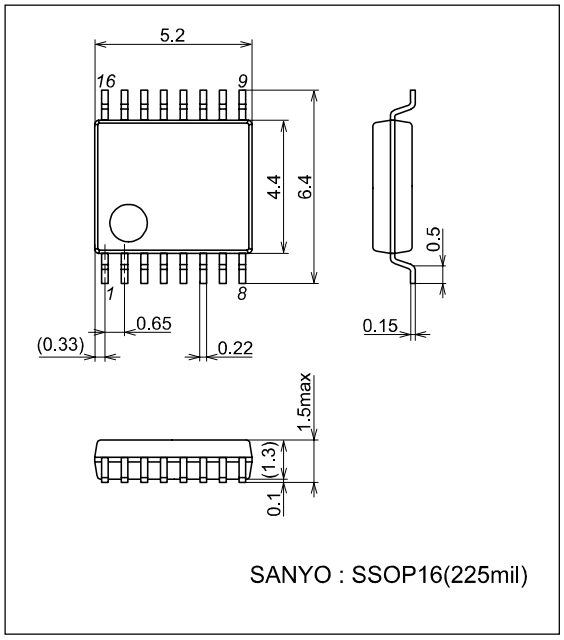
Electrical Characteristics/Operating Characteristics at Ta = 25°C, V_{CC} = 5.0V, Measured with US3ch unless otherwise specified

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current drain 1	$I_{CC}1$	No signal, pin 6 high	28	41	53	mA
Current drain 2	$I_{CC}2$	No signal, pin 6 low	15	22	29	mA
Regulator voltage	Vreg	No signal	3.7	3.9	4.1	V
Antenna driver voltage	Vanton	Pin 6 high, 220Ω load	3.2	3.5	3.8	V
Negative Resistance (pin7)	-R	CI≤100	1.2	2.2		kΩ
RF type						
Video carrier frequency accuracy	Fp	Fp (US3ch): 61.25MHz X'tal accuracy 30ppm	-25		25	kHz
Video carrier frequency stability	Fpt	X'tal accuracy 30ppm Ta = 4°C to 38°C	-25		25	kHz
Video carrier output US	Pus	No signal (Note 1)	85.5	87.5	89.5	dBμ
Audio carrier output ratio	P/S	S: fp + 4.5MHz	14.5	16	17.5	dB
Audio 2nd harmonic distortion	P/S2	S2: fp + 2 × 4.5MHz	50	65		dB
Audio 3rd harmonic distortion	P/S3	S3: fp + 3 × 4.5MHz	45	55		dB
Chroma beat	P/CB	Vin = 3.58MHz, 0.6Vp-p CB: fp + 920kHz	65	74		dB
Video harmonic distortion	P/V2	Vin = 1MHz, 1Vp-p V2: fp + 2MHz	45	72		dB
Video type						
Video modulation	Mp	Vin = Stair step, 1Vp-p	75	80	85	%
White clip level	W_{CL}	Vin = Stair step, 1.5Vp-p	90	95	99	%
Differential gain	D_G	Vin = 10-Stair step, 1Vp-p (Note 2)	-5		5	%
Differential phase	D_P	Vin = 10-Stair step, 1Vp-p (Note 2)	-5		5	°C
Video signal frequency response	R_{fv}	Vin = CW, 1Vp-p 0.75 MHz to 3.75MHz	-1.1	-0.4	0.3	dB
Video S/N	$V_{S/N}$	Vin = 50% 4.2MHz LPF ON		50		dB
Audio type						
Audio carrier frequency accuracy	Fs	X'tal accuracy 30ppm	-5		5	kHz
Audio modulation	Ms	Ain = 1kHz, 1Vp-p (Note 3)	90	100	110	%
Maximum audio modulation	Msmx	THD < 3%	400			%
Audio distortion	THD	Ain = 1 kHz, 1Vp-p		0.4	2	%
Audio S/N	$A_{S/N}$	Ain = 1 kHz, 1Vp-p Vin = Color bar, 1Vp-p	45	50		dB

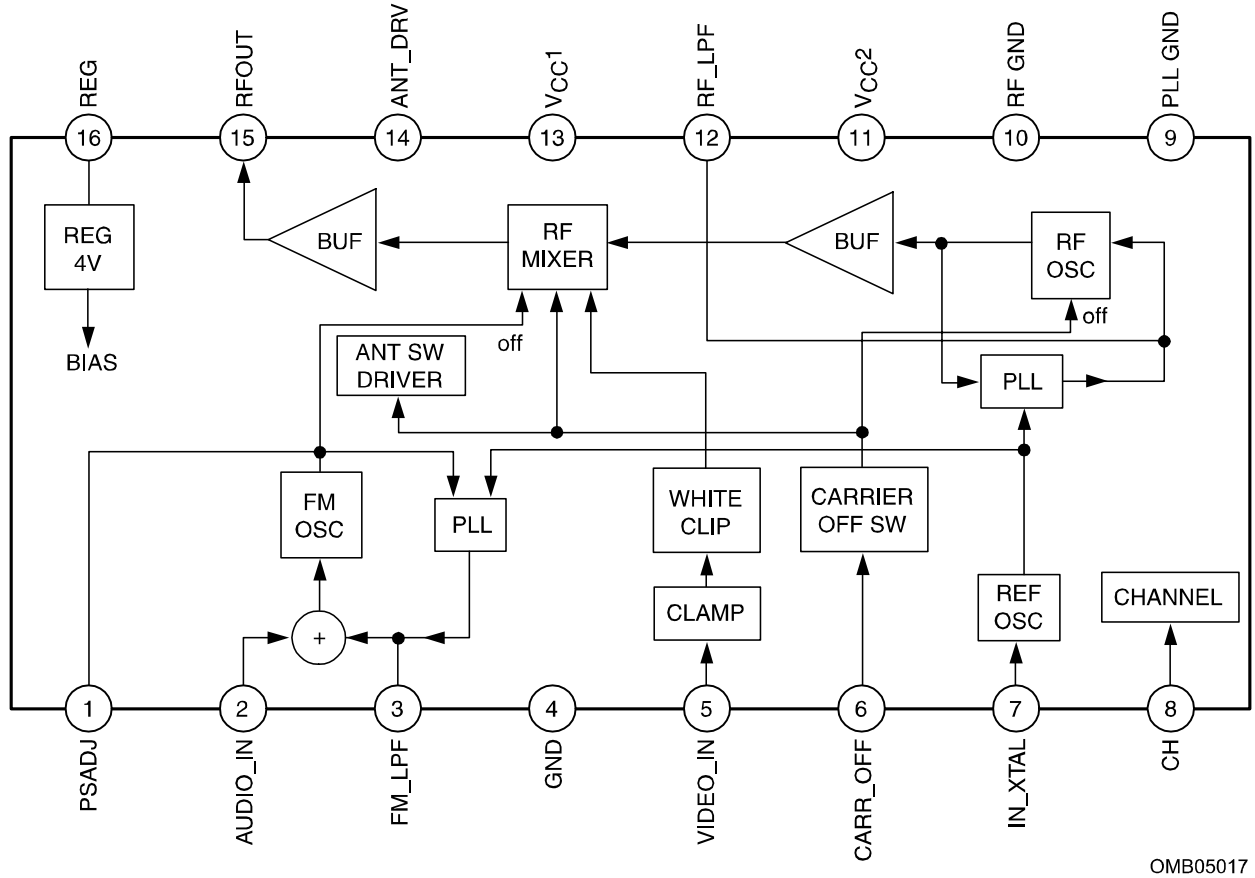
Note 1: 9.5dB added to the RFOUT value measured with a spectrum analyzer of the input impedance of 50Ω.
Note 2: Difference between 1 stair step and 8 stair step of 10 stair step.
Note 3: 100% = ±25kHz modulation.

Package Dimensions

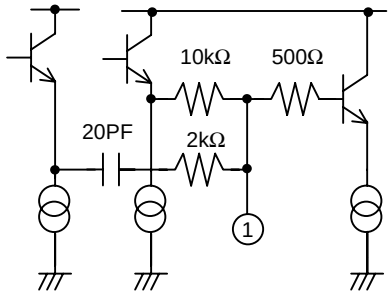
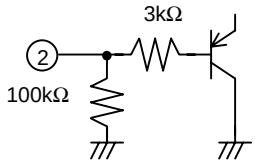
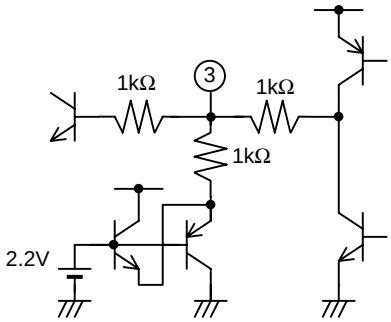
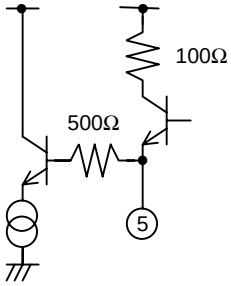
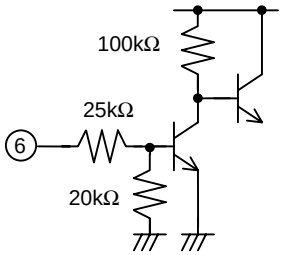
unit : mm
3178B



Block Diagram



Pin equivalent circuit

Pin No.	Symbol	Voltage	Circuit	Remarks
1	P/S ADJ	2.7		Capacitor and additionally a Resistor may inserted between the circuit and GND attenuate the audio inter-carrier level.
2	AUDIO IN	0		FM audio Input.
3	FM LPF	2.2		Control pin of output FM oscilator for the PLL phase detector charge pump.
4	GND	0		
5	VIDEO IN	2.6		Video Input Clamped with sink chip.
6	CARR OFF	-		Hi:14pin Hi RF Operating Lo:14pin Lo RF Stop

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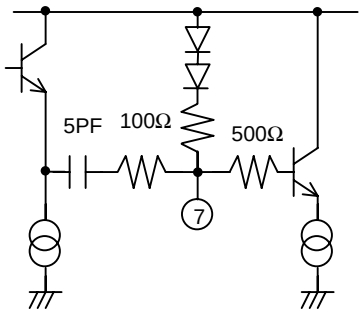
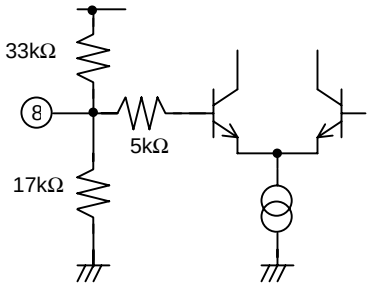
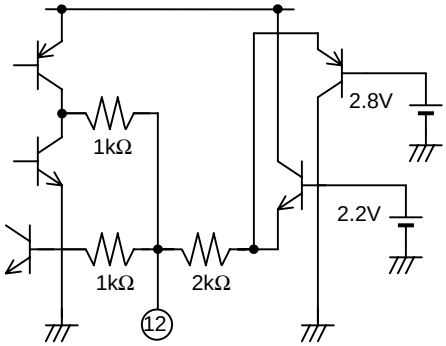
Pin No.	Symbol	Voltage	Circuit	Remarks
7	IN XTAL	3.5		4MHz oscillator inserted between the circuit and GND. External input of the 4MHz signal possible. Insertion of about 270kΩ resistor between the circuit and GND ensurescompatibility with 3.58MHz of VTR chroma sub-carrier. Insertion of about 270kΩ resistor between the circuit and V_{CC} ensurescompatibility with 27MHz of D-STB reference.
8	CH	1.7		CH selector pin US3: 4.2V or more US4: 2.7V to 3.8V
9	PLL GND	0		PLL type GND
10	RF GND	0		RF type GND
11	$V_{CC}2$	5.0		RF VCO type V_{CC}
12	RF LPF	2.6		Control pin of output RF oscillator for the PLL phase detector charge pump.

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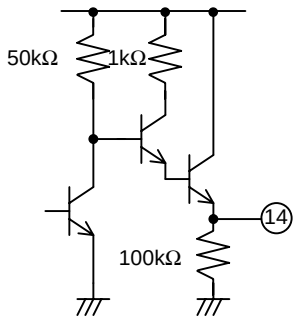
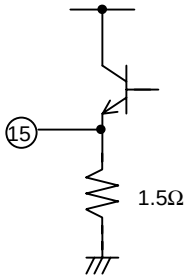
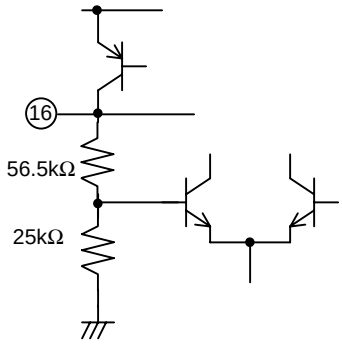
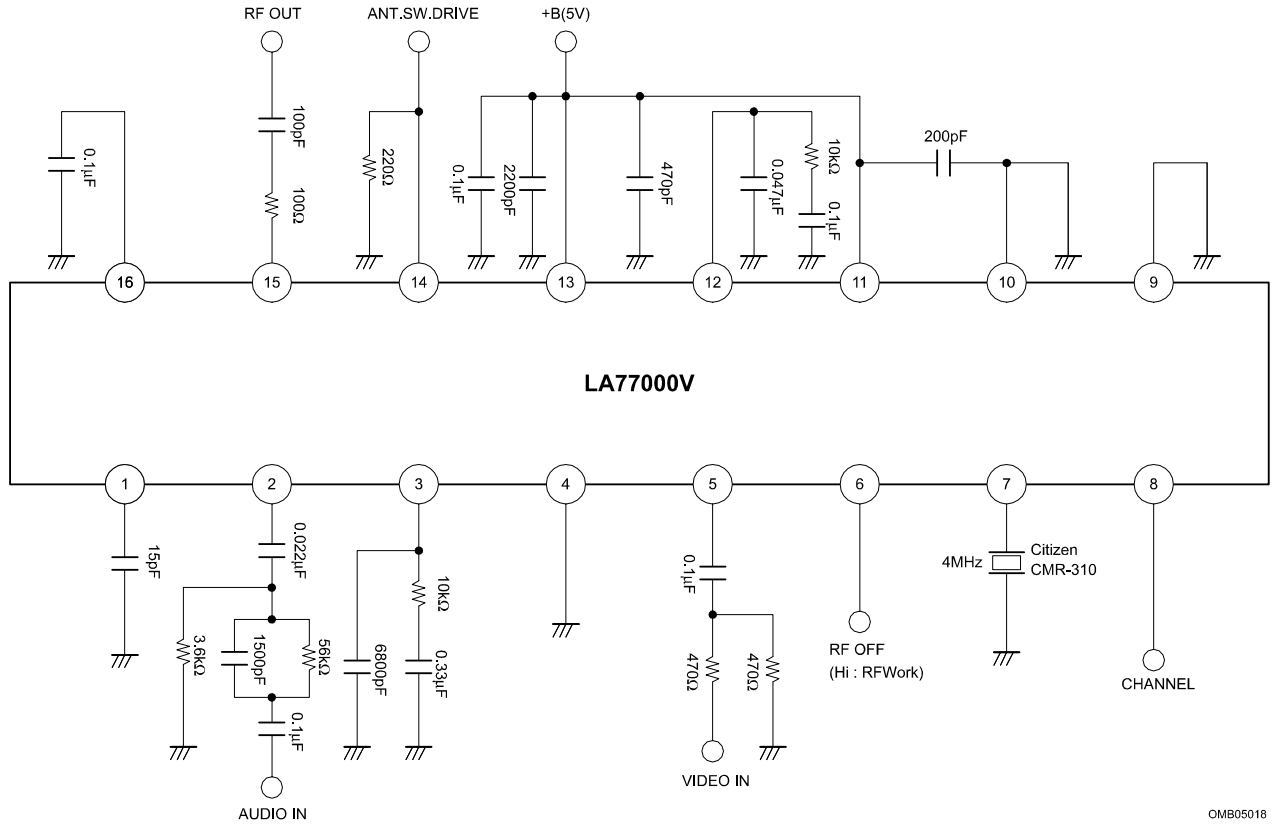
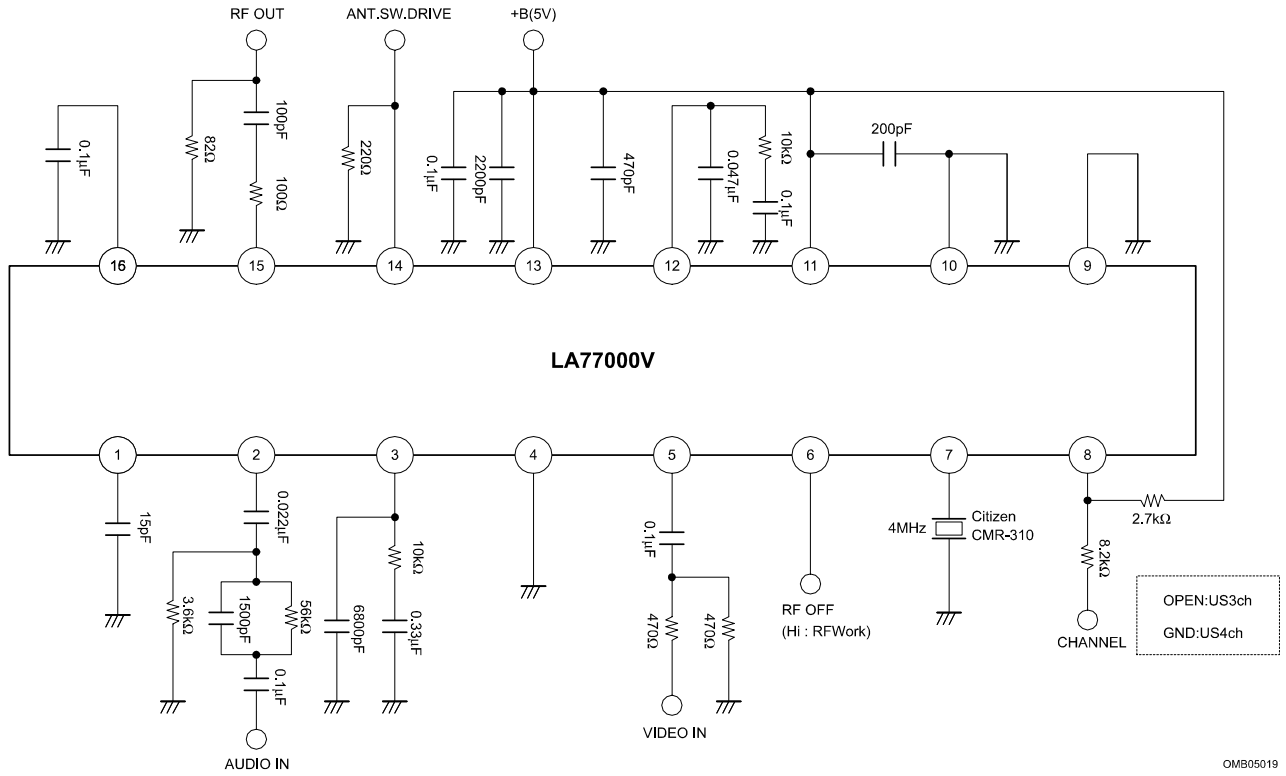
Pin No.	Symbol	Voltage	Circuit	Remarks
13	$V_{CC}1$	5.0		V_{CC}
14	ANT DRV	3.5		Antenna SW driver pin. 15mA drive.
15	RF OUT	3.0		RF mixed signal output.
16	REG	3.9		Regulator output.

Test Circuit



Sample Application Circuit 1 (USch) for VCR



Sample Application Circuit 2 (USch) for STB