M52062AFP

S-VHS SYSTEM VCR CHROMA SIGNAL PROCESSOR

DESCRIPTION

The M52062AFP processes VHS and S-VHS VCR color signals.

This circuit consists of main and sub B.M.'s, burst-up/down switch, VCXO, 320-fh VCO, ACC, APC, AFC, killer circuit, side lock detector, burst error correcter (PAL), pilot burst set/cancellation switch and pilot APC.

FEATURES

- Can be tuned to NTSC, PAL including S-VHS and modified SECAM.
- Provided with all signal processing circuits required for S-VHS PAL.
- Has a chroma ACC circuit that improves S/N when signals of low color saturation are processed in recording.
- The LC tank system VCO circuit betters PM S/N.
- Low power dissipation. (200mW for playback)

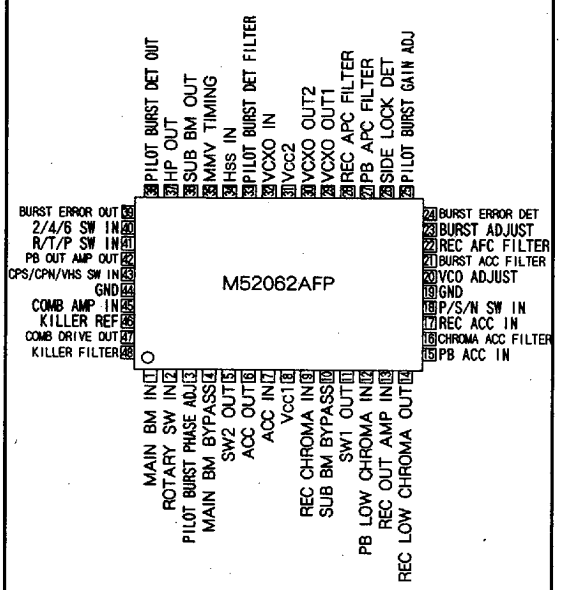
APPLICATION

VCR

RECOMMENDED OPERATING CONDITION

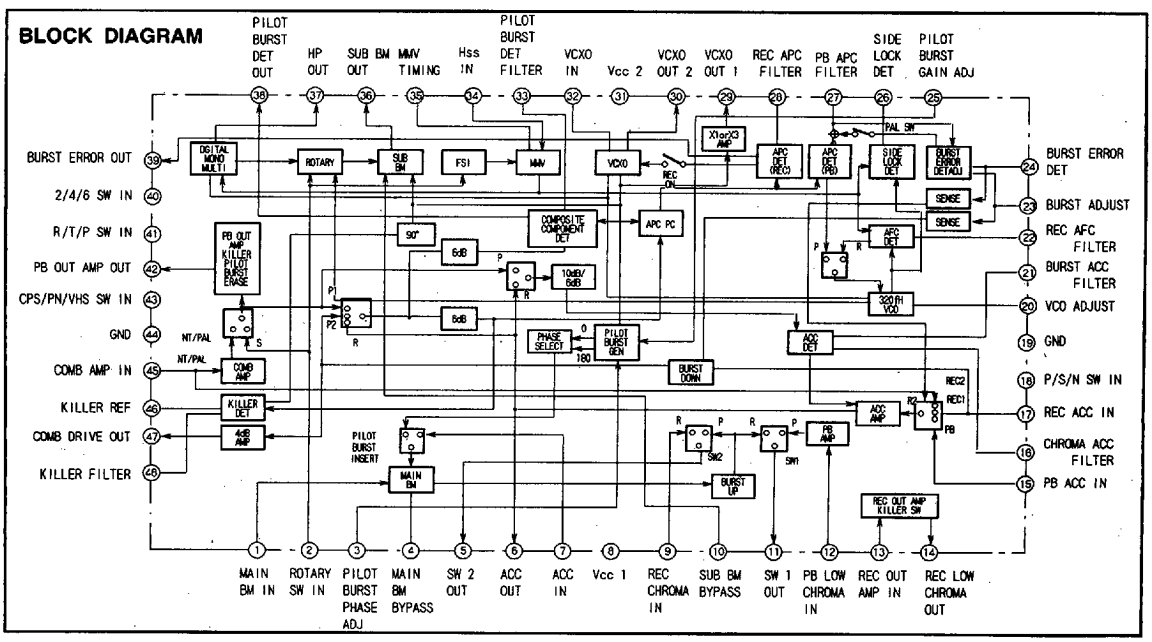
Supply voltage ..... 4.5~5.5V
Rated supply voltage 5.0V

PIN CONFIGURATION (TOP VIEW)



Outline 48P6S-A

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Paarameter	Ratings	Unit
V_{CC}	Supply voltage	6	V
P_d	Power dissipation	1.0	W
T_{opr}	Operating temperature	−20~75	℃
T_{stg}	Storage temperature	−40~125	℃
K_θ	Thermal derating	10	mW/℃

ELECTRICAL CHARACTERISTICS (Ta = 25℃, unless otherwise noted)

Symbol	Parameter	Test No.	Test conditions	Remark	Limits			Unit
					Min.	Typ.	Max.	
I_{CC}	Circuit current	1	Measure the amperage of the current that flows to pins ⑧ and ㉚.		32	40	48	mA
G_{PI}	PB amplifier gain	2	Pin ㉜:Input a 630-kHz 0.4-Vp-p sine wave. Pin ⑪:Measure the gain		10	12	14	dB
G_{RO}	REC output amplifier gain	3	Pin ⑬:Input a 630-kHz 0.25-Vp-p sine wave. Pin ⑭:Measure the gain.		2.8	3.8	4.8	dB
G_{BP}	Burst-down PB output amplifier gain	4	Pin ⑰:Input a 4.43-MHz 0.2-Vp-p sine wave. Pin ⑭:Measure the gain.		14.5	16.5	18.5	dB
G_{CPN}	COMB PB output amplifier gain 1	5	Pin ㉖:Input a 4.43-MHz 0.2-Vp-p sine wave. Pin ⑲:0 V;set to NTSC. PIN ㉔:Measure the gain	NTSC	11.0	13.0	15.0	dB
G_{CPP}	COMB PB output amplifier gain 2	6	Pin ㉖:Input a 4.43-MHz 0.11-Vp-p sine wave. Pin ⑲:2.5 V;set to PAL. PIN ㉔:Measure the gain	PAL	17.0	19.0	21.0	dB
ACC_R	REC ACC output amplitude	7	Pin ㉙:Input chroma signals. (Burst, 0.2 Vp-p; chroma, 0.4 Vp-p) Pin ㉘:Input 15.625IKHz SYNC. Pin ㉚:Measure the chroma section amplitude.		0.4	0.6	0.8	Vp−p
ACC_C	Chroma ACC increase	8	Pin ㉙:Input chroma signals. (Burst, 0.2 Vp-p : chroma, 0.4 Vp-p and 0 Vp-p) Pin ㉘:Input SYNC Pin ㉚:Measure the burst section amplitude.		2	3	4	dB
ACC_P	PB ACC output amplitude	9	Pin ㉜:Input reference low-freq. chroma signals. (Chroma: 0.1Vp-p, 630 kHz) Pin ㉘:Input SYNC. Pin ㉚:Measure the chroma section amplitude.		0.75	0.88	1.01	Vp−p
ACC_{P1}	PB ACC control range 1	10	Pin ㉜:Input reference low-freq. chroma signals (−18dB) Pin ㉘:Input SYNC Pin ㉚:Measure the chroma section amplitude.		−3		0	dB
ACC_{P2}	PB ACC control range 2	11	Pin ㉜:Input reference low-freq. chroma signals. (+6 dB) Pin ㉘:Input SYNC Pin ㉚:Measure the chroma section amplitude.		0		3	dB
G_{MB}	MAIN BM gain	12	Pin ㉑:Input a 3.58-MHz, 0.5-Vp-p sine wave. Pin ⑦Ground at "R=18 K" and offset. Pin ⑤Measure the gain.		5	6	7	dB
CL_{MB}	MAIN BM carrier leak	13	Pin ㉑:Input a 630-kHz, 0.5-Vp-p sine wave. Pin ①:Input a 5.06-MHz, 1.25-Vp-p sine wave. Pin ⑤:Measure 4.43-MHz and 5.06-MHz elements.			−45	−38	dB
G_{SB}	SUB BM output amplitude	14	Pin ㉘ : Measure the amplitude.		0.65	0.85	1.05	Vp−p
CL_{SB}	SUB BM carrier leak	15	Pin ㉘:Measure 4.43-MHz and 5.06-MHz elements.			−40	−34	dB
BU	Burst − up increase	16	Pin ㉑:Input a 630-kHz, 0.25Vp-p sine wave. Pin ㉘:Input SYNC. Pin ⑪:Measure the amplitude at the burst section and chroma section.		5	6	7	dB
β_{VCOR}	320fH VCO β1	17	Pin ㉒:Apply 3.1 V, 3.5 V. Pin ⑤:Perform measurement.	REC	0.8	1.3	1.8	kHz/mV
β_{VCOP}	320fH VCO β2	18	Pin ㉒:Apply 3.1 V, 3.5 V. Pin ⑤:Perform measurement.	PB	1.25	1.6	1.7	kHz/mV

Note 1 : The ambient temperature is 25℃.
2 : The supply voltage is 5.0 V.
3 : The direction of a current that flows toward the IC is regarded as plus.

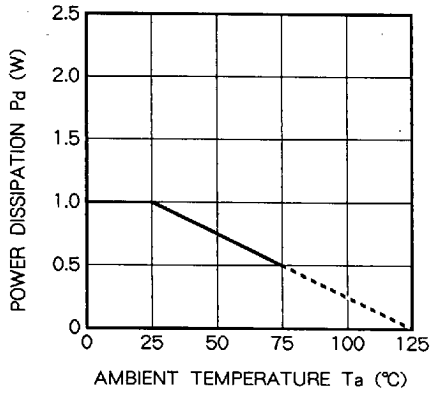
ELECTRICAL CHARACTERISTICS (cont.)

Symbol	Parameter	Test No.	Test conditions	Remark	Limits			Unit
					Min.	Typ.	Max.	
βVcxo	VCXOβ	19	Pin ㉘:Apply 3.6V, and 4.0 V. Pin ㉙:Perform measurement.		3	5	7	Hz/mV
μAPCR	REC APCDET μ	20	Pin ⑰:4.45MHz 0.1 Vp-p.) The phase are Pin ⑫:4.45MHz 0.5Vp-p.) synchronous. Pin ㉞:Input SYNC Pin ㉘:Measure the voltage.		13	18	23	mV/deg
μAPCP1	PB APCDET μ 1	21	Pin ㊺:4.43MHz 0.22 Vp-p.) The phase are Pin ㊷:4.43MHz 0.5Vp-p.) synchronous. Pin ㉞:Input SYNC Pin ㊱:Ground at 0.1μm. Pin ㉗:Measure the voltage.	Burst APC	200	280		mV/deg
μAPCP2	PB APCDET μ 2	22	Pin ㊺:4.43MHz 0.22 Vp-p.) The phase are Pin ㊷:4.43MHz 0.5Vp-p.) synchronous. Pin ㉞:Input SYNC Pin ㊱:5 V. Pin ㉗:Measure the voltage.	Pilot burst APC.	200	280		mV/deg
TH KILLR	REC color killer threshold	23	Pin ⑨:Input chroma signal(input ATT) Pin ㉔:Input SYNC. Pin ⑭ Measure the threshold.		−36	−31	−26	dB
TH KILLP	PB color killer threshold	24	Pin ㉒:Input low-freq. chroma signals (input ATT) Pin ㉝:Input SYNC Pin ⑭:Measure the threshold		−36	−31	−26	dB
SLD	SIDE LOCKDET dead zone	25	Pin ㉑:1VP-P, frequency variable. Pin ㉔:Input SYNC. Pin ㉕:Measure.		−10		10	kHz
TH PSN1	P/S/N switching threshold	26	Pin ㉖:Applied voltage variable. Pin ④:Input a 630-kHz, 0.25-VP-P sine wave. Pin ㉔:Input SYNC Pin ⑪:Measure the amplitude.	NTSC → PAL	0.9	1.1	1.3	V
TH PSN2	P/S/N switching threshold	27	Pin ⑲:Applied voltage variable. Pin ⑭:Measure.	PAL → SECAM	3.0	3.2	3.4	V
TH SLE1	2/4/6 switching threshold 1	28	Pin ④:Input a 630kHz, 0.25-Vp-p sine wave. Pin ㉔:Input SYNC. Pin ㊵:Applied voltage variable. Pin ①:Measure.	2H → 4H	0.9	1.1	1.3	V
TH SLE2	2/4/6 switching threshold 2	29	Pin ④:Input a 630-kHz, 0.25-Vp-p sine wave. Pin ㉔:Input SYNC. Pin ㊵:Applied voltage variable. Pin ①:Measure.	4H → 6H	3.0	3.2	3.4	V
TH RTP1	R/T/P switching threshold 1	30	Pin ⑬:Input a 630-kHz, 0.25-Vp-p sine wave. Pin ⑭:Measure	REC → TRICK	0.9	1.1	1.3	V
TH RTP2	R/T/P switching threshold 2	31	Pin ⑫:Input reference low-freq. chroma signals. Pin ㉔:Input SYNC. Pin ㊶:Applied voltage variable. Pin ㉖:Measure.	TRICK → PB	3.0	3.2	3.4	V

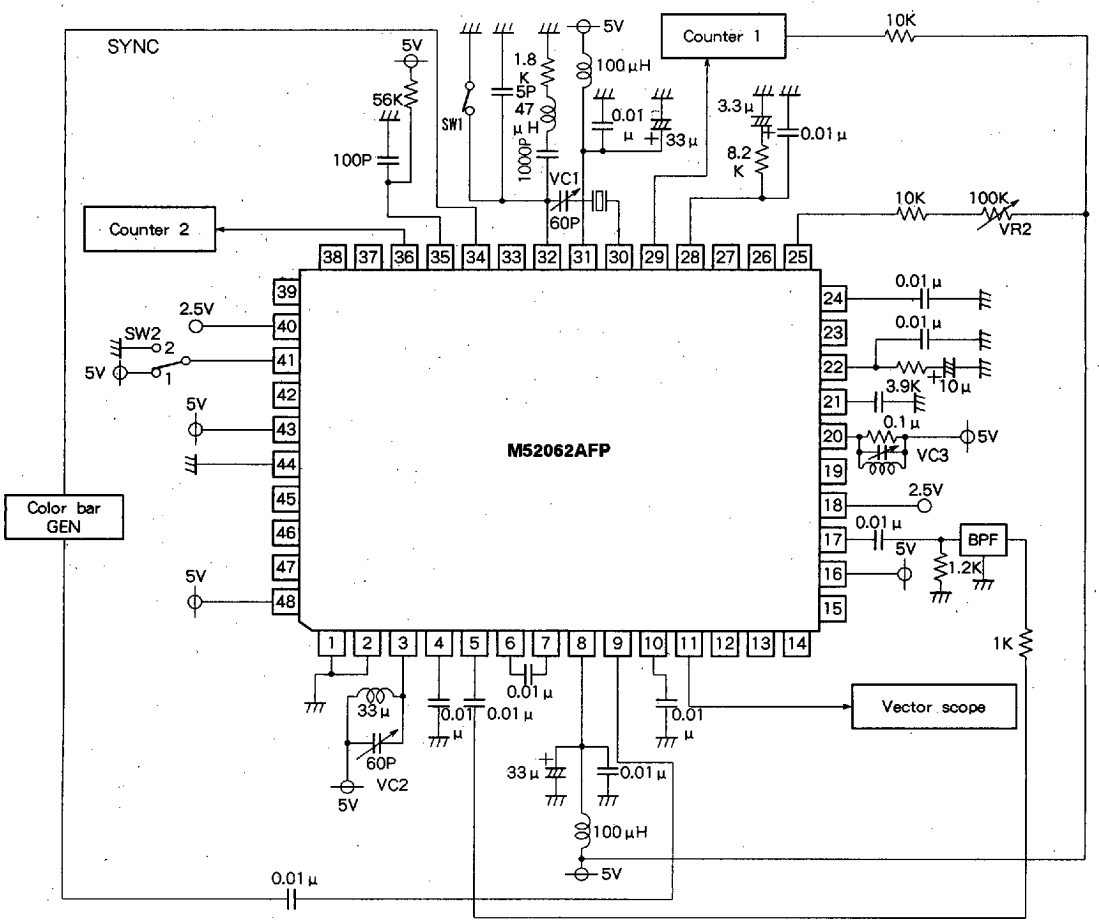
Note 1: The ambient temperature is 25℃.
2: The supply voltage is 5.0 V.
3: The direction of a current that flows toward the IC is regarded as plus.

TYPICAL CHRACTERISTICS

THERMAL DERATING (MAXIMUM RATING)



ADJUSTING CIRCUIT FOR MEASUREMENT



Units Resistance : Ω
Capacitance : F

1. VCXO free run frequency adjustment
   Set SW1 to OFF and SW2 to 1. Adjust the counter 1 frequency to 4.433619MHz using VC1.
2. 320-fH VCO free run frequency adjustment
   Set SW1 to ON and SW2 to 1. Adjust the counter 2 frequency to 627.0kHz using VC3.
3. Pilot burst phase adjustment
   Set SW1 to OFF and SW2 to 2. Adjust VC2 such that the pilot burst phase will meet axis V as in the vector scope.
4. Pilot burst amplitude adjustment
   Set SW1 to OFF and SW2 to 2. Adjust VR2 such that the pilot burst amplitude will meet the burst as in the vector scope.

APPLICATION EXAMPLE