

Smartcoder[®]

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

Angular Signal Converter IC

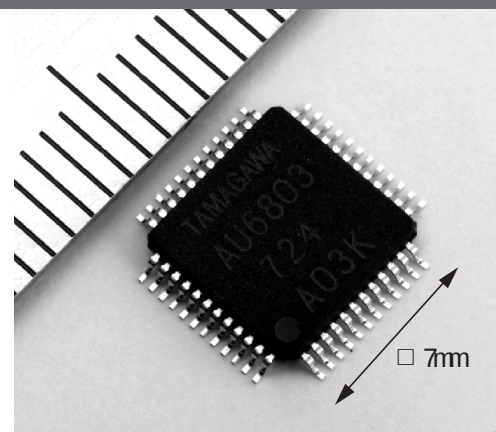
• Resolver Signal → Digital Signal

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.

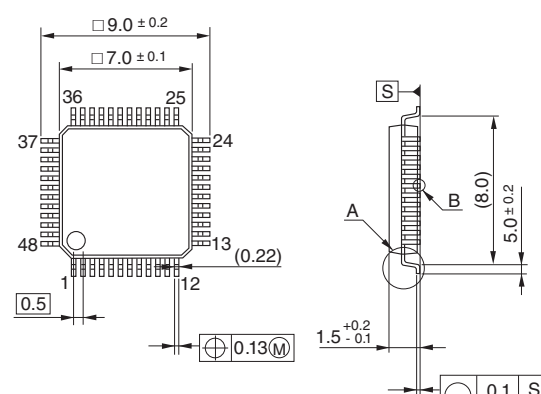
The newly developed signal processing technology enhances range of applications with its high performance and usability in a cost-competitive way.



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

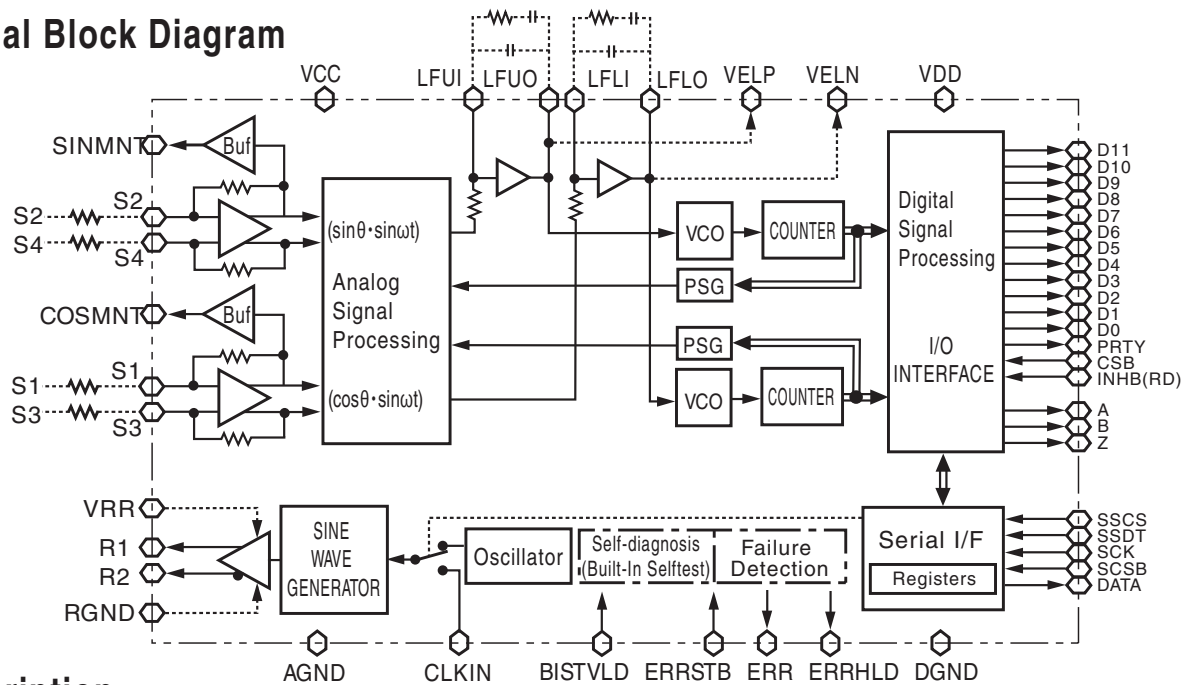
Specifications

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.

**TAMAGAWA SEIKI CO., LTD.**

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	INH(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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WARRANTY

Tamagawa Seiki warrants that this product is free from defects in material or workmanship under normal use and service for a period of one year from the date of shipment from the factory. This warranty, however, excludes incidental and consequential damages caused by careless use of the product by the user. Even after the warranty period, Tamagawa Seiki offers repair service, with charge, in order to maintain the quality of the product. The MTBF (mean time between failures) of our product is quite long; yet, the predictable failure rate is not zero. The user is advised, therefore, that multiple safety means be incorporated in your system or product so as to prevent any consequential troubles resulting from the failure of our product.

Specifications are subject to change without notice.

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