TA7315BP

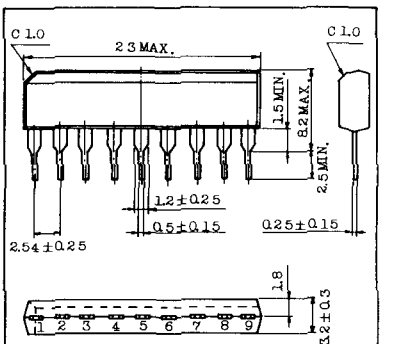
TOSHIBA PIPOLAR LINEAR INTEGRATED CIRCUIT

SILICON MONOLITHIC

TV TUNER BAND SWITCHING CIRCUIT

- Supplies 50mA and 80mA Source for VHF and UHF Tuners Respectively.
- Supplies 20mA Sink for VHF-HIGH Band.
- Includes Current Limitter Circuits for the Source Terminals.
- Includes Protecter Circuits for the Input Terminals.
- Maximum Ratings, Electrical Characteristics and Truth Table are Partially Different to those of TA7315P.

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 lead.

JEDEC	—
TOSHIBA	5-23B

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	19	V
Average Sink Current	I_{BS}	20	mA
Transient Sink Current	I_{BSm}	40	mA
Average Source Current for VHF Tuner	I_{BV}	50	mA
Transient Source Current for VHF Tuner	I_{BVm}	250	mA
Average Source Current for UHF Tuner	I_{BU}	80	mA
Transient Source Current for UHF Tuner	I_{BUm}	400	mA
Power Dissipation (Note)	P_D	625	mW
Application Voltage to the Sink	V_S	30	V
Storage Temperature	T_{stg}	-55 ~ 125	°C
Operating Temperature	T_{opr}	0 ~ 65	°C

Note : Derated above Ta=25°C in the proportion of 5mW/°C.

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified V_{CC}=17V, V_S=30V, Ta=-20 ~ 65°C)

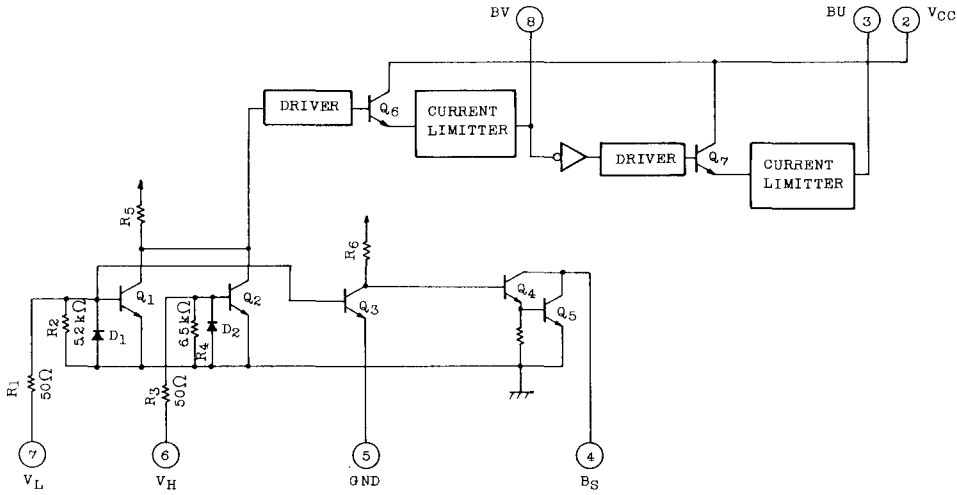
CHARACTERISTIC	SYMBOL	TEST CONDITION					MIN.	TYP.	MAX.	UNIT
		Ta(°C)	V_{CC}(V)	I8(mA)	I3(mA)	I4(mA)				
Each Inputs Current	I_{IN}	-	-	-	-	-	300	-	-	μA
VHF-L Power Dissipation Current	(Note 1) I_{OL}	25 -	17 17	50 50	0 0	0 0	4.10 3.80	6.00 6.00	8.90 9.90	mA
VHF-H Power Dissipation Current	(Note 2) I_{OH}	25 -	17 17	50 50	0 0	20 20	4.00 3.70	5.90 5.90	8.70 9.70	mA mA
UHF Power Dissipation Current	(Note 3) I_{OU}	25 -	17 17	0 0	80 80	0 0	2.70 2.45	4.50 4.50	7.30 8.20	mA mA
VHF Output Voltage	$V_{V(SAT)}$	-	-	50	0	0	0.6	0.9	1.5	V
UHF Output Voltage	$V_{U(SAT)}$	-	-	0	80	0	0.6	0.9	1.5	V
VHF-H Sink Output Voltage	$V_{S(SAT)}$	-	-	50	0	20	0.6	0.9	1.5	V
Temperature Coefficient of VHF Output Voltage	$\frac{dV_{V(SAT)}}{dT}$	-	-	50	0	0	-4.5	-2.0	-	mV/°C
Temperature Coefficient of UHF Output Voltage	$\frac{dV_{V(SAT)}}{dT}$	-	-	0	80	0	-4.5	-2.0	-	mV/°C
Temperature Coefficient of VHF-H Sink Output Voltage	$\frac{dV_{V(SAT)}}{dT}$	-	-	50	0	20	-4.5	-2.0	-	mV/°C
Each Outputs Leak Current	L_{LEAK}	-	-	-	-	-	-	-	10	μA
Power Dissipation	P_D	-	19	50	0	20	-	-	400	mW
Operating Supply Voltage	V_{CC}	-	-	-	-	-	13	-	19	V

(Note 1) $I_{OL}=I_{CC}-50mA$

(Note 2) $I_{OH}=I_{CC}-50mA$

(Note 3) $I_{OU}=I_{CC}-80mA$

BLOCK DIAGRAM



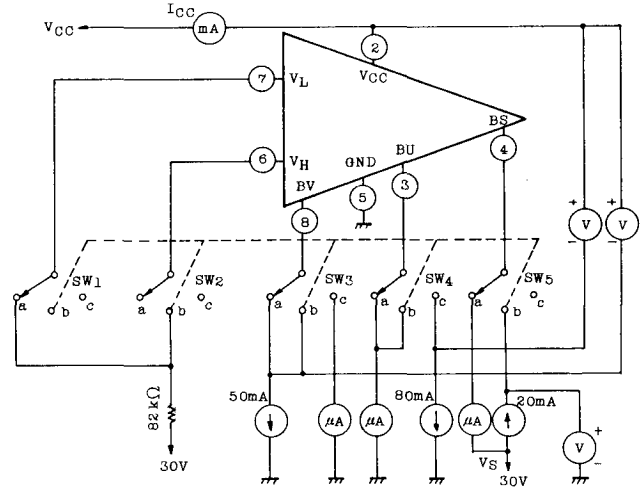
TRUTH TABLE (POSITIVE LOGIC) V_{CC}=13～19V

INPUT		OUTPUT			MODE
V_L	V_H	BV	BU	BS	
0	0	Z	1	0	UHF
0	1	1	Z	0	VHF-HIGH
1	0	1	Z	Z	VHF-LOW
1	1	1	Z	Z	-

Z : High impedance

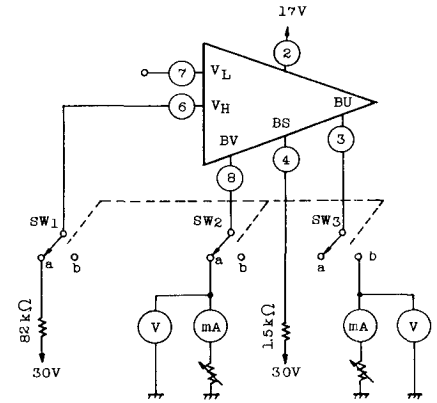
TEST CIRCUIT

1) $I_{OL}, I_{OH}, I_{OU}, V_{V(SAT)}, V_{U(SAT)}, V_{S(SAT)}, \frac{dV_{V(SAT)}}{dT}, \frac{dV_{U(SAT)}}{dT}, \frac{dV_{S(SAT)}}{dT}, I_{LEAK}, P_D$



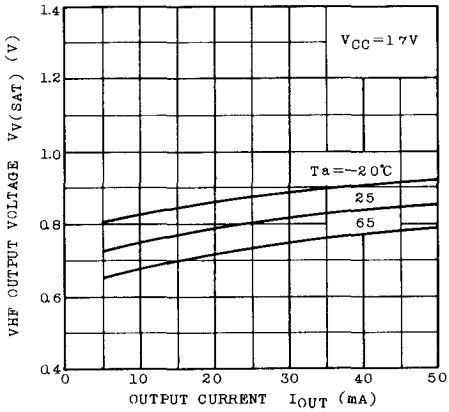
SW1~5
- a. VHF-LOW $I_{OL}, V_{V(SAT)}, dV_{V(SAT)}/dT, I_{LEAK}$
- b. VPH-HIGH $I_{OH}, V_{S(SAT)}, dV_{S(SAT)}/dT, I_{LEAK}, P_D$
- c. UHF $I_{OU}, V_{U(SAT)}, dV_{U(SAT)}/dT, I_{LEAK}$

2) CURRENT LIMITTER CHARACTERISTIC

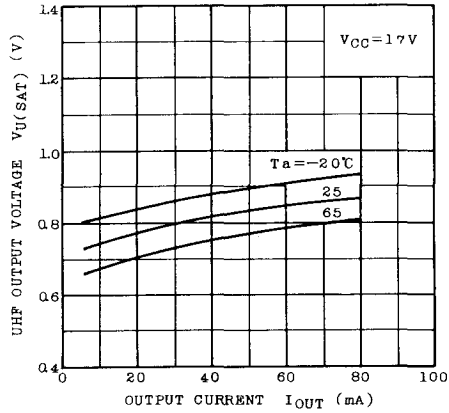


SW1~3
- a. VHF-HIGH Current Limitter Characteristic of BV
- b. UHF Current Limitter Characteristic of BU

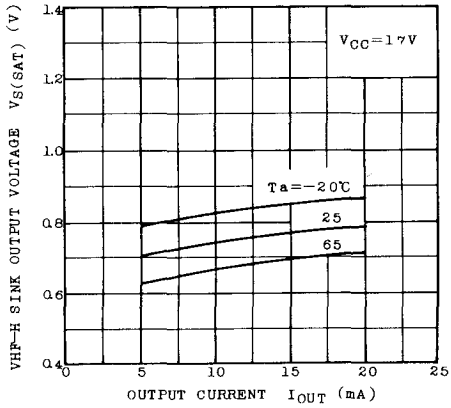
$V_{V(SAT)} - I_{OUT}$



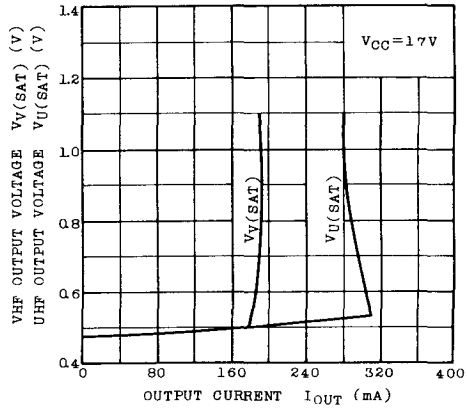
$V_{U(SAT)} - I_{OUT}$



$V_{S(SAT)} - I_{OUT}$



CURRENT LIMITTER CHARACTERISTIC OF BV AND BU



APPLICATION CIRCUIT