

## MES1706H

### DC/DC Converter

#### General Description

MES1706H 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

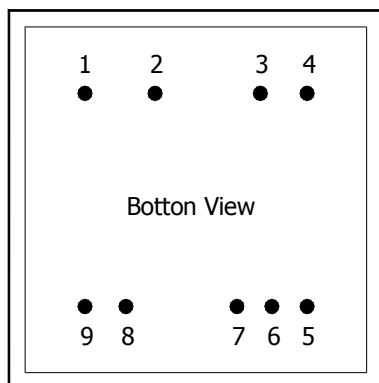
- Wide Input Range : FREEVOLT (AC 85V ~ 265V)
- A switching power supply can be made easily by adding simply external circuit
- Permits reduction of power consumption at low loads(when in stand-by)
- Able to deal with inputs of worldwide areas
- Ultra-compact size attained by application of high-density 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)

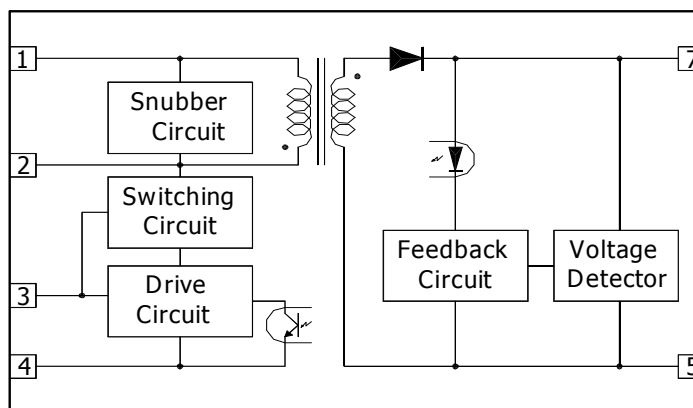
Characteristics	Symbol	Rating	Unit
Input Voltage	$V_{IN}$	120 ~ 375	$V_{DC}$
Output Voltage	$V_{OUT}$	17	V
Maximum Output Current	$I_{OMAX}$	600	mA
ESD Endurance	$V_{SURGE}$	2	kV
Maximum Surface Temperature	$T_{CMAX}$	105	°C
Ambient Operating Temperature Range	$T_{OPR}$	-10 ~ +60	°C

Storage Temperature Range	T <sub>STG</sub>	-40 ~ +105	°C
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### Pin Assignment



### Block Diagram



### Pin Descriptions

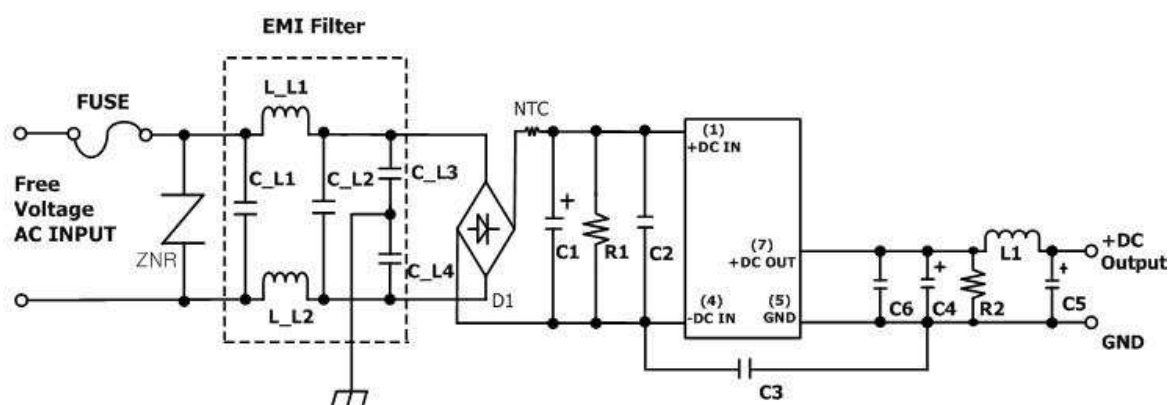
Pin Name	Pin No.	I/O	Description
+DC IN	1	I	Voltage Input Terminal, 120~375 V <sub>DCIN</sub>
DRAIN	2		Drain Output Terminal
NC	3		No Connection
- DC IN	4	I	Voltage Input Terminal, 0 V <sub>DCIN</sub>
GND	5	O	Voltage Output Terminal, 0 V <sub>DC</sub>
NC	6		No Connection
+DC OUT	7	O	DC Voltage Output Terminal, 17 V <sub>DC</sub>
NC	8		No Connection
NC	9		No Connection

(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 <sub>DC</sub>		120	311	375	V <sub>DC</sub>
Output Voltage	V <sub>O1</sub>	V <sub>i</sub> =311V, I <sub>O</sub> =600mA	16.0	17.0	18.0	V
Output Current	I <sub>O</sub>	V <sub>i</sub> =311V	-	-	600	mA
Line Regulation	V <sub>R</sub>	V <sub>i</sub> =120~375V, I <sub>O</sub> =600mA	-	0.05	0.20	V
Load Regulation	V <sub>L</sub>	V <sub>i</sub> =311V, I <sub>O</sub> =0~600mA	-	0.05	0.30	V
Output Ripple Voltage	V <sub>P</sub>	V <sub>i</sub> =311V, I <sub>O</sub> =600mA	-	0.05	0.20	Vp-p
Power Conversion Efficiency	η	V <sub>i</sub> =311V, I <sub>O</sub> =600mA	62	70	-	%

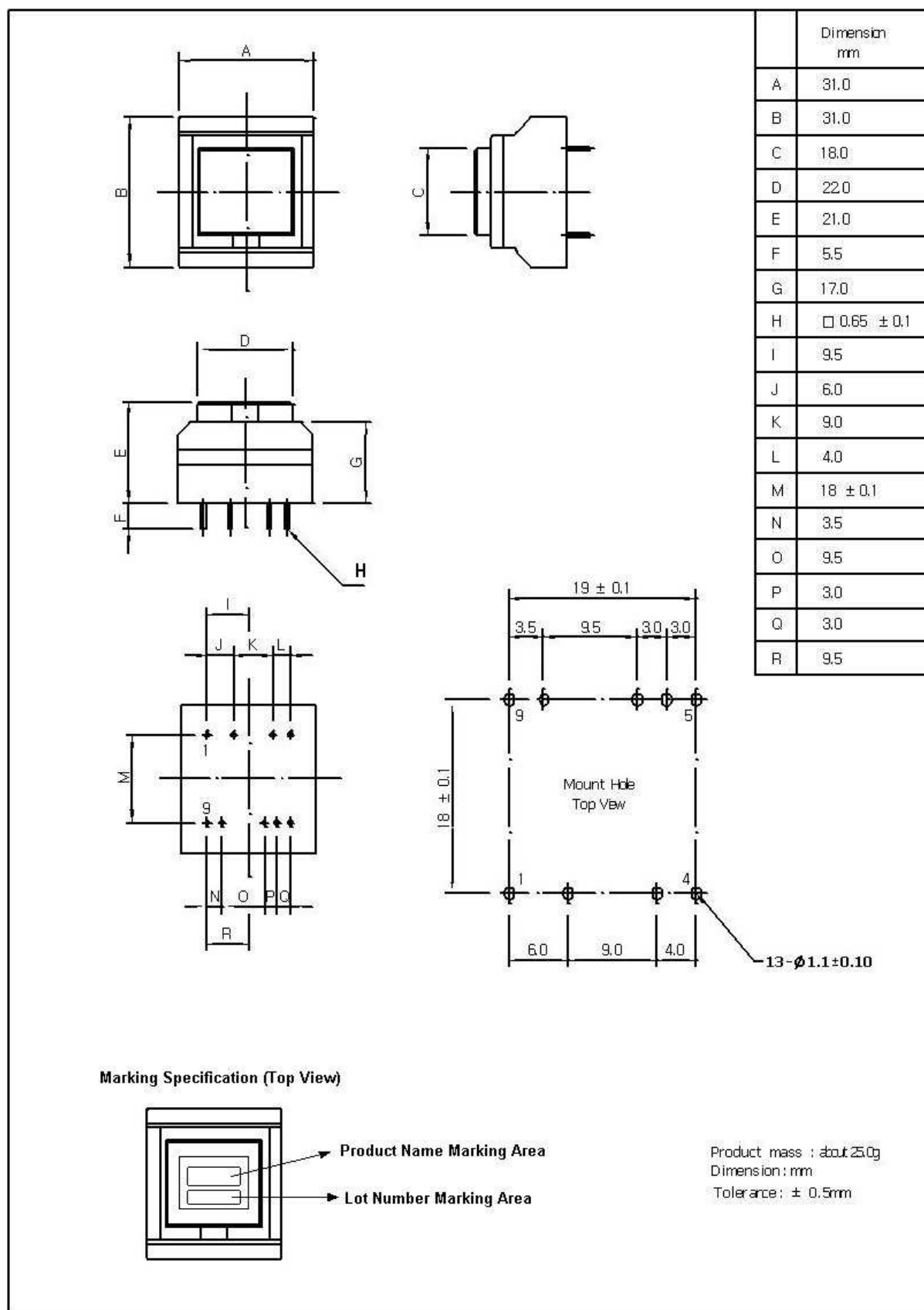
### Application Circuit



### External Component Setting

FUSE	Fuse	Please make sure to use quick acting fuse 2A or higher
<b>C1</b>	Capacitor for input voltage smoothing	Capacitance : 33 $\mu$ F~820 $\mu$ F, Rated voltage : 400V or higher Ripple current is 0.13Arms above.
<b>C2</b>	For noise terminal voltage reduction	Capacitance : 0.1 $\mu$ F~0.22 $\mu$ 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.
<b>C3</b>	Capacitor for Safety	Capacitance : 1nF~4.7nF, Rated voltage : 1kV or higher
<b>C4, C5</b>	Capacitor for output voltage smoothing	Capacitance : 680 $\mu$ F~2000 $\mu$ F, Rated voltage : 25V or higher ESD is 0.4 $\Omega$ max. Ripple current is 0.25Arms above. Output noise voltage is influenced. Please evaluate it in the actual set.
<b>R1</b>	Discharge Resistor	500k $\Omega$ or higher , 1W or higher
<b>R2</b>	Dummy Resistor	500 $\Omega$ , 0.5W
<b>C6</b>	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.
<b>L1</b>	Choke Coil	L : 4.7 $\mu$ H~10 $\mu$ H, Allowable current : 2A or higher Please use the one that is hard to be magnetic saturated even in the high temperature.
<b>D1</b>	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.)

**Package Outline**



**Ordering Information**

Order Number	Ambient Temperature Range	Package Type
MES1706H	-10°C ~ 60°C	

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

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