

TDA5703

Analog-to-Digital Converter

Preliminary Specification

Linear Products

DESCRIPTION

The TDA5703 is an 8-bit analog-to-digital converter (ADC) designed for video and professional applications. The TDA5703 converts the analog input signal into 8-bit binary-coded digital words at a sampling rate of up to 25MHz.

FEATURES

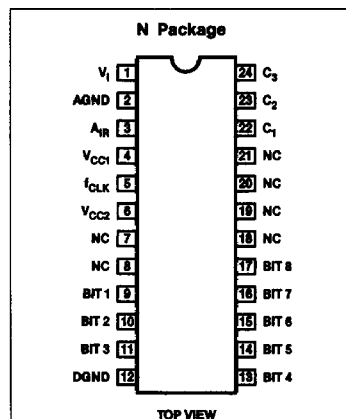
- 8-bit binary coded resolution
- Digitizing rates up to 25MHz
- Internal reference
- Only 3 external capacitors required

- Two voltage supply connections:
– analog +5V
– digital +5V
- 1V full-scale analog input (75Ω external resistor tied to V_{CC1})
- Full-scale bandwidth; 11MHz at 3dB
- Low power consumption; typically 250mW
- 24-lead plastic DIP

APPLICATION

- Video data conversion

PIN CONFIGURATION



ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE
24-Pin Plastic DIP (SOT-101 BE17)	0 to +70°C	TDA5703N

ABSOLUTE MAXIMUM RATINGS

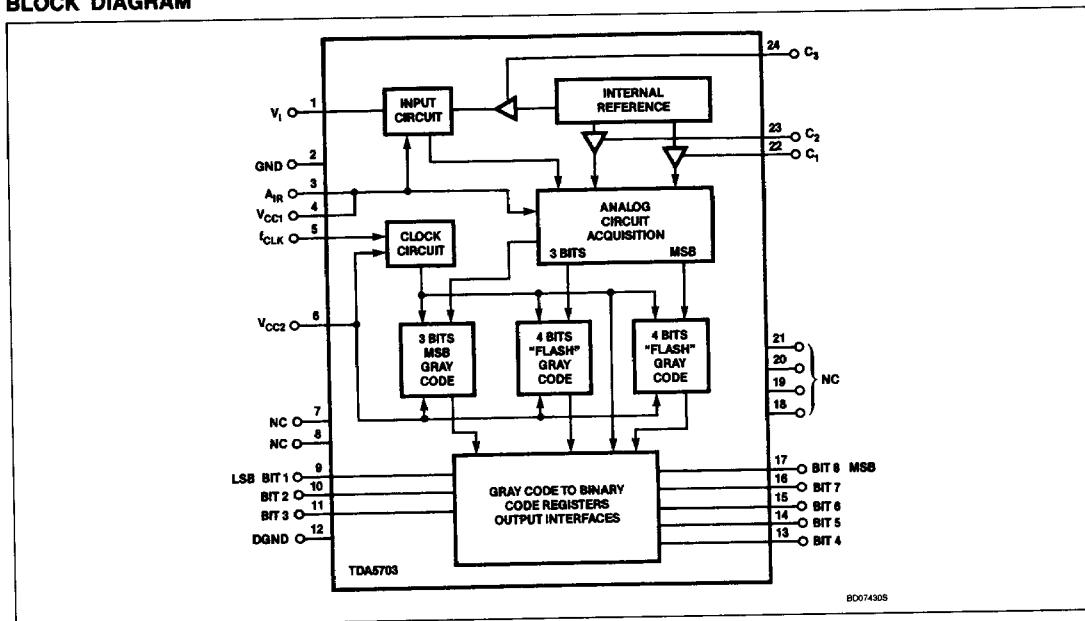
SYMBOL	PARAMETER	RATING	UNIT
V_{CC1} V_{CC2}	Supply voltages at Pin 4 at Pin 6	8 8	V V
V_{IN}	Input voltage at Pins 1 and 5	8	V
I_{OUT} I_O	Output current at Pins 9, 10, 11, 13, 14, 15, 16 and 17	10	mA
T_{STG}	Storage temperature range	-65 to +150	°C
T_J	Junction temperature	+125	°C
T_A	Operating ambient temperature range	0 to +70	°C

PIN NO.	SYMBOL	DESCRIPTION
1	V_I	Analog voltage input
2	AGND	Analog ground
3	A_{IR}	Analog input reference
4	V_{CC1}	Analog supply voltage
5	f_{CLK}	Clock input
6	V_{CC2}	Digital supply voltage
7	NC	Not connected
8	NC	Not connected
9	BIT 1	Least significant bit (LSB)
10	BIT 2	
11	BIT 3	
12	DGND	Digital ground
13	BIT 4	
14	BIT 5	
15	BIT 6	
16	BIT 7	
17	BIT 8	Most significant bit (MSB)
18	NC	Not connected
19	NC	Not connected
20	NC	Not connected
21	NC	Not connected
22	C_1	Decoupling for internal reference
23	C_2	
24	C_3	

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BLOCK DIAGRAM



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DC ELECTRICAL CHARACTERISTICS $V_{CC1} = V_{CC2} = 4.75$ to $5.25V$; $T_A = 25^\circ C$, unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS			UNIT
			Min	Typ	Max	
Supply						
V _{CC1}	Analog supply voltage	Pin 4	4.75	5.0	5.25	V
V _{CC2}	Digital supply voltage	Pin 6	4.75	5.0	5.25	V
I _{CC1}	Analog supply current	Pin 4	55	80	105	mA
I _{CC2}	Digital supply current	Pin 6	55	80	105	mA
Res	Resolution			8		bits
Digital input levels ¹						
V _{IH}	Input voltage HIGH		2.2		V _{CC2}	V
V _{IL}	Input voltage LOW		-0.3		0.8	V
I _{IH}	Input current HIGH				10	μA
I _{IL}	Input current LOW		-7	350		μA
	Analog input levels		V _{CC1} ⁻¹		V _{CC1}	V
	Absolute linearity	V ₁	-1.5	575	+1.5	LSB
	Differential linearity	V ₁	-1.5		+1	LSB
BW	Bandwidth	1dB		6.0		MHz
		3dB	6.0	10		MHz
	Differential phase	F ₀ = 25MHz, measured with TDA5702		1		deg.
	Differential gain			2.3		%
	Offset error			40		mV
R _{IN}	Input resistance			80		kΩ
C _{IN}	Input capacitance			5		pF
Digital output levels (I _O = 10mA)						
V _{OH}	Output voltage HIGH		2.4			V
V _{OL}	Output voltage LOW				0.40	V
C _O	External capacitance	C ₁ , C ₂ , C ₃		100		nF
Temperature						
T _A	Operating ambient temperature range		0		+70	°C

AC ELECTRICAL CHARACTERISTICS $V_{CC1} = V_{CC2} = 4.75$ to $5.25V$; $T_A = 25^\circ C$, unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS			UNIT
			Min	Typ	Max	
Timing						
f _C	Maximum conversion rate		25	40 per 8		MHz
t _{DELAY}	Aperture delay ¹			19		ns
t _D	Digital output delay ¹			28		ns
t _{PWH}	Pulse width conversion HIGH ¹		20			ns
t _{PWL}	Pulse width conversion LOW ¹		20			ns

NOTE:

1. See Timing Diagram, Figure 1

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