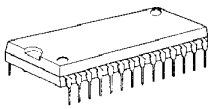
VIDEO SWITCH MATRIX

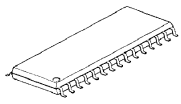
■GENERAL DESCRIPTION

The **NJM2277** is a Video switch for Set Top Box, and TV.
The **NJM2277** includes 2 CVBS input, 2-RGB input switches.
Also it allow the inputs to be routed in 3 CVBS output, 1-RGB output.
The **NJM2277** includes 5th-order Low pass Filter suppress the noise interference to video signal.
The **NJM2277** enable to control the Output Impedance for RGB outputs.

■ PACKAGE OUTLINE



NJM2277L

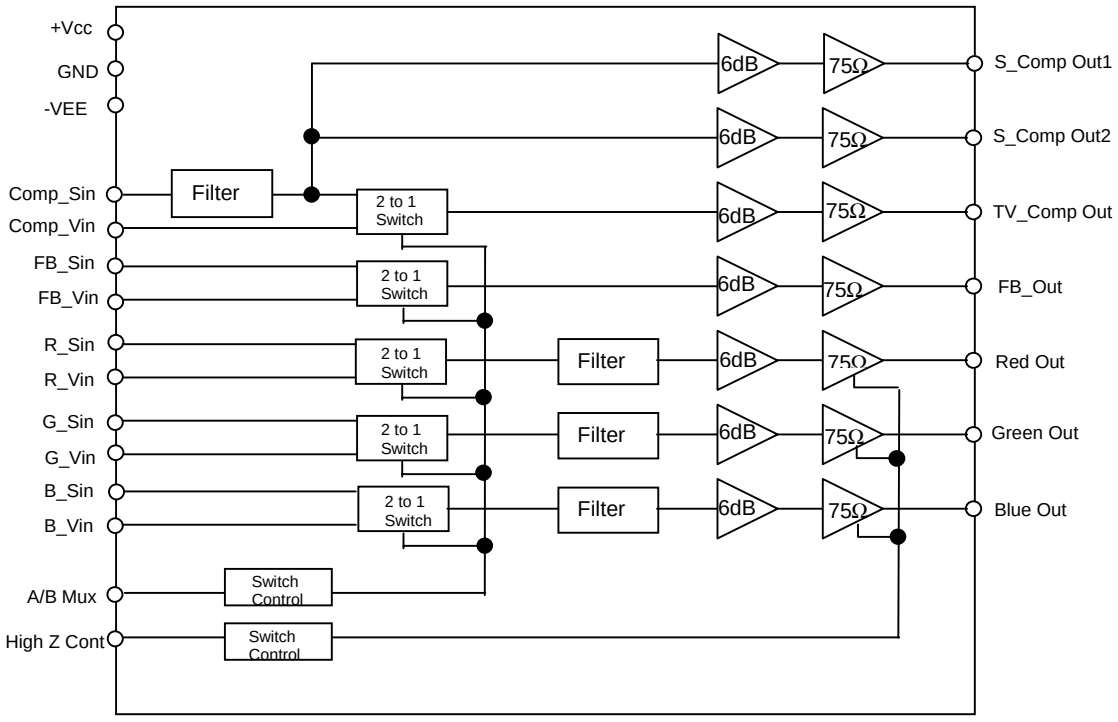


NJM2277M

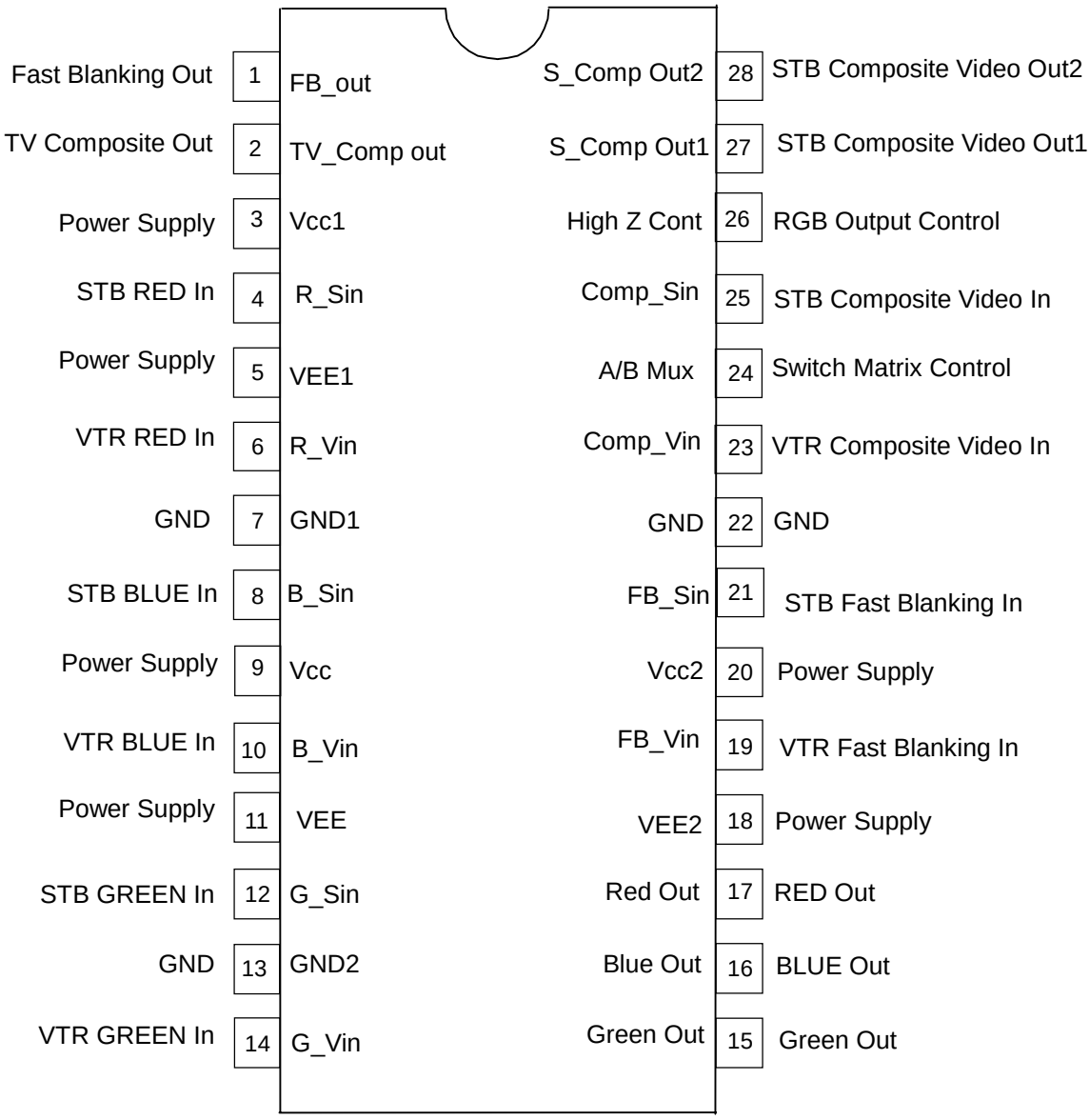
■FEATURES

- Operating Voltage ±5V
- 2- RGB Switches.
- 75Ω Cable Driver on all channels.
- 41dB Stop Band Rejection (@27MHz)
- Bipolar Technology
- Package Outline SDIP28, SDMP30
- 2-Input,3-output CVBS Switches.
- Quad 5th order Butter worth Low Pass Filter.
- High Impedance output for RGB signal.

■FUNCTION BLOCK DIAGRAM

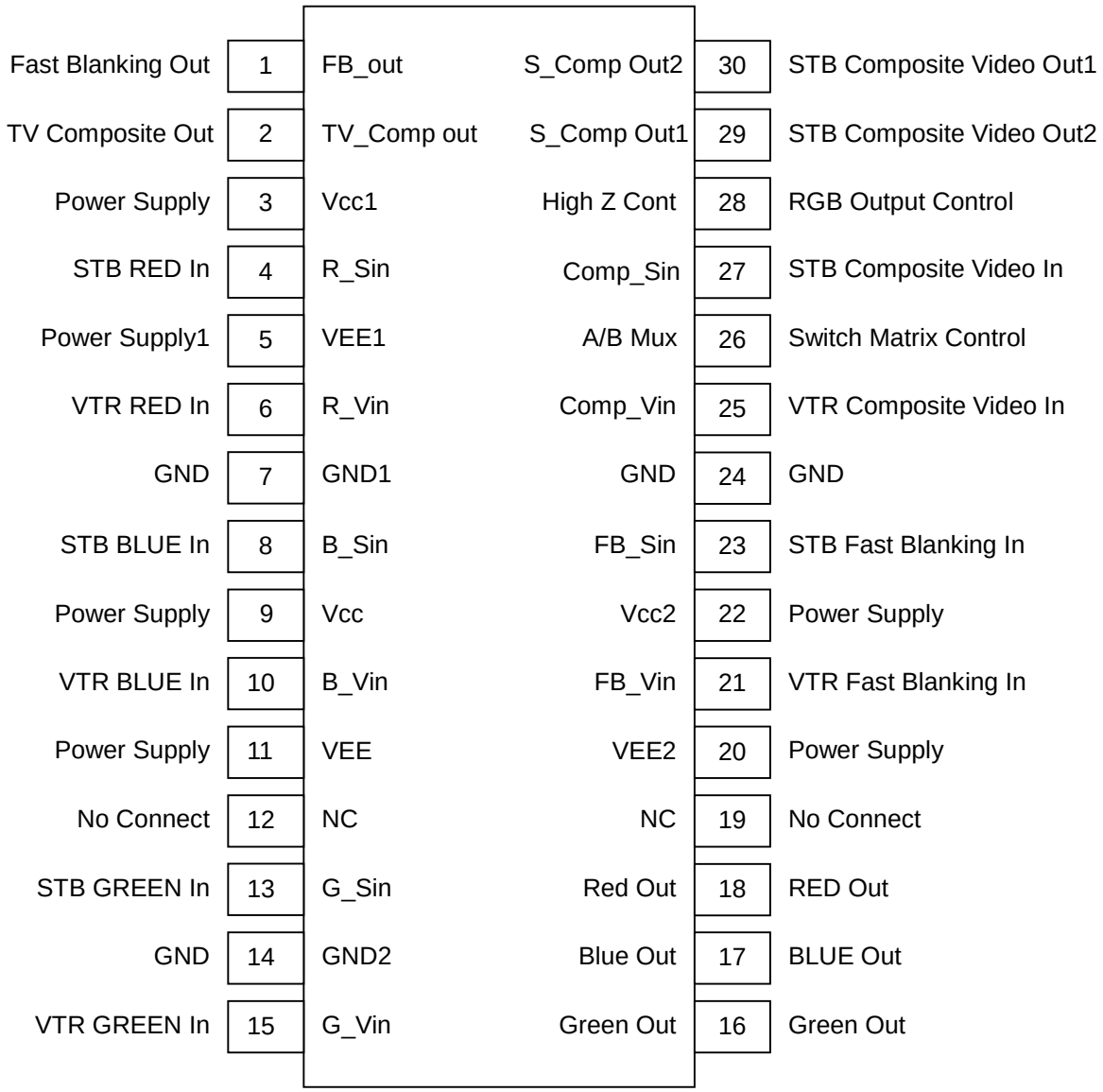


■ Pin Configuration (SDIP28)



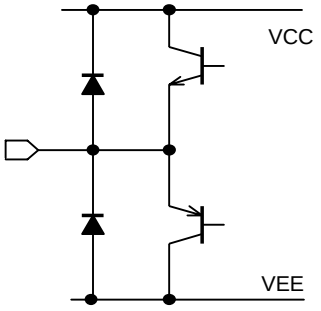
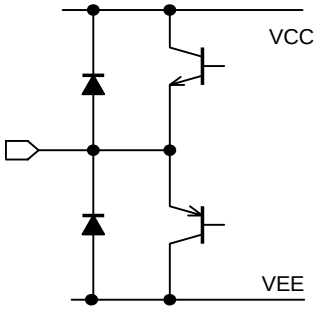
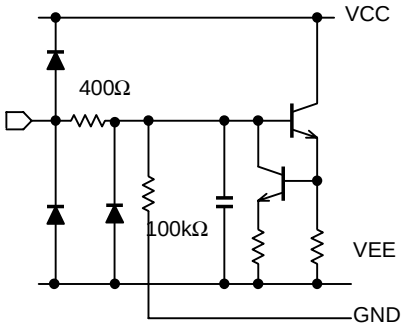
SDIP28

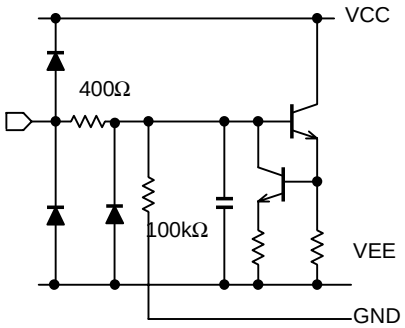
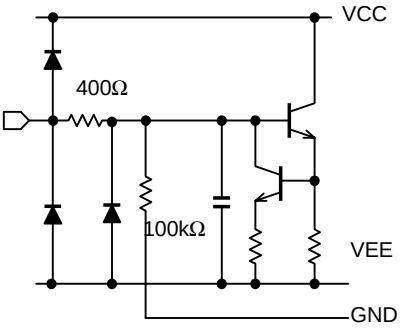
■ Pin Configuration (SDMP30)

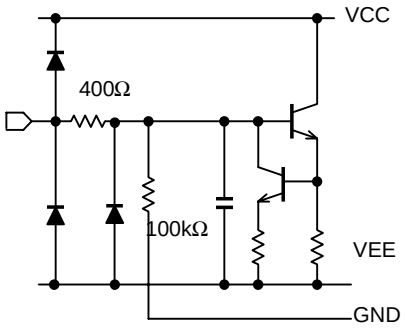
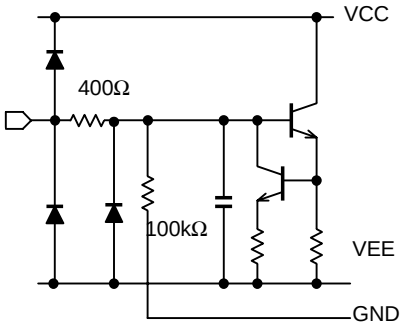


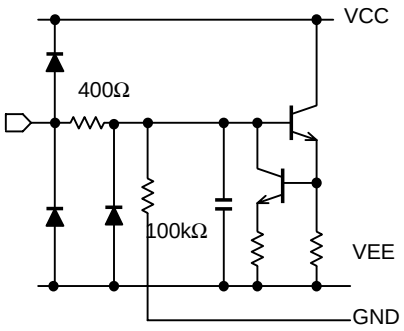
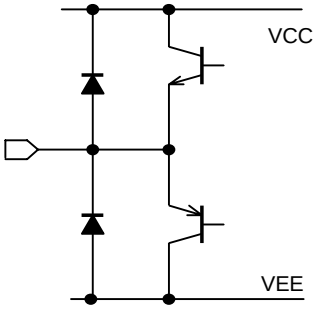
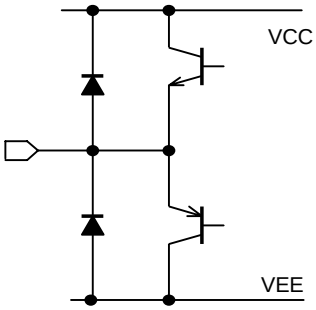
SDMP30

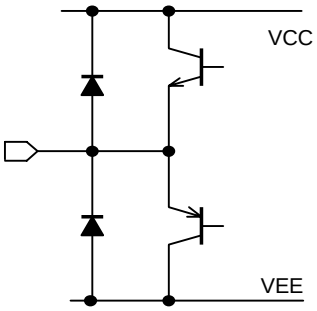
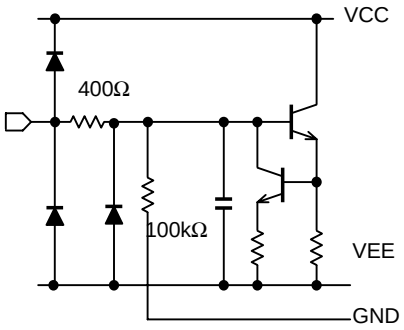
■ Pin Description

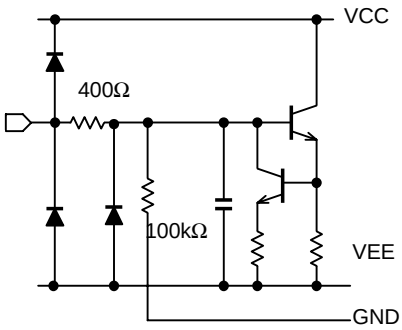
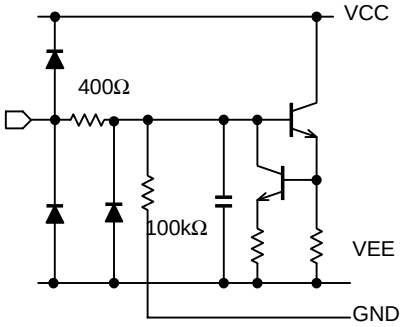
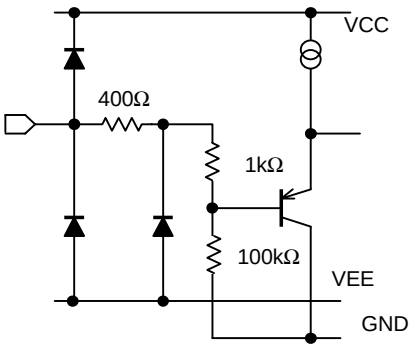
Symbol	Pin No.		I/O Type	Equivalent Circuit	Function
	SDIP28	SDMP30			
FB_out	1	1	O		Fast Blanking Output
TV_Comp out	2	2	O		Composite Video Signal Output
Vcc1	3	3	–	–	Vcc
R_Sin	4	4	I		RGB Signal Input CVBS/Y/C Signal Input

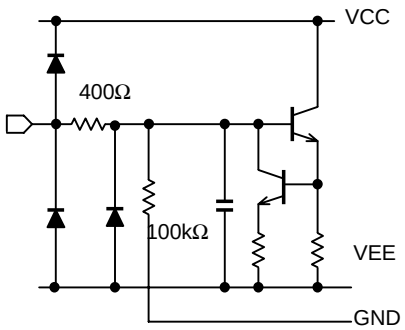
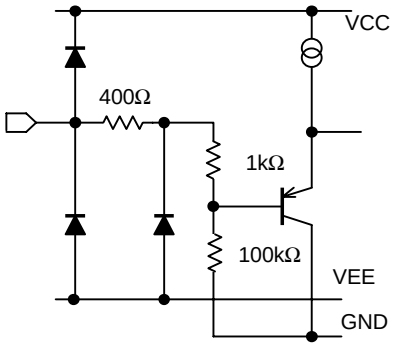
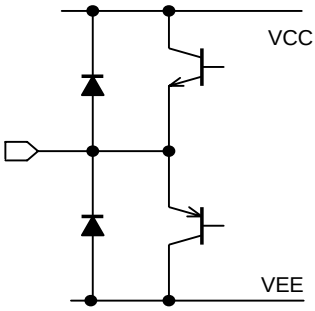
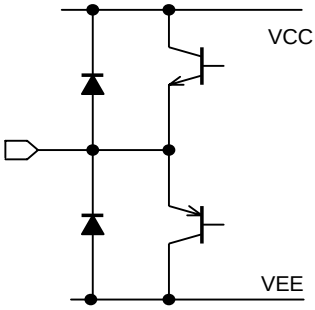
Symbol	Pin No.		I/O Type	Equivalent Circuit	Function
	SDIP28	SDMP30			
VEE1	5	5	–	–	VEE
R_Vin	6	6	I		RGB Signal Input CVBS/Y/C Signal Input
GND1	7	7	–	–	0
B_Sin	8	8	I		RGB Signal Input CVBS/Y/C Signal Input

Symbol	Pin No.		I/O Type	Equivalent Circuit	Function
	SDIP28	SDMP30			
Vcc	9	9	–	–	Vcc
B_Vin	10	10	I		RGB Signal Input CVBS/Y/C Signal Input
VEE	11	11	–	–	VEE
G_Sin	12	13	I		RGB Signal Input CVBS/Y/C Signal Input

Symbol	Pin No.		I/O Type	Equivalent Circuit	Function
	SDIP28	SDMP30			
GND2	13	14	—	—	0
G_Vin	14	15	I		RGB Signal Input CVBS/Y/C Signal Input
Green Out	15	16	O		Filtered RGB Signal Output
Blue Out	16	17	O		Filtered RGB Signal Output

Symbol	Pin No.		I/O Type	Equivalent Circuit	Function
	SDIP28	SDMP30			
Red Out	17	18	O		Filtered RGB Signal Output
VEE2	18	20	–	–	VEE
FB_Vin	19	21	I		VTR/STB Fast Blanking Input
Vcc2	20	22	–	–	Vcc

Symbol	Pin No.		I/O Type	Equivalent Circuit	Function
	SDIP28	SDMP30			
FB_Sin	21	23	I		VTR/STB Fast Blanking Input
GND	22	24	—	—	0
Comp_Vin	23	25	I		Video Signal Input CVBS/Y/C Signal Input
A/B Mux	24	26	I		Input Channel Selector

Symbol	Pin No.		I/O Type	Equivalent Circuit	Function
	SDIP28	SDMP30			
Comp_Sin	25	27	I		Video Signal Input CVBS/Y/C Signal Input
High_Z Cont	26	28	I		RGB Output Impedance Control "0"= High Impedance "1"= Through
S_Comp Out1	27	29	O		Filtered Video Signal Output
S_Comp Out2	28	30	O		Filtered Video Signal Output

■**ABSOLUTE MAXIMUM RATING** (Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V^+	15	V
Power Dissipation	P_D	(SDIP28) 700 (SDMP30) 700	mW
Operating Temperature Range	Topr	-40 to +85	°C
Storage Temperature Range	Tstg	-40 to +125	°C

■**ELECTRICAL CHARACTERISTICS** (Ta=25°C, Vcc=5.0V,VEE=-5V)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V^+		±4.5	±5.0	±5.5	V
Supply Current	I_{cc}	No Signal,No Loard	36	46	56	mA

●Video system(Ta=25°C, Vcc=5.0V,VEE=-5V, RL=150Ω unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Gain	GV	Vin=1.0Vp-p 100KHz S_Comp Out1/2,TV_Comp Out Red/Green/Blue Out	6.0	6.4	6.8	dB
Frequency Response Characteristics	FBW	Vin=1.0Vp-p 5MHz /100KHz All filtered channel	-1.0	0	1.0-	dB
Stop Band Rejection	Fsb	f=100KHz/27MHz ,1Vp-p All filtered channel	-35	-41	-	dB
-3dB Bandwidth	Fc	All filtered channel	-	7.1	-	MHz
RGB Gain matching level	Gm	Gain Matching Between Red/Green/Blue Out	-5	0	5	%
Total Harmonic Distortion	THD	f=1KHz, 1Vp-p input	-	0.1	-	%
Cross talk1	CT1	Vin=4.43MHz/1.0Vp-p One input to any other output	-	-60	-	dB
Cross Talk2	CT2	f=4.43MHz/1Vp-p Mux input to output	-	-60	-	dB
Differential Gain	DG	Vin=1Vp-p,10step Stairs-signal except FBout	-	0.4	-	%
Differential Phase	DP	Vin=1Vp-p,10step Stairs-signal except FBout	-	0.4	-	deg
Input Impedance	Rin	All Channel	-	50	-	KΩ
Output Impedance	Ro1	High Z Cont="0" Red/Green/Blue Output	10	20	-	KΩ
Output Impedance	Ro2	High Z Cont="1" Red/Green/Blue Output ,	-	45	-	mΩ
Equivalent Output Capacitance	Co	RGB output, High Z Cont="0"	-	3	-	pF
Group Delay	Tpd	Vin=1Vp-p, 100Khz All filtered Channel	-	70	-	nS

■**ELECTRICAL CHARACTERISTICS** (Ta=25°C, V=±5V)

● Fast Blanking (Ta=25°C, Vcc=5.0V,VEE=-5V, RL=150Ω unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Fast Blanking Output Low Level	FBlow	FB S/Vin=0V	0		0.4	V
Fast Blanking Output High Level	FBhigh	FB S/Vin=2Vp-p	2.0	3.8		V
Fast Blanking Delay	Ftpd	FB S/Vin=2Vp-p 100KHz	-	25	-	nS

● Switch Contorl (Ta=25°C, Vcc=5.0V, VEE=-5V, RL=150Ω unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
A/B Mux Logic-High level	Vihm		2.0			V
A/B Mux Logic-Low level	Vilm				0.8	V
High Z Control Logic-High level	Vihz		2.0			V
High Z Control Logic-Low level	Vilz				0.8	V

● SWITCH CONTROL TABLE

A/B Mux : Input Channel Selector

Control Signal	OUTPUTS				
	TV Comp Video Out	FB Out	Red Out	Green Out	Blue Out
0*	Comp_Vin	FB _Vin	R_Vin	G_Vin	B_Vin
1	Comp_Sin	FB _Sin	R_Sin	G_Sin	B_Sin

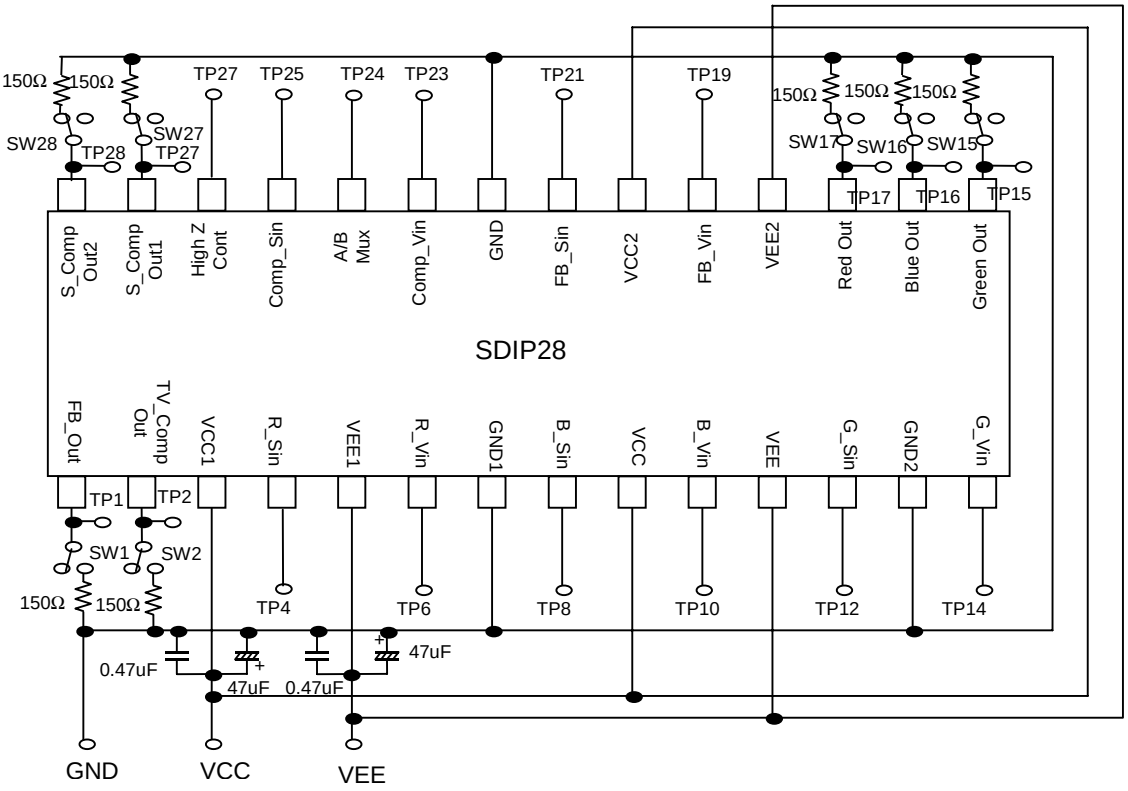
* : Default setting

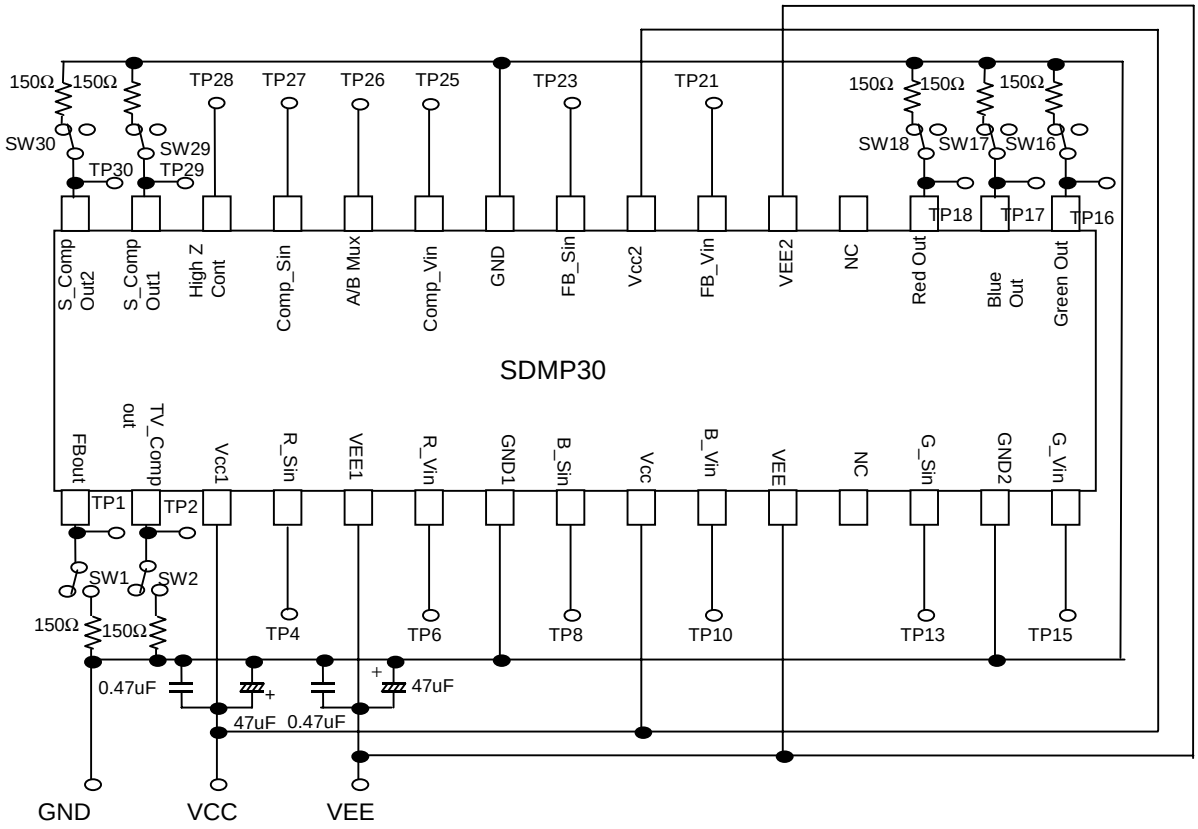
High Z Cont : RGB Outputs Impedance Control

Control Signal	RGB Outputs Impedance
0*	High Impedance
1	Through

* : Default setting

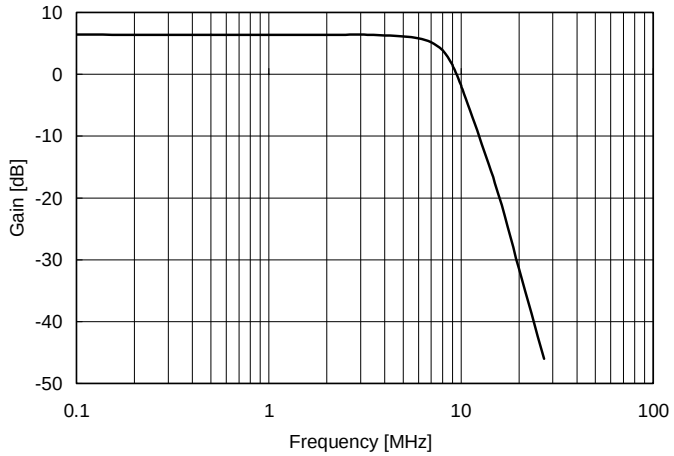
■**Measurement Circuit** (Ta=25°C, Vcc=5V,VEE=-5V)



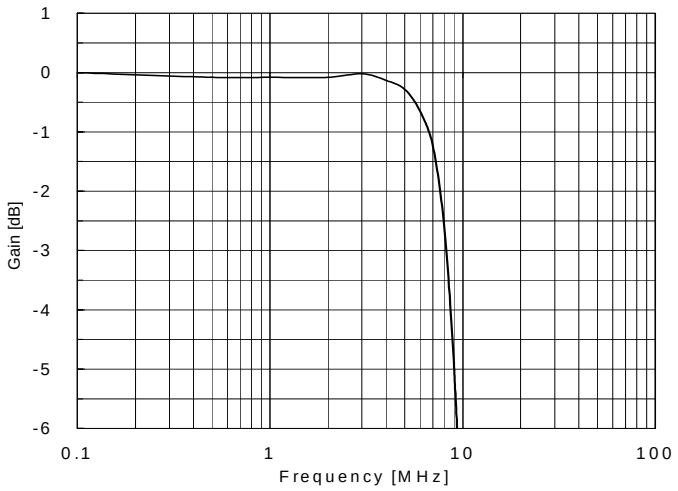


■**Typical Characteristics**

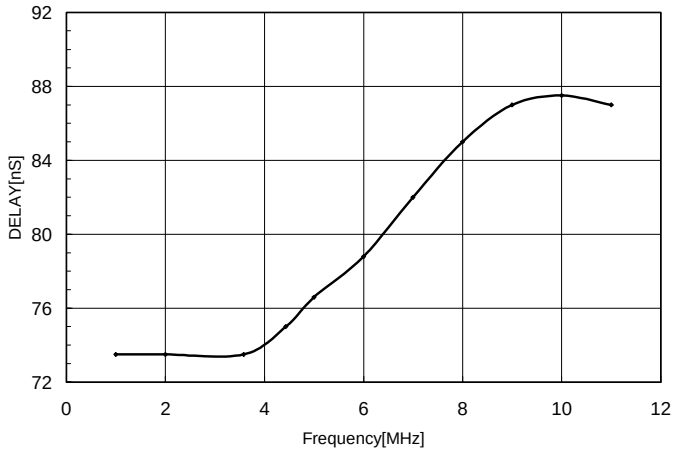
Frequency Response
(Ta=25°C, Vcc=5V,VEE=-5V)



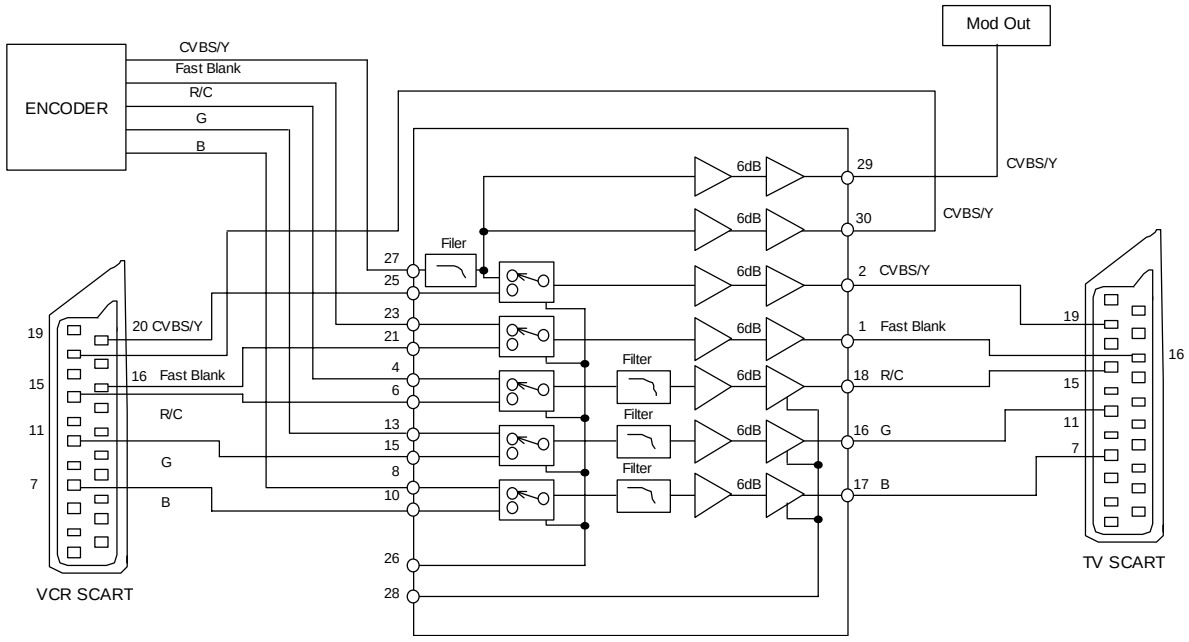
Normalized Frequency Response
(Ta=25°C, Vcc=5V,VEE=-5V)



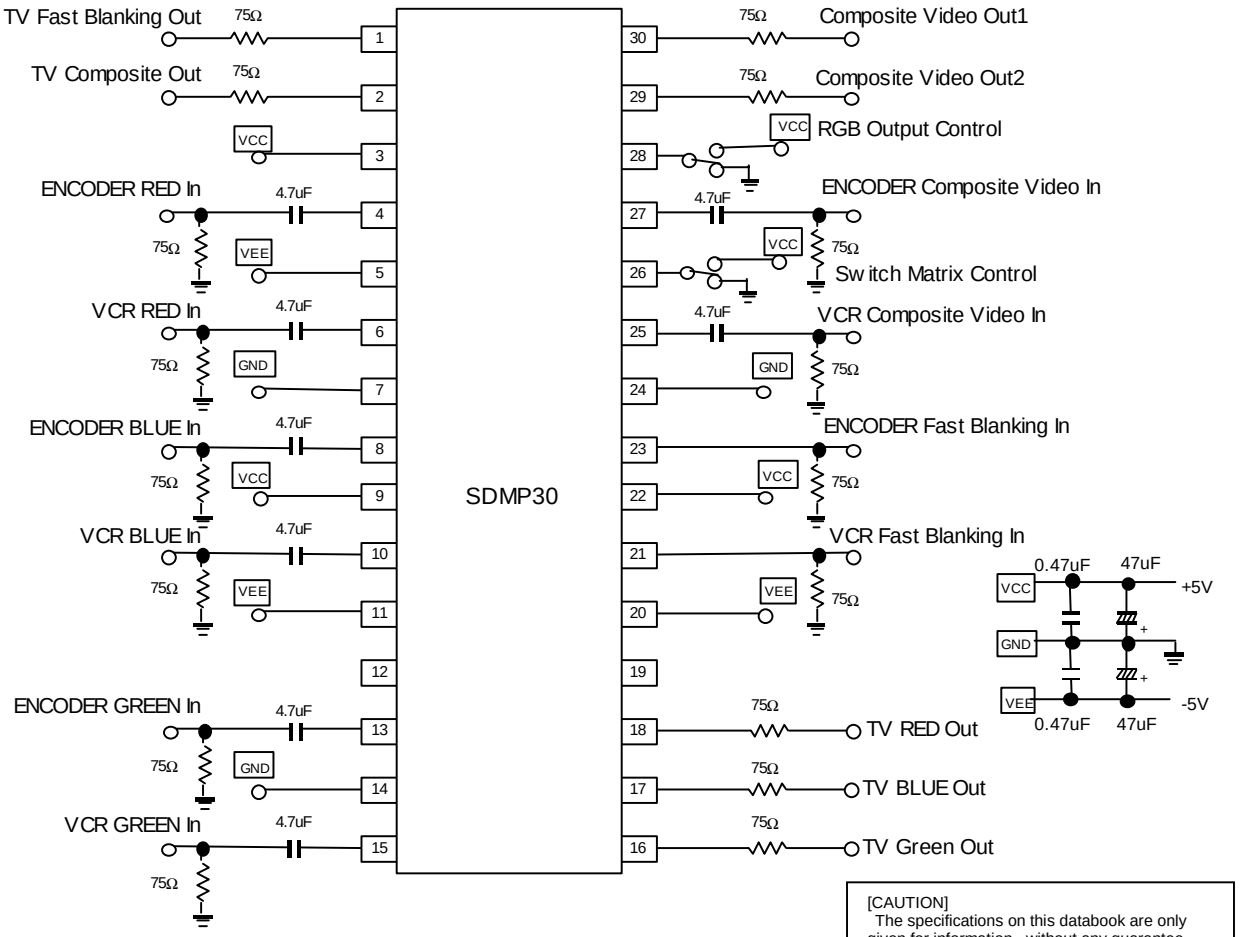
Group Delay
(Ta=25°C, Vcc=5V, VEE=-5V)



■APPLICATION CIRCUIT (SDMP30)



(Note) When there is no offset voltage of input, it is possible to remove the capacitor of 4.7uF of an input.



[CAUTION]
The specifications on this databook are only given for information , without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.