

MES1010MH

DC/DC Converter

General Description

MES1010MH is a DC-to-DC converter which can be used to supply DC output from a commercial power supply (85 to 265 VAC). Using these module enable simple, easy drive of microcomputers, LEDs, and other electronic components without using a transformer.

It also allows set PCBs to be kept compact and lightweight, with extremely few attachments. It can accommodate the 85VAC~265VAC power supplies used as household power supplies.



Application

- Small multi-purpose power supply.
- Stand-by power supply aimed at low power consumption when loaded light.
- Insulated-type DC-DC converted.

Features

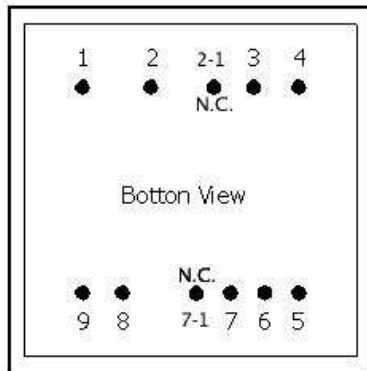
- Wide Input Range : FREEVOLT (AC 85V ~ 265V)
- A switching power supply can be made easily by adding simply external circuit
- Permits reduction of power consumption at low loads(when in stand-by)
- Able to deal with inputs of worldwide areas
- Ultra-compact size attained by application of high-density mounting technique
- Application of the unique molding technique features
Compliance with various safety regulations from the compact size
Humming is prevented when intermittent oscillation
- Over Temperature Protection
- Output Short Circuit Protection
- Over Load Protection

Absolute Maximum Ratings (Ta = 25°C)

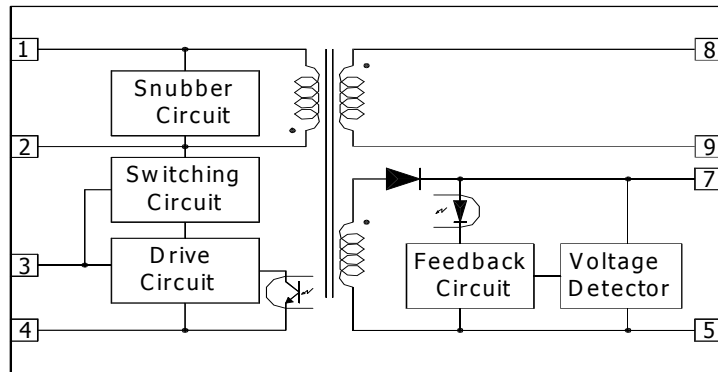
Characteristics	Symbol	Rating	Unit
Input Voltage	V _{IN}	120 ~ 375	V _{DC}
Output Voltage 1 (DC Output)	V _{OUT1}	10.0	V
Maximum Output Current 1	I _{OMAX1}	800	mA
Output Voltage 2 (AC Output)	V _{OUT2}	10.0	V
Maximum Output Current 2	I _{OMAX2}	400	mA
ESD Endurance	V _{SURGE}	2	kV

Maximum Surface Temperature	T_{CMAX}	105	°C
Ambient Operating Temperature Range	T_{OPR}	-10 ~ +60	°C
Storage Temperature Range	T_{STG}	-40 ~ +105	°C

Pin Assignment



Block Diagram



Pin Descriptions

Pin Name	Pin No.	I/O	Description
+DC IN	1	I	Voltage Input Terminal, 120~375 V_{IN}
DRAIN	2	O	Drain Output Terminal
NC	3		No Connection
- DC IN	4	I	Voltage Input Terminal, 0 V_{IN}
GND	5	O	Voltage Output Terminal, 0 V_{DC}
NC	6		No Connection
+DC OUT	7	O	DC Voltage Output Terminal, 10 V_{DC}
+AC OUT	8	O	AC Voltage Output Terminal, 10 V_{AC}
- AC OUT	9	O	AC Voltage Output Terminal, 0 V_{AC}

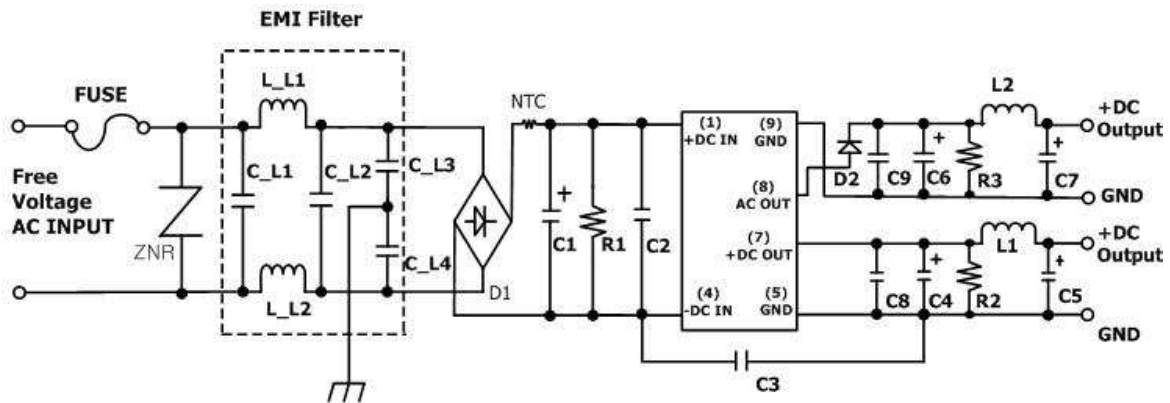
(Note1) Refer to the application circuit over pin connection

Electrical Characteristics (Ta=25°C)

Characteristics	Symbol	Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	V_{IN}		120	311	375	V_{DC}
Output Voltage 1 (DC Out)	V_{O1}	$V_i=311V, I_{o1}=800mA$	9.2	10.0	10.8	V
Output Current 1 (DC Out)	I_{O1}	$V_i=311V$	-	-	800	mA
Output Voltage 2 (AC Out)	V_{O2}	$V_i=311V, I_{o2}=400mA$	9.0	10.0	11.0	V
Output Current 2 (AC Out)	I_{O2}	$V_i=311V$	-	-	400	mA
Line Regulation	V_R	$V_i=120\sim 375V, I_o=800mA$	-0.20	0.05	0.20	V

Load Regulation	V_L	$V_i=311V, I_o=0\sim 800mA$	-0.20	0.05	0.20	V
Output Ripple Voltage	V_p	$V_i=311V, I_o=800mA$	-	0.05	0.10	V_{p-p}
Power Conversion Efficiency	η	$V_i=311V, I_o=800mA$	68	75	-	%

Application Circuit

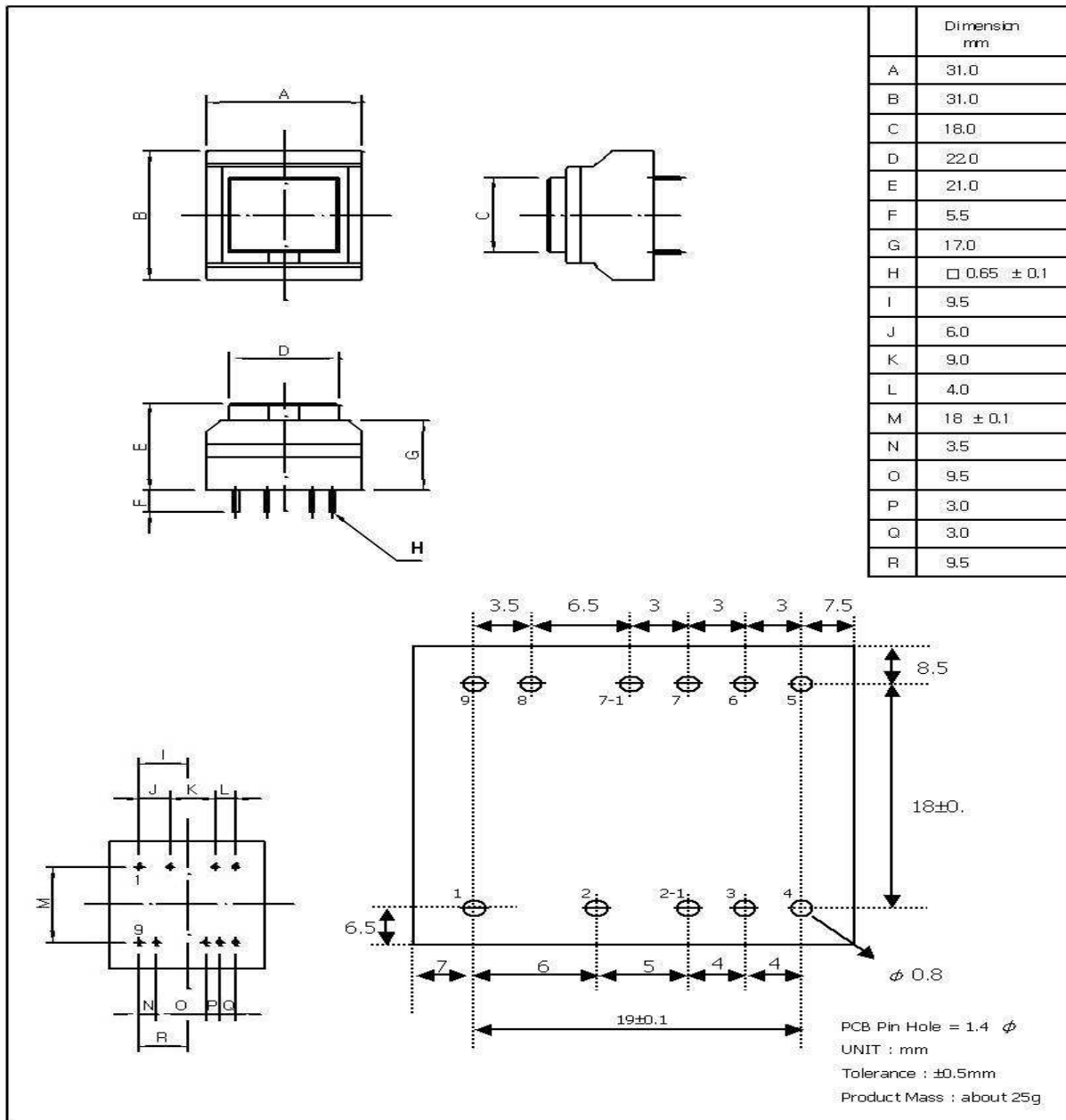


External Component Setting

FUSE	Fuse	Please make sure to use quick acting fuse 1A
C1	Capacitor for input voltage smoothing	Capacitance : 10 μ F~820 μ F, Rated voltage : 400V or higher Ripple current is 0.13Arms above.
C2	For noise terminal voltage reduction	Capacitance : 0.1 μ F~0.22 μ F, Rated voltage : 400V or higher Film capacitor or ceramic capacitor. Reduce the noise terminal voltage. The constant value should be evaluated in the set.
C3	Capacitor for Safety	Capacitance : 1nF~4.7nF, Rated voltage : 400V or higher
C4,C5 C6,C7	Capacitor for output voltage smoothing	Capacitance : 470 μ F~1000 μ F, Rated voltage : 25V or higher ESD is 0.4 Ω max. Ripple current is 0.25Arms above. Output noise voltage is influenced. Please evaluate it in the actual set.
C8,C9	Bypass Capacitor for high frequency noise	Capacitance : 10nF~100nF, Rated voltage : 50V or higher Film capacitor or ceramic capacitor. Reduce the high frequency noise terminal output.
R1	Discharge Resistor	500k Ω or higher , 1W or higher
R2,R3	Dummy Resistor	1k Ω , 1W
L1	Choke Coil	L : 4.7 μ H~10 μ H, Allowable current : 800mA or higher Please use the one that is hard to be magnetic saturated even in the high temperature.

L2	Choke Coil	L : 10 μ H~33 μ H, Allowable current : 300mA or higher Please use the one that is hard to be magnetic saturated even in the high temperature.
D1	Rectifier Diode	In the absolute maximum ratings, the reverse peak voltage should be 500V or higher, the average rectifying current should be 1A or higher, and the peak surge current should be 10A or higher. (Full-wave rectifier can be used in out part.)
D2	Fast Recovery Diode	In the absolute maximum ratings, the reverse peak voltage should be 200V or higher, the average rectifying current should be 1A or higher, and the peak surge current should be 10A or higher. (Full-wave rectifier can be used in out part.)

Package Outline



Ordering Information

Order Number	Ambient Temperature Range	Package Type
MES1010MH	0°C ~ 50°C	

* Please consult the factory or sales representative for pricing and availability.

POWERGEN CO., LTD

1F 2Dong, 541-9, Bongam-dong, Masanhoewon-gu, Changwon City, Gyeongnam, 630-803, Republic of Korea

TEL +82 55 259 5243 FAX +82 55 259 5249

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