



flowPIM S3

1200 V / 100 A

Features

- IGBT M7 with low VCEsat and improved EMC behavior
- New low inductive package
- Enhanced thermal performance

Target applications

- Embedded Drives
- Industrial Drives

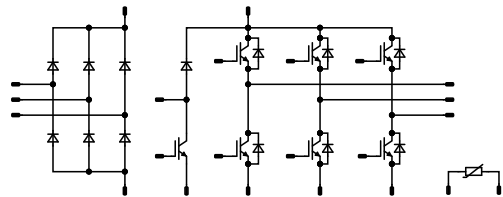
Types

- B0-SP12PMA100M7-LQ99A78Y

flow S3 12 mm housing



Schematic





Vincotech

B0-SP12PMA100M7-LQ99A78Y
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	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	100	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	208	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	$^{\circ}\text{C}$

Inverter Diode

Peak repetitive reverse voltage	V_{RRM}		1200	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	100	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	155	W
Maximum junction temperature	T_{jmax}		175	$^{\circ}\text{C}$

Brake Switch

Collector-emitter voltage	V_{CES}		1200	V
Collector current	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	100	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	208	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	$^{\circ}\text{C}$



Vincotech

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
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	100	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	155	W
Maximum junction temperature	T_{jmax}		175	°C

Rectifier Diode

Peak repetitive reverse voltage	V_{RRM}		1600	V
Forward average current	I_{FAV}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	60	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 150\text{ °C}$	890	A
Surge current capability	I^2t		3960	A ² s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	126	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 $t_p = 2\text{ s}$	6000	V
Isolation voltage	V_{isol}	AC Voltage $t_p = 1\text{ min}$	2500	V
Creepage distance			9,08	mm
Clearance			7,56	mm
Comparative Tracking Index	CTI		≥ 600	



Vincotech

Characteristic Values

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

Inverter Switch

Static

Gate-emitter threshold voltage	$V_{GE(th)}$			10	0,01	25	5,4	6	6,6	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		100	25 125 150		1,55 1,75 1,8	1,85	V
Collector-emitter cut-off current	I_{CES}		0	1200		25			100	μ A
Gate-emitter leakage current	I_{GES}		20	0		25			0,5	μ A
Internal gate resistance	r_g							None		Ω
Input capacitance	C_{ies}							21000		pF
Output capacitance	C_{oes}		0	10		25		700		pF
Reverse transfer capacitance	C_{res}							280		pF
Gate charge	Q_g	$V_{CC} = 600$ V	15		100	25		700		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3$ W/mK (TCP)						0,46		K/W
-------------------------------------	---------------	----------------------------------	--	--	--	--	--	------	--	-----

Inverter Diode

Static

Forward voltage	V_F				100	25 125 150		1,65 1,65 1,65	2,1	V
Reverse leakage current	I_R	$V_r = 1200$ V				25			40	μ A

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3$ W/mK (TCP)						0,61		K/W
-------------------------------------	---------------	----------------------------------	--	--	--	--	--	------	--	-----



Vincotech

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	0,01	25	5,4	6	6,6	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	15			100	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			0,5	μA
Internal gate resistance	r_g							None		Ω
Input capacitance	C_{ies}							21000		pF
Output capacitance	C_{oes}	0	10			25		700		pF
Reverse transfer capacitance	C_{res}							280		pF
Gate charge	Q_g	$V_{CC} = 600$ V	15		100	25		700		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3$ W/mK (TCP)						0,46		K/W
-------------------------------------	---------------	-------------------------------------	--	--	--	--	--	------	--	-----

Brake Diode

Static

Forward voltage	V_F				100	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	$R_{th(j-s)}$	$\lambda_{paste} = 3$ W/mK (TCP)						0,61		K/W
-------------------------------------	---------------	-------------------------------------	--	--	--	--	--	------	--	-----



Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
		V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	V_{CE} [V]	T_j [°C]	Min	Typ	Max	

Rectifier Diode

Static

Forward voltage	V_F				60	25			1,5	V
Reverse leakage current	I_R	$V_i = 1600$ V				25 150			100 2	μ A

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3$ W/mK (TCP)						0,56		K/W
-------------------------------------	---------------	----------------------------------	--	--	--	--	--	------	--	-----

Thermistor

Static

Rated resistance	R					25		22		k Ω
Deviation of R_{100}	$\Delta_{R/R}$	$R_{100} = 1484$ Ω				100	-5		5	%
Power dissipation	P							5		mW
Power dissipation constant	d					25		1,5		mW/K
B-value	$B_{(25/50)}$	Tol. ± 1 %						3962		K
B-value	$B_{(25/100)}$	Tol. ± 1 %						4000		K
Vincotech Thermistor Reference									I	



Vincotech

B0-SP12PMA100M7-LQ99A78Y
target datasheet

Ordering Code	
Version	Ordering Code
With thermal paste	B0-SP12PMA100M7-LQ99A78Y-/6/

Marking						
	Text	Name	Date code	Logo	Lot	Serial
		NN-NNNNNNNNNNNNNN- TTTTTVV	WWYY	VIN	LLLLL	SSSS
	Datamatrix	Type&Ver	Lot number	Serial	Date code	
		TTTTTVV	LLLLL	SSSS	WWYY	

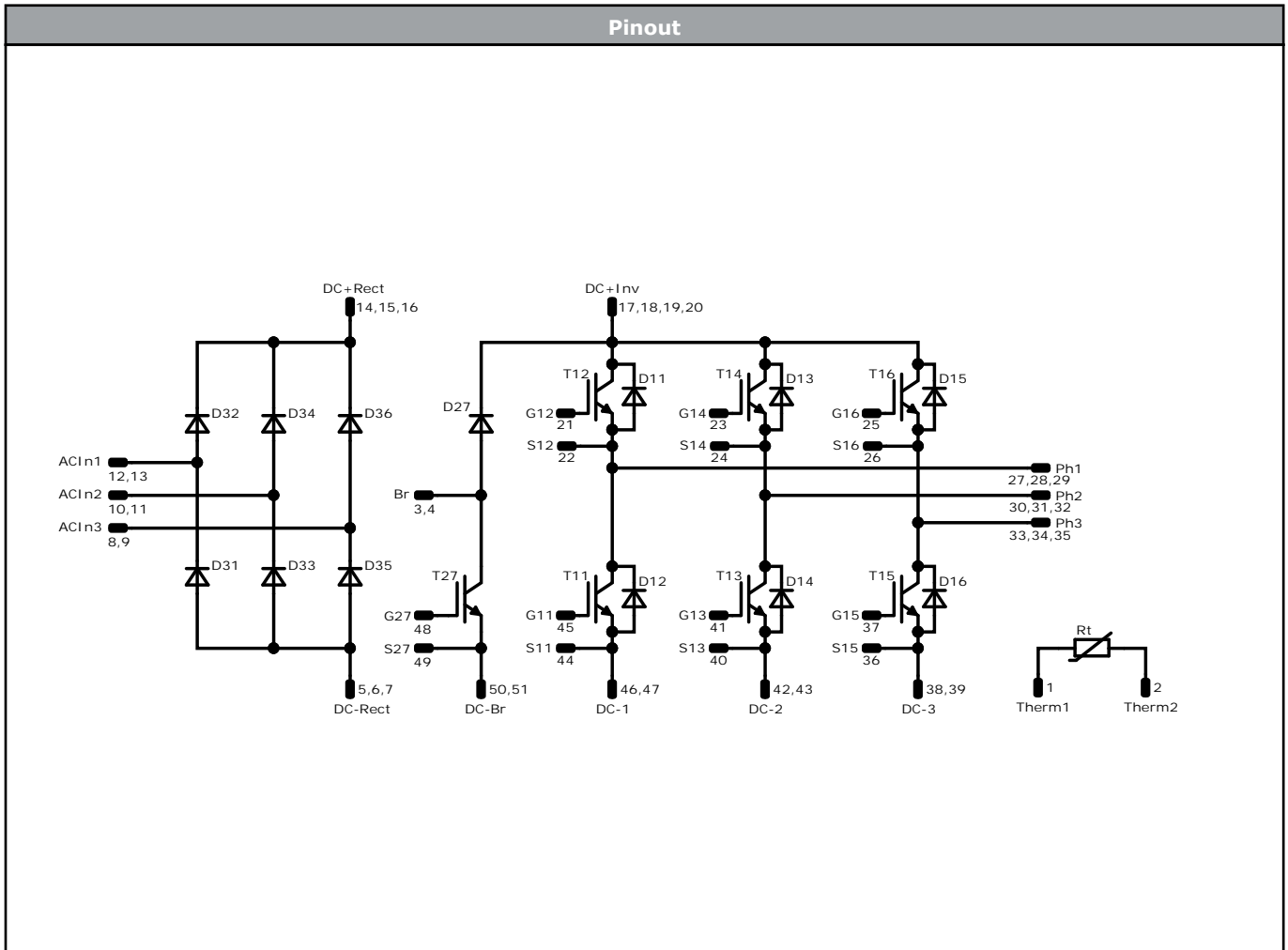
Outline*							
Pin table [mm]							
Pin	X	Y	Function	27	30,25	25,05	Ph1
1	0	0	Therm1	28	31,85	27,75	Ph1
2	6,9	0	Therm2	29	32,95	25,05	Ph1
3	0	8,5	Br	30	41,3	25,05	Ph2
4	2,7	7,9	Br	31	42,8	27,75	Ph2
5	2,7	16,35	DC-Rect	32	44	25,05	Ph2
6	0	17,6	DC-Rect	33	52,4	30,5	Ph3
7	0	20,3	DC-Rect	34	52,4	27,75	Ph3
8	3,5	28	AcIn3	35	52,4	25,05	Ph3
9	6,5	28	AcIn3	36	52,35	0	S15
10	3,5	39,25	AcIn2	37	49,35	0	G15
11	6,5	39,25	AcIn2	38	44,7	2,7	DC-3
12	0	50,4	AcIn1	39	44,7	0	DC-3
13	2,75	50,4	AcIn1	40	41,7	0	S13
14	12,2	50,4	DC+Rect	41	38,7	0	G13
15	14,95	50,4	DC+Rect	42	34,05	2,7	DC-2
16	17,7	50,4	DC+Rect	43	34,05	0	DC-2
17	20,9	50,4	DC+Inv	44	31,05	0	S11
18	20,9	47,65	DC+Inv	45	28,05	0	G11
19	20,9	44,9	DC+Inv	46	23,4	2,7	DC-1
20	20,9	42,15	DC+Inv	47	23,4	0	DC-1
21	29,4	50,4	G12	48	20,4	6	G27
22	32,4	50,4	S12	49	20,4	3	S27
23	40,95	50,4	G14	50	20,4	0	DC-Br
24	43,95	50,4	S14	51	17,7	0	DC-Br
25	52,4	50,4	G16				
26	52,4	47,4	S16				

Tolerance of pinpositions: ±0,5mm at the end of pins
Dimension of coordinate axis is only offset without tolerance

* Preliminary



Vincotech



Identification					
ID	Component	Voltage	Current	Function	Comment
T11, T12, T13, T14, T15, T16	IGBT	1200 V	100 A	Inverter Switch	
D11, D12, D13, D14, D15, D16	FWD	1200 V	100 A	Inverter Diode	
T27	IGBT	1200 V	100 A	Brake Switch	
D27	FWD	1200 V	100 A	Brake Diode	
D31, D32, D33, D34, D35, D36	Rectifier	1600 V	60 A	Rectifier Diode	
Rt	Thermistor			Thermistor	



Packaging instruction				
Standard packaging quantity (SPQ) 45	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for <i>flow</i> S3 packages see vincotech.com website.

Package data
Package data for <i>flow</i> S3 packages see vincotech.com website.

Document No.:	Date:	Modification:	Pages
B0-SP12PMA100M7-LQ99A78Y-T2-14	20 May. 2020	Remove UL file reference	7

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.