



Vincotech

80-M112PMA010I7-K209A90

target datasheet

MiniSKiiP® PIM 1

1200 V / 10 A

Topology features

- Converter+Brake+Inverter
- Open Emitter configuration
- Temperature sensor

Component features

- Easy paralleling
- Low collector emitter saturation voltage
- Low turn-off losses
- Positive temperature coefficient

Housing features

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

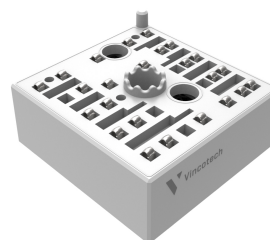
Target applications

- General Purpose Drives
- Industrial Drives
- Servo Drives

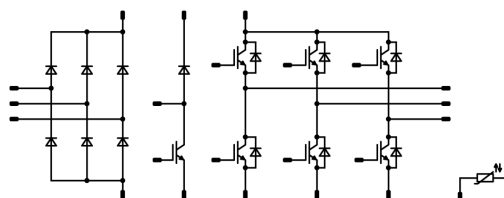
Types

- 80-M112PMA010I7-K209A90

MiniSKiiP® 1 16 mm housing



Schematic





Vincotech

80-M112PMA010I7-K209A90
target datasheet

Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Inverter Switch				
Collector-emitter voltage	V_{CES}		1200	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	21	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	20	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	64	W
Gate-emitter voltage	V_{GES}		± 20	V
Short circuit ratings	t_{SC}	$V_{GE} = 15\text{ V}$, $V_{CC} = 800\text{ V}$ $T_j = 175\text{ °C}$	7	μs
Maximum junction temperature	T_{jmax}		175	$^{\circ}\text{C}$

Inverter Diode

Peak repetitive reverse voltage	V_{RRM}		1200	V
Forward current (DC current) ⁽²⁾	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	23	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	22	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	50	W
Maximum junction temperature	T_{jmax}		175	$^{\circ}\text{C}$

⁽¹⁾Calculation based on chip supplier datasheet at $T_j=175^{\circ}\text{C}$

Brake Switch

Collector-emitter voltage	V_{CES}		1200	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	21	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	20	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	64	W
Gate-emitter voltage	V_{GES}		± 20	V
Short circuit ratings	t_{SC}	$V_{GE} = 15\text{ V}$, $V_{CC} = 800\text{ V}$ $T_j = 175\text{ °C}$	7	μs
Maximum junction temperature	T_{jmax}		175	$^{\circ}\text{C}$



Vincotech

80-M112PMA010I7-K209A90
target datasheet

Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Brake Diode				
Peak repetitive reverse voltage	V_{RRM}		1200	V
Forward current (DC current) ⁽⁴⁾	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	23	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	22	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	50	W
Maximum junction temperature	T_{jmax}		175	°C

⁽³⁾Calculation based on chip supplier datasheet at $T_j=175\text{°C}$

Rectifier Diode

Peak repetitive reverse voltage	V_{RRM}		1600	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	52	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 150\text{ °C}$	200	A
Surge current capability	I^2t		200	A²s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	79	W
Maximum junction temperature	T_{jmax}		175	°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	



Vincotech

80-M112PMA010I7-K209A90
target datasheet

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	

Inverter Switch

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,00022	25	5,15	5,8	6,45	V
Collector-emitter saturation voltage	V_{CEsat}		15		10	25	1,35	1,6	1,75	V
Collector-emitter cut-off current	I_{CES}		0	1200		25			4,5	µA
Gate-emitter leakage current	I_{GES}		20	0		25			100	nA
Internal gate resistance	r_g							None		Ω
Input capacitance	C_{ies}	$f = 100 \text{ kHz}$	0	25		25		1900		pF
Reverse transfer capacitance	C_{res}							6,6		pF
Gate charge	Q_g	$V_{CC} = 600 \text{ V}$	±15		10	25		157		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 2,5 \text{ W/mK}$ (HPTP)						1,48		K/W
-------------------------------------	---------------	--	--	--	--	--	--	------	--	-----

Inverter Diode

Static

Forward voltage	V_F				11	25	1,55	1,75	2	V
Reverse leakage current	I_R	$V_r = 1200 \text{ V}$				25			0,2	µA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 2,5 \text{ W/mK}$ (HPTP)						1,92		K/W
-------------------------------------	---------------	--	--	--	--	--	--	------	--	-----



Vincotech

80-M112PMA010I7-K209A90
target datasheet

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	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,00022	25	5,15	5,8	6,45	V
Collector-emitter saturation voltage	V_{CEsat}		15		10	25	1,35	1,6	1,75	V
Collector-emitter cut-off current	I_{CES}		0	1200		25			4,5	µA
Gate-emitter leakage current	I_{GES}		20	0		25			100	nA
Internal gate resistance	r_g							None		Ω
Input capacitance	C_{ies}	$f = 100 \text{ kHz}$	0	25		25		1900		pF
Reverse transfer capacitance	C_{res}							6,6		pF
Gate charge	Q_g	$V_{CC} = 600 \text{ V}$	±15		10	25		157		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 2,5 \text{ W/mK}$ (HPTP)						1,48		K/W
-------------------------------------	---------------	--	--	--	--	--	--	------	--	-----

Brake Diode

Static

Forward voltage	V_F				11	25	1,55	1,75	2	V
Reverse leakage current	I_R	$V_r = 1200 \text{ V}$				25			0,2	µA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 2,5 \text{ W/mK}$ (HPTP)						1,92		K/W
-------------------------------------	---------------	--	--	--	--	--	--	------	--	-----



Vincotech

80-M112PMA010I7-K209A90
target datasheet

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	

Rectifier Diode

Static

Forward voltage	V_F				18	25		1	1,5	V
Reverse leakage current	I_R	$V_r = 1600$ V				25 150			50 1000	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 2,5$ W/mK (HPTP)						1,2		K/W
-------------------------------------	---------------	--	--	--	--	--	--	-----	--	-----

Thermistor


Static

Rated resistance	R					25		1		kΩ
Deviation of R100	$\Delta_{R/R}$	$R_{100} = 1670$ Ω				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-M112PMA010I7-K209A90-/0A/
With thin lid (2.8mm height) + no thermal grease	80-M112PMA010I7-K209A90-/0B/
With std lid (6.5mm height) + thermal grease (0,8 W/mK, P12, silicone-based)	80-M112PMA010I7-K209A90-/1A/
With thin lid (2.8mm height) + thermal grease (0,8 W/mK, P12, silicone-based)	80-M112PMA010I7-K209A90-/1B/
With std lid (6.5mm height) + thermal grease (2,5 W/mK, TG20032, silicone-free)	80-M112PMA010I7-K209A90-/4A/
With thin lid (2.8mm height) + thermal grease (2,5 W/mK, TG20032, silicone-free)	80-M112PMA010I7-K209A90-/4B/
With std lid (6.5mm height) + thermal grease (2,5 W/mK, HPTP, silicone-based)	80-M112PMA010I7-K209A90-/5A/
With thin lid (2.8mm height) + thermal grease (2,5 W/mK, HPTP, silicone-based)	80-M112PMA010I7-K209A90-/5B/

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

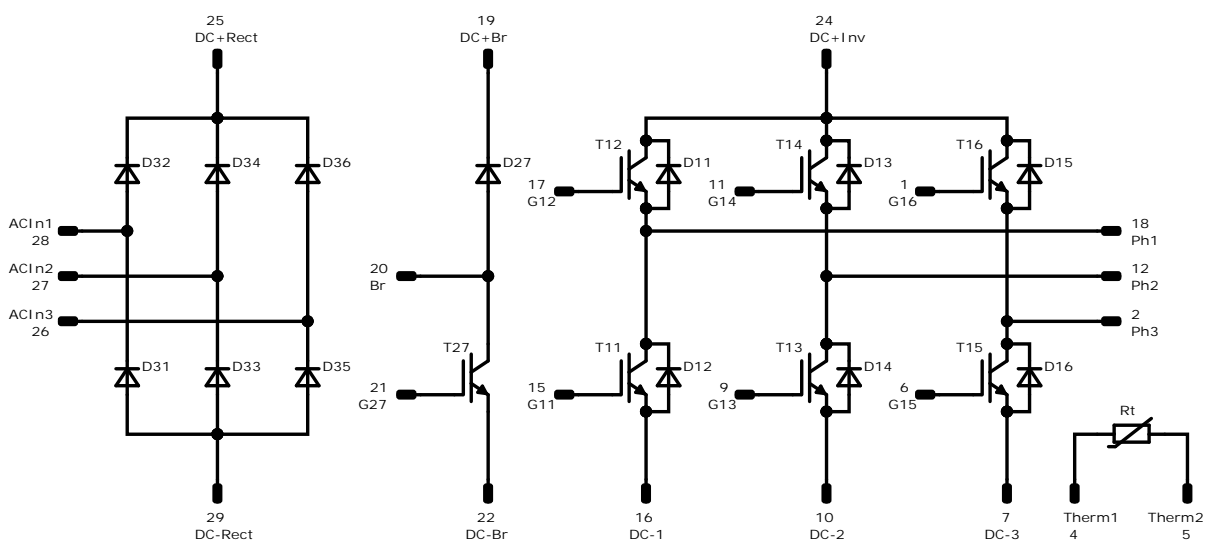
Pin table [mm]			
Pin	X	Y	Function
1	15,93	-14,6	G16
2	15,93	-9,8	Ph3
3	not assembled		
4	15,93	-0,2	Therm1
5	15,93	7,62	Therm2
6	15,93	12,62	G15
7	15,93	15,8	DC-3
8	not assembled		
9	8,23	12,62	G13
10	8,23	15,8	DC-2
11	7,73	-14,6	G14
12	7,73	-9,8	Ph2
13	not assembled		
14	not assembled		
15	0,53	12,62	G11
16	0,53	15,8	DC-1
17	-0,47	-14,6	G12
18	-0,47	-9,8	Ph1
19	-5,47	-5	DC+Br
20	-5,47	5,35	Br
21	-7,17	12,62	G27
22	-7,17	15,8	DC-Br
23	not assembled		
24	-8,07	-9,8	DC+Inv
25	-15,02	-15,8	DC+Rect
26	-15,02	-9,8	ACIn3
27	-15,02	0	ACIn2
28	-15,02	9,8	ACIn1
29	-15,02	15,8	DC-Rect



Vincotech

80-M112PMA010I7-K209A90
target datasheet

Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T11, T12, T13, T14, T15, T16	IGBT	1200 V	10 A	Inverter Switch	
D11, D12, D13, D14, D15, D16	FWD	1200 V	11 A	Inverter Diode	
T27	IGBT	1200 V	10 A	Brake Switch	
D27	FWD	1200 V	11 A	Brake Diode	
D31, D32, D33, D34, D35, D36	Rectifier	1600 V	18 A	Rectifier Diode	
Rt	Thermistor			Thermistor	



Vincotech

80-M112PMA010I7-K209A90
target datasheet

Packaging instruction				
Standard packaging quantity (SPQ) 120	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for MiniSKiiP® 1 packages see vincotech.com website.

Package data
Package data for MiniSKiiP® 1 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-M112PMA010I7-K209A90-T1-14	1 Jun. 2026	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.

DISCLAIMER

The information, specifications, procedures, methods and recommendations herein (together "information") are presented by Vincotech to reader in good faith, are believed to be accurate and reliable, but may well be incomplete and/or not applicable to all conditions or situations that may exist or occur. Vincotech reserves the right to make any changes without further notice to any products to improve reliability, function or design. No representation, guarantee or warranty is made to reader as to the accuracy, reliability or completeness of said information or that the application or use of any of the same will avoid hazards, accidents, losses, damages or injury of any kind to persons or property or that the same will not infringe third parties rights or give desired results. It is reader's sole responsibility to test and determine the suitability of the information and the product for reader's intended use.

LIFE SUPPORT POLICY

Vincotech products are not authorised for use as critical components in life support devices or systems without the express written approval of Vincotech.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in labelling can be reasonably expected to result in significant injury to the user.
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.