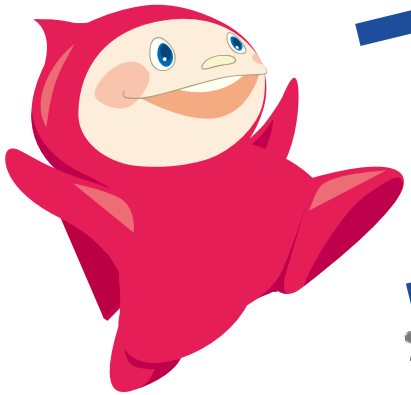
TAMURA

Power Modules ?



5 Key advantages

① Efficiency

② Noise Solution

③ SCM

④ Form-Factor

⑤ Time to Market

Concerns about Energy Efficiency…

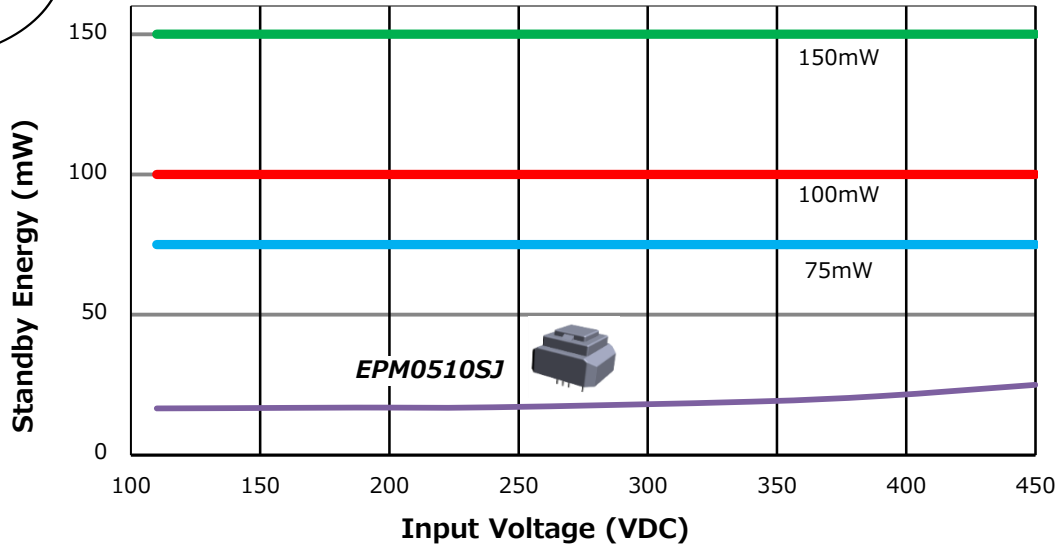
Improving Energy efficiency…

Complying with energy regulations …

①Efficiency

Improve Stand-by Power

Compliance with standby energy regulations
(Example: EPM0510SJ)



Concerns about Noise and Vibration Sound …

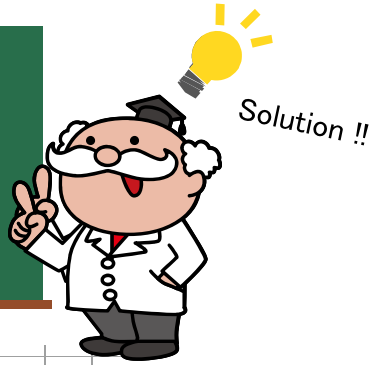
We want to reduce humming sound in power supply.

Is there a way to reduce it?

②Noise Solution

Improve Audible Noise level

Humming sound is reduced by Tamura's unique structure.



dB

Conventional Power Supply

Power module

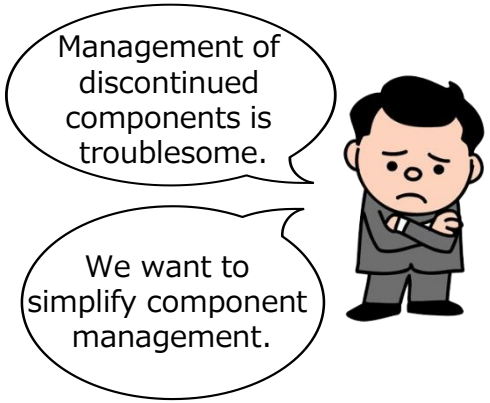
Humming sound reduced to

Max 1/60

20Hz — Audio frequency range — 20kHz

(Comparison with Tamura's previous Power Module)

Component Management is Troublesome …
Concerns about Component Management …

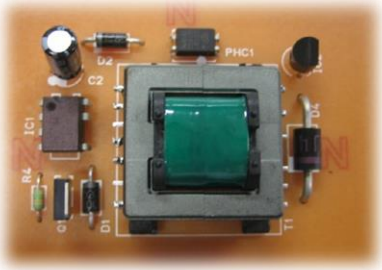


③SCM
Easy Management

	Primary side	Replaced components	Secondary side	TOTAL
EPM	**6**	**1**	**3**	**10**
Discrete component	26	1	11	38

(Example: Substrate sample)

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



A comparison of the number of components

29 : 1

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

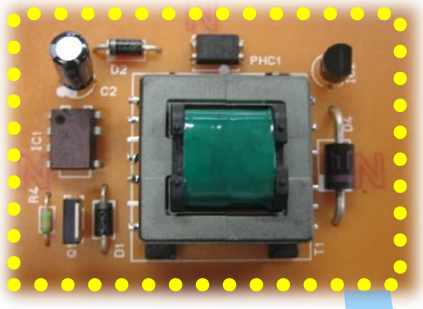
(Comparison with Tamura's previous Power Module)

Concerns about Size …

Mounting space is limited.

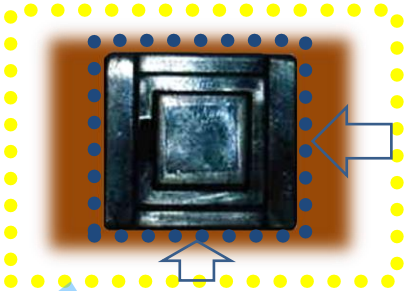
Substrates should be as small as possible…
What should we do …?

④Form-Factor
Compact Design
Discrete components
having the same functions as **EPM**



Area ratio
2 : 1

EPM



S=38mm X 53mm
=**2014mm²**

S=33mm X 31mm
=**1023mm²**

50% Less!!

(Comparison with Tamura's previous Power Module)

Concerns about Time Required for Development/Design …

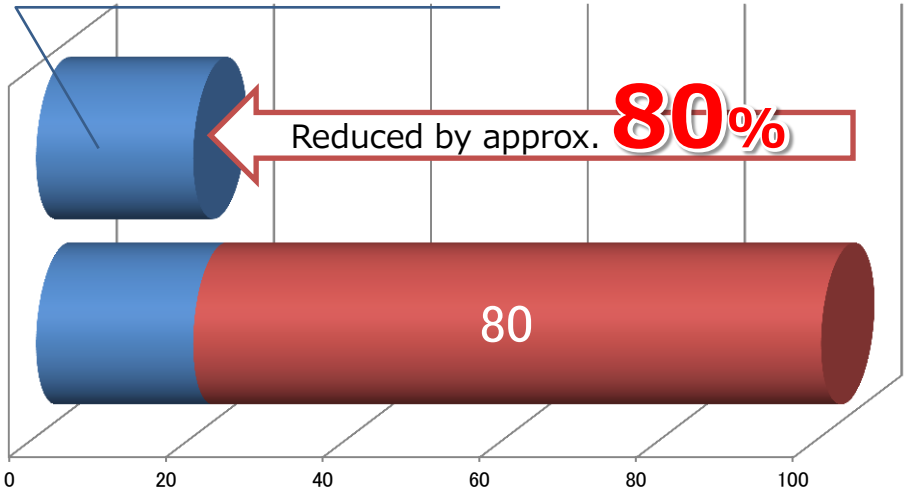
No human Resource are left to design standby power supplies.

Product development cycle is short …

⑤Time to Market
Facilitates Circuit Design

Development/design
Human Resource can be reduced.

Support provided by application note



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.

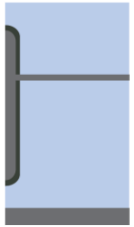
(Comparison with Tamura's previous Power Module)

Applications and Line Up

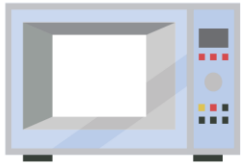
Applications

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

Refrigerator



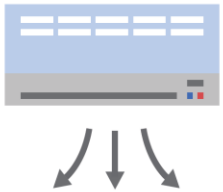
Microwave oven



kichen appliances

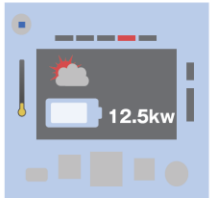
Cleaner

Air-conditioner



Toiletary

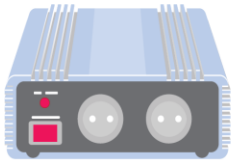
Smart meter



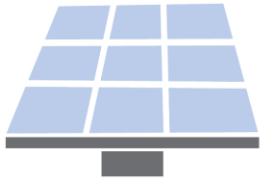
LED Lighting

UPS

General-inverter

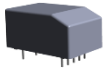


PV inverter



Product Lineup

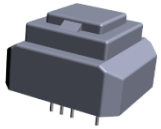
SPM



Part No.	Output voltage	Rated load	Output (Single or Multi)	RoHS compliant	Insulation (Between Pri-Sec)	Status
SPM0307SJ	3.3V	0.7A	1	OK	Reinforced insulation	mass production
SPM0507SJ	5V	0.66A		OK	Reinforced insulation	mass production
SPM1203SJ	12V	0.28A		OK	Reinforced insulation	mass production
SPM1502SJ	15V	0.22A		OK	Reinforced insulation	mass production
SPM2402SJ	24V	0.15A		OK	Basic insulation	sample

Product Lineup

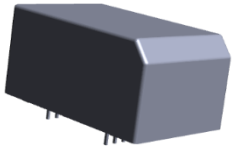
EPM



Part No.	Output voltage	Rated load	Output (Single or Multi)	RoHS compliant	Insulation (Between Pri-Sec)	Status
EPM0310SJ	3.3V	1A	1	OK	Reinforced insulation	mass production
EPM0510SJ	5V	1A		OK	Reinforced insulation	mass production
EPM1205SJ	12V	0.5A		OK	Reinforced insulation	mass production
EPM1210SJ		1A		OK	Reinforced insulation	mass production
EPM1505SJ	15V	0.5A		OK	Reinforced insulation	sample
EPM1510SJ		1A		OK	Reinforced insulation	mass production
EPM2405SJ	24V	0.5A		OK	Reinforced insulation	mass production
EPM120806D	8V	0.05A	2	OK	Reinforced insulation	development
	12V	0.5A				
EPM122410D	12V	0.2A		OK	Reinforced insulation	Sample
	24V	0.1A				
EPM141626D	13.5V	0.3A		OK	Basic insulation	Sample
	16V	0.12A				

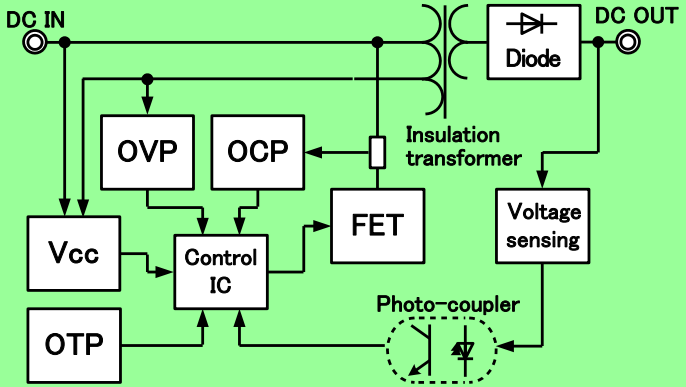
Product Lineup

BPM



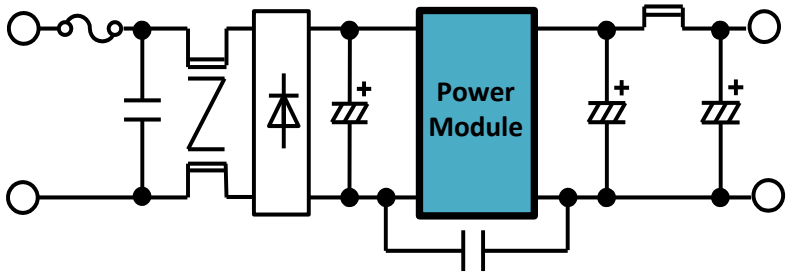
Part No.	Output voltage	Rated load	Output (Single or Multi)	RoHS compliant	Insulation (Between Pri-Sec)	Status
BPM0390SJ	3.3V	9A	1	OK	Reinforced insulation	development
BPM0580SJ	5V	8A		OK	Reinforced insulation	mass production
BPM1234SJ	12V	3.4A		OK	Reinforced insulation	mass production
BPM1527SJ	15V	2.7A		OK	Reinforced insulation	mass production
BPM2417SJ	24V	1.7A		OK	Reinforced insulation	mass production

Functions



Internal parts and functions
- Insulation Transformer
- Isolated Transformer (FET)
- IC control
- Output rectifier diode
- Photo-coupler
- Output voltage detection circuit
- Primary side control circuit
- Over voltage protection
- Over current protection
- Heating protection circuit

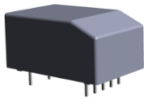
Switching Power Supply can be easily created



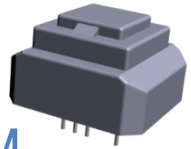
Features

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

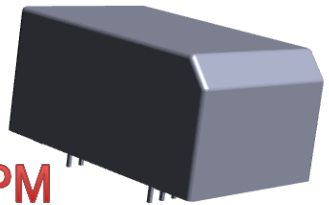
SPM



EPM



BPM



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