



INTEGRATED CIRCUIT

TECHNICAL DATA

TA7193P

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT

SILICON MONOLITHIC

TV CHROMA PROCESSOR (FOR PAL SYSTEM)

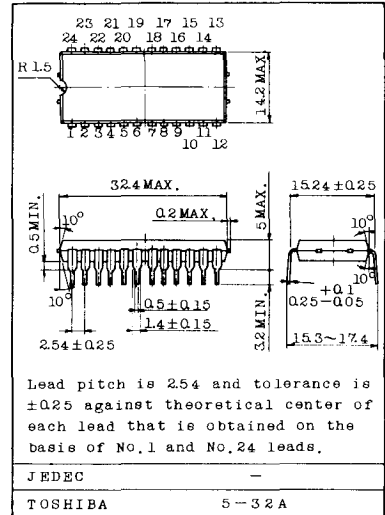
FUNCTIONS

- . Chroma Amplifier
- . DC Chroma Gain Control
- . DC Uni-color Control
- . Burst Amplifier
- . Burst Gate
- . ACC Peak Detector
- . ACC Amplifier
- . Killer Detector
- . APC Phase Detector
- . Voltage Controlled Oscillator
- . Ident Detector
- . PAL Switch
- . Matrix Circuit
- . Flip Flop

FEATURES

- . Having a whole color signal processing function.
- . Minimum number of external parts required.
- . In order to stabilize the operation of the phase detector in the APC circuit under poor receiving condition, DC feed back technique is provided.
- . The VCO consists of a low pass R.C circuit, so that there is no possibility of an undesirable parasitic oscillation.
- . It needs no tank circuit and consequently no initial adjustment is required in the VCO circuit.
- . AS the reference signals reproduced in the VCO are fed internally without passing through a tuning circuit, adjustment is not needed.
- . The ACC level is internally defined.

Unit in mm



Lead pitch is 2.54 and tolerance is ± 0.25 against theoretical center of each lead that is obtained on the basis of No.1 and No.24 leads.



MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	15	V
Power Dissipation (Ta=65°C)	P _d	720	mW
Signal Level at Input Pin	e _{in}	5	V _{p-p}
Load Resistance at Demodulator Output	R _L	MIN 1.8	kΩ
Gate Pulse Input Voltage	e _p	±6	V
Operating Temperature	T _{opr}	-20 ~ 65	°C
Storage Temperature	T _{stg}	-55 ~ 150	°C
Thermal Resistance (J-A)	R _{TH}	108	°C/W
Flip-Flop Drive Pulse	e _F	±5	V

ELECTRICAL CHARACTERISTICS (Ta=25±1.5°C, V_{CC}=12V)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	I _{CC}	4	S ₁ =2, S ₂ =1	34	46	65	mA
Maximum Chroma Output Voltage	e _c	1	S ₁ =1, S ₂ =1, S ₃ =1 e _{in} =100mV _{p-p} PIN 19	0.5	0.7	1.0	V _{p-p}
Burst Output Voltage	e _b	1	-	1.0	1.3	1.7	V _{p-p}
ACC Range	e _a	1	S ₁ =1, S ₂ =1, S ₃ =1 e _{in} =14mV _{p-p} PIN 17	0.7	-	-	V _{p-p}
Killed Chroma Output Voltage	e _k	1	S ₁ =1, S ₂ =1, S ₃ =2 e _{in} =100mV _{p-p} PIN 19	-	-	3	mV _{p-p}
Min. Gain Chroma Output Voltage	e _s	1	S ₁ =1, S ₂ =3, S ₃ =1 e _{in} =100mV _{p-p} PIN 19	-	-	3	mV _{p-p}
Terminal Voltage 18	V ₁₈	1	S ₁ =2, S ₂ =1, S ₃ =1	6.9	7.4	7.9	V
Color Control Voltage	V ₂₀	1	S ₁ =1, S ₂ =1, S ₃ =1 e _{in} =100mV _{p-p} When e _c being reduced to half	-	8.3	-	V

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Unicolor Control Characteristic	Δe_{03}	1	S ₁ =3, S ₂ =1, S ₃ =1 e _{in} =100mV _{p-p} V ₁₈ =5.9~8.9V, Signal change of PIN 19	9	10	12	dB
Phase Shift by Unicolor Control	$\Delta \phi$	1	S ₁ =3, S ₂ =1, S ₃ =1 e _{in} =100mV _{p-p} 4.43MHz CW V ₁₈ =0~12V Phase shift of PIN 19	-	4	7	deg
APC Detector Output Balance	V _P	2	S ₁ =1, S ₂ =2, S ₃ =1 Difference in voltage between PIN 9 and 10	-50	0	+50	mV
APC Pull-in Range	f _P	2	S ₁ =2, S ₂ =1, S ₃ =2 Adj. V ₉ -V ₁₀ for f ₀ ±10Hz S ₁ =1, S ₂ =1, S ₃ =2 Vary f ₁₁ & Measure f _P	±240	±350	-	Hz
VCO Frequency Control Sensitivity	β	2	S ₁ =1, S ₂ =1, S ₃ =1 Measure V ₉ -V ₁₀ at $\Delta f=100$ Hz	-	1.0	-	Hz/mV
Phase Detector Sensitivity	μ	2	S ₁ =1, S ₂ =2, S ₃ =1 Measure V ₉ -V ₁₀ at $\Delta \phi=10^\circ$	-	+25	-	mV/deg
VCO Frequency Stability vs V ₂₂	f _{OV}	2	S ₁ =2, S ₂ =1, S ₃ =1 V ₂₂ =12±1V	-20	0	+20	Hz
Temp-stability of APC Detector	ΔV_{Pt}	2	S ₁ =1, S ₂ =1, S ₃ =1 e _B =100mV _{p-p} , Ta=0~60°C	-70	0	+70	mV
Burst Level for Killer & Ident	e _i	2	S ₁ =1, S ₂ =1, S ₃ =1 at V ₂₀ ≥ 10V	30	80	150	mV _{p-p}
Demodulator DC Output Voltage	E _{ODC}	3	S ₁ =2, S ₂ =1, S ₃ =1 PIN 1, 23, 24	6.6	7.2	7.8	V
Temp. Coeffi. of Demod. DC Output Voltage	$\frac{\partial E_{ODC}}{\partial T}$	3	S ₁ =2, S ₂ =1, S ₃ =1 Ta=-20~65°C	-3	0	+2	mV/°C
DC Voltage Difference Between Any Demod. Output Terminal	ΔE_{ODC}	3	S ₁ =2, S ₂ =1, S ₃ =1 Vol. Difference among PIN 1, 23 & 24	-0.3	0	+0.3	V



CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Temp. Coeffi. of Demod Output Voltage Differences	$\frac{\partial \Delta E_{ODC}}{\partial T}$	3	S1=2, S2=1, S3=1 Ta=-20 ~ +65°C	-2	0	+2	mV/°C
Color Difference Output Voltage	e _{OB}	3	S1=1, S2=1, S3=1 e _{CW} =0.2V _{p-p} , 4.44MHz PIN 1, 23 & 24 (10kHz, Beat)	-	2.4	-	V _{p-p}
	e _{OR}			-	1.45	-	
	e _{OG}			-	0.65	-	
Maximum Color Difference Output Voltage	e _{om B}	3	S1=1, S2=1, S3=1 e _{CW} =1.2V _{p-p} , 4.44MHz PIN 1, 23 and 24 (10kHz Beat)	4.5	5.5	-	V _{p-p}
	e _{om R}			4.5	5.5	-	
	e _{om G}			1.5	2.0	-	
Relative Amplitude	$\frac{B-Y}{R-Y}$	3	S1=1, S2=1, S3=1 e _{CW} =0.2V _{p-p} 4.44MHz (10kHz Beat)	-	1.65	-	-
	$\frac{G-Y}{R-Y}$			-	0.45	-	
Demod. Phase	θ_{R-Y}	3	S1=3, S2=1, S3=2 e _{CW} =0.2V _{p-p} , 4.43MHz	83	90	97	deg
	θ_{G-Y}			222	236	250	
Residual Carrier	e _{car}	3	S1=2, S2=2, S3=1 4.43MHz	-	-	0.2	V _{p-p}
Residual Harmonics	e _{harm}	3	S1=1, S2=2, S3=1 e _{CW} =1.2V _{p-p} , 4.44MHz	-	-	2.2	V _{p-p}
Demod. Freq. Characteristics	f _D	3	S1=1, S2=2, S3=1 e _{CW} =0.2V _{p-p} , 4.44 ~ 7MHz 3dB band width	0.8	1.5	-	MHz
Output DC Voltage Change by PAL Switch	E _{SW}	4	S1=2, S2=1 e _{in} =0mV _{p-p} DC Deviation on each scanning	-	-	50	mV _{p-p}
Carrier Leak In B.P.	e _{ccar}	4	S1=1, S2=2, e _{in} =0mV _{p-p} , Carrier Component Output of PIN 19	-	-	14	mV _{p-p}