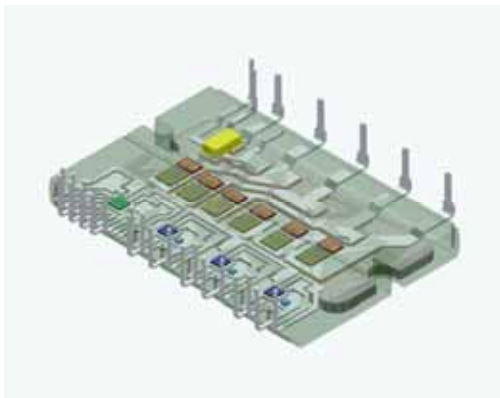


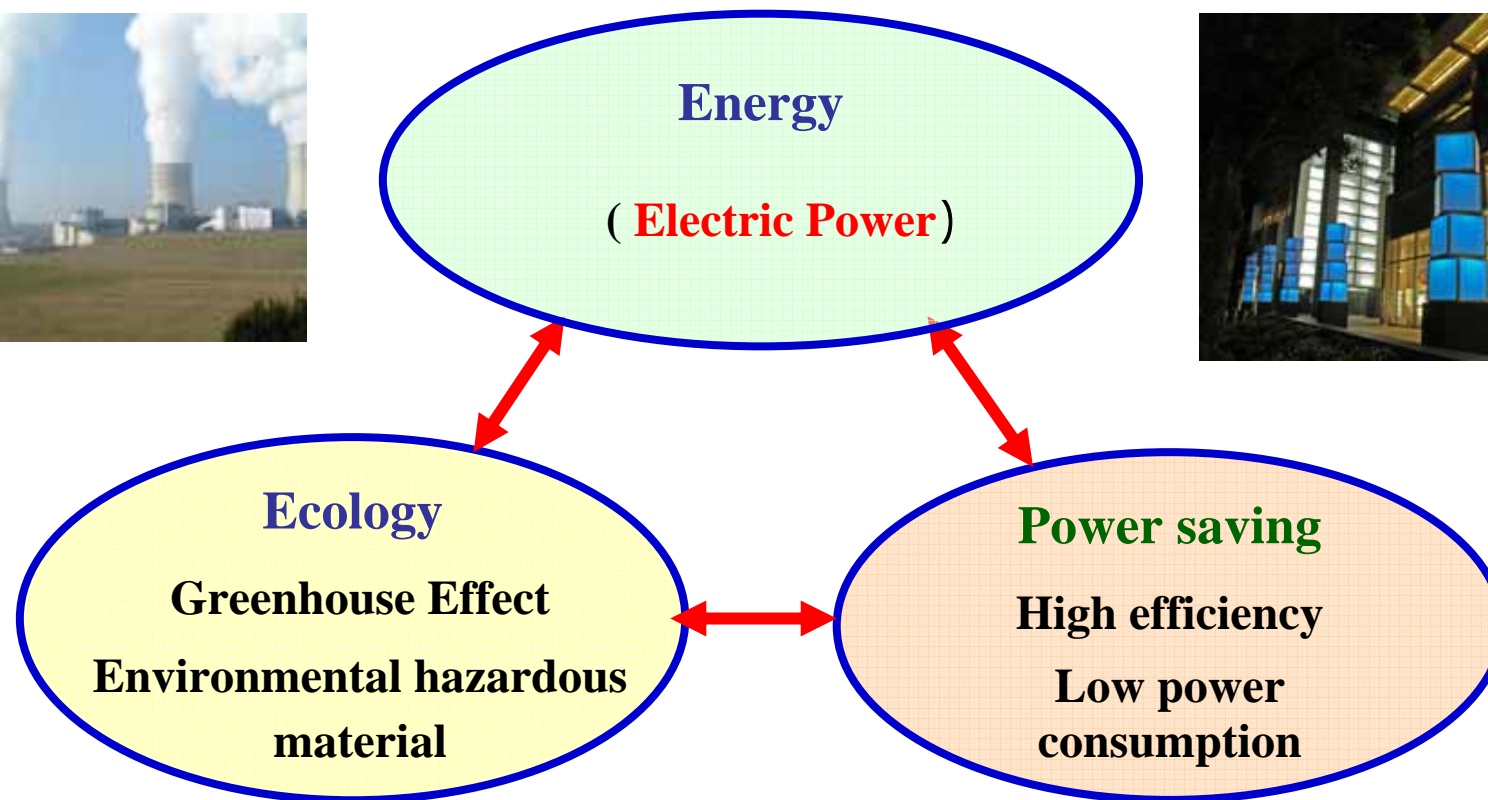
Products design and Application with BD180 Process



M. Hoshino

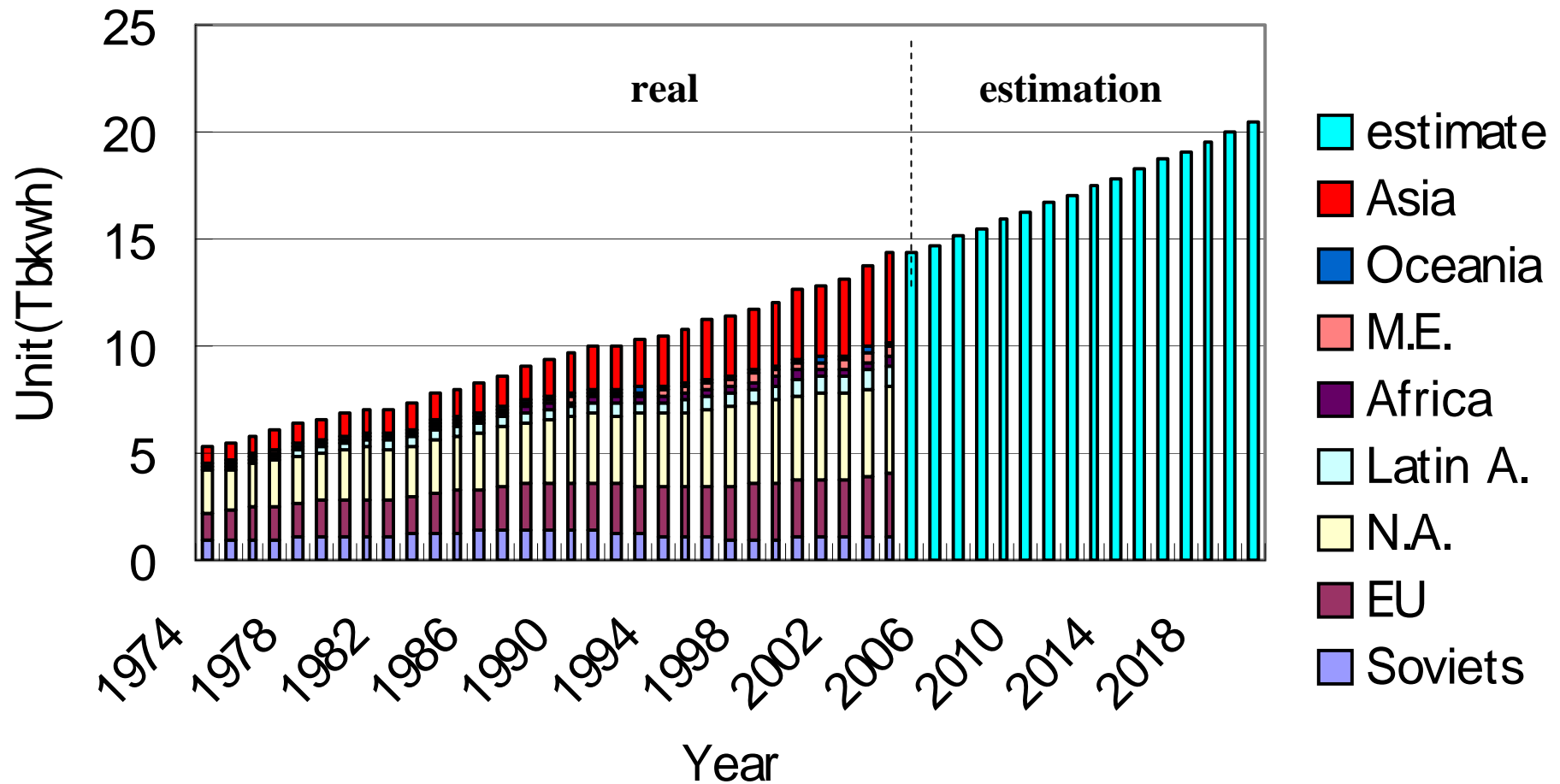
Sanken Electric Co. LTD.

The Fundamental Issues of the 21st Century



The most important issues of the 21st Century are Energy and Environmental issues, especially Electric Power energy. To solve these matters, we need new power saving system with power semiconductors, power ICs and new power devices .

The world Electric Power Consumption



Electric Power consumption is increasing Day by day, especially in Asia.

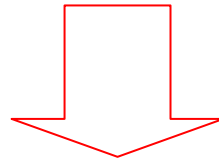


To solve the Electric Power Energy Issue

Power saving Technology

High efficiency

Alternative energy (Solar, Wind, ...)



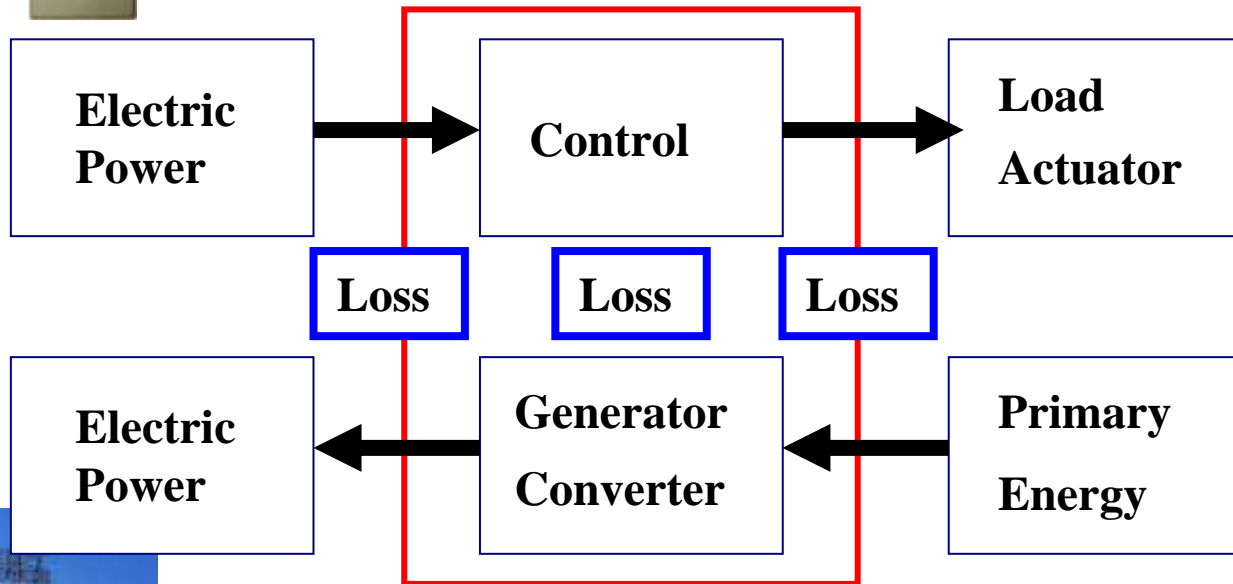
At any electronic system

**The Key is the Power semiconductors ;
Power IC, Power discrete device, Non silicon device.
The Electric Power can be controlled by Power IC.**



Electric power control and conversion system

Power semiconductors and power ICs are indispensable for precise and effective operation of the Power Systems.,



**Motor
Switch
Heater
Lighting**

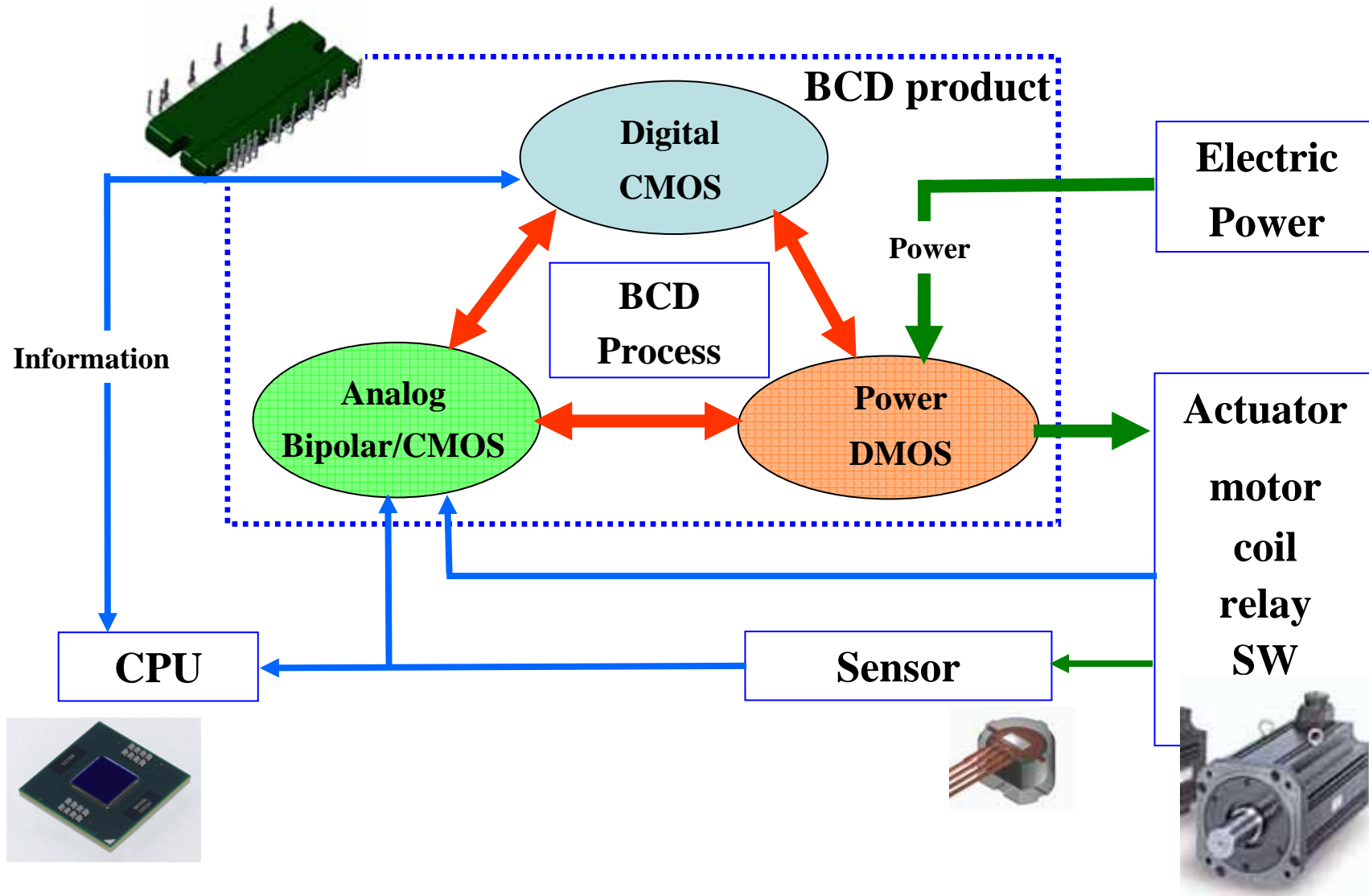
**Petroleum
Coal
Waterpower
Atomic power
.....**



These precise systems can realize high efficiency and the reduction of the Power Loss..



Electric power control system with BCD IC



Bipolar CMOS and Diffused MOS

CMOS
[Logic]

Bi-polar
[Analog]

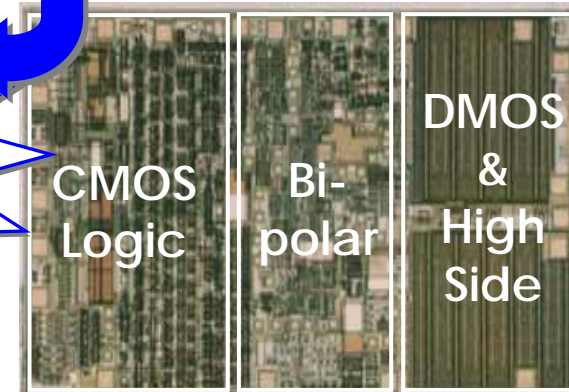
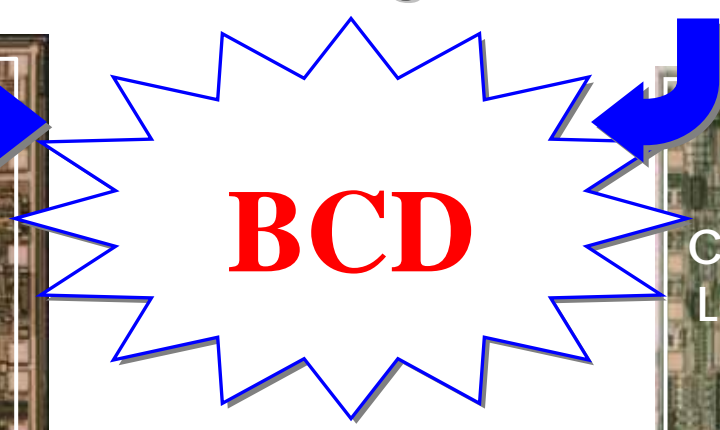
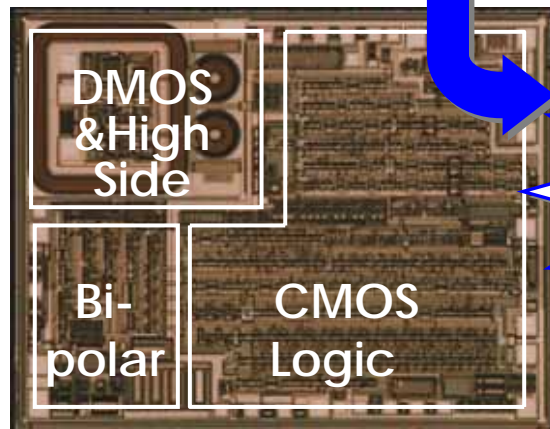
BCD Technology

Precise Analog **B**ipolar
High dense Digital **C**MOS
High power **D**MOS

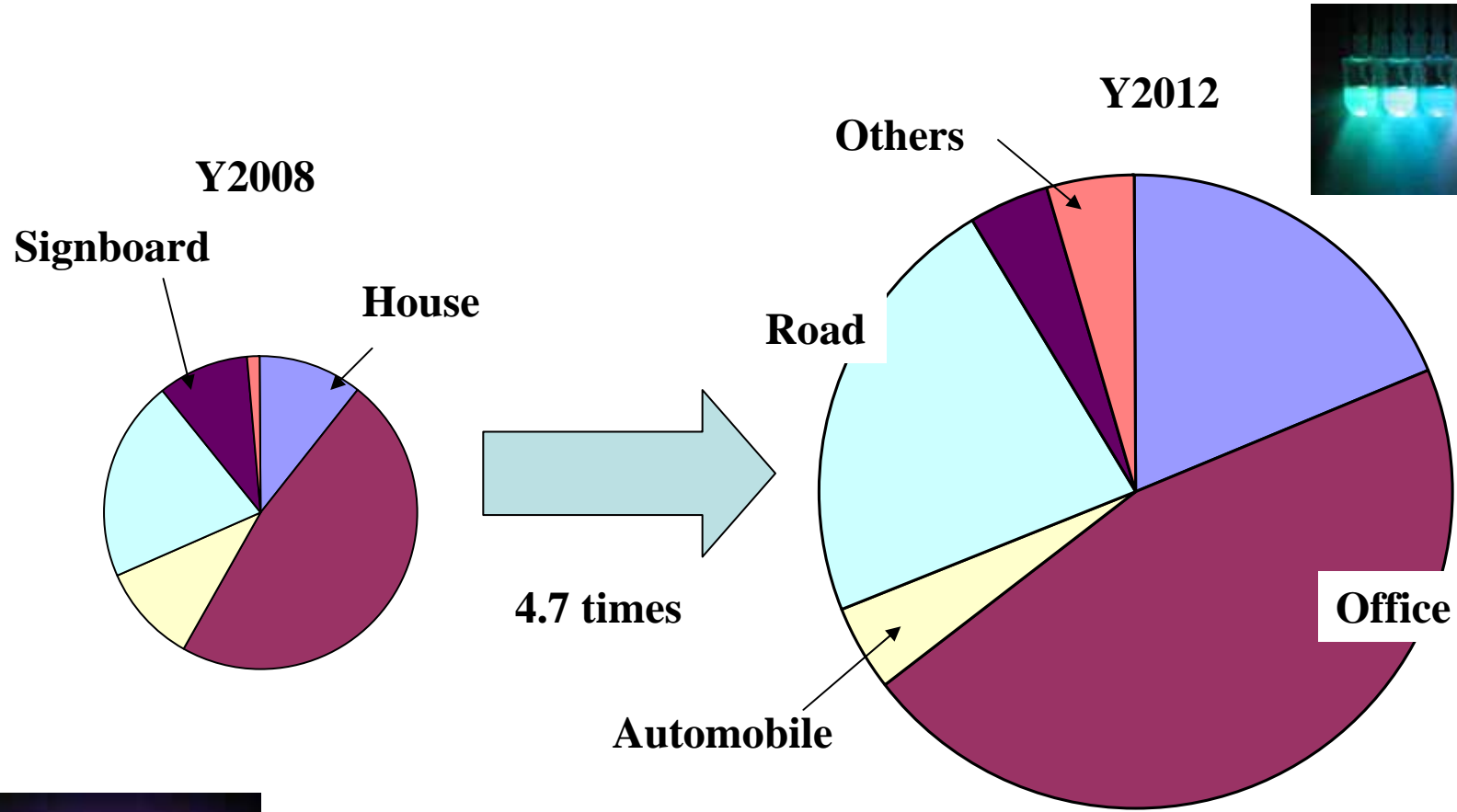


DMOS
[High Voltage]

DMOS
[High Current]

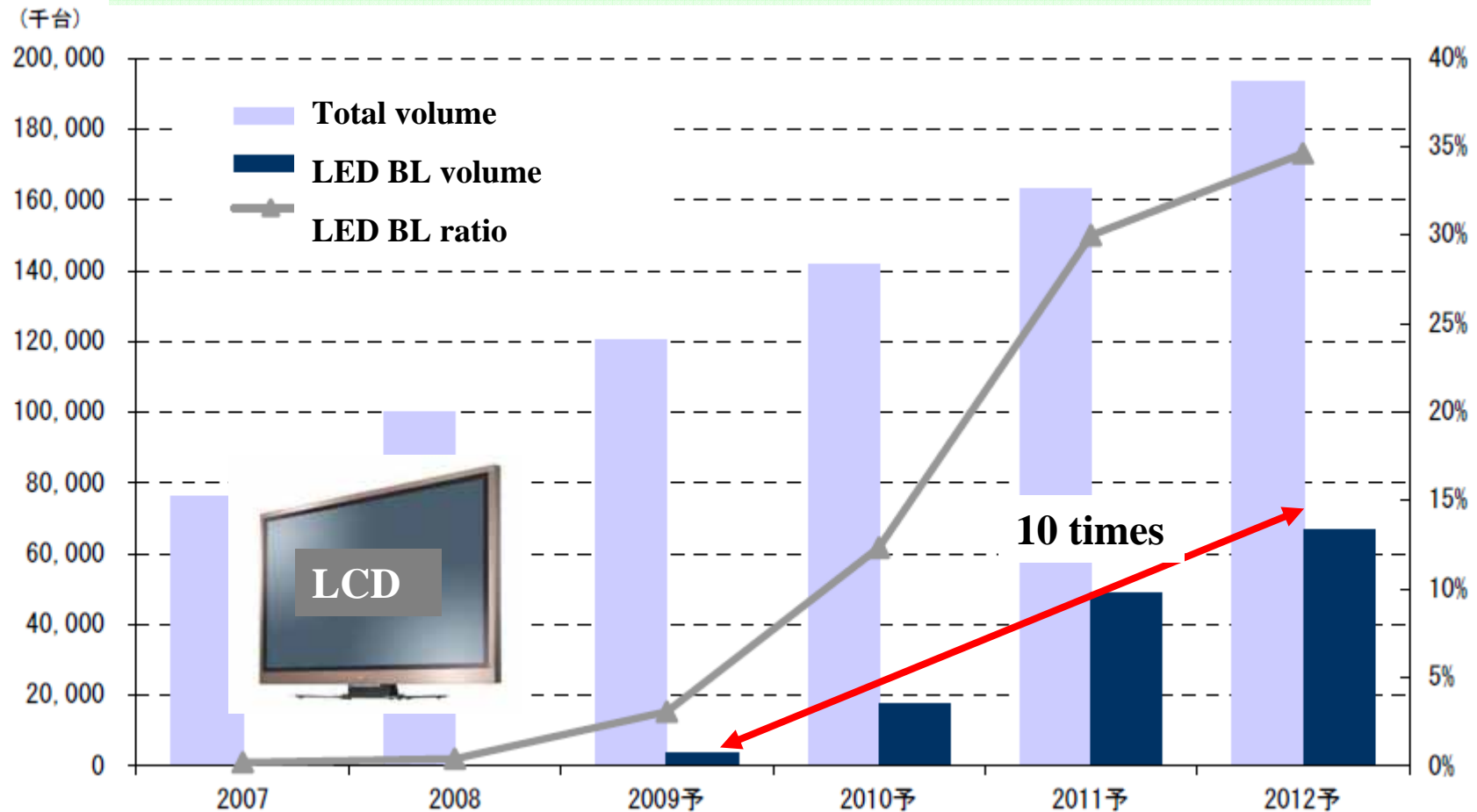


The Growth of LED Lighting System

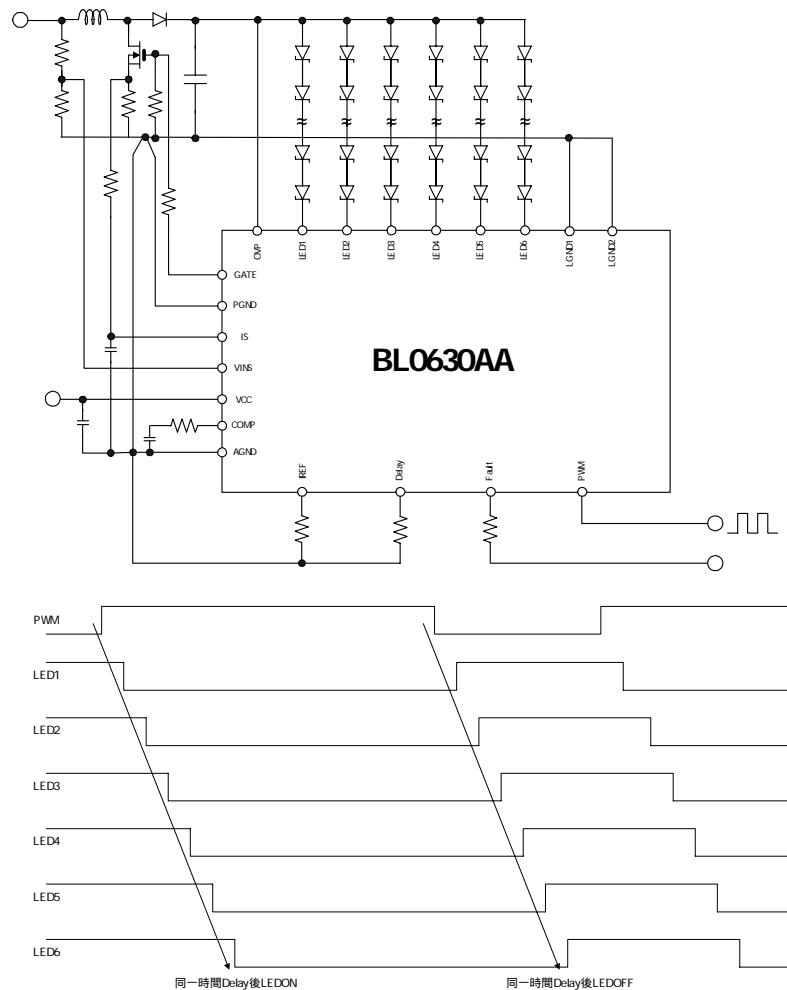


LED lighting is the rapidly expanding market.

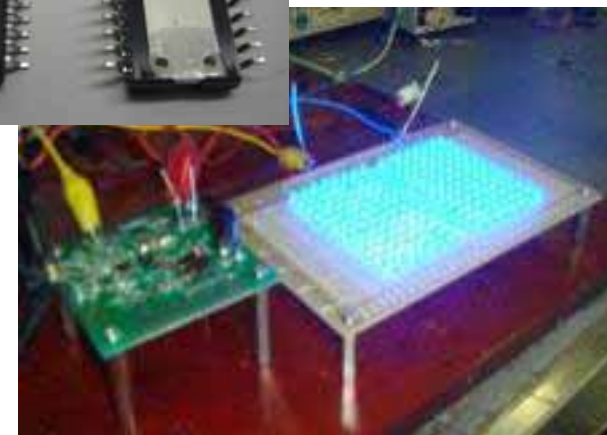
Market Trend of the LED BL System for LCD



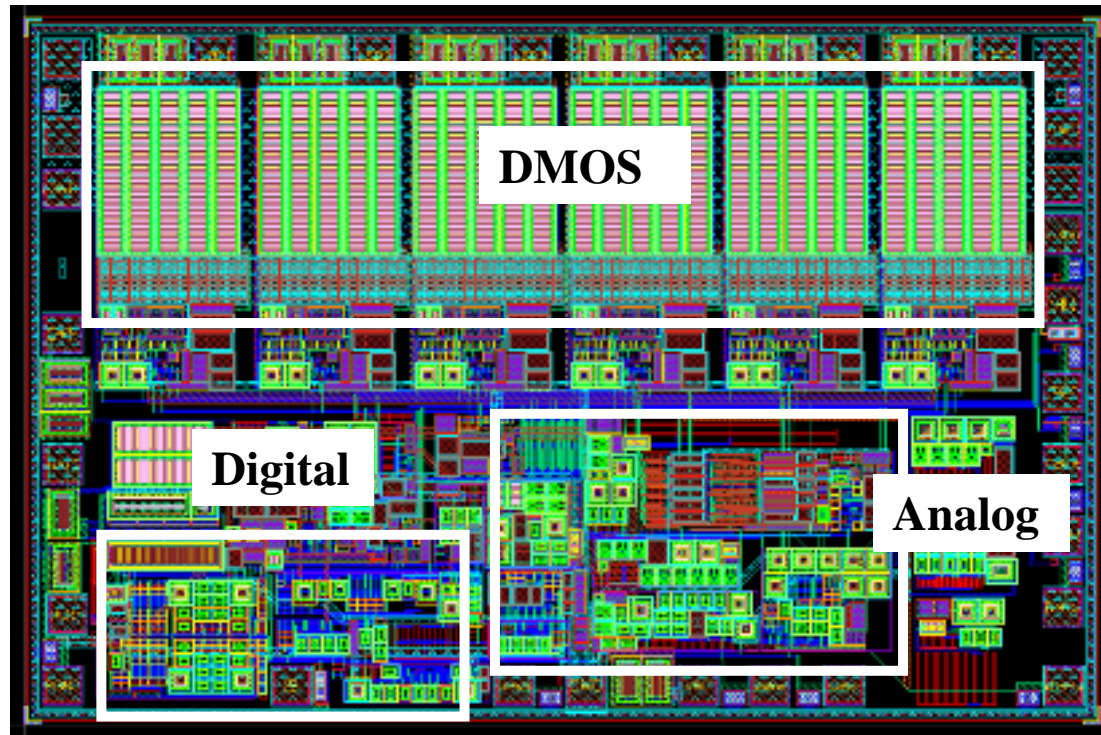
LED BL Driver IC1 of LCD TV



6ch LED Driver with DC/DC converter
 300mA/60V high voltage and current
 precise current adjusting function
 Dimming control
 phase shift function and other protections

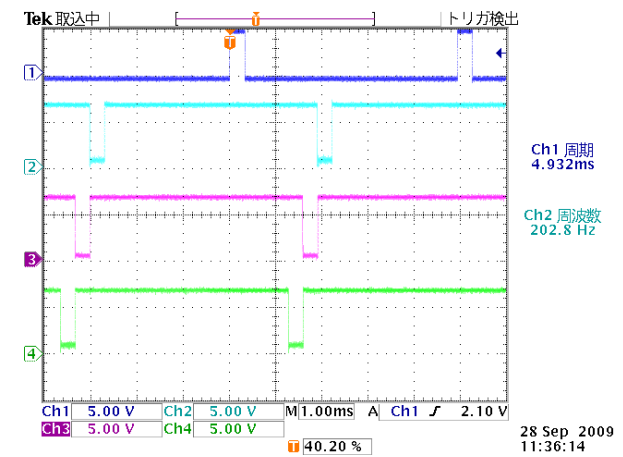
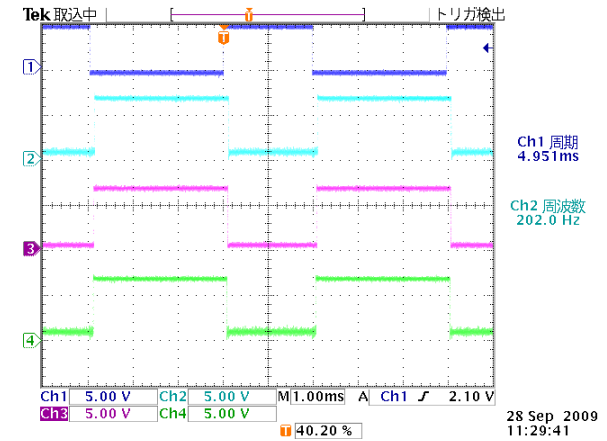


LED BL Driver IC1 of LCD TV

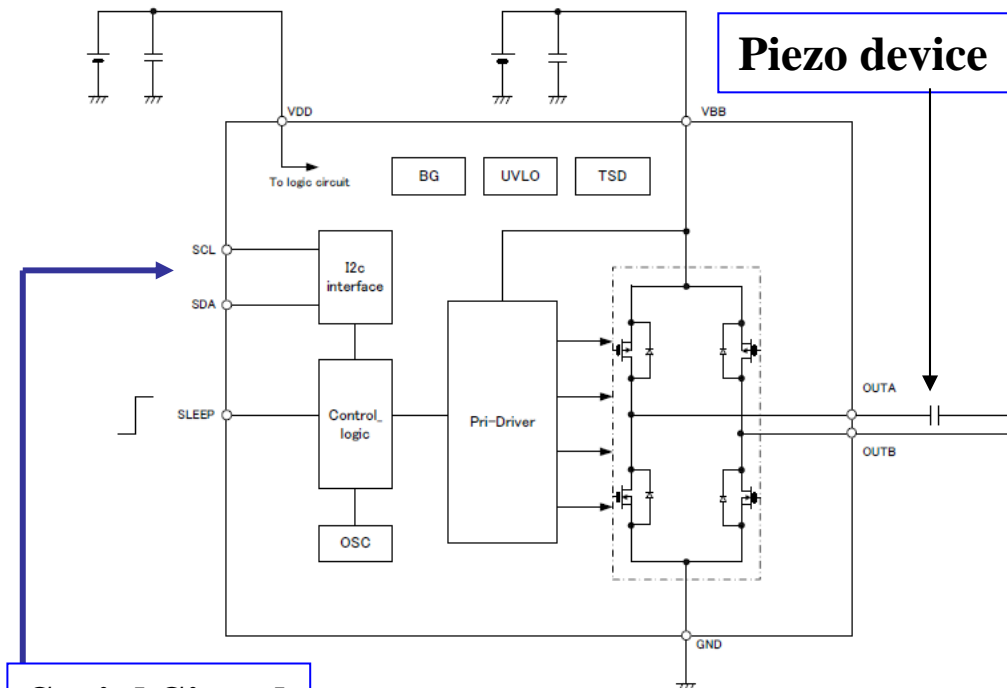


Layout

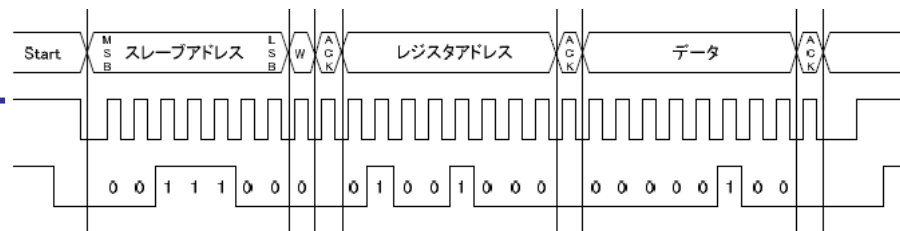
Waveforms



Piezo driver IC with BD180



Serial Signal



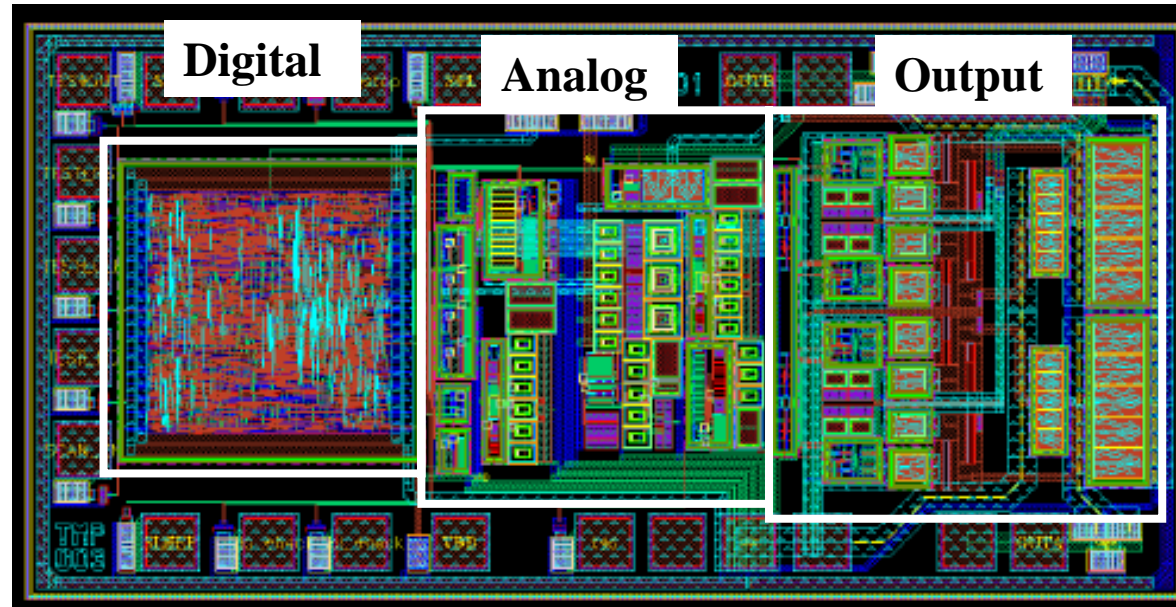
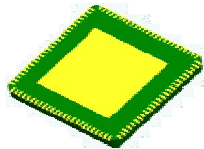
Piezo driver designed by BD180 process for Auto focus control of Digital camera .

Smaller and thinner design

Fine tuning focus functions and protections.

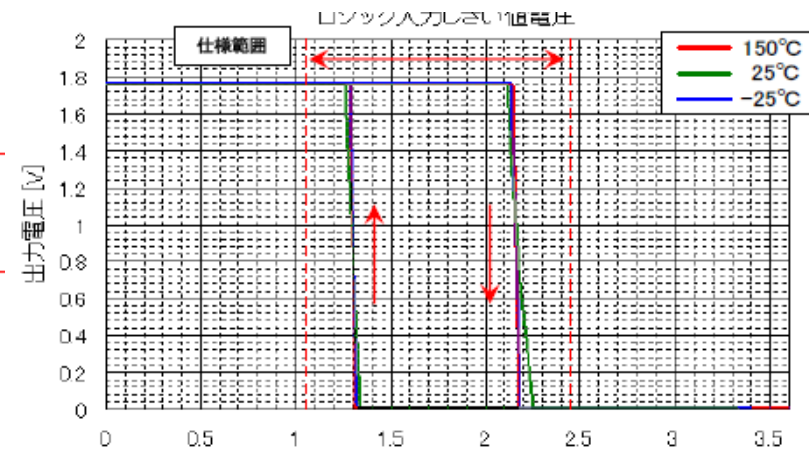
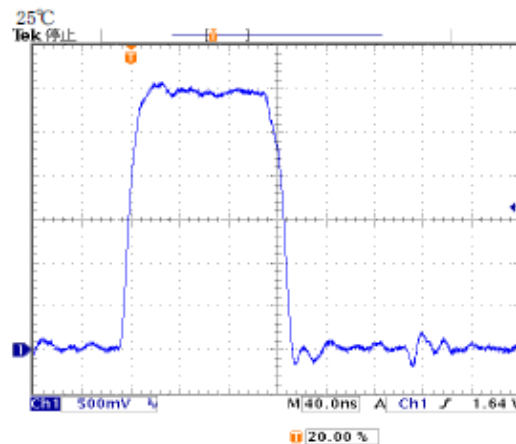
The Piezo driver IC with BD180

Layout

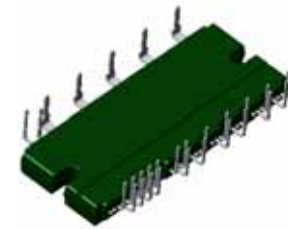


Operation

Waveform and Characteristics



Summary



Power Saving is one of the most important issues in the World, especially the Electric Power on the ecological aspect. To realize the world wide goal on that issue, the Power Saving Technology through the high efficient Power Devices and ICs is the fastest Shortcut.

BCD process is the one of the key technologies to design the Higher Performance Power ICs which can be controlled precisely and finely.

BD180 is the process fit for such demands by its high-density and high-voltage elements

By designing the power ICs with BCD, it will be easier and simpler to develop the precisely and finely controlled power systems.

By using the BCD technology and products, many engineers will be able to contribute to the solution for the electric power saving and environmental issues.

