Current sensor optimized for high frequency converters

~Open loop(ASIC) LA series~

TAMURA

TAM-CS-00002
Rev C

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Current sensor optimized for high frequency converters

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Current sensor optimized for high frequency converters

1. Why, When we started development Current Sensors

Circuit design Technology

Transformer Technology

Potting Technology

EMI/EMC Solution

Market Awareness

Current sensor optimized for high frequency converters

1. Why, When we started development Current Sensors

1924 1930 1939 1956 1994 2007 2011 2016 2024

RADIO

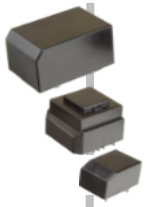
Power Transformer

Audio Transformer

Reactors

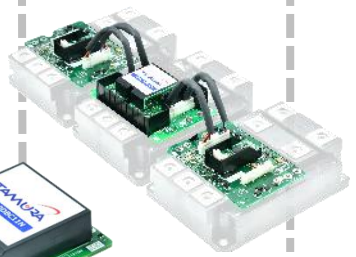
ZERO watt standby Power Supply

Power supply module



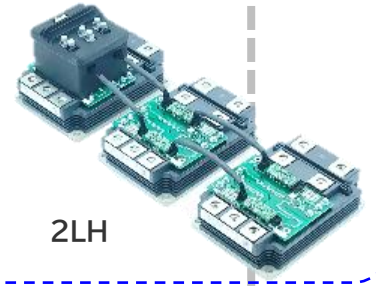
Reactors(HPM)

SiC/IGBT Gate Driver



2LG-C Parallel

2CG-B for SiC



2LH

Current Sensor

Open Type

L Series

Closed Type

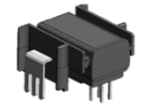
S Series

Fluxgate Type

F Series

Large Current

Open loop (ASIC) Type



LA Series

Power Supply

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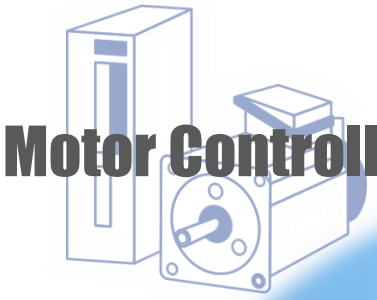
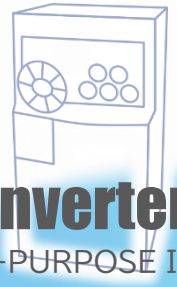
2. Application



Motor Controller



Inverter

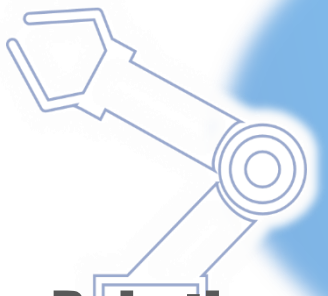
GENERAL-PURPOSE INVERTER

PV

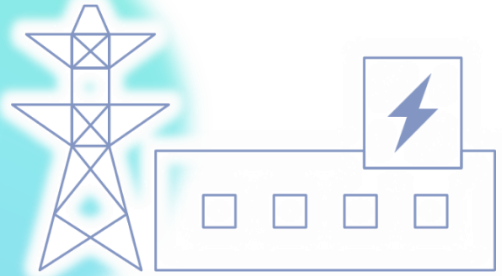
Photovoltaic Power Generation

Wind

Wind Power Generation



Robotics



Grid/SVG

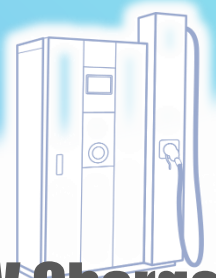
Electric grid

Welding

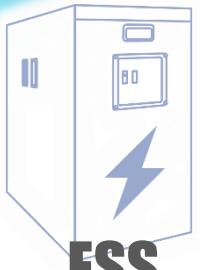
Welding Machine

UPS

Uninterruptible Power Supply



EV Charger
EV Stand



ESS

Energy Storage System

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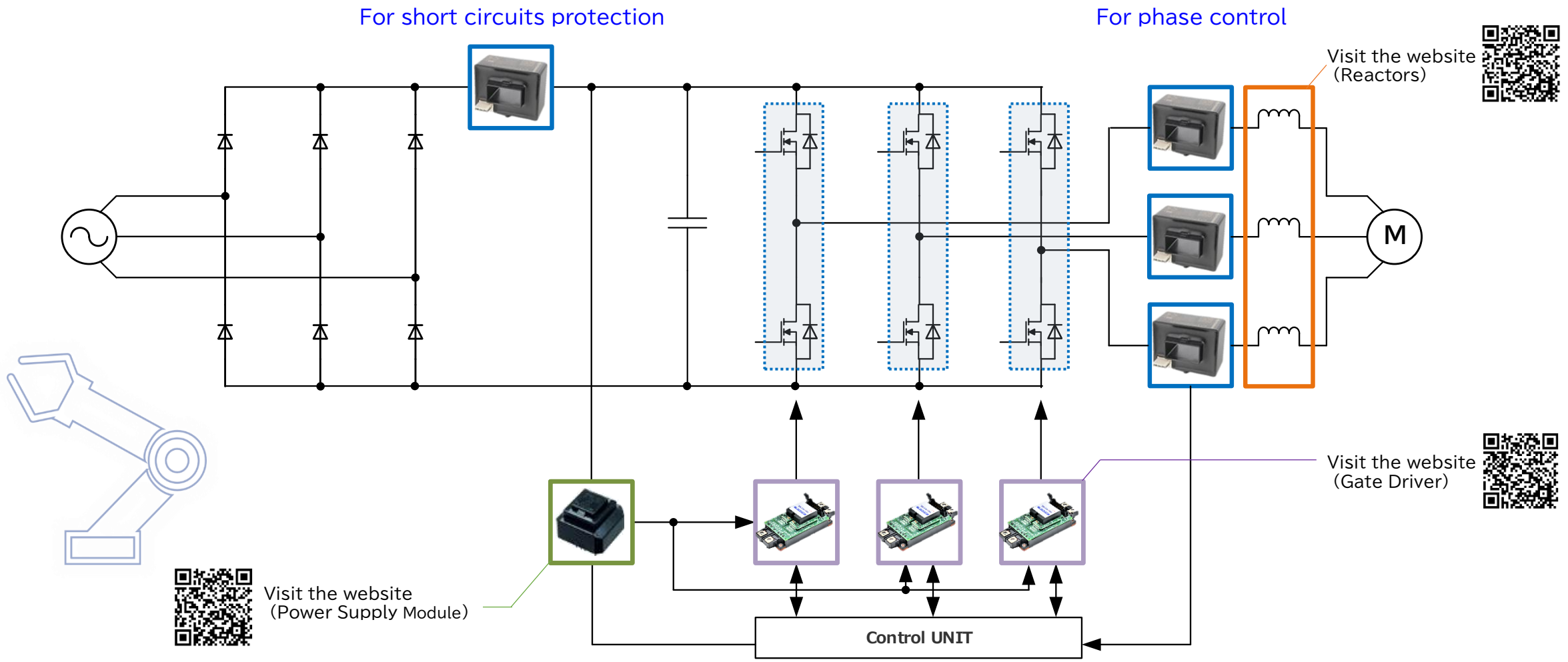
2. Application

Motor Controller



Current sensor optimized for high frequency converters

3. Features of Tamura Current Sensors ～Case of Open loop(ASIC) type～

Features items	Applied technology	Benefits
No malfunctions	Analog, Digital, EMC, Potting	Higher precision improving noise characteristics !
Temperature characteristics	Analog, Digital, EMC, Potting	Reference voltage is constant from high to low temperature!
Fast response	Analog, Digital, EMC, Potting	Can achieve high frequencies!

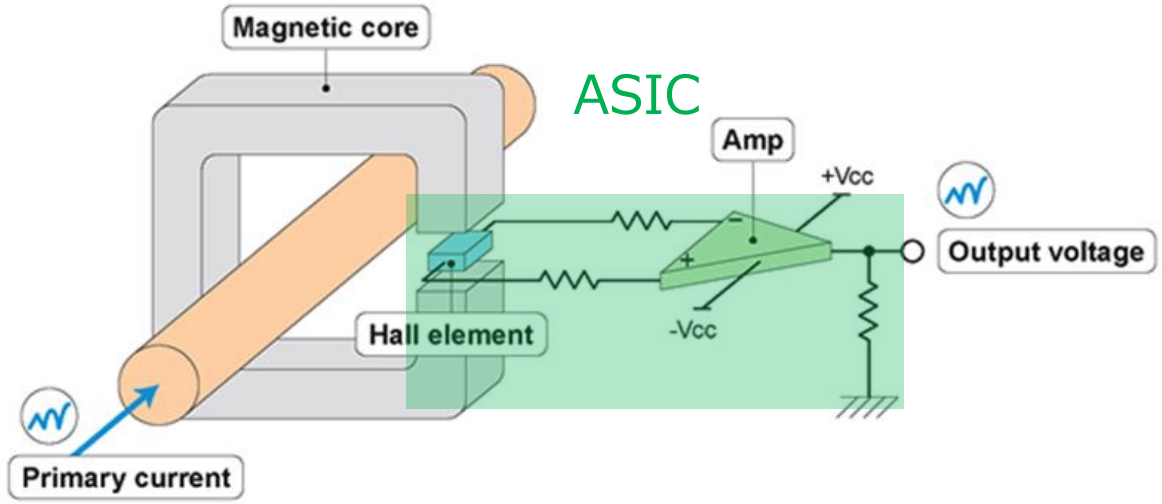
Current sensor optimized for high frequency converters

3. Features of Tamura Current Sensors ～Case of Open loop(ASIC) type～

What is ASIC?

Application Specific Integrated Circuit

Open loop type
Current sensor



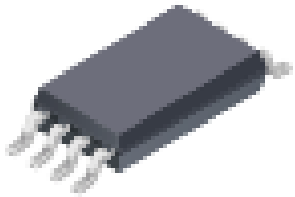
Circuit configuration

Discrete current sensor

- Hall element
- Operational amplifier
- Regulator IC
- Resistance
- Capacitor

In one-chip

ASIC



- Offset correction
- Temperature correction
- Selectable function

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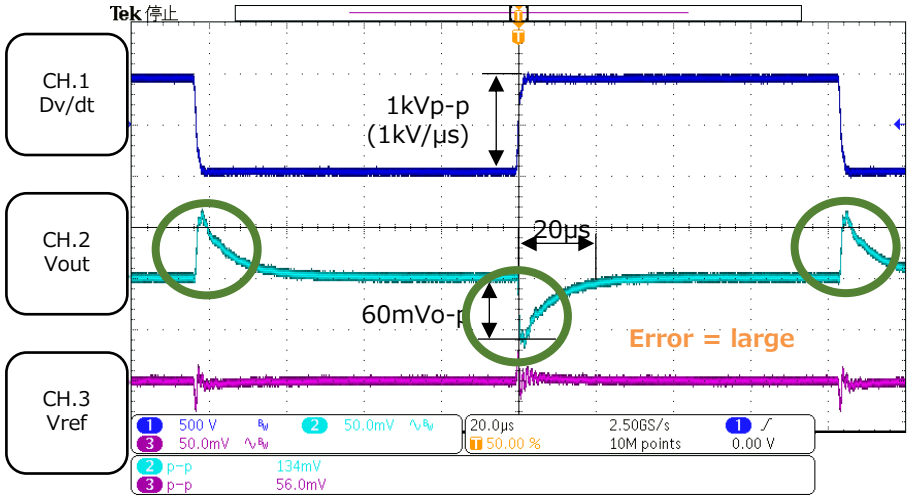
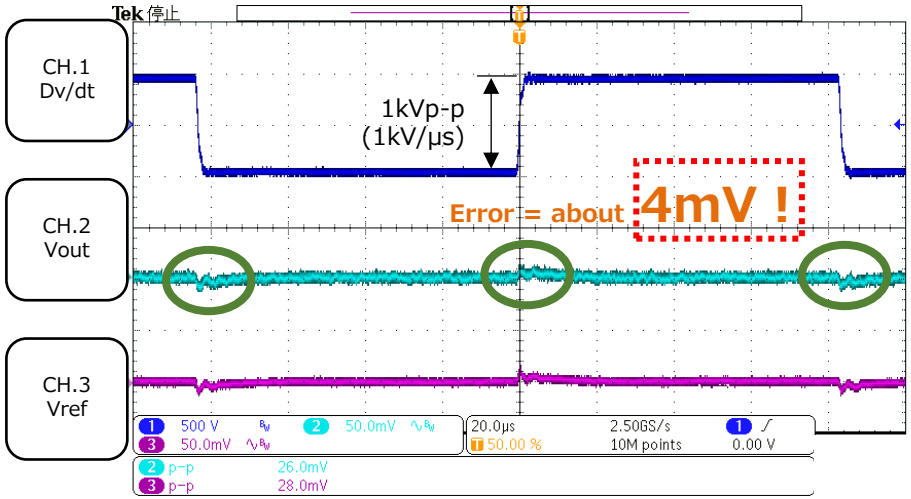
3. Features of Tamura Current Sensors ～Case of Open loop(ASIC) type～

No malfunctions

dv/dt Characteristics





(a) Existing
Discrete current sensor
L37S200S05

(b) NEW
ASIC current sensor
LA37S200S05

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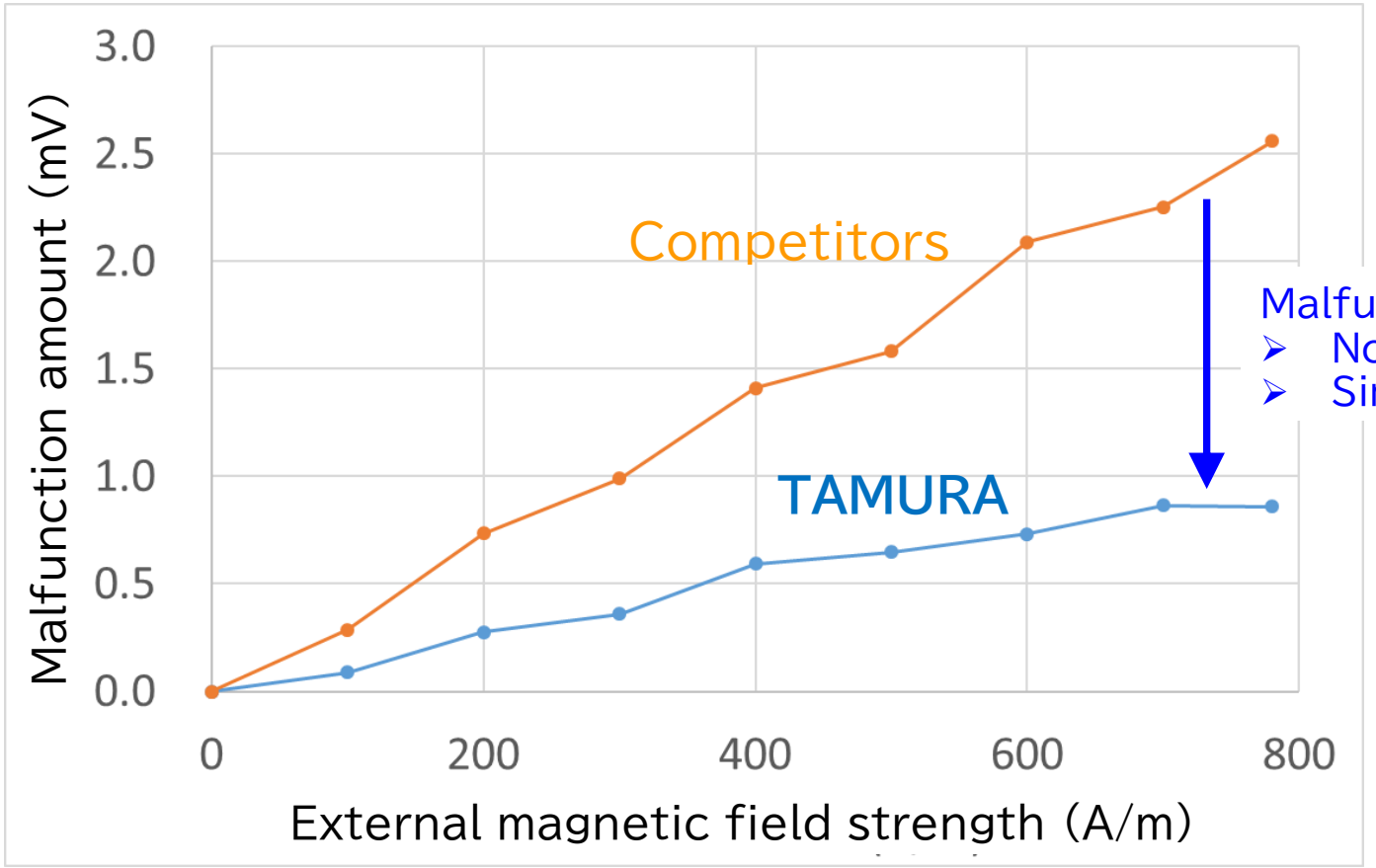
3. Features of Tamura Current Sensors
～Case of Open loop(ASIC) type～

No malfunctions

External magnetic field characteristics



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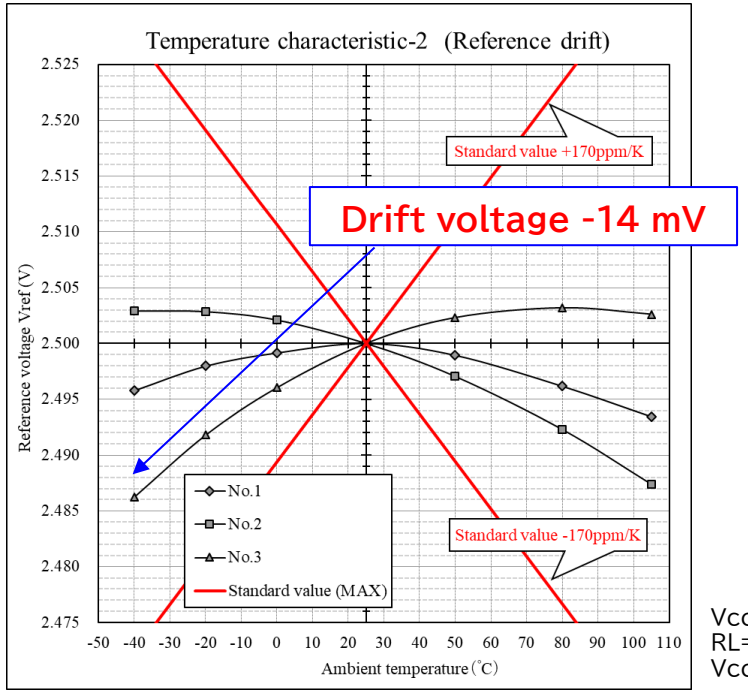
3. Features of Tamura Current Sensors
～Case of Open loop(ASIC) type～

Temperature characteristics

Reference voltage temperature characteristics

Temperature drift of Reference Voltage at Ip=0A

Competitors



Vcc=+5 V
RL=10 kΩ
Vcc-GND = 0.1 uF

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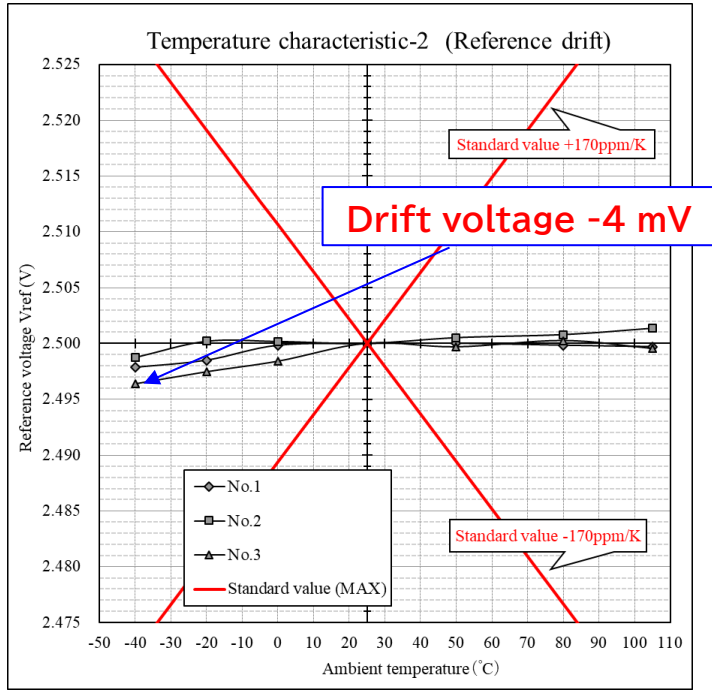

Vcc=+5 V
RL=10 kΩ
Vcc-GND = 0.1 uF

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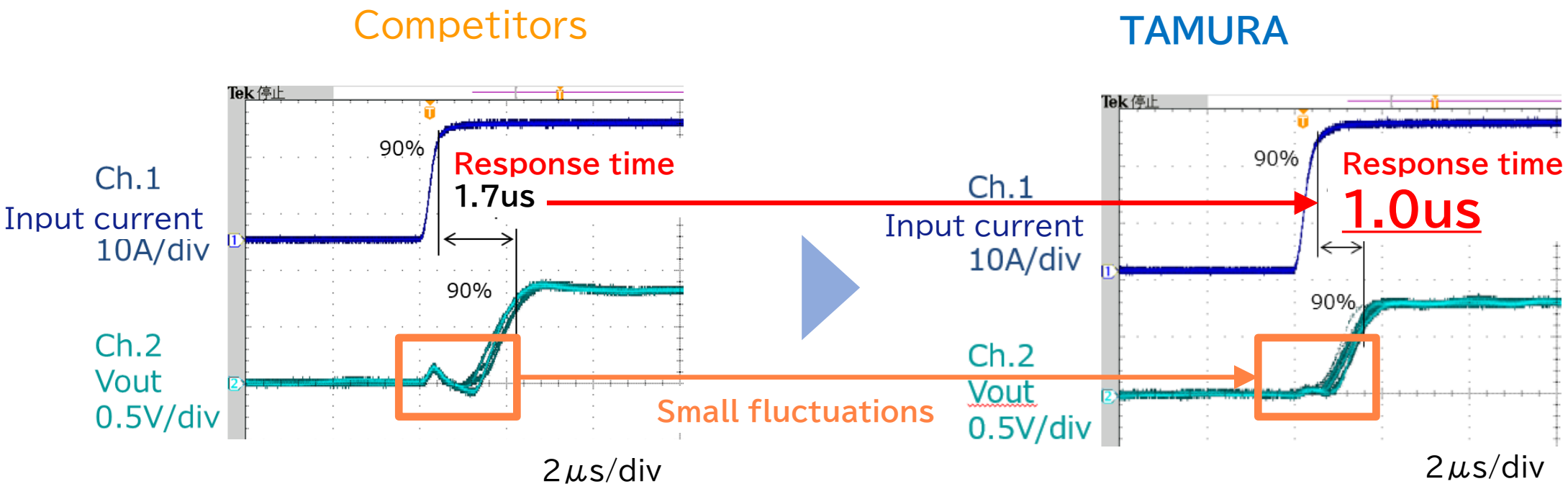
3. Features of Tamura Current Sensors ～Case of Open loop(ASIC) type～

Fast response

Response time



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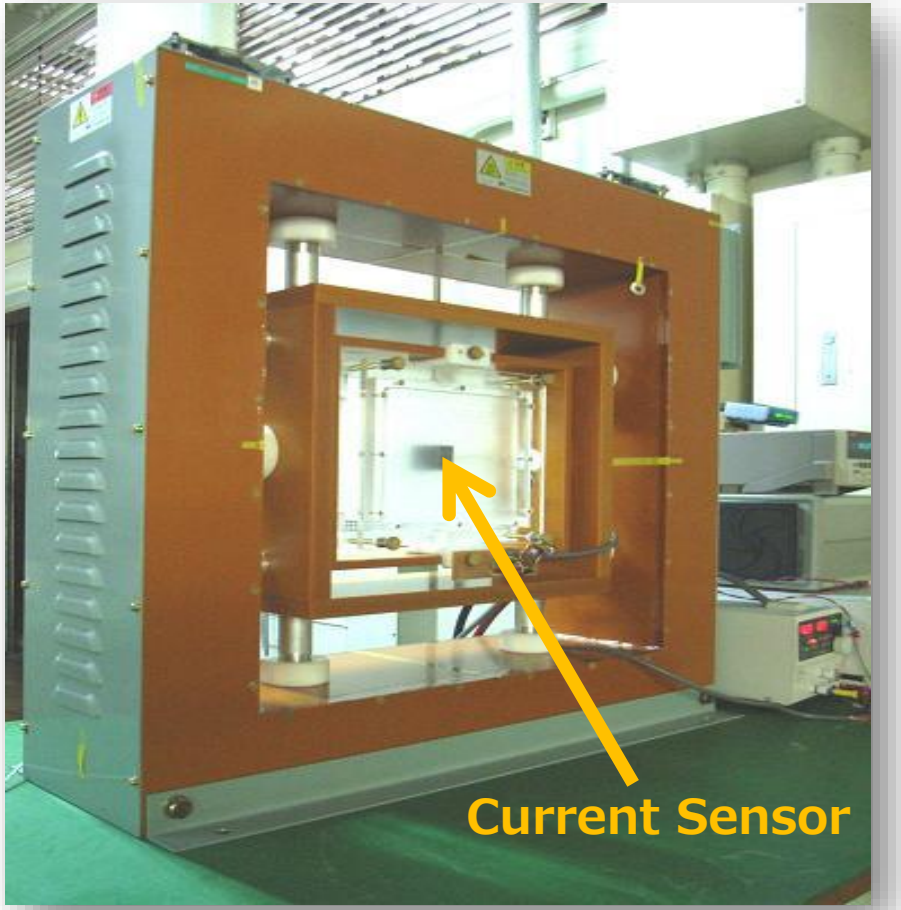
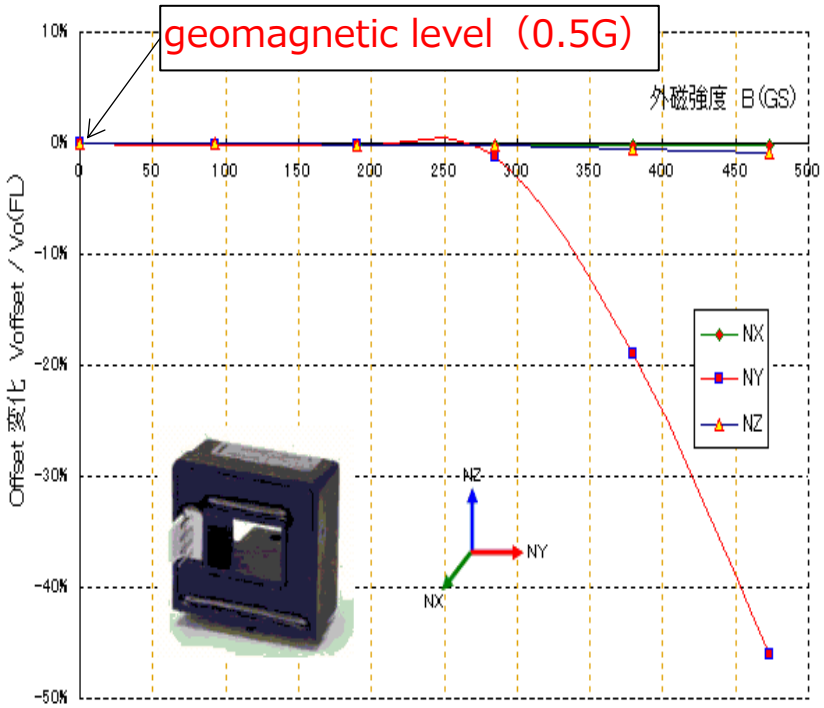
4. Technology to support of Current Sensors

Magnetic noise immunity



External magnetic noise evaluation equipment



It is possible to evaluate magnetic noise immunity quantitatively from the geomagnetic level.

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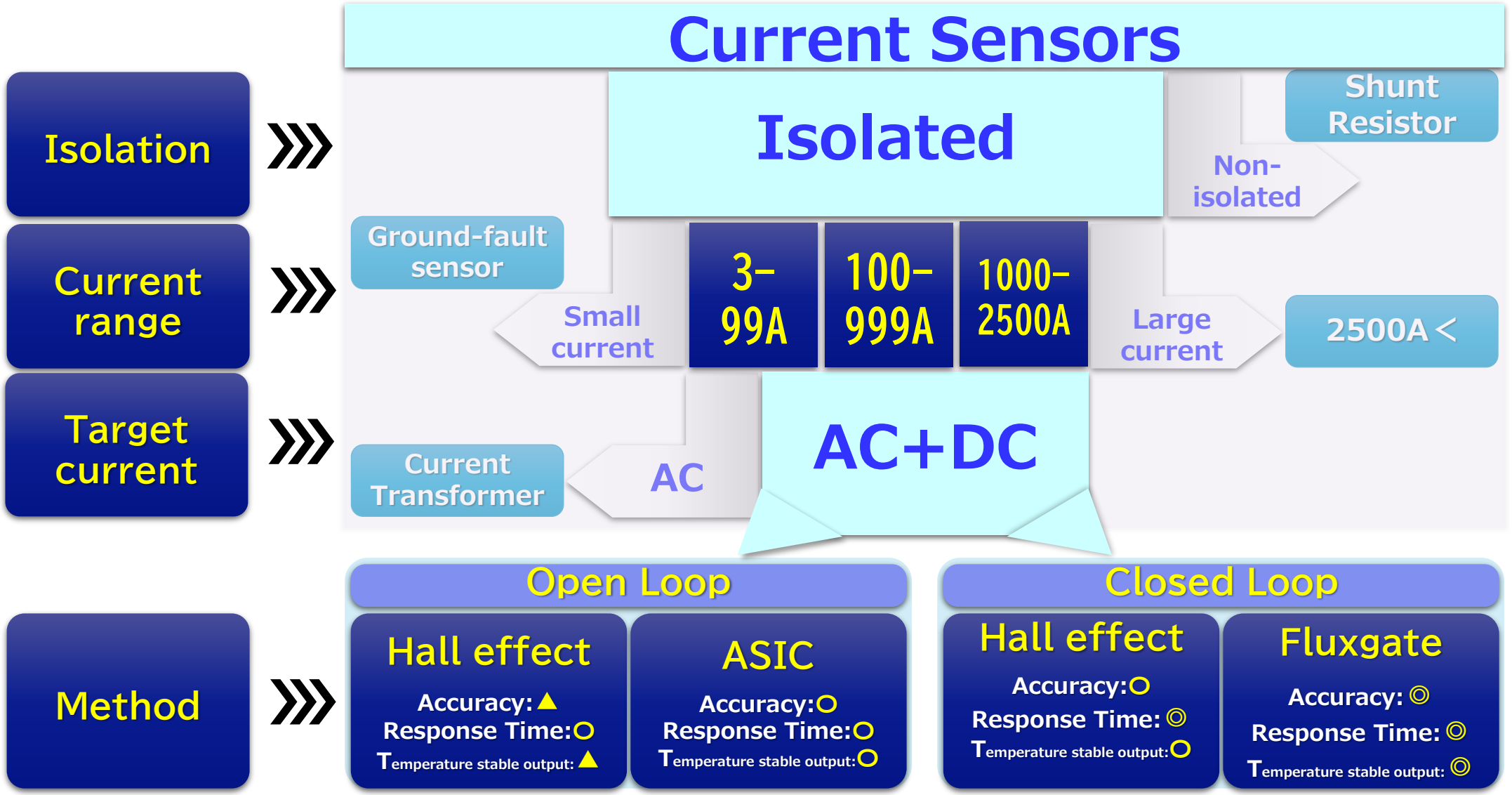
5. Product lineup / Tamura CS products range



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5. Product lineup

Appearance	Current	Supply voltage	Gain	Circuit	Primary Conductor	Model	Details
	10~50A	+7.2V	0.8V	Open ASIC	built-in bus-bar	LA17P	
	50~600A	+7.2V	0.8V	Open ASIC	Penetration □20.3*10.3	LA37S S05	
	50~600A	+7.2V	0.625V	Open ASIC	Penetration □20.3*10.3	LA37S S05K	
New 	50~800A	+7.2V	0.8V	Open ASIC	Penetration □21.5*13	LA25S	T.B.D

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Tamura's mascot "Quenu"