Vincotech

80-M0166BA060RW02-K369G

target datasheet

MiniSkiiP®CON 2 **1600 V / 60 A**

Features

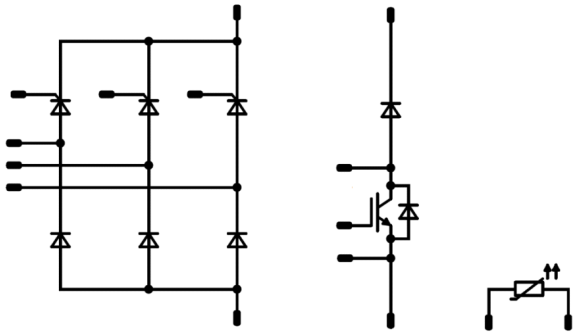
- 3-phase half controlled rectifier
- Brake chopper

MiniSkiiP® 2 housing

Target applications

- Industrial Drives

Schematic



Types

- 80-M0166BA060RW02-K369G

Maximum Ratings

T_j=25°C, unless otherwise specified

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

Parameter	Symbol	Conditions		Value	Unit
Rectifier Thyristor					
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°C	90	A
Surge forward current	I_{FSM}	t_p=10 ms	T_j=25°C	1100	A
I^2t value	I^2t			6050	A^2s
Mean total power loss	$P_{tot(AV)}$	$T_j=T_{jmax}$	T_S=80°C	91	W
Maximum Junction Temperature	T_{jmax}			125	°C

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 °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 °C	125	W
Gate-emitter voltage	V_{GES}			±20	V
Short circuit ratings	t_{SC} V_{CC}	$T_j \leq 150°C$ V_{GE} = 15V		10 850	µs V
Maximum Junction Temperature	T_{jmax}			175	°C

Parameter	Symbol	Conditions		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°C	49	A
Repetitive peak forward current	I_{FRM}			100	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_S = 80°C	102	W
Maximum Junction Temperature	T_{jmax}			175	°C

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

Parameter	Symbol	Conditions		Value	Unit
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	

Characteristic Values

Rectifier Diode

Parameter	Symbol	Conditions					Value			Unit
				V_r [V]	I_F [A]	T_j [°C]	Min	Typ	Max	
Static										
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
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	Thermal grease thickness≤50um λ = 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	
Static										
Forward voltage	V_T	I_T =150A t_p = 380µs				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_{GT}				25 125			200	mA
Gate trigger voltage	V_{GT}	V_D=12V		12V		25			1,5	V
Gate trigger current	I_{GT}	R_L =30Ω				25	10		80	mA
Gate non-trigger voltage	V_{GD}			2/3 V_{DRM}		25 125	0,25			V
Thermal										
Thermal resistance chip to sink	$R_{th(j-s)}$	Thermal grease thickness≤50um λ = 1 W/mK						0,49		K/W

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}	f=100 KHz	0	10		25		6200		pF
Output capacitance	C_{oes}							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≤50um λ = 1 W/mK						0,76		K/W

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≤50um λ = 1 W/mK						0,93		K/W

Brake Switch Protection Diode

Parameter	Symbol	Conditions					Value			Unit
				V_r [V]	I_F [A]	T_j [°C]	Min	Typ	Max	
Static										
Forward voltage	V_F				8	25 125		1,65 1,61		V
Reverse leakage current	I_r			1200		25 150			250 -	µA
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	Thermal grease thickness≤50um λ = 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		kΩ
Deviation of R100	$\Delta_{R/R}$	R100=1670 Ω				100	-2		+2	%
R100	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/K²
Vincotech PTC Reference									E	

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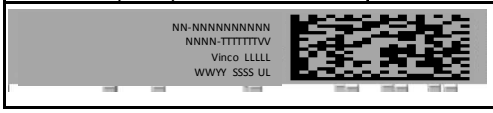
Ordering Code & Marking

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/



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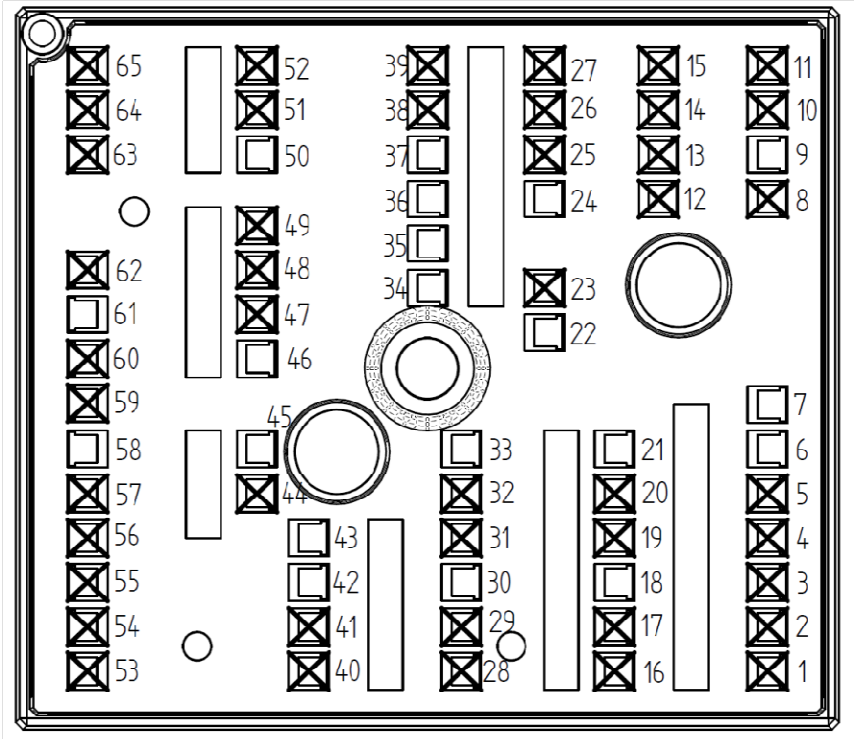
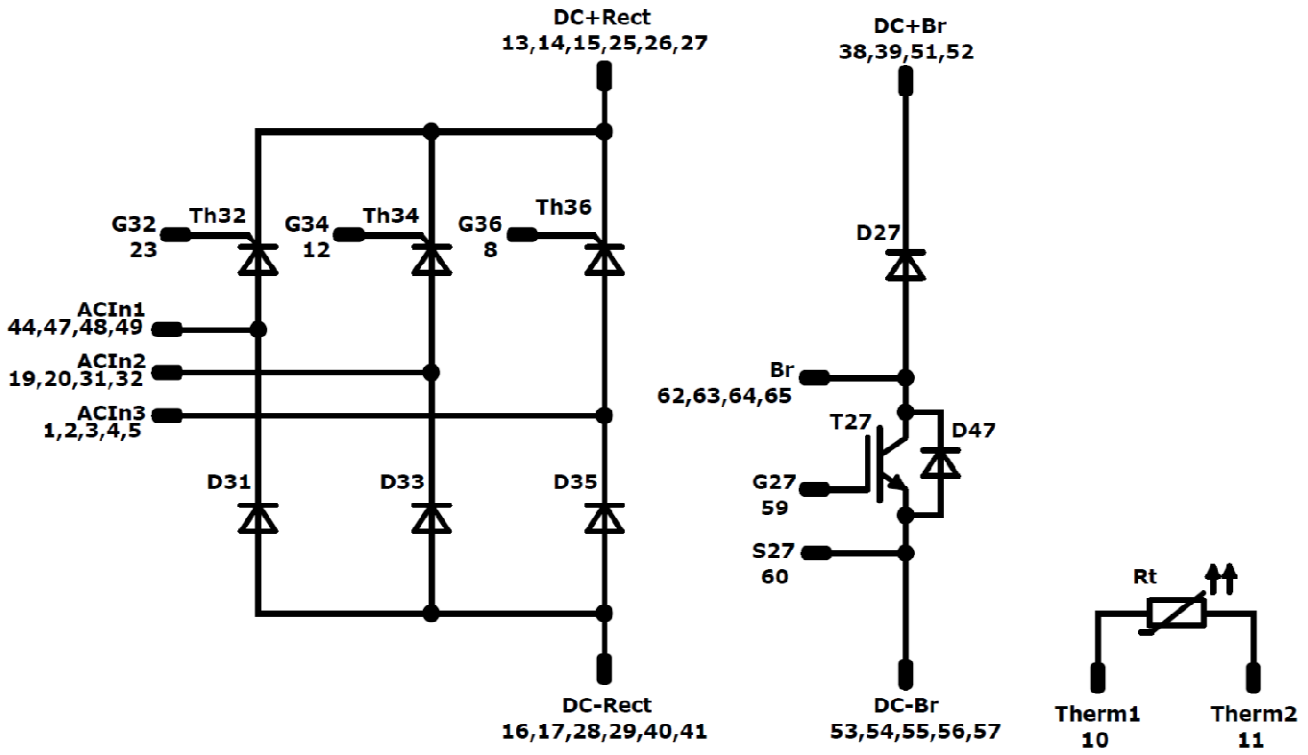
Datamatrix	Type&Ver	Lot number	Serial	Date code		
	TTTTTTTVV	LLLLL	SSSS	WWYY		

Outline



Pinout



Identification

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	

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

Handling instruction
Handling instructions for MiniSkiiP® 2 packages see vincotech.com website.

Package data
Package data for MiniSkiiP® 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.