

M57184N-315AF

NON-ISOLATED DC-DC CONVERTER

DESCRIPTION

The M57184N-315AF is an un-insulated type DC-DC converter designed for direct input of rectified voltage from 240V AC.

This hybrid IC provides +15V, 80mA and +5V, 350mA with few external components such as electrolytic capacitors and choke coils only.

FEATURES

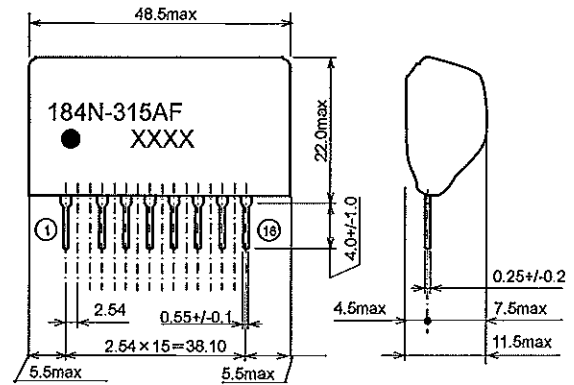
- Input voltage range DC 180V ~ 410V
- Output specifications 15V, 80mA
5V, 350mA

APPLICATIONS

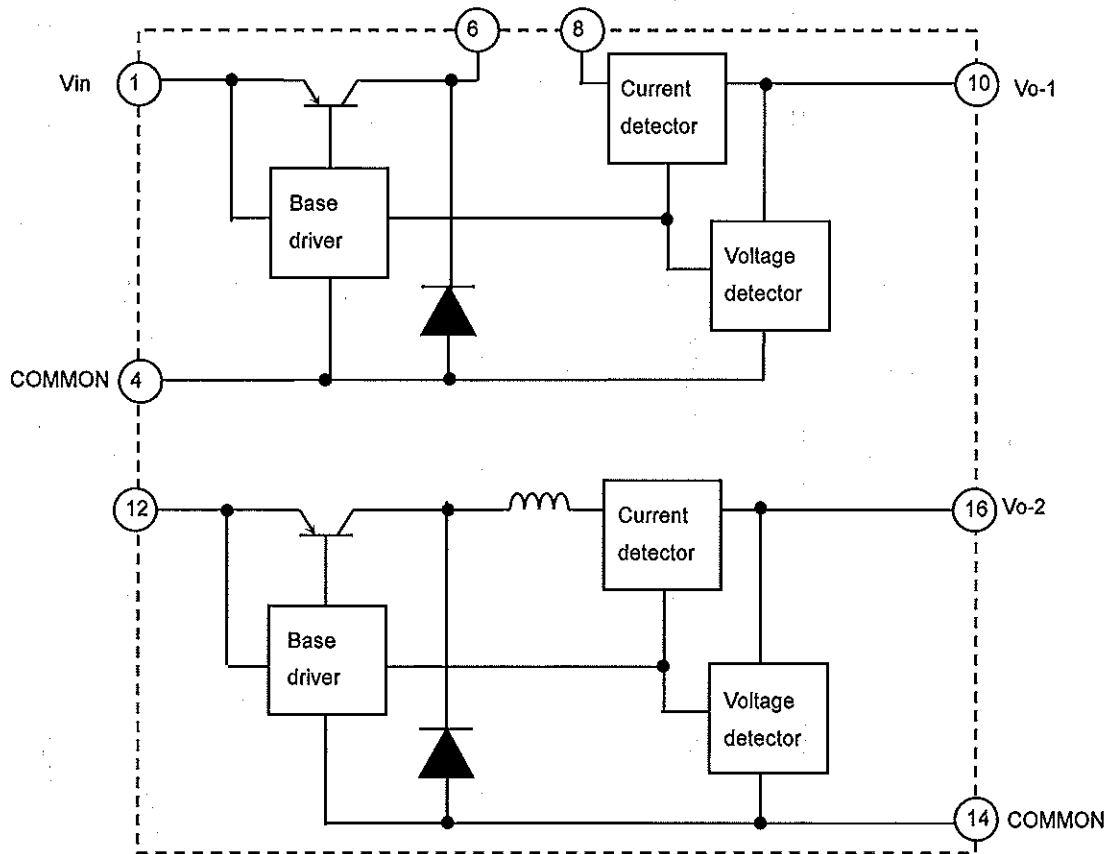
Power supply for non-isolated inverter control.

OUTLINE DRAWING

Dimensions: mm



BLOCK DIAGRAM



M57184N-315AF

NON-ISOLATED DC-DC CONVERTER

MAXIMUM RATINGS (unless otherwise noted, Ta=25°C, Vin=282V)

Symbol	Parameter	Conditions	Ratings	Unit
V _{in}	Input voltage	-----	600	V
I _{L-1}	Load current-1	-----	100	mA
I _{L-2}	Load current-2	-----	450	mA
P _{max}	Maximum output power	(*1)	3	W
T _{opr}	Operating temperature	No condensation allowable	-20 ~ +80	°C
T _{stg}	Storage temperature	No condensation allowable	-25 ~ +100	°C

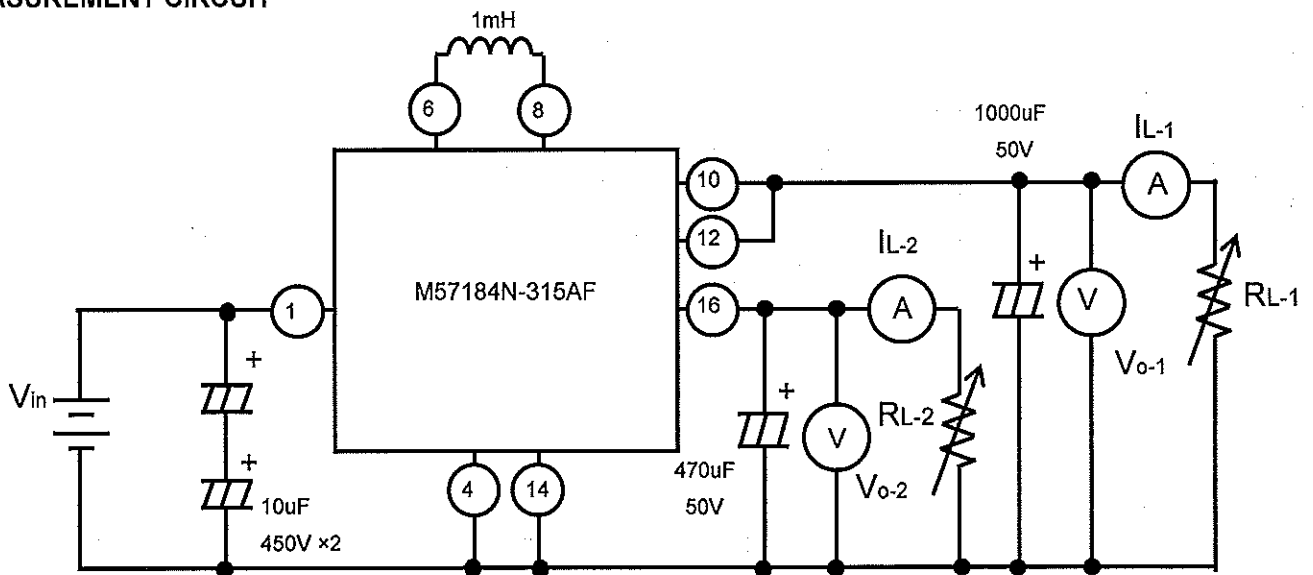
(*1): There is the necessity for derating with ambient temperature.

ELECTRICAL CHARACTERISTICS (Unless otherwise noted, Ta=25°C, V_{in}=282V)

Symbol	Parameter	Conditions	Limits			Unit
			Min	Typ	Max	
V _{in}	Input voltage	Recommended range	180	282	410	V
V _{O-1}	Output voltage - 1	I _{L-1} = 0 ~ 80mA, I _{L-2} = 0mA	14	15	16	V
V _{O-2}	Output voltage - 2	I _{L-1} = 0mA, I _{L-2} = 0 ~ 350mA	4.7	5.0	5.3	V
Reg. _{i1}	Input regulation - 1	V _{in} = 180 ~ 410V, I _{L-1} = 80mA, I _{L-2} = 0mA	—	100	200	mV
Reg. _{i2}	Input regulation - 2	V _{in} = 180 ~ 410V, I _{L-1} = 0mA, I _{L-2} = 350mA	—	60	200	mV
Reg. _{L1}	Load regulation - 1	I _{L-1} = 0 ~ 80mA, I _{L-2} = 0mA	—	60	200	mV
Reg. _{L2}	Load regulation - 2	I _{L-1} = 0mA, I _{L-2} = 0 ~ 350mA	—	80	200	mV
η	Efficiency	I _{L-1} = 80mA, I _{L-2} = 350mA	62	69	—	%
V _{p-p}	Ripple voltage	I _{L-1} = 80mA, I _{L-2} = 350mA (*2)	—	80	200	mVp-p

(*2) Spike noise is not included in output ripple voltage.

MEASUREMENT CIRCUIT



(*) Please use power inductors with good performance of DC superimposition.

(We used C13 -FR -102: made in MITSUMI ELECTRIC CO., LTD.)

(**) Please use electrolytic capacitor of output side with high frequency and low impedance.

FOR SAFETY USING

Great detail and careful attention are given to the production activity of Hics, such as the development, the quality of production, and in its reliability. However the reliability of Hics depends not only on their own factors but also in their condition of usage. When handling Hics, please note the following cautions.

CAUTIONS	
Packing	<p>The materials used in packing Hics can only withstand normal external conditions. When exposed to outside shocks, rain and certain environmental contaminants, the packing materials will deteriorates. Please take care in handling.</p>
Carrying	<ol style="list-style-type: none"> 1) Don't stack boxes too high. Avoid placing heavy materials on boxes. 2) Boxes must be positioned correctly during transportation to avoid breakage. 3) Don't throw or drop boxes. 4) Keep boxes dry. Avoid rain or snow. 5) Minimal vibration and shock during transportation is desirable.
Storage	<p>When storing Hics, please observe the following notices or possible deterioration of their electrical characteristics, risk of solderability, and external damage may occur.</p> <ol style="list-style-type: none"> 1) Devices must be stored where fluctuation of temperature and humidity is minimal, and must not be exposed to direct sunlight. Store at the normal temperature of 5 to 30 degrees Celsius with humidity at 40 to 60%. 2) Avoid locations where corrosive gasses are generated or where much dust accumulates. 3) Storage cases must be static proof. 4) Avoid putting weight on boxes.
Extended storage	<p>When extended storage is necessary, Hics must be kept non-processed. When using Hics which have been stored for more than one year or under severe conditions, be sure to check that the exterior is free from flaw and other damages.</p>
Maximum ratings	<p>To prevent any electrical damages, use Hics within the maximum ratings. The temperature, current, voltage, etc. must not exceed these conditions.</p>
Polarity	<p>To protect Hics from destruction and deterioration due to wrong insertion, make sure of polarity in inserting leads into the board holes, conforming to the external view for the terminal arrangement.</p>


ISAHAYA ELECTRONICS CORPORATION

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- ISAHAYA Electronics Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (1) placement of substitutive, auxiliary circuits, (2) use of non-flammable material or (3) prevention against any malfunction or mishap.

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