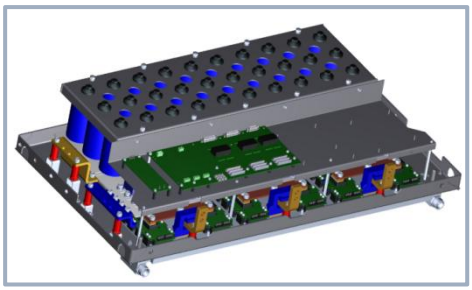
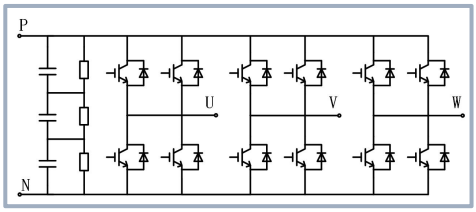
FPS088T172W001





Ordering No.

- **FPS088T172W001**

Features

- **2-level**
- **3-phase**
- **2 IGBTs in parallel**
- **Liquid cooling**

Typical Applications

- **Wind Power**

Symbol	Description	min	typ	max	Unit
Electrical Characteristics					
V_{DC}	Rated Full DC bus voltage		1150	1250	V
V_{AC}	Rated AC voltage		690		V_{RMS}
I_{AC}	Rated AC current		880		A_{RMS}
f_{SW}	Switching frequency			3	kHz
PF	Power factor	-1.0		1.0	
P_{LOSS}	Stack power loss		11.22		kW
V_{ISOL}	Insulation voltage		2.5		kV_{RMS}
IGBT module	Package	[1]1700V/1000A PrimePACK™3			

Note1: Taking Infineon modules as an example, modules with compatible packages are available for use.

Symbol	min	typ	max	Unit
Environmental Data				
Liquid volume **ΔV/ Δt**	12	15		L/min
Liquid pressure **Δp**		0.61		bar
Inlet temperature T_{INLET}			50	°C
Installation altitude	0		2000	m
Protection degree, According to EN 50178		IP00		
Pollution degree, According to IEC 60529		2		
Storage temperature	-40		70	°C
Operational ambient temperature	-25		60	°C
Relative humidity	0		95	%

Mechanical Data				
Dimensions, Length × width × height		1090*596*272		mm
Weight		96		kg
DC terminal mounting torque M_{DC}		40		Nm
AC terminal mounting torque M_{AC}		55		Nm

Controller Interface

The module control and protection circuits are connected to the controller via two D-Sub 25-pin connectors. D-Sub male terminals X2 and X3 on the module are defined as follows:

Controller Signal Connector Pin Definitions (X2)

Pin	Name	Function	Pin	Name	Function
1	NC	Vacant	14	PWM_U_BOT	U -phase bottom half-bridge PWM signal
2	Phase_U_Error	U-phase fault output	15	PWM_U_TOP	U -phase top half-bridge PWM signal
3	PWM_V_BOT	V-phase bottom half-bridge PWM signal	16	Phase_V_Error	V-phase fault output
4	PWM_V_TOP	V-phase higher half-bridge PWM signal	17	PWM_W_BOT	W-phase bottom half-bridge PWM signal
5	Phase_W_Error	W-phase fault output	18	PWM_W_TOP	W-phase top half-bridge PWM signal
6	NC	Vacant	19	NC	Vacant
7	NC	Vacant	20	NC	Vacant
8	NC	Vacant	21	NC	Vacant
9	NC	Vacant	22	GNDdigital	Digital signal ground
10	GND digital	Digital signal ground	23	NC	Vacant
11	NC	Vacant	24	NC	Vacant
12	NC	Vacant	25	NC	Vacant
13	NC	Vacant			

Controller Signal Connector Pin Definitions (X3)

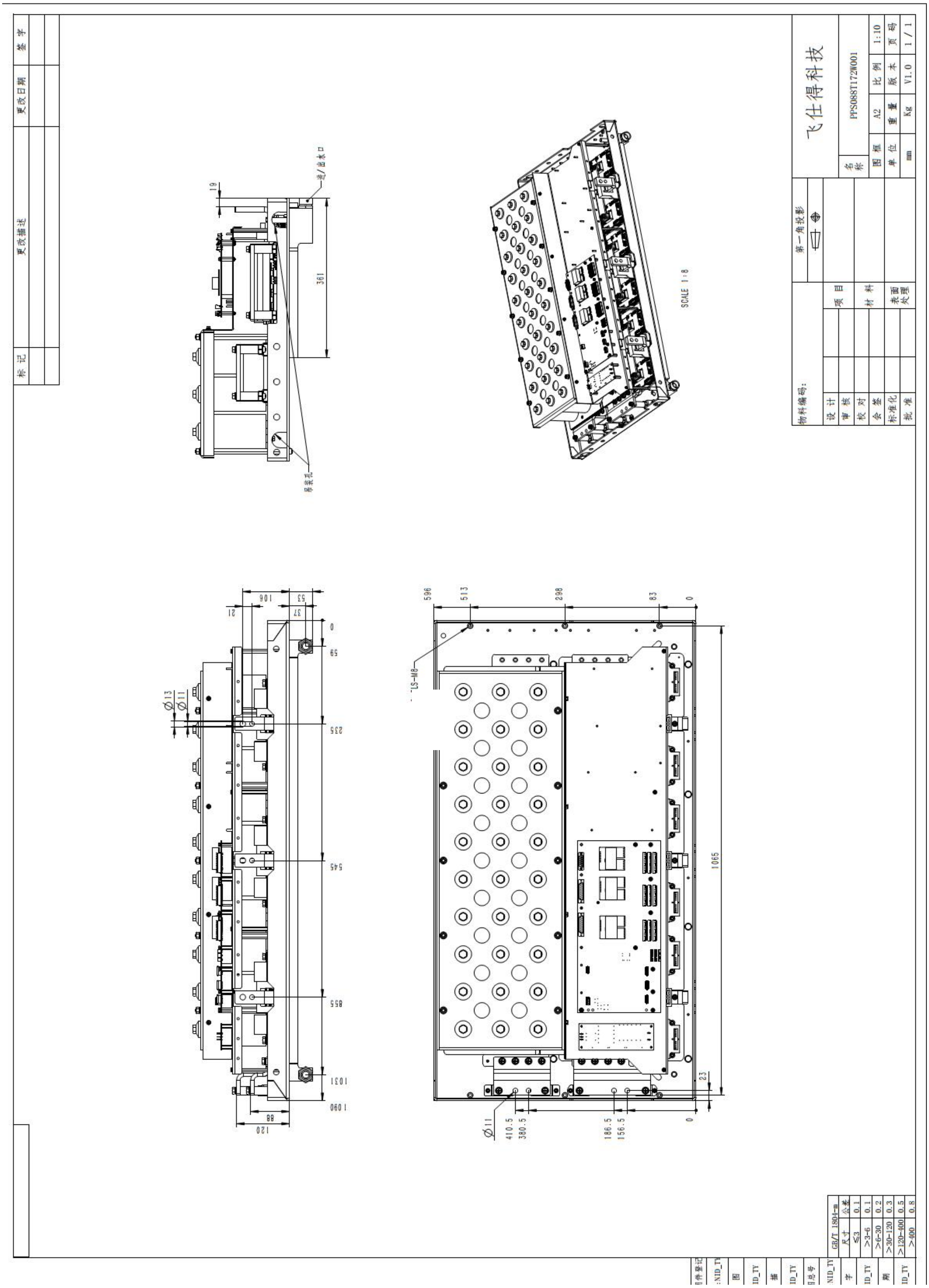
1	NC	Vacant	14	GND_dig	Digital signal ground
2	GND_dig	Digital signal ground	15	15V	15V power supply output
3	15V	15V power supply output	16	NC	Vacant
4	Sum Error	Summary fault output	17	OC Error	Overcurrent fault output
5	Phase U Error	U-phase fault output	18	Phase V Error	V-phase fault output
6	Phase W Error	W-phase fault output	19	OT Error	Overheating fault output
7	OV Error	Overvoltage fault output	20	GND_dig	Digital signal ground
8	NC	Vacant	21	NC	Vacant
9	NC	Vacant	22	NC	Vacant
10	VTheta_NTC	Temperature output	23	VDC_ana	DC bus voltage
11	VIU_ana	U-phase current output	24	GND_ana	Analogue signal ground
12	VIV_ana	V-phase current output	25	GND_ana	Analogue signal ground
13	VIW_ana	W-phase current output			

Controller Signal Connector Pin Definitions (X5)[1]

1	Vaux	24V power supply positive	3	PE	Shielded ground
2	GND	24V power supply negative			

Note 1: The 5.08mm 3-pin terminal block is used for the power supply interface of the module gate driver board

Dimensions



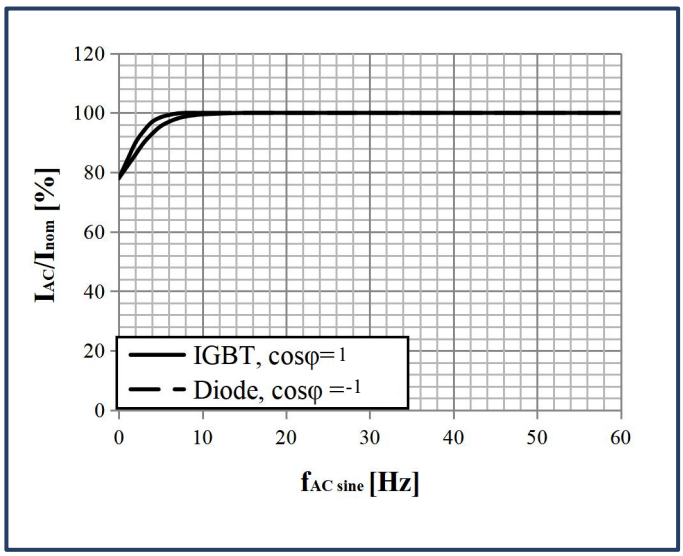


Fig.1 f_{ACsine}**-Derating curve IGBT (contravariant), Diode (Rectification),**V_{DC} **= 1100 V,** V_{AC} **= 690 V,** f_{sw} **= 2.8 kHz, cosφ = +/- 0.9,**T_{inlet} **= 50 °C**

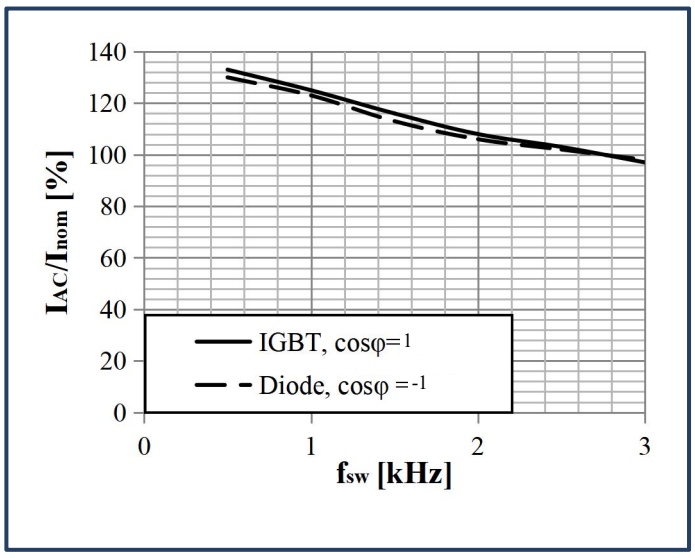


Fig.2 f_{sw}**-Derating curve IGBT (contravariant), Diode (Rectification),**V_{DC} **= 1100 V,** V_{AC} **= 690 V,** f_{sw} **= 2.8 kHz, cosφ = +/- 0.9** T_{inlet} **= 50 °C**

Safety instructions

1. The data contained in this product datasheet is intended for technically trained engineers only. The suitability of this product for your specific application scenario and the completeness of the information provided must be fully evaluated before implementation.
2. This product must not be operated beyond the absolute maximum ratings listed in this specification under any circumstances. Operating the device at multiple maximum rating thresholds simultaneously is strictly prohibited.
3. External cooling and dissipation requirements indicated in this specification must be strictly enforced to prevent performance derating or catastrophic thermal failure.
4. For applications in safety-critical systems (such as aviation, medical, or life-support systems), please contact Firstack to establish dedicated quality agreements and risk assessments before ordering.

Legal disclaimer

This manual gives a detailed introduction about the product, but cannot promise to Switching frequency(Hz) warranty or guarantee, express or implied, is given herein as to the delivery, performance or applicability of the product.
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