



Vincotech

80-M2166BA110M701-K799G01

target datasheet

MiniSKiiP® CON 2

1200 V / 110 A

Topology features

- Three-phase Rectifier
- Brake Chopper
- Temperature sensor

Component features

- High inrush current capability

Housing features

- Base isolation: Al₂O₃
- Easy assembly in one mounting step
- Flexible PCB design w/o pin holes
- Rugged solderless spring contacts

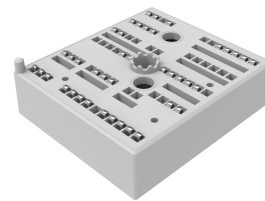
Target applications

- Industrial Drives

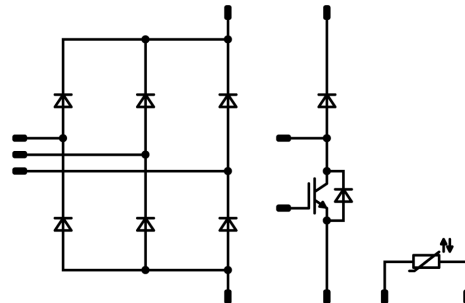
Types

- 80-M2166BA110M701-K799G01

MiniSKiiP® 2 16 mm housing



Schematic





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Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Brake Switch				
Collector-emitter voltage	V_{CES}		1200	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	161	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	300	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	317	W
Gate-emitter voltage	V_{GES}		± 20	V
Short circuit ratings	t_{SC}	$V_{GE} = 15\text{ V}$, $V_{CC} = 800\text{ V}$ $T_j = 150\text{ °C}$	9,5	μs
Maximum junction temperature	T_{jmax}		175	$^{\circ}\text{C}$

Brake Diode

Peak repetitive reverse voltage	V_{RRM}		1200	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	55	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	100	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	105	W
Maximum junction temperature	T_{jmax}		175	$^{\circ}\text{C}$

Brake Sw. Protection Diode

Peak repetitive reverse voltage	V_{RRM}		1200	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	15	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	10	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	41	W
Maximum junction temperature	T_{jmax}		175	$^{\circ}\text{C}$



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Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Rectifier Diode				
Peak repetitive reverse voltage	V_{RRM}		1600	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_a = 80\text{ °C}$	161	A
Surge (non-repetitive) forward current	I_{FSM}	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}	$T_j = T_{jmax}$ $T_a = 80\text{ °C}$	182	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 $t_p = 2\text{ s}$	5500	V
Creepage distance		With std lid For more informations see handling instructions	6,3	mm
Clearance		With std lid For more informations see handling instructions	6,3	mm
Comparative Tracking Index	CTI		≥ 600	



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Characteristic Values

Parameter	Symbol	Conditions					Values			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	

Brake Switch

Static

Gate-emitter threshold voltage	$V_{GE(th)}$			10	0,015	25	5,4	6	6,6	V
Collector-emitter saturation voltage	V_{CEsat}		15		150	25 125 150		1,55 1,75 1,8	1,85	V
Collector-emitter cut-off current	I_{CES}		0	1200		25			100	µA
Gate-emitter leakage current	I_{GES}		20	0		25			500	nA
Internal gate resistance	r_g							3		Ω
Input capacitance	C_{ies}		0	10		25		30000		pF
Output capacitance	C_{oes}							880		pF
Reverse transfer capacitance	C_{res}							320		pF
Gate charge	Q_g	$V_{CC} = 600$ V	0/15		150	25		1000		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 2,5$ W/mK (HPTP)						0,3		K/W
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Brake Diode

Static

Forward voltage	V_F				50	25 125 150		1,65 1,65 1,65	2,1	V
Reverse leakage current	I_R	$V_r = 1200$ V				25			40	µA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 2,5$ W/mK (HPTP)						0,9		K/W
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Characteristic Values

Parameter	Symbol	Conditions						Values			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	

Brake Sw. Protection Diode

Static

Forward voltage	V_F				5	25 125 150			1,6 1,7 1,7	2,1	V
Reverse leakage current	I_R	$V_r = 1200$ V				25				20	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 2,5$ W/mK (HPTP)							2,31		K/W
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Rectifier Diode

Static

Forward voltage	V_F				77	25 125			1 0,9	1,21 1,1	V
Reverse leakage current	I_R	$V_r = 1600$ V				25				50	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 2,5$ W/mK (HPTP)							0,38		K/W
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Characteristic Values

Parameter	Symbol	Conditions					Values			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	

Thermistor


Static

Rated resistance	R					25		1		k Ω
Deviation of R100	$\Delta_{R/R}$	$R_{100} = 1670 \Omega$				100	-2		2	%
Maximum Current	I_{max}							3		mA
Power dissipation constant	d					25		0,76		mW/K
A-value	A							$7,635 \times 10^{-3}$		1/K
B-value	B							$1,73 \times 10^{-5}$		1/K ²
Vincotech Thermistor Reference									E	



target datasheet

Ordering Code	
Version	Ordering Code
With std lid (6.5mm height) + no thermal grease	80-M2166BA110M701-K799G01-/0A/
With thin lid (2.8mm height) + no thermal grease	80-M2166BA110M701-K799G01-/0B/
With std lid (6.5mm height) + thermal grease (0,8 W/mK, P12, silicone-based)	80-M2166BA110M701-K799G01-/1A/
With thin lid (2.8mm height) + thermal grease (0,8 W/mK, P12, silicone-based)	80-M2166BA110M701-K799G01-/1B/
With std lid (6.5mm height) + thermal grease (2,5 W/mK, TG20032, silicone-free)	80-M2166BA110M701-K799G01-/4A/
With thin lid (2.8mm height) + thermal grease (2,5 W/mK, TG20032, silicone-free)	80-M2166BA110M701-K799G01-/4B/
With std lid (6.5mm height) + thermal grease (2,5 W/mK, HPTP, silicone-based)	80-M2166BA110M701-K799G01-/5A/
With thin lid (2.8mm height) + thermal grease (2,5 W/mK, HPTP, silicone-based)	80-M2166BA110M701-K799G01-/5B/

Marking							
	Text	Name NN-NNNNNNNNNNNNNN- TTTTTV		Date code WWYY	UL & VIN UL VIN	Lot LLLLL	Serial SSSS
		Datamatrix	Type&Ver TTTTTTVV	Lot number LLLLL	Serial SSSS	Date code WWYY	

Outline							
Pin table [mm]							
Pin	X	Y	Function	34	0,03	5,8	ACIn1
1	24,38	-21,8	ACIn3	35	0,03	9	ACIn1
2	24,38	-18,6	ACIn3	36	not assembled		
3	24,38	-15,4	ACIn3	37	not assembled		
4	24,38	-12,2	ACIn3	38	not assembled		
5	24,38	-9	ACIn3	39	not assembled		
6	not assembled			40	-8,5	-21,8	DC-Rect
7	not assembled			41	-8,5	-18,6	DC-Rect
8	24,38	12,2	DC+Rect	42	not assembled		
9	not assembled			43	not assembled		
10	24,38	18,6	Therm1	44	not assembled		
11	24,38	21,8	Therm2	45	not assembled		
12	16,58	12,2	DC+Rect	46	-12,22	0,7	ACIn1
13	16,58	15,4	DC+Rect	47	-12,22	3,9	ACIn1
14	16,58	18,6	DC+Rect	48	-12,22	7,1	ACIn1
15	16,58	21,8	DC+Rect	49	not assembled		
16	not assembled			50	-12,22	15,4	DC+Br
17	not assembled			51	-12,22	18,6	DC+Br
18	not assembled			52	-12,22	21,8	DC+Br
19	not assembled			53	-24,38	-21,8	DC-Rect
20	not assembled			54	-24,38	-18,6	DC-Rect
21	not assembled			55	-24,38	-15,4	DC-Rect
22	not assembled			56	-24,38	-12,2	DC-Rect
23	not assembled			57	-24,38	-9	DC-Rect
24	not assembled			58	not assembled		
25	not assembled			59	-24,38	-2,5	G27
26	8,38	18,6	DC+Rect	60	-24,38	0,7	DC-Br
27	8,38	21,8	DC+Rect	61	-24,38	3,9	DC-Br
28	not assembled			62	-24,38	7,1	DC-Br
29	2,46	-18,6	ACIn2	63	-24,38	15,4	Br
30	2,46	-15,4	ACIn2	64	-24,38	18,6	Br
31	2,46	-12,2	ACIn2	65	-24,38	21,8	Br
32	2,46	-9	ACIn2				
33	2,46	-5,8	ACIn2				

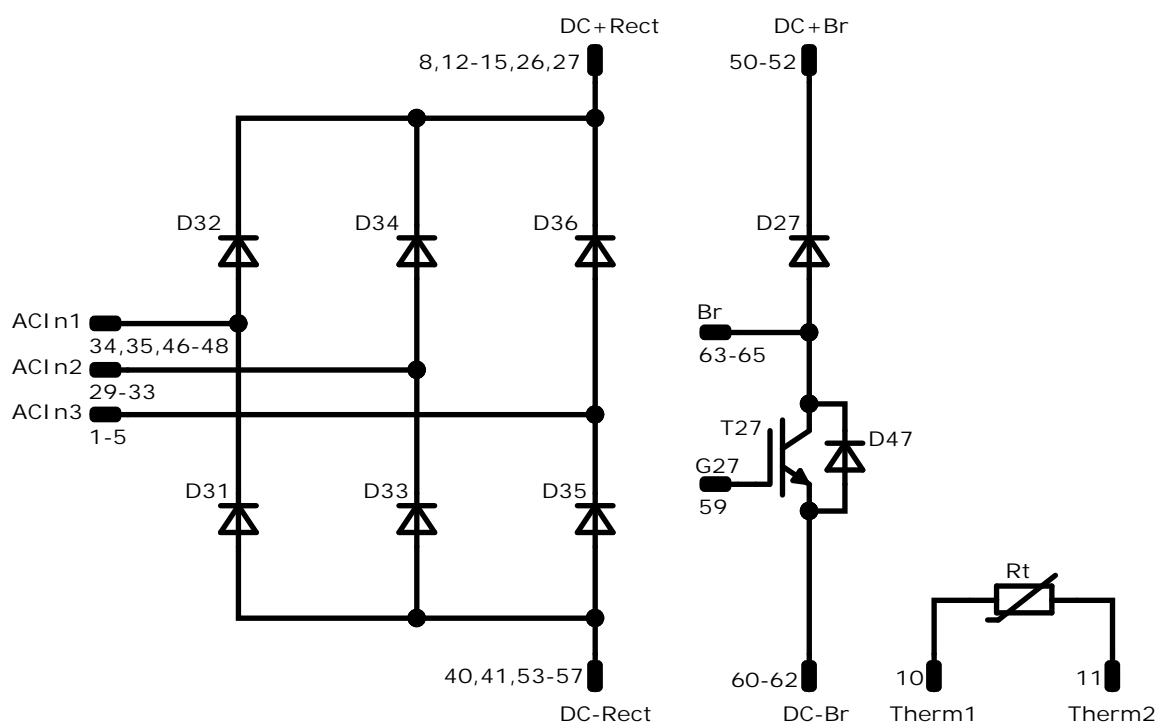
Pad positions refers to center point. For more informations on pad design please see package data.



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Pinout




Identification

ID	Component	Voltage	Current	Function	Comment
T27	IGBT	1200 V	150 A	Brake Switch	
D27	FWD	1200 V	50 A	Brake Diode	
D47	FWD	1200 V	5 A	Brake Sw. Protection Diode	
D31, D32, D33, D34, D35, D36	Rectifier	1600 V	140 A	Rectifier Diode	
Rt	Thermistor			Thermistor	



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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.				
Vincotech thermistor reference				
See Vincotech thermistor reference table at vincotech.com website.				
UL recognition and file number				
This device is UL 1557 recognized under E192116 up to a junction temperature under switching condition $T_{j,op}=150^{\circ}\text{C}$ and up to 2500VAC/1min isolation voltage. For more information see vincotech.com website.				

Document No.:	Date:	Modification:	Pages
80-M2166BA110M701-K799G01-T1-14	1 Aug. 2025	Initial Release	

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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