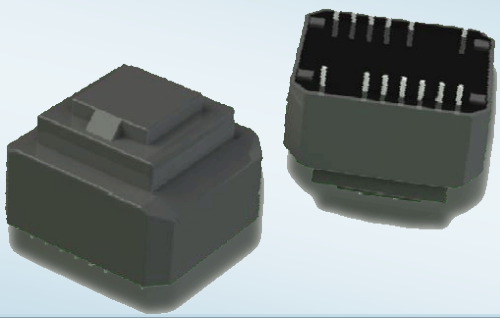
Tamura Power Module ~ Five Improvements

1. Standby Power	- Complied to Energy Star
2. Noise Reduction	- Reduced up to 1/10
3. Availability	- 1 Power Module /less material
4. Compact Form	- 1/2 size than discrete
5. Facilitates Circuit Design	- 80% deduct of design time

Improvements

Power Modules



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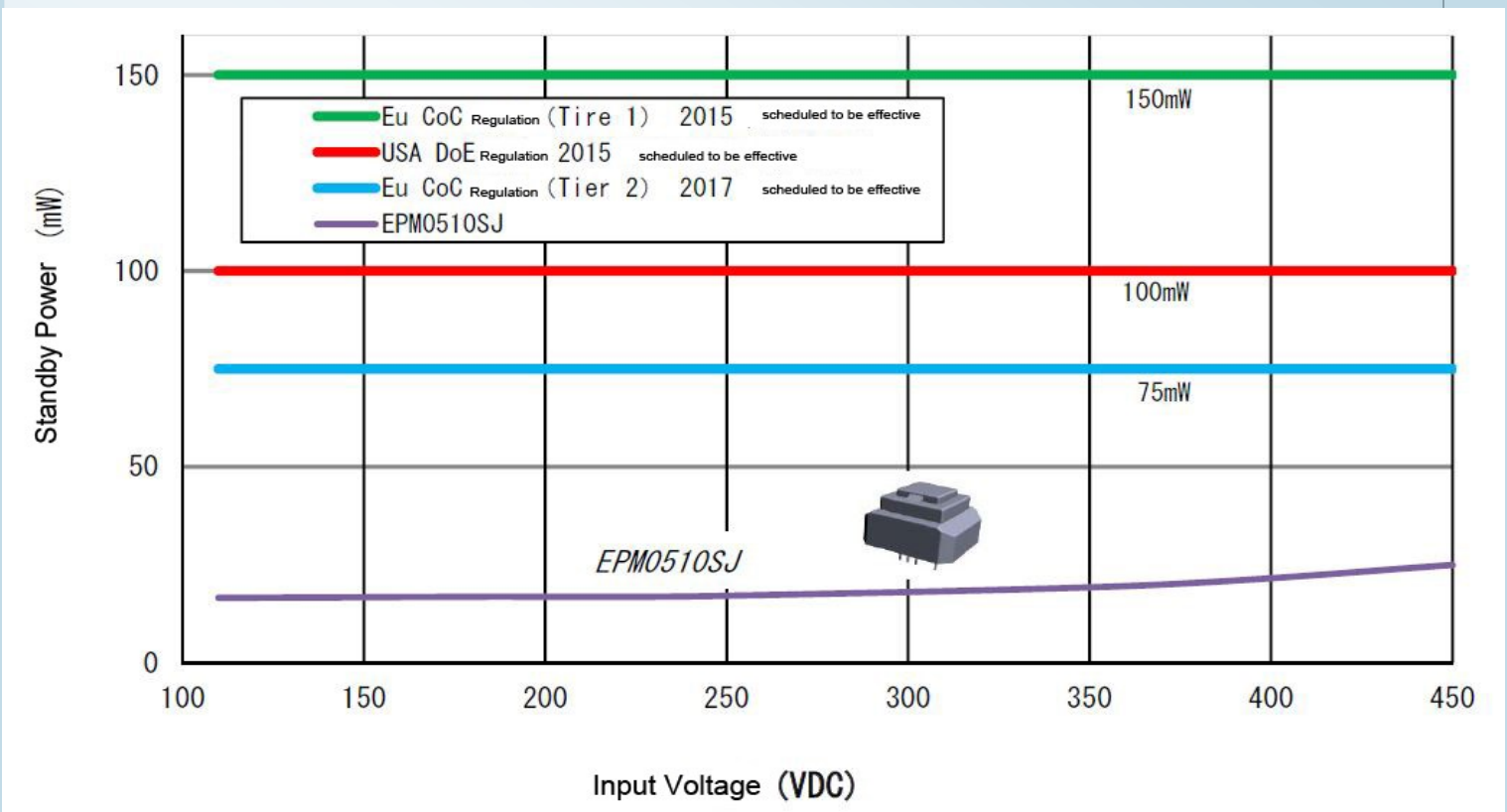

[Standby Power]

Power Modules

Complied with energy star (standby power requirements)

Improved Efficient Standby Power

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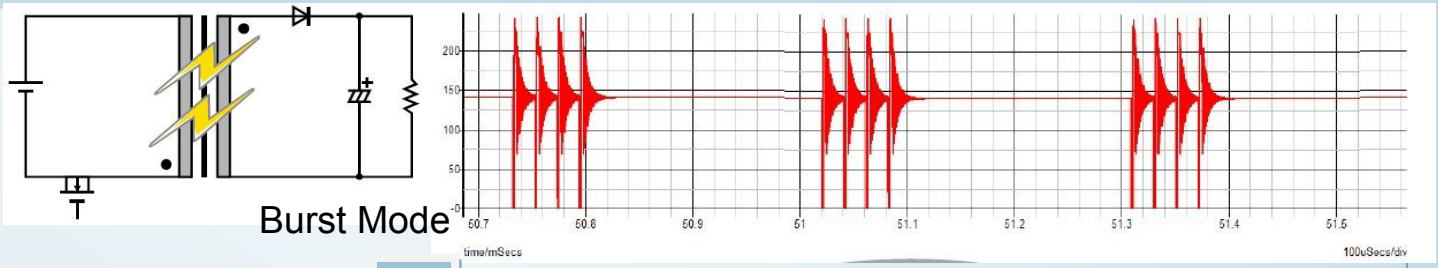

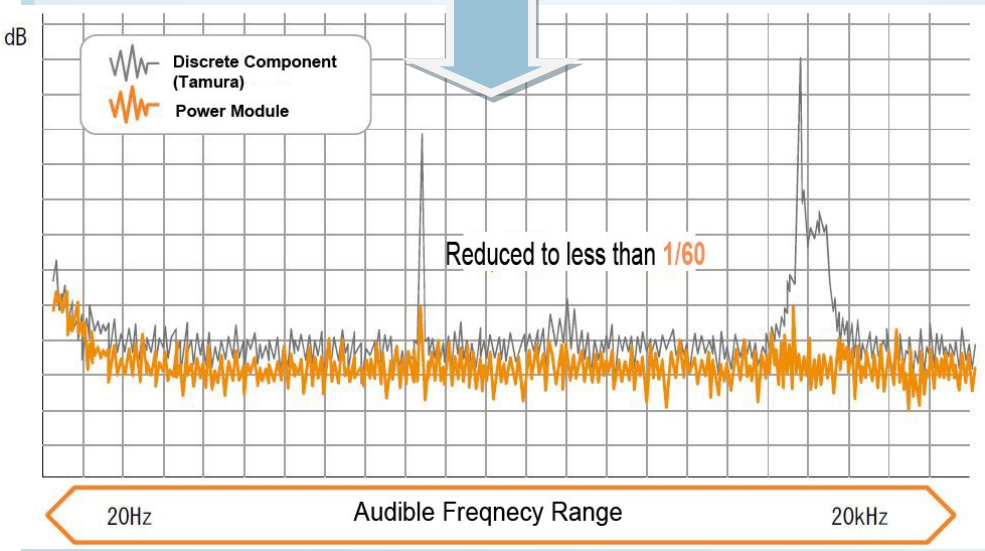

With Tamura's original technology, EPM , SPM , BPM power modules can reduce noise from the power source up to 1/10

(comparison to our discrete component)

***Patent Pending**

[Noise **Reduction**] Power Modules

Efficiency is the key for high performance power supply. To achieve this, switching method is selected as for appropriate solution. The switching frequency is most like to be 30 to 150KHz. To improve efficiency more at low load, it is used to apply " burst mode" . Burst mode frequency is within the audible frequency band; power supply would generate audible noise at low load with Standby Mode, and it is needed to be minimized. Mostly the roots of the audible noise was created by switching transfer. And depends on that structures, the level of noise would be changed.

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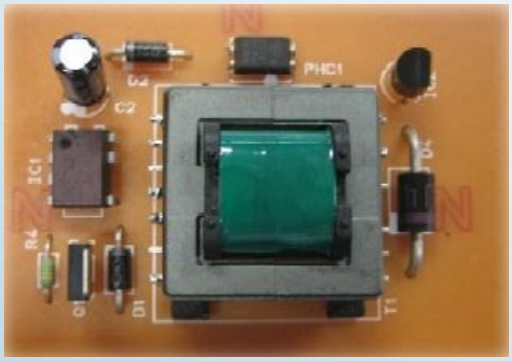
Reference with PCB	Primary	Replacement Parts	Secondary	Total
EPM	6	1	3	10
Discrete	26	1	11	38

Procure less parts/material



29 : 1

Discrete Component : 29 parts needed

Power Module : only 1 part needed

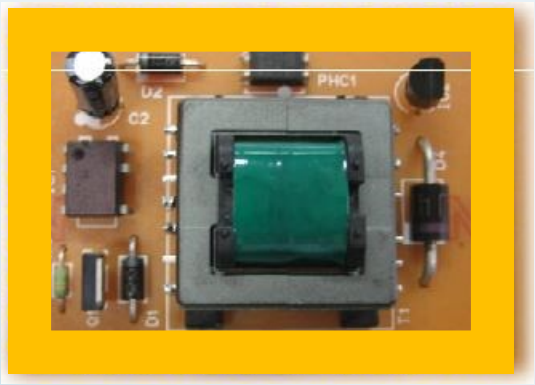
Availability

Power Modules

Efficiency is the key for high performance power supply. To achieve this, switching method is selected as for appropriate solution. The switching frequency is most like to be 30 to 150KHz. To improve efficiency more at low load, it is used to apply “ burst mode” . Burst mode frequency is within the audible frequency band; power supply would generate audible noise at low load with Standby Mode, and it is needed to be minimized. Mostly the roots of the audible noise was created by switching transfer. And depends on that structures, the level of noise would be changed.

Equivalent function with EPM

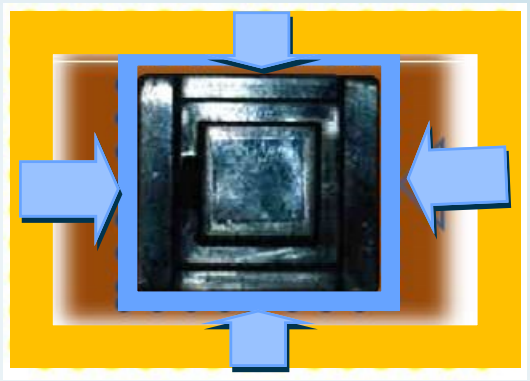
Discrete Component



S = 38mm x 53 mm

= 2014 mm²

EPM



S = 38mm x 31 mm

= 1023 mm²

1/2 Size

[Compact **Form**] Power Modules

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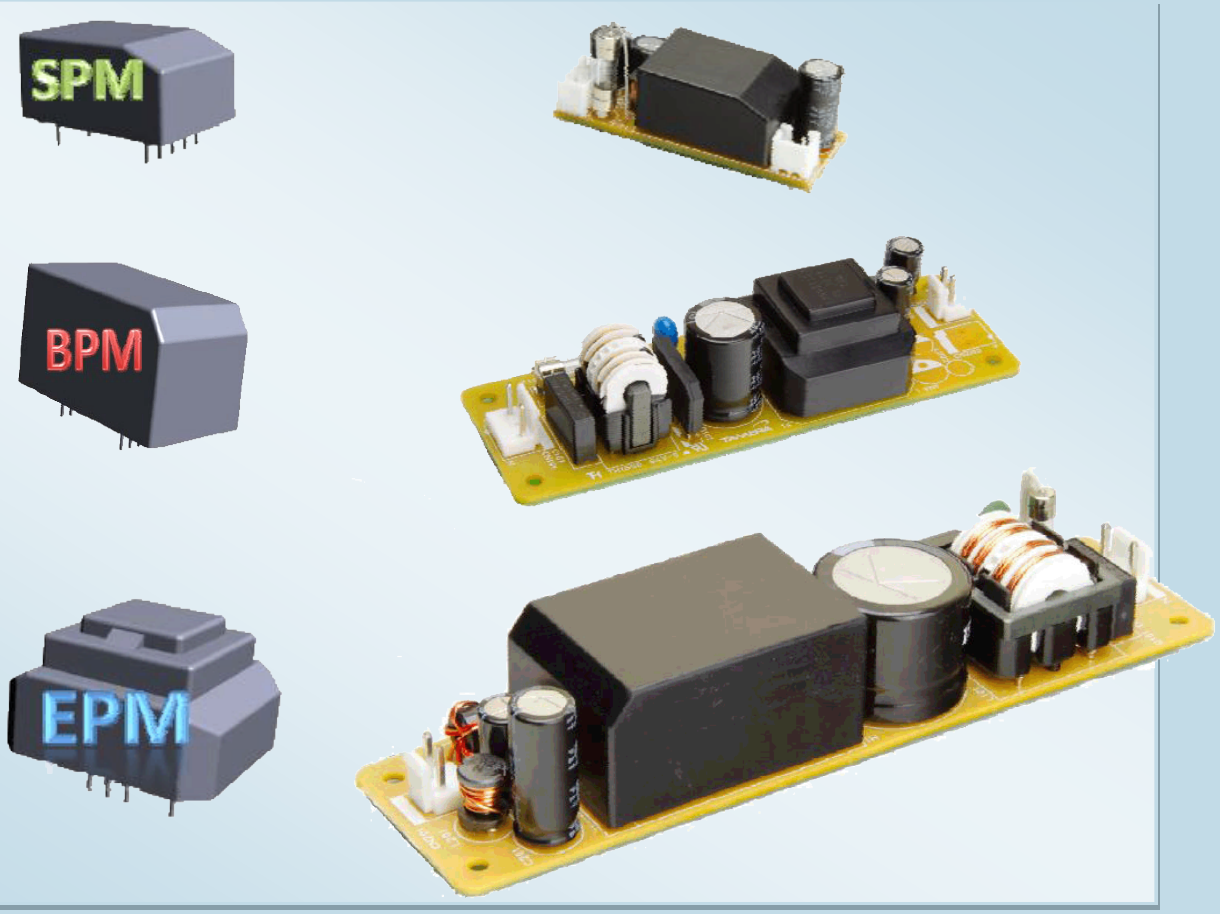
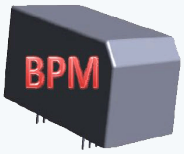
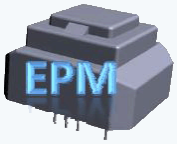
Examples



[Compact **Form**]

Power Modules

	SPM series	EPM series	BPM series
Class	4W	15W	40W
Product			

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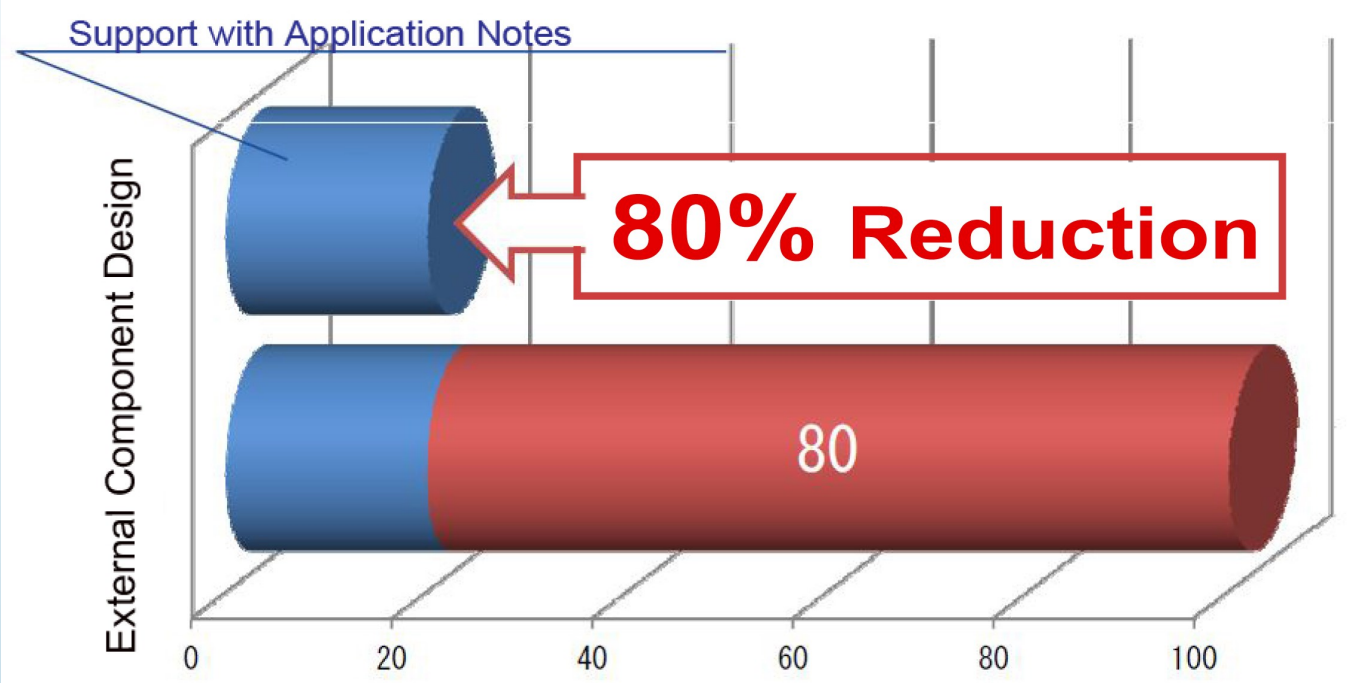

Reduce design hours , product development

[Facilitates **Circuit Design**]

Power Modules

Reduces :

Trans Design , Circuit Design, IC control evaluation, Thermal Design,

PCB Design, EMI, EMC evaluation, Safety Standard Application ,

Material Procurement

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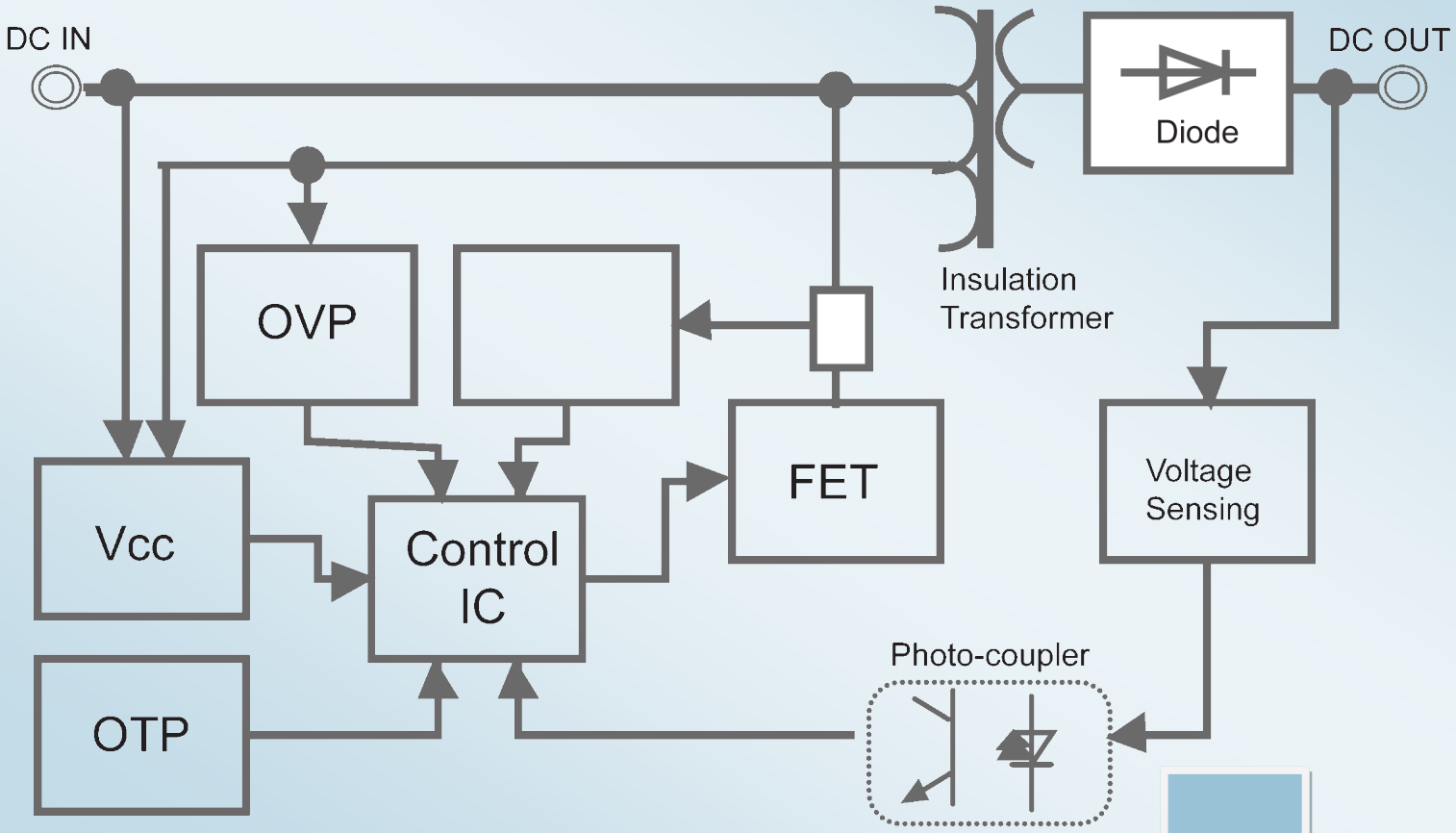
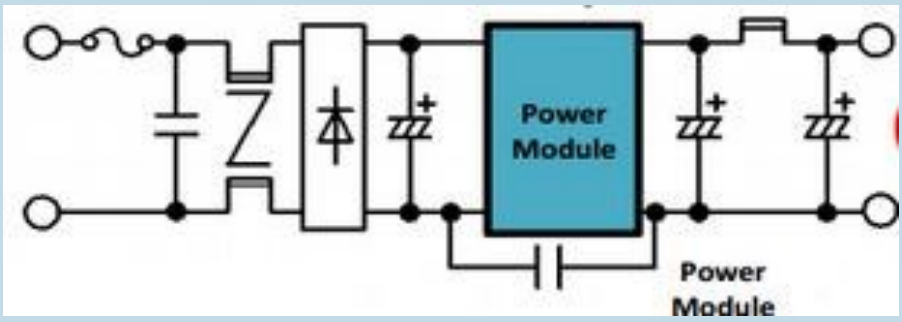
Key Internal Components



Function

Power Modules



Possible to design

Switching Power Supply Easily

Office Appliances

Smart Meter

AV equipment

LED

Inverter

Consumer electronics

Solar

UPS

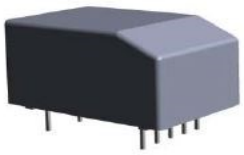
[Applications]

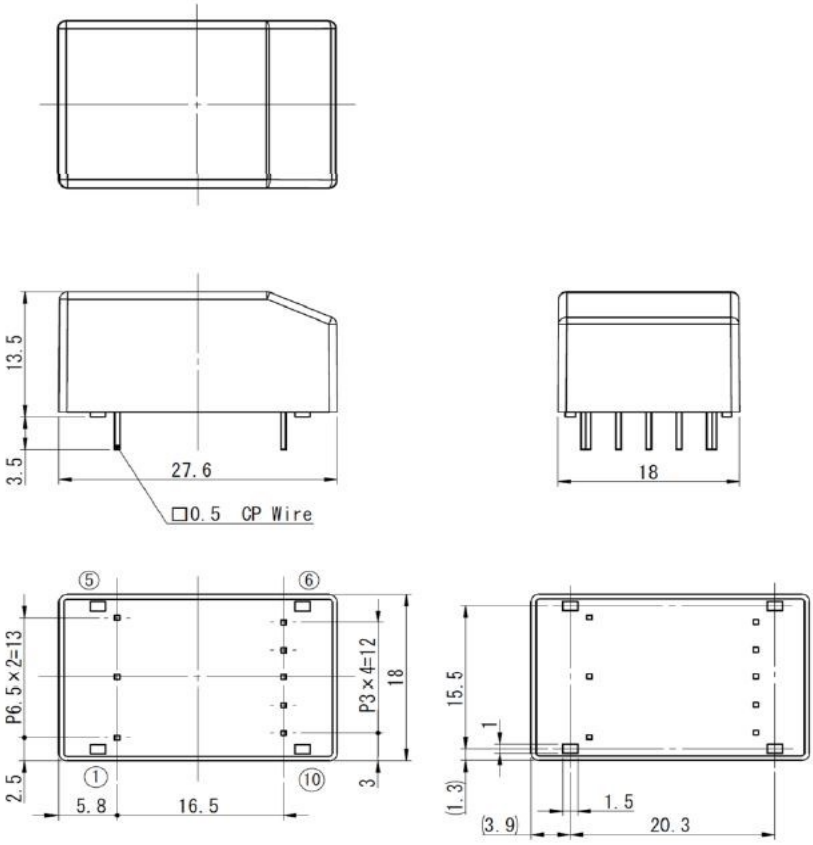
Power Modules

Industrial Equipment, Information Processing Equipment, AV Equipment, Consumer Electronics, Standby Power , etc.

SPM

External Dimension



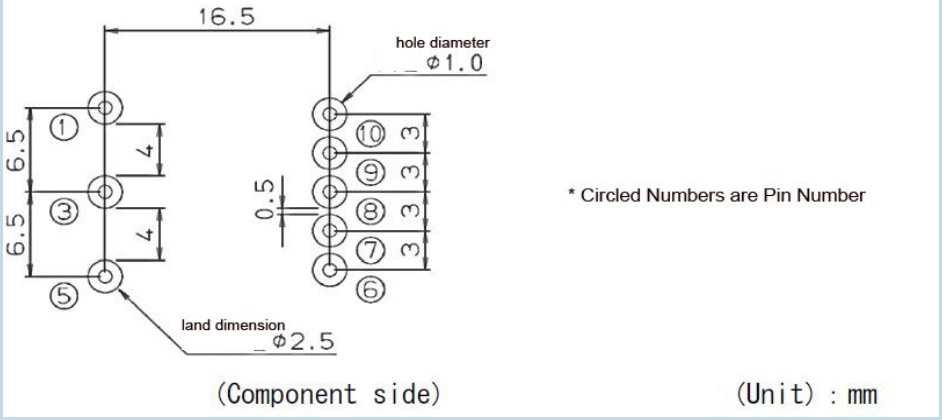


Note :1. The dimensional tolerance without directions is ± 0.5mm.

[Dimensions **SPM series**]

Power Modules

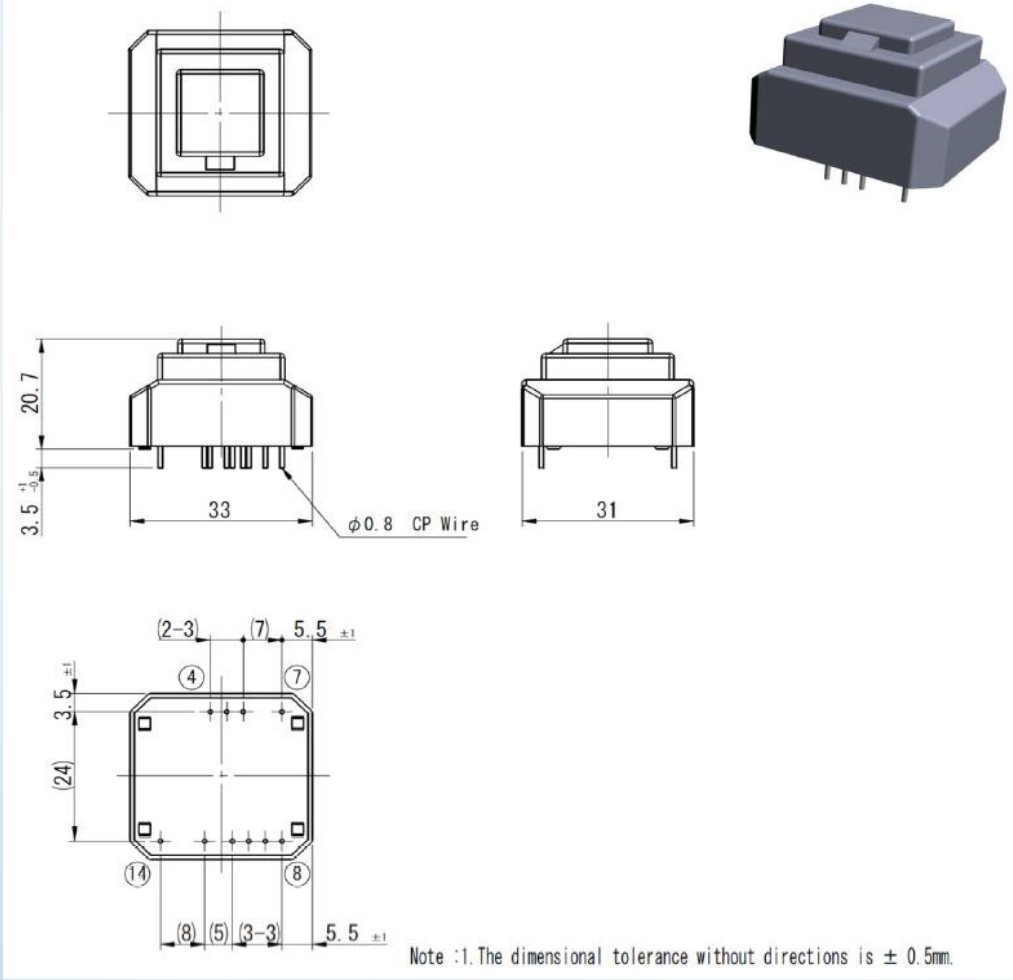
Recommended Hole Diameter / Land Dimension



* Circled Numbers are Pin Number

EPM

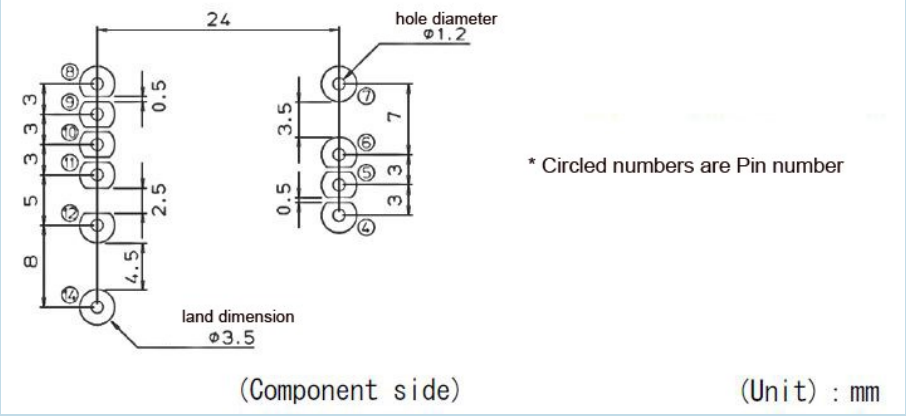
External Dimension



[Dimensions **EPM series**]

Power Modules

Recommended Hole Diameter / Land Dimension



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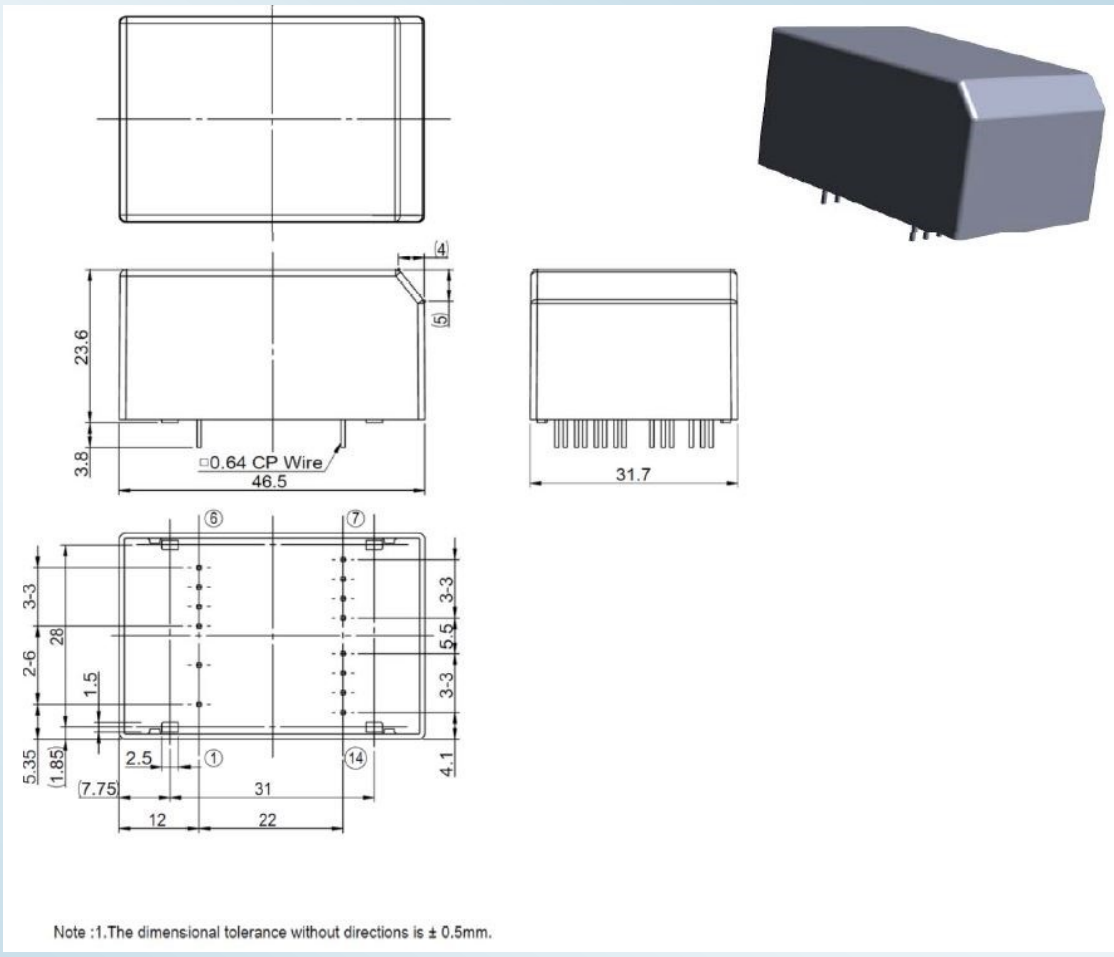
BPM

External Dimension

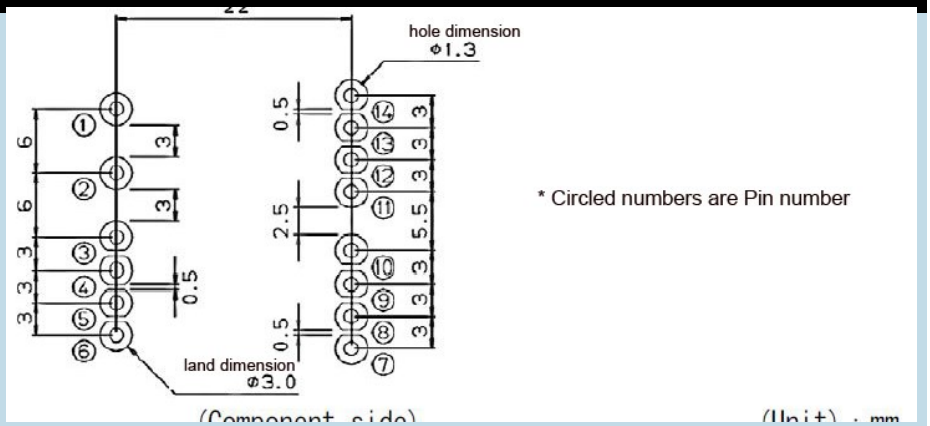


Note :1.The dimensional tolerance without directions is ± 0.5mm.

[Dimensions **BPM series**]

Power Modules

Recommended Hole Diameter / Land Dimension



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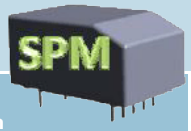

	Part Number	Output Voltage	Rated Load	Output Tolerance	Output	External Type	RoHS Compliant	Insulation (between Pri-Sec)
SPM	SPM0310SJ	3.3V	0.7A	±5%	1	S18S	Yes	Reinforced Insulation
	SPM0507SJ	5V	0.7A	±5%				
	SPM1203SJ	12V	0.3A	±5%				
	SPM1502SJ	15V	0.24A	±5%				
	SPM2402SJ	24V	0.15A	±5%				

EPM	EPM0310SJ	3.3V	1A	±5%	1	FE19S	Yes	Reinforced Insulation
	EPM0510SJ	5V	1A	±5%				
	EPM1205SJ	12V	0.5A	±5%				
	EPM1210SJ	12V	1A	±5%		FE22S		
	EPM1505SJ	15V	0.5A	±5%		FE19S		
	EPM1510SJ	15V	1A	±5%		FE22S		
	EPM2405SJ	24V	0.5A	±5%				
	EP-M120806D	8V	0.05A	±15%	2	FE19D		Reinforced Insulation
		12V	0.2A	±10%				
	EP-M122410D	12V	0.2A	±10%		FE22D		
		24V	0.1A	±5%				
	EP-M141626D	13.5V	0.3A	±10%				Basic Insulation
		16V	0.12A	±10%				

[Product Line Up] Power Modules

BPM	BPM0390SJ	3.3V	9A	±5%	1	B32S	Yes	Reinforced Insulation
	BPM0508SJ	5V	8A	±5%				
	BPM1234SJ	12V	3.4A	±5%				
	BPM1527SJ	15V	2.7A	±5%				
	BPM2417SJ	24V	1.7A	±5%				