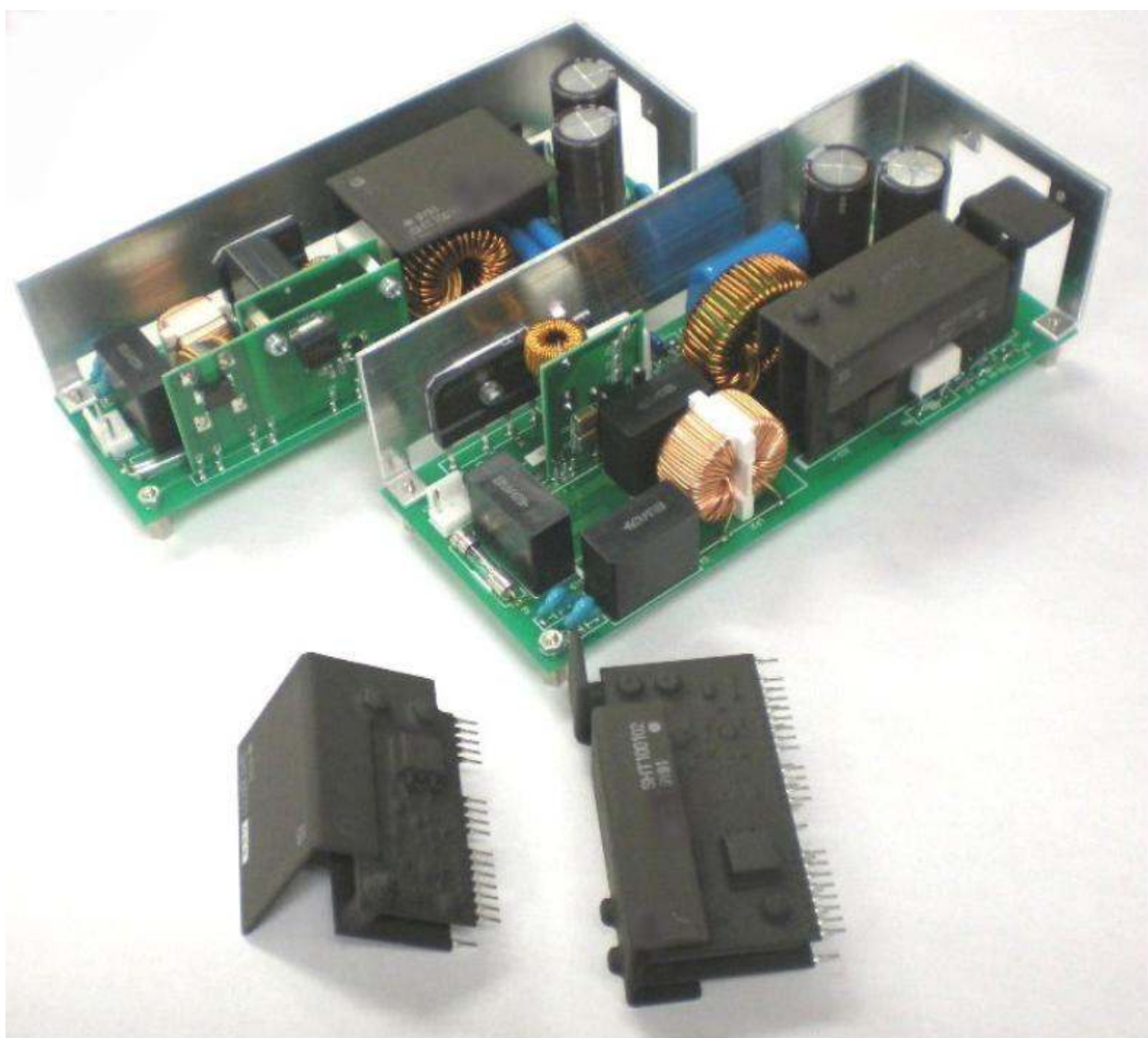


# ***SELECTION GUIDE BOOK***

*for Power Electronics*



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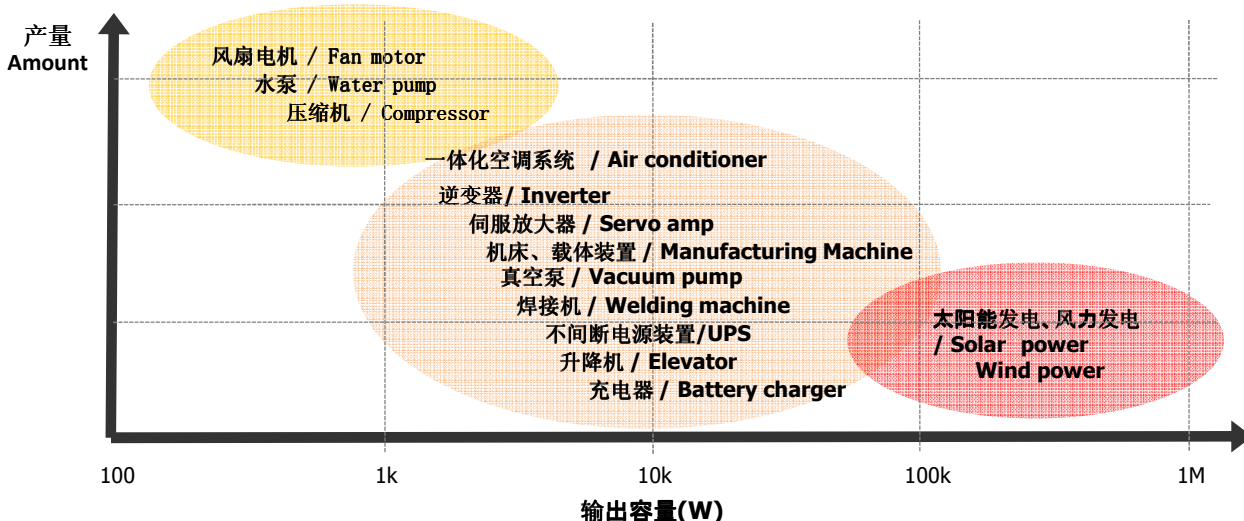
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谏早电子系列产品的拓展领域 / Cover area of IDC products

谏早电子（株）的电源模块业务，拥有着由半导体技术进化而来的控制技术和多种制程，生产各种可用作电子机器核心部份的系统电源和组件产品。我们将继续为面向产业化机器（生产装置、机床、载体装置、业务用冷热器械、大型空调、各种电源等）的电源管理提出独到的提案，并将业务扩展至更大功率电源和更高信誉的领域。其中，IGBT栅极驱动器和DC-DC转换器已经成功推出标准产品，其产品体系也在与时俱进、日趋完善。

Within the power semiconductor field, through the general development of a variety of technologies of which we can be justly proud, especially circuit and assembly technology, we have created the system power supplies and module products used as the core of a wide variety of electronic equipment. Usage is expanding into industrial instruments(production machinery, automation lines, air conditioner, various power supply systems, etc.) and also into the fields of high power and high reliability applications.



每种产品的对应领域 / Cover area of each products



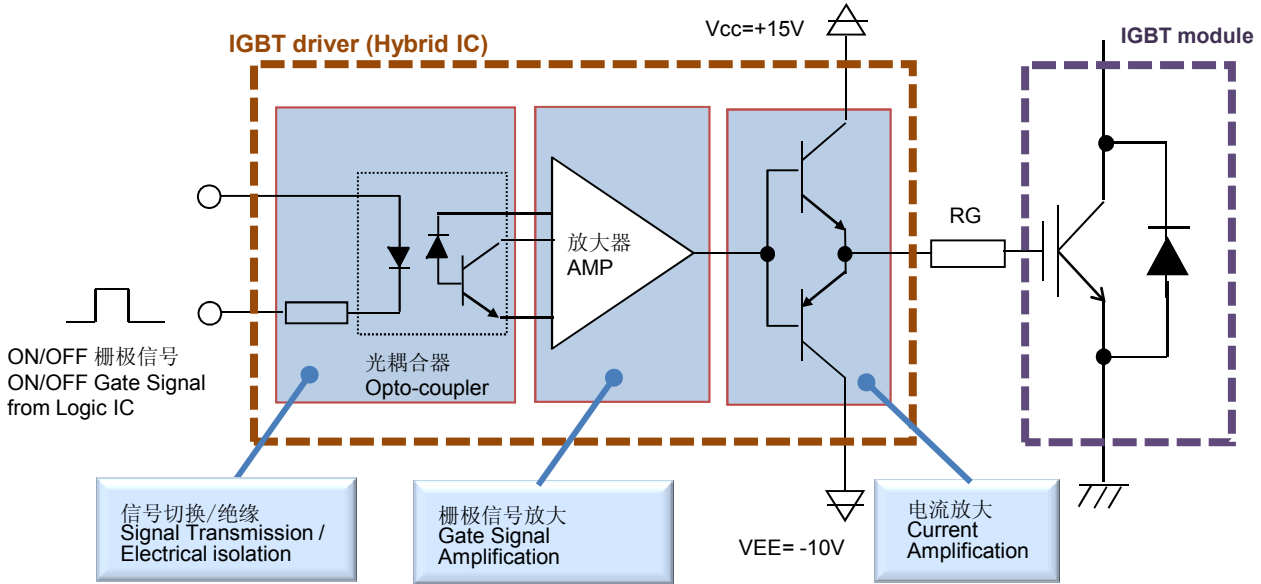
## 关于 IGBT 驱动器/About IGBT driver

打开和关闭IGBT时应将GBT的栅极电压设为+15V的偏压或-10V左右的负偏压。这一偏压的切换应在瞬间内完成，因此需要配备一条可以高速运转的驱动电路。

将这组驱动电路结合制成混合集成电路(Hybrid IC)IGBT驱动器。

When the IGBT is turn-ON, gate voltage of IGBT should be applied 15V, and when the IGBT is turn-OFF, gate voltage should be applied around -10V. The change of this bias must be performed very fast at the turn-ON and turn-OFF.

ISAHAYA IGBT driver is contained these drive circuit on hybrid IC.

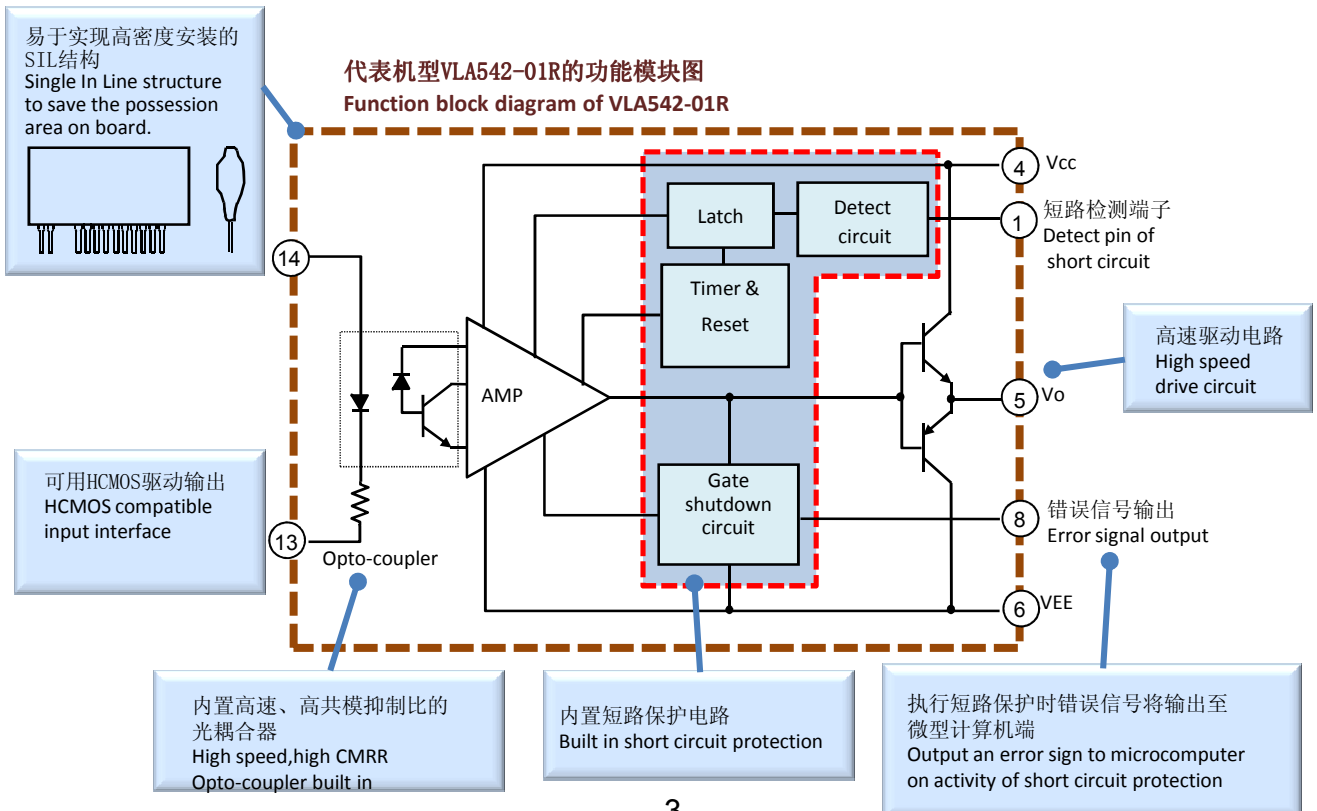


## 速早电子IGBT驱动器的特征/Features of ISAHAYA IGBT drivers

速早电子IGBT驱动器能够满足从15A级别到1400A级别范围内的多种IGBT技术要求。几乎所有的产品中都内置有短路保护电路，可实现高速且安全的短路保护，从而有效防止因IGBT短路而造成损失。

ISAHAYA IGBT drivers support the IGBT for the wide area (15A class to 1400A class).

Most of ISAHAYA IGBT drivers are built-in the short circuit protective function which has high speed response and safe protection.



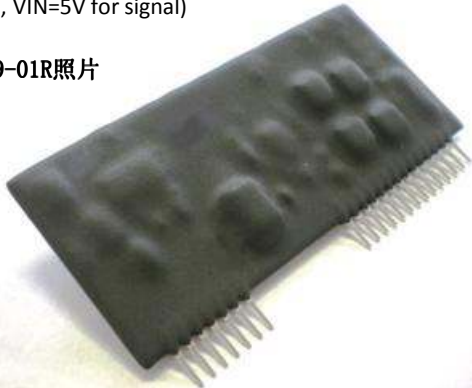
## ■ 大容量IGBT组件栅极驱动器 / IGBT driver for high power module

VLA539是用于大容量IGBT组件、一次~二次绝缘耐压可达4000Vrms的开关驱动器。

因内置开关电源，驱动时仅需供给15V、收发信号时仅需供给5V即可运作。

The VLA539 is gate driver for high power IGBT modules which has 4000Vrms isolation strength. So it had be built in the gate power supply, it can be driven by simple power supply system. (VD=15V for drive, VIN=5V for signal)

VLA539-01R照片



- ◆ 绝缘耐压 / Isolation voltage : AC4000V,1min
- ◆ 内置开关电源 / Built-in gate power supply
- ◆ 内置短路保护功能/Built-in short circuit protective circuit
- ◆ 对象IGBT/ Recommended IGBT modules
  - VCES : 600V, 600A class
  - VCES : 1200V, 3600A class
  - VCES : 1700V, 3600A class
- ◆ 可调节短路检测下降时间  
/Variable fall time on activity of short circuit rotection
- ◆ 可用CMOS逻辑输入信号  
/CMOS compatible input interface

## ■ IGBT组件搭载型驱动装置 United IGBT driver

VLA536是能够直接搭载在二合一型IGBT组件上的开关驱动装置。开关驱动电路上载有2个VLA520，开关电源上载有2个VLA106-15252。因内置开关电源，驱动时仅需供给15V、收发信号时仅需供给5V电源即可运作。

The VLA536 is possible to mount on the IGBT package (2 in 1 type). It is contained 2 drivers (VLA520), 2 DC-DC converters(VLA106-15252) and peripheral parts. It is needed the two way power supply system for drivers and input signal. (VD=15V, VIN=5V)

VLA536-01R照片  
(不含IGBT组件)



- ◆ 绝缘耐压 / Isolation voltage : AC2500V,1min
- ◆ 开关驱动器 / Gate driver : VLA520 × 2
- ◆ 开关电源 / Gate power : VLA106 × 2
- ◆ 附带短路保护功能/ With short circuit protection
- ◆ 对象IGBT/ Recommended IGBT modules  
MITSUBISHI NX series
  - VCES : 600V, 400Aclass
  - VCES : 1200V, 450Aclass
- ◆ 可用CMOS逻辑输入信号  
/CMOS compatible input interface

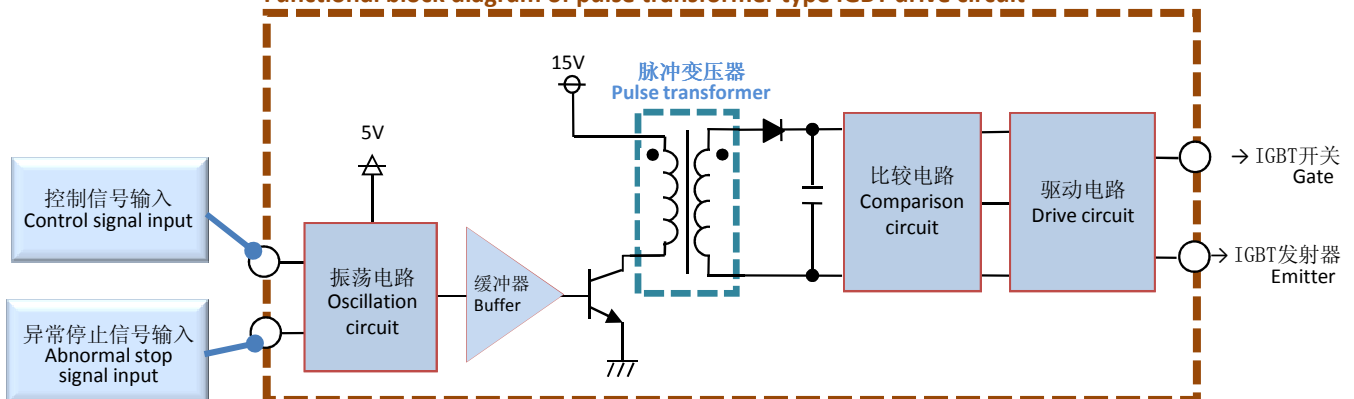
## ■ 脉冲变压器型IGBT驱动器/ Pulse transformer type IGBT driver

脉冲变压器型TGBT驱动器仅通过变压器传送从1次端到2次端的开关信号与开关驱动电量，所以外部无需设置绝缘型电源。此外，因内置用于传送信号的光耦合器，较为可靠（注） 本系列产品的实际配电频率在3kHz以下。

Pulse transformer type IGBT drivers transmit the gate signal and energy to secondary from primary by transformer, so it doesn't need the isolated power supply outside. So it has not the optical coupler, be superior also at a point of the reliability .

(Note) Since this series has no minus bias, practical switching frequency is up to 3kHz.

脉冲变压器型IGBT栅极驱动电路的功能模块图  
Functional block diagram of pulse transformer type IGBT drive circuit



## IGBT驱动器（电源内置型）产品一览 / List of IGBT driver ( Built in power supply type )

型号 Type Name	功能 Function	电源电压 Power Supply (V)	输出 Output				大小 Size (H x L x W) (mm)	用途 Application	备注 Note
			tPLH (us)	tPHL (us)	IOHP (A)	IOLP (A)			
M57161L-01R	开关驱动 / 内置电源 Gate drive / Built in Power Supply	VD +15V	1	2	-7	7	30.5x 83 x15	Mitsubishi F series IGBT module	
VLA500-01R	开关驱动 / 内置电源 Gate drive / Built in Power Supply	VD +15V	1	1.3	-12	12	33x 83x 15.5	~600V, 600A class ~1200V,1400A Class	
VLA500-02R	开关驱动 / 内置电源 Gate drive / Built in Power Supply	VD +24V	1	1.3	-12	12	33x 83x 15.5	~600V, 600A class ~1200V,1400A Class	
VLA500K-01R	VLA500高绝缘耐压版 High Isolation type of VLA500	VD +15V	1	1.3	-12	12	33x 83x 17	~600V, 600A Class ~1200V, 1400A Class ~1700V,1000A Class	绝缘耐压:AC4000V Isolation :AC4000V
VLA502-01R	VLA500高速版 High speed type of VLA500	VD +15V	0.65	0.65	-12	12	33x 83x 15.5	~600V, 600A Class ~1200V,600A Class High Speed IGBT	
<b>NEW</b> VLA536-01R	组件搭载型封装 Mount on IGBT package	VD +15V	0.8	0.7	-5	5	33.6 x 101 x 57.5	Mitsubishi NX series 600V, 400A 1200V, 450A	
<b>NEW</b> VLA539-01R	开关驱动 / 内置电源 Gate drive / Built in Power Supply	VD +15V	1.5	1.5	-24	24	42 x 88 x 17	~600V, 600A Class ~1200V, 3600A Class ~1700V,3600A Class	绝缘耐压:AC4000V Isolation :AC4000V

## IGBT驱动器（电源非内置型）产品一览 / List of IGBT driver ( No power supply type )

型号 Type Name	功能 Function	电源电压 Power Supply (V)	输出 Output				大小 Size (H x L x W) (mm)	用途 Application	备注 Note
			tPLH (us)	tPHL (us)	IOHP (A)	IOLP (A)			
M57159L-01R	开关驱动 / 短路保护 Gate drive / Short Circuit Protection	VCC +15V VEE 10V	1.3	1.3	-1.5	1.5	22 x43 x 11	~600V,150A Class ~1200V, 75A class	
M57160AL-01R	开关驱动 / 短路保护 Gate drive / Short Circuit Protection	VCC +15V VEE -10V	1	1.3	-5	5	20.5x47x11.5	Mitsubishi F series IGBT module	
M57959AL-01R	开关驱动 / 短路保护 Gate drive / Short Circuit Protection	VCC +15V VEE 10V	1	1.3	-2	2	22 x43 x 11	~600V,200A Class ~1200V, 100A class	
M57962AL-01R	开关驱动 / 短路保护 Gate drive / Short Circuit Protection	VCC +15V VEE -10V	1	1.3	-5	5	25 x 51 x 12	~600V, 600A class ~1200V,400A Class	
M57962CL-01R	开关驱动 / 短路保护 Gate drive / Short circuit Protection	VCC +15V VEE 10V	1	1.3	-5	5	25 x 51 x 12	~600V, 600A class ~1200V,400A Class	可调节保护时的下降时间 Adjustable fall time on protection
M57962K-01R	开关驱动 / 短路保护 Gate drive / Short circuit Protection	VCC +15V VEE 10V	1	1.3	-5	5	27 x 51 x 10	~600V, 600A class ~1200V, 400A class ~1700V,400A Class	绝缘耐压:AC3750V Isolation :AC3750V
VLA507-01R	开关驱动 Gate drive	VCC +15V VEE 10V	0.8	0.9	-3	3	20 x 30 x 7	~600V,200A Class ~1200V,150A class	
VLA513-01R	开关驱动 Gate drive	VCC +15V VEE 10V	0.5	0.5	-5	5	27 x 48 x 7	~600V,200A(60kHz) ~1200V,200A(60kHz)	
<b>NEW</b> VLA520-01R	开关驱动 / 短路保护 Gate drive / Short Circuit Protection	VCC +15V VEE 10V	0.8	0.7	-5	5	27 x 45 x 12	~600V,600A class ~1200V, 450A class	内置错误信号耦合器 Built-in error signal coupler
VLA531-01R	开关驱动 / 短路保护 Gate drive / Short Circuit Protection	VCC +15V VEE 10V	1.3	1.3	-2.5	2.5	18 x 42 x 6.5	~600V,200A Class ~1200V,150A class	内置简易保护电路 Simple protection circuit
<b>NEW</b> VLA541-01R	开关驱动 / 短路保护 Gate drive / Short Circuit Protection	VCC +15V VEE 10V	1	1	-3	3	26 x 44 x 8	~600V,200A Class ~1200V,150A class	与M57959AL兼容 Compatible with M57959AL
<b>NEW</b> VLA542-01R	开关驱动 / 短路保护 Gate drive / Short Circuit Protection	VCC 15V VEE 10V	1	1	-5	5	26 x 44 x 8	~600V, 600A lass ~1200V,400A lass	与M57962AL兼容 Compatible with M57962AL

## IGBT驱动器（脉冲变压器型）产品一览 / List of IGBT driver(Pulse transformer type)

型号 Type Name	功能 Function	电源电压 Power Supply (V)	输出 Output				大小 Size (H x L x W) (mm)	用途 Application	备注 Note
			tPLH (us)	tPHL (us)	IOHP (A)	IOLP (A)			
M57174L-03	开关驱动 / 内置3条电路 Gate drive / 3circuits	VCC1 +15V VCC2 +5V	2.2	2	-0.6	0.6	45 x 61 x 13	Small capacity IGBT(less than 50A)	绝缘耐压 :AC2500V Isolation :AC2500V
<b>NEW</b> VLA526A-06AR	开关驱动 / 内置6条电路 Gate drive / 6circuits	VCC1 +15V VCC2 +5V	2.2 (H-side) 0.7 (L-side)	1.7 (H-side) 0.9 (L-side)	-0.2	0.6	41.5 x 88 x 13	Small capacity IGBT(less than 50A)	绝缘耐压 :AC2500V Isolation :AC2500V

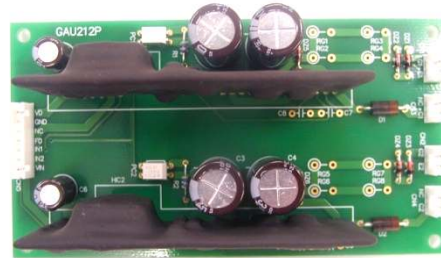
## IGBT驱动器综合电路板 / IGBT driver evaluation board

是综合了IGBT开关驱动器、绝缘型电源的混合IC及其周边零部件的评价电路板。  
 开关驱动器部分和开关电源部分使用的是谏早标准的混合IC。内置开关驱动器与DCDC转换器的组合如下所示。  
 SHAYA is preparing the IGBT driver evaluation board include hybrid IC (Driver and DCDC converter) and peripheral parts. Gate drivers and gate power supplies are ISAHAYA standard hybrid IC.  
 The combination of gate driver and DCDC converter is as follows.

型号 / Typename	开关驱动器 / Gate driver	DC-DC转换器 / DC-DC converter
GAU205S-15252	VLA513-01R	VLA106-15242
GAU205P-15252A	VLA542-01R	VLA106-15242
GAU212S-15255	VLA502-01R	VLA502-01R (VLA502是DCDC转换器的内置品 / VLA502 is built in DCDCtype)
GAU212P-15255	VLA500-01R	VLA500-01R (VLA500是DCDC转换器的内置品 / VLA500 is built in DCDCtype)



GAU205S-15252



GAU212P-15255

## IGBT驱动器（综合电路板）产品一览 / List of IGBT driver (evaluation board)

型号 Type Name	功能 Function	电源电压 Power Supply (V)	输出 Output				大小 Size (H x L x W) (mm)	用途 Application	备注 Note
			tPLH (us)	tPHL (us)	IOHP (A)	IOLP (A)			
GAU205S-15252	开关驱动 / 内置电源 Gate drive / Built in Power Supply	VD +15V	0.5	0.5	-5	5	65 x 95 x 34	~1200V,400A Class IGBT module	VLA513综合板 Evaluation board
GAU205P-15252A	开关驱动 / 内置电源 Gate drive / Built in Power Supply	VD +15V	1	1	-5	5	65 x 95 x 34	~600V, 600A class ~1200V,400A Class	VLA542综合板 Evaluation board
GAU212S-15255	开关驱动 / 内置电源 Gate drive / Built in Power Supply	VD +15V	0.65	0.65	-12	12	60x 120 x 40	~1200V,1400A Class IGBT module	VLA502综合板 Evaluation board
GAU212P-15255	开关驱动 / 内置电源 Gate drive / Built in Power Supply	VD +15V	1	1.3	-12	12	65x 120 x 40	~1200V,1400A Class IGBT module	VLA500综合板 Evaluation board

## IPM接口产品一览 / List of IPM interface

型号 Type Name	功能 Function	电源电压 (V) Power Supply (V)	大小 / Size (H x L x W) (mm)	用途 Application	备注 Note
VLA606-01R	信号接口 Signal Interface	1次端 : 5V / 2次端 : 15V Primary side:5V / Secondary side:5	31 x 86 x 12.5	IPM驱动 IPM drive	Viso = AC2500V

## ■ 速早电子DC-DC转换器的特征 / Features of ISAHAYA DC-DC converter

### □丰富的产品阵容

#### Wide variations of products

绝缘型、非绝缘型、低电压输入、高电压输入，产品系列丰富多样。

ISAHAYA has wide variations of DC-DC converters ,

Isolated types, non isolated types, low input voltage types and high input voltage types.

### □充足的逆变器周边产品

#### Peripheral products of Inverters

尤其致力于生产用于控制逆变器及其周边设备的产品。

ISAHAYA has wide variations of peripheral products for Inverters.

### □备有小型高绝缘耐压品（VLA106系列）

#### Realization of small size and high isolation voltage products (VLA106 series)

在小巧的外观下，绝缘耐压可达2500Vrms。

Compact size realize 2500Vrms isolation.

### □备有高电压输入品（整流电压可达AC600V）（VLA312、VLA313系列）

#### ISHAYA originally has high input voltage series. (VLA312, VLA313series)

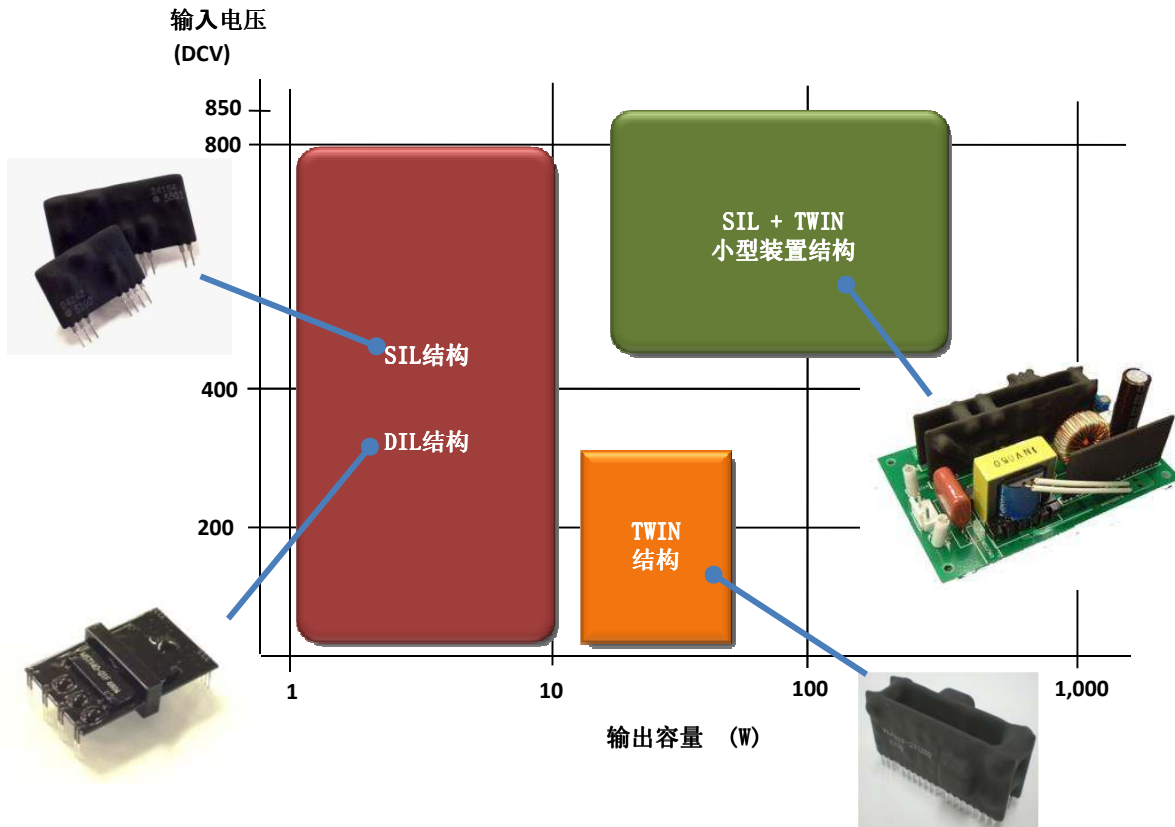
系列化生产最多可输入DC850V的绝缘型DC-DC转换器。

It is serialized the isolated DC-DC converters that can input DC850V.

## ■ 支持领域 / Cover Area Map

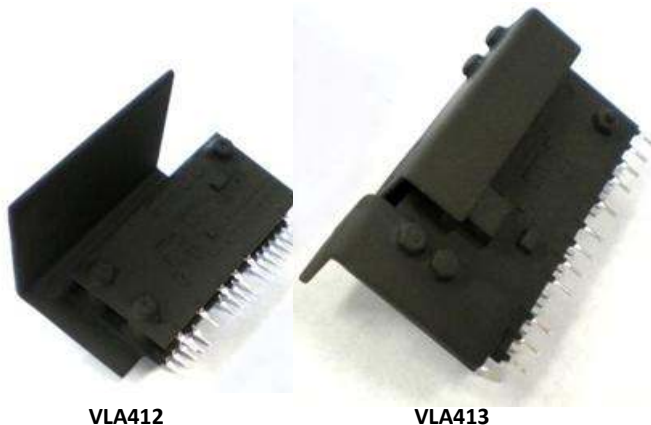
以IGBT驱动栅极电源、IPM控制电源等绝缘型DC-DC转换器为主，兼有周边设备的控制电源、高电压输入型预留电源等。通过单列直插（SIL）结构、双列直插（DIL）结构、TWIN结构以及将这些结构组合在一起的小型装置结构，将各种各样的小型电源产品化。

ISAHAYA has DC-DC converters which supply the powers mainly to inverter control and peripheral devices control. And make full use of various structure technology like Single in Line (SIL), Dual in Line (DIL) and TWIN structure and apply it to all products.

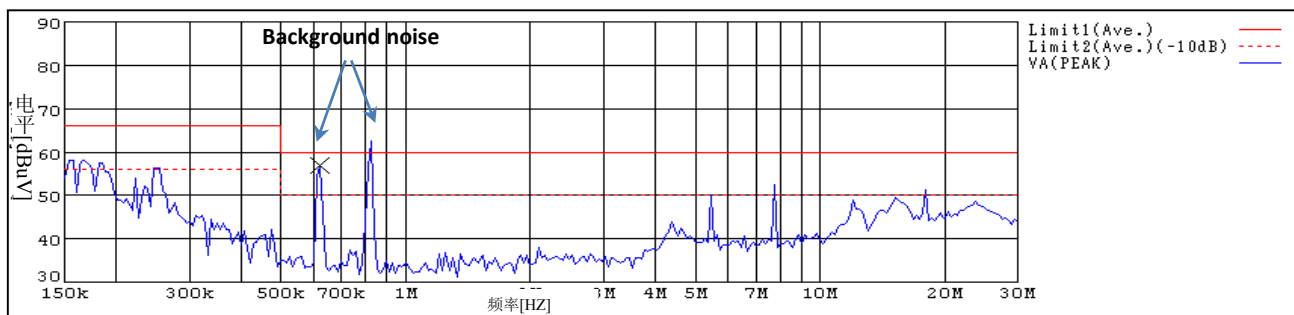
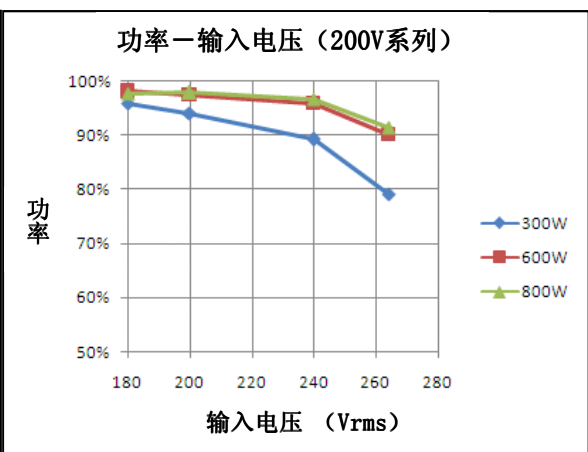
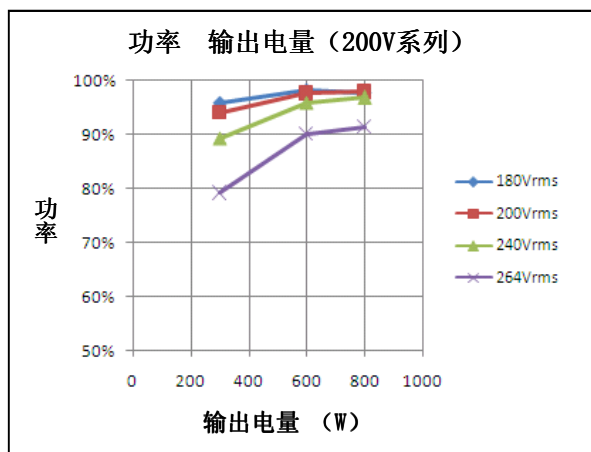
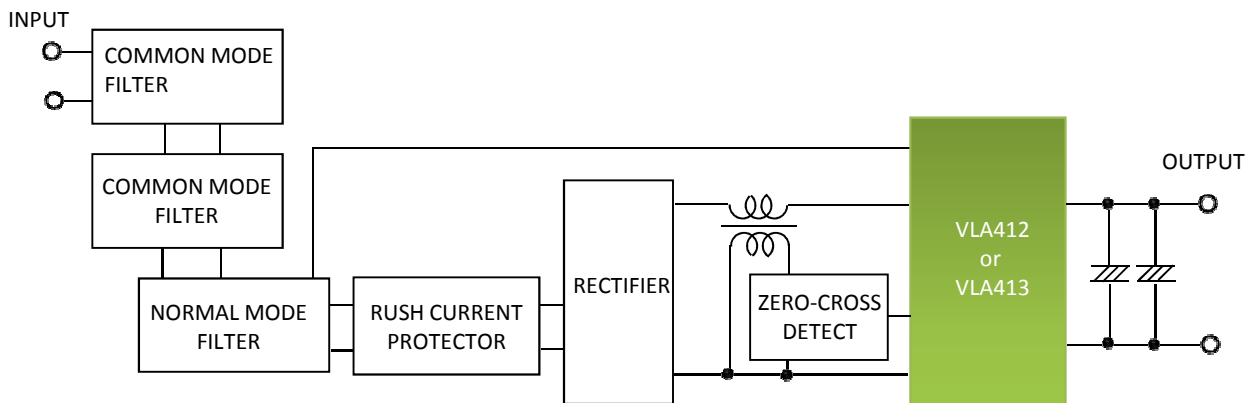


电路板搭载型功率改善组件/Power Factor Collection Module for set on the board

利用谏早的独立结构技术生产的IDC-TM，实现了在电路板上搭载组件并改善功率。



- 【VLA413的主要特征】**
- 容许输入范围 / Input voltage AC90~240V
  - 输出电压 / Output voltage DC375V
  - 输出电量 / Output power 800Wmax (VIN=AC180V, forced air-cooling)
  - 输出输入-FG间绝缘耐压 / Terminal-Frame isolation strength 1500Vrms, 1 min.
  - 功率 / Power factor 98%typ(800W)
  - 谐波电流 / Harmonics current 依据IEC61000-3-2
  - 可并列使用两个 / Permit parallel usage





■ 速早电子塔式组件 (IDC-TM®) / Features of ISAHAYA Tower-Module

将控制电路分成2块电路板，分别安装引线并组合在一起，提高了以往SIL结构所欠缺的抗振性。而且，内部磨损产生的热量由2块电路板共同释放，无需散热风扇，实现了组装的高密度和结构的小型化。

VLA313-2450 (输入850VDCmax、输出50W的绝缘型DC-DC转换器) 就是塔式组件的应用实例之一。

It divided a control circuit into two pieces of boards and got a lead on each board and improved by the quake resistance that was a weak point of the conventional SIL structure by can put it together. In addition, high-density implementation, miniaturization are possible without needing a radiation of heat fin it share fever by the inside loss with two pieces of boards, and to radiate heat. VLA313-2450 (input 850VDCmax, an insulation type DC - DC converter of output 50W) is the applied one in question of the tower modules.

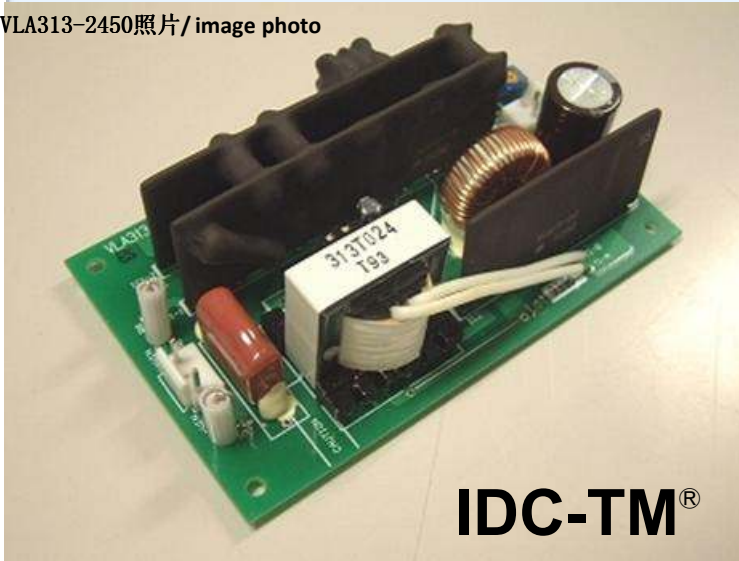
【VLA313-2450的优势】

- 采用了TWIN结构，一并解决了小型化、抗振、散热的问题。
- 运用了独特的控制方法，减小了体积、提高了效率。
- 输入电压可达DC850V (整流电压可达AC600V)，支持世界各国的电源电压规格。
- 内置自动复位型过电流保护电路。
- 1分钟内输入输出间绝缘耐压可达2500Vrms

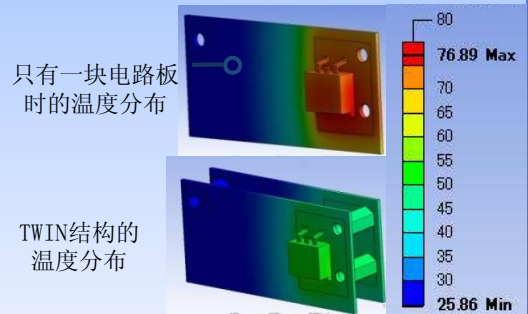
【FEATURES OF VLA313-2450】

- By TWIN structure technology, it solved many problems such as possession area and radiation of heat.
- It has adopted an original control system and realize lightweight high efficiency.
- Input voltage is DC850Vmax.
- Automatic return type over-current protection.
- Isolation voltage is 2500Vrms, 1min.

VLA313-2450照片 / image photo

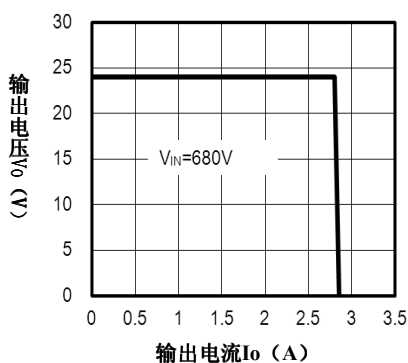


【TWIN结构部分的温度分布 / Temperature distribution diagram】

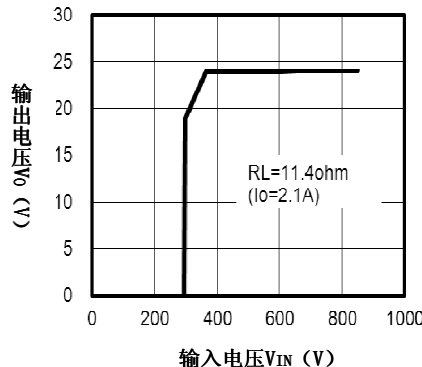


IDC-TM®

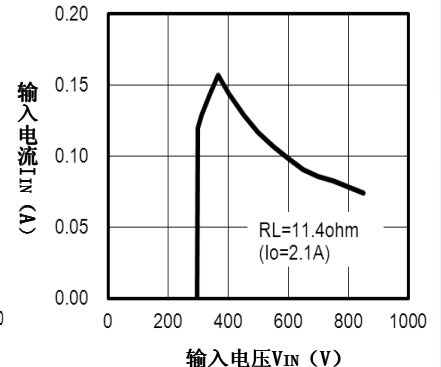
输出电压—输出电流特性



输出电压—输入电压特性



输入电流—输入电压特性



功率改善组件产品一览 / List of power factor collection module

型号 Type Name	输入电压 Input Voltage	输出 Outputs	绝缘耐压 Isolation Voltage (输入输出-FG间)	用途 Application	结构 Structure	大小 Size L x W x H (mm)
NEW VLA412-01R	AC90~220V	DC375V, 300Wmax	1500Vrms, 1min.	PFC控制 PFC Control	TWIN	60 x 45 x 40
NEW VLA413-01R	AC90~240V	DC375V, 800Wmax	1500Vrms, 1min.	PFC控制 PFC Control		86 x 39 x 45

绝缘型DC-DC转换器产品一览 (1) / List of isolated type DC-DC converters (1)

型号 Type Name	输入电压 Input Voltage	输出 Outputs	绝缘耐压 Isolation Voltage	用途 Application	结构 Structure	大小 Size L x W x H (mm)
M57140-01F	20V	15V/30mA x3 15V/100mA x1	2500	IPM控制 IPM Control	DIL	52 x 33 x 18
M57140-04F	20V	12V/30mA x3 12V/100mA x1	2500	一般控制设备 Device Control		
M57140-06F	20V	18.5V/30mA x3 18.5V/100mA x1	2500	一般控制设备 Device Control		
M57140-07F	20V	21.5V/30mA x3 21.5V/100mA x1	2500	一般控制设备 Device Control		
VLA106-15051	15V	5V/300mA	2500	一般控制设备 Device Control	SIL	33 x 18 x 24
VLA106-15151	15V	15V/100mA	2500	一般控制设备 Device Control		
VLA106-15242	15V	24V/100mA	2500	一般控制设备 Device Control		
VLA106-24051	24V	5V/300mA	2500	一般控制设备 Device Control		
VLA106-24151	24V	15V/100mA	2500	一般控制设备 Device Control		
VLA106-24242	24V	24V/100mA	2500	一般控制设备 Device Control		
VLA106-15123	15V	12V/300mA	2500	一般控制设备 Device Control	SIL	46 x 18 x 27
VLA106-15154	15V	15V/300mA	2500	一般控制设备 Device Control		
VLA106-24123	24V	12V/300mA	2500	一般控制设备 Device Control		
VLA106-24154	24V	15V/300mA	2500	一般控制设备 Device Control		
NEW VLA107-644R	24V	15V/120mA x 4	2500	一般控制设备 Device Control	SIL	87 x 14 x 39
NEW VLA107-655R	20V	15V/120mA x 4	2500	一般控制设备 Device Control		
NEW VLA107-666R	15V	12V/120mA x 4	2500	一般控制设备 Device Control		
NEW VLA107-677R	15V	15V/120mA x 4	2500	一般控制设备 Device Control		
VLA118-15056	9~18V	5V / 1.2A	2500	一般控制设备 Device Control	SIL	46 x 17 x 25
VLA118-2415D6	18~36V	±15V / ±0.2A	2500	一般控制设备 Device Control		
VLA301-122R	80~220V	12V/200mA	2000	一般控制设备 Device Control	SIL	37 x 17 x 23
VLA301-243R	63~156V	24V/130mA	2000	一般控制设备 Device Control		

## 绝缘型DC-DC转换器产品一览 (2) / List of isolated type DC-DC converters (2)

型号 Type Name	输入电压 Input Voltage	输出 Outputs	绝缘耐压 Isolation Voltage	用途 Application	结构 Structure	大小 Size L x W x H (mm)
VLA303-01	140~380V	15V/50mA x3 15V/100mA x1 12V/400mA x1 5V/300mA x1	1500	IPM控制电源 Device Control	DIL	82 x 50 x 33
VLA307-01R	220~380V	15V/300mA -15V/100mA 12V/400mA 5V/300mA	2500	一般控制设备 Device Control	SIL	76 x 22 x 45
VLA307-02R	220~380V	24V/400mA 8V/200mA	1500	一般控制设备 Device Control	SIL	
VLA307-03R	220~380V	24V/480mA 12V/160mA 5V/150mA	1500	一般控制设备 Device Control	SIL	
VLA308-01R	220~380V	12V/650mA	2500	一般控制设备 Device Control	SIL	56 x 19 x 42
VLA309-156R	400~800V	15V/550mA -15V/50mA 5V/500mA	2500	一般控制设备 Device Control	SIL	91 x 20 x 44
<b>NEW</b> VLA312-2425	475~850V	24V / 1.05A	2500	一般控制设备 Device Control	TWIN 装置	90 x 55 x 40
<b>NEW</b> VLA313-2450	475~850V	24V / 2.1A	2500	一般控制设备 Device Control	TWIN 装置	115 x 70 x 40
<b>NEW</b> VLA315-24100	430~815V	24V / 4.2A	2500	一般控制设备 Device Control	TWIN 装置	140 x 80 x 45

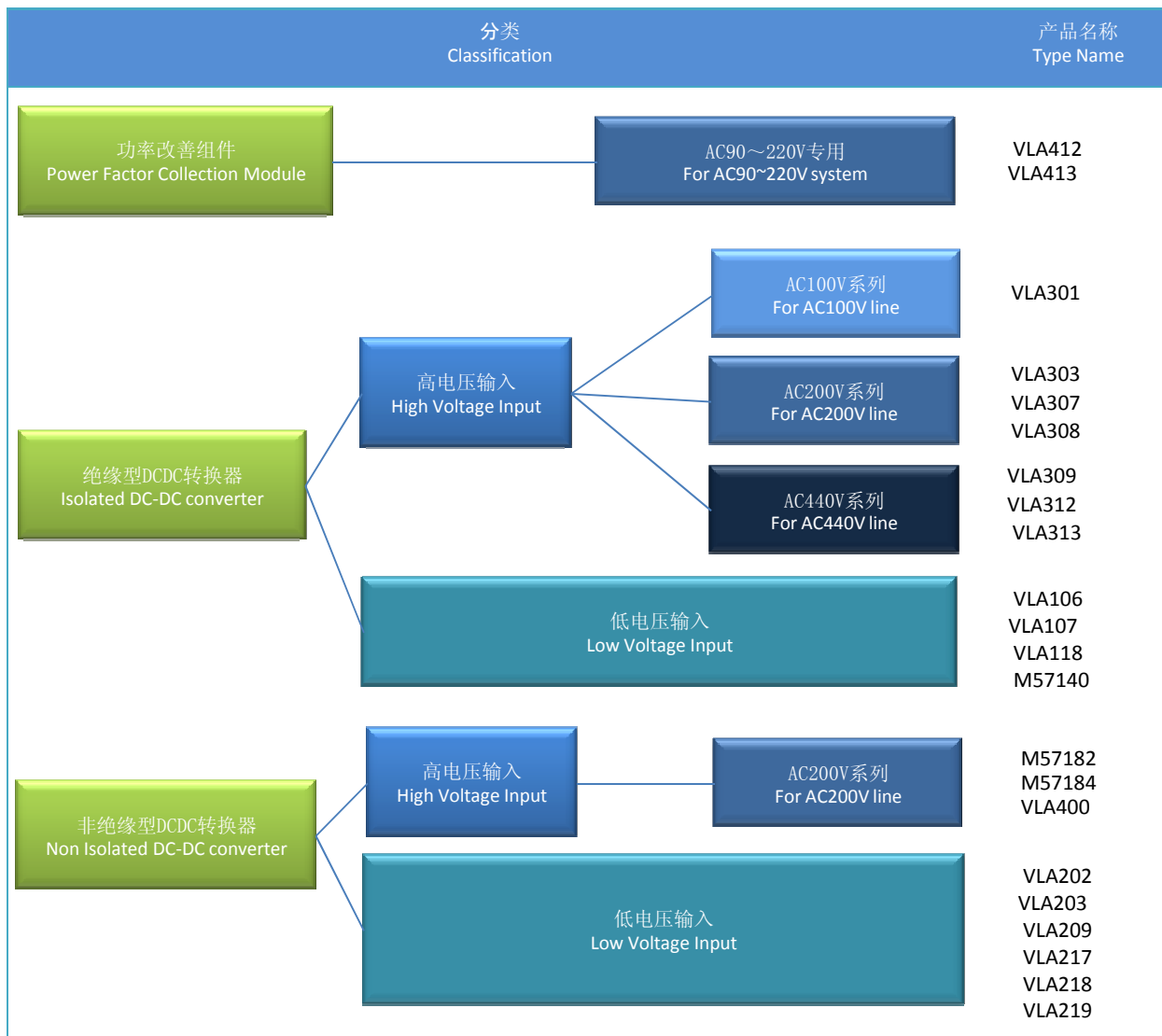
## 非绝缘型DC-DC转换器产品一览 (1) / List of isolated type DC-DC converters (1)

型号 Type Name	输入电压 Input Voltage	输出 Outputs	用途 Application	结构 Structure	大小 Size L x W x H (mm)	备注 Note
M57182N-212F	220~380V	12V/200mA	一般控制设备 Device Control	SIL	35 x 9 x 20	
M57182N-315F	220~380V	15V/200mA	DIP-IPM控制电源 For DIP-IPM	SIL	35 x 9 x 20	
M57182N-415AF	180~450V	15.5V/300mA	DIP-IPM控制电源 For DIP-IPM	SIL	37 x 9 x 22	
M57184N-315AF	180~410V	15V/100mA 5V/450mA	DIP-IPM控制电源 For DIP-IPM	SIL	49 x 12 x 22	内置保险丝 Built-in protection fuse
M57184N-515AF	220~410V	15V/200mA 5V/450mA	DIP-IPM控制电源 For DIP-IPM	SIL	52 x 12 x 24	内置保险丝 Built-in protection fuse
M57184N-516AF	220~410V	16.5V/180mA 5V/450mA	DIP-IPM控制电源 For DIP-IPM	SIL	52 x 12 x 24	内置保险丝 Built-in protection fuse
M57184N-715BF	220~360V	15V/350mA 5V/200mA	DIP-IPM控制电源 For DIP-IPM	SIL	52 x 12 x 24	
VLA202-12051	8~16V	5V/300mA	一般控制设备 Device Control	SIL	18.3 x 13 x 19.3	
VLA202-24051	18~36V	5V/300mA	一般控制设备 Device Control	SIL	18.3 x 13 x 19.3	
VLA203-121R	26~120V	12V/150mA	一般控制设备 Device Control	SIL	40 x 13 x 23	
VLA203-203R	26~120V	20V/150mA	一般控制设备 Device Control	SIL	40 x 13 x 23	
VLA209-24126	18~36V (9~36V)	12V/0.5A (5V/0.5A) (3.3V/0.5A)	一般控制设备 Device Control	SIL	29 x 15 x 30	输出电压可通过外部电阻 调节。输出电压在5V以下 时，输入电压的范围在9 ~36V之间。 Output voltage is adjustable by outer resistance. When output is under 5V, input range admit wide input range 9~36V.

■ 非绝缘型DC-DC转换器产品一览 (2) / List of isolated type DC-DC converters (1)

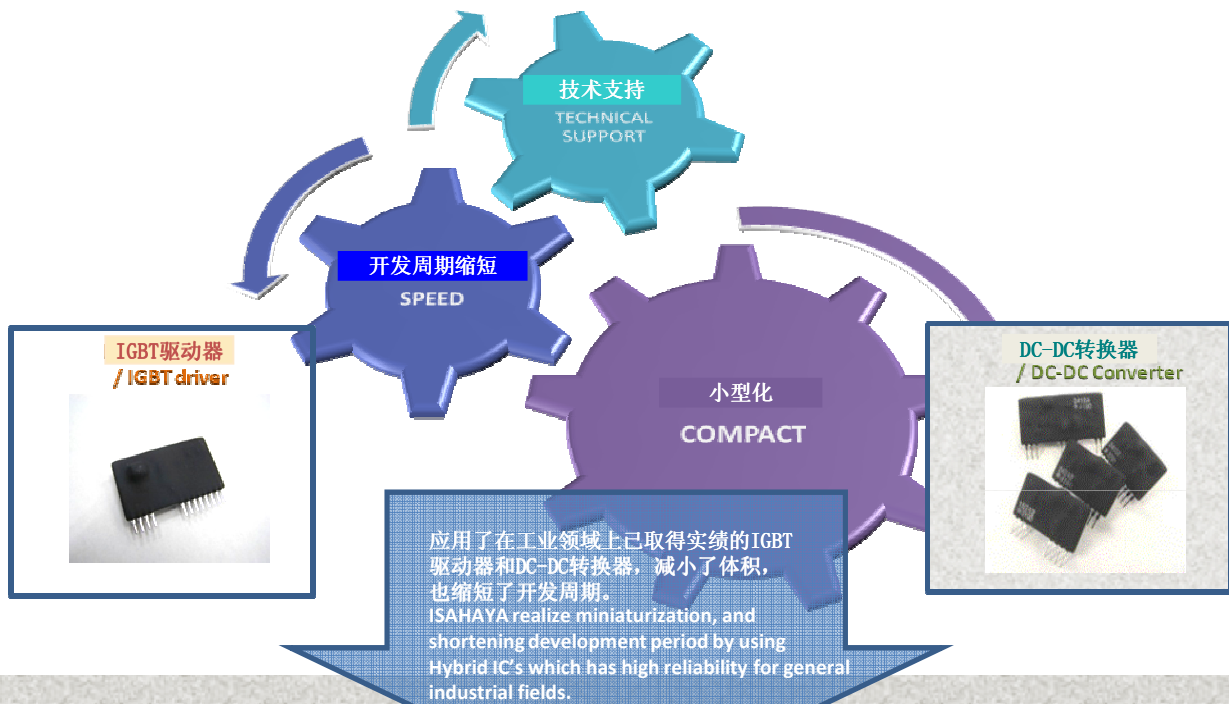
型号 Type Name	输入电压 Input Voltage	输出 Outputs	用途 Application	结构 Structure	大小 Size L x W x H (mm)	备注 Note
VLA217-241218	18~36V (9~36V)	12V/1.5A (5V/1.5A) (3.3V/1.5A)	一般控制设备 Device Control	SIL	55 x 15 x 30	输出电压可通过外部电阻调节， 输出电压在5V以下时，输入电压 的范围在9~36V之间。 Output voltage is adjustable by outer resistance. When output is under 5V, input range admit wide input range 9~36V.
VLA218-241236	18~36V (9~36V)	12V/3A (5V/3A) (3.3V/3A)	一般控制设备 Device Control	SIL	55 x 15 x 30	
VLA219-241260	18~36V	12V/5A	一般控制设备 Device Control	TWIN	55 x 28 x 30	
VLA400-204	113~380V	20V/200mA	一般控制设备 Device Control	SIL	37 x 18 x 34	

■ 电源组件产品系列图 / Products Tree for Switching mode power supply



## ◆理念 / Concepts

- 1) 提供可用于普通工业的各种定制电源。  
ISAHAYA can produce various custom power supplies for general industrial use.
- 2) 以标准混合IC为核心，减小了体积，也缩短了开发周期。  
ISAHAYA realize miniaturization, and shortening development period by using standard Hybrid IC's.
- 3) 可支持50W~12kW之间的输出容量。  
Output power range is 50W to 12kW.



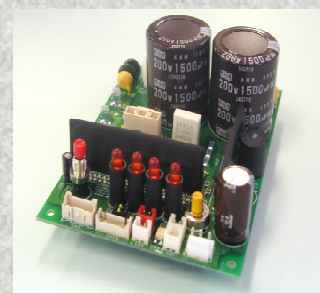
1.1kW特殊型电源  
1.1kW power supply for special use



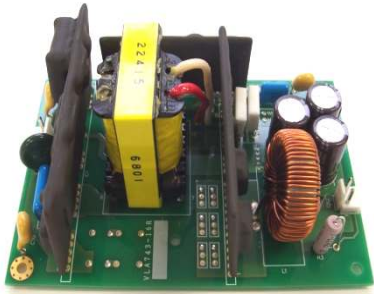
水泵用逆变器  
Inverter for water pump motor



焊机用控制装置  
Control unit for welding machine



风扇用逆变器  
Inverter for wind fan motor



**示例 1 绝缘型DC-DC转换器**

Example1 Isolated DC-DC converter

外形大小/Size : L x W x H = 80 x 120 x 49

输入电压 / Input Voltage : DC400V

输出 / Output : 36V / 150W

功能 / Function : 输出过电流保护

protection Output over current



**示例 2 绝缘型DC-DC转换器**

Example1 Isolated DC-DC converter

外形大小/ Size : L x W x H = 85 x 140 x 45

输入电压 / Input Voltage : DC400V

输出 / Output : 24V / 300W

功能 / Function : 输出过电流保护

Output over current protection



**示例 3 非绝缘型逆变器**

Example3 Non Isolated Inverter

外形大小/Size: L x W x H = 144 x 144 x 120

输入电压 / Input Voltage : AC200V

输出 / Output : 1.5kW

功能 / Function : 输出过电流保护

Output over current protection



**示例 4 绝缘型逆变器**

Example4 Isolated Inverter

外形大小/ Size:L x W x H = 200 x 300 x100

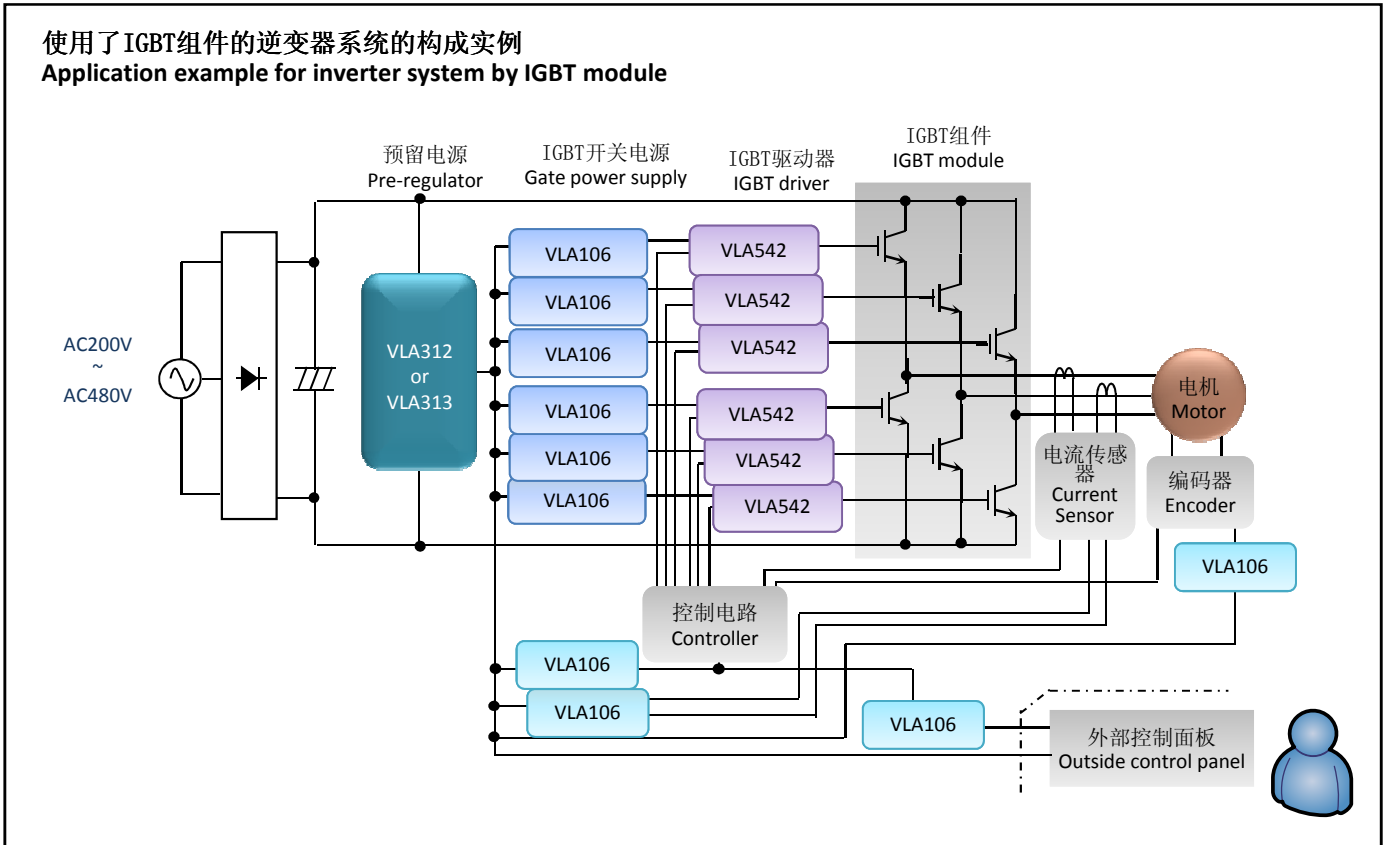
输入电压 / Input Voltage : AC200V

输出 / Output : 1.1kW

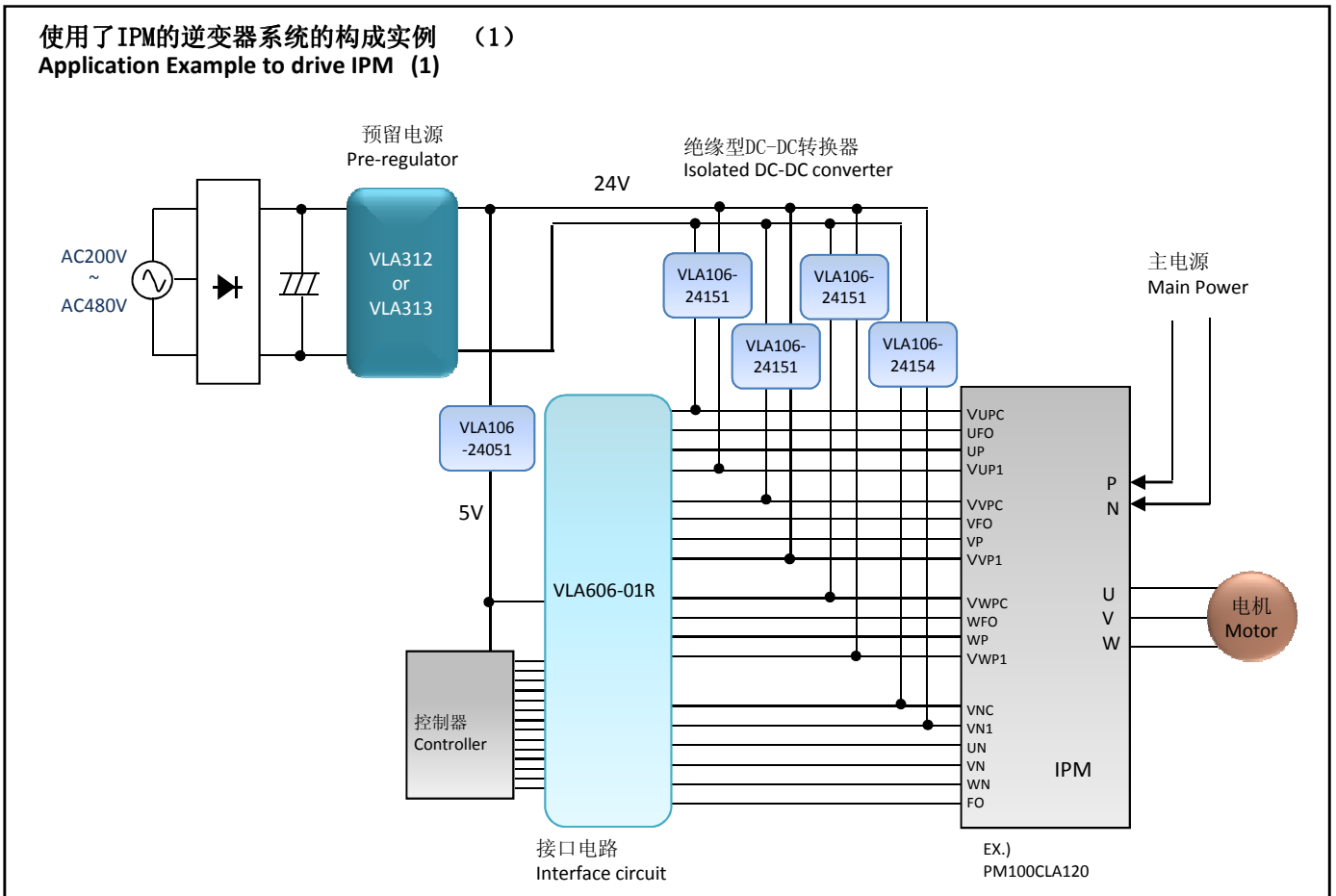
功能 / Function : 内置PFC (功率98%以上)

Built in PFC  
(Power Factor more than 98%)

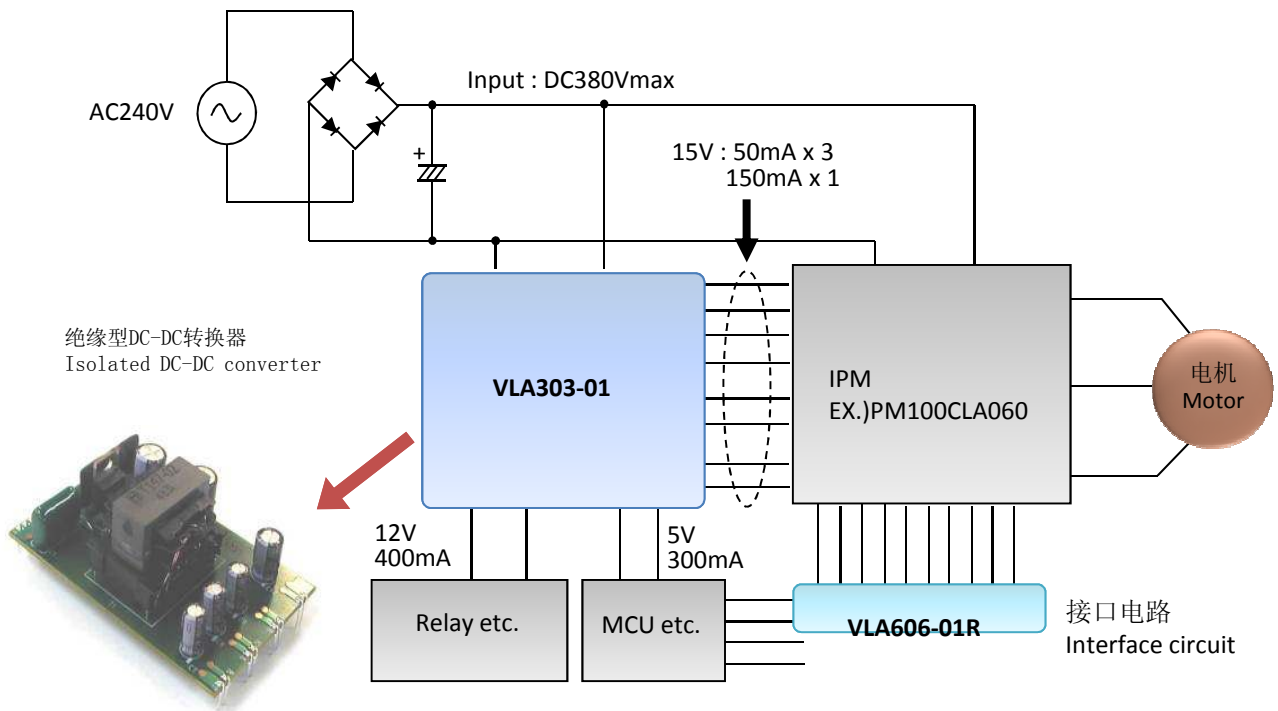
使用了IGBT组件的逆变器系统的构成实例  
Application example for inverter system by IGBT module



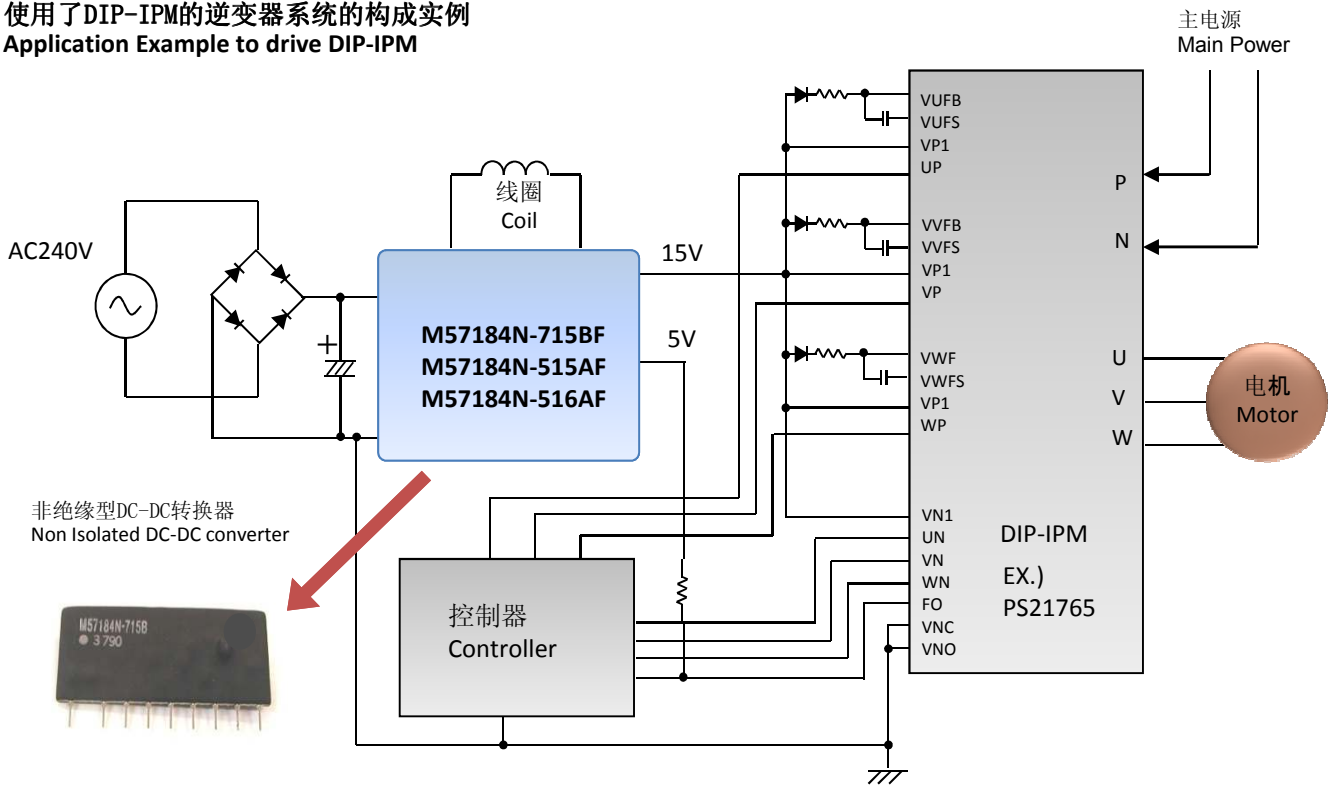
使用了IPM的逆变器系统的构成实例 (1)  
Application Example to drive IPM (1)



使用了IPM的逆变器系统的构成实例 (2)  
Application Example to drive IPM (2)

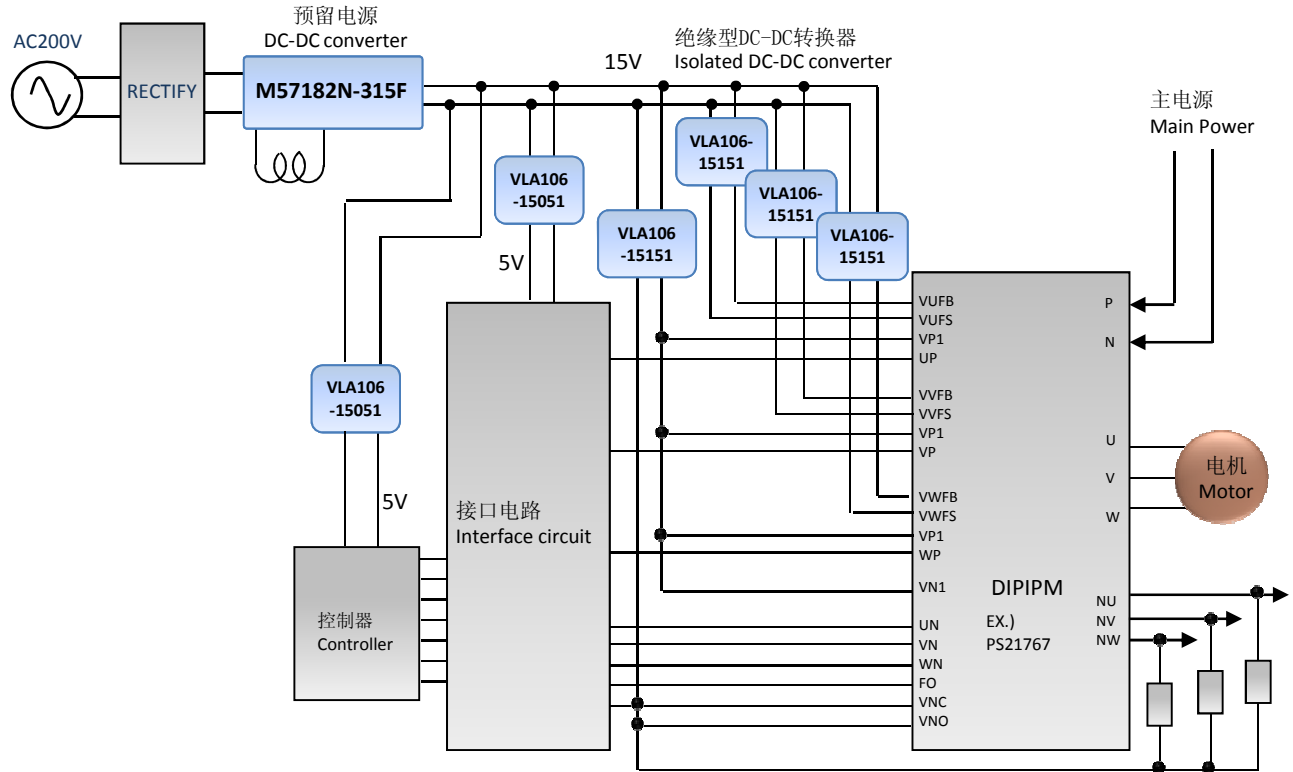


使用了DIP-IPM的逆变器系统的构成实例  
Application Example to drive DIP-IPM

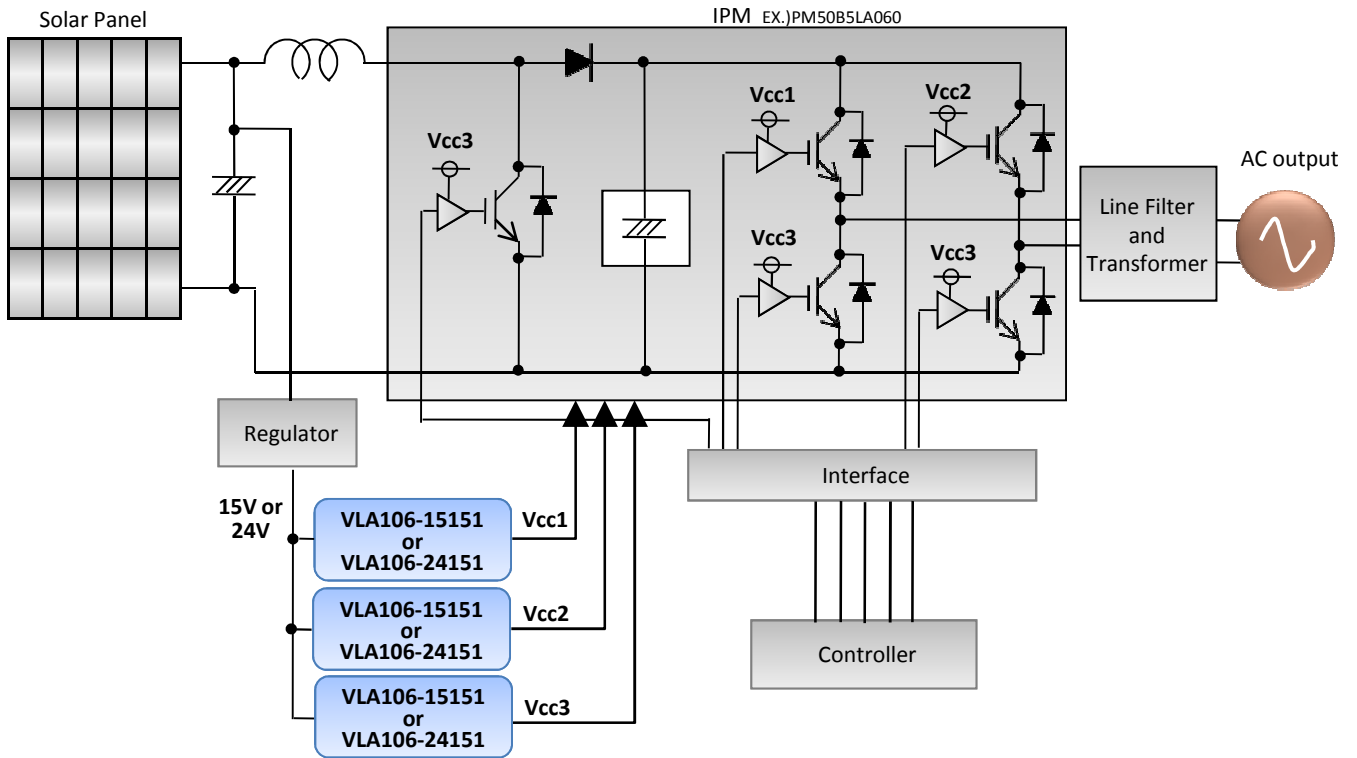




应用于使用了DIPIPM的伺服放大器的实例  
Application Example for servo



应用于太阳能发电的实例  
Application Example for photovoltaic



# IGBT 模块产品对应表 / Selection Map for IGBT Module

适用于三菱IGBT组件的产品对应表 Guide table for MITSUBISHI IGBT modules

<For 6<sup>th</sup> Generation New Mega Power Dual series>

IC \ VCES	1100A	1500A	1800A	2500A
1200V	NO IGBT	DRIVER : VLA500 GATE POWER : NO NEED	NO IGBT	DRIVER : VLA539 GATE POWER : NO NEED
1700V	DRIVER : VLA500K GATE POWER : NO NEED	NO IGBT	DRIVER : VLA539 GATE POWER : NO NEED	NO IGBT

<For 6<sup>th</sup> Generation series>

IC \ VCES	35A	50A	75A	100A	150A	200A	300A	400A	450A	600A	1000A
1200V	DRIVER : M57159L GATE POWER : VLA106					DRIVER : VLA541 GATE POWER : VLA106	DRIVER : VLA542 (M57962) GATE POWER : VLA106			DRIVER : VLA500	
1700V	NO IGBT	DRIVER : M57962K GATE POWER : UNDER DEVELOPMENT									NO IGBT

<For 5<sup>th</sup> Generation NX series>

IC \ VCES	35A	50A	75A	100A	150A	200A	300A	400A	450A	600A
600V	NO IGBT	DRIVER : M57159L GATE POWER : VLA106				DRIVER : VLA541 GATE POWER : VLA106	DRIVER : VLA542 (M57962) GATE POWER : VLA106			
1200V	DRIVER : M57159L GATE POWER : VLA106			DRIVER : VLA541 GATE POWER : VLA106			DRIVER : VLA542 (M57962) GATE POWER : VLA106		DRIVER : VLA500 GATE POWER : NO NEED	

<For A series> A series : 5th generation Mitsubishi IGBT modules

IC \ VCES	75A	100A	150A	200A	300A	400A	600A
1200V	NO IGBT	DRIVER : VLA541 GATE POWER : VLA106			DRIVER : VLA542 (M57962) GATE POWER : VLA106		
1700V	DRIVER : M57962K GATE POWER : UNDER DEVELOPMENT						NO IGBT

<For NF series> NF series : 5th generation Mitsubishi IGBT modules

IC \ VCES	50A	75A	100A	150A	200A	300A	400A	600A	900A	1400A
600V	NO IGBT	DRIVER : M57159L GATE POWER : VLA106	DRIVER : VLA541 GATE POWER : VLA106		DRIVER : VLA542 GATE POWER : VLA106			NO IGBT		
1200V	DRIVER : M57159L GATE POWER : VLA106		DRIVER : VLA541 GATE POWER : VLA106		DRIVER : VLA542 GATE POWER : VLA106			VLA500		

# IGBT 模块产品对应表 / Selection Map for IGBT Module

## 适用于三菱IGBT组件的产品对应表/ Guide table for MITSUBISHI IGBT module)

<For NFH & NFM series>      NFH & NFM series : MITSUBISHI high frequency switching IGBT modules

< Up to 30kHz use >

IC \ VCES	100A	150A	200A	300A	400A	600A
600V	DRIVER : VLA507 GATE POWER : VLA106	DRIVER : VLA513 GATE POWER : VLA106				DRIVER : VLA502 GATE POWER : NO NEED
1200V	DRIVER : VLA507 GATE POWER : VLA106		DRIVER : VLA513 GATE POWER : VLA106			DRIVER : VLA502 GATE POWER : NO NEED

< Up to 60kHz use >

IC \ VCES	100A	150A	200A	300A	400A	600A
600V	DRIVER : VLA513 GATE POWER : VLA106			DRIVER : VLA502 GATE POWER : NO NEED		NO Driver
1200V	DRIVER : VLA513 GATE POWER : VLA106			DRIVER : VLA502 GATE POWER : NO NEED		

Note) 600V,100A Class → CM100DUS-12F

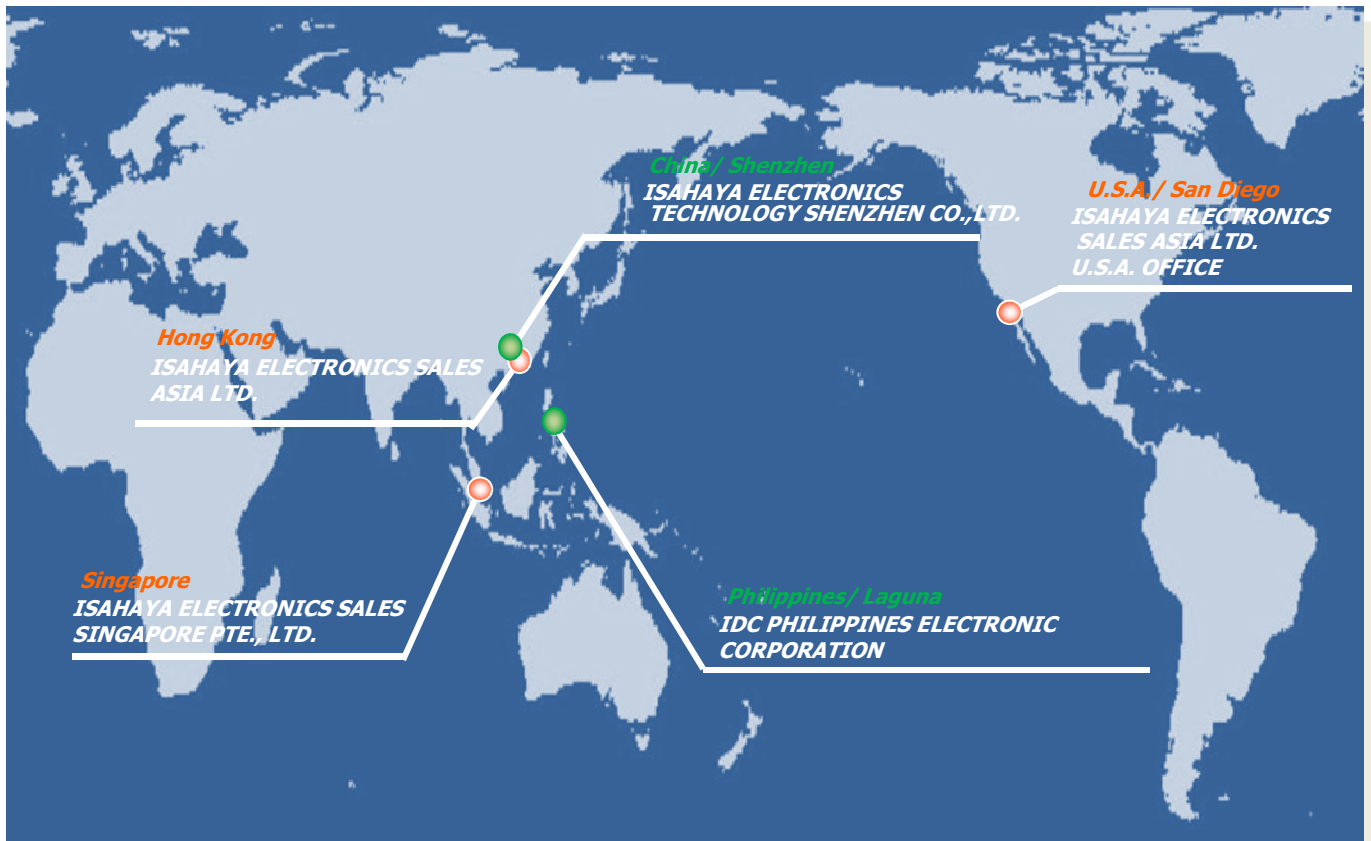
600V,150A Class → CM150DUS-12F

<For F series>      F series : Mitsubishi 4th generation IGBT modules

IC \ VCES	50A	75A	100A	150A	200A	300A	400A	600A
600V	M57160AL							M57161L
1200V	M57160AL					M57161L		

<For H series>      H series : Mitsubishi 3rd generation IGBT modules

IC \ VCES	15A	20A	30A	50A	75A	100A	150A	200A	300A	400A	600A	1000A
600V	M57159L							M57959AL	M57962AL,CL			NO IGBT
1200V 1400V	M57159L					M57959AL	M57962AL,CL				VLA500	



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