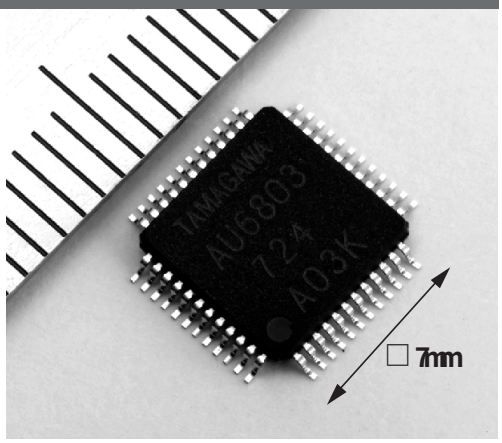
Smartcoder®

New

AU6803 (for automobiles) / AU6804 (for general use)

Angular Signal Converter IC

●Resolver Signal → Digital Signal



Newly developed R/D conversion method " Twin-PLL"
Compact, and Low Cost
High speed 12 bit R/D (resolver to digital) conversion IC

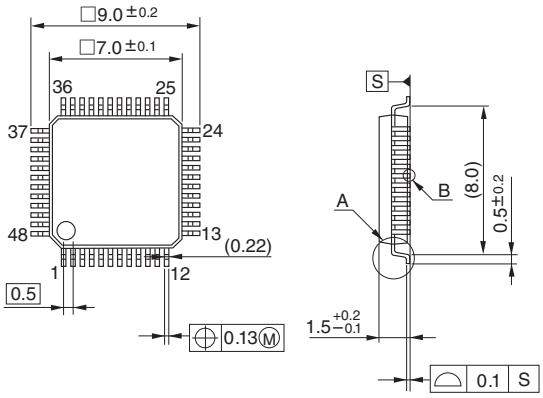
Overview

This is a 12 bit analog to digital conversion IC, which takes in signal from resolvers, the high-reliability absolute angular sensor, and outputs real-time 12 bit position data.
The newly developed signal processing technology enhances range of applications with its high performance and usability in a cost-competitive way.

Features

- ● Compact size, Light weight, Low cost
- ・Package area :1/2 (compared to AU6802N1)
- ● Advanced failure check functions
- ・Enhanced error detection functions (Square sum, Wire cut, PLL unlock, Over-temp)
- ・BIST Built-In Self Test functions
- ● Excitation Amp (currency controlled) incorporated
- ・All-in-one concept to reduce total system cost
- ● Can handle Sine/Cosine DC resolver signals

Outline



Applications

1.Velocity/Position controls in Automobiles, Trains, and Vehicles
2.Feedback controls in industrial robots and machines

Specifications

Items	Values	
Resolution	4,096 (=2^{12})	
Max Angular velocity	240,000 rpm (CLK>10MHz)	180,000rpm (CLK≦10MHz)
Conversion Accuracy	±4 LSB	
Max Angular Acceleration	1,000,000 rad/sec^2	
Settling Time	1.5 ms (typical) (180 °step input)	
Responsibility	±0.2 ° (max) / 10,000 rpm	
Allowable Phase Shift	±45 °	
Output Signals	12 bit Binary True Logic Parallel ＋ **A**,**B**,**Z**＋ Serial I/F	
Power supply voltage	＋5**V**±10% (60 mA max.)	
Resolver Excitation Power Supply	9.5 mArms,10 kHz (Current-controlled excitation amplifier incorporated)	
Outline Dimensions	48 pin LQFP (7×7×1.5t), Pin pitch : 0.5mm	
Operating Temperature	−40℃ ～ ＋125℃	

AU6803 is delivered after burn-in, while AU6804 without burn-in. Both function the same way except the burn-in process.

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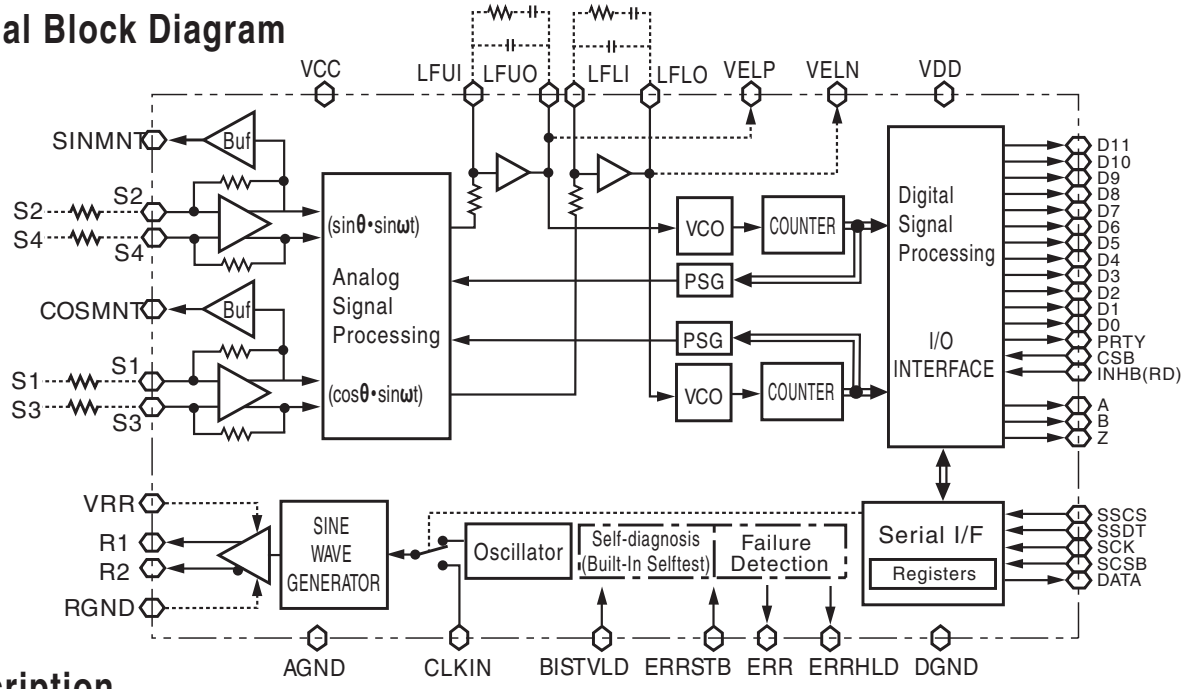
Functional Block Diagram



Pin Description

No	Name of signals	Classification	Remarks	No	Name of signals	Classification	Remarks	No	Name of signals	Classification	Remarks
1	LFUO	A/O	LPF output(U)	17	CLKIN	D/I	Clock input	33	D3	D/O(BUS)	Phase-U/φ 9
2	VELN	A/O	Velocity output	18	SSDT	D/I	Serial setting data	34	D2	D/O(BUS)	Phase-Z/φ 10
3	VELP	A/O	Velocity output	19	SSCS	D/I	Serial setting CS	35	D1	D/O(BUS)	Phase-B/φ 11
4	VCC	—	Analog PS	20	DATA	D/O(BUS)	Serial data	36	D0	D/O(BUS)	Phase-A/φ 12
5	SINMNT	A/O	SIN monitor	21	SCSB	D/I	Serial CSB	37	VDD	—	Digital PS
6	COSMNT	A/O	COS monitor	22	PRTY	D/O(BUS)	Parity / Test output	38	INHB(RD)	D/I	Inhibit
7	AGND	—	Analog GND	23	SCK	D/I	Serial clock	39	ERRHLD	D/O(I)	Error(Hold)
8	S3	A/I	S3 input	24	DGND	—	Digital GND	40	ERRSTB	D/I	Error reset
9	S1	A/I	S1 input	25	D11	D/O(BUS)	ERRCD3/φ1	41	ERR	D/O(I)	Error output
10	S2	A/I	S2 input	26	D10	D/O(BUS)	ERRCD2/φ2	42	A	D/O	Pulse output of phase A
11	S4	A/I	S4 input	27	D9	D/O(BUS)	ERRCD1/φ3	43	B	D/O	Pulse output of phase B
12	RGND	—	Exciting amplifier GND	28	D8	D/O(BUS)	ERRHLD/φ4	44	Z	D/O(I)	Z/Test output
13	R2	A/O	Exciting output R2	29	D7	D/O(BUS)	ERR/φ 5	45	CSB	D/I	Chip selection
14	VRR	—	Exciting amplifier PS	30	D6	D/O(BUS)	– /φ 6	46	LFLO	A/O	LPF output (L)
15	R1	A/O	Exciting output R1	31	D5	D/O(BUS)	Phase-W/φ 7	47	LFLI	A/I	LPF input (L)
16	BISTVLD	D/I	BISIT operation control	32	D4	D/O(BUS)	Phase-V/φ 8	48	LFUI	A/I	LPF input (U)

Notes : 1. "No." in corresponding to the terminal pin number.
2. The classification of signals is as follows.
- A/I : Analog input
- A/O : Analog output
- D/I : Digital input
- D/O : Digital output
- D/O(I) : Digital output (Adding the input internally)
- D/O(BUS) : Digital output (3-state output)

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