25W, AC-DC converter

FEATURES

- Universal Input : 85 - 264VAC, 100 - 370VDC, 50/60Hz
- Regulated output , Low ripple & noise
- Low no-load power consumption < 0.1W
- High efficiency up to 89%
- Output short circuit, over-current, over-voltage protection
- Meets EN60601-1, ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1 standards (2xMOPP)(Pending)
- Mounting: PCB mounting, Chassis mounting, DIN-Rail mounting available
- **Meets 5000m altitude requirements**

RoHS 3 years Warranty

MA25-H20BxxMU series is a compact size power converter offered by MEGA. It features universal input voltage, taking both DC and AC Input voltage, low power consumption, high efficiency, high reliability, safer isolation. Meets EN60601-1, ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1 standards (2xMOPP), and widely used in medical, industrial, instruments, telecommunication and civil applications. For harsh EMC environment, the application circuit in the datasheet is strongly recommended.

Selection Guide

Certification	Part No.	Output Power	Nominal Output Voltage and Current(Vo/Io)	Efficiency (230VAC, %/Typ.)	Max. Capacitive Load(μF)
CSA/CE (Pending)	MA25-H20B05MU	20.5W	5V/4100mA	82	10000
	MA25-H20B12MU	25 W	12V/2100mA	88	5000
	MA25-H20B15MU		15V/1600mA	88	4000
	MA25-H20B18MU		18V/1400mA	88	3000
	MA25-H20B24MU		24V/1100mA	89	1000

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	264	VAC
	DC input	100	--	370	VDC
Input frequency*		47	--	440	Hz
Input current	115VAC	--	--	0.6	A
	230VAC	--	--	0.34	
Inrush current	115VAC	--	10	--	
	230VAC	--	25	--	
Leakage current		0.1mA RMS typ./264VAC/60Hz			
Recommended External Input Fuse(Special package series include fuse)		3.15A/250V, slow fusing			
Hot Plug		Unavailable			
*Medical Certification Input frequency range: 47-63 Hz					

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Main circuit	--	±2	--	%

Line Regulation	Full load	--	±0.5	--	
Load Regulation		--	±1	--	
Ripple & Noise*	20MHz bandwidth (peak-peak value)	--	50	150	mV
Temperature Coefficient		--	±0.02	--	%/℃
Short Circuit Protection		Continuous, self-recovery			
Over-current Protection		≥110%Io self-recovery			
Over-voltage Protection	5VDC Output	≤7.5VDC			
	12 /15VDC Output	≤20VDC			
	18VDC Output	≤25VDC			
	24VDC Output	≤30VDC			
Min. Load		0	--	--	%
Hold-up Time	115VAC input	--	15	--	ms
	230VAC input	--	80	--	

Note: * Ripple and noise are measured by "parallel cable" method; please see AC-DC Converter Application Notes for specific operation.

General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output	Test time: 1min Leakage current≦5mA		4000	--	--	VAC
Operating Temperature				-40	--	+70	℃
Storage Temperature				-40	--	+85	
Storage Humidity				--	--	95	%RH
Welding Temperature		Wave-soldering		260 ± 5℃; time:5 - 10s			
		Manual-welding		360 ± 10℃; time:3 - 5s			
Switching Frequency				--	65	--	kHz
Power Derating		-40℃ to -25℃		3.3	--	--	%/℃
		+50℃ to +70℃	5V Output	2.5	--	--	
		+55℃ to +70℃	Others	3.3	--	--	
Safety Standard				EN60601-1, ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1			
Safety Certification				EN60601-1, ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1 **(Pending)**			
Safety Class				CLASSII			
Insulation Level		**First side-Second side**		**2xMOPP**			
MTBF				MIL-HDBK-217F@25℃≥ 300,000 h			

Physical Specifications

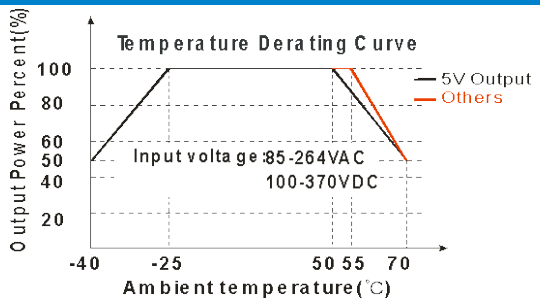
Casing Material		Black flame-retardant and heat-resistant plastic (UL94V-0)
Dimension	Horizontal package	70.00*48.00*23.50mm
	A2 chassis mounting	96.10*54.00*32.00mm
	A4 Din-Rail mounting	96.10*54.00*36.60mm
Weight	Horizontal package	120g (Typ.)
	A2 chassis mounting	170g (Typ.)
	A4 Din-Rail mounting	210g (Typ.)
Cooling method		Free air convection

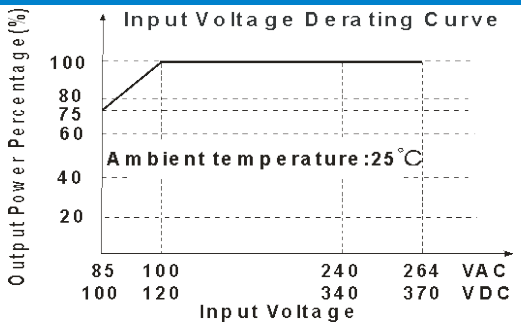
EMC Specifications

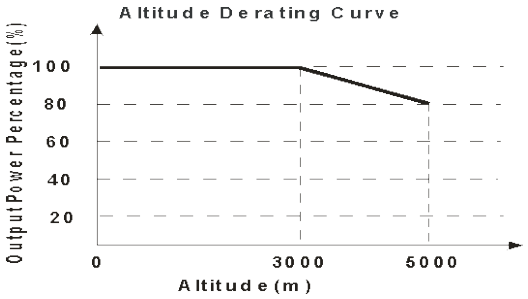
EMI	CE	EN55011(CISPR11) / EN55022(CISPR22) CLASS B	
	RE	EN55011(CISPR11) / EN55022(CISPR22) CLASS B	
EMS	ESD	IEC/EN61000-4-2 Contact ±6KV/Air ±8KV	Perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV	perf. Criteria B
		IEC/EN61000-4-4 ±4KV (See Fig. 2 for recommended circuit)	perf. Criteria B

	Surge	IEC/EN61000-4-5	line to line ±1KV	perf. Criteria B
		IEC/EN61000-4-5	line to line ±2KV (See Fig. 2 for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	10 Vr.m.s	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity☐	IEC/EN61000-4-11	0%,70%	perf. Criteria B

Product Characteristic Curve



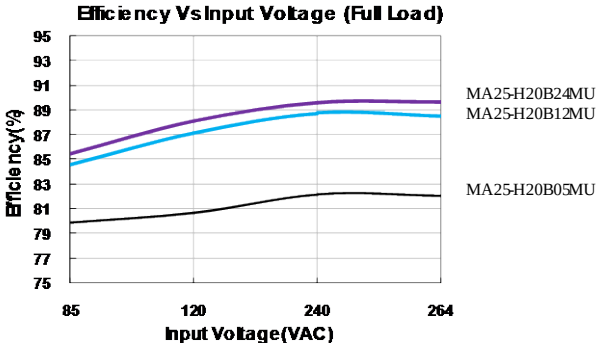


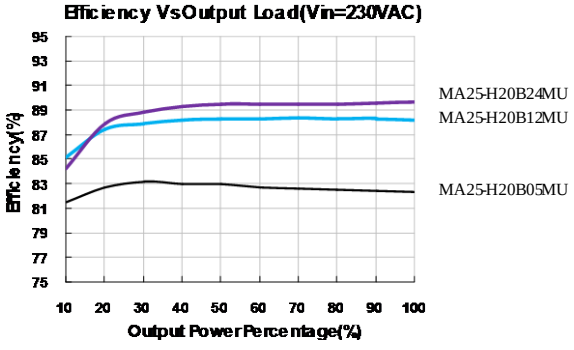


Note: ①When input 85-100VAC/100-120VDC, it need to be voltage derated on basis of temperature derating;

②Altitude should be derated based on temperature derating when it is 3000 - 5000m;

③This product is suitable for use in natural air cooling environments, if in a closed environment, please contact our company's FAE.





Design Reference

1. Typical application circuit

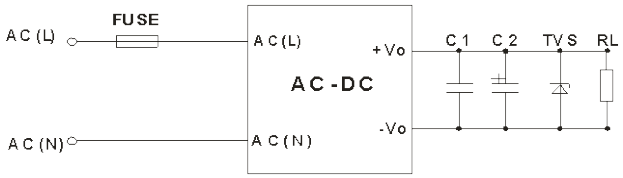


Fig. 1: Typical application circuit

型号	C2(μF)	TVS1
MA25-H20B05MU	330	SMBJ7.0A
MA25-H20B12MU	330	SMBJ20A
MA25-H20B15MU	330	SMBJ20A
MA25-H20B18MU	120	SMBJ30A
MA25-H20B24MU	68	SMBJ30A

Note: Output filtering capacitors C2 is electrolytic capacitor, it is recommended to use high frequency and low impedance electrolytic capacitor. For capacitance and current of capacitor please refer to manufacture's datasheet. Capacitor withstand voltage derating should be 80% or above. C1 is ceramic capacitor, which is used to filter high-frequency noise, **advice use 1μF**. TVS is a recommended component to protect post-circuits if converter fails. **External input FUSE model is recommended to use 3.15A/250V slow fusing**

2. EMC solution-recommended circuit

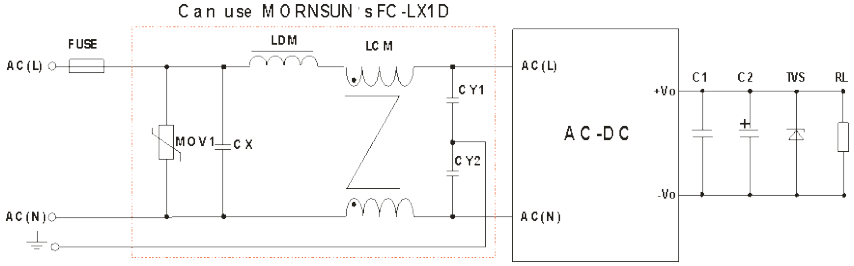
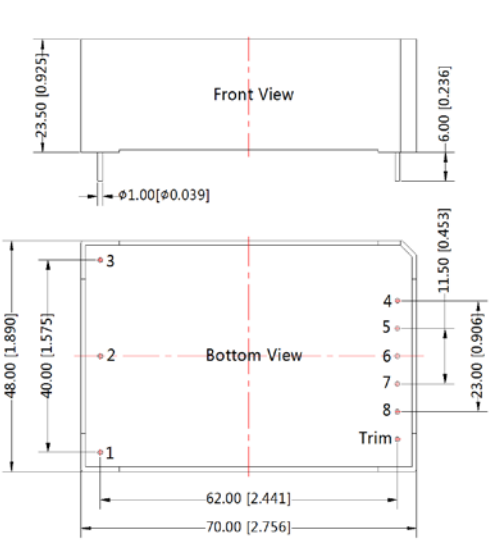
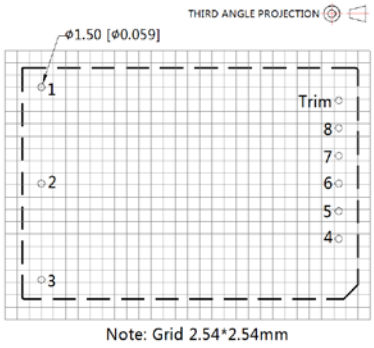


Fig 2: EMC Recommended circuit with higher requirements

Element model	Recommended value
MOV1	S14K300
CY1 , CY2	1nF/400VAC
CX	0.1μF/275VAC
LCM	10mH, recommended to use FL2D-Z5-103
LDM	4.7μH/2A
FC-LX1D	2KV/4KV EMC filter
FUSE	3.15A/250V slow fusing, necessary

Dimensions and Recommended Layout





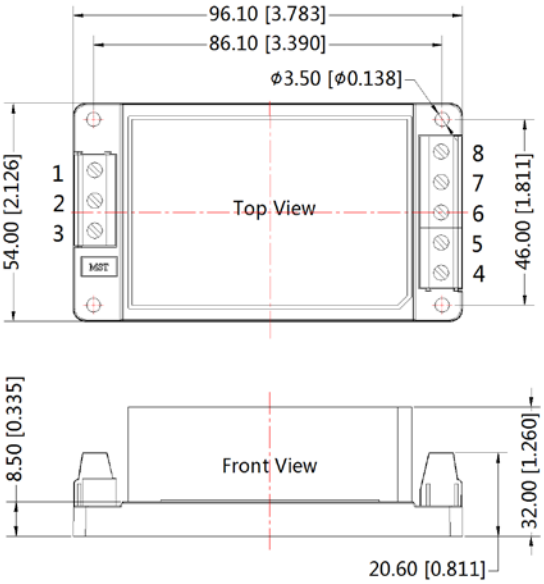
Note: Grid 2.54*2.54mm

Note:
Unit :mm[inch]
Pin diameter tolerances :±0.10[±0.004]
General tolerances:±0.50[±0.020]

Pin-Out	
Pin	Fuction
1	No Pin
2	AC(N)
3	AC(L)
4	+Vo
5	No Pin
6	No Pin
7	No Pin
8	-Vo
Trim	No Pin

A2 Dimensions

THIRD ANGLE PROJECTION

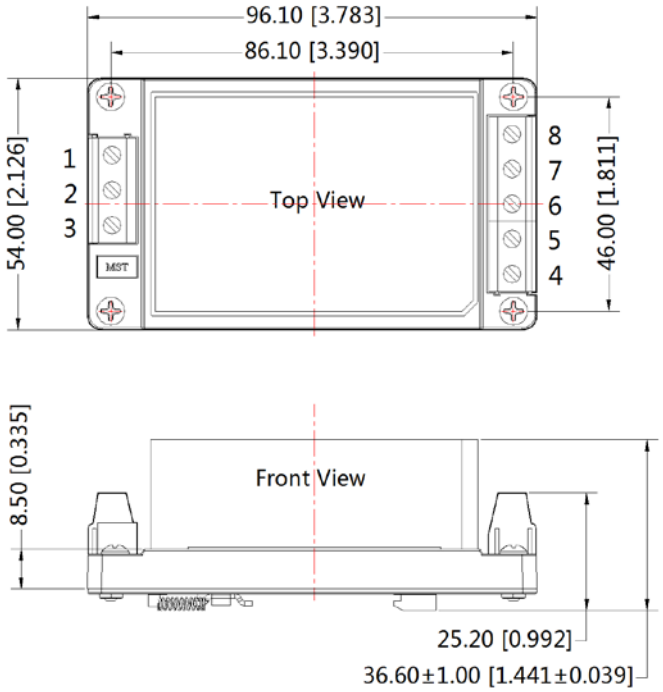


Pin-Out	
Pin	Function
1	NC
2	AC(N)
3	AC(L)
4	+Vo
5	NC
6	NC
7	NC
8	-Vo

Note:
Unit: mm[inch]
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N·m
General tolerances: ±0.50[±0.020]

A4 Dimensions

THIRD ANGLE PROJECTION



Pin-Out	
Pin	Function
1	NC
2	AC(N)
3	AC(L)
4	+Vo
5	NC
6	NC
7	NC
8	-Vo

Note:
Unit: mm[inch]
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N·m
Installed on DIN rail TS35
General tolerances: ±0.50[±0.020]

Note:

1. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25 ℃, humidity<75% with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on our Company's corporate standards;
4. The performance parameters of the product models listed in this manual are as above, but some parameters of non-standard model products may exceed the requirements mentioned above. Please contact our technicians directly for specific information;
5. We can provide product customization service;
6. Specifications are subject to change without prior notice.