Vincotech

10-0B06PPA010RC01-L025A19

target datasheet

flow PIM 0B + PFC	600V/10A

Features

- Convert, PFC, inverter in one housing
- New high speed IGBT for PFC
- One screw heatsink mounting

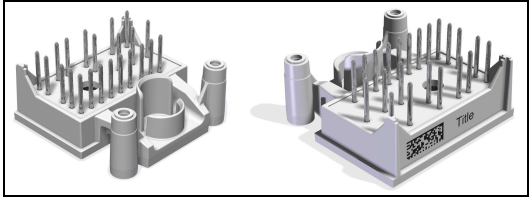
Target Applications

- Embedded drives

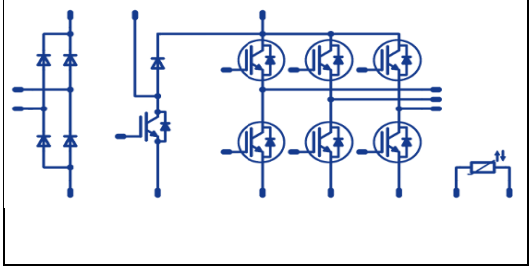
Types

- 10-0B06PPA010RC01-L025A19

flow PIM 0B + PFC housing



Schematic



Maximum Ratings

T_j=25℃, unless otherwise specified

Parameter	Symbol	Condition		Value	Unit
D31,D32,D33,D34					
Repetitive peak reverse voltage	V_{RRM}			1600	V
DC forward current	I_{FAV}	T_j=$T_j$max	T_h=80℃ T_c=80℃	12 16	A
Surge forward current	I_{FSM}	t_p=10ms	T_j=25℃	150	A
I2t-value	I^2t			110	A^2s
Power dissipation per Diode	P_{tot}	T_j=$T_j$max	T_h=80℃ T_c=80℃	20 30	W
Maximum Junction Temperature	$T_j$max			150	℃

Maximum Ratings

T_j=25℃, unless otherwise specified

Parameter	Symbol	Condition		Value	Unit
T27					
Collector-emitter break down voltage	V_{CE}			650	V
DC collector current	I_C	T_j=$T_j$max	T_h=80℃ T_c=80℃	22 29	A
Pulsed collector current	I_{Cpulse}	t_p limited by $T_j$max		90	A
Turn off safe operating area		VCE ≤ 1200V, Tj ≤ Top max		90	A
Power dissipation per IGBT	P_{tot}	T_j=$T_j$max	T_h=80℃ T_c=80℃	41 62	W
Gate-emitter peak voltage	V_{GE}			±20	V
Maximum Junction Temperature	$T_j$max			175	℃
D47					
Peak Repetitive Reverse Voltage	V_{RRM}			650	V
DC forward current	I_F	T_j=$T_j$max	T_h=80℃ T_c=80℃	8 10	A
Repetitive peak forward current	I_{FRM}	t_p limited by $T_j$max		12	A
Power dissipation per Diode	P_{tot}	T_j=$T_j$max	T_h=80℃ T_c=80℃	40 22	W
Maximum Junction Temperature	$T_j$max			175	℃
D27					
Peak Repetitive Reverse Voltage	V_{RRM}			600	V
DC forward current	I_F	T_j=$T_j$max	T_h=80℃ T_c=80℃	10 14	A
Repetitive peak forward current	I_{FRM}	t_p limited by $T_j$max		35	A
Power dissipation	P_{tot}	T_j=$T_j$max	T_h=80℃ T_c=80℃	19 29	W
Maximum Junction Temperature	$T_j$max			175	℃

Maximum Ratings

T_j=25℃, unless otherwise specified

Parameter	Symbol	Condition		Value	Unit
T11,T12,T13,T14,T15,T16 (IGBT)					
Collector-emitter break down voltage	V_{CE}			600	V
DC collector current	I_C	T_j=$T_j$max	T_h=80℃ T_c=80℃	13 17	A
Pulsed collector current	I_{Cpulse}	t_p limited by $T_j$max		30	A
Turn off safe operating area		VCE ≤ 600V, Tj ≤ Top max		30	A
Power dissipation per IGBT	P_{tot}	T_j=$T_j$max	T_h=80℃ T_c=80℃	48 72	W
Gate-emitter peak voltage	V_{GE}			±20	V
Short circuit ratings	t_{SC} V_{CC}	T_j≤150℃ V_{GE}=15V		5 400	µs V
Maximum Junction Temperature	$T_j$max			175	℃
T11,T12,T13,T14,T15,T16 (FWD)					
Peak Repetitive Reverse Voltage	V_{RRM}			600	V
DC forward current	I_F	T_j=$T_j$max	T_h=80℃ T_c=80℃	9 7	A
Repetitive peak forward current	I_{FRM}	t_p limited by $T_j$max		30	A
Power dissipation per Diode	P_{tot}	T_j=$T_j$max	T_h=80℃ T_c=80℃	27 17	W
Maximum Junction Temperature	$T_j$max			175	℃
Thermal Properties					
Storage temperature	T_{stg}			-40…+125	℃
Operation temperature under switching condition	T_{op}			-40…+(Tjmax - 25)	℃
Insulation Properties					
Insulation voltage	V_{is}	t=2s	DC voltage	4000	V
Creepage distance				min 12,7	mm
Clearance				min 12,7	mm
Comparative tracking index	CTI			>200	

Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
			V_{GE} [V] or V_{GS} [V]	V_r [V] or V_{CE} [V] or V_{DS} [V]	I_C [A] or I_F [A] or I_D [A]	T_j	Min	Typ	Max	
D31,D32,D33,D34										
Forward voltage	V_F				12	Tj=25℃ Tj=125℃		1,14 1,14		V
Threshold voltage (for power loss calc. only)	V_{to}				12	Tj=25℃ Tj=125℃		0,88 0,79		V
Slope resistance (for power loss calc. only)	r_t				12	Tj=25℃ Tj=125℃		54 69		mΩ
Reverse current	I_r			1500		Tj=25℃ Tj=125℃			0,01	mA
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um λ = 1 W/mK						2,80		K/W
T27										
Gate emitter threshold voltage	$V_{GE(th)}$				0,0008	Tj=25℃ Tj=150℃	3,3	4	4,7	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		30	Tj=25℃ Tj=150℃		1,65	2,22	V
Collector-emitter cut-off	I_{CES}		0	650		Tj=25℃ Tj=150℃			0,04	mA
Gate-emitter leakage current	I_{GES}		20	0		Tj=25℃ Tj=150℃			120	nA
Integrated Gate resistor	R_{gint}							-		Ω
Turn-on delay time	$t_{d(on)}$	Rgoff=0 Ω Rgon=0 Ω	±15	300	15	Tj=25℃ Tj=150℃		tbd		ns
Rise time	t_r					Tj=25℃ Tj=150℃		tbd		
Turn-off delay time	$t_{d(off)}$					Tj=25℃ Tj=150℃		tbd		
Fall time	t_f					Tj=25℃ Tj=150℃		tbd		
Turn-on energy loss per pulse	E_{on}					Tj=25℃ Tj=150℃		tbd		mWs
Turn-off energy loss per pulse	E_{off}					Tj=25℃ Tj=150℃		tbd		
Input capacitance	C_{ies}	f=1MHz	0	25		Tj=25℃		2100		pF
Output capacitance	C_{oss}							tbd		
Reverse transfer capacitance	C_{rss}							7,7		
Gate charge	Q_{Gate}		±15	480	30	Tj=25℃		tbd		nC
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um λ = 1 W/mK						1,70		K/W
D47										
Diode forward voltage	V_F				10	Tj=25℃ Tj=125℃		1,5		V
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um λ = 1 W/mK						3,14		K/W
D27										
Forward voltage	V_F					Tj=25℃ Tj=125℃		1,35 1,55	1,55	V
Reverse leakage current	I_{rm}			400		Tj=25℃ Tj=125℃			160	µA
Peak recovery current	I_{RRM}	diF/dt=300A/us		400		Tj=25℃ Tj=125℃		tbd		A
Reverse recovery time	t_{rr}					Tj=25℃ Tj=125℃		15		ns
Reverse recovery charge	Q_{rr}					Tj=25℃ Tj=125℃		0,015		µC
Reverse recovered energy	E_{rec}					Tj=25℃ Tj=125℃		tbd		mWs
Peak rate of fall of recovery current	di(rec)max /dt					Tj=25℃ Tj=125℃		tbd		A/µs
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um λ = 1 W/mK						4,95		K/W

Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
			V_{GE} [V] or V_{GS} [V]	V_r [V] or V_{CE} [V] or V_{DS} [V]	I_C [A] or I_F [A] or I_D [A]	T_j	Min	Typ	Max	
T11,T12,T13,T14,T15,T16 (IGBT)										
Gate emitter threshold voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}$			0,00017	Tj=25℃ Tj=175℃	4,3	5	5,7	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		10	Tj=25℃ Tj=175℃		2,1 2	2,4	V
Collector-emitter cut-off current incl. Diode	I_{CES}		0	600		Tj=25℃ Tj=175℃			0,04 1	mA
Gate-emitter leakage current	I_{GES}		20	0		Tj=25℃ Tj=175℃			100	nA
Integrated Gate resistor	R_{gint}							none		Ω
Turn-on delay time	$t_{d(on)}$	Rgoff=26 Ω Rgon=26 Ω	±15	400	10	Tj=25℃ Tj=150℃		12 12		ns
Rise time	t_r					Tj=25℃ Tj=150℃		15 15		
Turn-off delay time	$t_{d(off)}$					Tj=25℃ Tj=150℃		168 178		
Fall time	t_f					Tj=25℃ Tj=150℃		18 20		
Turn-on energy loss per pulse	E_{on}					Tj=25℃ Tj=150℃		0,19 0,31		mWs
Turn-off energy loss per pulse	E_{off}					Tj=25℃ Tj=150℃		0,16 0,21		
Input capacitance	C_{ies}	f=1MHz	0	25		Tj=25℃		665		pF
Output capacitance	C_{oss}							37		
Reverse transfer capacitance	C_{rss}							22		
Gate charge	Q_{Gate}		±15	480	10	Tj=25℃		64		nC
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um λ = 1 W/mK						2		K/W
T11,T12,T13,T14,T15,T16 (FWD)										
Diode forward voltage	V_F				10	Tj=25℃ Tj=150℃	1,68	2,1	2,42	V
Peak reverse recovery current	I_{RRM}	Rgon=4 Ω	±15	300	50	Tj=25℃ Tj=150℃		9,1 12,9		A
Reverse recovery time	t_{rr}					Tj=25℃ Tj=150℃		72 112		ns
Reverse recovered charge	Q_{rr}					Tj=25℃ Tj=150℃		0,27 0,62		µC
Peak rate of fall of recovery current	di(rec)max /dt					Tj=25℃ Tj=150℃		146 136		A/µs
Reverse recovered energy	Erec					Tj=25℃ Tj=150℃				mWs
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um λ = 1 W/mK						5,5		K/W
Thermistor										
Rated resistance	R					Tj=25℃		21511		Ω
Deviation of R100	ΔR/R	R100=1486 Ω				Tc=100℃	-4,5		+4,5	%
Power dissipation	P					Tc=100℃		210		mW
Power dissipation constant						Tj=25℃		3,5		mW/K
B-value	$B_{(25/50)}$					Tj=25℃		3884		K
B-value	$B_{(25/100)}$					Tj=25℃		3964		K
Vincotech NTC Reference						Tj=25℃			F	

Ordering Code and Marking - Outline - Pinout

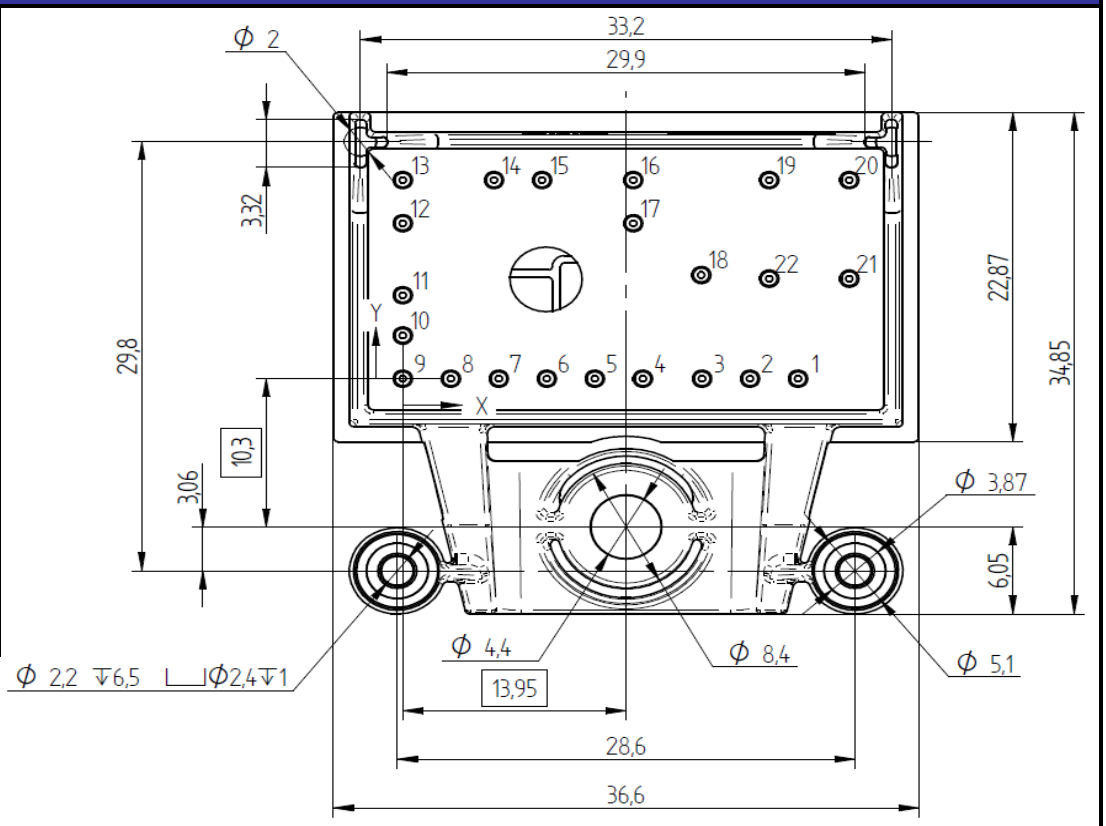
Ordering Code & Marking

Version	Ordering Code	in DataMatrix as	in packaging barcode as
without thermal paste 12mm housing	10-0B06PPA010RC01-L025A19	L025A19	L025A19

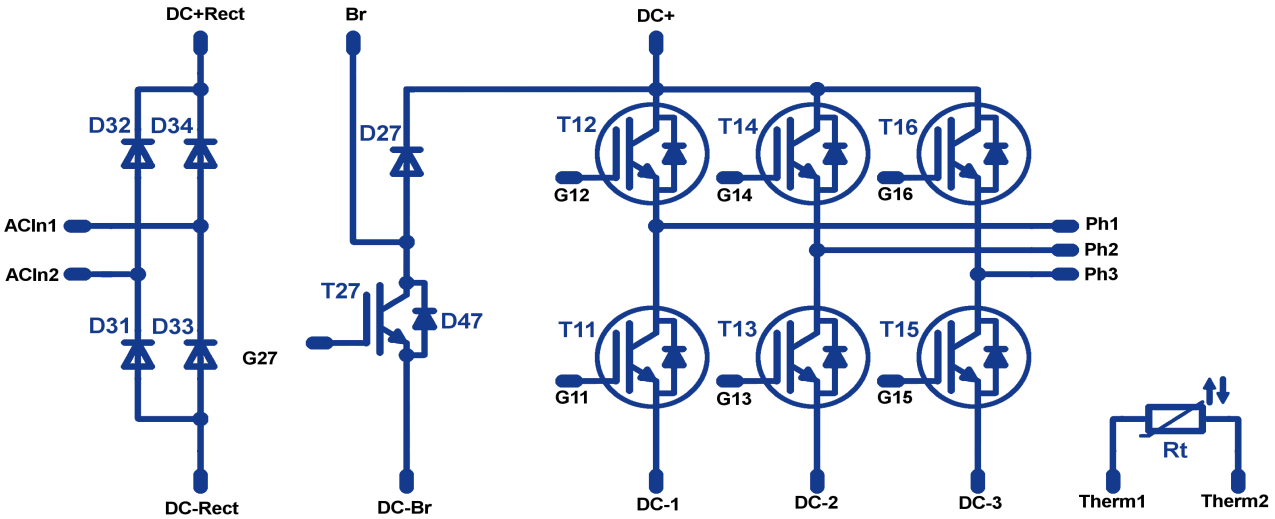
Outline

Pin table

Pin	X	Y
1	24,7	0
2	21,7	0
3	18,7	0
4	15	0
5	12	0
6	9	0
7	6	0
8	3	0
9	0	0
10	0	3
11	0	5,8
12	0	10,8
13	0	13,8
14	5,7	13,8
15	8,7	13,8
16	14,4	13,8
17	14,4	10,8
18	18,65	7,2
19	22,9	13,8
20	27,9	13,8
21	27,9	6,95
22	22,9	6,95



Pinout



PRODUCT STATUS DEFINITIONS

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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