# ENCODER TECHNOLOGY

Smartcoder
AU6802

High-speed, Digital-Tracking, Complete 10/12-Bit Resolver-to-Digital Converter

■ Features

(1)   Vehicle-mount quality
   ✳   Quality level: Transportation equipment involved with safety
   ✳   Operating temperature range: - 40° ~ + 125°C

(2)   High accuracy

(3)   Simple to use
   ✳   Real time output (High tracking rate: 2000,000 rpm for 10 bit resolution
   ✳   Single power supply of DC5V (integrated oscillator for exciting resolver: 10/20 kHz)
   ✳   Small size and light weight (10 x 10mm, Pin interval: 0.65mm, 52 pins QFP, Wt.-1 gram)
   ✳   Built-in test (Abnormality detection) function
   ✳   Pulse + Serial/Parallel/Bus output (Selectable)
   ✳   Resolution of 10/12 bits (Selectable)
   ✳   Capability to set the number of poles for UVW (Selectable from x 1, 2, 3, 4)
   ✳   Clock input (20MHz): External CLK input/Crystal resonator /Ceramic resonator (Selectable)
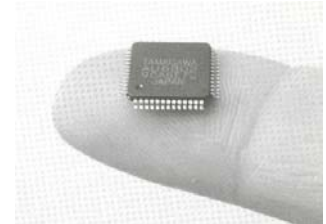
■ Outline
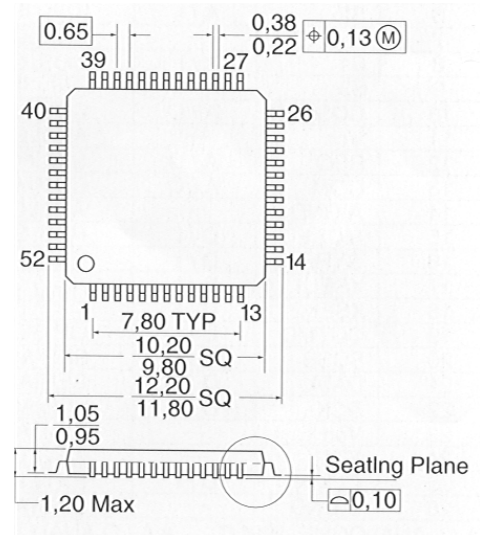
■ Specifications

Resolution	1,024 (=2^{10})	4,096 (=2^{12})	For 1 revolution of electric angle
Conversion accuracy	±10.6 arc-minutes ± 1.5LSB		As static accuracy in electric angle
Settling time	0.5 ms typ.	2 ms typ.	For step input of 179° in electric angle
Tracking rate	200,000 rpm	50,000 rpm	As maximum tracking rate in electric angle
Response	±0.2°max./10,000 rpm	±0.4°max./10,000 rpm	As output response delay in electric angle
2 phase pulse signal	256 P/T	1024 P/T	
Source dissipation	DC 5V ± 5% 50mA Max		
Operating Temperature	-40 ~ + 125°C		
Storage temperature	-60 ~ + 150°C		
Humidity	90% RH		
Mass	1g Max		

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■ Functional Block Diagram
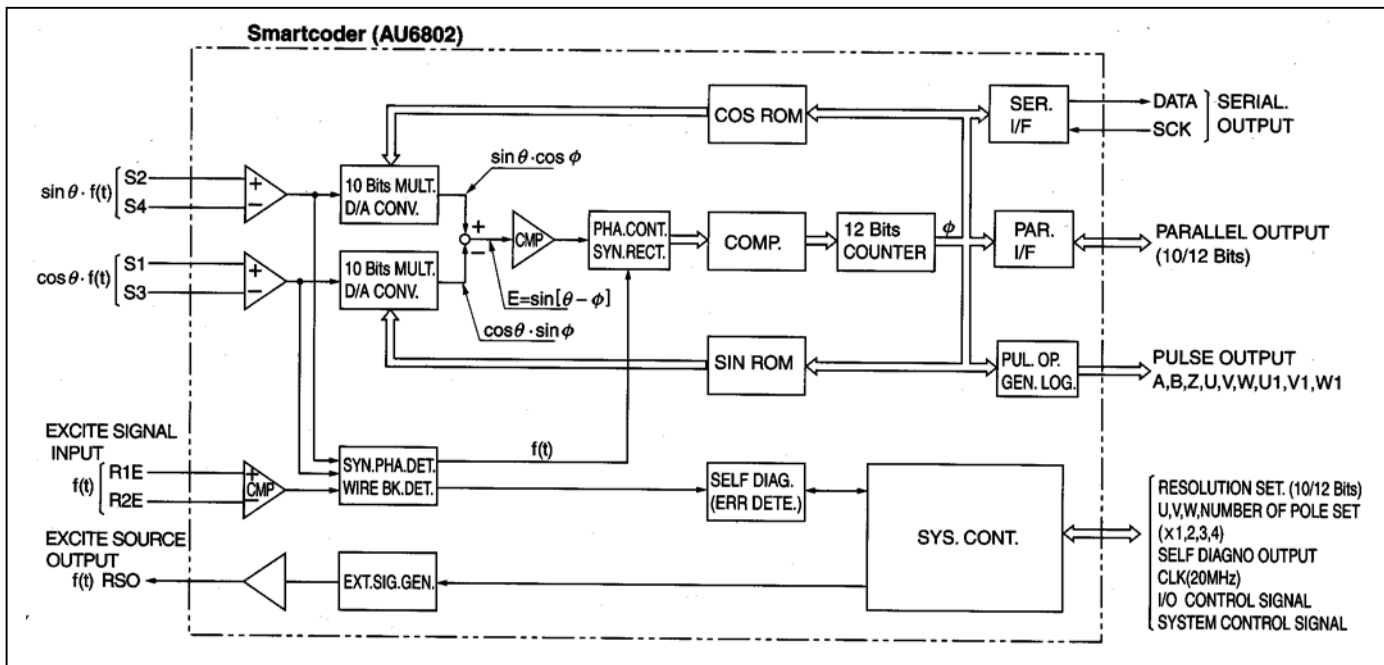
■ Pin Description

Pin No.	Symbol	Form	Function	Pin No.	Symbol	Form	Function
1	R1E	A/1	EXT. EXCIT. IP	27	Do	D/O (BUS)	PRT/Ø12
2	R2E	A/1	(DIF.IP)	28	D1	D/O (BUS)	ERRHLD/ Ø11
3	Vcc	-	ANALOGUE SOURCE	29	D2	D/O (BUS)	ERR/ Ø10
4	SINMNT	A/O	SIN MONITOR	30	D3	D/O (BUS)	W1/ Ø9
5	S4	A/1	SIN. IP	31	D4	D/O (BUS)	V1/ Ø8
6	S2	A/1	(DIF. IP)	32	D5	D/O (BUS)	U1/ Ø7
7	A.GND	-	ANALOGUE GND	33	D.GND	-	DIGITAL GND
8	S1	A/1	RES. SELECT	34	D6	D/O (BUS)	Wch/ Ø6
9	S3	A/1	(DIF. IP)	35	D7	D/O (BUS)	Vch/ Ø5
10	COSMNT	A/O	COS. MONITOR	36	D8	D/O (BUS)	Uch/ Ø4
11	Vcc	-	ANALGOUE SOURCE	37	D9	D/O (BUS)	Zch/ Ø3
12	RSO	A/O	SIG. FOR EXCIT.	38	D10	D/O (BUS)	Bch/ Ø2
13	COM	A/O	COMMON (2.5V)	39	D11	D/O (BUS)	Ach/ Ø1
14	A.GND	-	ANALOGUE GND	40	D.GND	-	DIGITAL GND
15	MDSEL	D/1	RES. SELECT	41	CSB	D/1	CHIP SELECT
16	SYRB	D/1	REF. SYNC.	42	RDB	D/1	LEAD
17	XSEL1	D/1		43	INHB(RD)	D/1	INHIBIT
18	XSEL2	D/1	UVW P SEL	44	PRT	D/O (BUS)	PARITY
19	OUTMD	D/1	OP. SEL	45	ERRHLD	D/O	ERROR HOLD
20	SCSB	D/1	SERIAL CSB.	46	ERRST	D/1	ERROR RESET
21	DATA	D/O	SERIAL DATA	47	FSEL1	D/1	FREQUENCY SELECT
22	SCK	D/1	SERIAL LOCK	48	FSEL2	D/1	FREQUENCY SELECT
23	VDD	-	DIGITAL SOURCE	49	VDD	-	DIGITAL GND
24	XTAL	-	OSC. CONN	50	YEST1	D/1	TEST MODE SET
25	CLKIN	D/1	EXTERNAL CLK INPUT	51	TEST2	D/1	TEST MODE SET
26	D.GND	-	DIGITAL GND	52	A.GND	-	ANALOGUE GND

* A/I Analog input   * A/O Analog Output   * D/I Digital input   * D/O Digital Output

CAUTION 1. Pin arrangement must be referred to special drawing