

**Technical  
Data Sheet**

**POWER MODULE** DC-DC SWITCHING CONVERTERS

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**PEKING P.R. CHINA  
ORIGIN**

# VHD 100 - 48 S 12

- ①      ②      ③      ④      ⑤

## Ready products

- ① Series №: VHD
- ② Output Power: 100W
- ③ Input Voltage: 48Vdc (12V 24V 48V 110V)
- ④ Output Mode: S=Single D=Dual T=Triple Q=Quad
- ⑤ Output Voltage: 12V (2.5V 3.3V 5V 12V 15V 24V 28V 48V)



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# Product Advantage

## VHD100-48S12

- [1] Quality conform to ISO 9001:2008 and AS9100 certifications.
- [2] Quality approved by GE, PHIPS, OSRAM, TDK, FDK and OTIS.
- [3] Int’L safety at UL, IEC,CUL, VDE, RoHS, FCC, CCC, Directive-compliant and CE standards.
- [4] High quality raw materials. Imported cores (Magnets, TDK, Epcos, Ferroxcube, CSC...).
- [5] Premium Electron components.
  
- [6] Original manufacturers P.R.C. direct export.
- [7] All green products.
- [8] 50K pieces monthly.
- [9] Short lead time. About 30-60 working days.
- [10] Small order acceptable.
- [11] Samples available.
  
- [12] Strong & Safe packages international export standard. Anti-static.
- [13] Comprehensive tests before delivery packages included.
  - 1) 100% aging test for all products.
  - 2) 100% full load burn-in test.
  - 3) Product reliability testing.
  - 4) Thermal design, strong impact test.
  - 5) Meet EMC and safety test.
  
- [14] **Low cost** down by 30~50% for users to reach. The smaller size allows for excellent efficiency maintaining top level performance. Low cost designs with pre-tinned leads for SMC/SMD used to PCB instead of hole mounting.
  
- [15] Using less raw materials, energy sources, PCB spaces, facility, human, time etc. to enhance productivity to make the **automation** realized.
  
- [16] **Customization** for Commercial, Industrial and Military applications as users’ design,size,materials information etc. Best solution for users based on experiences, expertise in designing and manufacturing to meet virtually any users’ specification.

# Product Performance

## VHD100-48S12

- [1] Excellent output voltage regulation
- [2] Fast dynamic response
- [3] High assembly density
- [4] High capacitance and resistances quality
- [5] High efficiency
- [6] High Output voltage accuracy
- [7] High power density
- [8] High raw materials quality
- [9] High reliability
- [10] High stability
- [11] High temperature resistance
- [12] Low leakage current only 0.1mA
- [13] Low no-load loss (less than 0.3W)
- [14] Low output ripple and noise
- [15] Low power consumption
- [16] Low standby power consumption
- [17] Solder joint defects low rate
- [18] Strong anti-interference for Electromagnetic
- [19] Strong anti-interference for Radio-frequency
- [20] Strong performance at high operating frequency
- [21] Strong vibration resistance
- [22] Voltage stabilized source
  
- [23] Super compacted size modular DC-DC Converter
- [24] Ultra-Thin Ultra-Small Miniaturization Design
- [25] Excellent shape design
- [26] Low profile down by 40~60%
- [27] Light weight down by 60~80%
  
- [28] Small package
- [29] Hexahedron metal shield mode
- [30] Open frame ones to fulfill customer's needs
- [31] Fully encapsulated modes including SIP, DIP, SMD, and Chassis Mount
- [32] Output modes including Single, Dual, Dual independent, Triple and Quad roads
  
- [33] Security specifications meet the standards
- [34] Keep exceptional thermal derating
- [35] Medical-grade power supplies meet safety requirements imposed by int'l standards like IEC60601-1
- [36] To meet latest energy saving demand and green power trend, more efficiency level V adapters
- [37] Power-saving
- [38] With power good and fail signal output
- [39] Warranty: 5-year. Normal Life not less than 10years

# Product Function

VHD100-48S12

## GENERAL function

### [1] Isolation

- 1) Security Isolation
- 2) Noise Isolation
- 3) Ground loop elimination

### [2] Protection

- 1) Short-circuit protection
- 2) Over-voltage protection
- 3) Low-voltage protection
- 4) Over-current protection
- 5) Low leakage current Protection
- 6) Overload protection
- 7) Environmental protection
- 8) Over temperature protection
- 9) Green environment-friendly protection.
- 10) Other protection.

### [3] Current Change AC - DC Alternating Current to Direct Current

### [4] Voltage Change

- 1) Step-up of voltage transformation
- 2) Step-down of voltage transformation

### [5] Polarity Inversion

### [6] Voltage Stabilization

- 1) AC mains power supply
- 2) Remote DC supply
- 3) Distributed power supply system
- 4) Battery powered

### [7] Control and Trim function

## DEDICATED function

- [1] PCB mount and chassis mount, to save space of PCB (SMC/SMD).
- [2] Industrial Power Supply.
- [3] Broadband noise filter of input.
- [4] LED driver / LED Power indication.
- [5] SMPS convertors

With temperature ranges from -25 degrees centigrade to 85 degrees centigrade, high isolation barriers, varying switching frequencies. Options include SIP, DIP, SMD, and Chassis Mount. single, dual, dual independent and quad outputs. Continuous short circuit protection, remote on/off, For Automation and Process Control, Avionics and Transport, Communication Systems, Medical, and many other industries.

# Catalogue

## VHD100W

Serial	Model №	Input Voltage (Vdc)	Output Voltage (Vdc)	Output Current (A)
1	VHD100-24S2V5	18~36	2.5	40
2	VHD100-24S3V3	18~36	3.3	30.3
3	VHD100-24S05	18~36	5	20
4	VHD100-24S12	18~36	12	8.3
5	VHD100-24S15	18~36	15	6.7
6	VHD100-24S24	18~36	24	4.2
7	VHD100-24S28	18~36	28	3.6
8	VHD100-24S48	18~36	48	2.1
9	VHD100-48S2V5	36~72	2.5	40
10	VHD100-48S3V3	36~72	3.3	30.3
11	VHD100-48S05	36~72	5	20
12	<b>VHD100-48S12</b>	<b>36~72</b>	<b>12</b>	<b>8.3</b>
13	VHD100-48S15	36~72	15	6.7
14	VHD100-48S24	36~72	24	4.2
15	VHD100-48S28	36~72	28	3.6
16	VHD100-48S48	36~72	48	2.1
17	VHD100-110S2V5	66~160	2.5	40
18	VHD100-110S3V3	66~160	3.3	30.3
19	VHD100-110S05	66~160	5	20
20	VHD100-110S12	66~160	12	8.3
21	VHD100-110S15	66~160	15	6.7
22	VHD100-110S24	66~160	24	4.2
23	VHD100-110S28	66~160	28	3.6
24	VHD100-110S48	66~160	48	2.1

# Specification

VHD100-48S12

- ❖ Output Power 100W DC/DC converter
- ❖ Industry Standard Half Brick
- ❖ High Efficiency
- ❖ Input-Output Isolated DC-DC converter
- ❖ Wide input Voltage 2:1 (4:1)
- ❖ Control and Trim Functions
- ❖ Short Circuit Protection, Automatic Recovery
- ❖ 6-side Metal Shield
- ❖ Aluminum based plate

## Electrical Characteristics <sup>25°C</sup>

### Input Features

Items	Min.	Normal	Max.	Notes
Input Voltage (Vdc)	36	48	72	
Input Under-voltage Lockout (Vdc)	32		36	
Input Current (A)			3.33	Vin=36Vdc
Control		On Off		CNT open/connect to +Vin CNT connect to -Vin
Logic Low (V)			0.4	
Turn on Time (ms)		20		
Start-up Delay Time (ms)		50		

## Electrical Characteristics <sup>25°C</sup>

### Output Features

Items	Min.	Normal	Max.	Notes
Power (W)		100		
Output Current (A)		8.33		
Current Limit Threshold (A)	9.16		11.66	
Output Voltage (Vdc)	11.88	12	12.12	
Trim Range (Vdc)	10.8		13.2	
Setpoint Accuracy			±1%	Vo1
Line Regulation			±0.2 %	Vin=18~36Vdc Io=10A
Load Regulation			±0.5 %	Vin=24Vdc
Dynamic Response			±5%Vo Pk deviation 200µS settling time	50~75% load 50~25% load
Total Remote Sense Compensation (Vdc)		1.2		
Ripple and Noise			150 mVP-P	20MHz Bandwidth
Maximum Capacitor Load (µF)	3300			
Temperature			±0.02%/°C	
Over-Temperature Protection (°C)	100	105	110	aluminum based plate temperature

# Electrical Characteristics <sup>25°C</sup>

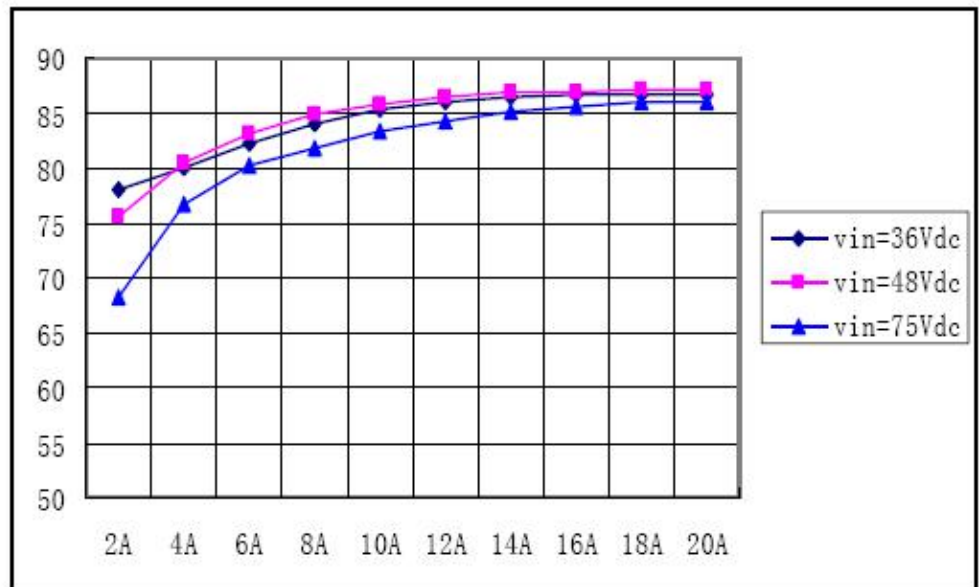
## General Features

Items	Min.	Normal	Max.	Notes
Isolation Voltage	1500 Vdc 1050 Vdc 500 Vdc			Input-Output Input-Case Output-Case
Switching Frequency		300KHz		
Efficiency	85%	87%		Vin=48Vdc Full Load
Pin Solder Temperature			250°C	Wave Solder < 10S
Hand Soldering Time			5s	Iron Temperature:425°C
MTBF		8×10 <sup>5</sup> h		Bellcore TR332,25°C
Case Temperature	-40°C		+100°C	
Storage Temperature	-40°C		+105°C	
Relative Humidity	10%		90%	
Weight (G)		75		Excluding sink
Safety	IEC60950-1/UL60950-1/EN60950-1/GB4943			
Short-Circuit Protection	Continuous Automatic Recovery			

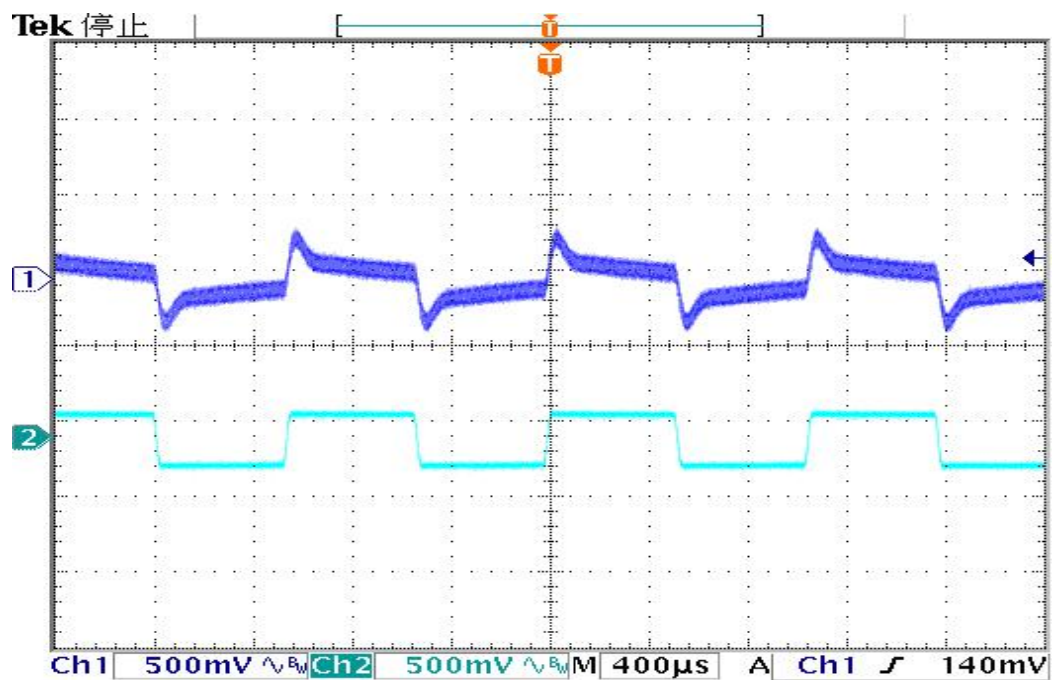
## Characteristic Curves <sup>25°C</sup>

■ *typical*  
Efficiency

%

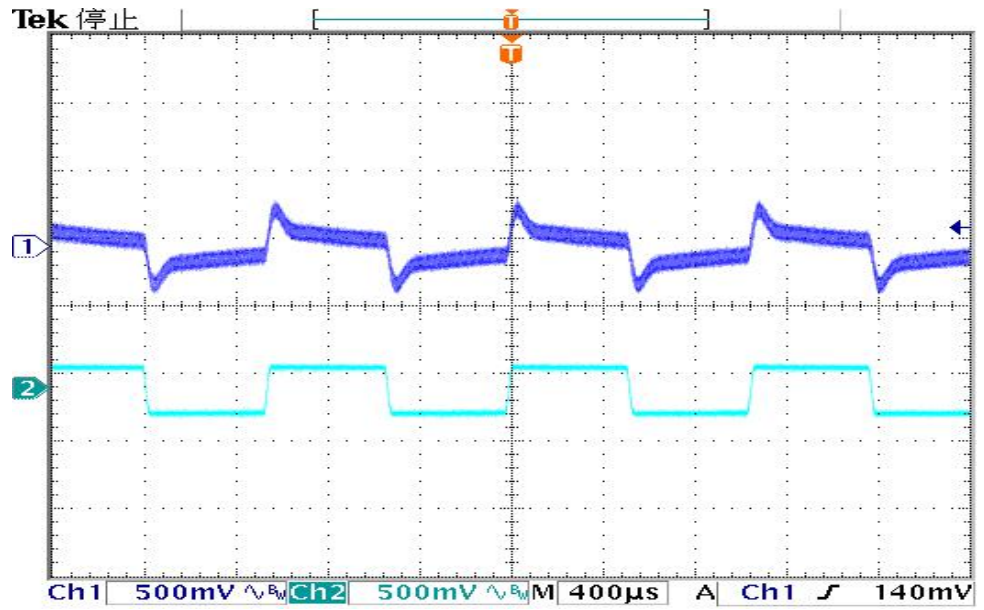


■ *typical*  
Output Ripple  
voltage



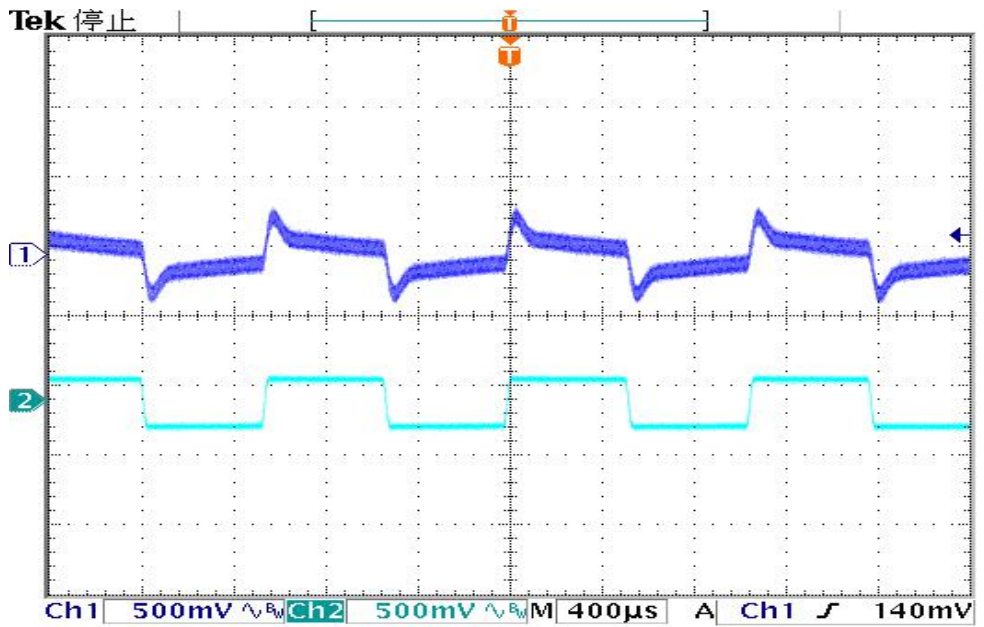
■ typical

Transient Response  
to step load change from  
50%~75%~50%  
 $I_{omax}$

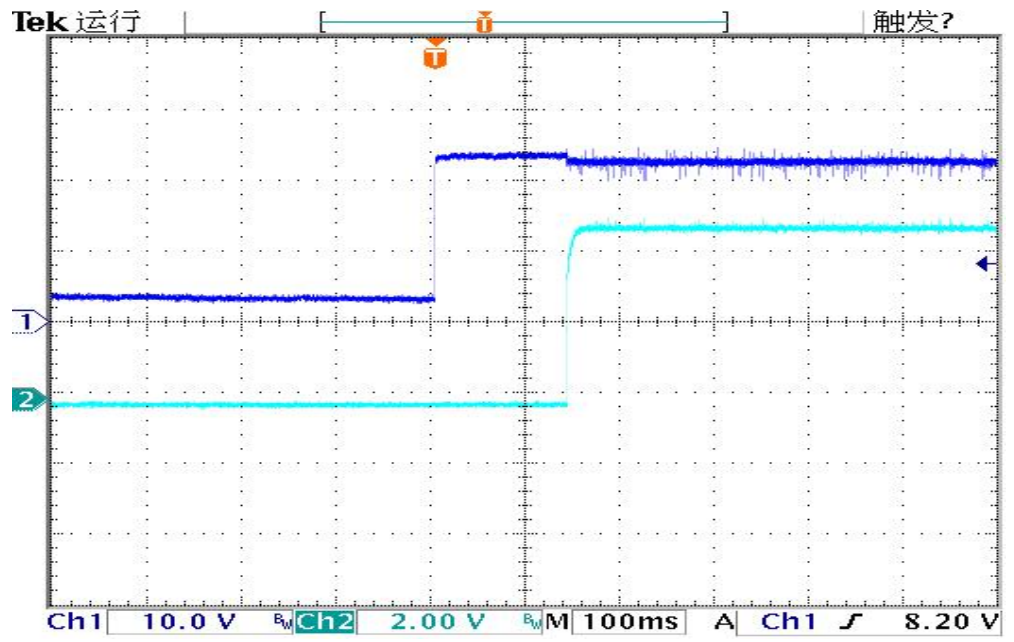


■ typical

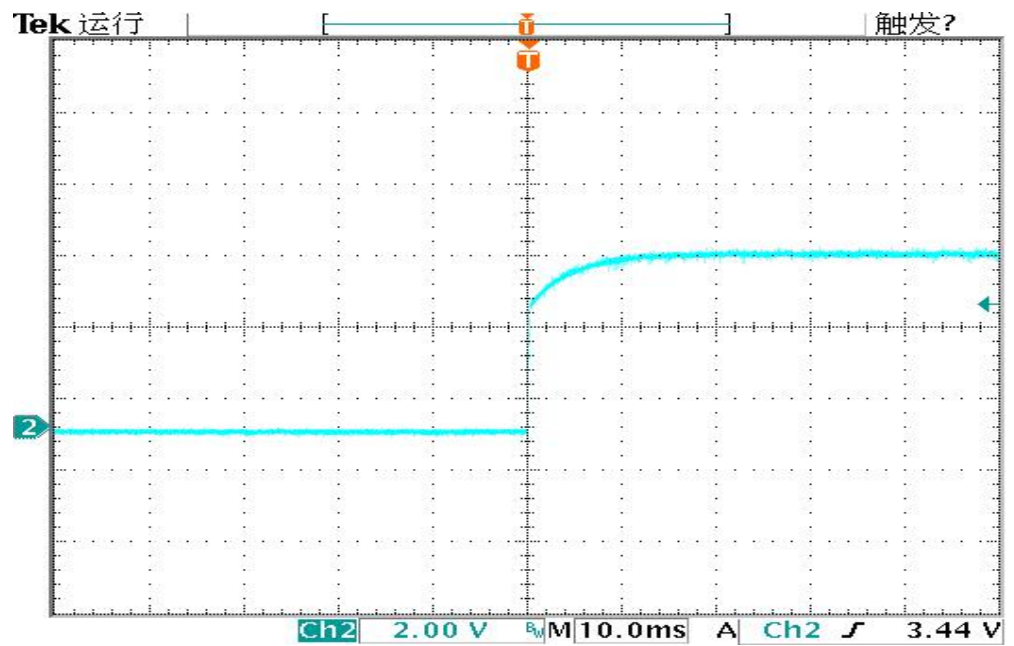
Transient Response  
to step load Change from  
25%~50%~25%  
 $I_{omax}$



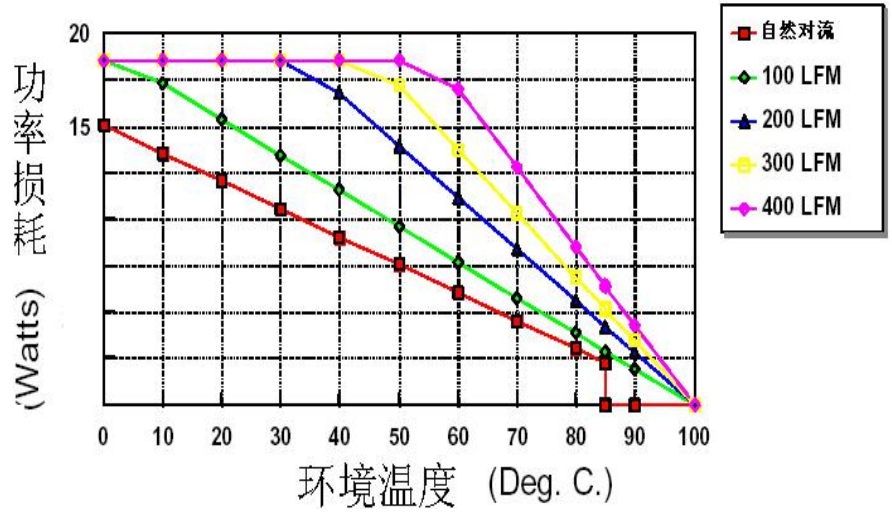
■ typical  
Start-Up Delay  
from power on



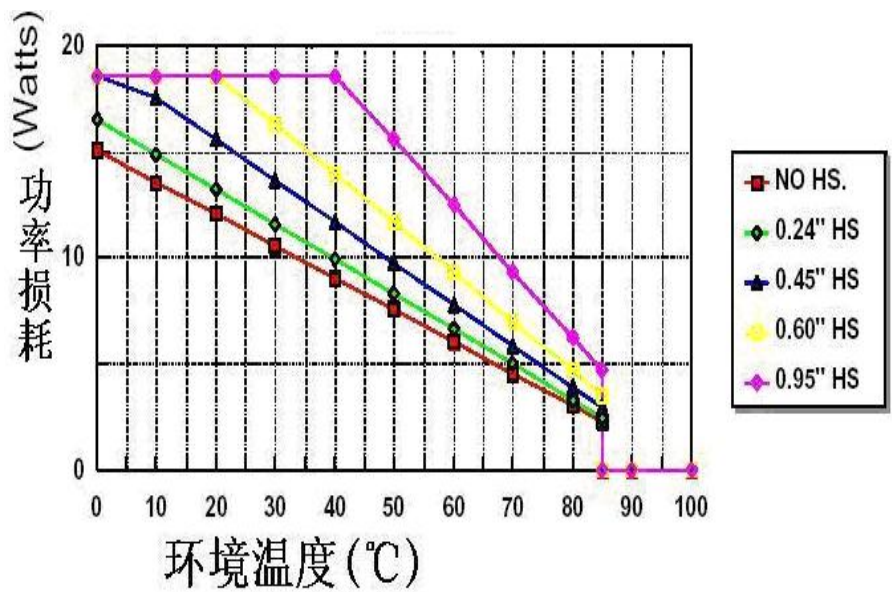
■ typical  
Start-Up Turn On  
from power on



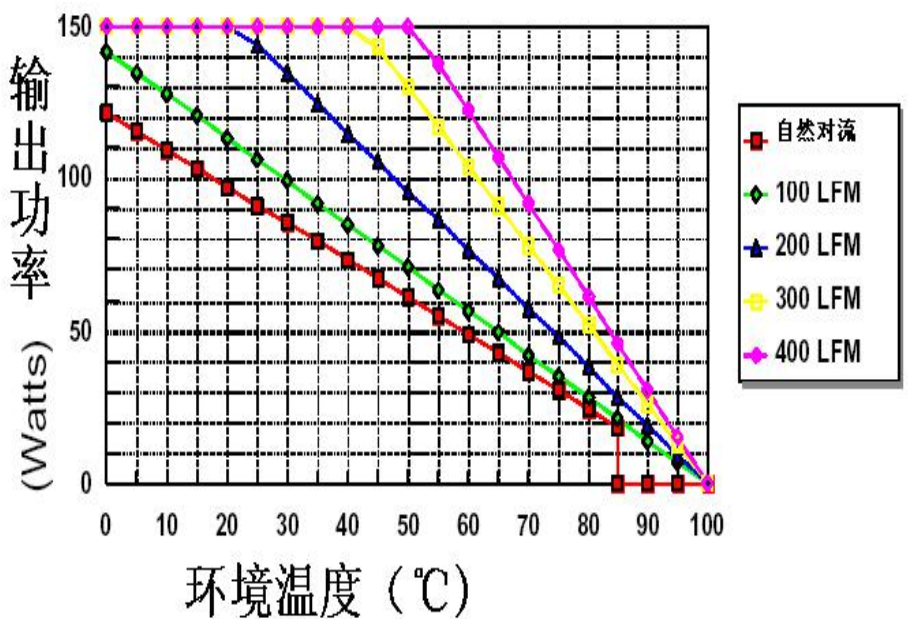
■ Power Dissipation  
VS ambient temperature  
and air flow



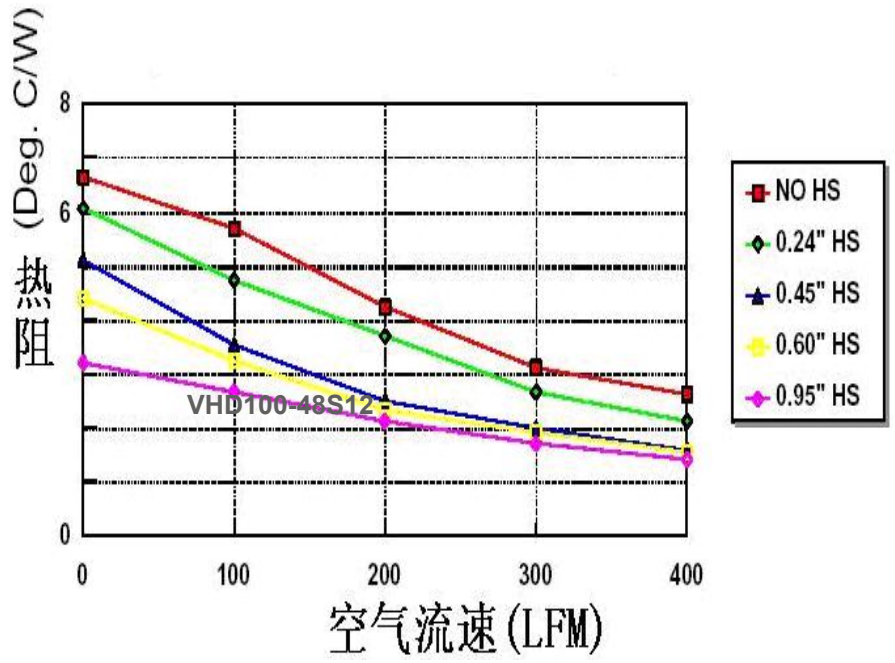
■ Power Dissipation  
VS ambient temperature  
and heat sinks



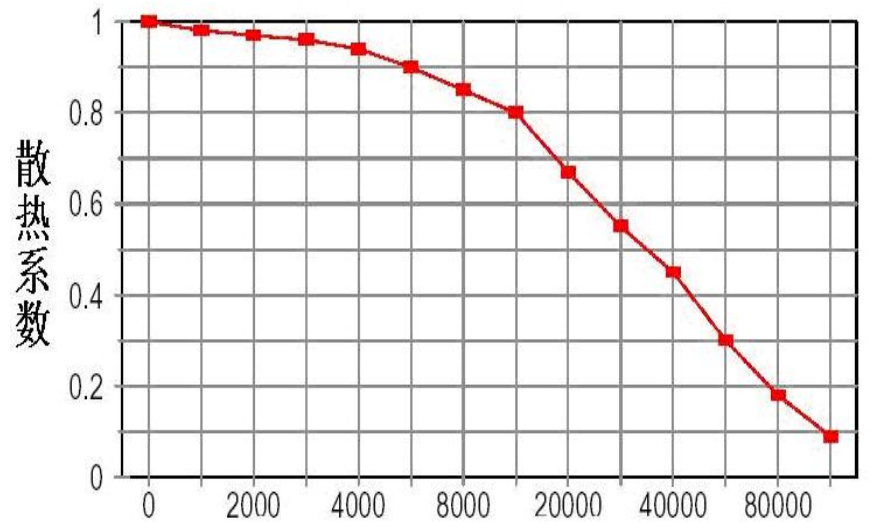
■ Out Power  
VS ambient temperature  
and air flow



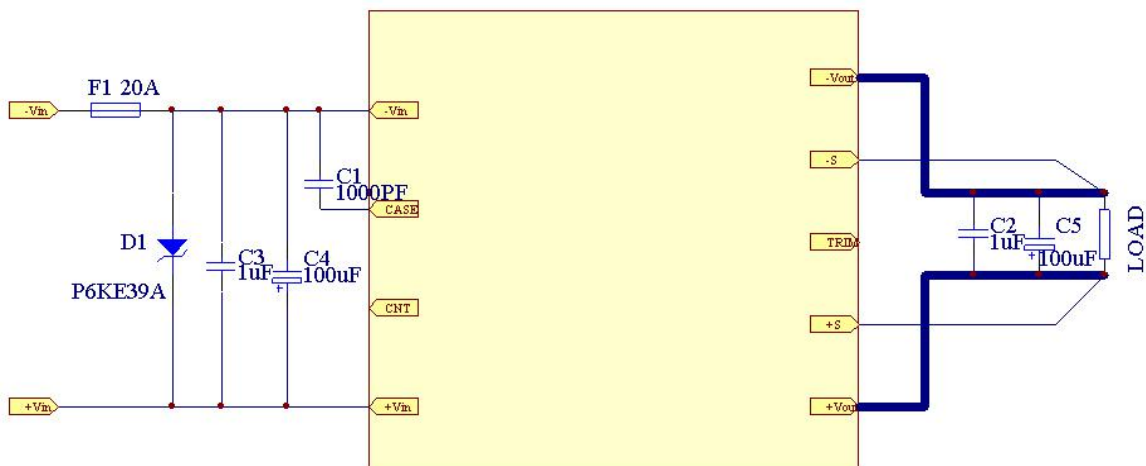
■ thermal resistance  
graph of  
Heat Sinks



■ effect  
of Altitude

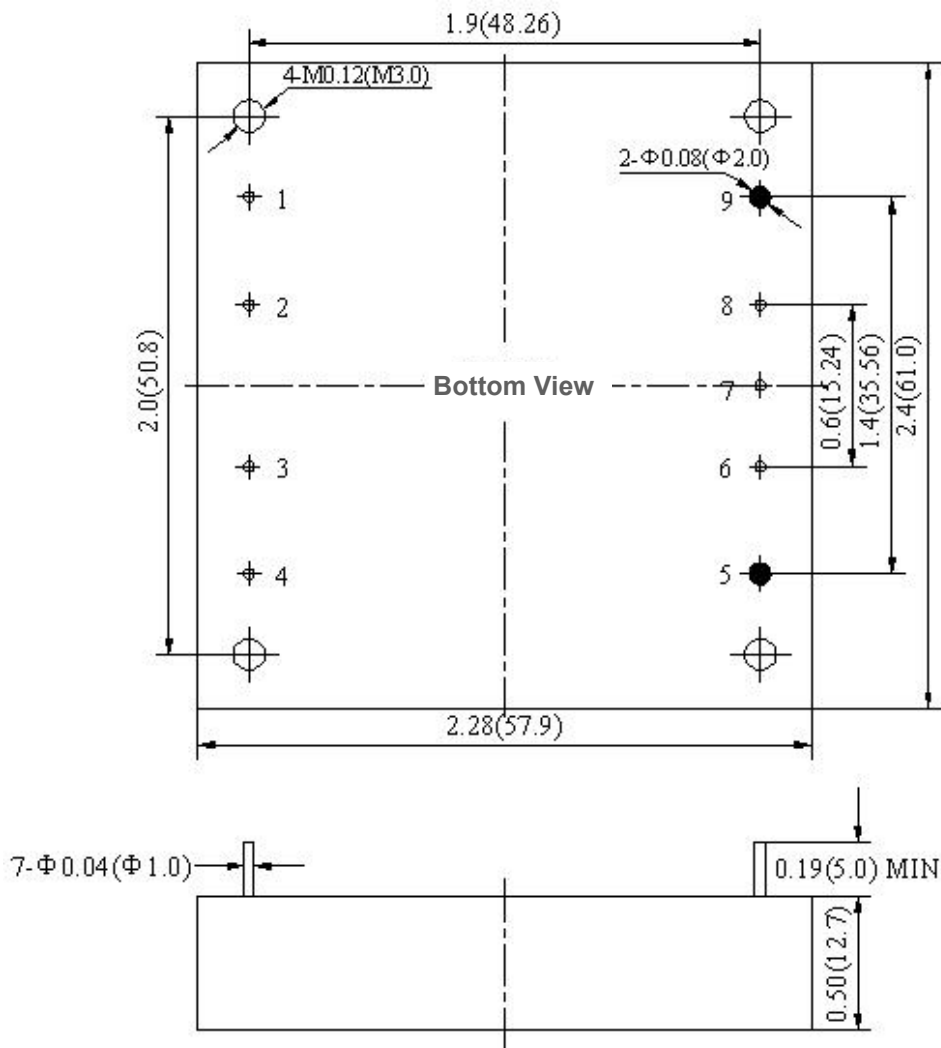


## Typical Application



# Mechanical Drawing

Inch (mm)



## PIN Definition

PIN	1	2	3	4	5	6	7	8	9
Single	-Vin	CASE	CNT	+Vin	+Vo	+S	TRIM	-S	-Vo

NC = no connection pin

NP = no pin

# Production System

VHD100-48S12

- ❖ A professional manufacturer for 15 years more.
- ❖ Three factories covering 38,000 m<sup>2</sup>.
- ❖ Ten R&D famous Engineers/Specialists, 20-year experiences. Skillful and Experienced 500 employees. Focus on customer's needs, with high-quality high-efficiency management to provide high-quality service and products.
- ❖ 100% Guarantee quality. Manufactured under strict controls.
- ❖ More than 10 years experiences for RJ45, RJ11, RJ12.
  
- ❖ To care for the health and safety of employees as corporate responsibility, all production activities must give priority to employee's safety and health.
- ❖ To control the production process effectively and abide by the law.
- ❖ To save resources, lower energy consumption.
- ❖ To reduce environmental pollution caused by the production.
- ❖ To continuous improvement, sustainable operation.

## Impregnation Processes

INDUCTORS  
TRANSFORMERS  
CONVERTERS

- step 1. **Preparation of the components in the machine vats of mixture**  
 Degassing of the resin and the flexibilizer and colouring in the vats of mixture during 4 hours to a pressure of 1mbar. This process extracts the air that contains the mixture inside the vat, mixing sayings components during the time specified previously, assuring the perfect condition for the later process. Degassing of the hardener for 4 hours to a pressure of 1mbar, the same process as procedure previously described.
- step 2. **Warm-up of the component**  
 Process of warm-up of the component and plastic before resin for 3 hours to 75o. This process will improve the penetration of the resin and it prevents that in the process of polymerization there are big differences of temperature, avoiding breaks in the plastic and ensuring the adherence of the resin with the plastic.
- step 3. **Impregnation**  
 Temperature of the mixture between 50-60°  
 Emptiness of the cabin of impregnation

This is the process of filling of the component with the mixture of already prepared resin, the temperature of the mixture avoids contractions and the process of emptiness extracts all the air of cabin ensuring that do not remain hollow of air inside the piece, since on having treated itself about an electrical component with high tensions air residues cannot stay inside the resin, this process assures completely that do not produce air bubbles.

step 4. **Process of drying**

This process will dry the resin up to turning it in occurred. Once the process is completed the component will be totally protected and will assures its reliability.

step 5. **Process of staggered dried**

1st stage - 2.5 hours of duration to 80°

2nd stage - 4.5 hours of duration to 95°

step 6. **Process of cooling**

Once finished the process of drying the components were left to cool at environment temperature before going on to the electrical controls of quality of 100 %.

**Controlling the whole production is to avoid possible problems such as:**

- a. Adherence of the resin is absent with the plastic.
- b. Air bubbles inside the component.
- c. Fissures.
- d. Penetration of the resin is absent

# Raw Material

comparison table for parts

Brand/Material	ACME	P2 Obsolete	P4	P4I	P42	P43 New	P44 New	P46	P5	P5I	P52	N2	N4	N42	N43 New	
	TDK	PC30/PC32	PC20	PC44	PC90			PC95		PC50		DN45				
	NICERA	NC-1M	NC-2H	2H-M4/ 2H-M5	BM27/ BM30			3H	2M	5M		4B	2B	3B		
	FDK (FUJI)	6H10	6H10/6H12 0	6H40/6H41				6H42		7H10						
	HITACHI		ML24D	ML25D			MB19D	ML30D/ ML32D		ML14D		MQ40D	MQ25D			
	NEC-TOKIN		BH2	BH1					BH5	B40						
	JFE	MB1	MB3	MB4				MBT1		MC2						
	TOMITA	2E6	2G.8	2E8					2H8			2H5		2N3		
	天通(TDG)	TP3	TP4	TP4A	TP4S	TP4F		TK,TP4W		TP5,TP5B		TD5A	TF3	TD5A		
	東磁(DMEGC)	DMR30	DMR40	DMR44	DMR24		DMR90	DMR95	DMR55 DMR56	DMR50 DMR50B		DMR72	DMR70	DMR71		
	FERROXCUBE (PHILIPS)		3C30&3C34, 3C90	3C94, 3C96	3C92	3C93		3C95	3F3	3F35		3E28	3B7	3B46, 355	3D3	
	EPCOS (SIEMENS)	N41	N67, N72	N87, N97	N92				N87	N49		T57	N48	N45	M33	
	KOLEKTOR MAGMA (ISKRA)	25G	45G	65G	55G				35G	75G, 76G	76G		16G, 26G	27G	10G	
	VOGT	F1324	8	F1325						F1327						

# Application

**Typical used to,**

- [1] Beauty Apparatus
- [2] Broadcasting Equipment
- [3] Civilian Industries
- [4] Communication Devices
- [5] Consumer Electronics
- [6] High-End Lighting
- [7] Home Equipment
- [8] Industrial Control Applications
- [9] Instruments & Meters
- [10] Intelligent Home
- [11] LED driver
- [12] Medical Equipment
- [13] Mixed Voltage Designs
- [14] Office Equipment & Industries
- [15] Optical Transceiver
- [16] Physiotherapeutic Instrument
- [17] Power Supplies Field
- [18] Railway power supply modules
- [19] SMPS convertors

**Main Fields used to,**

- [1] 10kva inverter
- [2] 110v dc motor
- [3] 110v dc power supply
- [4] 12 volt 10 amp power supply
- [5] 120v 60hz ac adapter
- [6] 120v dc motor
- [7] 12v adapter
- [8] 12v adapter ea4114120042g
- [9] 12v dc brushless fan motor
- [10] 12v dc brushless motor
- [11] 12v dc fan motor
- [12] 12v dc led light
- [13] 12v dc motor b2609
- [14] 12v dc water pump
- [15] 230v ac 14v ac transformer
- [16] 24v ac adapter transformer
- [17] 24v dc motor
- [18] 24v dc water pump
- [19] 3 phase inverter 30kw
- [20] 36v ac adapter
- [21] 48v ac dc converter

- [22] 4g module
- [23] 5v 3a power adapter
- [24] 5v dc motor
- [25] 6pdt toggle switch
- [26] ac automatic voltage regulator
- [27] ac dc converter
- [28] ac dc power adapter
- [29] ac motor blender
- [30] ac power bank
- [31] ac power cord
- [32] acegoo wireless light switch kit
- [33] art supply
- [34] atx power supply
- [35] automatic transfer switch
- [36] bluetooth adapter, bluetooth module, bluetooth switch
- [37] c adapter
- [38] camera module
- [39] car power inverter
- [40] catalytic converter
- [41] chuck wireless power supply 15w
- [42] class 2 power supply
- [43] cmo camera module
- [44] craft supply
- [45] dab tuner module
- [46] dc blower wx12038
- [47] dc brushless motor
- [48] dc dc converter
- [49] dc fan
- [50] dc jack
- [51] dc motor 6000 rpm, dc motor brushle, dc motor dual shaft, dc motor geared motor
- [52] dc plug
- [53] dc power jack
- [54] dimmer switch
- [55] display module
- [56] driver usb wireless adapter
- [57] duplicator power supply
- [58] electric switch
- [59] electrical switch socket
- [60] ethernet switch
- [61] fake catalytic converter
- [62] full auto glock switch
- [63] glock switch
- [64] gps module
- [65] gs ac adaptor
- [66] gsm module
- [67] gsm to landline converter
- [68] guangdong mobile power supply
- [69] hd av switch

[70] hdmi switch  
[71] hotel supply  
[72] hybrid solar inverter  
[73] industrial power supply  
[74] infrared sensor switch hzk 218c  
[75] intelligent switch  
[76] inverter generator  
[77] inverter off grid  
[78] iot module  
[79] ipod shuffle bluetooth adapter  
[80] keyboard switch  
[81] kvm switch  
[82] laptop ac adapter  
[83] laptop adapter  
[84] lcd module  
[85] led module, led power supply  
[86] light switch  
[87] lightning adapter  
[88] lte module  
[89] macbook adapter  
[90] media converter  
[91] medical power supply  
[92] membrane switch  
[93] micro switch  
[94] mobile energy storage power supply  
[95] mobile phone camera module  
[96] mobile power supply  
[97] n20 dc motor  
[98] network switch  
[99] nintendo switch controller  
[100] off grid solar inverter  
[101] office supply  
[102] party supply  
[103] poe switch  
[104] portable power  
[105] portable power supply energy  
[106] power adapter plug  
[107] power amplifier  
[108] power bank  
[109] power cable  
[110] power case  
[111] power cord  
[112] power inverter  
[113] power jack  
[114] power lamp  
[115] power plug  
[116] power socket  
[117] power station

[118] power strip  
[119] power tool  
[120] power transformer  
[121] powerline adapter  
[122] private label pet supply  
[123] push button switch  
[124] reed switch  
[125] rocker switch  
[126] rotary switch  
[127] school supply  
[128] sfp module  
[129] slide switch  
[130] smart switch  
[131] solar inverter  
[132] solar panel module  
[133] sound module  
[134] switch controller  
[135] switch ethernet oem  
[136] switch gamepad  
[137] switch socket  
[138] switching power adapter  
[139] switching power supply  
[140] tact switch  
[141] tactile switch  
[142] tft lcd module  
[143] thunderbolt to sata adapter  
[144] timer switch  
[145] toggle switch  
[146] touch switch  
[147] travel adapter  
[148] travel adapter uk  
[149] type c adapter  
[150] ue150112hkls1-p ac-plug  
[151] universal travel adapter  
[152] ups power supply  
[153] usb adapter  
[154] usb camera module  
[155] usb serial adapter driver  
[156] vehicle power supply  
[157] wall switch  
[158] waterproof micro switch  
[159] wifi adapter, wifi module, wifi switch  
[160] wireless mobile power supply 15w  
[161] zigbee power switch



# Cooperation International

- [1] **ODM** cooperated
- [2] **OEM** cooperated
- [3] **IMPORT** raw materials some.
- [4] **EXPORT** finished commodities T. Inductors, Converters.
- [5] **INVESTMENTS** introduction of foreign capital.
- [6] **INVESTMENTS** establishment of factories abroad.

# Product Exhibition

## VHD series

			
VHD50-24S12	VHD50-24S24	VHD50-48S05	VHD50-48S24
			
VHD50-110S15T	VHD50-110S24	VHD50-24S12-W	VHD50-24S24-W
			
VHD60-30S05	VHD60-110S15S	VHD75-24S12	VHD75-24S15
			
VHD75-48S24	VHD100-24S12	VHD100-24S15	VHD100-24S24