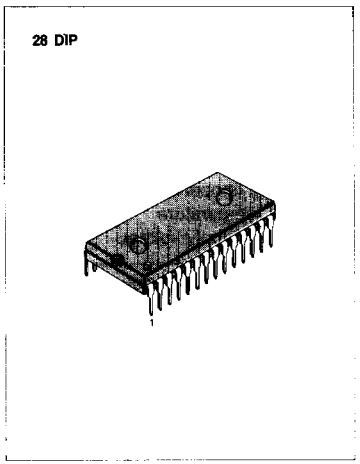
CHROMA SIGNAL PROCESSOR

The KA2988 is a chroma signal processor designed for home video tape recorders. (for NTSC & PAL)



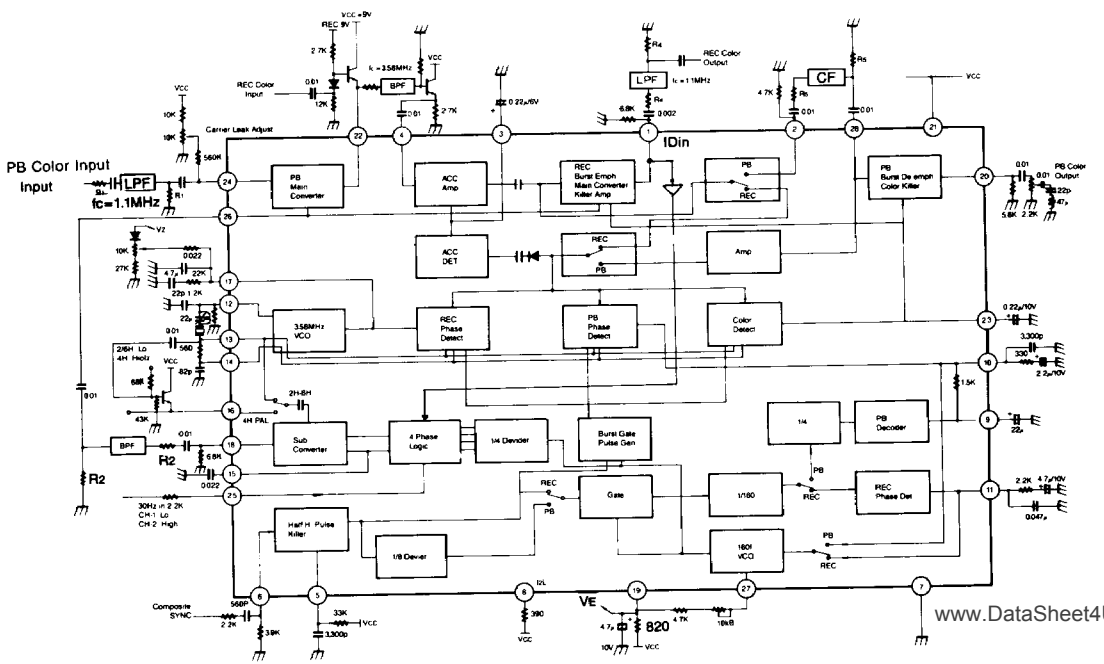
FUNCTION

- Automatic color controller
- Burst Pre/De-Emphasis circuits
- Converter
- Automatic frequency controllers for chroma signal
- Automatic phase controllers for chroma signal
- Sub Converter
- Voltage controlled oscillator (160fH)
- 4-Phase 40fH signal generator
- Voltage controlled oscillator (f=3.579545MHz)
- ID circuit

ORDERING INFORMATION

Device	Package	Operating Temperature
KA2988	28 DIP	−10 ~ +70°C

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	15	V
Power Dissipation	P_D	800 (T_{OPR} = 65°C) 675 (T_{OPR} = 75°C)	mW
Operating Temperature	T_{opr}	−10 ~ +70	°C
Storage Temperature	T_{stg}	−40 ~ +125	°C
Operating Supply Voltage	V_{opr}	9 ± 1	V

* Value at=65°C **Value at=75°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C, V_{CC} = 9V)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Current	I_{CC}	Total REC Mode at Pins 8, 19, 21, and 27	—	70	90	mA
Zener Voltage	V_{19}	820Ω Connected to 9V	—	7.2	—	V
REC ACC Dynamic Range	V_{ACC}	With Respect to Input of 0.15V_{p-p}; Input Peak to Peak Voltage which Varies Output from −3dB to +3dB	15	150	450	mV_{p-p}
REC ACC Secondary Harmonics		Input Signal to Pin 4= 0.15V_{p-p}; 33K Connected to GND Via Pin 26; Output at Pin 1 Measured	—	−35	−30	dB
PB ACC Secondary Harmonics		Input Signal at Pin 4 =0.15V_{p-p} Output at Pin 2 Measured	—	−43	−30	dB
REC Main Converter Carrier Leak Spurious		f=3.58MHz	—	−30	−20	dB
		f=4.21MHz	—	−28	−20	dB
PB Main Converter Conversion Gain		Input Signal to Pin 24 =629KHz, 0.15V_{p-p}; Input Signal to Pin 26 =4.21MHz, 0.3V_{p-p}	4.5	6.0	7.5	dB
PB Main Converter Carrier Leak Spurious		f=4.21MHz	—	−32	−20	dB
		f=629KHz	—	−34	−20	dB
Burst Emphasis	G_{KR}		5	6	7	dB
Burst Emphasis DC Offset Voltage			—	0	±100	mV
Burst De-Emphasis	G_{KP}		—	4.7	—	dB
Burst De-Emphasis DC Offset Voltage			—	0	±50	mV
Burst De-Emphasis AMP Gain		Chroma	9.5	11	12.5	dB

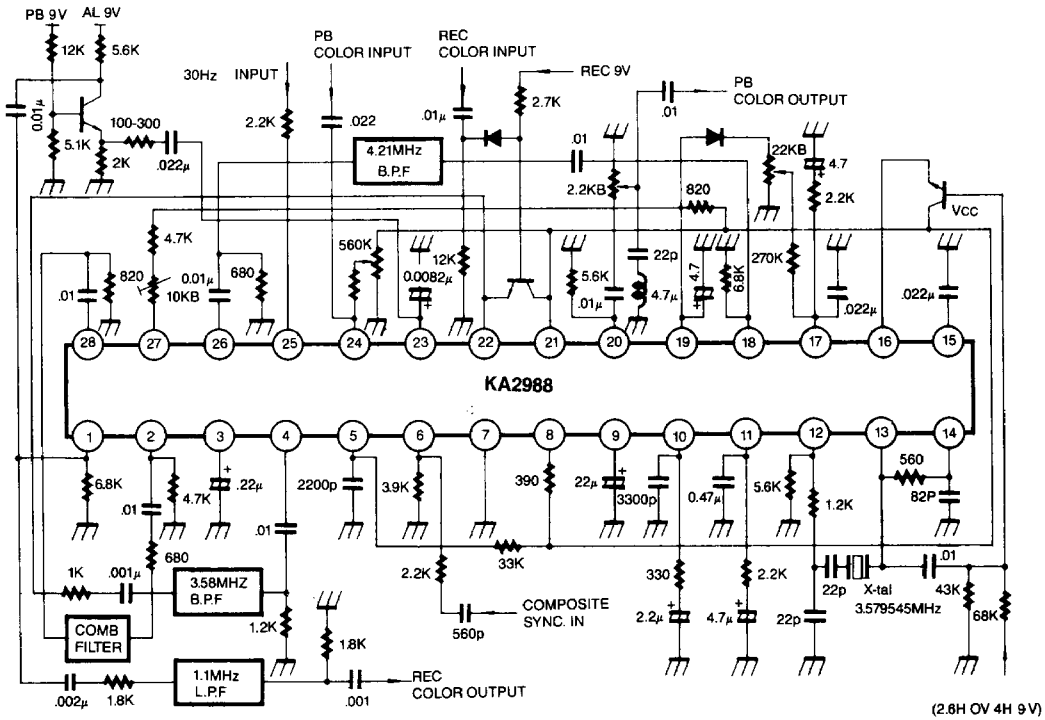
ELECTRICAL CHARACTERISTICS (Continued)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Burst De-Emhasis Secondary Harmonics			—	-45	-30	dB
REC Killer Sensitivity			—	-46	-30	dB
PB Killer Sensitivity			—	-43	-30	dB
Subconverter Carrier Leak	C_L	629KHz Internally	—	-40	-30	dB
Subconverter Spurious		629KHz Internally; (4.21 + 0.629 × 3) MHz	—	-16	-13	dB
REC AFC Pull-In Range			75	—	—	KHz
VCO ($160f_H$) Control Sensitivity	β		80	140	200	Hz/mV
REC AFC Phase Detective Sensitivity	μRS		50	100	—	mV/deg
REC DC Loop Gain			9	14	—	KHz/deg
PB AFC Pull-In Range	f_{PR}		75	—	—	KHz
3.58MHz VCO Output Peak-To-Peak Voltage	V_{OSC}	Measured at Pin 16	—	0.36	—	V_{P-P}
REC APC Pull-In Range	f_{PR}		300	—	—	Hz
REC APC Phase Detective Sensitivity	μRP		13	18	21	mV/deg
REC APC Control Sensitivity	β		1.9	—	2.7	Hz/mV
Killer Threshold Voltage		Burst Level at Pin 4 Measured	—	8	—	mV
Injector Current		$f_r = 160f_H$; Input Current of Pin 27 Measured	—	0.32	—	mV
ID Input Threshold Voltage		Threshold at Pin 1 Measured (PB Only)	—	1.1	2.0	V_{DC}

PIN FUNCTIONS

No.	Function	Comment
1	REC Color Output (REC) ID Input (PB)	
2	Buffer Amp Output (connected to 1HDL filter) (PB only)	DC 1V
3	ACC Det Filter Terminal	
4	ACC Amp Input	
5	Mono-Multi Constant Terminal 1/2H Pulse Killer Circuit	
6	1/2 H Pulse Killer Circuit Input (Sync. Pulse)	
7	GND	
8	I^2L Injector Terminal	DC 0.8V
9	Freq. Discrimination Filter Terminal	DC 5V
10	APC PD Filter Terminal at PB	DC 5V PB
11	AFC PD Filter Terminal at REC	DC 5V REC
12	3.58 MHz VCO Output	
13	3.58 MHz VCO Input	
14	3.58 MHz VCO Input	
15	4-Phase 40f_H Signal By-Pass	
16	3.58 MHz VCO Output	
17	APC PD Filter Terminal at REC	DC 5V
18	Sub Conv. Output	
19	Zener Voltage Terminal	DC 7.2V
20	PB Color Output (PBonly)	
21	V_{CC}	DC 9V
22	(REC) REC Color Signal Input (PB) Main Conv. Output (Connected to 3.58 MHz B.P.F.)	
23	Killer Det. Filter Terminal	DC 5V
24	Main Conv. Input (PB 629 KHz signal) (PBonly)	
25	30 Hz Pulse Signal Input	
26	Main Conv. Input (Carrier for Freq. Conversion)	
27	160 f_H VCO Control Current Input	DC 5V
28	(PB) Burst De-emphasis Killer Amp Input	

TYPICAL APPLICATION CIRCUIT



(2.6H OV 4H 9 V)