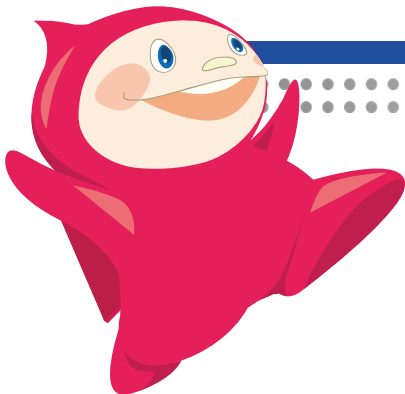


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# TAMURA Power Modules ?



The TAMURA logo features the word "TAMURA" in a bold, blue, sans-serif font. A red swoosh or arc is positioned above the letter "A", starting from the top of the "A" and curving over to the right.

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## Five Key advantage

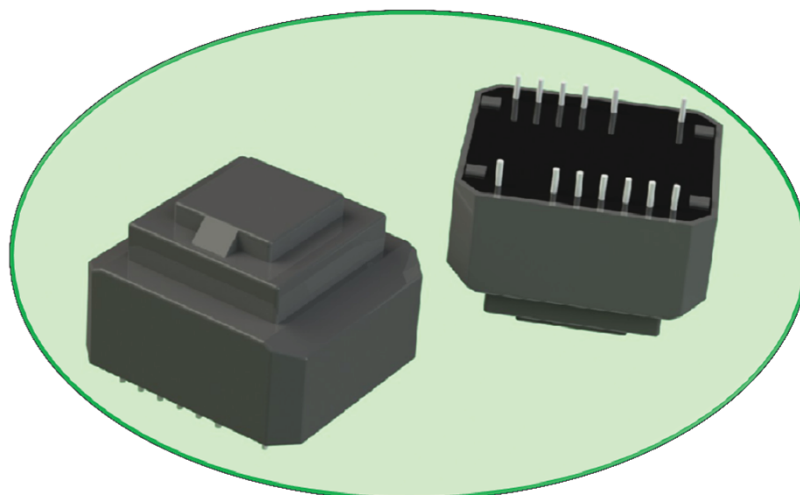
① **Improve Efficiency**

② **Improve Noise**

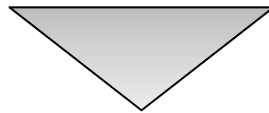
③ **Improve SCM**

④ **Improve Form-Factor**

⑤ **Improve time to market**



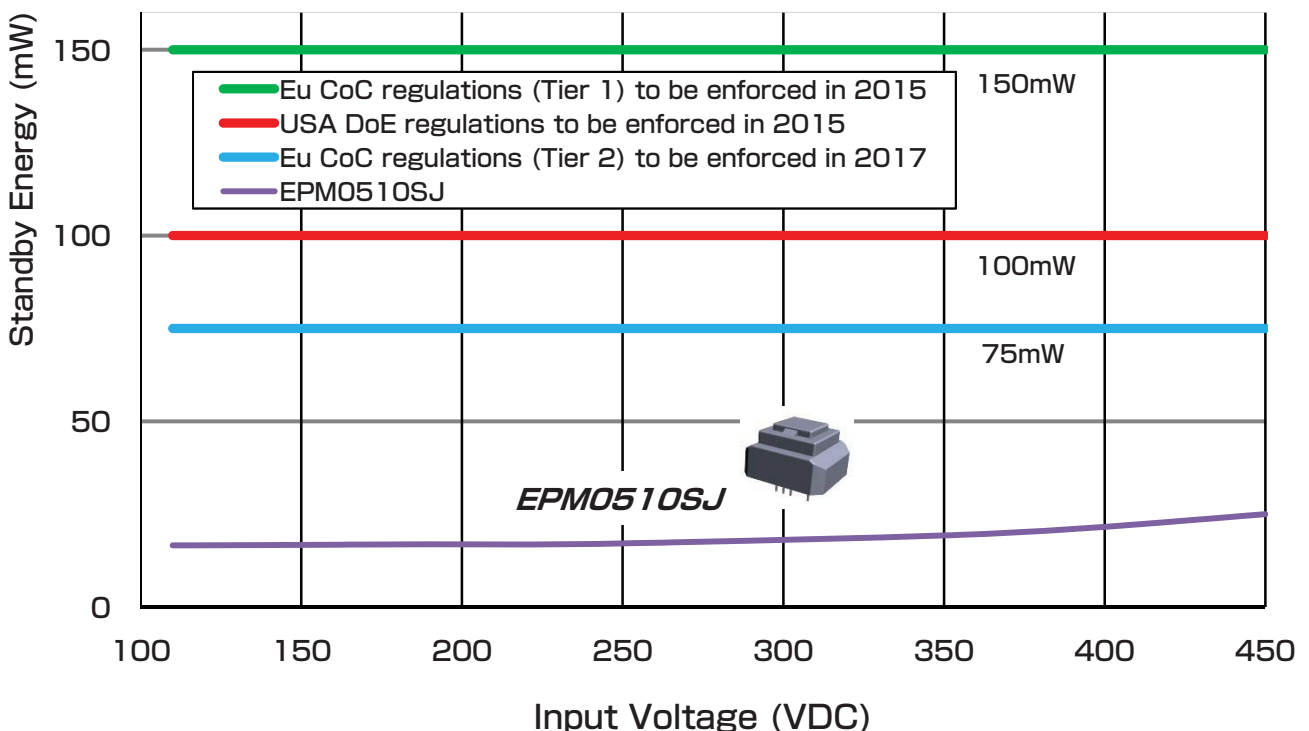
## Concerns about Energy Efficiency...



## Solution !!

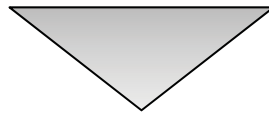
### ① Improve Stand-by Power

#### Compliance with standby energy regulations (Example: EPM0510SJ)



Click "► Tamura's web site" for target block diagrams and other useful information!

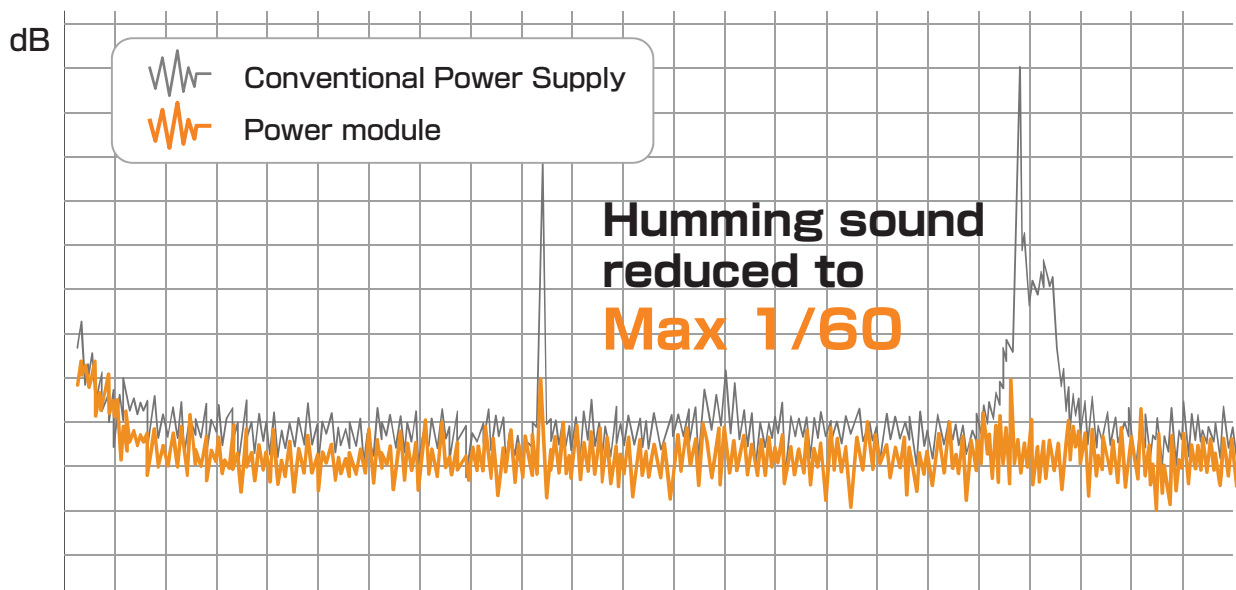
## Concerns about Noise and Vibration Sound ...



### Solution !!

## ② Improve Audible Noise level

Humming sound is reduced by Tamura's unique structure.



20Hz

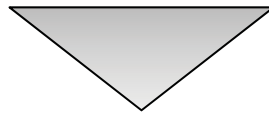
Audio frequency range

20kHz

(Comparison with Tamura's previous Power Module)

Visit "Ways to Reduce Power Supply Noise" on Tamura's web site for noise reduction solutions and more information!

## Component Management is Troublesome ... Concerns about Component Management ...



### Solution !!

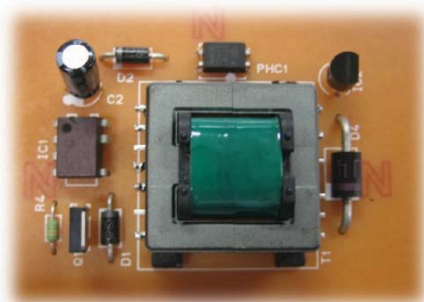
## ③ Easy Management

(Example: Substrate sample)

	Primary side	Replaced components	Secondary side	TOTAL
<b>EPM</b>	<b>6</b>	<b>1</b>	<b>3</b>	<b>10</b>
Discrete component	26	1	11	38

When discrete components are used,  
**29** components need to be prepared.

When the power supply module is used,  
**1** component needs to be prepared!



A comparison of  
the number of  
components

**29 : 1**



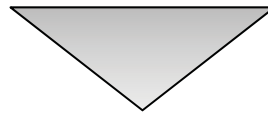
(Comparison with Tamura's previous Power Module)

## Concerns about Size ...

Mounting space is limited.



Substrates should be as small as possible...  
What should we do ...?

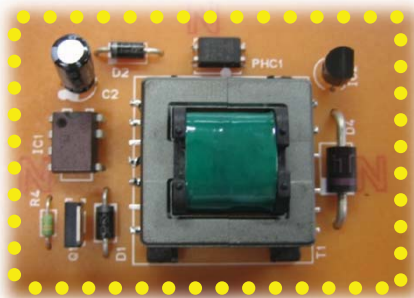


**Solution !!**



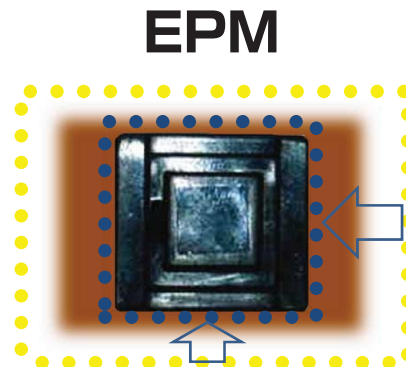
### ④ Compact Form-Factor

Discrete components having the same functions as EPM



S=38mm X 53mm  
= **2014mm<sup>2</sup>**

Area ratio  
**2:1**



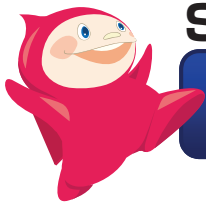
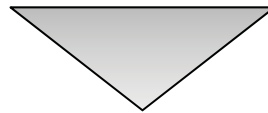
S=33mm X 31mm  
= **1023mm<sup>2</sup>**

50% Less!!

(Comparison with Tamura's previous Power Module)

Visit Tamura's web site for mounting methods and other details!

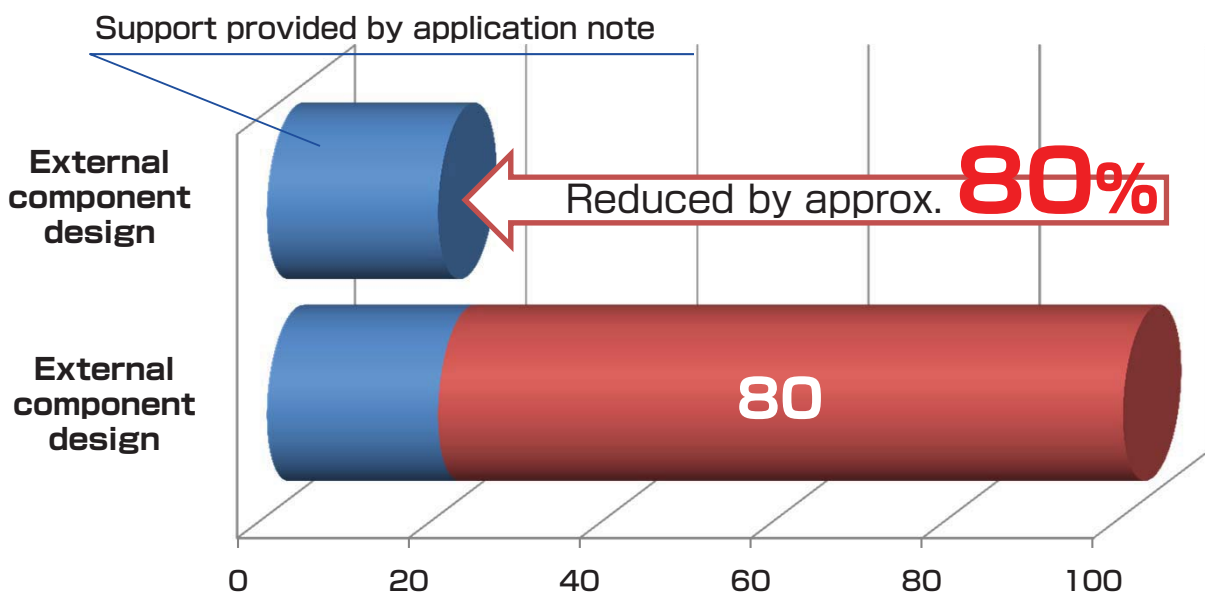
## Concerns about Time Required for Development/Design ...



## Solution !!

### ⑤ Facilitates Circuit Design

Development/design Human Resource can be reduced.



Transformer design, circuit design, control IC evaluation, heat release design, substrate design, EMI/EMC evaluation, application for approval of safety standards, component/material arrangement for individual prototypes, etc.

(Comparison with Tamura's previous Power Module)

Visit Tamura's web site for application note!



## Product Lineup

### SPM



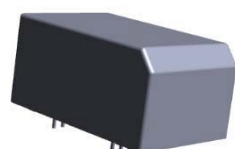
Part No	Input voltage	Output voltage	Rated load	Output tolerance	RoHS	Status
SPM0307SJ	DC110~420V (AC85~276V & PFC)	3.3V	0.7A	±5%	OK	development
SPM0507SJ		5V	0.66A		OK	sample
SPM1203SJ		12V	0.28A		OK	sample
SPM1502SJ		15V	0.24A		OK	sample
SPM2402SJ		24V	0.15A		OK	development

### EPM



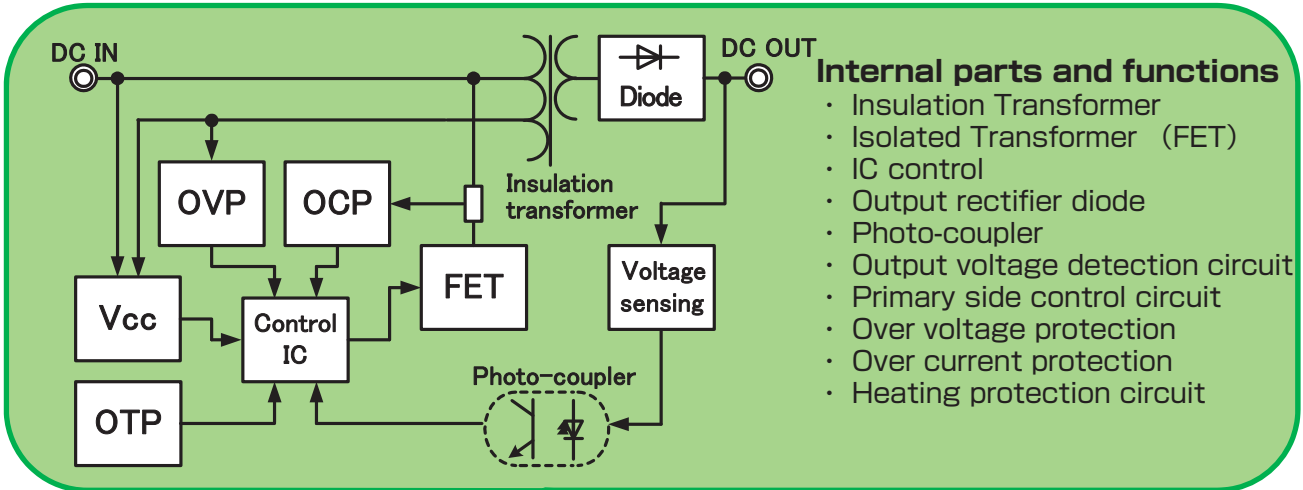
Part No	Input voltage	Output voltage	Rated load	Output tolerance	RoHS	Status
EPM0310SJ	DC110~450V (AC85~276V & PFC)	3.3V	1A	±5%	OK	mass production
EPM0510SJ		5V	1A		OK	mass production
EPM1205SJ		12V	0.5A		OK	mass production
EPM1210SJ			1A		OK	mass production
EPM1505SJ		15V	0.5A		OK	sample
EPM1510SJ			1A		OK	mass production
EPM2405SJ		24V	0.5A		OK	mass production

### BPM

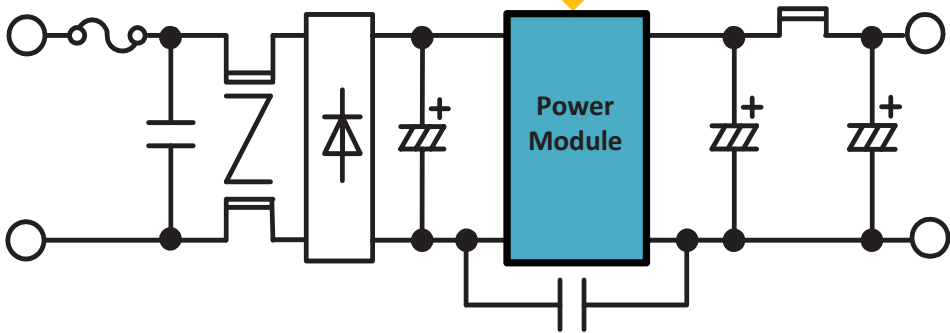


Part No	Input voltage	Output voltage	Rated load	Output tolerance	RoHS	Status
BPM0390SJ	DC110~420V (AC85~276V & PFC)	3.3V	9A	±5%	OK	development
BPM0580SJ		5V	8A		OK	development
BPM1234SJ		12V	3.4A		OK	development
BPM1527SJ		15V	2.7A		OK	development
BPM2417SJ		24V	1.7A		OK	sample

# Functions

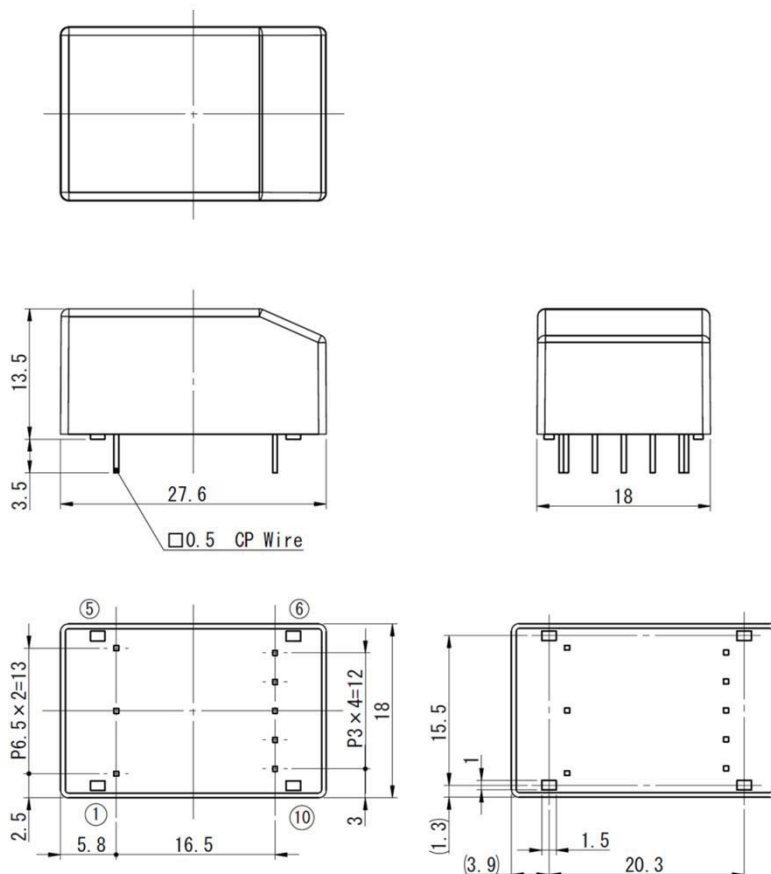
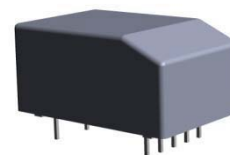


Switching Power Supply can be easily created



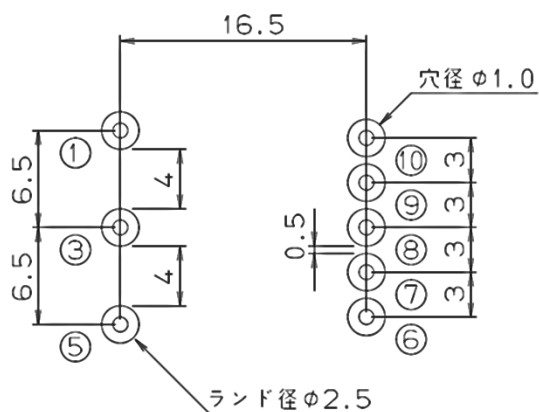
## SPM External Dimensions

## SPM



Note :1. The dimensional tolerance without directions is  $\pm 0.5$ mm.

## SPM Recommended Hole Diameter/Land Dimensions



\* Numbers in circles indicate pin numbers.

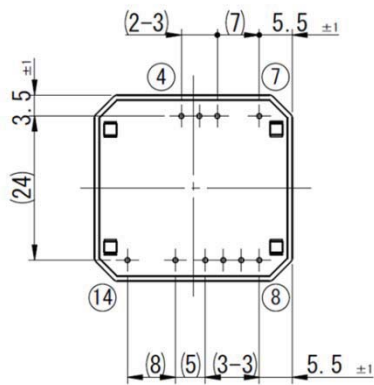
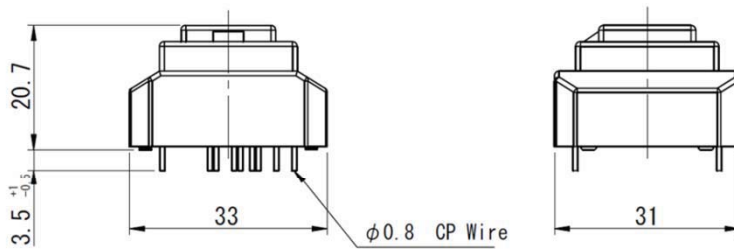
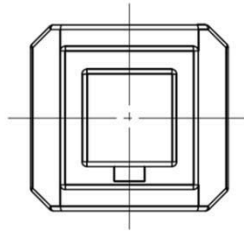
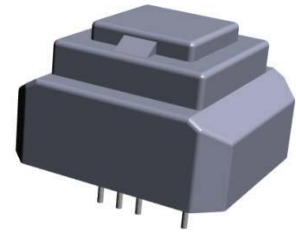
Component side

Unit : mm

## EPM External Dimensions

(FE19S Type)

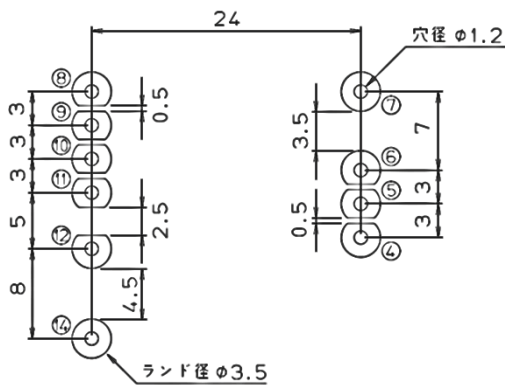
# EPM



Note :1. The dimensional tolerance without directions is  $\pm 0.5\text{mm}$ .

## EPM Recommended Hole Diameter/Land Dimensions

(FE19S Type)

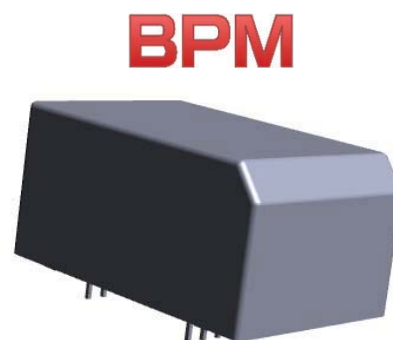
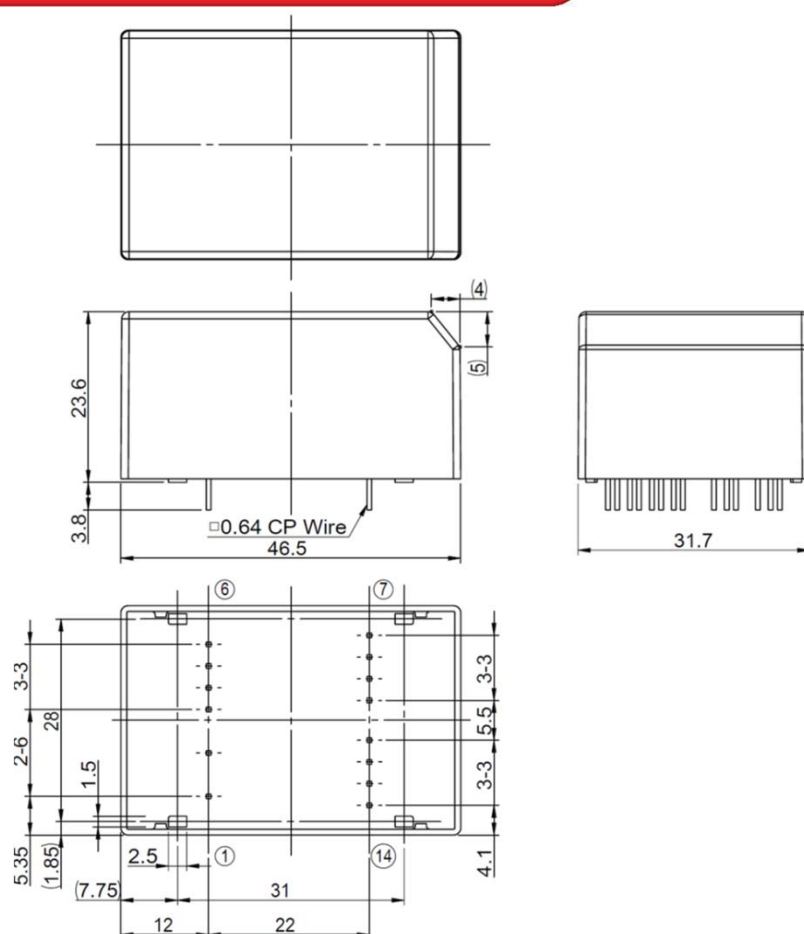


\* Numbers in circles indicate pin numbers.

Component side

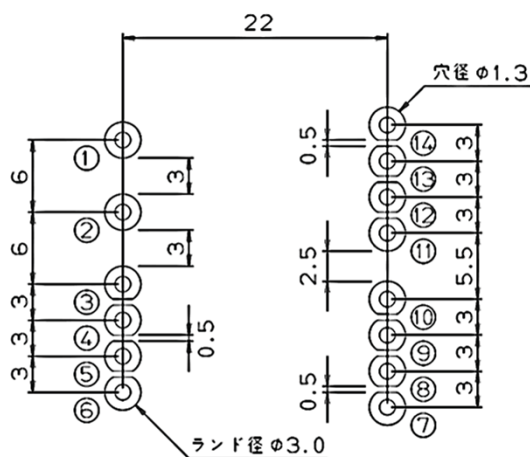
Unit : mm

## BPM External Dimensions



Note :1.The dimensional tolerance without directions is  $\pm 0.5$ mm.

## BPM Recommended Hole Diameter/Land Dimensions



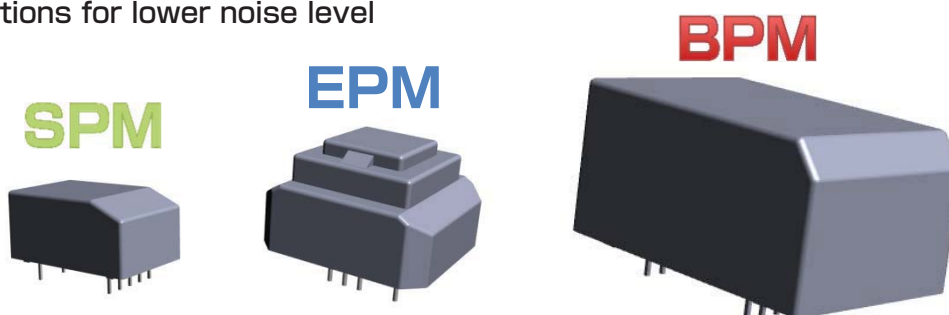
\* Numbers in circles indicate pin numbers.

Component side

Unit : mm

## Features

1. Easy to design compact AC/DC due to small number of external components
2. Potential design evaluation time savings; EMC, open/short circuit testing, & etc.
3. Enables significant reduction in power consumption of no-load and light load
4. Corresponding world wide input and PFC output voltage
5. Unique Tamura design insures significant reduction in 'buzz' under light-load conditions for lower noise level



## Applications

Consumer electronics, Information processing equipment, AV equipment ,Stand-by Power



REFRIGERATOR



MICROWAVE OVEN



AV



OA



AIR-CONDITIONER



TOILETARY



SMART METER



LED LIGHTING



UPS

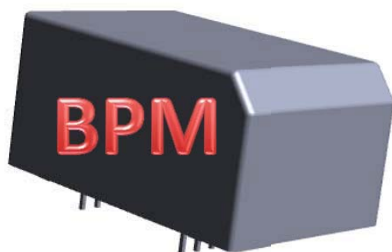
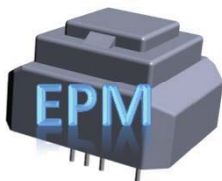


GENERAL-INVERTER



PV INVERTER

## Example of Application





<http://www.tamura-ss.co.jp/electronics/en/>



**Thank you!!**