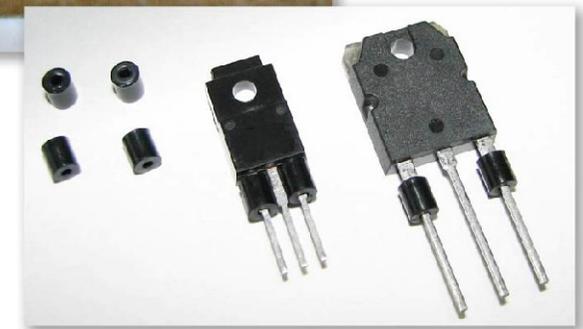
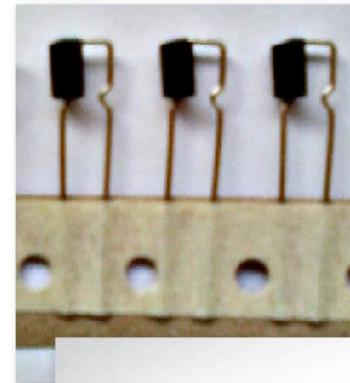
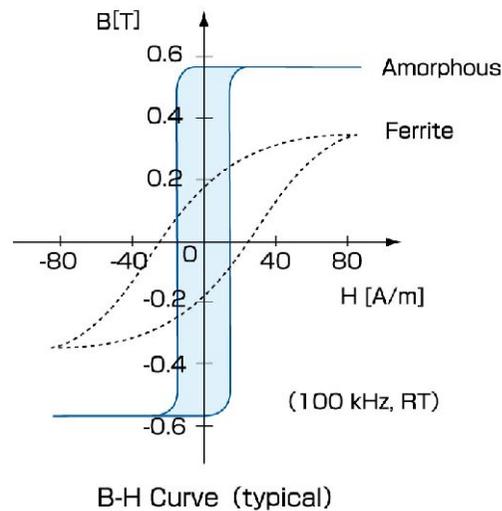


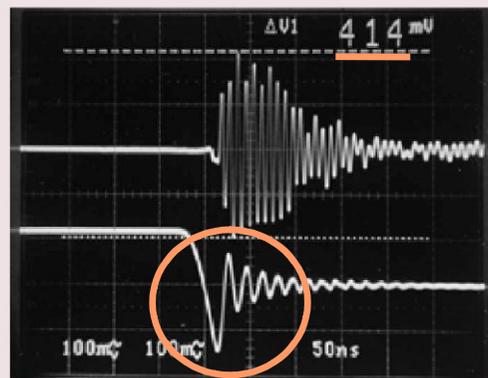
Amorphous Noise Suppression Devices

“ AMOBEADS[®] ”



“AMOBEBADS[®]” suppresses directly the rapid change of current or voltage as the origin of noise, which reduces circuit noise. It differs Ferrite beads as absorbing noise occurred.

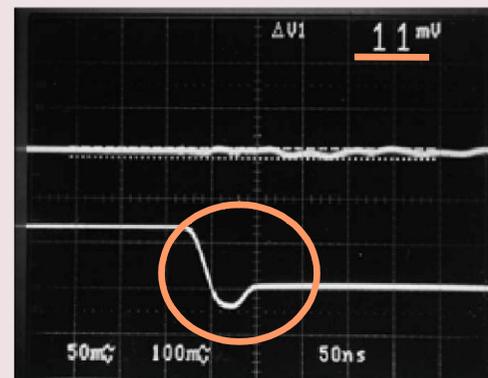
☆ Example of the noise suppression on a Chopper Converter



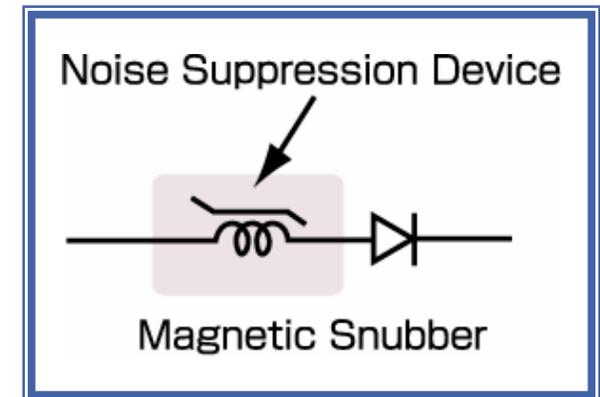
Without Countermeasure

Output Noise

Diode Current
1 A/div



With AMOBEBADS[®]



☆ Effective suppression of noise

Minimize directly the rapid change of current or voltage

☆ Low loss and temperature rise

Cobalt based amorphous material has low loss at high frequency

☆ Low influence against circuit parts

High rectangular ratio means low influences such as surge voltage.



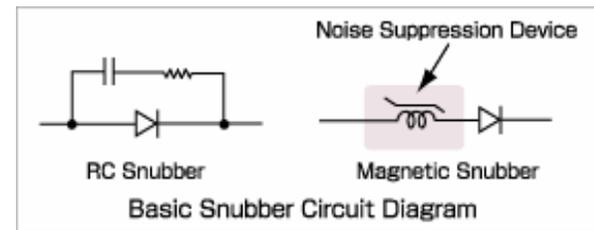
FEATUERS

- ☆ Improvement in **Cost Performance** over conventional "AMOBEADS®" by optimizing new case material and the structure.
- ☆ **Superior Noise Suppression** over RC Snubbers and Ferrite Beads. Can be used to reduce parts, reduce cost, and save circuit board space.



STANDARD SPECIFICATION

*New size AB2.8X4.5DY



RoHS compliant products

TYPE	Finished Dimensions [mm] ¹⁾		Total Flux Φ_c [μ Wb]	Reference
	O.D.	H.T.		
New AB 2.8 x 4.5 DY	4.0±0.2	5.7±0.3	min. 0.9 ²⁾	Casing : Black PBT packing unit : 10kp/pack
AB 3 x 2 x 3 W	4.0±0.2	4.2±0.3	min.0.9	Casing : Blue PBT

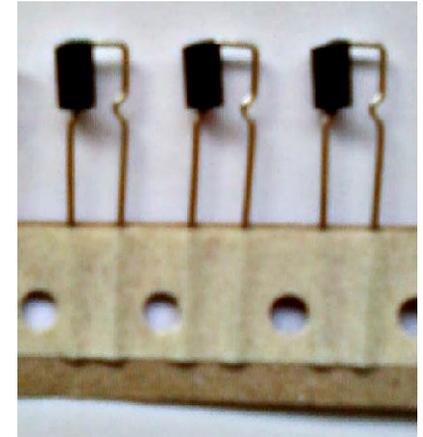
1) The Inner Diameter is such that a lead of 1.2mm x 0.7mm can be inserted.

2) Converted from Inductance Value L1 at 1kHz, 100mA(sine wave), RT.



FEATUERS

- ☆ Possible to supply AMOBeads[®] with taping radial lead
- ☆ Easily replacement from ferrite beads with lead
- ☆ Simple structure succeed high cost performance



STANDARD SPECIFICATION

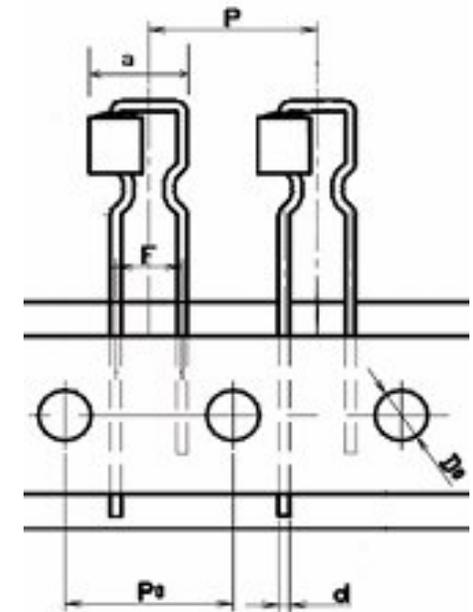
RoHS compliant products

TYPE	Current ¹⁾ I [A]	Total Flux ¹⁾ Φ _c [μWb]	Packing unit (p/pack)
LB 2.8 x 4.5 U	(5)	min.0.9	3,000

1) Converted from Inductance Value L1 at 1kHz, 100mA (sine wave), RT.

Unit : mm

P	PO	D0	a	d
12.7	12.7	φ 4.0	9.0以下	φ 0.8



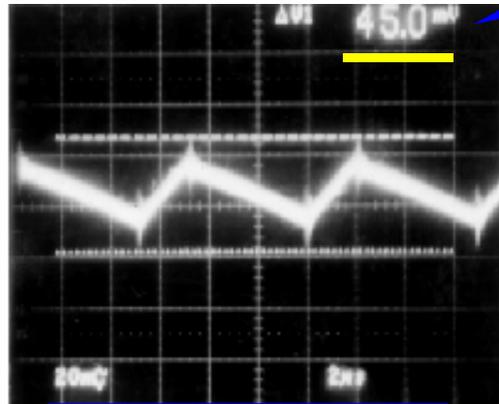
Radial Taping

☆ Output noise reduction (Forward converter)

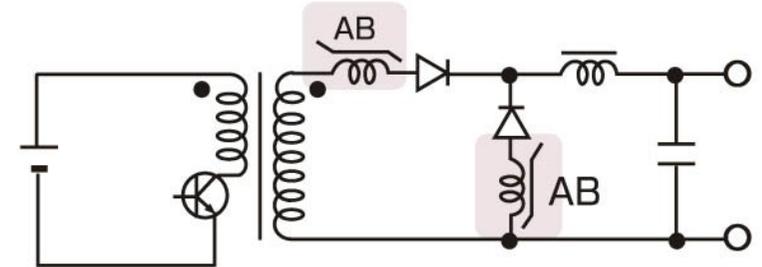
Noise Reduction



Output Noise V_N
20mv/div



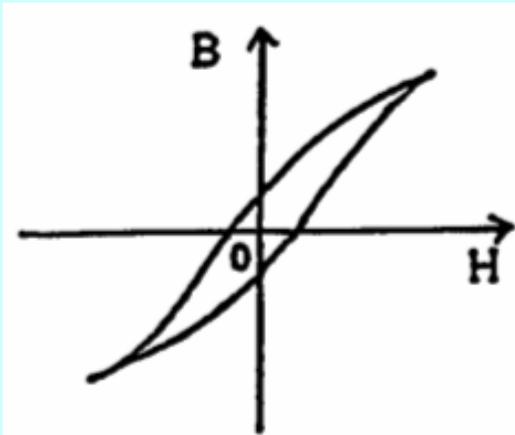
15V / 10A



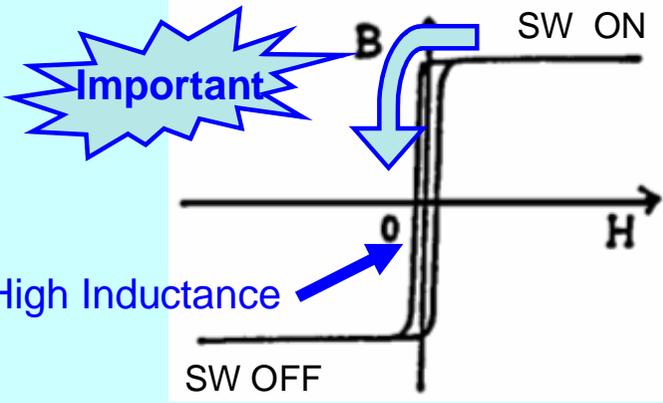
Forward Converter

CR snubber + ferrite beads

AMOBEADS®



ferrite beads



AMOBEADS®

High inductance, during zero crossing of current, makes spike current reduce and suppress the noise.

☆ Suppression of reverse recovery current of diode (Inverter of Back Light)



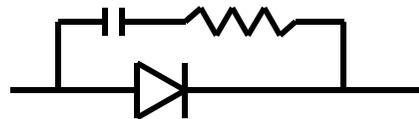
Without Countermeasure

CR 0.01 μ F - 10 Ω

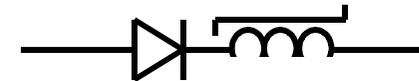
AMOBEDS[®]

Low effect by CR snubber

Effective suppression by
AMOBEDS[®]

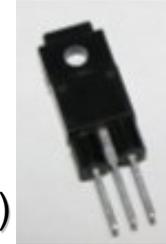


CRsnubber: In parallel to diode.
Heat loss by absorbing
change of voltage

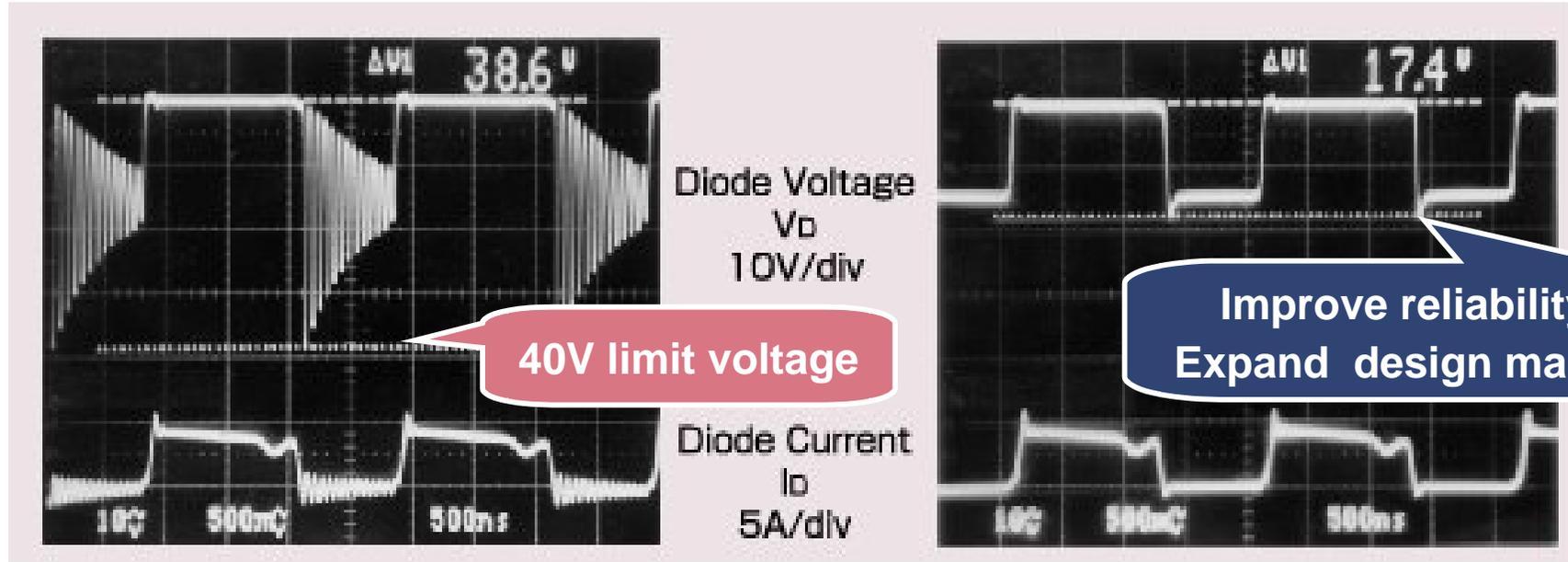


AMOBEDS[®]: In series to diode.
Suppress rapid current
change during zero
crossing.

☆ Output Noise reduction (forward converter)



Schottky barrier diode (SBD)



40V limit voltage

Improve reliability,
Expand design margin

Without Countermeasure

AMOBeads®

☆ Reduce spike voltage and Prevent ringing phenomenon
⇒ The Schottky barrier diode (SBD) can be protected from over-withstand voltage.

AMOBeads® can also be utilized as protection for semiconductors.

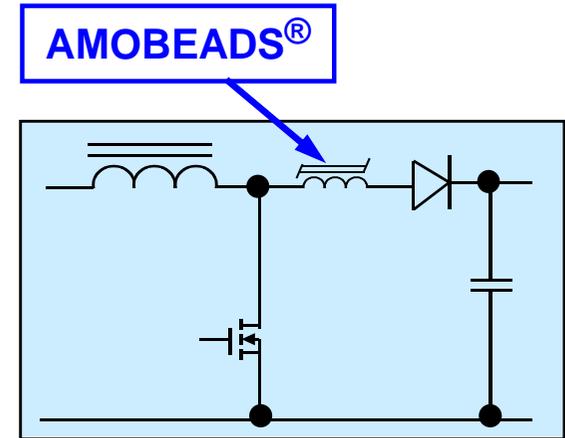
☆ Noise caused by diode : FPD(300W)TV

CR snubber can not satisfy the spec on 30~100MHz

CR snubber + ferrite beads 3 pcs in series

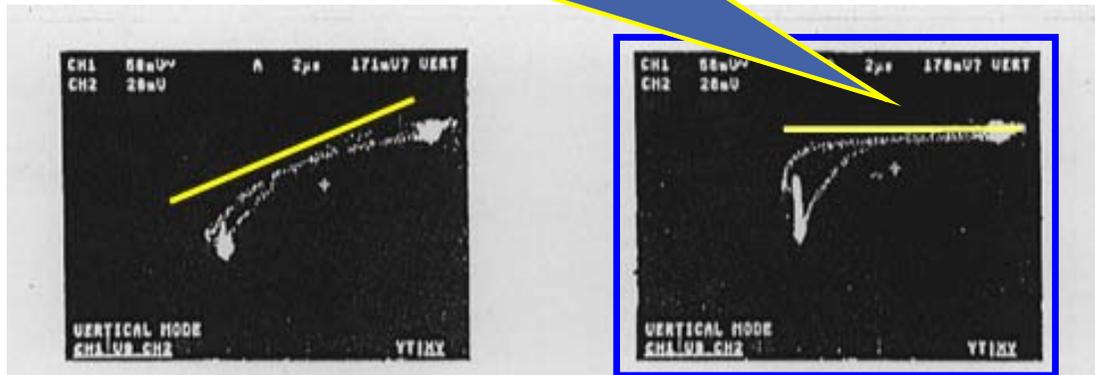
→ AMOBEDS® 1 piece

decreases surge voltage of FET
makes the switching loss reduce
improves the reliability



PFC

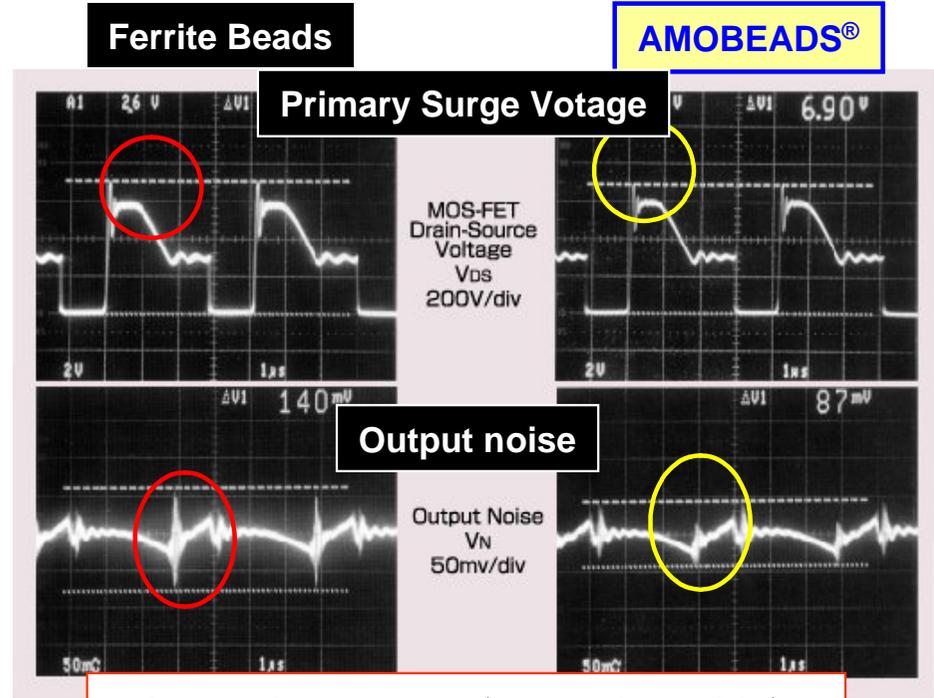
As inductance during "OFF period" is small, the surge voltage is small.



Ferrite Beads

AMOBEDS®

BH curve under operation

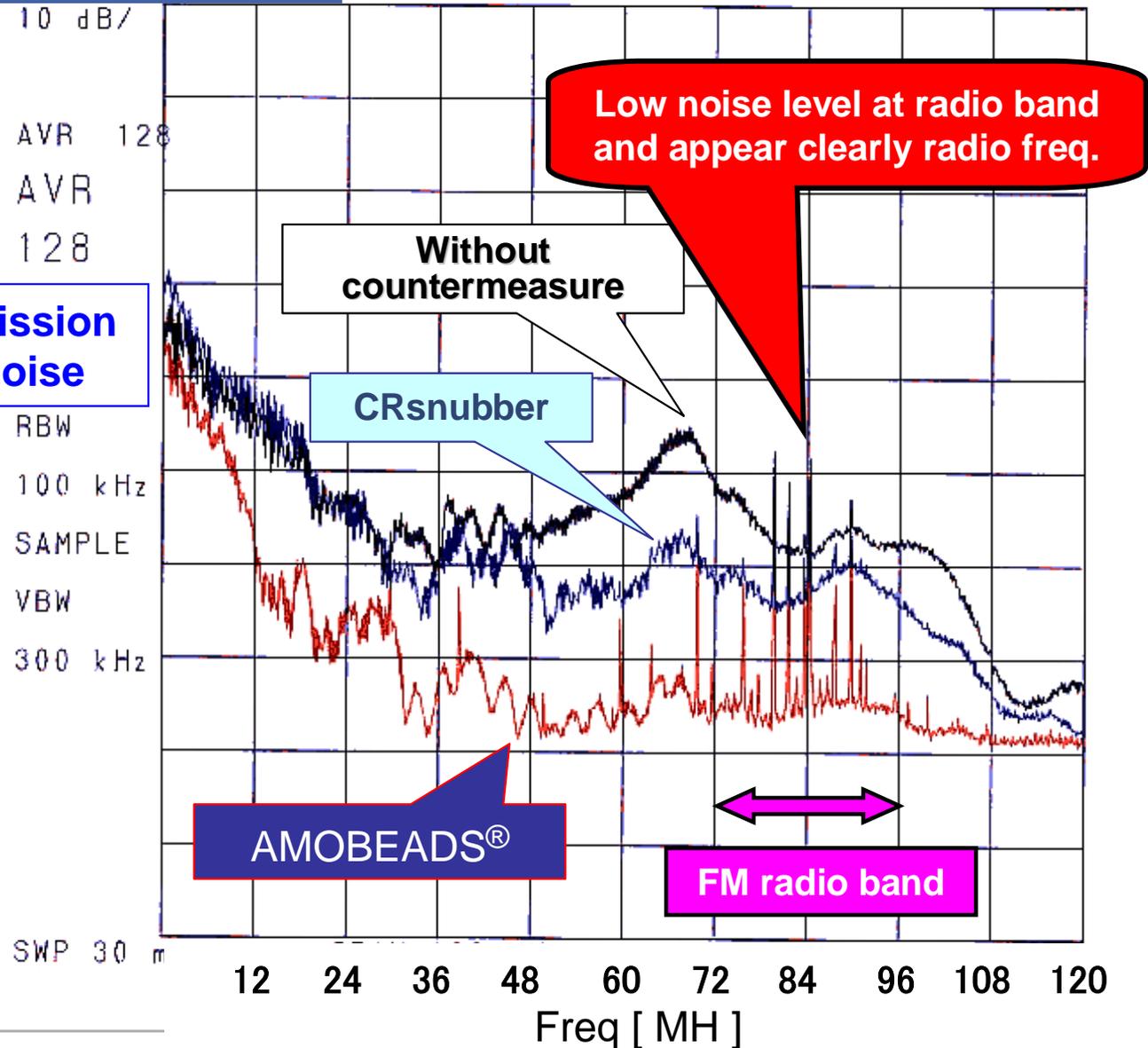
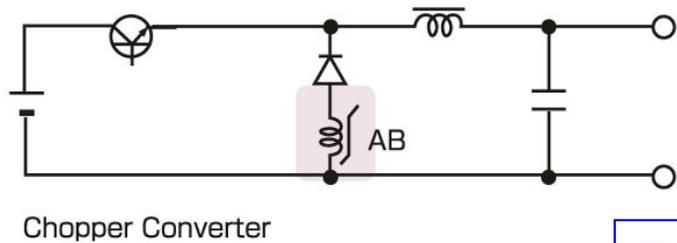


Ferrite Beads

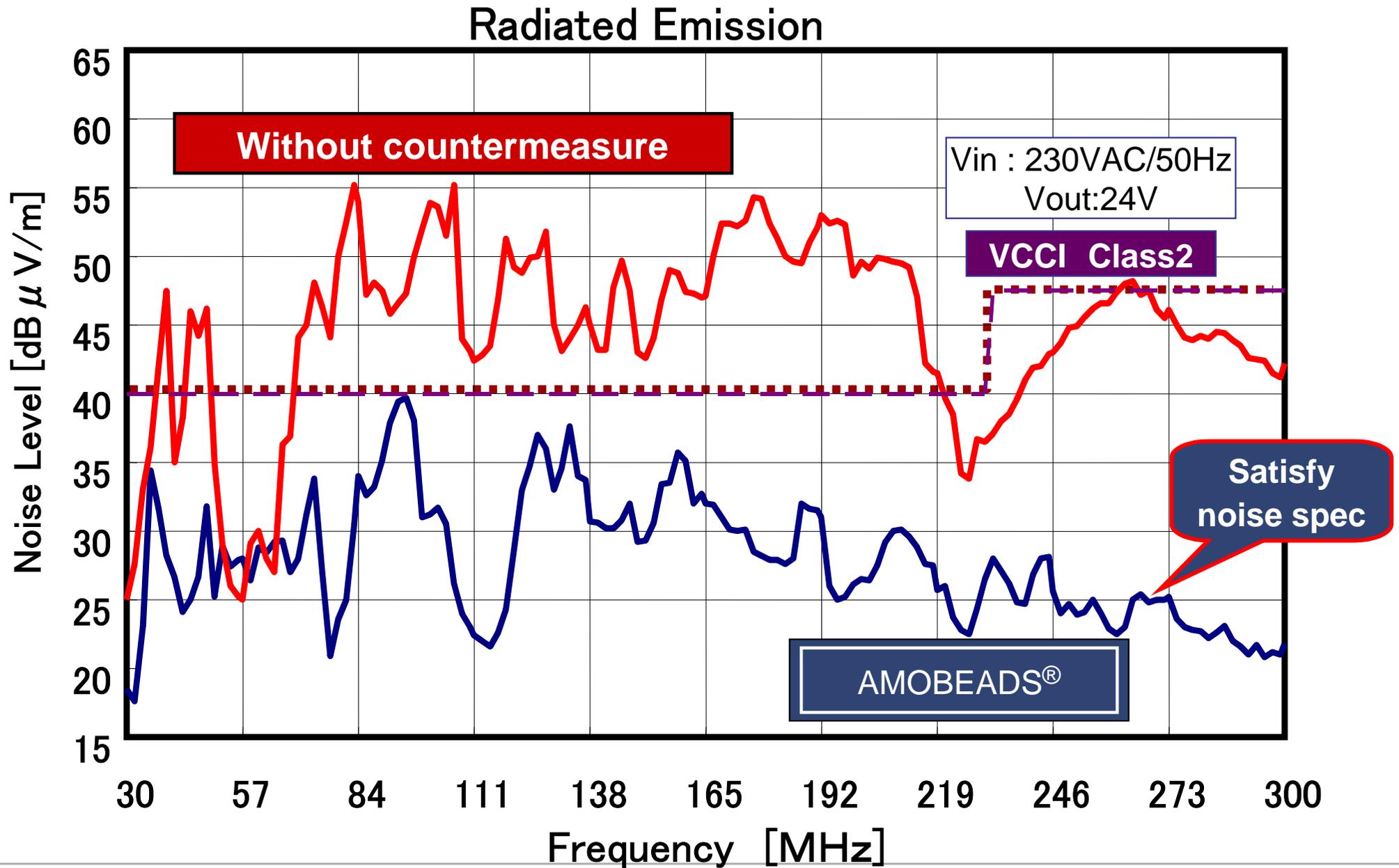
AMOBEDS®

forward converter (secondary side)

☆ Emission noise (chopper converter)

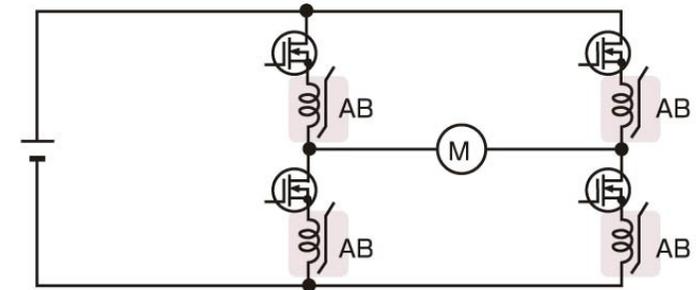


Input : 20V
Output : 12V-2A
Operating freq. : 90kHz
Diode : 10GL2C
Measurement : loop antenna

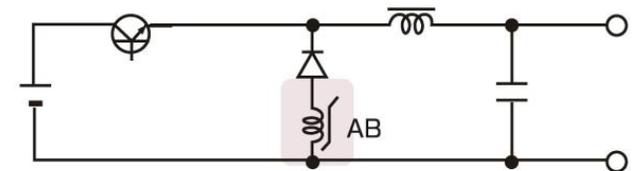


Applications

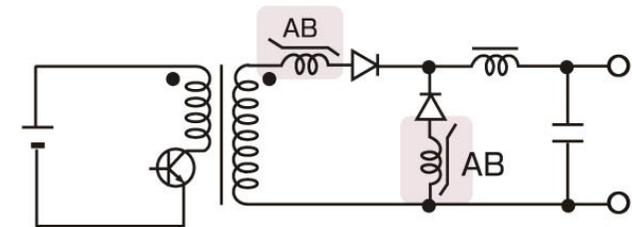
- ☆ Server, Data Storage
- ☆ Mobile Communications
- ☆ Medical apparatus
- ☆ Flat-Panel Display (LCD TV etc)
- ☆ Motor Driving Circuit
- ☆ FAX/COPY machine
- ☆ Battery Charger
- ☆ Home-use Game Console
- ☆ Inverter (AC/AC)
- ☆ Power factor improvement Circuit (PFC)



Motor Driving Circuit



Chopper Converter



Forward Converter

By the trend of increasing the large-scale equipment to home and the movement of the noise restriction, AMOBEADS[®] is adopted for the displays such as FPD and projectors, and for the high capacity equipment.

Summary

★ Comparison of noise suppression devises (Our data)

diode reverse recovery current of secondary side

	CR snubber	ferrite	AMOBEBADS (current)	AMOBEBADS DY series
Effect	▲	○	◎	◎
Space	▲	◎	◎	◎
Cost	◎	○	▲	○



★ AMOBEBADS[®] “DY series”

with new case material and new structure, has high cost performance compared to current AMOBEBADS[®].

★ AMOBEBADS[®] with lead “LB”

AMOBEBADS[®] with lead "LB" is also added to our product lineup, for requirement of automatic mounting, e.g., FPD application.