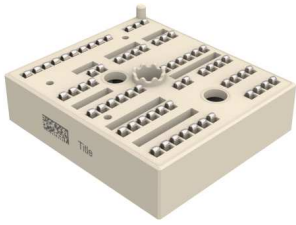
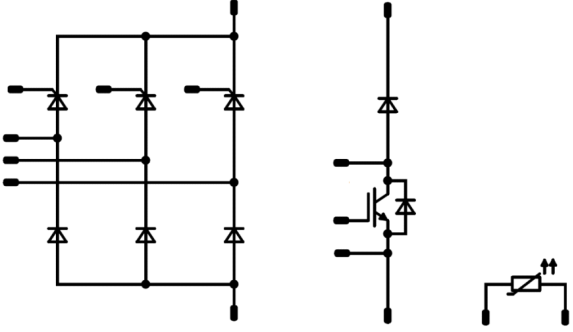




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MiniSkiiP® CON 2	1600 V / 60 A
<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;"><b>Features</b></div> <ul style="list-style-type: none"> <li>3-phase half controlled rectifier</li> <li>Brake chopper</li> </ul>	<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;"><b>MiniSkiiP® 2 housing</b></div> 
<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;"><b>Target applications</b></div> <ul style="list-style-type: none"> <li>Industrial Drives</li> </ul>	<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;"><b>Schematic</b></div> 
<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;"><b>Types</b></div> <ul style="list-style-type: none"> <li>80-M0166BA060RW02-K369G</li> </ul>	

## Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
<b>Rectifier Diode</b>				
Peak Repetitive Reverse Voltage	$V_{RRM}$		1600	V
Continuous (direct) forward current	$I_F$	$T_j = T_{jmax}$ $T_S = 80^\circ\text{C}$	79	A
Surge (non-repetitive) forward current	$I_{FSM}$	50 Hz Single Half Sine Wave $T_j = 150^\circ\text{C}$	890	A
Surge current capability	$I^2t$	$t_p = 10\text{ ms}$ 50 Hz sine	3960	$\text{A}^2\text{s}$
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_S = 80^\circ\text{C}$	101	W
Maximum Junction Temperature	$T_{jmax}$		150	$^\circ\text{C}$



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Parameter	Symbol	Conditions	Value	Unit
<b>Rectifier Thyristor</b>				
Repetitive peak reverse voltage	$V_{RRM}$		1600	V
Mean on-state current	$I_{T(AV)}$	sine, $d=0,5$ $T_j=T_{jmax}$ $T_s=80^\circ\text{C}$	90	A
Surge forward current	$I_{FSM}$	$t_p=10\text{ ms}$ $T_j=25^\circ\text{C}$	1100	A
$I^2t$ value	$I^2t$		6050	$\text{A}^2\text{s}$
Mean total power loss	$P_{tot(AV)}$	$T_j=T_{jmax}$ $T_s=80^\circ\text{C}$	91	W
Maximum Junction Temperature	$T_{jmax}$		125	$^\circ\text{C}$

Parameter	Symbol	Condition	Value	Unit
<b>Brake Switch</b>				
Collector-emitter voltage	$V_{CES}$		1200	V
Collector current	$I_C$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	68	A
Repetitive peak collector current	$I_{CRM}$	$t_p$ limited by $T_{jmax}$	200	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	125	W
Gate-emitter voltage	$V_{GES}$		$\pm 20$	V
Short circuit ratings	$t_{SC}$ $V_{CC}$	$T_j \leq 150^\circ\text{C}$ $V_{GE} = 15\text{V}$	10 850	$\mu\text{s}$ V
Maximum Junction Temperature	$T_{jmax}$		175	$^\circ\text{C}$

Parameter	Symbol	Conditions	Value	Unit
<b>Brake Diode</b>				
Peak Repetitive Reverse Voltage	$V_{RRM}$		1200	V
Continuous (direct) forward current	$I_F$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	49	A
Repetitive peak forward current	$I_{FRM}$		100	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	102	W
Maximum Junction Temperature	$T_{jmax}$		175	$^\circ\text{C}$

Parameter	Symbol	Conditions	Value	Unit
<b>Brake Switch Protection Diode</b>				
Peak Repetitive Reverse Voltage	$V_{RRM}$		1200	V
Continuous (direct) forward current	$I_F$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	14	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	29	W
Maximum Junction Temperature	$T_{jmax}$		150	$^\circ\text{C}$



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Parameter	Symbol	Conditions	Value	Unit
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**Module Properties**

**Thermal Properties**

Storage temperature	$T_{stg}$		-40...+125	°C
Operation Junction Temperature	$T_{jop}$		-40...+( $T_{jmax}$ - 25)	°C

**Isolation Properties**

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



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## Characteristic Values

### Rectifier Diode

Parameter	Symbol	Conditions					Value			Unit
				$V_r$ [V]	$I_F$ [A]	$T_j$ [°C]	Min	Typ	Max	
<b>Static</b>										
Forward voltage	$V_F$				60	25 150		1,17 1,15	1,5	V
Reverse leakage current	$I_r$			1600		25 150			100 2000	μA
<b>Thermal</b>										
Thermal resistance junction to sink	$R_{th(j-s)}$	Thermal grease thickness ≤ 50 μm $\lambda = 1$ W/mK						0,69		K/W

### Rectifier Thyristor

Parameter	Symbol	Conditions					Value			Unit
				$V_D$ [V]	$I_F$ [A]	$T_j$ [°C]	Min	Typ	Max	
<b>Static</b>										
Forward voltage	$V_T$	$I_T = 150A$ $t_n = 380\mu s$				25 125			1,8	V
Critical rate of rise of off-state voltage	$(dv/dt)_{cr}$			$2/3 V_{DRM}$		25 125	1000			V/μs
Holding current	$I_H$	$I_T = 1A$		6V		25 125			150	mA
Latching current	$I_L$	$I_G = 1,2 I_{cr}$				25 125			200	mA
Gate trigger voltage	$V_{GT}$	$V_D = 12V$		12V		25			1,5	V
Gate trigger current	$I_{GT}$	$R_L = 30\Omega$					25	10		80
Gate non-trigger voltage	$V_{GD}$			$2/3 V_{DRM}$		25 125	0,25			V
<b>Thermal</b>										
Thermal resistance chip to sink	$R_{th(j-s)}$	Thermal grease thickness ≤ 50 μm $\lambda = 1$ W/mK						0,49		K/W



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## Brake Switch

Parameter	Symbol	Conditions					Value			Unit
		$V_{GE}$ [V]	$V_{CE}$ [V]	$I_C$ [A]	$T_j$ [°C]	Min	Typ	Max		

### Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}$			0,01	25 125	5,4	6	6,6	V
Collector-emitter saturation voltage	$V_{CEsat}$		15		100	25 125 150	1,2	1,77 2,05 2,11	2,2	V
Collector-emitter cut-off current	$I_{CES}$		0	1200		25 125			300	µA
Gate-emitter leakage current	$I_{GES}$		20	0		25 125			1000	nA
Internal gate resistance	$r_g$							none		Ω
Input capacitance	$C_{ies}$							6200		pF
Output capacitance	$C_{oes}$	f=100 KHz	0	10		25		680		
Reverse transfer capacitance	$C_{res}$							74		
Gate charge	$Q_g$		15	600	100	25		210		nC

### Thermal

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

Parameter	Symbol	Conditions					Value			Unit
		$V_r$ [V]	$I_F$ [A]	$T_j$ [°C]	Min	Typ	Max			

### Static

Forward voltage	$V_F$				50	25 125		2,73 2,19	3,3	V
Reverse leakage current	$I_r$			1200		25 150			50	µA

### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	Thermal grease thickness ≤ 50µm $\lambda = 1$ W/mK						0,93		K/W
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### Brake Switch Protection Diode


Parameter	Symbol	Conditions					Value			Unit
				$V_r$ [V]	$I_F$ [A]	$T_j$ [°C]	Min	Typ	Max	
<b>Static</b>										
Forward voltage	$V_F$				8	25 125		1,65 1,61		V
Reverse leakage current	$I_r$			1200		25 150			250 -	$\mu$ A
<b>Thermal</b>										
Thermal resistance junction to sink	$R_{th(j-s)}$	Thermal grease thickness $\leq 50\mu$ m $\lambda = 1$ W/mK							2,38	K/W

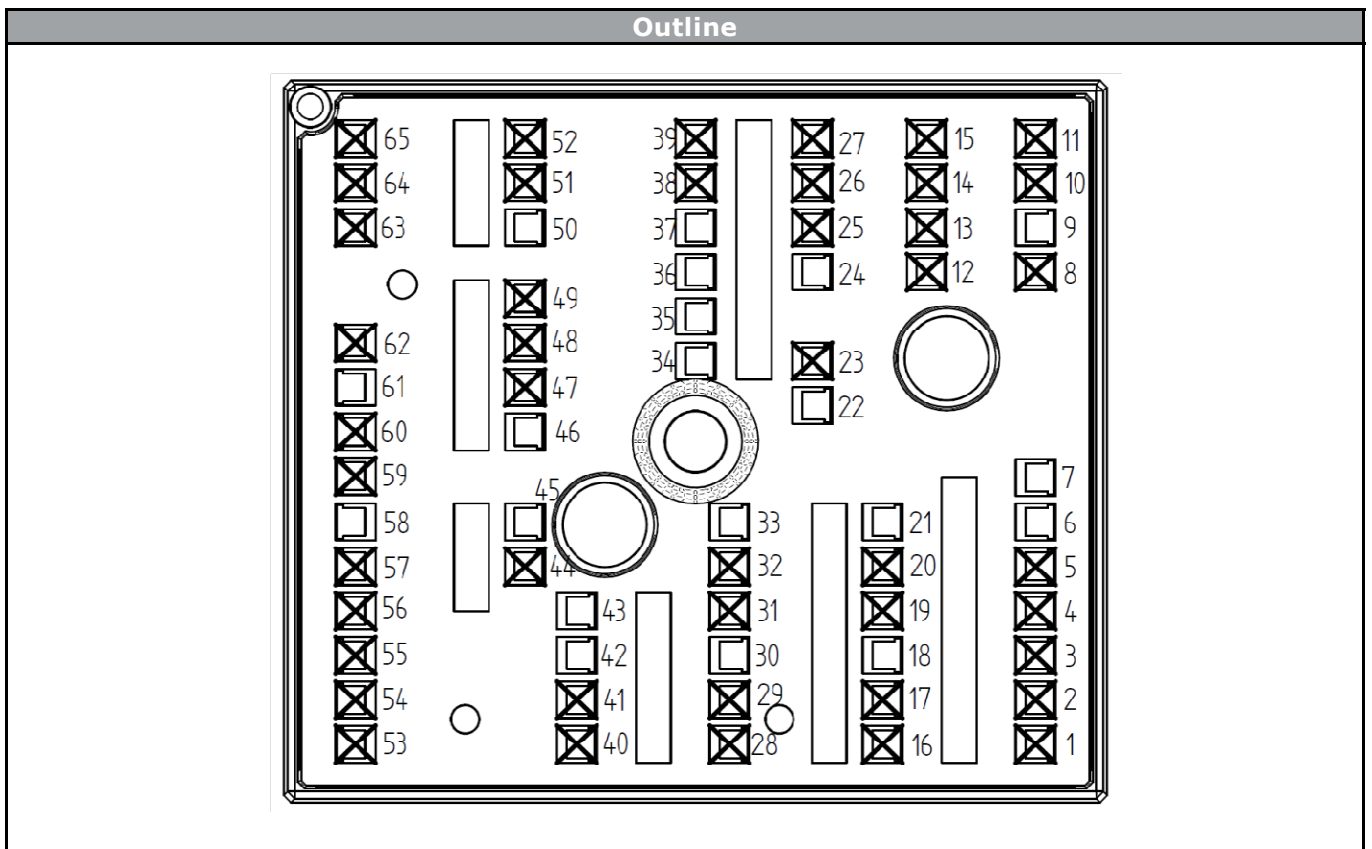
### Thermistor

Parameter	Symbol	Conditions					Value			Unit
			$V_{GE}$ [V]	$V_{CE}$ [V]	$I_C$ [A]	$T_j$ [°C]	Min	Typ	Max	
Rated resistance	R					25		1		k $\Omega$
Deviation of R100	$\Delta_{R/R}$	R100=1670 $\Omega$				100	-2		+2	%
R100	R					100		1670		$\Omega$
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 <sup>2</sup>
Vincotech PTC Reference									E	



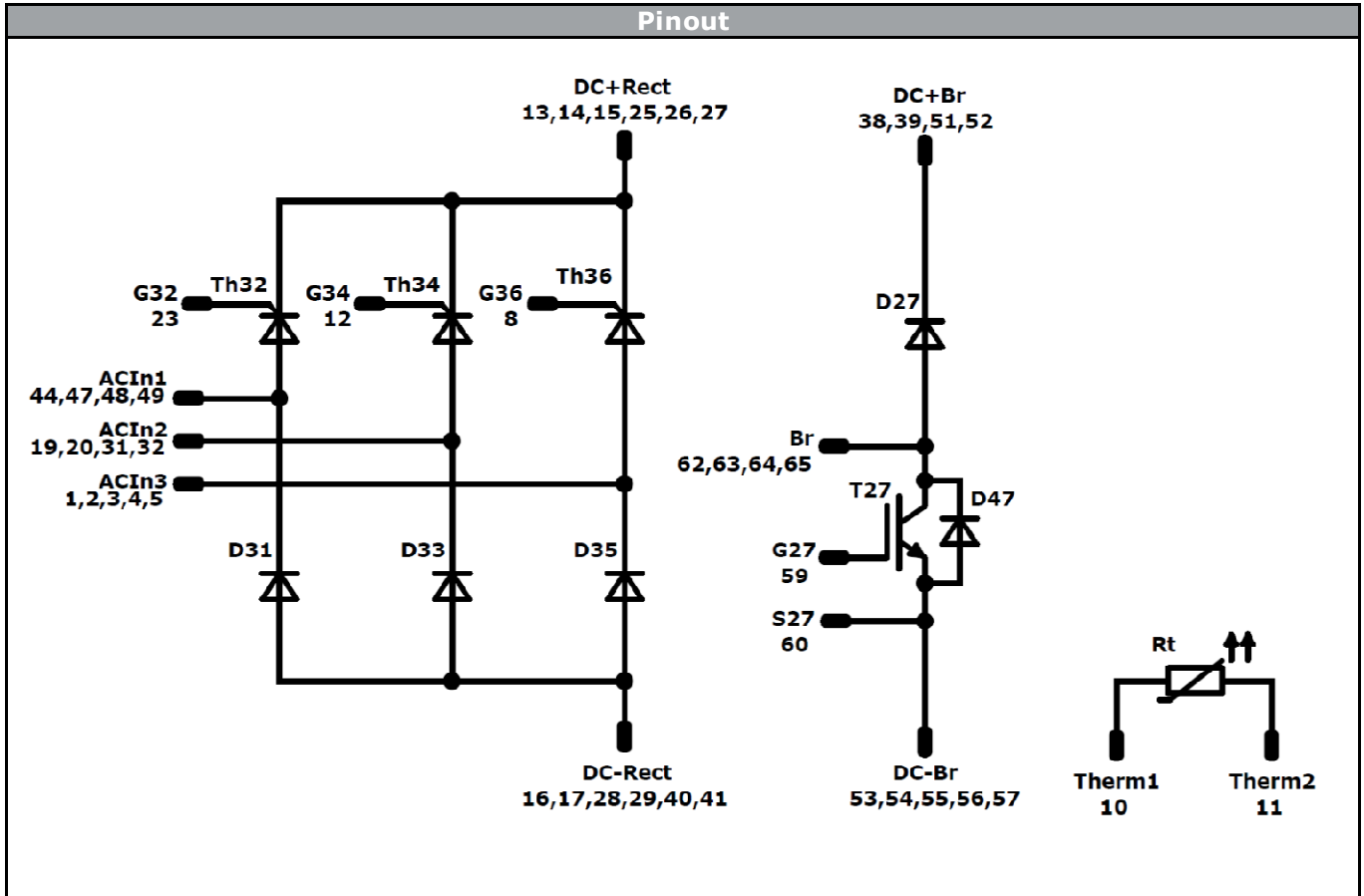
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Ordering Code & Marking							
Version	Ordering Code	in DataMatrix as		in packaging barcode as			
with std lid (black)	80-M0166BA060RW02-K369G-/0A/	K369G		K369G-/0A/			
with std lid (black) and P12	80-M0166BA060RW02-K369G-/1A/	K369G		K369G-/1A/			
with thin lid (white)	80-M0166BA060RW02-K369G-/0B/	K369G		K369G-/0B/			
with thin lid (white) and P12	80-M0166BA060RW02-K369G-/1B/	K369G		K369G-/1B/			
NN-NNNNNNNN NNNN-TTTTTTV Vinco LLLLL WWYY SSSS UL		Name		Type&Ver	Date code	Vinco&Lot	Serial&UL
		NN-NNNNNNNNNNNNNN		TTTTTTTV	WWYY	Vinco LLLLL	SSSS UL
Text		Type&Ver	Lot number	Serial	Date code		
Datamatrix		TTTTTTTV	LLLLL	SSSS	WWYY		





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<b>Identification</b>					
ID	Component	Voltage	Current	Function	Comment
T27	IGBT	1200V	100A	Brake Switch	
D47	FWD	1200V	7,5A	Brake Switch Protection Diode	
D27	FWD	1200V	50A	Brake Diode	
D31,D33,D35	Rectifier	1600V	60A	Rectifier Diode	
Th32,Th34,Th36	Thyristor	1600V	90A	Rectifier Thyristor	
Rt	PTC	-	-	Thermistor	





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Packaging instruction			
Standard packaging quantity (SPQ)	72	>SPQ	Standard
		<SPQ	Sample

Handling instruction
Handling instructions for MiniSkiiP <sup>®</sup> 2 packages see vincotech.com website.

Package data
Package data for MiniSkiiP <sup>®</sup> 2 packages see vincotech.com website.

Document No.:	Date:	Modification:	Pages
80-M0166BA060RW02-K369G-T1-14	28 Sep. 2015		

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.