FEATURES

- Industrial Standard DIP-8 Package
- I/O Isolation 3000VDC
- Operating Ambient Temp. Range -40℃ to +90℃
- Overload and Short Circuit Protection
- UL/cUL/IEC/EN 62368-1 (60950-1) Safety Approval (Pending) & CE Marking



NEW

PRODUCT OVERVIEW

The MINMAX MFPU01H series is a new range of isolated 1W DC/DC converter modules in DIP-8 package which feature a high I/O isolation voltage rated for 3000VDC and there are 21 models available for 3.3, 5 or 12VDC input.

Advanced circuit topology provides continuous overload, short circuit protection and a high efficiency up to 82% which allows operating ambient temperatures range of -40°Cto +85°C without power derating.

These converters offer a cost-effective solution for all applications where a high I/O isolation and fault condition protection are required.

Model Selection Guide

Model Number	Input Voltage (Range)	Output Voltage	Output Current		Input Current		Load Regulation	Max. capacitive Load	Efficiency (typ.)
			Max.	Min.	@Max. Load	@No Load			@Max. Load
	VDC	VDC	mA	mA	mA(typ.)	mA(typ.)	% (max.)	µF	%
MFPU01-033S033H	3.3 (2.97 ~ 3.63)	3.3	300	6	400	45	15	220	75
MFPU01-033S05H		5	200	4	384		12		79
MFPU01-033S12H		12	84	1.68	382		12		80
MFPU01-033S15H		15	67	1.34	376		10		81
MFPU01-033D05H		±5	±100	±2	389		12	100#	78
MFPU01-033D12H		±12	±42	±0.84	382		12		80
MFPU01-033D15H		±15	±33	±0.66	370		10		81
MFPU01-05S033H	5 (4.5 ~ 5.5)	3.3	300	6	257	30	12	220	77
MFPU01-05S05H		5	200	4	250		11		80
MFPU01-05S12H		12	84	1.68	246		9		82
MFPU01-05S15H		15	67	1.34	242		8		83
MFPU01-05D05H		±5	±100	±2	250		11	100#	80
MFPU01-05D12H		±12	±42	±0.84	243		9		83
MFPU01-05D15H		±15	±33	±0.66	239		8		83
MFPU01-12S033H	12 (10.8 ~ 13.2)	3.3	300	6	107	17	8	220	77
MFPU01-12S05H		5	200	4	105		8		79
MFPU01-12S12H		12	84	1.68	104		8		81
MFPU01-12S15H		15	67	1.34	102		7		82
MFPU01-12D05H		±5	±100	±2	104		7	100#	80
MFPU01-12D12H		±12	±42	±0.84	102		7		82
MFPU01-12D15H		±15	±33	±0.66	101		7		82

For each output

Input Specifications

Parameter	Model	Min.	Typ.	Max.	Unit
Input Voltage Range	3.3V Input Models	2.97	3.3	3.63	VDC
	5V Input Models	4.5	5	5.5	
	12V Input Models	10.8	12	13.2	
Input Surge Voltage (1 sec. max.)	3.3V Input Models	-0.7	---	6	
	5V Input Models	-0.7	---	9	
	12V Input Models	-0.7	---	18	
Input Filter	All Models	Internal Capacitor			

Output Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Setting Accuracy		---	---	±3.0	%Vnom.
Output Voltage Balance	Dual Output, Balanced Loads	---	±0.1	±1.0	%
Line Regulation	For Vin Change of 1%	---	±1.2	±1.5	%
Load Regulation	Io=10% to 100%	See Model Selection Guide			
Ripple & Noise	0-20 MHz Bandwidth	---	---	100	mV_{P-P}
Temperature Coefficient		---	±0.01	±0.02	%/°C
Over Load Protection	Normal Vin at 25°C	---	160	---	%
Short Circuit Protection	Continuous, Automatic Recovery				

General Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage	60 Seconds	3000	---	---	VDC
I/O Isolation Resistance	500 VDC	10	---	---	GΩ
I/O Isolation Capacitance	100KHz, 1V	---	20	---	pF
Switching Frequency		50	80	110	KHz
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign	TBD	---	---	Hours
Safety Approvals (Pending)	UL/cUL 60950-1 recognition (UL certificate), IEC/EN 60950-1 (CB-report)				
	UL/cUL 62368-1 recognition (UL certificate), IEC/EN 62368-1 (CB-report)				

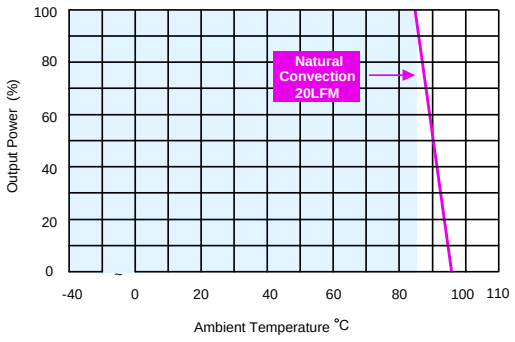
Environmental Specifications

Parameter	Conditions	Min.	Max.	Unit
Operating Ambient Temperature Range (See Power Derating Curve)	Natural Convection	-40	+90	°C
Case Temperature		---	+95	°C
Storage Temperature Range		-50	+125	°C
Humidity (non condensing)		---	95	% rel. H
Cooling	Natural Convection			
Lead Temperature (1.5mm from case for 10Sec.)		---	260	°C

EMC Specifications

Parameter	Standards & Level		Performance
EMI	Conduction	EN55022, FCC part 15	Class A(5)
EMS	EN55024		
	ESD	EN61000-4-2 Air ± 8kV , Contact ± 6kV	A
	Radiated immunity	EN61000-4-3 10V/m	A
	Fast transient (6)	EN61000-4-4 ±2kV	A
	Surge (6)	EN61000-4-5 ±1kV	A
	Conducted immunity	EN61000-4-6 10Vrms	A
	PFMF	EN61000-4-8 3A/m	A

Power Derating Curve

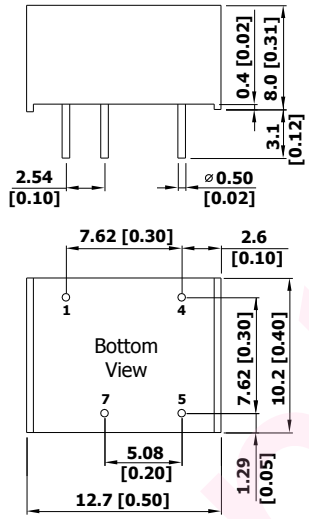


Notes

1 Specifications typical at Ta=+25°C, resistive load, nominal input voltage and rated output current unless otherwise noted.
2 These power converters require a minimum output loading to maintain specified regulation, operation under no-load conditions will not damage these modules; however they may not meet all specifications listed.
3 We recommend to protect the converter by a fast blow fuse in the input supply line.
4 Other input and output voltage may be available, please contact factory.
5 To meet EN55022 Class A an external filter, please contact MINMAX.
6 To meet EN61000-4-4 & EN61000-4-5 an external capacitor across the input pins is required.Suggested capacitor:TBD.
7 That "natural convection" is about 20LFM but is not equal to still air (0 LFM).
8 Specifications are subject to change without notice.

Package Specifications

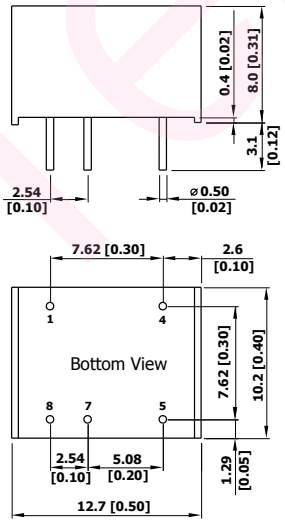
Mechanical Dimensions (Single Output)



Pin Connections

Pin	Single Output	Dual Output
1	-Vin	-Vin
4	+Vin	+Vin
5	+Vout	+Vout
7	-Vout	Common
8	No Pin	-Vout

Mechanical Dimensions (Dual Output)



▶ All dimensions in mm (inches)
▶ Tolerance: X.X±0.5 (X.XX±0.02)
X.XX±0.25 (X.XXX±0.01)
▶ Pins ±0.05 (±0.002)

Physical Characteristics

Case Size	:	12.7x8.0x10.2mm (0.50x0.31x0.40 inches)
Case Material	:	Non-Conductive Black Plastic (flammability to UL 94V-0 rated)
Pin Material	:	Tinned Copper
Weight	:	TBD

Tentative