



# DC-DC Converter

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Product Introduction





An aerial photograph of a naval fleet. In the foreground, a large aircraft carrier is moving from left to right, leaving a white wake. The carrier's deck is visible, with several aircraft parked. In the background, several other naval ships are visible on the horizon under a clear blue sky.

# Factory Profile



**Make sustainable innovations and progresses, and serve the country through industry**  
**Provide first-class products and services for defense equipment and customers**



Wibbow has more than 40 years of experience in the design, development, manufacturing and application of power topologies, power system architectures, and electromagnetic compatibility solutions.

In china, Wibbow has the only ChiP production line, as the exclusive supplier of ChiP DC-DC Converter.



**R&D**

**High-tech R&D  
enterprise**



**300+**

**Total  
employees**



**150+**

**Research  
staff**



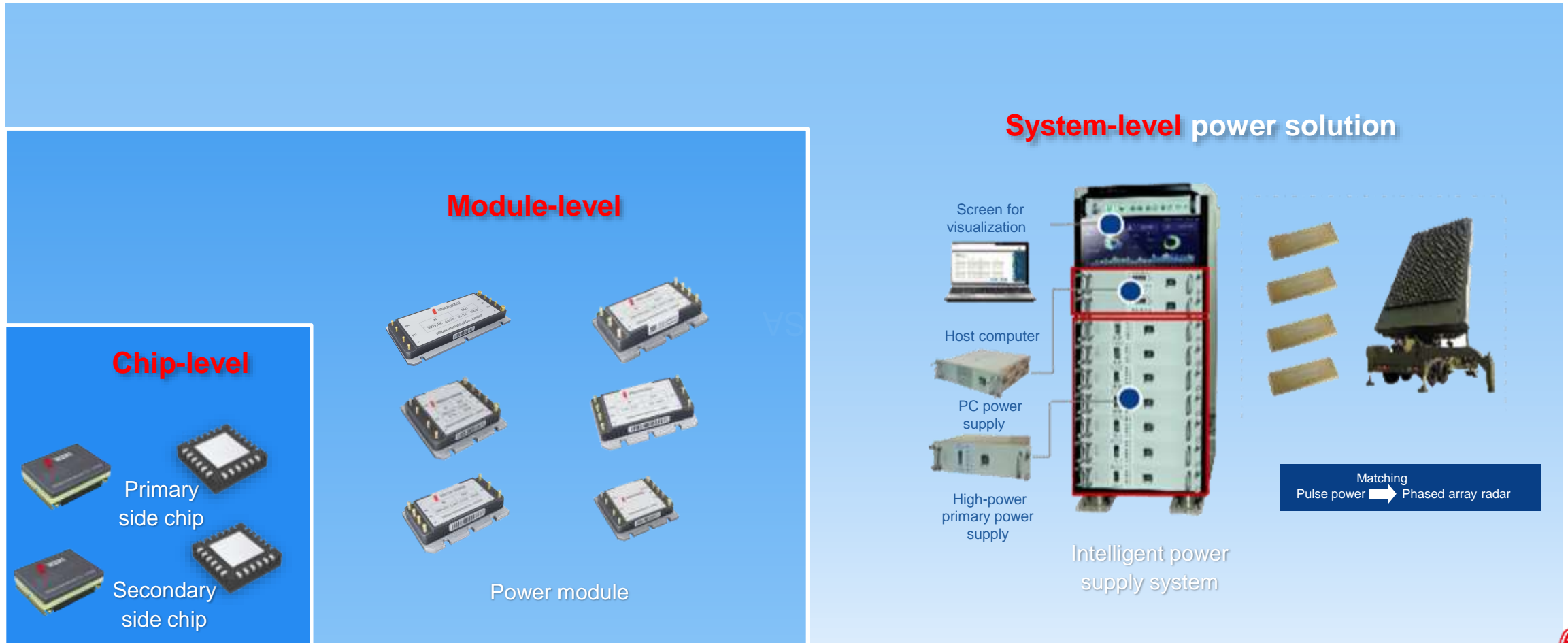
**300+ million**

**Sales revenue  
in 2023(CNY)**



# Product Introduction

## Create a chip-module-system full industry chain



## The only one in China to achieve in-situ replacement of similar products



### Compatibility and interchangeability

Pin-to-pin compatible and interchange with V products;



### Autonomous and controllable

100% localization of DTI;



### High efficiency

5%-7% higher efficiency than V products;



### Appraisal

The products have passed the appraisal and inspection of CEPREI;



### High reliability

Digital isolation technology and higher reliability than opto-isolator module;

100%  
localization



Full brick

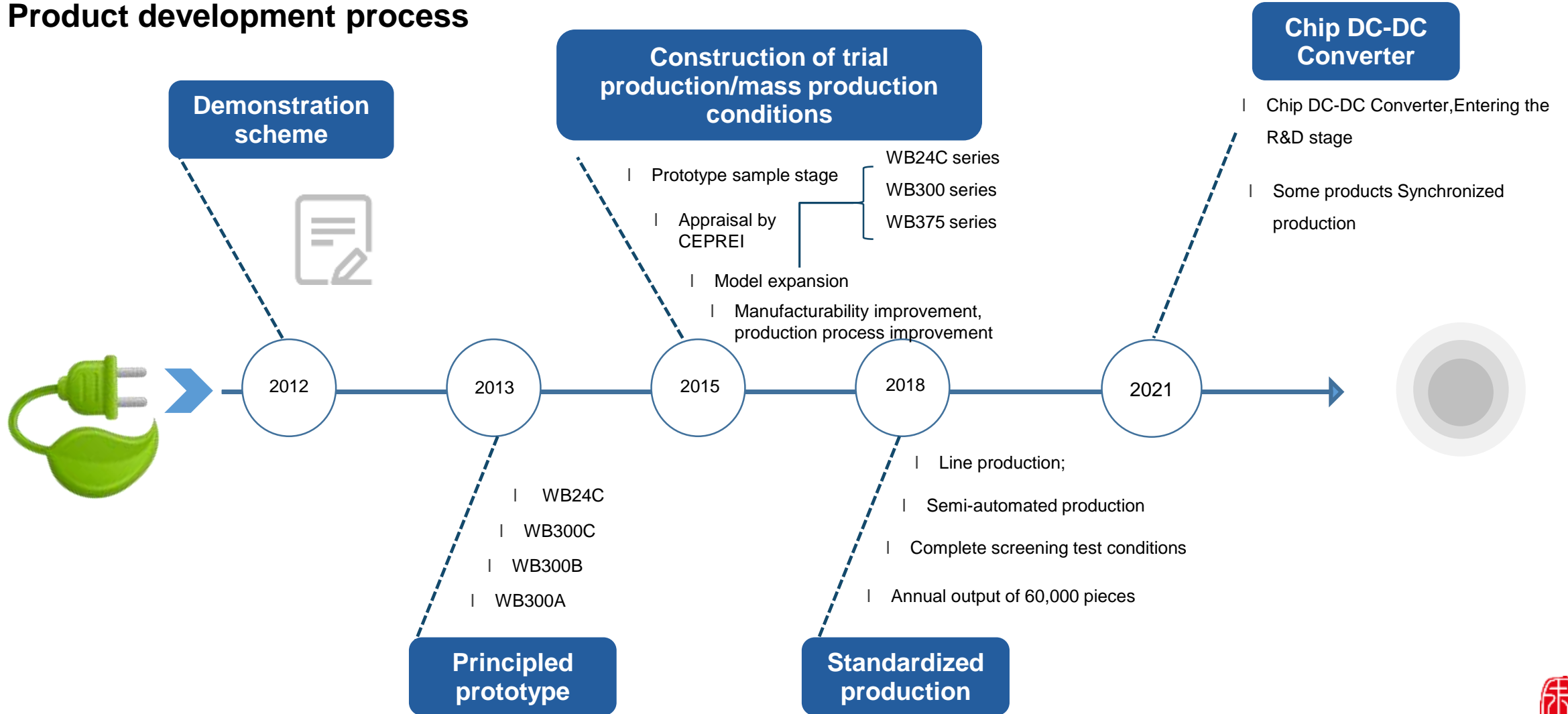


Half brick



1/4 brick

## Product development process





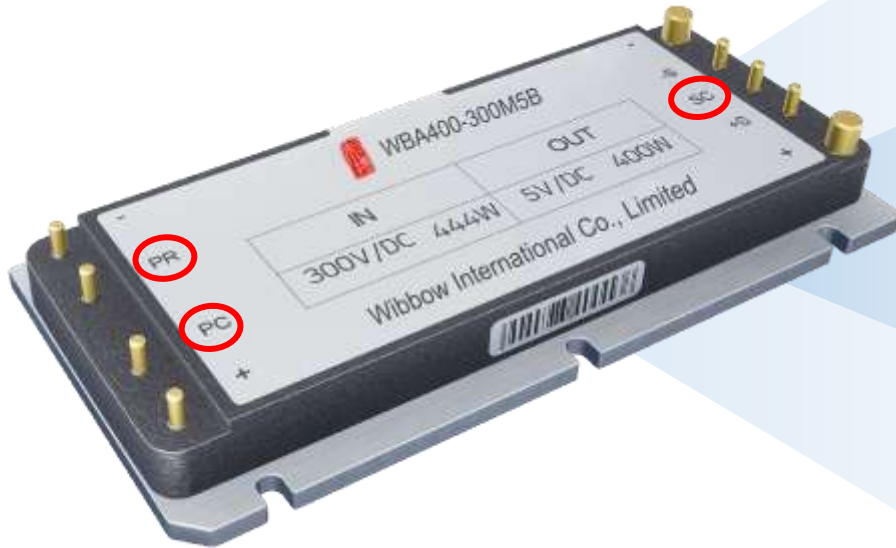
# Localized Alternative Power Supply

Comparison with  
VICOR  
Generation II  
modular power  
supply

Comparison with  
Vicor Generation  
III wafer power  
supply

## Advantages:

### 1 In-situ replacement



**Same size** Consistent overall dimensions and pin definitions



**Same parameter** Exactly the same up-and-down parameters



**Mixed insertion** Variable frequency control and mixed insertion



**Smartest** Remote control and alarm



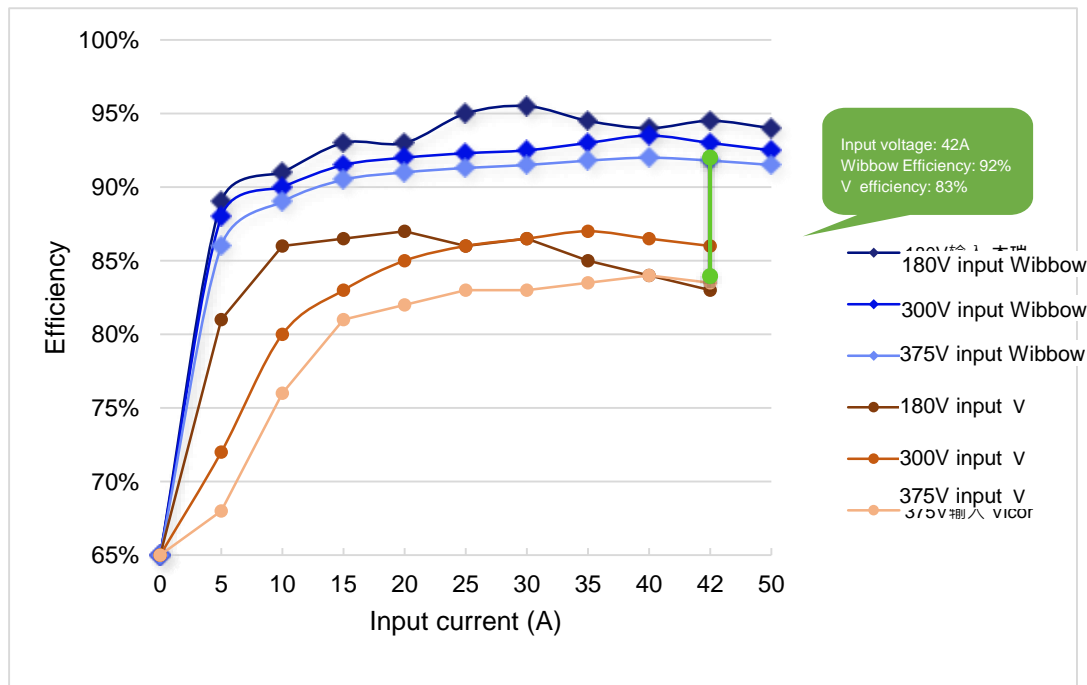
**Direct plugging** Plugging without making changes

## Advantages:

### 2 High efficiency and low loss

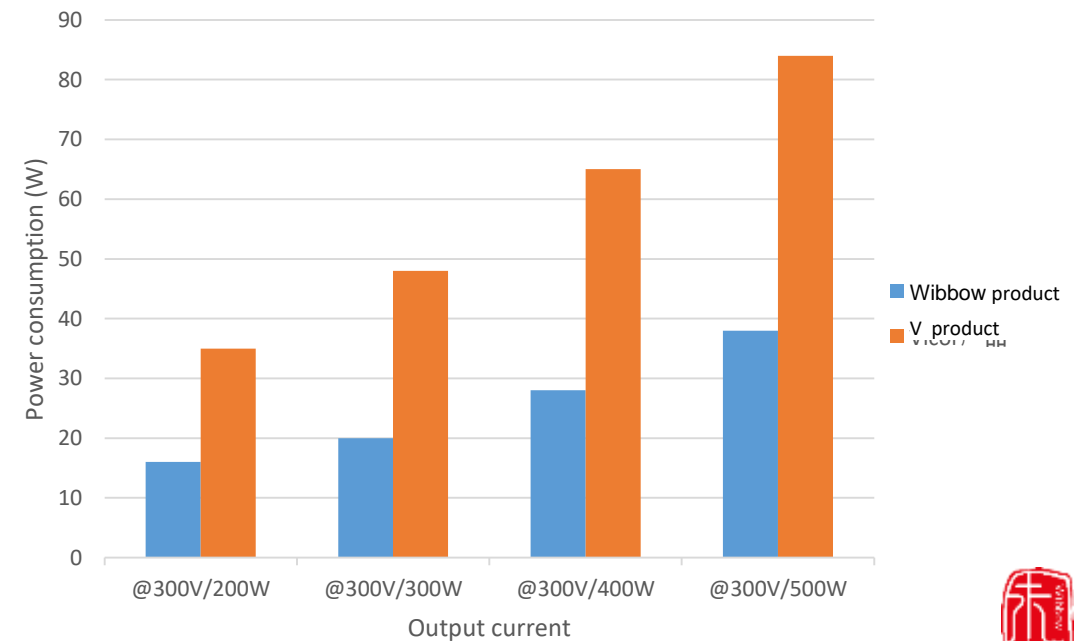
#### High efficiency

- 7% higher efficiency than similar V products, and efficiency up to 95%;
- 100W higher full brick output power than similar V products
- Flatter efficiency curve in the range of full input voltage and output load;



#### Low loss

- Low power consumption, less than 1/2 of similar V modules;



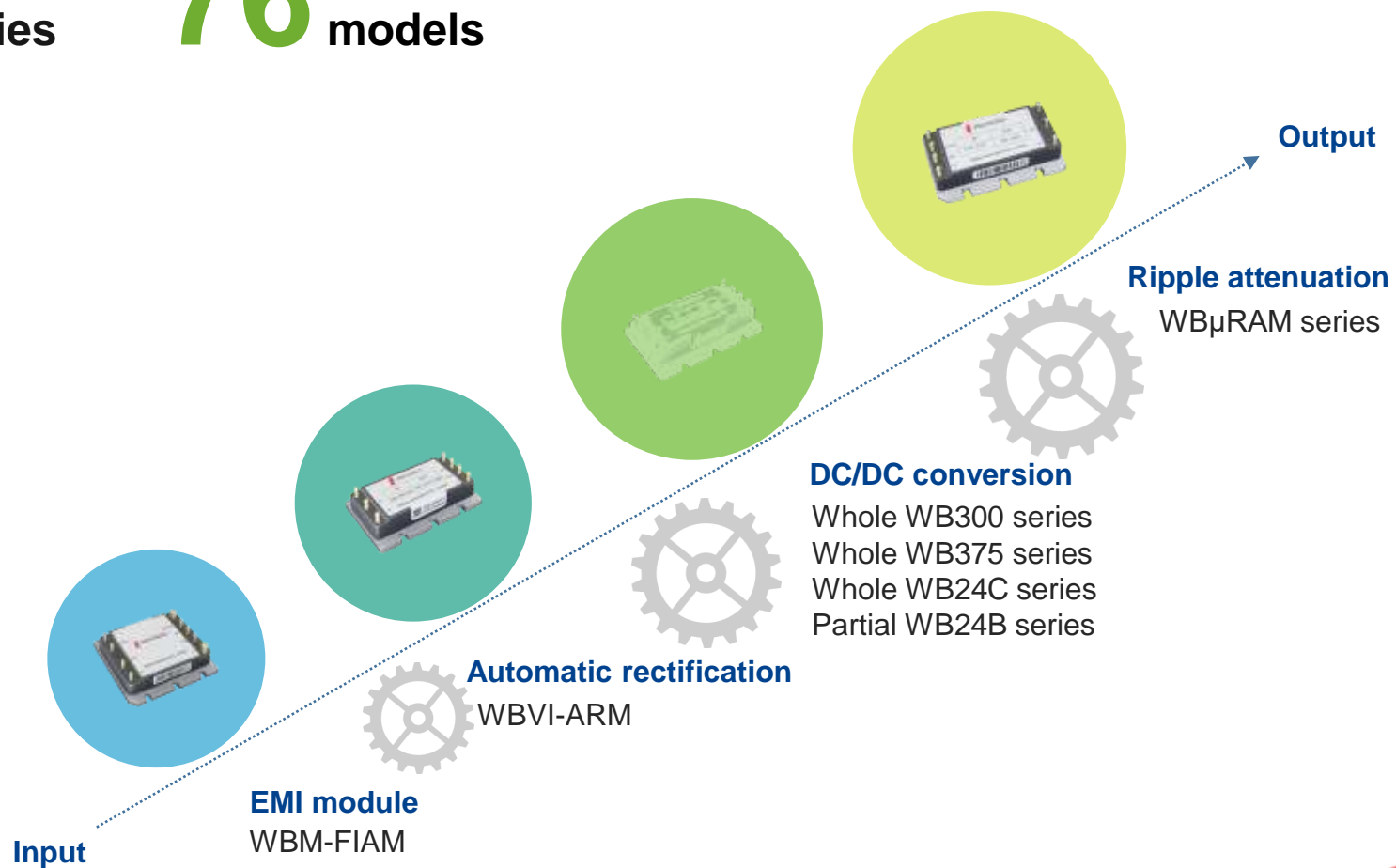
## Advantages:

3

Complete series

9 series

76 models





# Localized Alternative Power Supply

Comparison with  
VICOR  
Generation II  
modular power  
supply

Comparison with  
Vicor Generation  
III wafer power  
supply

## Advantages:

### 4 Dedicated production line

Annual production of 300,000  
pieces in stable supply



Automatic chip  
attachment

Automatic assembly,  
automatic dispensing

Automatic  
filling and  
sealing

Automatic  
welding

Automatic test

Special aging  
machine room



## Core technologies:

- | Revolutionary distributed power supply architecture and Converter Housed in Package (ChiP) technology;
- | Class MHz soft switching power supply topology, high frequency magnetic materials, high thermal conductivity packaging and other key technologies;
- | World-class technical indicators

## Key values:

- | The world's highest high power density (10 times higher than Generation II modular power supply);
- | High efficiency and low EMI
- | Ultra-small thickness  $\leq 7.21$  mm;
- | Ultra-light weight  $\leq 30$  g @ 500W (1/10 of Generation II modular power supply);
- | Full range soft switching, excellent electromagnetic compatibility characteristics;
- | High thermal conductivity package



Vicor Generation II 500W-98W/in<sup>3</sup>  
All brick (117×55.9×12.7mm)



Generation III microchip-500W-1040W/in<sup>3</sup>  
ChiP4623 (47.91 × 22.8 × 7.21 mm)

## Non-isolated and regulated series



FullChip

Gold plating



## Isolated unregulated series



FullChip

Gold plating

### WBPRM

- Ø Features: Non-isolated, regulated
- Ø Indicators: **500W/96%/1700W/in3**
- Ø Power topology: **Four-switch Buck-Boost**
- Ø Maximum thickness: **6.73 mm**
- Ø Input voltage range: **16V ~ 60V**
- Ø Number of units in parallel: 10

### WBVTM

- Ø Features: Isolated, fixed ratio, unregulated
- Ø Indicators: **130A/97%/3230W/in3**
- Ø Power topology: resonant LLC circuit
- Ø Maximum thickness: **6.73 mm**
- Ø Number of units in parallel: 10

## Isolated and regulated series



3623

4623

6123

PI31XX

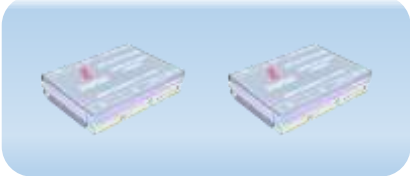
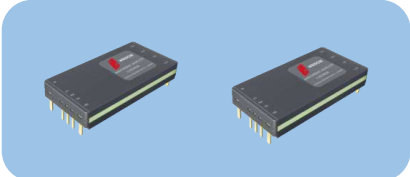
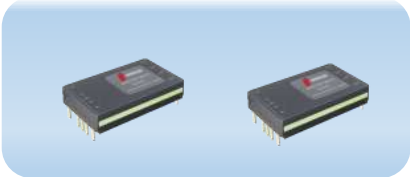
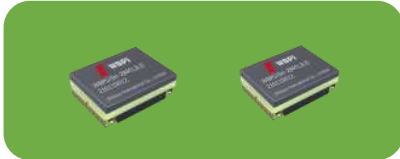
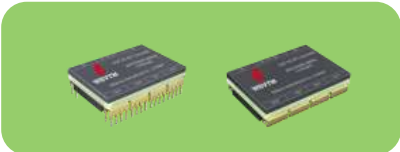
### WBDCM&WBPI31XX

- Ø **Features: Isolated, regulated**
- Ø **Indicators: 1300W/96% /1244W/in3**
- Ø Power topology: **Dual-clamp ZVS buck-boost**
- Ø Maximum thickness: **7.21mm**
- Ø Input voltage range: **9V ~ 420V**
- Ø Number of units in parallel: 8

## Distributed FPA power supply architecture

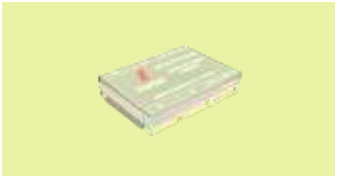
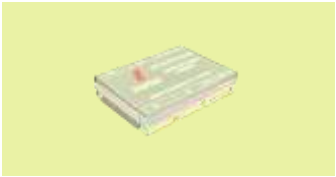
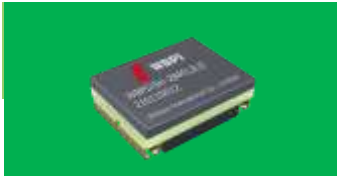
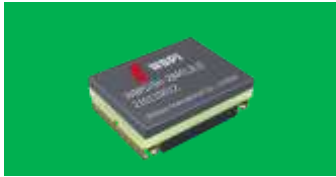
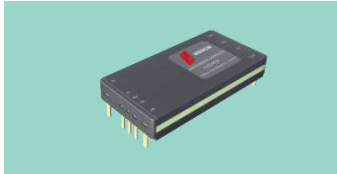

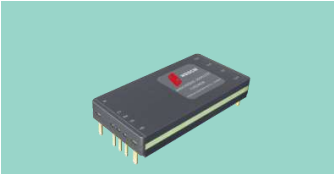
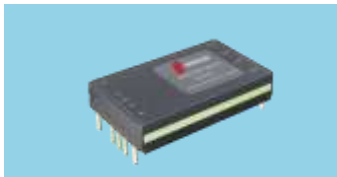
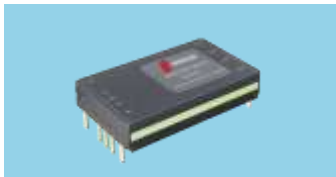
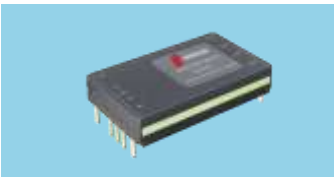
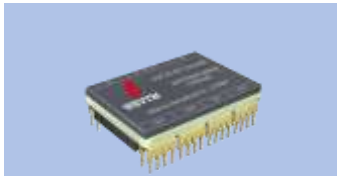
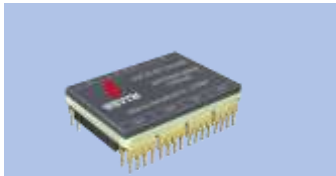
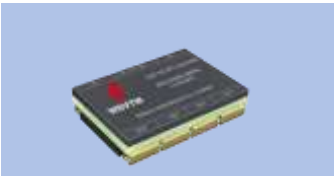
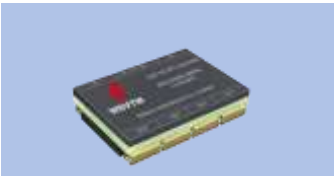


Development progress of new products

SN	Series	Subseries	Model (14 types)	Technical parameter	Development progress	Photo
1	Non-isolated, regulated	WBPRM series	MP028F036M12AL P036F048T12AL	Input voltage range: 16 ~ 60VDC Output voltage range: 26 ~ 50VDC Efficiency: up to 96% Power density: up to 407W/in3	Type approval In-situ replacement Better indicators than Vicor products	
2	Isolated, regulated	High voltage WBDCM series	DCM4623TD2K31E0M00 DCM300P280M500A40 DCM4623TD2K13E0T00	Wide input range: 160 ~ 420VDC Output voltage: 12V/28V Output power: 500W Efficiency: up to 93% Power density: up to 1040W/in3	Type approval In-situ replacement Indicators consistent with Vicor products	
3	Isolated, regulated	Low voltage WBDCM series	DCM3623T50T0680M00 MDCM28AP120M320A50 MDCM28AP280M320A50	Wide input range: 16 ~ 50VDC Output voltage: 5V/12V/28V Output power: 320W Efficiency: up to 93.8% Volume power density: up to 818W/in3	Type approval In-situ replacement Indicators consistent with Vicor products	
4	Isolated, regulated	WBPI28H Series	PI3109-00-HVMZ PI3106-00-HVMZ	Wide input range: 16-50VDC Output voltage: 5V/12V Output power: 50W Efficiency: Up to 88.5% Power density: up to 334W/in3	Type approval In-situ replacement Indicators consistent with Vicor products	
5	Isolated, unregulated	WBVTM series	V048F120T025 MVTM36BF060M020A00 MVTM36BF240M005A00 VTM48EF060T040A00	Input voltage range: 16 ~ 50V Output voltage: 6V/12V//24V Output power: Max. 300W Efficiency: up to 96% Volume power density: up to 407W/in3	Type approval In-situ replacement Indicators consistent with Vicor products	



## Development progress of new products

Series	Photo			
WBPRM				
WBPI				
High voltage WBDCM				
Low voltage WBDCM				
WBVTM				



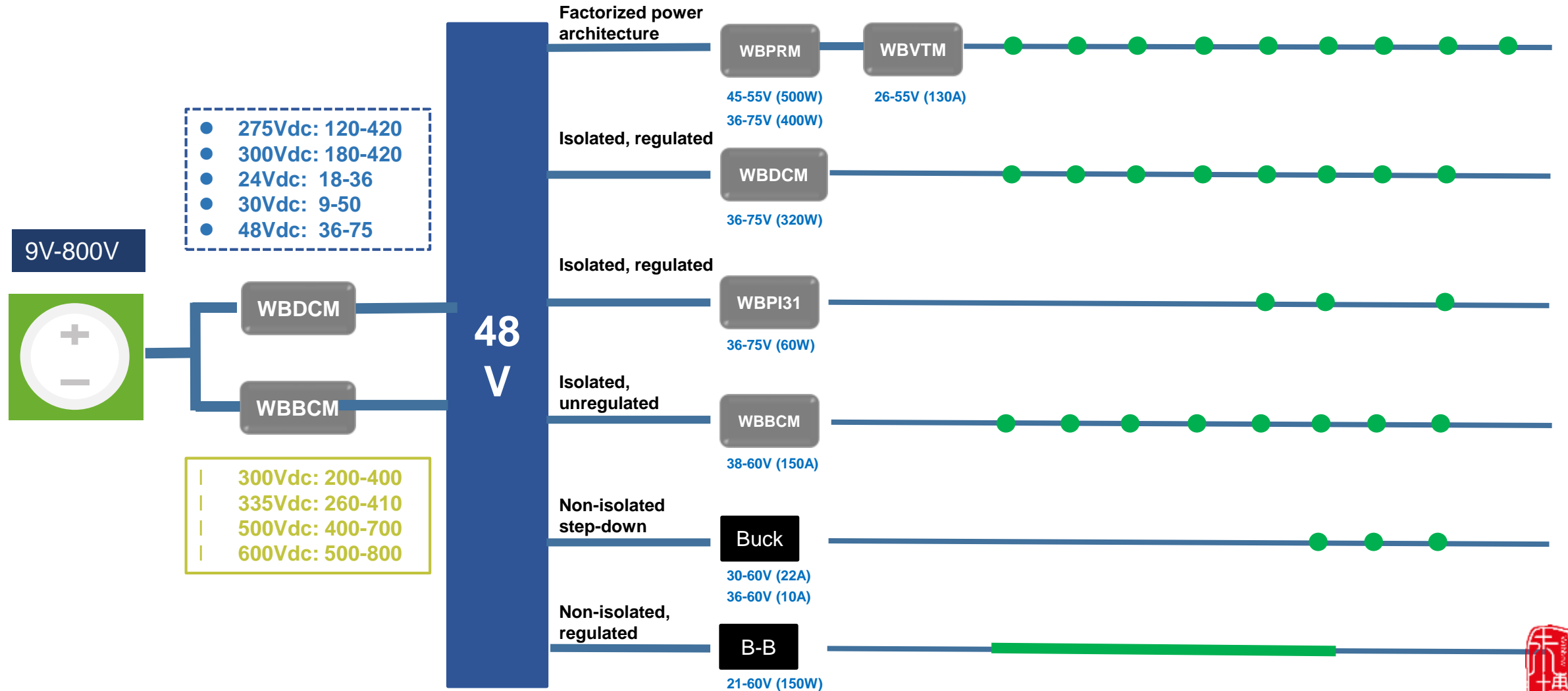
## High-voltage WBDCM series microchip power supply

- | Features: Isolated, regulated
- | Input voltage range: **150V~420V**
- | Output voltage range: 3.3 V ~ 53V
- | Output power: **up to 500W**
- | Efficiency: up to 94%
- | Weight: **28g only**
- | Volume power density: **up to 1,040W/in<sup>3</sup>**
- | Weight power density: up to 17.4 W/g
- | ChiP4623 package: **47.91 mm × 22.8 mm × 7.21 mm**
- | Number of units in parallel: **8**
- | Working case temperature: **-55 °C to 100 °C (full load)**
- | **In-situ replacement of** VICOR DCM4623 series





## High/Low-voltage DC to point load (48V intermediate bus)



# Localized Alternative Power Supply

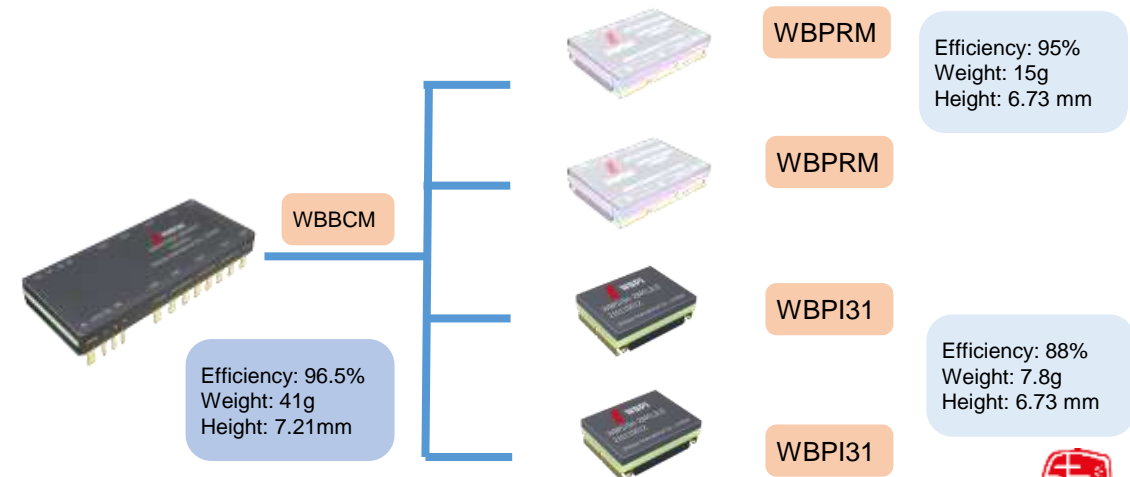
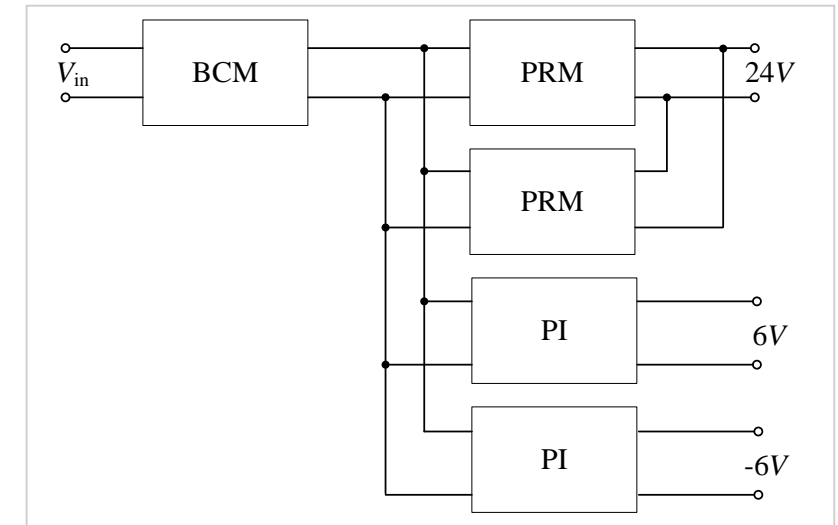
Comparison with  
VICOR  
Generation II  
modular power  
supply

Comparison with  
Vicor Generation  
III wafer power  
supply

## A new radar microchip power solution

Key indicators	Parameter requirements		
Input Indicator	DC 550V ± 30V		
Output voltage	+24V	45A	1080W
	+6V	10A	60W
	-6V	2A	12W
Size	≤ 70mm*63mm* 9mm (industrial half-brick)		
Efficiency	≥90%		

- | Electrical functions: **Isolation, voltage regulation, three-way output**
- | Overall efficiency: **≥ 91.2%**
- | Output power: **1,152W**
- | Weight of power supply: **86g only**



INDUSTRY SECTORS





Wibbow International Co., Limited.