junction to sink	$R_{th(j-s)}$	Thermal grease thickness ≤ 50 μm $\lambda = 1$ W/mK		0,54		K/W



Characteristic Values

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

Rectifier Thyristor

Static

Parameter	Symbol	Conditions	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_D [A]	T_j [°C]	Min	Typ	Max	Unit
Forward voltage	V_F					110	25 125		1,09 1,02	1,2	V
Threshold voltage (for power loss calc. only)	V_{to}						130			0,85	V
Slope resistance (for power loss calc. only)	r_t						130			3,2	mΩ
Reverse current	I_r			1600			25			0,2	mA
Gate controlled delay time	t_{GD}	$T_{vj} = 25\text{ °C}$ $I_G = 1\text{ A}$ $di/dt = 1\text{ A}/\mu\text{s}$		1072			25		1		μs
Gate controlled rise time	t_{GR}	$V_D = 0,67 * V_{DRM}$		1072			25		2		μs
Critical rate of rise of off-state voltage	$(dv/dt)_{cr}$						130			1000	V/μs
Critical rate of rise of on-state current	$(di/dt)_{cr}$						130			100	A/μs
Circuit commutated turn-off time	t_q						130		150		μs
Holding current	I_H						25			220	mA
Latching current	I_L						25			550	mA
Gate trigger voltage	V_{GT}						25			1,98	V
Gate trigger current	I_{GT}						25			100	mA
Gate non-trigger voltage	V_{GD}						130	0,25			V
Gate non-trigger current	I_{GD}						115	6			mA

Thermal

Parameter	Symbol	Conditions	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_D [A]	T_j [°C]	Min	Typ	Max	Unit
Thermal resistance chip to sink	$R_{th(j-s)}$	Thermal grease thickness $\leq 50\mu\text{m}$ $\lambda = 1\text{ W/mK}$							0,47		K/W

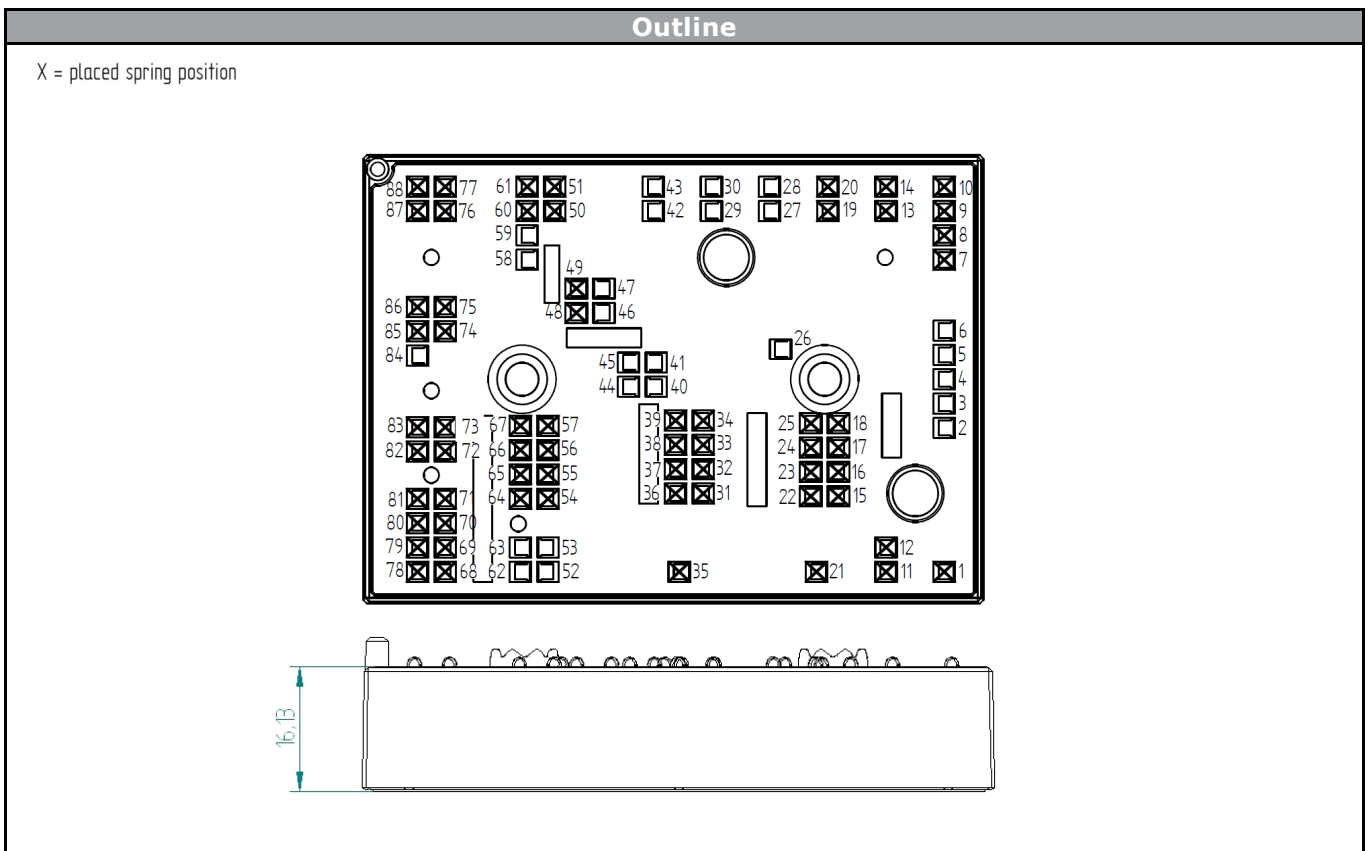
Thermistor

Parameter	Symbol	Conditions	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_D [A]	T_j [°C]	Min	Typ	Max	Unit
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		$7,635 * 10^{-3}$		1/K
B-value	$B_{(25/100)}$						25		$1,731 * 10^{-5}$		1/K ²
Vincotech PTC Reference										E	



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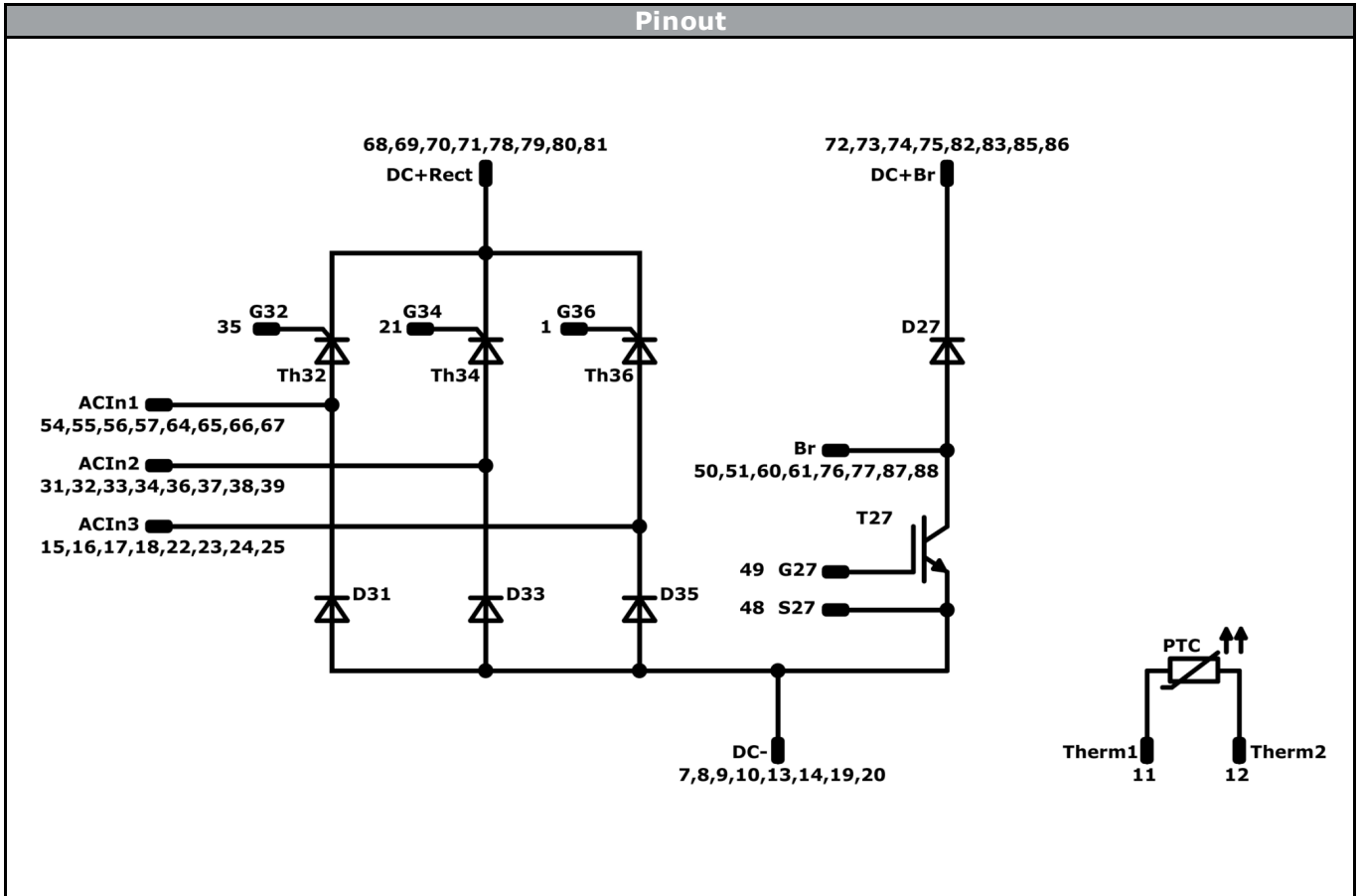
Ordering Code & Marking						
Version			Ordering Code			
With thermal paste and std lid (black V23990-K32-T-2-PM)			80-M3166BA125AS-K489G30-/1A/			
			Name	Date code	UL & VIN	Lot
			NN-NNNNNNNNNNNNNN-TTTTTWW	WWYY	UL VIN	LLLLL
			Type&Ver	Lot number	Serial	Date code
			TTTTTTTV	LLLLL	SSSS	WWYY





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Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T27	IGBT	1200 V	140 A	Brake Switch	
D27	FWD	1200 V	150 A	Brake Diode	
D31, D33, D35	FWD	1600 V	140 A	Rectifier Diode	
Th32, Th34, Th36	Thyristor	1600 V	110 A	Rectifier Thyristor	
PTC	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-M3166BA125AS-K489G30-T2-14	21 Jun. 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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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.