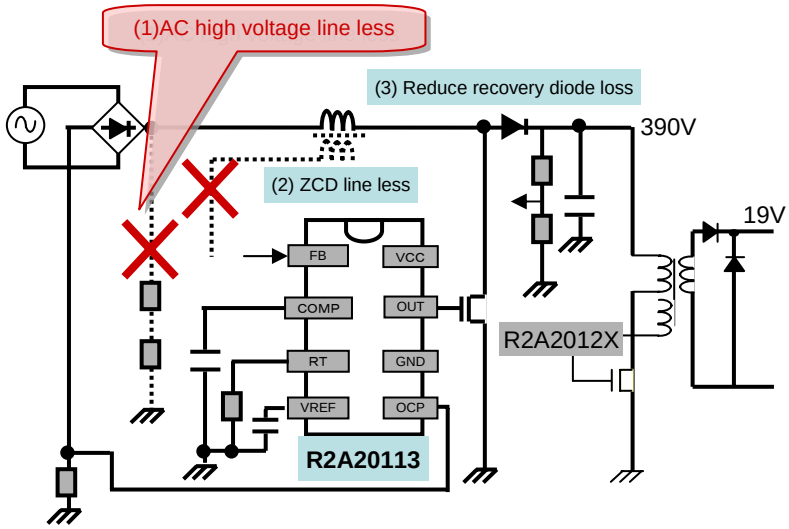
Renesas Critical Conduction Mode PFC IC
R2A20113

April 2010

Features

Simple External Circuit
Best for Small Power Supplies

- AC sense line less
- ZCD line less
  No open/short detector, No turn-on at inrush
- Feedback loop detection
- High efficiency by Zero current switching
- Low radiation noise
- Small package: SOP8/DIP8



Specification

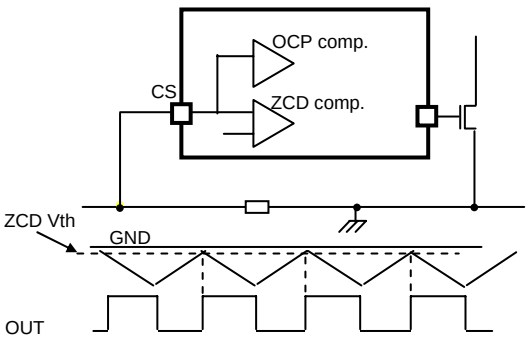
Vcc Maximum	24V
Tj operation	-40 to 150deg.
Drive peak current	+/-0.9A

Applications

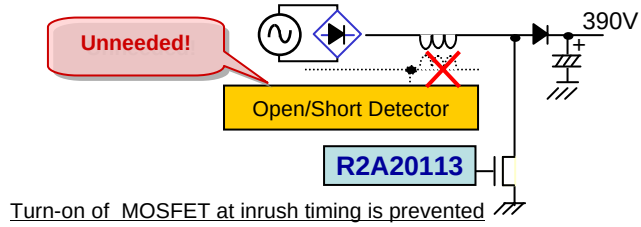
Best support for power supplies of 1-phase operating products that require low noise and downsizing due to the power factor regulation for flat-screen TV, HDD recorder and AV home electronics.

1. ZCD Line Less

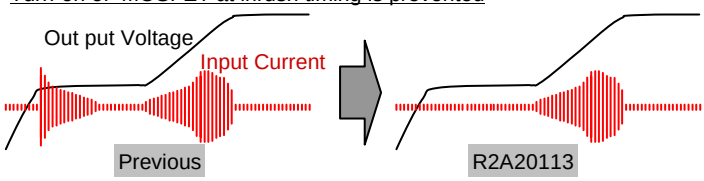
Getting ZCD signal pulse from the current sense resistor, therefore ZCD auxiliary winding is unneeded.



External open short detection circuit is unneeded

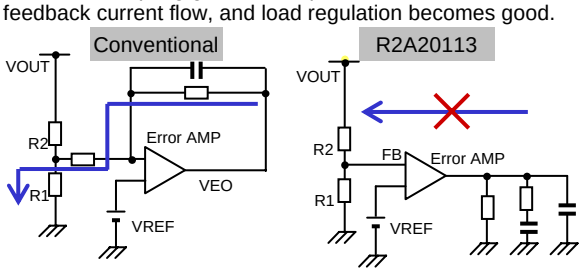


Turn-on of MOSFET at inrush timing is prevented



2. Improvement of Load Reg. Adopting gmAMP

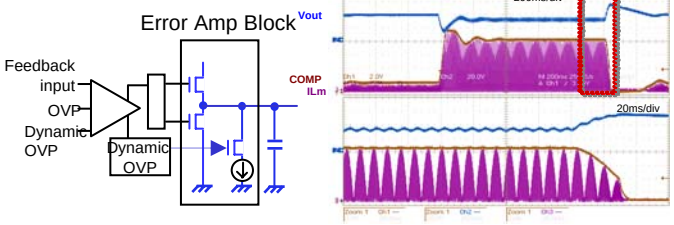
In case of adopting gmAMP adopted, there is no feedback current flow, and load regulation becomes good.



3. Dynamic OVP

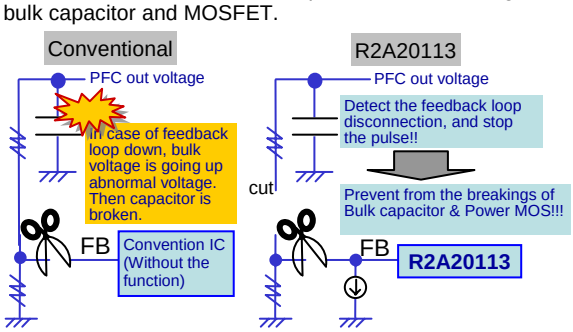
The R2A20113 has “Dynamic” and “Static” OVP. Dynamic OVP is doing discharge error AMP voltage before reaching Static OVP voltage. Therefore peak current is limited. As the result, reduce over voltage cause “No coil vibration”.

Acoustic noise is reduced.



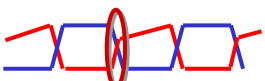
4. Feedback Loop Detector

Feedback loop absence detect function can stop output pulse. Therefore Renesas PFC IC prevents the breakings of bulk capacitor and MOSFET.



5. Principle Power Loss Reduction

Continue conduction mode

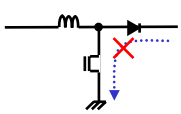


In CCM case, switching loss and radiation noise are large.

Critical conduction mode

In CRM case, switching loss and radiation noise are small due to zero current and zero voltage switching.

Recovery Loss of Boost diode by ZCS
Basically, no recovery diode loss by zero current switching too.



Renesas Electronics URL http://www.renesas.com/pfcic