

FEATURES

- ▶ Ultra Compact Size 1.0" x 1.0" x 0.64"
- ▶ Fully Encapsulated Plastic Case for PCB Mounting
- ▶ Universal Input 85~264VAC
- ▶ Protection Class II as per IEC/EN 60536
- ▶ I/O Isolation 3000VAC with Reinforced Insulation
- ▶ Operating Ambient Temp. Range -25°C to +70°C
- ▶ No Min. Load Requirement
- ▶ Overload/Voltage and Short Circuit Protection
- ▶ Designed-in EMI Emission meets EN55011/22 Class B & FCC Level B
- ▶ Designed-in EMC Immunity meets EN61000-4-2,3,4,5,6,8,11
- ▶ Eco Design, Low No Load Power Consumption < 150mW
- ▶ UL/cUL/IEC/EN 60950-1, TUV/IEC/EN 60335-1 Safety Approval & CE Marking

NEW

PRODUCT OVERVIEW

The new AAF-03 Series from MINMAX is a range of ultra-small, fully encapsulated 3 Watt AC/DC power supply modules. They are designed for easy PCB mounting with solder pins. The modules feature EMI-filter to meet EN 55011/55022, class B and EN 55014. EMC immunity complies with EN 61000-6-1. The low stand-by power consumption complies with European ErP Directive 2009/125/EC.

Universal input voltage range of 85-264VAC and an International safety approval package qualifies the power modules for worldwide markets.

The AAF-03 series provide a cost effective solution for space critical applications in consumer appliances and instrumentation and communication equipment.

Model Selection Guide

Model Number	Output Voltage	Output Current		Input Current	Max. capacitive Load	Efficiency
		Max.	Peak ⁽¹⁾	@Max. Load		(typ.)
		mA	mA	mA(typ.)		@Max. Load
	VDC				µF	%
AAF-03S03	3.3	900	1170	62	1200	70
AAF-03S05	5	600	780	61	820	72
AAF-03S09	9	333	430	57	470	77
AAF-03S12	12	250	320	56	330	78
AAF-03S15	15	200	260	56	270	78
AAF-03S24	24	125	160	56	180	78

Input Specifications

Parameter	Model	Min.	Typ.	Max.	Unit
Input Voltage Range	All Models	85	---	264	VAC
Input Frequency Range		47	---	63	Hz
Input Voltage Range		120	---	370	VDC
No-Load Power Consumption		---	---	150	mW
Inrush Current (Cold Start at 25°C)	115VAC	---	---	15	A
	230VAC	---	---	25	A

Output Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		---	---	±2.0	%Vnom.
Line Regulation	Vin=Min. to Max. @Full Load	---	---	±1.0	%
Load Regulation	Io=0% to 100%	---	---	±1.0	%
Ripple & Noise	0-20 MHz Bandwidth	---	---	70	mV _{P-P}
Minimum Load	No minimum Load Requirement				
Over Voltage Protection	Zener Diode Clamp	---	125	190	% of Vo
Temperature Coefficient		---	---	±0.05	%/°C
Overshoot		---	---	5	%Vout
Current Limitation	Foldback, auto-recovery (long term overload condition may cause damage)	135	150	---	%Inom.
Short Circuit Protection	Hiccup mode, Automatic Recovery				

General Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage	60 Seconds	3000	---	---	VAC
I/O Isolation Resistance	500 VDC	100	---	---	MΩ
Switching Frequency		---	65	---	KHz
Hold-up Time	115VAC, Full Load	---	8	---	ms
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign	1,200,000			Hours
Protection Class II	According IEC/EN 60536				
Safety Approvals	UL/cUL 60950-1 recognition (UL certificate), IEC/EN 60950-1 (CB-report) IEC/EN 60335-1 recognition (CB-report, TUV certificate)				

EMC Specifications

Parameter	Standards & Level		Performance
EMI	Conduction & Radiation	EN55011, EN55014-1, EN55022, FCC part 15	Class B
EMS	EN55014-2, EN55024		
	ESD	EN61000-4-2 Air ± 8kV, Contact ± 4kV	A
	Radiated immunity	EN61000-4-3 10V/m	A
	Fast transient	EN61000-4-4 ±2kV	A
	Surge	EN61000-4-5 ±1kV	A
	Conducted immunity	EN61000-4-6 10Vrms	A
	PFMF	EN61000-4-8 30A/m	A
	Dips	EN61000-4-11 30% 10ms	A
Interruptions	EN61000-4-11 >95% 5000ms	B	

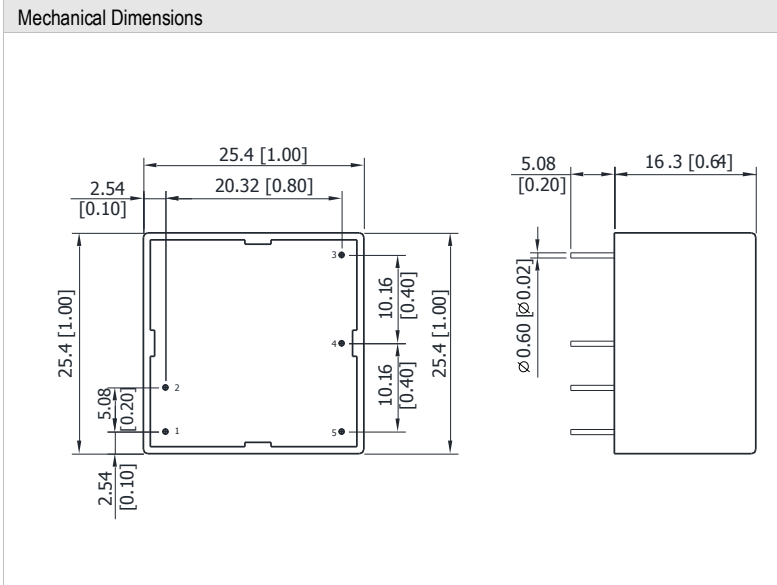
Environmental Specifications

Parameter	Conditions	Min.	Max.	Unit
Operating Ambient Temperature Range (See Power Derating Curve)	Natural Convection	-25	+70	°C
Storage Temperature Range		-40	+85	°C
Power Derating	+60°C to +70°C	0.15		W / °C
Humidity (non condensing)		---	95	% rel. H
Cooling	Natural Convection			
Lead Temperature (1.5mm from case for 10Sec.)		---	260	°C

Notes

- Peak load lasting <30s with a maximum duty cycle of 10%, average output power not to exceed maximum power.
- All specifications typical at Ta=+25°C, resistive load, 115VAC, 60Hz input voltage and after warm-up time rated output current unless otherwise noted.
- We recommend to protect the converter by a slow blow fuse in the input supply line.
- Other input and output voltage may be available, please contact factory.
- That "natural convection" is about 20LFM but is not equal to still air (0 LFM).
- Specifications are subject to change without notice.

Package Specifications



Pin Connections

Pin	Function
1	AC (N)
2	AC (L)
3	NC
4	-Vout
5	+Vout

NC: No Connection

- ▶ All dimensions in mm (inches)
- ▶ Tolerance: ± 0.5 (± 0.01)
- ▶ Pin diameter $\varnothing 0.6 \pm 0.1$ (0.02 ± 0.004)

Physical Characteristics

Case Size	: 25.4x25.4x16.3mm (1.0x1.0x0.64 inches)
Case Material	: Plastic resin (flammability to UL 94V-0 rated)
Pin Material	: Copper Alloy with Gold Plate Over Nickel Subplate
Weight	: 17.4g