

## Data Converter Datasheet

# 12bit 2MSps SAR ADC

### Key Features

- Conversion method : Successive approximation
- Resolution : 12bit
- Conversion time : 0.5us
- Differential nonlinearity : -1LSB(Min.)/+2LSB(Max)
- Integral nonlinearity : -4LSB(Min.)/+4LSB(Max)
- Supply voltage:  $V_{CCA}=1.8\pm 0.15V$
- Analog Input range : 0 to  $V_{CCA}$ , single-ended.
- 14ch analog inputs multiplexer included.

### Technology

- Process : TSMC CLN28HPM/HPC
- Available metallization technologies :4X2Y2R+AP-RDL.

### Electrical characteristics

| Item                                   | Unit  | Spec      |     |           | Description                 |
|--|-------|-----------|-----|-----------|-----------------------------|
|  |       | MIN       | TYP | MAX       |                             |
| Analog operating voltage ( $V_{CCA}$ ) | V     | 1.65      | 1.8 | 1.95      |                             |
| Digital operating voltage ( $V_{DD}$ ) | V     | 0.9       | 1.0 | 1.08      |                             |
| Reference voltage ( $V_{REF}$ )        | V     | $V_{CCA}$ | -   | $V_{CCA}$ |                             |
| Junction temperature ( $T_j$ )         | °C    | -40       | 25  | 125       |                             |
| Resolution                             | bits  | -         | -   | 12        |                             |
| Clock frequency (ADCLK)                | MHz   | 50        | 108 | 113       |                             |
| Analog input range ( $V_{in}$ )        | V     | 0         |     | $V_{REF}$ | Single ended                |
| Analog input channel number            | n     | -         | -   | 14        |                             |
| Conversion rate ( $F_{conv}$ )         | Msp/s | -         | -   | 2         | ADCLK=108MHz                |
| Conversion time ( $T_{conv}$ )         | us    | 0.5       | -   | -         | ADCLK=108MHz                |
| Integral Non-Linearity (INL)           | LSB   | -4        | -   | +4        |                             |
| Differential Non-Linearity (DNL)       | LSB   | -1        | -   | +2        |                             |
| Absolute accuracy (Abs)                | LSB   | -16       | -   | +16       |                             |
| Power consumption ( $I_{cc}$ )         | mA    | -         | -   | 1         | ADCLK=108MHz, $V_{CCA}$ pin |

*\*This IP is contract design IP. Please contact for detail.*