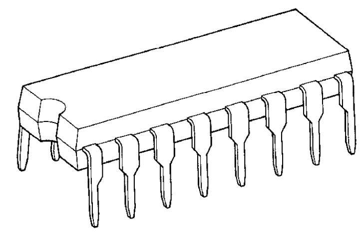
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA8637BP

VHF MODULATOR FOR VCR OR VDP

FEATURES

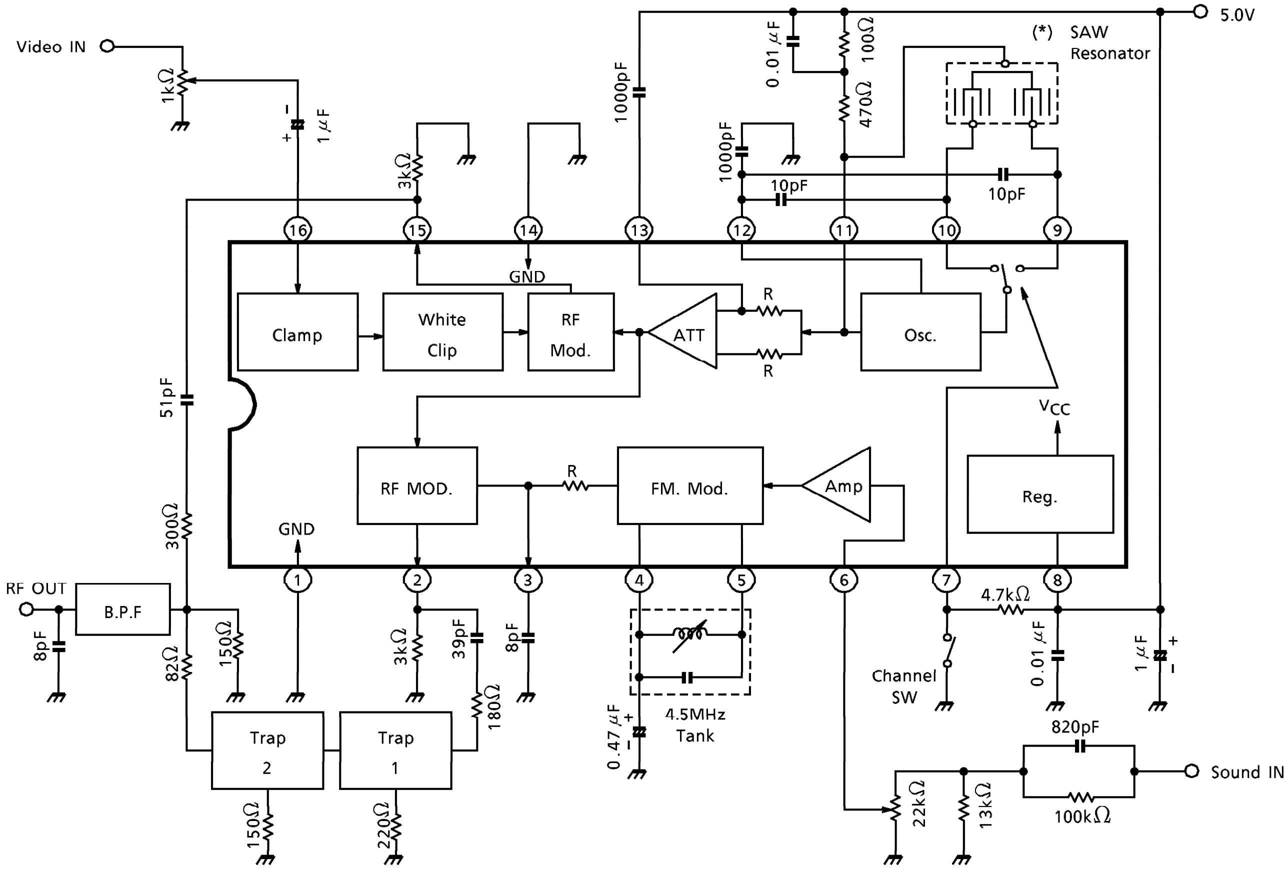
- Video clamp
- White clip
- Main carrier oscillator
- Main carrier attenuator
- Video Modulator
- Sound Modulator
- Sound FM Modulator
- Channel Switch
- Low power operation
- Adjustable output level and V / A ratio with external resistance.
- Minimum number of external parts required.
- Regulator circuit is included.
- Operating voltage range : 4.5V~5.5V, Typ. 5V
- Suggested operating voltage : 4.75V~5.25V, Typ. 5V



DIP16-P-300-2.54A

Weight : 1.11g (Typ.)

BLOCK DIAGRAM & APPLICATION CIRCUIT



(*) See SAW Resonator Technical Data.

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	7	V
Power Dissipation	P_D (Note)	750	mA
Input Signal Voltage	e_{in}	2.5	$V_{p\text{-}p}$
Input Voltage at Pin 7	V_{in}	GND – 0.3~V_{CC} + 0.3	V
Operating Temperature	T_{opr}	– 10~70	°C
Storage Temperature	T_{stg}	– 55~150	°C

(Note) Derated above Ta = 25°C in the proportion of 6mW / °C.

ELECTRICAL CHARACTERISTICS (V_{CC} = 5.0V, Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Supply Current	I_{CC}	—	$S_1 = 2$, $S_2 = 1$, $S_3 = 2$		10	14	20	mA
Video RF Output Level	V_o (f_{p1})	—	$S_2 = 1$, $S_3 = 2$ (Note 1) V_{i1} : No input signal V_{o1} : Output level	$S_1 = 2$	90	92	94	dBμV
	V_o (f_{p2})	—		$S_1 = 1$				
Video RF Output Level Temperature Drift	ΔV_o (f_{p1})	—	V_o (f_{p1}) (Ta = −10~70°C) − V_o (f_{p1}) (Ta = 25°C)		—	—	±2	dB
	ΔV_o (f_{p2})	—	V_o (f_{p2}) (Ta = −10~70°C) − V_o (f_{p2}) (Ta = 25°C)					
Video Modulation Factor	m_{p1}	1	$S_2 = 1$, $S_3 = 2$ V_{i1} = 0.45V_{p-p}, white	$S_1 = 2$	72	77	82	%
	m_{p2}			$S_1 = 1$				
Video Modulation Factor Temperature Stability	Δm_{p1}	1	m_{p1} (Ta = −10~70°C) − m_{p1} (Ta = 25°C)		—	—	±3	%
	Δm_{p2}	1	m_{p2} (Ta = −10~70°C) − m_{p2} (Ta = 25°C)					
Video Modulation Factor Difference	Δm_p	1	$m_{p1} - m_{p2}$		—	—	±1	%
Max. Video Modulation Factor	m_{p2} (Max.)	1	$S_1 = 1$, $S_2 = 1$, $S_3 = 2$ V_{i1} = 2.0V_{p-p}, white		89	94	98	%
Max. Video Modulation Temperature Drift	Δm_{p2} (Max.)	1	Ta = −10~70°C m_{p2} (Max.)		89	94	98	%
Defferential Gain	DG_1	2	$S_2 = 1$, $S_3 = 2$, V_{i1} = 0.45V_{p-p}, Stair case, (Note 2)	$S_1 = 2$	—	±2	±5	%
	DG_2			$S_1 = 1$				
Defferential Phase	DP_1	2	$S_2 = 1$, $S_3 = 2$, V_{i1} = 0.45V_{p-p}, Stair case, (Note 2)	$S_1 = 2$	—	±2	±5	°
	DP_2			$S_1 = 1$				
Sound RF Output Level	V_o (f_{s1})	—	$S_2 = 1$, $S_3 = 2$ (Note 1) V_{o3} : Sound RF level	$S_1 = 2$	81	83	86	dBμV
	V_o (f_{s2})			$S_1 = 1$				
Sound FM Temperature Drift	Δf_s	—	$S_1 = 1$, $S_2 = 2$, $S_3 = 2$ (Note 3) f_s (Ta = 0~60°C) − f_s (Ta = 25°C)		—	—	±10	kHz
Sound FM Modulation Sensitivity	β_s	—	$S_1 = 1$, $S_2 = 2$, $S_3 = 1$ (Note 4)		—	0.43	—	kHz / mV
Sound Total Harmonic Distortion	THD	—	$S_1 = 1$, $S_2 = 2$, $S_3 = 3$ V_{i2} = 1kHz (Note 5)		—	0.2	1.0	%

(Note 1) Measure RF level by spectrum analyzer (Input impedance = 50) and calculate measurement data V_O (dBm) by

Output Level (dBμV) = $V_O + 107 + 16$ (dBμV)

(Note 2) Measure after that demodulated by the standard demodulator (For example Tektronix 1450).

(Note 3) Adjust a sound FM center frequency to 4.500MHz at Ta = 25°C, then measure a frequency drift at Ta = 0~60°C for at Ta = 25°C.
This spec (Δf_S) does not include TANK temperature coefficiency.

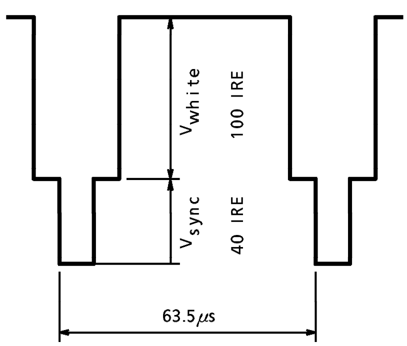
(Note 4) Connect Va + 0.2 (V) and Va − 0.2 (V) to V_1 (Va ; #6 terminals open voltage) then measure each frequency and calculate by

$$\beta_S = \frac{\text{Frequency difference between } V_1 = Va + 0.2 \text{ and } V_2 = Va - 0.2}{0.4}$$

(Note 5) Adjust V_{i2} level so that FM deviation become ±20kHz, then measure THD after that demodulate by standard demodulator (for example tektronix 1450)

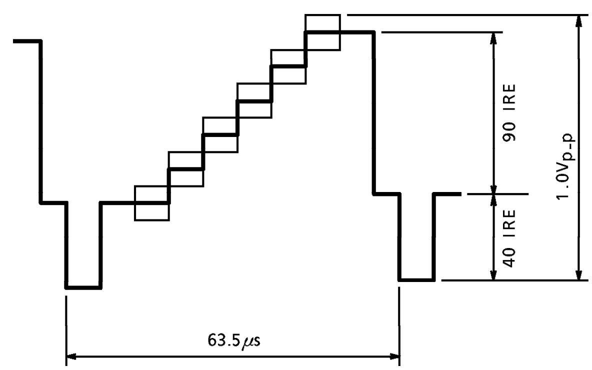
Input wave form

White signal

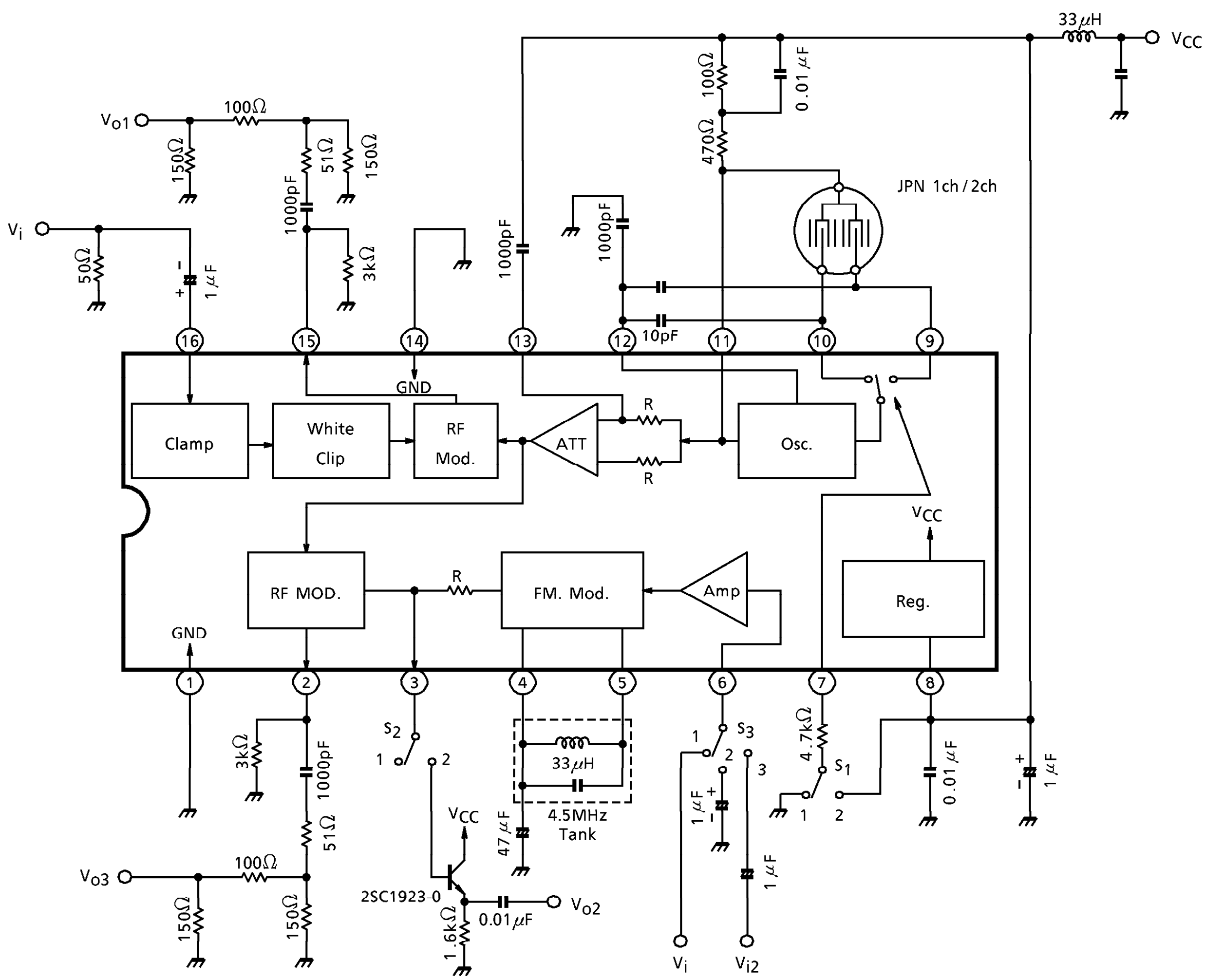


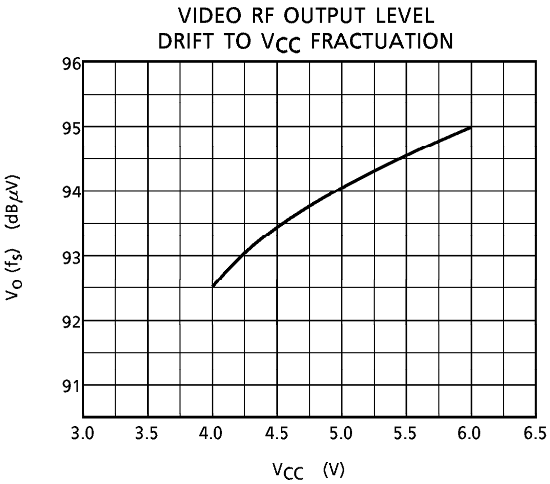
Stair case signal

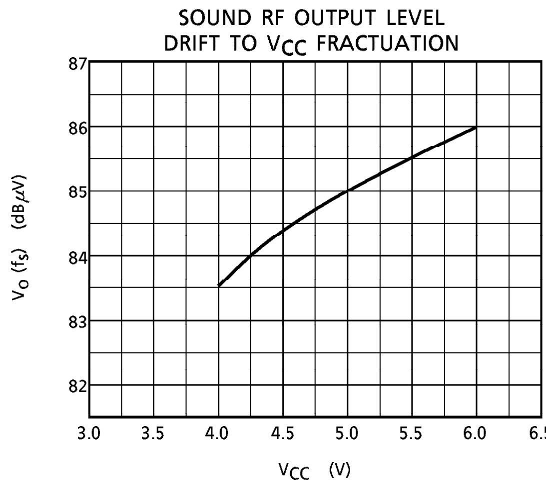
APL 50% sub carrier 20 IRE

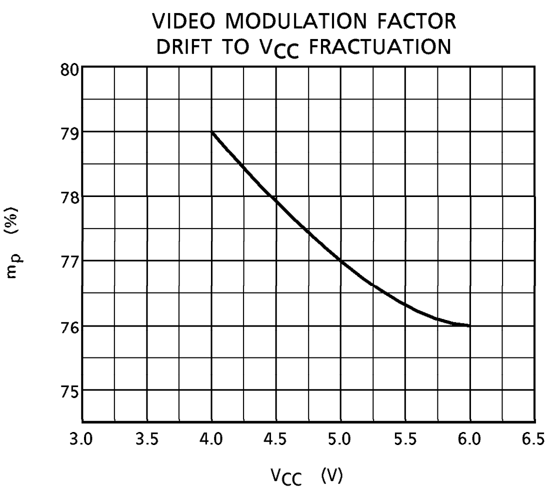


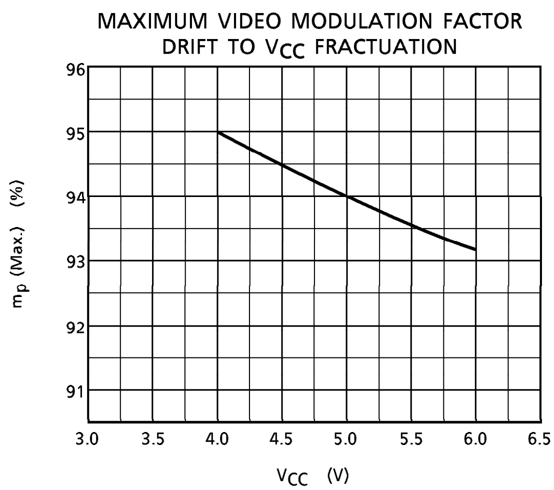
TEST CIRCUIT











SOUND, VIDEO MODULATION RANK CLASSFICATION

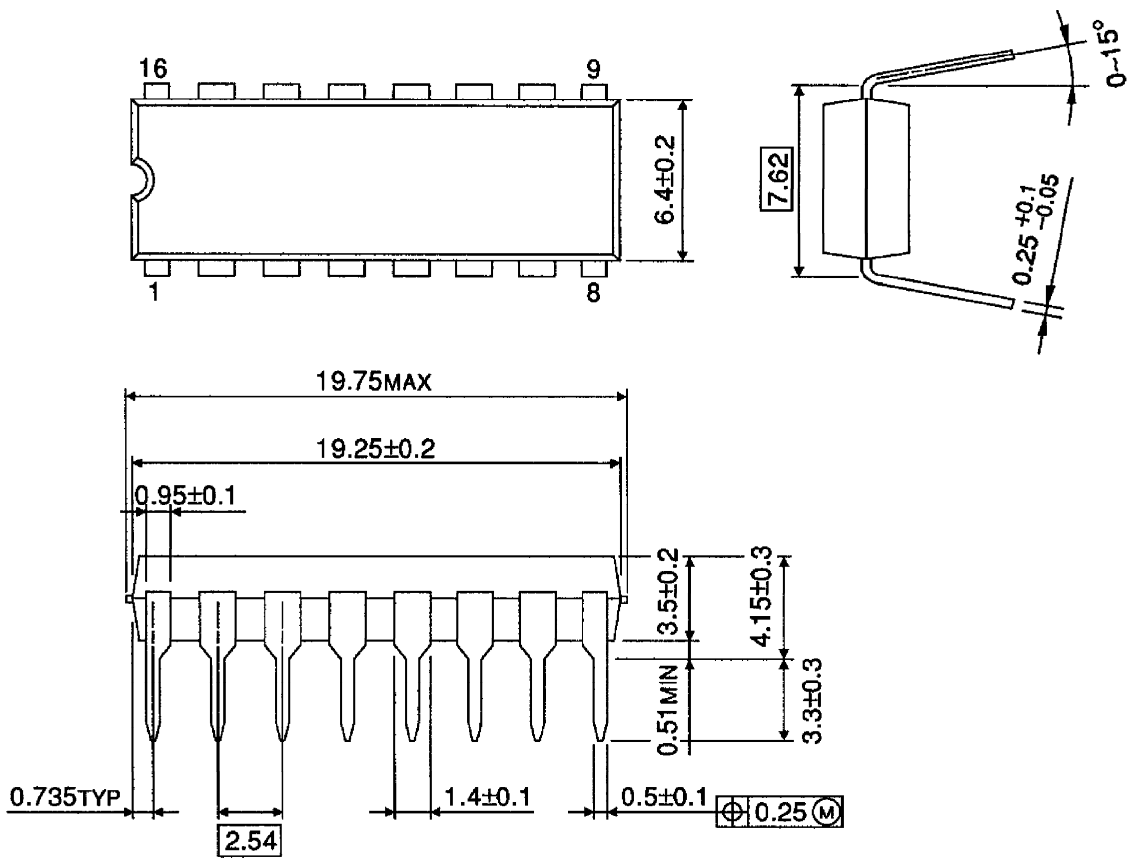
RANK	SOUND FM MODULATION SENSITIVITY				VIDEO MODULATION FACT				MARK
	MIN	TYP.	MAX	UNIT	MIN	TYP.	MAX	UNIT	
1	0.36	0.39	0.42	kHz / mV	72	75	78	%	Green
2	0.39	0.43	0.46		72	75	78		Yellow
3	0.44	0.48	0.52		72	75	78		Red
4	0.36	0.39	0.42		76	79	82		Blue
5	0.39	0.43	0.46		76	79	82		Orange
6	0.44	0.48	0.52		76	79	82		Purple

(Note) TA8637BP does not receive the rank classification specification when ordering.

OUTLINE DRAWING

DIP16-P-300-2.54A

Unit : mm



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