

HYBRID IC  
**VLA313L-2450A**

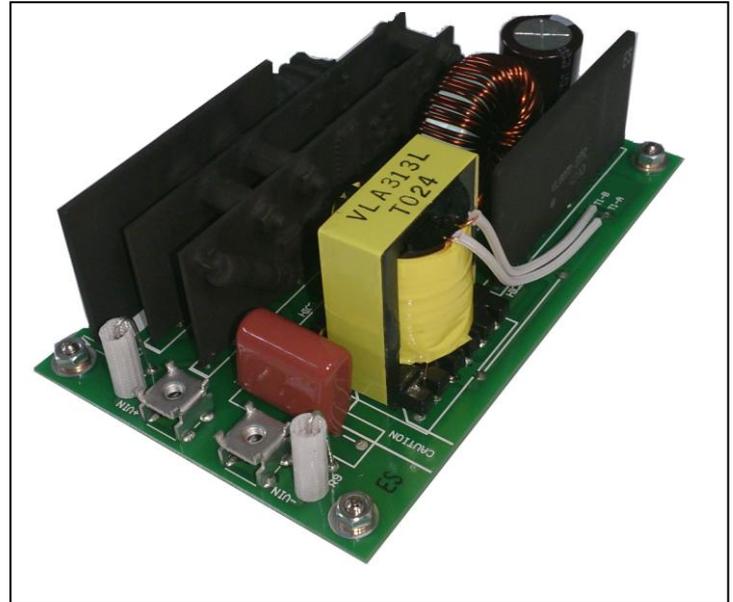
**ISOLATED TYPE DC-DC CONVERTER**

**DESCRIPTION**

The VLA313L-2450A is an isolated DC-DC converter  
Designed to control the industrial equipment.  
It can input the rectified AC200~480V(DC850Vmax) directly  
and convert to low voltage.  
Total output power is 50W.

**FEATURES**

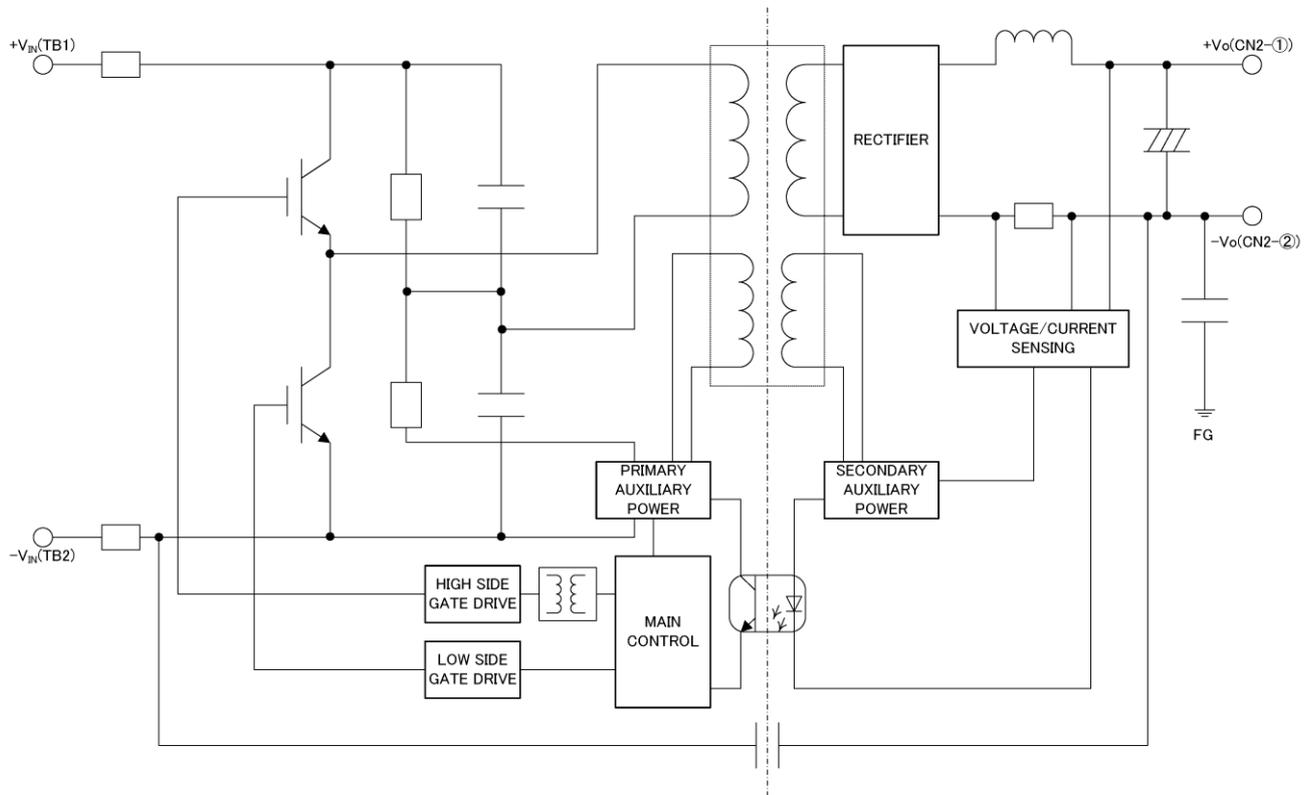
- Wide input voltage----- 200V to 850V DC
- Output ----- +24V, 2.1A (50.4W)
- Electrical isolation  
    between input and output  
        ----- 2500Vrms 1 minute  
    between output and FG  
        ----- 2500Vrms 1 minute
- Over current protection (auto resumption)
- Over voltage protection



**APPLICATIONS**

On-board pre-regulator for industrial control equipment

**BLOCK DIAGRAM**



**ISOLATED TYPE DC-DC CONVERTER**

**MAXIMUM RATINGS** (unless otherwise noted,  $T_a=25^\circ\text{C}$ )

Symbol	Parameter	Conditions	Ratings	Unit
$V_{IN}$	Input voltage	Between $+V_{IN}$ and $-V_{IN}$	850	V
$I_o$	Output current	Between $+V_o$ and $-V_o$	2.1	A
$T_{opr}$	Operating temperature	No condensation (*1)	$-20 \sim +55$	$^\circ\text{C}$
$T_{stg}$	Storage temperature	No condensation	$-20 \sim +75$	$^\circ\text{C}$
Viso	Electrical isolation between input and output	Sine wave voltage, 60Hz, 1min	2500	Vrms
	Electrical isolation between output and FG	Sine wave voltage, 60Hz, 1min (*2)	2500	Vrms

(\*1) Please refer to de-rating characteristics.

(\*2) Please refer to outline dimension. (FG:  $\phi 3.5$  through hole)

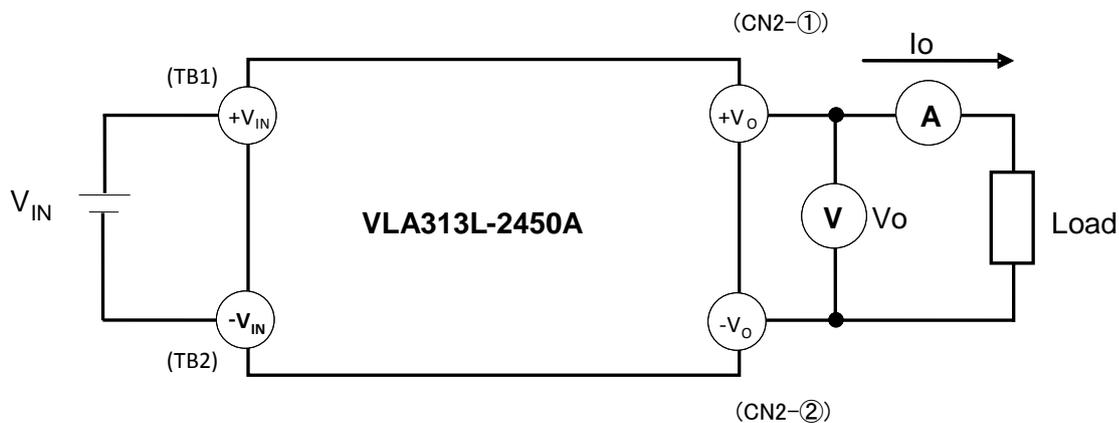
**ELECTRICAL CHARACTERISTICS** (unless otherwise noted,  $V_{IN}=680\text{V}$ ,  $T_a=25^\circ\text{C}$ )

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
$V_{IN}$	Input voltage	Recommended range	200	680	850	V
$V_o$	Output voltage	$I_o=0.05 \sim 2.1\text{A}$	22.8	24.0	25.2	V
$Reg_I$	Input regulation	$I_o=2.1\text{A}$ , $V_{IN}=200 \sim 850\text{V}$	-	-	100	mV
$Reg_L$	Load regulation	$I_o=0.05 \sim 2.1\text{A}$	-	-	150	mV
$V_{p-p}$	Ripple voltage	$I_o=2.1\text{A}$ (*3)	-	-	240	mV
$\eta$	Efficiency	$I_o=2.1\text{A}$	-	82	-	%

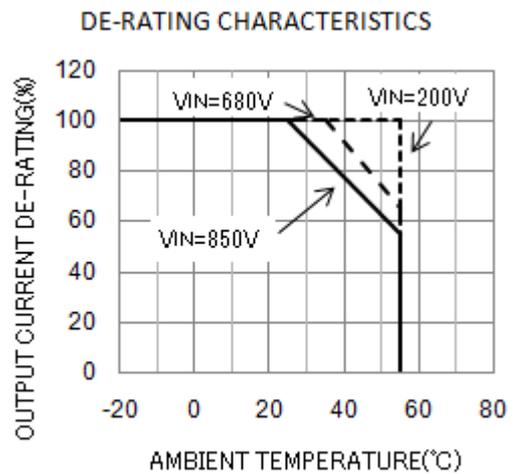
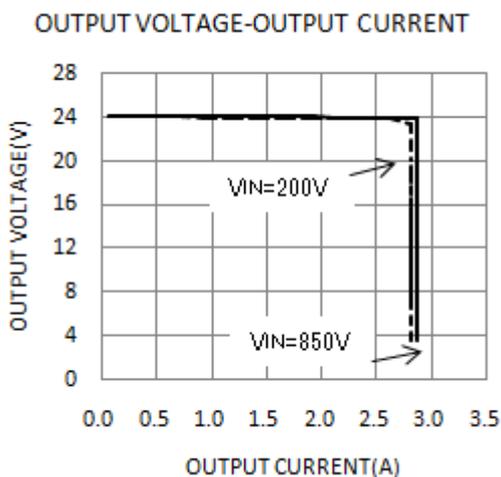
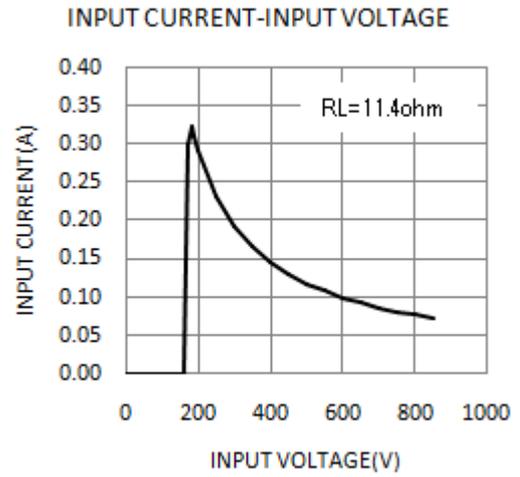
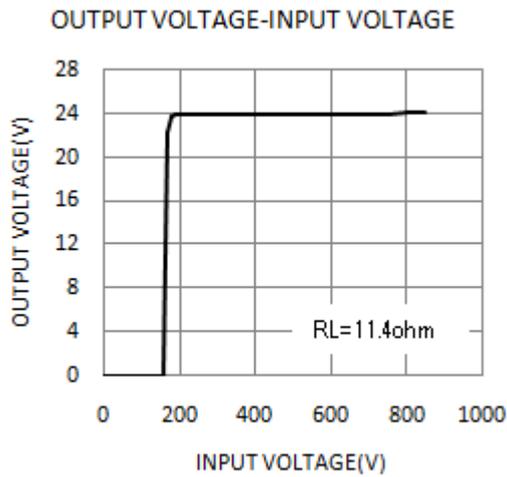
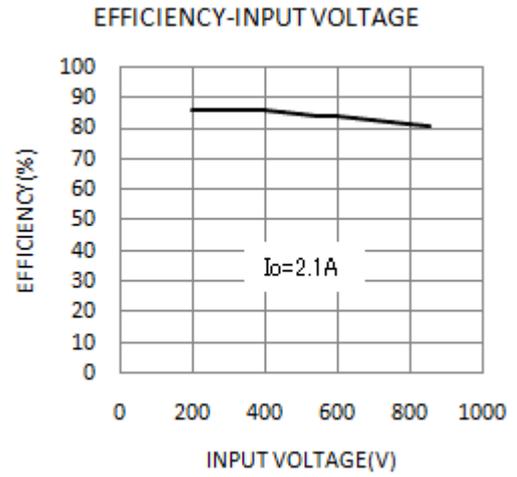
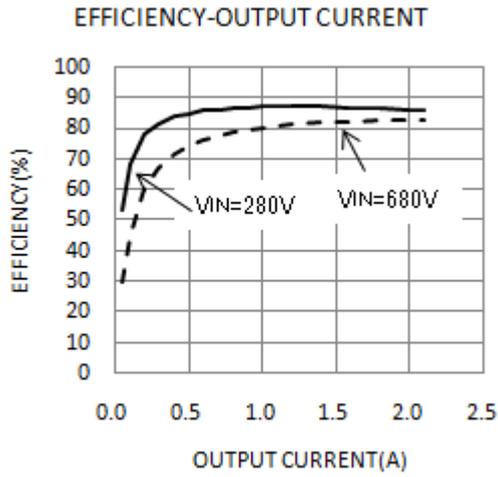
(\*3) Not contain the spike noise.

(\*4) It need to output current of  $I_o$  over 50mA.

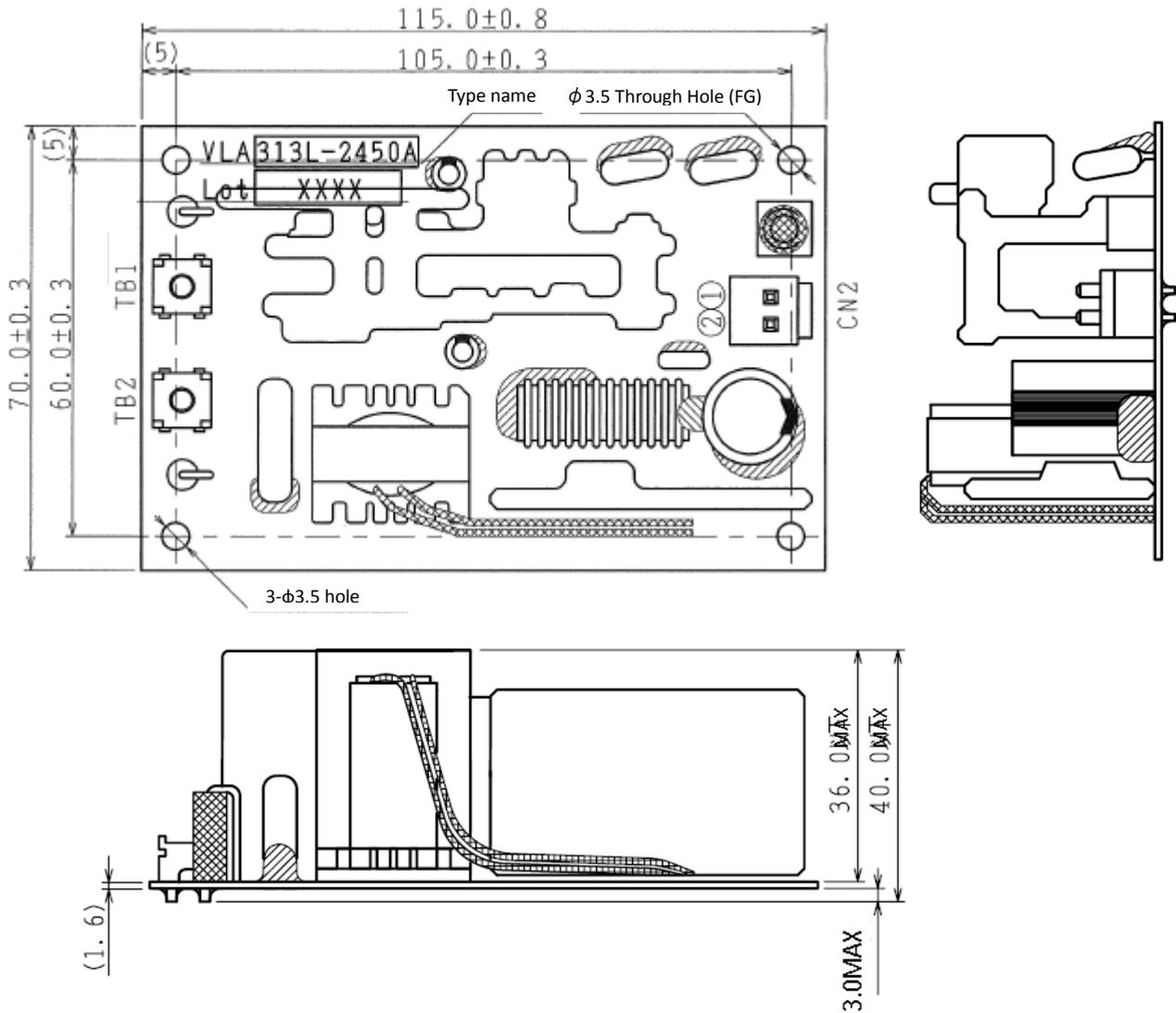
**TEST CIRCUIT DIAGRAM**



TYPICAL CHARACTERISTICS (Ta=25°C)



OUTLINE DIMENSION



SPECIFICATIONS OF TERMINALS

INPUT TERMINAL	TB1,2
TYPE NAME	OT-047-M3
MANUFACTURER	OSADA
TB1	+V <sub>IN</sub>
TB2	-V <sub>IN</sub>
ACCESSORY SCREW	No attach
CROSSLINE TERMINAL (Recommended)	R2-3.5(JST)

OUTPUT TERMINAL	CN2
TYPE NAME	B2P-VH
MANUFACTURER	JST
TERMINAL SYMBOL ①	+V <sub>O</sub>
TERMINAL SYMBOL ②	-V <sub>O</sub>

**FOR SAFETY USING**

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

CAUTIONS	
Packing	The materials used in packing devices 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	<ol style="list-style-type: none"> <li>1) Don't stack boxes too high. Avoid placing heavy materials on boxes.</li> <li>2) Boxes must be positioned correctly during transportation to avoid breakage.</li> <li>3) Don't throw or drop boxes.</li> <li>4) Keep boxes dry. Avoid rain or snow.</li> <li>5) Minimal vibration and shock during transportation is desirable.</li> </ol>
Storage	<p>When storing the devices, 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"> <li>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%.</li> <li>2) Avoid locations where corrosive gasses are generated or where much dust accumulates.</li> <li>3) Storage cases must be static proof.</li> <li>4) Avoid putting weight on boxes.</li> </ol>
Extended storage	When extended storage is necessary, the devices must be kept non-processed. When using devices 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 devices within the maximum ratings. The temperature, current, voltage, etc. must not exceed these conditions.
Polarity	To protect devices 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.



**Keep safety first in your circuit designs!**

- 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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