M57184N-715BF

NON-ISOLATED DC-DC CONVERTER

DESCRIPTION

The M57184N-715BF is a non-isolated type DC-DC converter designed for direct input of rectified voltage from 240V AC.

This hybrid IC provides +15V, 350mA and +5V, 200mA with fewer external components such as electrolytic capacitors and choke coils only.

FEATURES

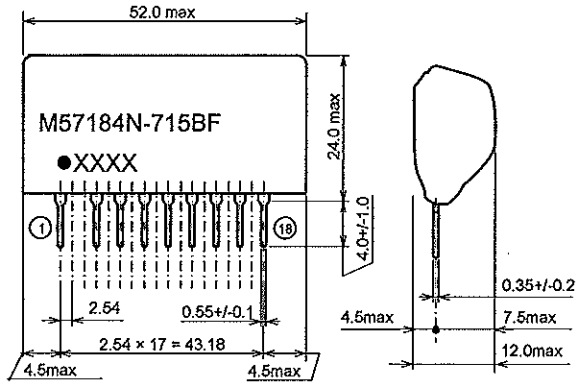
- Input voltage rage ..... DC 220V ~ 360V
- Output specifications 15V, 350mA
  5V, 200mA

APPLICATIONS

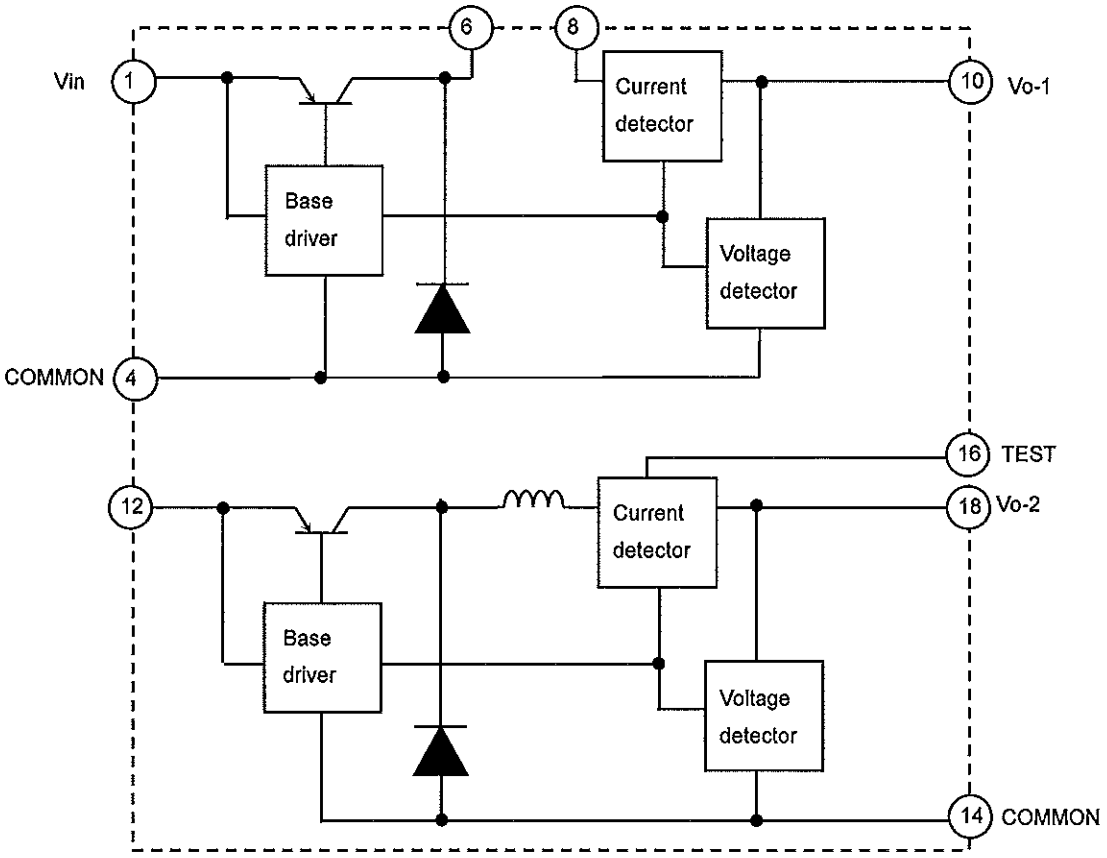
Power supply for non-isolated inverter control

OUTLINE DRAWING

Dimensions: mm



BLOCK DIAGRAM



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

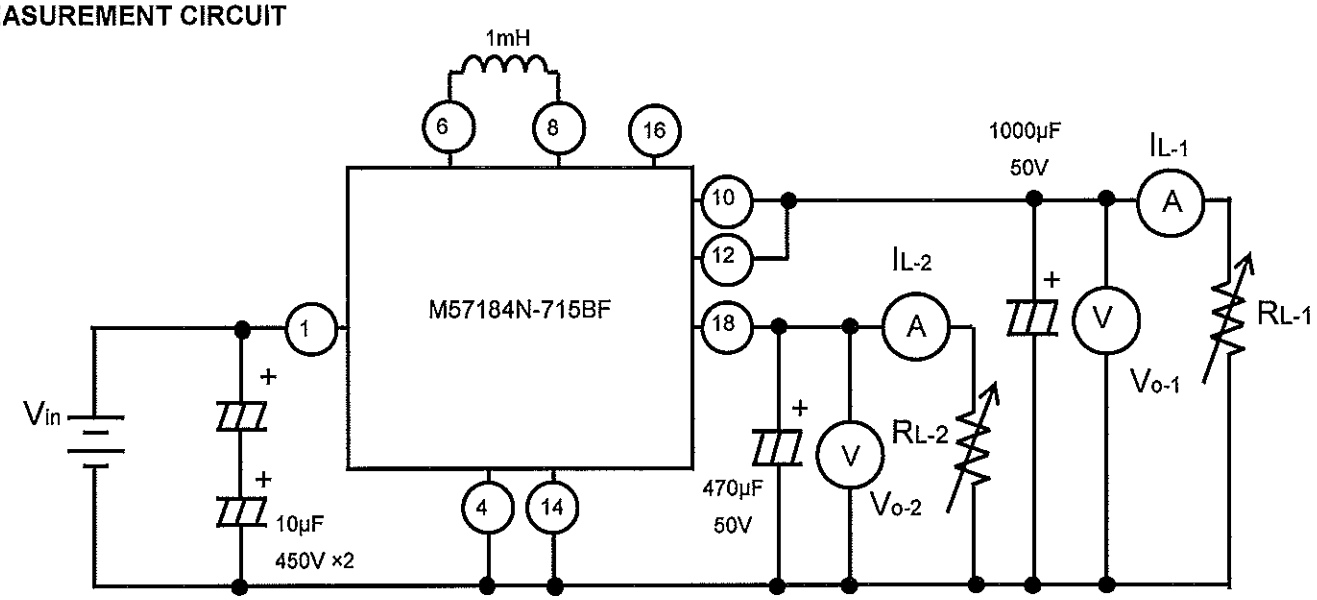
Symbol	Parameter	Conditions	Ratings	Unit
Vin	Input voltage	———	600	V
IL-1	Load current-1	———	350	mA
IL-2	Load current-2	———	200	mA
Topr	Operating temperature	No condensation allowable	-20 ~ +70	°C
Tstg	Storage temperature	No condensation allowable	-25 ~ +85	°C

ELECTRICAL CHARACTERISTICS (Unless otherwise noted, Ta=25°C, V_{in}=280V)

Symbol	Parameter	Conditions	Limits			Unit
			Min	Typ	Max	
V_{In}	Input voltage	Recommended range	220	280	360	V
V_{O-1}	Output voltage - 1	Pin 10 voltage: I_{L-1} = 350mA	14.1	15.0	15.9	V
V_{O-2}	Output voltage - 2	Pin 18 voltage: I_{L-2} = 200mA	4.7	5.0	5.3	V
Reg_{-I1}	Input regulation - 1	Pin 10 voltage: I_{L-1} = 350mA, V_{in} = 220 ~ 360V	—	60	160	mV
Reg_{-I2}	Input regulation - 2	Pin 18 voltage: I_{L-2} = 200mA, V_{in} = 220 ~ 360V	—	60	160	mV
Reg_{-L1}	Load regulation - 1	Pin 10 voltage: I_{L-1} = 0 ~ 350mA	—	80	200	mV
Reg_{-L2}	Load regulation - 2	Pin 18 voltage: I_{L-2} = 0 ~ 200mA	—	80	200	mV
η	Efficiency	I_{L-1} = 350mA, I_{L-2} = 200mA	65	72	—	%
V_{P-P}	Ripple voltage	I_{L-1} = 350mA, I_{L-2} = 200mA (*1)	—	80	200	mVp-p

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

MEASUREMENT CIRCUIT



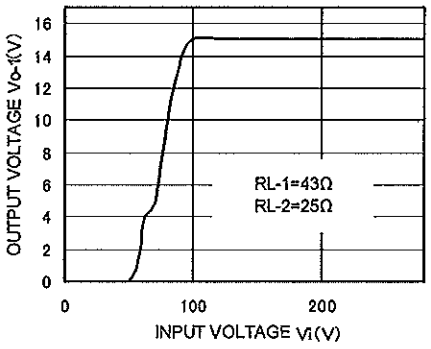
(*) Please use power inductors with good performance of DC superimposition.
(We used C13 -FR -102: made in MITSUMI ELECTRIC CO., LTD.)

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

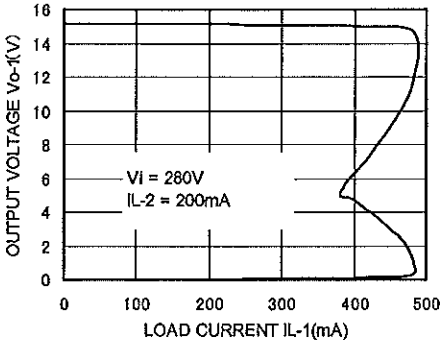
(***)Since a 16Pin is a test terminal, please use it for opening, carrying out it electrically.

TYPICAL CHARACTERISTICS

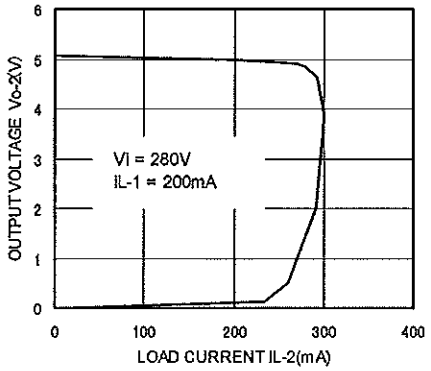
OUTPUT VOLTAGE - INPUT VOLTAGE CHARACTERISTICS (TYPICAL)



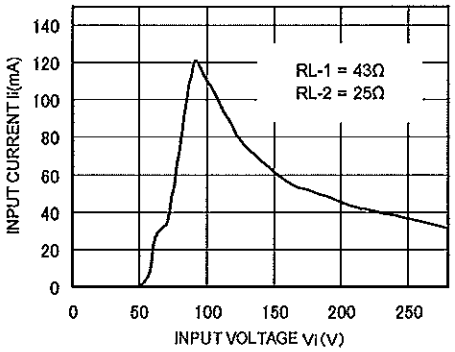
OUTPUT VOLTAGE - LOAD CURRENT CHARACTERISTICS (TYPICAL)



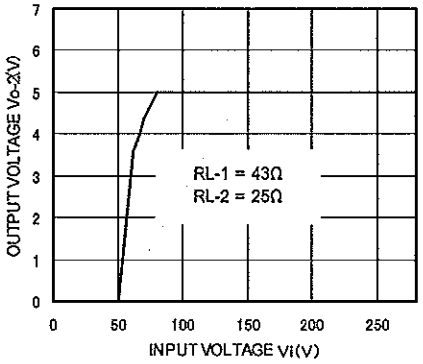
OUTPUT VOLTAGE - LOAD CURRENT CHARACTERISTICS (TYPICAL)



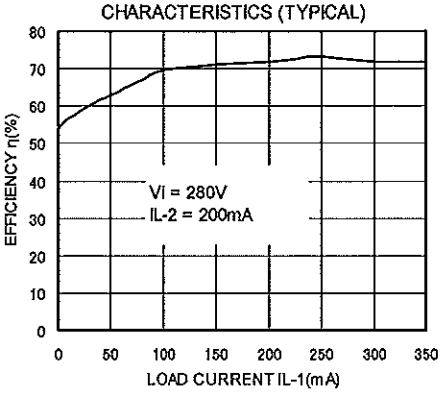
START-UP CHARACTERISTICS (TYPICAL)



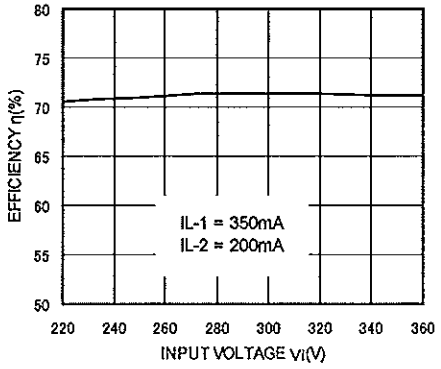
START-UP CHARACTERISTICS (TYPICAL)



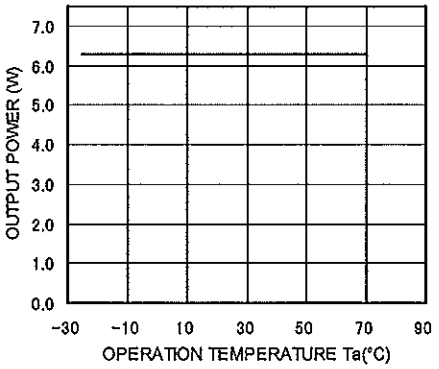
EFFICIENCY - LOAD CURRENT CHARACTERISTICS (TYPICAL)



EFFICIENCY - INPUT VOLTAGE CHARACTERISTICS (TYPICAL)



DERATING CURVE



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 it's 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	The materials used in packing Hics can only withstand normal external conditions. When exposed to outside shocks, rain and certain environmental contaminators, the packing materials will deteriorates. Please take care in handling.
Carrying	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	When storing Hics, please observe the following notices or possible deterioration of their electrical characteristics, risk of solderability, and external damage may occur. 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	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.
Maximum ratings	To prevent any electrical damages, use Hics within the maximum ratings. The temperaqture, current, voltage, etc. must not exceed these conditions.
Polarity	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.

ISAHAYA ELECTRONICS CORPORATION
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