

M52069VP**8mm VCR LUMINANCE SUB-EMPHASIS****DESCRIPTION**

The M52069VP, developed for 8mm VCR, is a semiconductor integrated circuit for luminance signal sub-emphasis.

FEATURES

- Wide-band applicable to high-band specifications
- DC clip circuit in addition to AC clip/expansion circuit
- Low power dissipation, small package (16 pin SSOP)

APPLICATION

8mm VCR

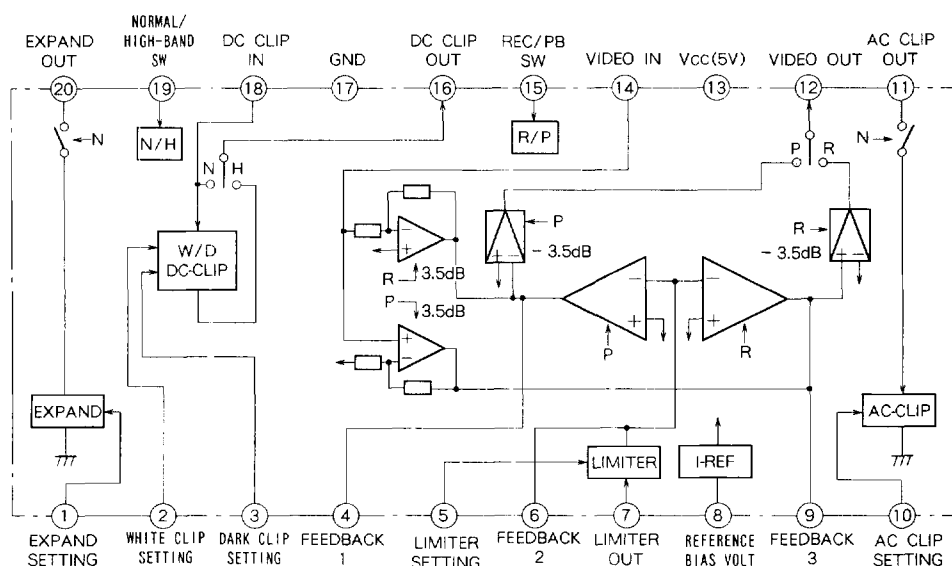
RECOMMENDED OPERATING CONDITIONS

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

PIN CONFIGURATION (TOP VIEW)

EXPAND SETTING	1	20	EXPAND OUT
WHITE CLIP SETTING	2	19	NORMAL/HIGH-BAND SW
DARK CLIP SETTING	3	18	DC CLIP IN
FEEDBACK 1	4	17	GND
LIMITER SETTING	5	16	DC CLIP OUT
FEEDBACK 2	6	15	REC/PB SW
LIMITER OUT	7	14	VIDEO IN
REFERENCE BIAS VOLT	8	13	Vcc (5V)
FEEDBACK 3	9	12	VIDEO OUT
AC CLIP SETTING	10	11	AC CLIP OUT

Outline 20P2E-A

BLOCK DIAGRAM

M52069VP

8mm VCR LUMINANCE SUB-EMPHASIS

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Ratings	Unit
V _{CC}	Supply voltage	6.0	V
P _d	Power dissipation	275	mW
T _{opr}	Operating temperature	-20~75	°C
T _{stg}	Storage temperature	-40~125	°C
V _{opr}	Recommended operating supply voltage	5.0	V
V _{opr} '	Recommended operating supply voltage range	4.5~5.5	V

ELECTRICAL CHARACTERISTICS (T_a = 25°C, V_{CC} = 5.0V, unless otherwise noted)

Symbol	Parameter	Test No.	Test circuit	Test conditions	Limits			Unit
					Min.	Typ.	Max.	
I _{cc}	Circuit current(REC)	1	1		9	12	15	mA
I _{pc}	Circuit current(PB)	2	1		7	10	13	V
V _B	Reference bias voltage	3	1		2.7	3.0	3.3	V
FR12	Frequency characteristics(REC)	4	2		According to Table 1			dB
FP12	Frequency characteristics(PB)	5	2		According to Table 2			dB
FN16	DC clip(normal)	6	2	Pin ⑩ input 0.9V _{D-P} 5MHz V ₂ =4V, V ₃ =1V	-1	0	1	dB
FH16	DC clip(High-band)	7	2	Pin ⑩ input 0.9V _{D-P} 5MHz V ₂ =4V, V ₃ =1V	-1	0	1	dB
WC1	W-CLIP characteristics	8	3	Pin ⑩ input 0.8V _{D-P} 1MHz high-band mode, V ₂ =2.2V	2.15	2.20	2.25	V
DC1	D-CLIP characteristics	9	3	Pin ⑩ input 0.8V _{D-P} 1MHz high-band mode, V ₃ =1.9V	1.75	1.80	1.85	V
EX1	EXPAND(OFF)characteristics	10	3	Pin ⑩ input 0.5V _{D-P} 100kHz high-band mode, V ₁ =3.4V	0.48	0.50	0.52	V _{D-P}
EX2	EXPAND(ON)characteristics	11	3	Pin ⑩ input 0.5V _{D-P} 100kHz normal mode, V ₁ =3.4V	0.33	0.35	0.37	V _{D-P}
ACC1	AC-CLIP(OFF)characteristics	12	3	Pin ⑪ input 0.5V _{D-P} 100kHz high-band mode, V ₁₀ =3.4V	0.48	0.50	0.52	V _{D-P}
ACC2	AC-CLIP(ON)characteristics	13	3	Pin ⑪ input 0.5V _{D-P} 100kHz normal mode, V ₁₀ =3.4V	0.33	0.35	0.37	V _{D-P}
S151	Pin ⑮ threshold 1(REC/PB)	14	3	REC/PB switch (REC)	1.9	—	5.0	V
S152	Pin ⑮ threshold 2(REC/PB)	15	3	REC/PB switch (PB)	0	—	1.3	V
S191	Pin ⑩ threshold 1(Normal/high-band)	16	3	Normal/HiBand switch(N)	2.0	—	5.0	V
S192	Pin ⑩ threshold 2(Normal/high-band)	17	3	Normal/HiBand switch(H)	0	—	1.4	V

ELECTRICAL CHARACTERISTICS TEST METHOD**Measurement No. 1, 2, 3**

In the above test circuit, readings on each ammeter and voltmeter should be referred to respectively as I_{rc} , I_{pc} , V_1 , V_5 , V_8 and V_{10} .

In Measurement No. 1 and 2, REC/PB switch should be made by applying the voltages below to pin ⑮.

(Pin ⑮ voltage)

5V REC

0V PB

Measurement No. 4, 5

Input frequencies at respective input levels shown in Table 1 to pin ⑭, and find the gain in relation to the output at pin ⑫.

REC/PB switch should be made by applying the voltages below to pin ⑮.

(Pin ⑮ voltage)

5V REC

0V PB

Measurement No. 6, 7

Input $0.9V_{p-p}$, (1MHz / 5MHz), CW to pin ⑩, and measure the outputs at pin ⑮. Refer to measurements respectively as B(V_{p-p}) and C(V_{p-p}).

$$F*16=20 \times \log \frac{C}{B} \text{ (dB)}$$

(Voltage conditions)

Pin ② 4.0V

Pin ③ 1.0V

Measurement No. 8, 9

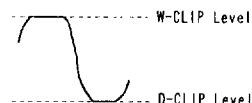
Input $0.8V_{p-p}$, 1MHz, CW to pin ⑩, and measure the CLIP level (DC voltage) at pin ⑮.

(Voltage conditions)

Pin ⑨ 0V

Pin ② 2.2V

Pin ③ 1.9V

**Measurement No. 10, 11**

Input $0.5V_{p-p}$, 100kHz, CW to point A of pin ⑫, and measure the output signal amplitude at point B.

(Voltage conditions)

Measurement No.10 pin ⑨=0V, pin ⑬=40V

Measurement No.11 pin ⑨=5V, pin ⑬=40V

Measurement No. 12, 13

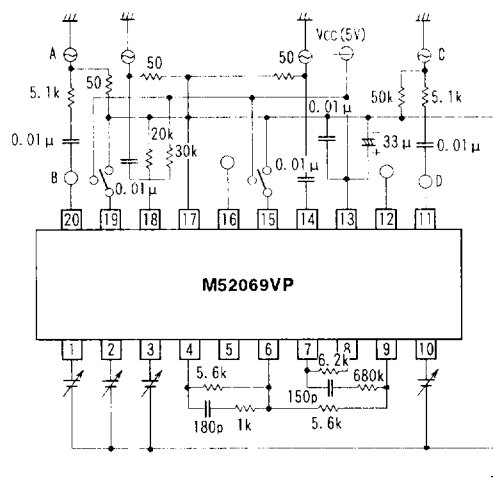
Input $0.5V_{p-p}$, 100kHz, CW to point C of pin ⑪, and measure the output signal amplitude at point D.

(Voltage conditions)

Measurement No.12 pin ⑨=0V, pin ⑩=3.40V

Measurement No.13 pin ⑨=5V, pin ⑩=3.40V

TEST CIRCUIT 2



Units Resistance : Ω
Capacitance : F

Units Resistance : Ω
Capacitance : F

EMPHASIS CHARACTERISTICS DEVIATION

THERMAL DERATING (MAXIMUM RATING)

Ambient Temperature T_a (°C)	Power Dissipation P_d (W)
-25	0.28
25	0.28
75	0.14
125	0.00

Frequency characteristics (MHz)	0.05	0.2	1.0	4.0
Input (dB)				
-3	0.3 ± 0.6	1.6 ± 0.6	3.3 ± 1.5	3.6 ± 4.0
-10	0.3 ± 0.6	2.0 ± 0.6	5.3 ± 1.5	6.0 ± 4.0
-20	0.3 ± 0.6	2.2 ± 0.6	7.6 ± 1.5	8.7 ± 4.0

Frequency characteristics (MHz)	0.05	0.2	1.0	4.0
Input (dB)				
-3	-0.3 ± 1	-2.0 ± 1	-5.0 ± 2	-5.7 ± 5
-10	-0.3 ± 1	-2.4 ± 1	-7.7 ± 2	-9.3 ± 5
-20	-0.3 ± 1	-2.6 ± 2	-9.0 ± 3	-11.0 ± 5

Note : 10kHz, 400mV_{p-p}, CW should be referred to as 0dB.

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APPLICATION EXAMPLE

