

flow PIM 0B + PFC

600V/6A

Features

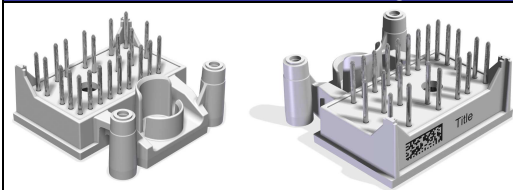
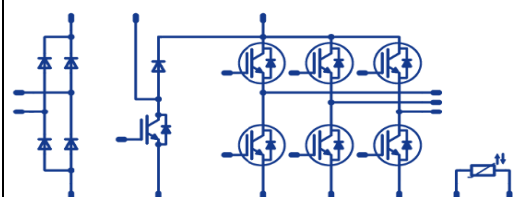
- Convert, PFC, inverter in one housing
- New high speed IGBT for PFC
- One screw heatsink mounting

Target Applications

- Embedded drives

Types

- 10-0B06PPA006RC-L023A09

flow PIM 0B + PFC housing

Schematic


Maximum Ratings

 $T_j = 25^\circ\text{C}$, 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}	$T_j = T_{jmax}$ $T_h = 80^\circ\text{C}$ $T_c = 80^\circ\text{C}$	12 16	A
Surge forward current	I_{FSM}	$t_p = 10\text{ms}$ $T_j = 25^\circ\text{C}$	150	A
I^2t -value	I^2t		110	A^2s
Power dissipation per Diode	P_{tot}	$T_j = T_{jmax}$ $T_h = 80^\circ\text{C}$ $T_c = 80^\circ\text{C}$	20 30	W
Maximum Junction Temperature	T_{jmax}		150	$^\circ\text{C}$

Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
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T27

Collector-emitter break down voltage	V_{CE}		650	V
DC collector current	I_C	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	19 25	A
Pulsed collector current	I_{Cpulse}	t_p limited by T_{jmax}	45	A
Turn off safe operating area		$V_{CE} \leq 1200\text{V}$, $T_j \leq T_{op max}$	45	A
Power dissipation per IGBT	P_{tot}	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	48 72	W
Gate-emitter peak voltage	V_{GE}		± 20	V
Maximum Junction Temperature	T_{jmax}		175	$^{\circ}\text{C}$

D47

Peak Repetitive Reverse Voltage	V_{RRM}		650	V
DC forward current	I_F	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	8 10	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	12	A
Power dissipation per Diode	P_{tot}	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	40 22	W
Maximum Junction Temperature	T_{jmax}		175	$^{\circ}\text{C}$

D27

Peak Repetitive Reverse Voltage	V_{RRM}		650	V
DC forward current	I_F	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	22 28	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	30	A
Power dissipation	P_{tot}	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	35 53	W
Maximum Junction Temperature	T_{jmax}		175	$^{\circ}\text{C}$

Maximum Ratings

 $T_j=25^{\circ}\text{C}$, 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	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	9 11,5	A
Pulsed collector current	I_{Cpulse}	t_p limited by T_{jmax}	18	A
Turn off safe operating area		$V_{CE} \leq 600\text{V}$, $T_j \leq T_{op max}$	12	A
Power dissipation per IGBT	P_{tot}	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	38 58	W
Gate-emitter peak voltage	V_{GE}		± 20	V
Short circuit ratings	t_{SC} V_{CC}	$T_j \leq 150^{\circ}\text{C}$ $V_{GE}=15\text{V}$	5 400	μs V
Maximum Junction Temperature	T_{jmax}		175	$^{\circ}\text{C}$

T11,T12,T13,T14,T15,T16 (FWD)

Peak Repetitive Reverse Voltage	V_{RRM}		600	V
DC forward current	I_F	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	3,7 4,7	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	12	A
Power dissipation per Diode	P_{tot}	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	17 56	W
Maximum Junction Temperature	T_{jmax}		175	$^{\circ}\text{C}$

Thermal Properties

Storage temperature	T_{stg}		-40...+125	$^{\circ}\text{C}$
Operation temperature under switching condition	T_{op}		-40...+($T_{jmax} - 25$)	$^{\circ}\text{C}$

Insulation Properties

Insulation voltage	V_{is}	$t=2\text{s}$ 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	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		1,14 1,14		V
Threshold voltage (for power loss calc. only)	V_{th}				12	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		0,88 0,79		V
Slope resistance (for power loss calc. only)	r_t				12	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		54 69		mΩ
Reverse current	I_r			1500		$T_j=25^{\circ}C$ $T_j=125^{\circ}C$			0,01	mA
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um $\lambda = 1 \text{ W/mK}$						2,80		K/W
T27										
Gate emitter threshold voltage	$V_{GE(th)}$				0,0004	$T_j=25^{\circ}C$ $T_j=150^{\circ}C$	3,3	4	4,7	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		15	$T_j=25^{\circ}C$ $T_j=175^{\circ}C$		1,65 1,9	2,22	V
Collector-emitter cut-off	I_{CES}		0	650		$T_j=25^{\circ}C$ $T_j=150^{\circ}C$			0,04	mA
Gate-emitter leakage current	I_{GES}		20	0		$T_j=25^{\circ}C$ $T_j=150^{\circ}C$			120	nA
Integrated Gate resistor	R_{gint}							-		Ω
Turn-on delay time	$t_{d(on)}$	$R_{goff}=0 \text{ Ω}$ $R_{gon}=0 \text{ Ω}$	±15	300	15	$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		tbd		ns
Rise time	t_r					$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		tbd		
Turn-off delay time	$t_{d(off)}$					$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		tbd		
Fall time	t_f					$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		tbd		
Turn-on energy loss per pulse	E_{on}					$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		tbd		mWs
Turn-off energy loss per pulse	E_{off}					$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		tbd		
Input capacitance	C_{ies}	f=1MHz	0	25		$T_j=25^{\circ}C$		930		pF
Output capacitance	C_{oss}							tbd		
Reverse transfer capacitance	C_{rss}							4		
Gate charge	Q_{Gate}		±15	650	15	$T_j=25^{\circ}C$		tbd		nC
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um $\lambda = 1 \text{ W/mK}$						2,00		K/W
D47										
Diode forward voltage	V_F				10	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		1,5		V
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um $\lambda = 1 \text{ W/mK}$						3,14		K/W
D27										
Forward voltage	V_F				15	$T_j=25^{\circ}C$ $T_j=200^{\circ}C$		1,35 1,26	1,77	V
Reverse leakage current	I_{rm}		±15	300	50	$T_j=25^{\circ}C$ $T_j=150^{\circ}C$			0,94	μA
Peak recovery current	I_{RRM}	$R_{gon}=0 \text{ Ω}$	±15	300	50	$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		tbd		A
Reverse recovery time	t_{rr}					$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		tbd		ns
Reverse recovery charge	Q_{rr}					$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		tbd		μC
Reverse recovered energy	E_{rec}					$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		tbd		mWs
Peak rate of fall of recovery current	$di(rec)_{max}/dt$					$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		tbd		A/μs
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um $\lambda = 1 \text{ W/mK}$						2,70		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	$V_{GE(th)}$	$V_{CE}=V_{GE}$			0,00011	$T_j=25^{\circ}C$ $T_j=150^{\circ}C$	4,4	5	5,6	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		6	$T_j=25^{\circ}C$ $T_j=150^{\circ}C$	1,88	2,2	2,62	V
Collector-emitter cut-off current incl. Diode	I_{CES}		0	600		$T_j=25^{\circ}C$ $T_j=150^{\circ}C$			0,002	mA
Gate-emitter leakage current	I_{GES}		20	0		$T_j=25^{\circ}C$ $T_j=150^{\circ}C$			120	nA
Integrated Gate resistor	R_{gint}							-		Ω
Turn-on delay time	$t_{d(on)}$	$R_{goff}=23\ \Omega$ $R_{gon}=23\ \Omega$	± 15	300	6	$T_j=25^{\circ}C$ $T_j=175^{\circ}C$		7 8		ns
Rise time	t_r					$T_j=25^{\circ}C$ $T_j=175^{\circ}C$		8 8		
Turn-off delay time	$t_{d(off)}$					$T_j=25^{\circ}C$ $T_j=175^{\circ}C$		106 115		
Fall time	t_f					$T_j=25^{\circ}C$ $T_j=175^{\circ}C$		22 35		
Turn-on energy loss per pulse	E_{on}					$T_j=25^{\circ}C$ $T_j=175^{\circ}C$		tbd		mWs
Turn-off energy loss per pulse	E_{off}					$T_j=25^{\circ}C$ $T_j=175^{\circ}C$		tbd		
Input capacitance	C_{ies}	f=1MHz	0	25		$T_j=25^{\circ}C$		470		pF
Output capacitance	C_{oss}							24		
Reverse transfer capacitance	C_{iss}							14		
Gate charge	Q_{Gate}		± 15	480	6	$T_j=25^{\circ}C$		48		nC
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness $\leq 50\mu m$ $\lambda = 1\ W/mK$						2,5		K/W
T11,T12,T13,T14,T15,T16 (FWD)										
Diode forward voltage	V_F					$T_j=25^{\circ}C$ $T_j=175^{\circ}C$	1,68	2,1	2,42	V
Peak reverse recovery current	I_{RRM}	$di/dt=770A/\mu s$	± 15	400		$T_j=25^{\circ}C$ $T_j=175^{\circ}C$		7,4 10,3		A
Reverse recovery time	t_{rr}					$T_j=25^{\circ}C$ $T_j=175^{\circ}C$		48 74		ns
Reverse recovered charge	Q_{rr}					$T_j=25^{\circ}C$ $T_j=175^{\circ}C$		0,16 0,34		μC
Peak rate of fall of recovery current	$di(rec)_{max}/dt$					$T_j=25^{\circ}C$ $T_j=175^{\circ}C$		195 177		A/ μs
Reverse recovered energy	E_{rec}					$T_j=25^{\circ}C$ $T_j=175^{\circ}C$		tbd		mWs
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness $\leq 50\mu m$ $\lambda = 1\ W/mK$						5,6		K/W
Thermistor										
Rated resistance	R					$T_j=25^{\circ}C$		21511		Ω
Deviation of R100	$\Delta R/R$	R100=1486 Ω				$T_c=100^{\circ}C$	-4,5		+4,5	%
Power dissipation	P					$T_c=100^{\circ}C$		210		mW
Power dissipation constant						$T_j=25^{\circ}C$		3,5		mW/K
B-value	$B_{(25/50)}$					$T_j=25^{\circ}C$		3884		K
B-value	$B_{(25/100)}$					$T_j=25^{\circ}C$		3964		K
Vincotech NTC Reference						$T_j=25^{\circ}C$			F	

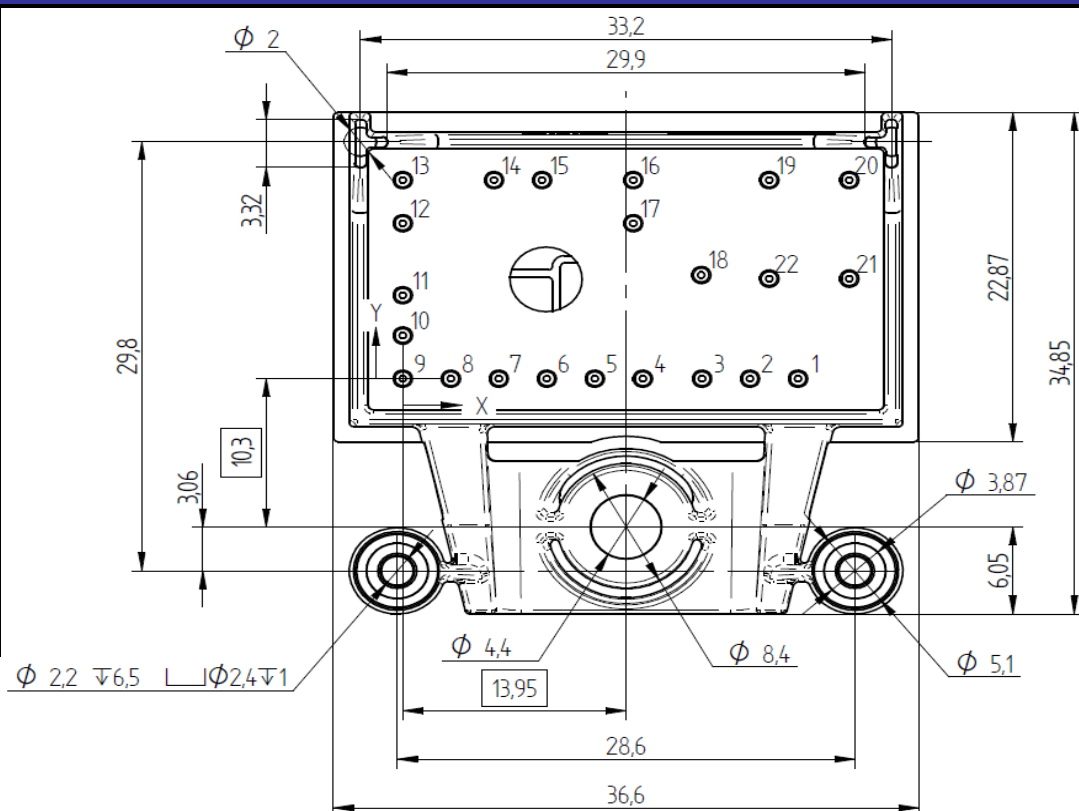
Ordering Code and Marking - Outline - Pinout

Ordering Code & Marking

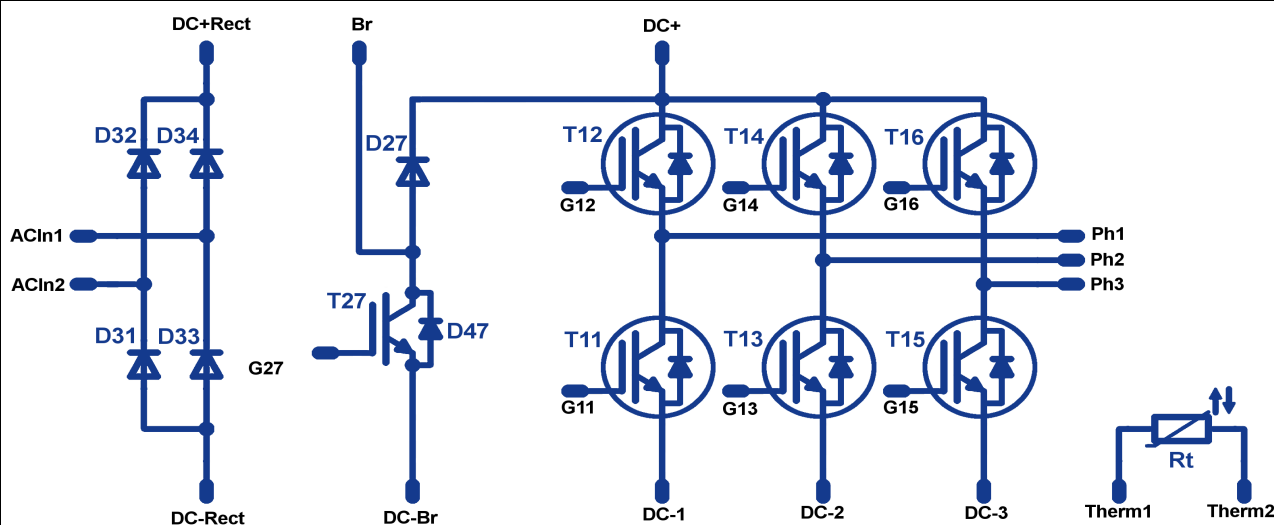
Version	Ordering Code	in DataMatrix as	in packaging barcode as
without thermal paste 12mm housing	10-0B06PPA006RC-L023A09	L023A09	L023A09

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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