

# 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<sub>CC1</sub>)
- Full-scale bandwidth; 11MHz at 3dB
- Low power consumption; typically 250mW
- 24-lead plastic DIP

### APPLICATION

- Video data conversion

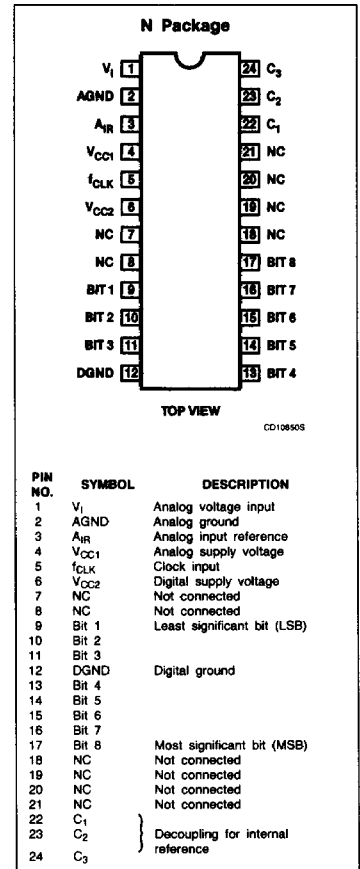
### ORDERING INFORMATION

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 <sub>CC1</sub> V <sub>CC2</sub>	Supply voltages at Pin 4 at Pin 6	8	V
V <sub>IN</sub>	Input voltage at Pins 1 and 5	8	V
I <sub>OUT</sub> I <sub>O</sub>	Output current at Pins 9, 10, 11, 13, 14, 15, 16 and 17	10	mA
T <sub>STG</sub>	Storage temperature range	-65 to +150	°C
T <sub>J</sub>	Junction temperature	+125	°C
T <sub>A</sub>	Operating ambient temperature range	0 to +70	°C

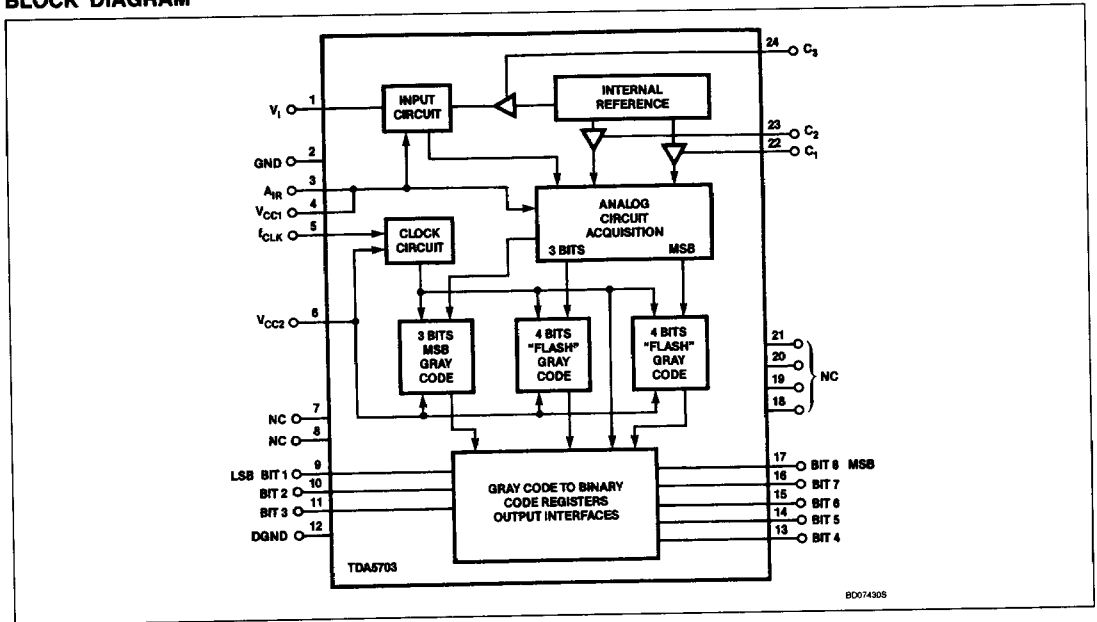
### PIN CONFIGURATION



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## TDA5703

### BLOCK DIAGRAM



## Analog-to-Digital Converter

TDA5703

**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	
<b>Supply</b>						
$V_{CC1}$	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
<b>Digital input levels<sup>1</sup></b>						
$V_{IH}$	Input voltage HIGH		2.2		$V_{CC2}$	V
$V_{IL}$	Input voltage LOW		-0.3		0.8	V
$I_{IH}$	Input current HIGH				10	$\mu A$
$I_{IL}$	Input current LOW		-7	350		$\mu A$
	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 Differential gain	$F_0 = 25MHz$ , measured with TDA5702		1 2.3		deg. %
	Offset error			40		mV
$R_{IN}$	Input resistance			80		$k\Omega$
$C_{IN}$	Input capacitance			5		pF
<b>Digital output levels (<math>I_O = 10mA</math>)</b>						
$V_{OH}$	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
<b>Temperature</b>						
$T_A$	Operating ambient temperature range		0		+70	$^\circ C$

**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	
<b>Timing</b>						
$f_C$	Maximum conversion rate		25	40		MHz
$t_{DELAY}$	Aperture delay <sup>1</sup>			19		ns
$t_D$	Digital output delay <sup>1</sup>			28		ns
$t_{PWH}$	Pulse width conversion HIGH <sup>1</sup>		20			ns
$t_{PWL}$	Pulse width conversion LOW <sup>1</sup>		20			ns

**NOTE:**

1. See Timing Diagram, Figure 1