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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 250 MHz, 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.B   250 MHz
- Input level: R.G.B   0.7 V_{P-P} (Typ.)
- Video signal-detector
  Responsive frequency: to 50 MHz
  Input level: 0.7 V_{P-P} (Typ.)
  Detected level: 150 mV (Typ.)
  (Measure bottom to DET. level)
- Only the G channel is proved 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 V_{CC5} (Pin 15) as power save mode.
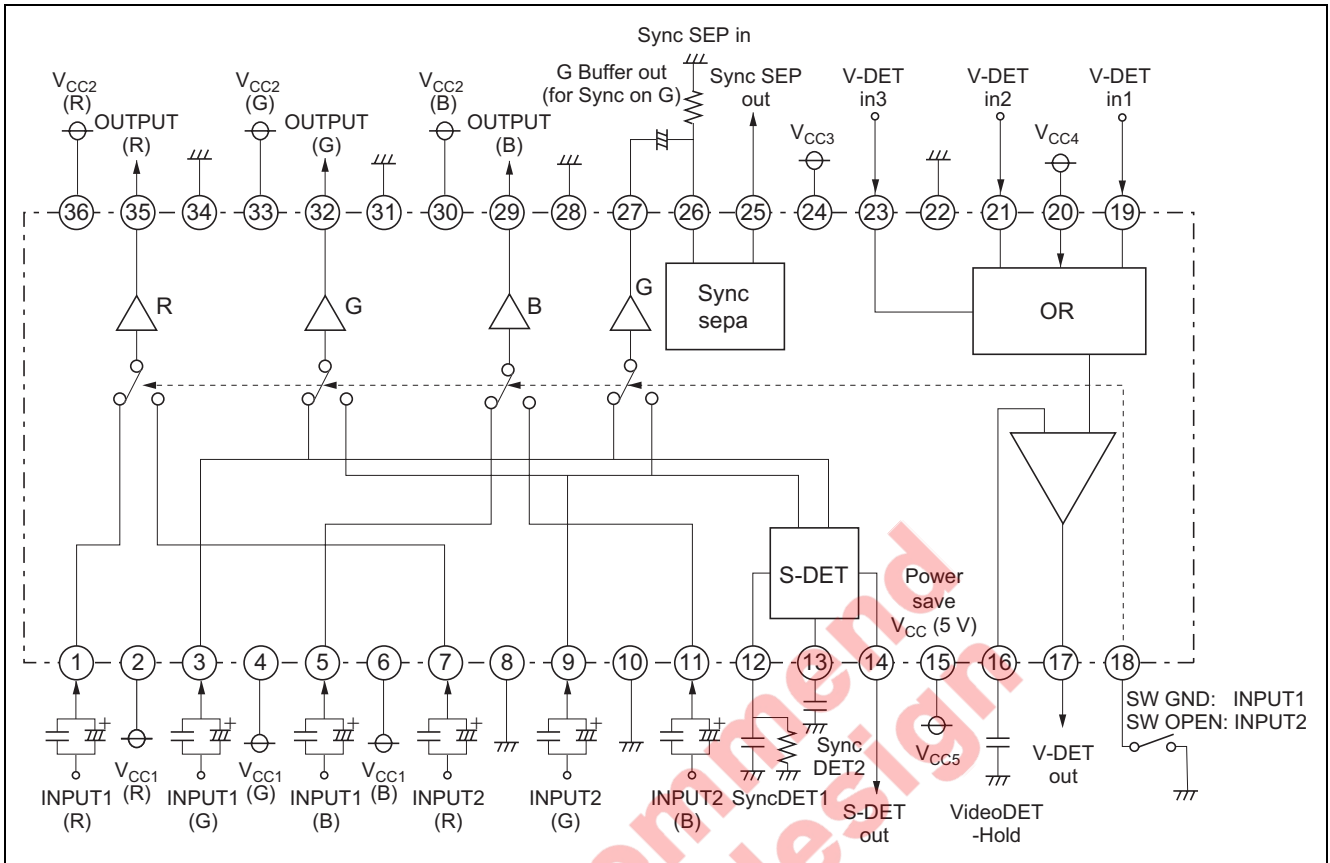- Include Sync Separation, Video signal detector, and Sync-on G detector.

Application
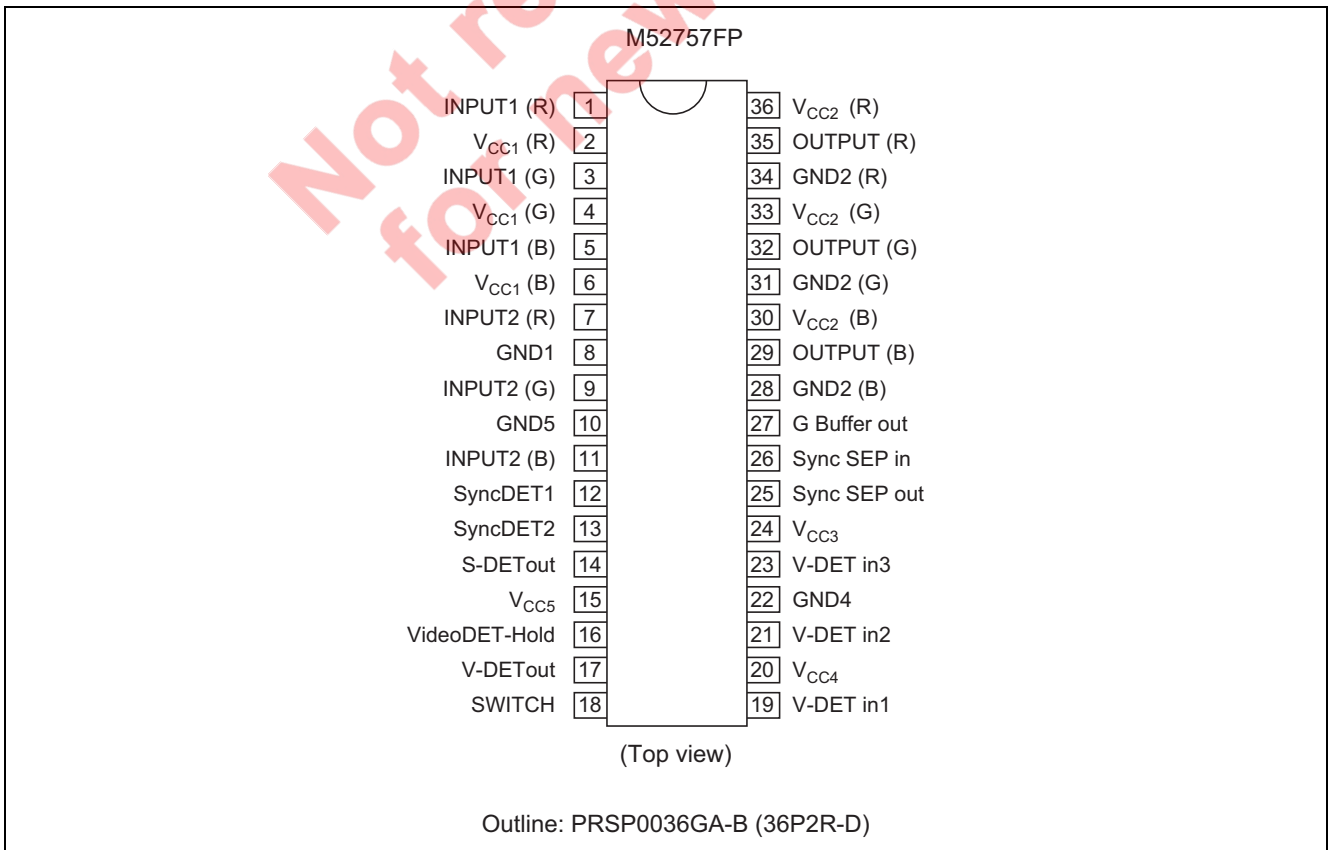
Display monitor

Recommended Operating Condition

Supply voltage range: 4.75 to 5.5 V

Rated voltage: 5.0 V

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Block Diagram

Pin Arrangement

M52757FP

INPUT1 (R)	1	36	V_{CC2} (R)
V_{CC1} (R)	2	35	OUTPUT (R)
INPUT1 (G)	3	34	GND2 (R)
V_{CC1} (G)	4	33	V_{CC2} (G)
INPUT1 (B)	5	32	OUTPUT (G)
V_{CC1} (B)	6	31	GND2 (G)
INPUT2 (R)	7	30	V_{CC2} (B)
GND1	8	29	OUTPUT (B)
INPUT2 (G)	9	28	GND2 (B)
GND5	10	27	G Buffer out
INPUT2 (B)	11	26	Sync SEP in
SyncDET1	12	25	Sync SEP out
SyncDET2	13	24	V_{CC3}
S-DETout	14	23	V-DET in3
V_{CC5}	15	22	GND4
VideoDET-Hold	16	21	V-DET in2
V-DETout	17	20	V_{CC4}
SWITCH	18	19	V-DET in1

(Top view)

Outline: PRSP0036GA-B (36P2R-D)

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Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Supply voltage	V_{CC}	7.0	V
Power dissipation	Pd	1068	mW
Operating temperature	Topr	−20 to +85	°C
Storage temperature	Tstg	−40 to +150	°C
Recommended operating supply voltage	Vopr	5.0	V
Recommended operating supply voltage range	Vopr'	4.75 to 5.5	V
Electrostatic discharge	Sarge	±200	V

Thermal Derating (Maximum Rating)
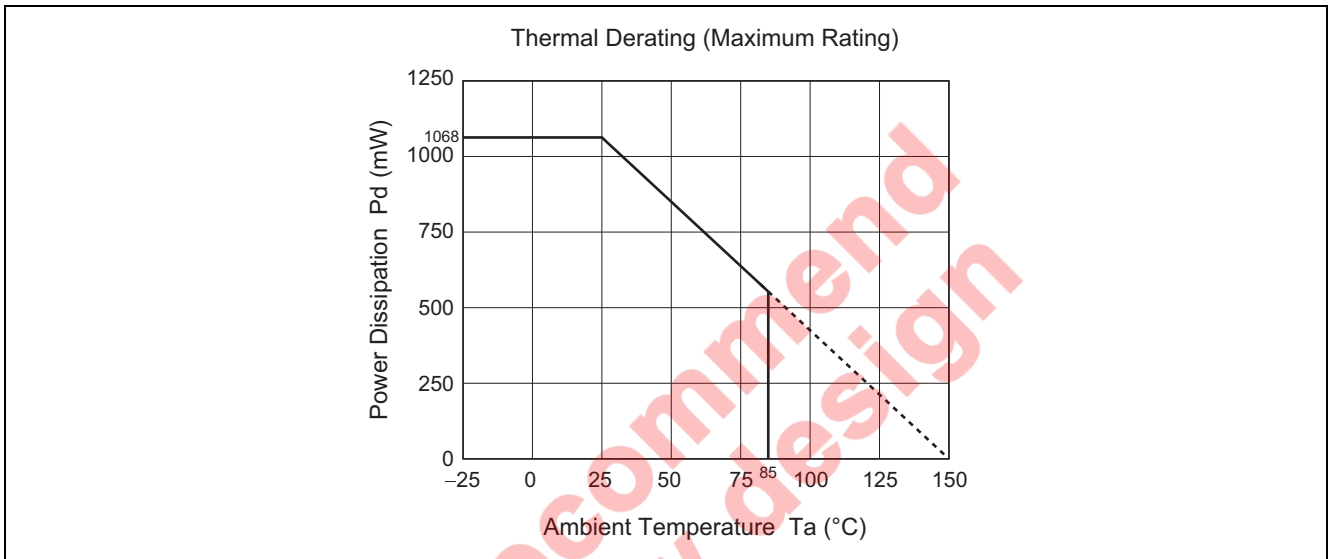
Electrical Characteristics

$(V_{CC} = 5\ V,\ Ta = 25°C)$

Item	Symbol	Limits			Unit	Test Point (s)	Input	SW18
		Min	Typ	Max				
Circuit current 1	$I_{CC}1$	45	65	85	mA	A	—	OPN
Circuit current 2	$I_{CC}5$	3	5	7	mA	15	—	OPN
<RGB SW>								
Output DC voltage 1	Vdc1	1.1	1.5	1.9	V	29, 32, 35	—	OPN
Output DC voltage 2	Vdc2	1.1	1.5	1.9	V	29, 32, 35	—	GND
Output DC voltage 3	Vdc3	0.5	0.9	1.3	V	27	—	OPN
Output DC voltage 4	Vdc4	0.5	0.9	1.3	V	27	—	GND
Maximum allowable input 1	VImax1	1.4	1.6	—	V_{P-P}	1, 3, 5	1, 3, 5	GND
Maximum allowable input 2	VImax2	1.4	1.6	—	V_{P-P}	7, 9, 11	7, 9, 11	GND
Voltage gain 1	Gv1	−0.1	0.5	1.1	dB	29, 32, 35	1, 3, 5	GND
Relative voltage gain 1	∆Gv1	−0.6	0	0.6	dB	Relative to measured values above		
Voltage gain 2	Gv2	−0.1	0.5	1.1	dB	29, 32, 35	7, 9, 11	OPN
Relative voltage gain 2	∆Gv2	−0.6	0	0.6	dB	Relative to measured values above		
Voltage gain 3	Gv3	−0.6	0	0.6	dB	27	3	GND
Voltage gain 4	Gv4	−0.6	0	0.6	dB	27	9	OPN
Freq. characteristic 1 (100 MHz)	Fc1	−1.0	0	1.0	dB	29, 32, 35	1, 3, 5	GND
Relative Freq. characteristic 1	∆Fc1	−1.0	0	1.0	dB	Relative to measured values above		
Freq. characteristic 2 (100 MHz)	Fc2	−1.0	0	1.0	dB	29, 32, 35	7, 9, 11	OPN
Relative Freq. characteristic 2	∆Fc2	−1.0	0	1.0	dB	Relative to measured values above		
Freq. characteristic 1 (250 MHz)	Fc3	−3.0	−1.5	1.0	dB	29, 32, 35	1, 3, 5	GND
Freq. characteristic 2 (250 MHz)	Fc4	−3.0	−1.5	1.0	dB	29, 32, 35	7, 9, 11	OPN
Crosstalk between 2 inputs 1 (10 MHz)	CTI1	—	−60	−50	dB	29, 32, 35	1, 3, 5	GD to OP
Crosstalk between 2 inputs 2 (10 MHz)	CTI2	—	−60	−50	dB	29, 32, 35	7, 9, 11	OP to GD
Crosstalk between 2 inputs 3 (100 MHz)	CTI3	—	−40	−35	dB	29, 32, 35	1, 3, 5	GD to OP
Crosstalk between 2 inputs 4 (100 MHz)	CTI4	—	−40	−35	dB	29, 32, 35	7, 9, 11	OP to GD
Crosstalk between channel 1 (10 MHz)	CTC1	—	−50	−40	dB	29, 32, 35	1, 3, 5	GND
Crosstalk between channel 2 (10 MHz)	CTC2	—	−50	−40	dB	29, 32, 35	7, 9, 11	OPN
Crosstalk between channel 3 (100 MHz)	CTC3	—	−30	−25	dB	29, 32, 35	1, 3, 5	GND
Crosstalk between channel 4 (100 MHz)	CTC4	—	−30	−25	dB	29, 32, 35	7, 9, 11	OPN
Pulse characteristic 1	Tr1	—	1.6	2.5	ns	29, 32, 35	1, 3, 5	GND
	Tf1	—	1.6	2.5	ns	29, 32, 35	1, 3, 5	GND
Pulse characteristic 2	Tr2	—	1.6	2.5	ns	29, 32, 35	7, 9, 11	OPN
	Tf2	—	1.6	2.5	ns	29, 32, 35	7, 9, 11	OPN
<SYNC SEP>								
Sync input min. level	SYrv	0.2	—	—	V_{P-P}	25	26	—
Sync-sep output Hi level	SYVH	4.5	4.9	—	V	25	26	—
Sync-sep output Low level	SYVL	—	0.2	0.4	V	25	26	—
Sync-sep output delay time 1	TdSf	—	60	—	ns	25	26	—
Sync-sep output delay time 2	TdSb	—	60	—	ns	25	26	—

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## Electrical Characteristics (cont.)

Item	Symbol	Limits			Unit	Test Point (s)	Input	SW18
		Min	**Typ**	**Max**				
<SYNC DET>								
Min. detectable Sync amplitude	SDETrv	0.2	—	—	V_{P-P}	14	3, 9	—
Max. detectable Sync width	SDETrt	—	4.0	—	μs	14	3, 9	—
Sync-DET output high level	SDVH	4.5	4.9	—	V	14	3, 9	—
Sync-DET output low level	SDVL	—	0.2	0.4	V	14	3, 9	—
Max. allowable input noise level	SDETnv	—	—	0.05	V_{P-P}	14	3, 9	—
<VIDEO DET>								
Allowable input DC range	VDinV	2.0	2.4	2.8	V	19, 21, 23	19, 21, 23	—
Allowable input amplitude range	VDin	—	0.7	1.0	V_{P-P}	19, 21, 23	19, 21, 23	—
Min. detectable input level	VDETrv	0.15	—	—	V_{P-P}	17	19, 21, 23	—
Max. allowable input noise level	VDETnv	—	—	0.1	V_{P-P}	17	19, 21, 23	—
Max. input pulse width	VDETrt	—	10.0	—	ns	17	19, 21, 23	—
Video-DET output Hi level	SDVH	4.2	4.8	—	V	17	19, 21, 23	—
Video-DET output Low level	SDVL	—	0.7	1.0	V	17	19, 21, 23	—

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Package Dimensions

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SSOP36-8.4x15-0.80	PRSP0036GA-B	36P2R-D	0.5g
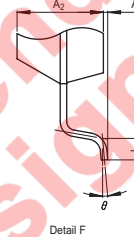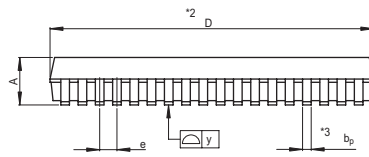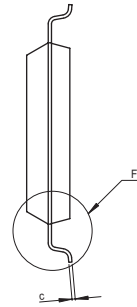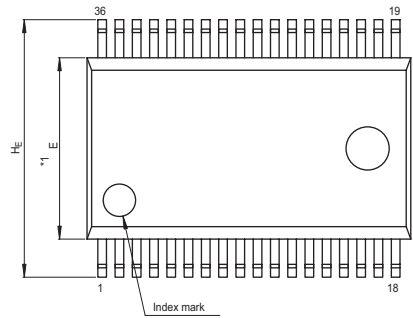
NOTE)
1. DIMENSIONS "*1" AND "*2"
   DO NOT INCLUDE MOLD FLASH.
2. DIMENSION "*3" DOES NOT
   INCLUDE TRIM OFFSET.

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	14.8	15.0	15.2
E	8.2	8.4	8.6
A$_2$	—	2.05	—
A	—	—	2.35
A$_1$	0	0.1	0.2
b$_p$	0.3	0.35	0.45
c	0.18	0.2	0.25
θ	0°	—	8°
H$_E$	11.63	11.93	12.23
e	0.65	0.8	0.95
y	—	—	0.10
L	0.3	0.5	0.7

Detail F

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RENESAS SALES OFFICES

http://www.renesas.com

Refer to "**http://www.renesas.com/en/network**" for the latest and detailed information.

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