

RGB Encoder Monolithic IC MM1268

Outline

This IC converts analog RGB signals into chroma, Y+S and composite video signals.

Features

1. Operates on 5V single power supply
2. Supports NTSC and PAL formats
3. Supports S (Y, C output)
4. 75Ω driver output (RGB output, Y, C output, composite video output)
5. Built-in BR/ and delay circuits

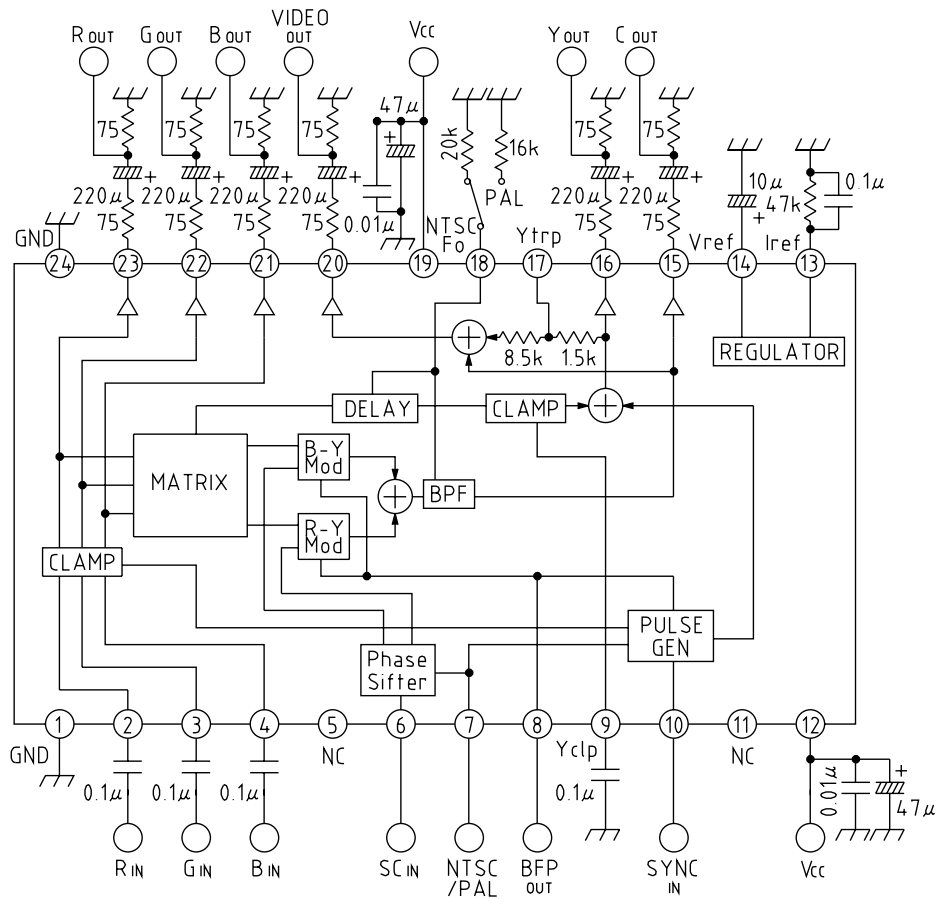
Package

SOP-24A

Applications

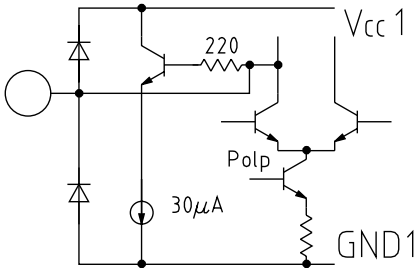
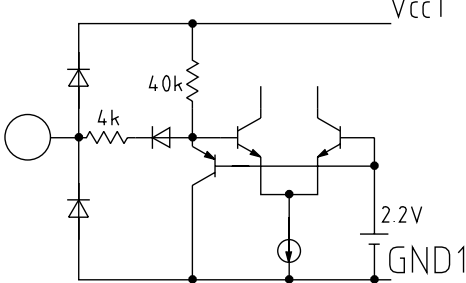
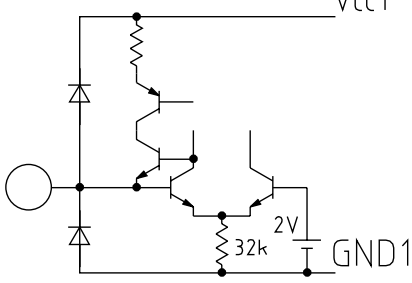
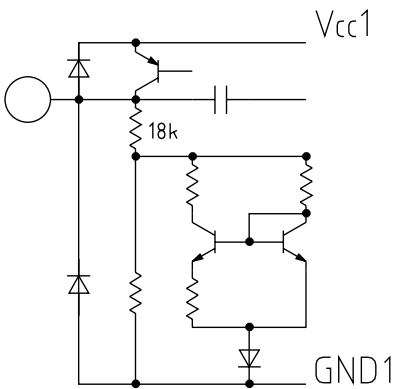
1. PCs
2. Game equipment
3. Other video equipment

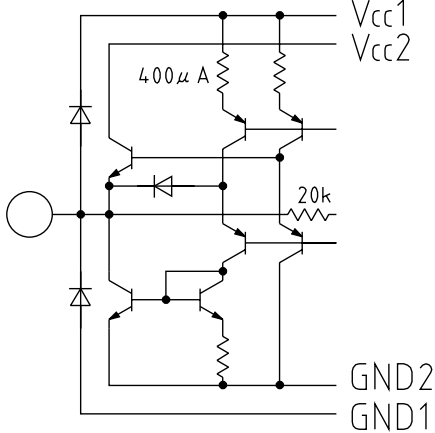
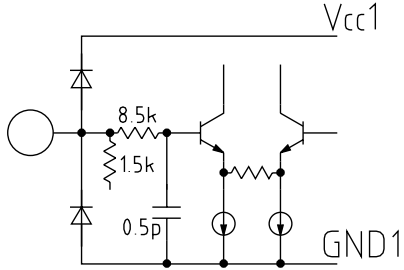
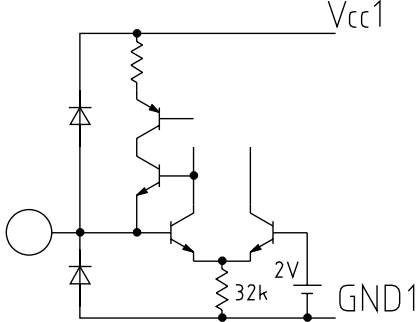
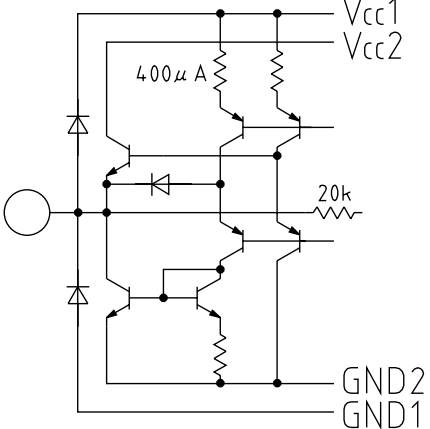
Equivalent Circuit Diagram



Pin Description

Pin no.	Pin name	Function	Internal equivalent circuit diagram
1	GND1		
2 3 4	R _{IN} G _{IN} B _{IN}	RGB input pins Maximum input voltage is 1V _{P-P} DC level is 2V during clamp	
5	NC	OPEN	
6	SC _{IN}	Subcarrier input pin Input a 0.4V~5V _{P-P} sine wave	
7	NTSC/PAL	Mode setting pin NTSC : V _{CC} PAL : GND	
8	BFP _{OUT}	Burst flag pulse monitor pin	

<p>9</p>	<p>Yclp</p>	<p>Connects to capacitor for Y signal clamp</p>	
<p>10</p>	<p>SYNC_{IN}</p>	<p>Composite sync signal input pin</p>	
<p>11</p>	<p>NC</p>	<p>OPEN</p>	
<p>12</p>	<p>Vcc1</p>		
<p>13</p>	<p>Iref</p>	<p>Determines internal reference current Connect a 47kΩ resistor between this pin and ground</p>	
<p>14</p>	<p>Vref</p>	<p>Internal reference voltage pin Reference voltage is 4V Connect a 10μF capacitor between this pin and ground.</p>	

<p>15 16</p>	<p>C_{OUT} Y_{OUT}</p>	<p>Chroma signal output pin Luminance signal output pin Able to drive 75Ω load</p>	
<p>17</p>	<p>Y_{trp}</p>	<p>Connects to trap for removing subcarrier frequency component in VIDEO output luminance signal</p>	
<p>18</p>	<p>f₀</p>	<p>Determines filter and delay circuit f₀ NTSC : 20k PAL : 16k</p>	
<p>19</p>	<p>V_{cc2}</p>	<p>Output stage power supply</p>	
<p>20</p>	<p>VIDEO OUT</p>	<p>Composite video signal output pin Able to drive 75Ω load</p>	

21	B _{OUT}	RGB signal output pin	
22	G _{OUT}	Able to drive 75Ω load	
23	R _{OUT}		
24	GND2	Output stage GND	

Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Ratings	Units
Storage temperature	T _{STG}	-40~+125	°C
Operating temperature	T _{OPR}	-20~+75	°C
Power supply voltage	V _{CC max.}	+7	V
Allowable loss	P _d *1	720	mW

Note : *1 Loss tolerance when garaepo board is mounted. (25.0 × 75.0 × 0.8mm garaepo board)

Recommended Operating Conditions

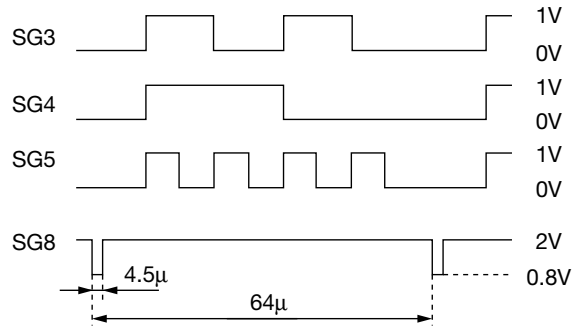
Item	Symbol	Ratings	Units
Operating temperature	T _{OPR}	-20~+75	°C
Operating voltage	V _{OP}	4.75~5.25	°C

Electrical Characteristics (Ta=25°C, Vcc=1, 2=5V)

Item	Symbol	Measurement circuit	Measurement conditions, SW conditions (S1, S2, S3, S4, S5, S6, S7)	Min.	Typ.	Max.	Units
Consumption current 1	Icc1		V4 : SG6 V5 : SG8		31	40	mA
Consumption current 2	Icc2		SW conditions (0, 0, 0, 0, 0, 0, 0)		17	22	mA
RGB output characteristics R _{out} , G _{out} , B _{out}							
R output voltage	VR	F	V1, 2, 3 : SG1 SW conditions (1, 1, 0, 0, 1, 1, 0)	0.64	0.71	0.78	V _{P-P}
G output voltage	VG	E					
B output voltage	VB	D					
Rf characteristic	fR	F	V1, 2, 3 : SG2/SG1 SW conditions (1, 1, 0, 0, 1, 1, 0)	-3.0			dB
Gf characteristic	fG	E					
Bf characteristic	fB	D					
Brightness output characteristic Y _{out} , VIDEO _{out}							
Sync level	Y(S)	B/C	V1 : SG3 V2 : SG4 V3 : SG5 V4 : SG6 V5 : SG8 SW conditions (1, 0, 0, 0, 0, 0, 0)	0.26	0.29	0.33	V _{P-P}
Red brightness level	Y(R)			0.17	0.21	0.26	V
Green brightness level	Y(G)			0.35	0.42	0.49	V
Blue brightness level	Y(B)			0.065	0.08	0.095	V
White brightness level	Y(W)			0.6	0.71	0.82	V
Brightness f characteristic	fY(R) fY(G) fY(B)	B/C	V1, 2, 3 : SG2/SG1 SW conditions (1, 1, 0, 0, 1, 1, 0)	-3.0			dB
Chroma output characteristic C _{out} , VIDEO _{out}							
NTSC							
Burst level	CL(b)	A/C	V1 : SG3 V2 : SG4 V3 : SG5 V4 : SG6 V5 : SG8 SW conditions (1, 0, 0, 0, 0, 0, 0)	0.2	0.25	0.3	V _{P-P}
Red level ratio	CL(R)			2.84	3.16	3.48	
Red phase	CP(R)			94	104	114	deg
Green level ratio	CL(G)			2.65	2.95	3.25	
Green phase	CP(G)			231	241	251	deg
Blue level ratio	CL(B)			2.01	2.24	2.47	
Blue phase	CP(B)			337	347	357	deg
PAL							
Burst -1 level	CL(b1)	A/C	V1 : SG3 V2 : SG4 V3 : SG5 V4 : SG6 V5 : SG8 SW conditions (1, 0, 0, 1, 0, 0, 1)	0.2	0.25	0.3	V _{P-P}
Burst -1 phase	CP(b1)			125	135	145	deg
Burst -2 level	CL(b2)			0.2	0.25	0.3	V _{P-P}
Burst -2 phase	CP(b2)			215	225	235	deg
Red-1 level ratio	CL(R1)			2.84	3.16	3.48	
Red-1 phase	CP(R1)			94	104	114	deg
Red-2 level ratio	CL(R2)			2.84	3.16	3.48	
Red-2 phase	CP(R2)			246	256	266	deg
Green -1 level ratio	CL(G1)			2.65	2.95	3.25	
Green -1 phase	CP(G1)			231	241	251	deg
Green -2 level ratio	CL(G2)			2.65	2.95	3.25	
Green -2 phase	CP(G2)			109	119	129	deg
Blue -1 level ratio	CL(B1)			2.01	2.24	2.47	
Blue -1 phase	CP(B1)			337	347	357	deg
Blue -2 level ratio	CL(B2)			2.01	2.24	2.47	
Blue -2 phase	CP(B2)	3	13	23	deg		
NTSC/PAL							
Burst position	td	A/C	V1 : SG3 V2 : SG4 V3 : SG5 V4 : SG6 SW conditions (1, 0, 0, 1, 0, 0, 1)	0.4	0.6	0.75	μS
Burst width	tw			2.5	2.75	3.2	μS
Carrier lea	VL	A/C	V1~3 : no signal, V4 : SG6 SW conditions (1, 0, 0, 1, 0, 0, 1)			20	mV _{P-P}

Input conditions

Symbol	Signal
SG1	Sine wave, 1V _{P-P} , f=200kHz
SG2	Sine wave, 1V _{P-P} , f=5MHz
SG3	Color bar (100%) R signal
SG4	Color bar (100%) G signal
SG5	Color bar (100%) B signal
SG6	Sine wave, 0.5V _{P-P} , f=3.58MHz
SG7	Sine wave, 0.5V _{P-P} , f=4.43MHz
SG8	0.8V-2.0V, composite, sync signal



Measuring Circuit SW conditions : (0,0,0,0,0,0) for the circuit illustrated below

