

To all our customers

Regarding the change of names mentioned in the document, such as Mitsubishi Electric and Mitsubishi XX, to Renesas Technology Corp.

The semiconductor operations of Hitachi and Mitsubishi Electric were transferred to Renesas Technology Corporation on April 1st 2003. These operations include microcomputer, logic, analog and discrete devices, and memory chips other than DRAMs (flash memory, SRAMs etc.) Accordingly, although Mitsubishi Electric, Mitsubishi Electric Corporation, Mitsubishi Semiconductors, and other Mitsubishi brand names are mentioned in the document, these names have in fact all been changed to Renesas Technology Corp. Thank you for your understanding. Except for our corporate trademark, logo and corporate statement, no changes whatsoever have been made to the contents of the document, and these changes do not constitute any alteration to the contents of the document itself.

Note : Mitsubishi Electric will continue the business operations of high frequency & optical devices and power devices.

Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

M52757FP

WIDE BAND ANALOG SWITCH

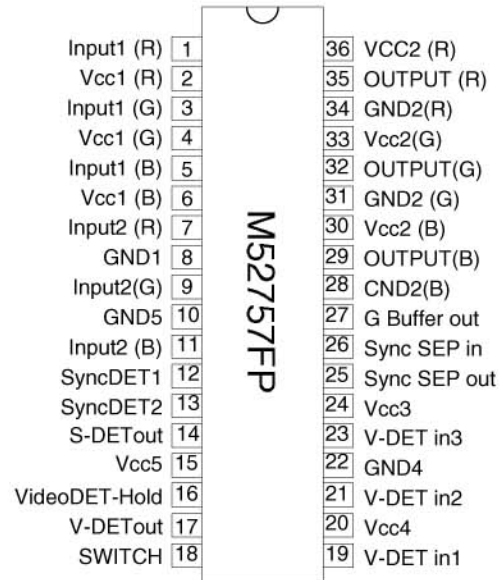
DESCRIPTION

The M52757FP is a semiconductor integrated circuit for the RGB interface. The device features switching signals input from two types of image sources and outputting the signals to the CRT display, etc. The frequency band of video signals is 250MHz, acquiring high-resolution images, and are optimum as an interface IC with high-resolution CRT display and various new media. It includes Sync-separator, Video-signal-detector, and Sync-on G detector (SOG-DET.).

FEATURES

- Frequency band width : R.G.B250MHz
- Input level : R.G.B.....0.7Vp-p (Typ.)
- Video signal-detector
 Responsive frequency..... ~50MHz
 Input level.....0.7Vpp (Typ.)
 Detected level.....150mV (Typ.)
 (Measure bottom to DET.level)
- Only the G channel is provided with buffer video output.
- It is possible to save the consumption current by stopping current supply to Pin 2,4,6,20,24,30,33,35 because SOG-DET can be operated with only Vcc5 (Pin 15) as power save mode.
- Include Sync Separation, Video signal detector, and Sync-on G detector.

PIN CONFIGURATION (TOP VIEW)



Outline: 36P2R-D

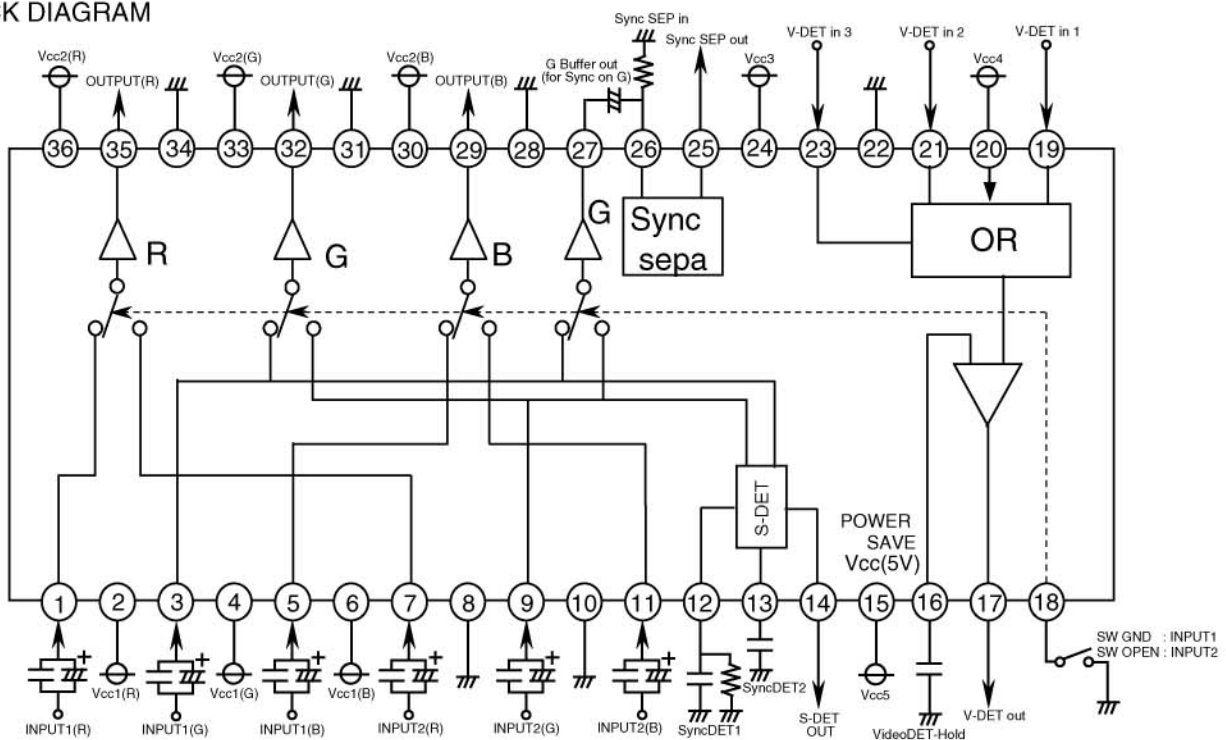
APPLICATION

Display monitor

RECOMMENDED OPERATING CONDITION

Supply voltage range	4.75~5.5V
Rated voltage	5.0V

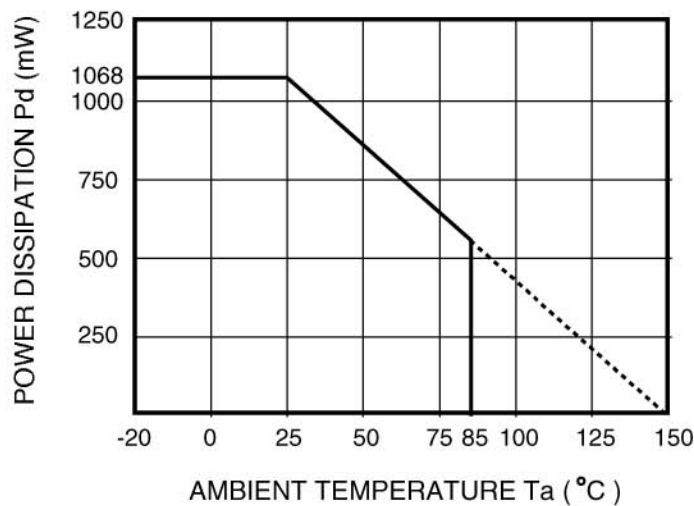
BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
Vcc	Supply voltage	7.0	V
Pd	Power dissipation	1068	mW
Topr	Operating temperature	-20~+85	°C
Tstg	Storage temperature	-40~+150	°C
Vopr	Recommended operating supply voltage	5.0	V
Vopr'	Recommended operating supply voltage range	4.75~5.5	V
Sarge	Electrostatic discharge	±200	V

THERMAL DERATING (MAXIMUM RATING)



ELECTRICAL CHARACTERISTICS (V_{CC}=5V, T_a=25 °C)

NO.	Parameter	Test conditions	Symbol	Test point (s)	Input	SW18	Limits			Unit
							MIN	TYP	MAX	
1	Circuit current 1		I _{CC1}	A	-	OPN	45	65	85	mA
2	Circuit current 2		I _{CC5}	15	-	OPN	3	5	7	mA

< RGB SW >

NO.	Parameter	Test conditions	Symbol	Test point (s)	Input	SW18	Limits			Unit
							MIN	TYP	MAX	
3	Output DC voltage 1		V _{DC1}	29,32,35	-	OPN	1.1	1.5	1.9	V
4	Output DC voltage 2		V _{DC2}	29,32,35	-	GND	1.1	1.5	1.9	V
5	Output DC voltage 3		V _{DC3}	27	-	OPN	0.5	0.9	1.3	V
6	Output DC voltage 4		V _{DC4}	27	-	GND	0.5	0.9	1.3	V
7	Maximum allowable input 1		V _{IMAX1}	1,3,5	1,3,5	GND	1.4	1.6	-	V _{PP}
8	Maximum allowable input 2		V _{IMAX2}	7,9,11	7,9,11	GND	1.4	1.6	-	V _{PP}
9	Voltage gain 1		G _{V1}	29,32,35	1,3,5	GND	-0.1	0.5	1.1	dB
10	Relative voltage gain 1		ΔG _{V1}	Relative to measured values above			-0.6	0	0.6	dB
11	Voltage gain 2		G _{V2}	29,32,35	7,9,11	OPN	-0.1	0.5	1.1	dB
12	Relative voltage gain 2		ΔG _{V2}	Relative to measured values above			-0.6	0	0.6	dB
13	Voltage gain 3		G _{V3}	27	3	GND	-0.6	0	0.6	dB
14	Voltage gain 4		G _{V4}	27	9	OPN	-0.6	0	0.6	dB
15	Freq.characteristic 1 (100MHz)		F _{C1}	29,32,35	1,3,5	GND	-1.0	0	1.0	dB
16	Relative Freq.characteristic 1		ΔF _{C1}	Relative to measured values above			-1.0	0	1.0	dB
17	Freq.characteristic 2 (100MHz)		F _{C2}	29,32,35	7,9,11	OPN	-1.0	0	1.0	dB
18	Relative Freq.characteristic 2		ΔF _{C2}	Relative to measured values above			-1.0	0	1.0	dB
19	Freq.characteristic 1 (250MHz)		F _{C3}	29,32,35	1,3,5	GND	-3.0	-1.5	1.0	dB
20	Freq.characteristic 2 (250MHz)		F _{C4}	29,32,35	7,9,11	OPN	-3.0	-1.5	1.0	dB

M52757FP

WIDE BAND ANALOG SWITCH

ELECTRICAL CHARACTERISTICS (V_{CC}=5V, T_a=25 °C)

< RGB SW >

NO.	Parameter	Test conditions	Symbol	Test point (s)	Input	SW18	Limits			Unit
							MIN	TYP	MAX	
21	Crosstalk between 2 inputs 1 (10MHz)		CT11	29,32,35	1,3,5	GD~OP	-	-60	-50	dB
22	Crosstalk between 2 inputs 2 (10MHz)		CT12	29,32,35	7,9,11	OP~GD	-	-60	-50	dB
23	Crosstalk between 2 inputs 3 (100MHz)		CT13	29,32,35	1,3,5	GD~OP	-	-40	-35	dB
24	Crosstalk between 2 inputs 4 (100MHz)		CT14	29,32,35	7,9,11	OP~GD	-	-40	-35	dB
25	Crosstalk between channel 1 (10MHz)		CTC1	29,32,35	1,3,5	GND	-	-50	-40	dB
26	Crosstalk between channel 2 (10MHz)		CTC2	29,32,35	7,9,11	OPN	-	-50	-40	dB
27	Crosstalk between channel 3 (100MHz)		CTC3	29,32,35	1,3,5	GND	-	-30	-25	dB
28	Crosstalk between channel 4 (100MHz)		CTC4	29,32,35	7,9,11	OPN	-	-30	-25	dB
29	Pulse characteristic 1		Tr1	29,32,35	1,3,5	GND	-	1.6	2.5	nS
30			Tf1	29,32,35	1,3,5	GND	-	1.6	2.5	nS
31	Pulse characteristic 2		Tr2	29,32,35	7,9,11	OPN	-	1.6	2.5	nS
32			Tf2	29,32,35	7,9,11	OPN	-	1.6	2.5	nS

< SYNC SEP >

33	Sync input min. level		SYrv	25	26	-	0.2	-	-	Vpp
34	Sync-sep output Hi level		SYVH	25	26	-	4.5	4.9	-	V
35	Sync-sep output Low level		SYVL	25	26	-	-	0.2	0.4	V
36	Sync-sep output delay time 1		TdSf	25	26	-	-	60	-	nS
37	Sync-sep output delay time 2		TdSb	25	26	-	-	60	-	nS

< SYNC DET >

38	Min. detectable Sync amplitude		SDETrv	14	3,9	-	0.2	-	-	Vpp
39	Max. detectable Sync width		SDETrt	14	3,9	-	-	4.0	-	μS
40	Sync-DET output Hi level		SDVH	14	3,9	-	4.5	4.9	-	V
41	Sync-DET output Low level		SDVL	14	3,9	-	-	0.2	0.4	V
42	Max. allowable input noise level		SDETrnv	14	3,9	-	-	-	0.05	Vpp

ELECTRICAL CHARACTERISTICS (Vcc=5V, Ta=25 c)

< VIDEO DET >

NO.	Parameter	Test conditions	Symbol	Test point (s)	Input	SW18	MIN	Limits TYP	MAX	Unit
43	Allowable input DC range		VDinV	19,21,23	19,21,23	-	2.0	-2.8	V	
44	Allowable input amplitude range		VDin	19,21,23	19,21,23	-	-	0.7	1.0	Vpp
45	Min. detectable input level		VDETrv	17	19,21,23	-	0.15	-	-	Vpp
46	Max. allowable input noise level		VDETrnv	17	19,21,23	-	-	-	0.1	Vpp
47	Max. input pulse width		VDETrt	17	19,21,23	-	-	10.0	-	nS
48	Video-DET output Hi level		SDVH	17	19,21,23	-	4.2	4.8	-	V
49	Video-DET output Low level		SDVL	17	19,21,23	-	-	0.7	1.0	V