



◆Features

- Constant Voltage;
- Wide AC input: 90-305VAC;
- Working temperture: -30~+70°C;
- No load power consumption<0.1W;
- Protections: Short- circuit/Over-load/Over-voltage;
- Typical efficiency up to 76.5%;
- Comply with RoHS/REACH environmental standards;
- 100% full-load aging test;
- 3 years warranty;

◆Applications

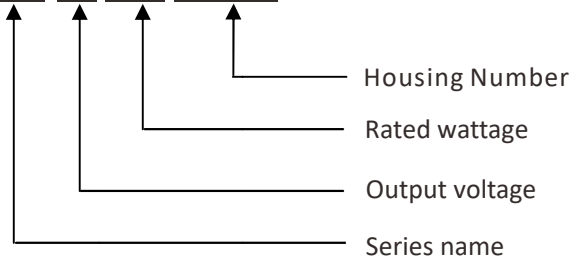
- Industrial electrical equipment;
- Mechanical equipment;
- Factory automation equipment;
- Hand-held electronic device;

◆Description

MVFC-12003A0780 is a 3W compact size (32.3*27.3*21.8mm) AC-DC power module with the advantages of wide AC input and at the same time accepts DC input voltage, low power consumption, low ripple noise, high reliability, and safe isolation. Ready to be soldered onto the PCB boards of various kinds of electronic instruments or industrial automation equipments. The flame-retardant plastic case and silicone potting are used to enhance the heat dissipation capability, with basic dust and moisture-proof functions, while meeting the vibration-proof requirements of 5G. With an efficiency of up to 76.5% and ultra-low no-load power consumption of less than 0.1W, the MVFC-12003A0780 series meets the global regulatory requirements for low power consumption of electronic products. The entire series is a Class II design (without FGpin), with built-in EMI filter devices, in compliance with CISPR32/EN55032 CLASSB, and good electromagnetic compatibility (EMC) characteristics to protect terminal electronic equipment from electromagnetic interference.

◆Mode Encoding

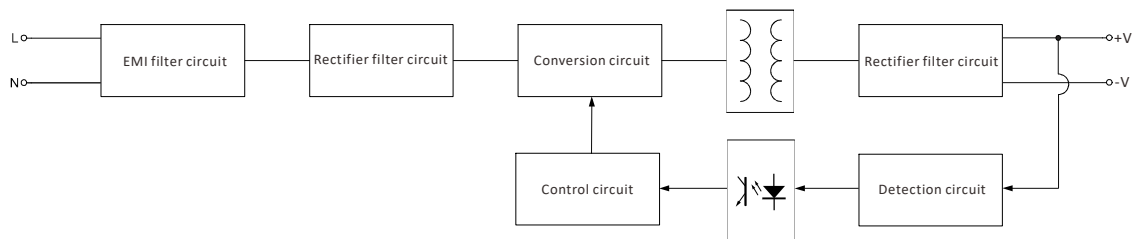
MVFC-12 003 A0780



◆Specification:

Model		MVFC-12003A0780
Output	DC voltage	12V
	Rated current	0.25A
	Current range	0~0.25A
	Rated Power	3W
	Efficiency (Typ.)	76.5%
	Maximum capacitive load	1200uF
	Voltage accuracy*③	±4.0%
	Line Regulation	±1.0%
	Load Regulation	±2.0%
	Ripple and Noise (max.)*④	150mVp-p
	Start-up, rise time*⑥	1000ms,30ms(Full load)
	Holding time (Typ.)	15ms,230VAC/115VAC(Full load)
Input	Voltage range*②	90~305VAC or 127~432VDC
	Frequency range	47~63Hz
	AC current	Max.0.09A
	Inrush current(Typ.)	Cold start: 20A/230VAC
	Leakage current	<0.25mA/277VAC
Protection	Overload	105%~175% of rated output power Protection mode: Hiccup protection mode, automatically recovers after load reduction
	Over voltage	13.0~18.0V Protection mode: Hiccup protection mode, automatically recovers after fault is eliminated
Environment	Working Temp	-30~70℃ (Please refer to <Temperature Derating Curve>)
	Working humidity	20~90% RH,non-condensing
	Storage Temp、Humidity	-40~+85℃,10~90% RH
	Temp.coefficient	±0.05%/℃(-30℃~50℃)
	Vibration	10~500Hz,5G,10 minutes/cycle, 60 mins for each of X, Y and Z axes
	Soldering temperture	Wave soldering: 265℃, 5s (max.); Manual soldering: 390℃, 3s (max.)
	Operating height*⑧	2000M
Safety	Safety standards	Complies with UL 60335-1, UL 62368-1, EN 62368-1, EN 60335-1 certification requirements
	Withstand voltage	I/P-O/P:3KVAC
	Isolation resistance	I/P-O/P:100M Ohms/500VDC/25℃/70% RH
Electromagnetic Compatibility Emission	Conducted disturbance	CISPR32/EN55032 CLASS B
	Radiated disturbance	CISPR32/EN55032 CLASS B
	Harmonic current	IEC/EN61000-3-2 Class A
Electromagnetic Compatibility Immunity	ESD	IEC/EN61000-4-2 Contact:±6KV/AIR:±8KV perf.CriteriaB
	Radiation Immunity	IEC/EN61000-4-3 10V/m perf.CriteriaB
	EFT	IEC/EN61000-4-4 ±2KV perf.CriteriaB
	Surge immunity	IEC/EN61000-4-5 L_N±1KV perf.CriteriaB
	CS	IEC/EN61000-4-6 10Vr.m.s perf.criteriaB
	Voltage dip, sag and temporary interruption immunity	IEC/EN61000-4-11 0%,70% perf.CriteriaB
Othere	MTBF	>1500K
	Warranty	3Years
	Dimension	32.3mm(L)*27.3mm(W)*21.8mm(H)
	Packing	420mm*340mm*200mm;0.03Kg;8.1Kg/270pcs
Note*	① Unless otherwise specified, all specifications are measured at 230Vac input, rated load, and 25℃ ambient temperature. ② Output derating is required under low input voltage conditions. Please refer to the input derating curve for details. ③ Accuracy: includes design error, linear regulation rate, and load regulation rate. ④ Ripple and noise measurement method: Use twisted pair cables, and connect 0.1uF and 47uF capacitors in parallel at the terminals, and measure at 20MHz bandwidth. ⑤ The power supply is regarded as a device used in conjunction with the terminal design, so EMD is affected by the entire device. The terminal equipment manufacturer needs to re-confirm the EMC of the entire device. ⑥ The startup time is measured in the cold start state. Continuous switching may prolong the startup time. ⑦ The input current and safety requirements have slightly different parameters due to different certifications. ⑧ When the altitude exceeds 2000 meters (6500FT), the operating ambient temperature decreases at a rate of 3.5℃/1000m.	

◆Block Diagram



◆Typical Application Circuit

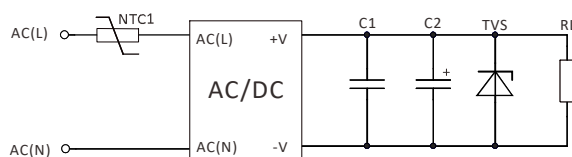


Figure 1: Typical circuit

Model	NTC1	C1	C2	TVS
MVFC-12003A0780	12Ω/3W	1uF/50V	120uF/35V	SMBJ20A

Note: C1 is a ceramic capacitor to filter high-frequency noise. C2 is recommended to use a high-frequency low-resistance electrolytic capacitor. For capacity and current, please refer to the technical specifications provided by each manufacturer. The capacitor withstand voltage should be derated by at least 80%. The TVS tube protects the subsequent circuit when the module fails.

◆EMC Recommended Circuit

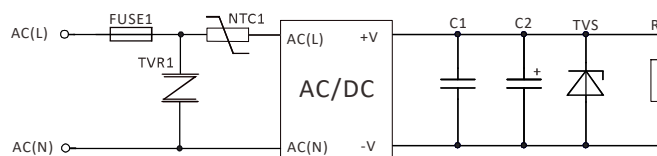


Figure 2: High-demand recommended circuit

Component model	FUSE1	TVR1	NTC1
Recommended value	1.6A/350V	14D561K	12Ω/3W

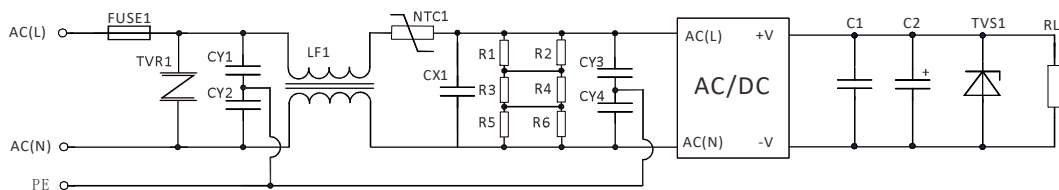
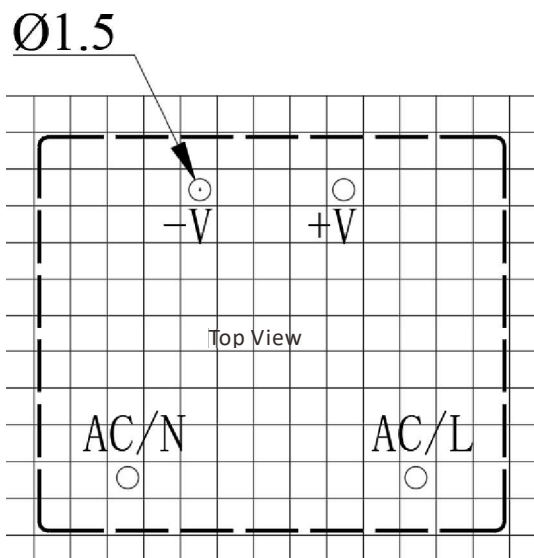
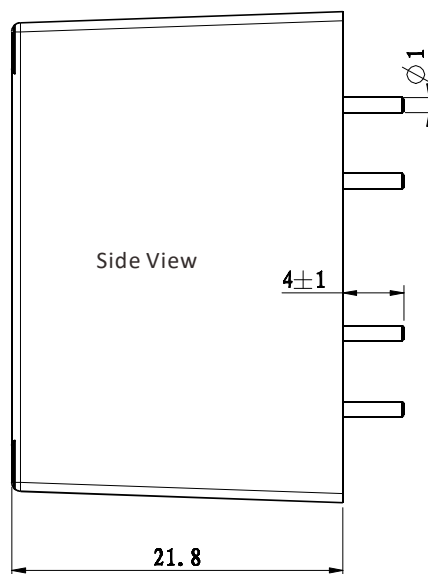
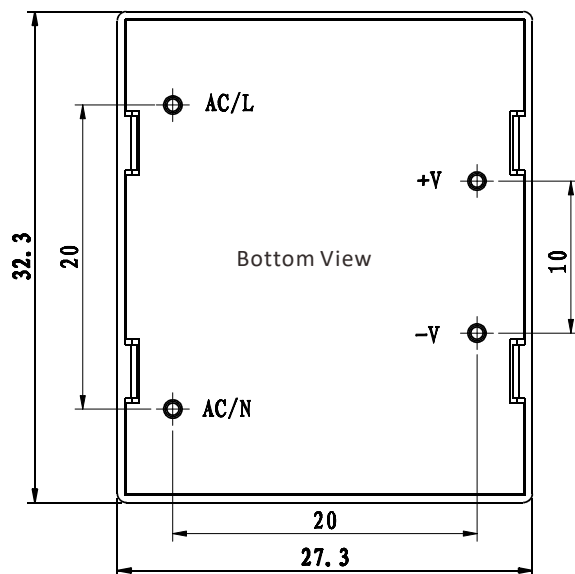


Figure 3: Class I equipment recommended circuit

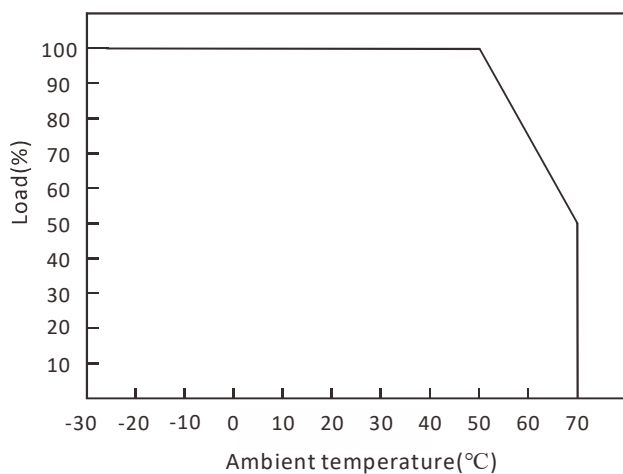
Component model	FUSE1	TVR1	CY1~CY4	LF1	NTC1	CX1	R1~R6
Recommended value	1.6A/350V	14D561K	2.2nF/400V	FL2D-10-203	33Ω/3W	224/310V	1.5MΩ/150VDC

◆ Case Size



Note:
Dimension unit: mm
Terminal diameter tolerance: ± 0.10
Unmarked tolerance: ± 0.50

◆ Temperature derating curve



◆ Input derating curve

