PRELIMINARY
Notice:This is not a final specification.
Some parametric limits are subject to change.

M65657FP

SCAN CONVERTER

DESCRIPTION

The M65657FP is an integrated circuit that converts digital VGA inputs directly into NTSC/PAL TV format outputs.

This circuit integrates a digital NTSC/PAL encoder with 10bit DAC's.

FEATURES

- VGA picture signal to NTSC / PAL signal conversion
- Input Format, 60Hz, 640×480 (Standard VGA format)
- High performance Non-Flicker Filter
- Built-in Line Memories
  Fully integrated with no external memory requirement
- Digital input for RGB
- Clamp pulse output
- Built-in triple 10bit-D/A converters for TV signal outputs
- Single +3.3V Power Supply
- I²C Bus Control
- 64pin Flat Package

APPLICATION

VGA to Video converter Modules

TV, VCR

Mobile PC

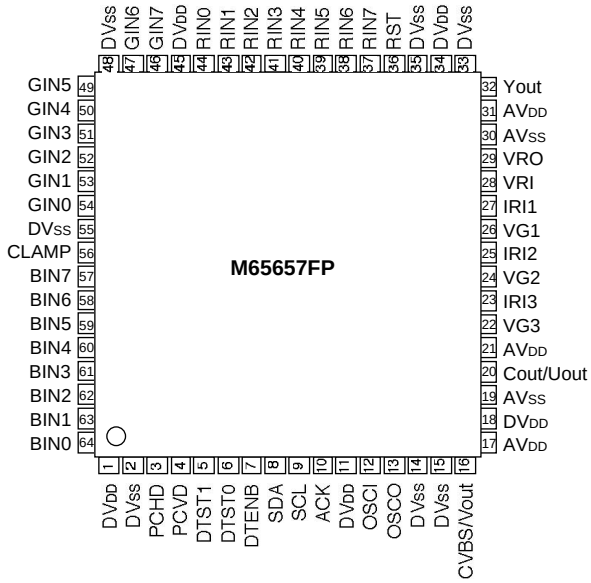
Multi-media Systems (Set-Top-Box)

RECOMMENDED OPERATING CONDITION

Supply voltage range.....3.0 to 3.6V

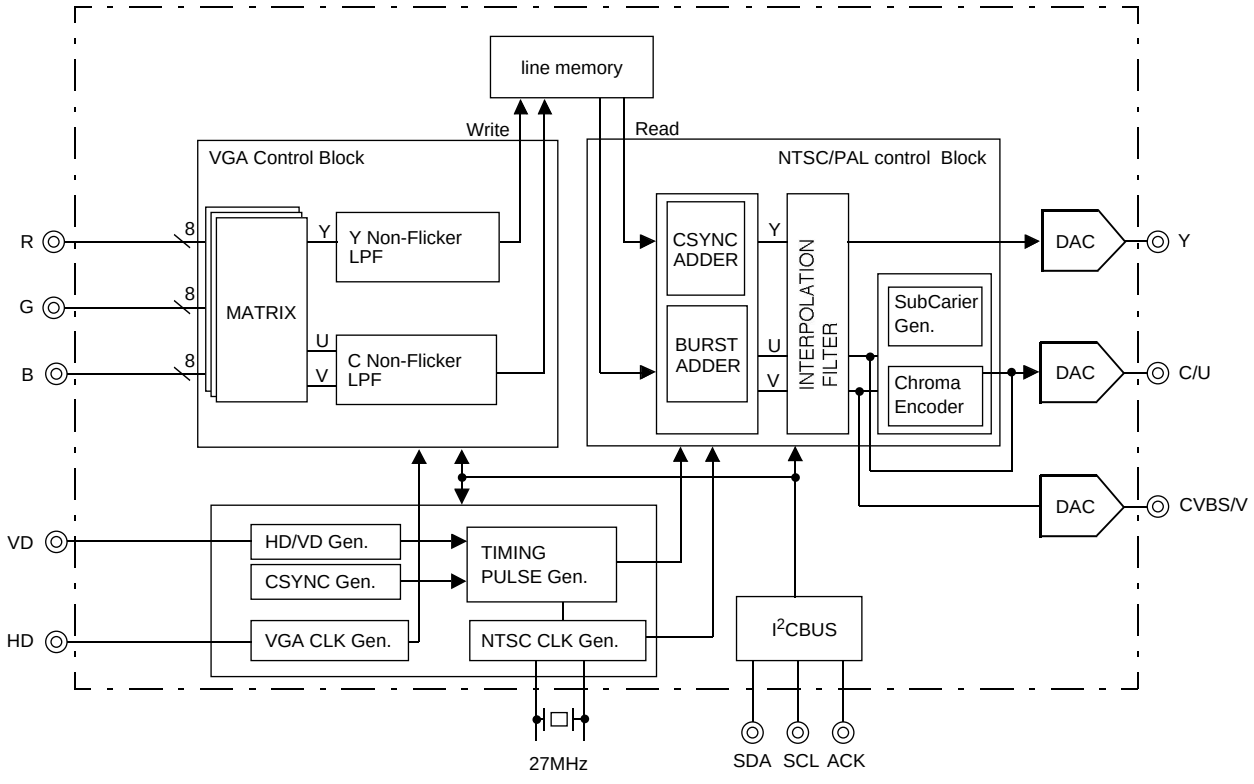
Rated supply voltage.....3.3V

PIN CONFIGURATION (TOP VIEW)



Outline 64P6N-A

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (V_{SS}=0V)

Symbol	Parameter	Limits		Unit
		Min.	Max.	
V_{DD3}	Supply voltage (3.3V)	-0.3	3.6	V
V_I	Input voltage	-0.3	V_{DD3}+0.3	V
V_O	Output voltage	-0.3	V_{DD3}+0.3	V
I_O	Output current (1)	− −	I_{OL}=20 I_{OH}=-26	mA
P_d	Power dissipation		500	mW
T_{opr}	Operating temperature	0	75	°C
T_{stg}	Storage temperrature	-50	125	°C

1 : Output current per output terminal. But P_d limits all current.

DC CHARACTERISTICS (V_{SS}=0V)

Symbol	Parameter		Test conditions	Limits			Unit
				Min.	Typ.	Max.	
V_{IL}	Input voltage (CMOS interface)	L	V_{DD}=2.7V	0	−	0.81	V
V_{IH}		H	V_{DD}=3.6V	2.52	−	3.6	V
V_{T-}	Input volyage schmitt trigger (CMOS interface)	-	V_{DD}=3.3V	0.5	−	1.65	V
V_{T+}		+		1.4	−	2.4	V
V_H		Hysteresis		0.3	−	1.2	V
V_{OL}	Output voltage	L	V_{DD}=3.3V, | I_O |<1µA	−	−	0.05	V
V_{OH}		H		3.25	−	−	V
I_{OL}	Output current	L	V_{DD}=3.0V, V_{OL}=0.4V	4	−	−	mA
I_{OH}		H	V_{DD}=3.0V, V_{OH}=2.6V	−	−	-4	mA
I_{IH}	Input current	L	V_{DD}=3.6V, V_I=0V	-1	−	1	µA
I_{IL}		H	V_{DD}=3.6V, V_I=3.6V	-1	−	1	µA
I_{OZL}	Output leakage current	L	V_{DD}=3.6V, V_O=0V	-1	−	1	µA
I_{OZH}		H	V_{DD}=3.6V, V_O=3.6V	-1	−	1	µA
C_I	Input pin capacitance		f=1MHz, V_{DD}=0V	−	7	15	pF
C_O	Output pin capacitance			−	7	15	pF
C_{IO}	Bidirectional pin capacitance			−	7	15	pF
I_{DD}	Operating current	3.3V supply		−	−	200	mA

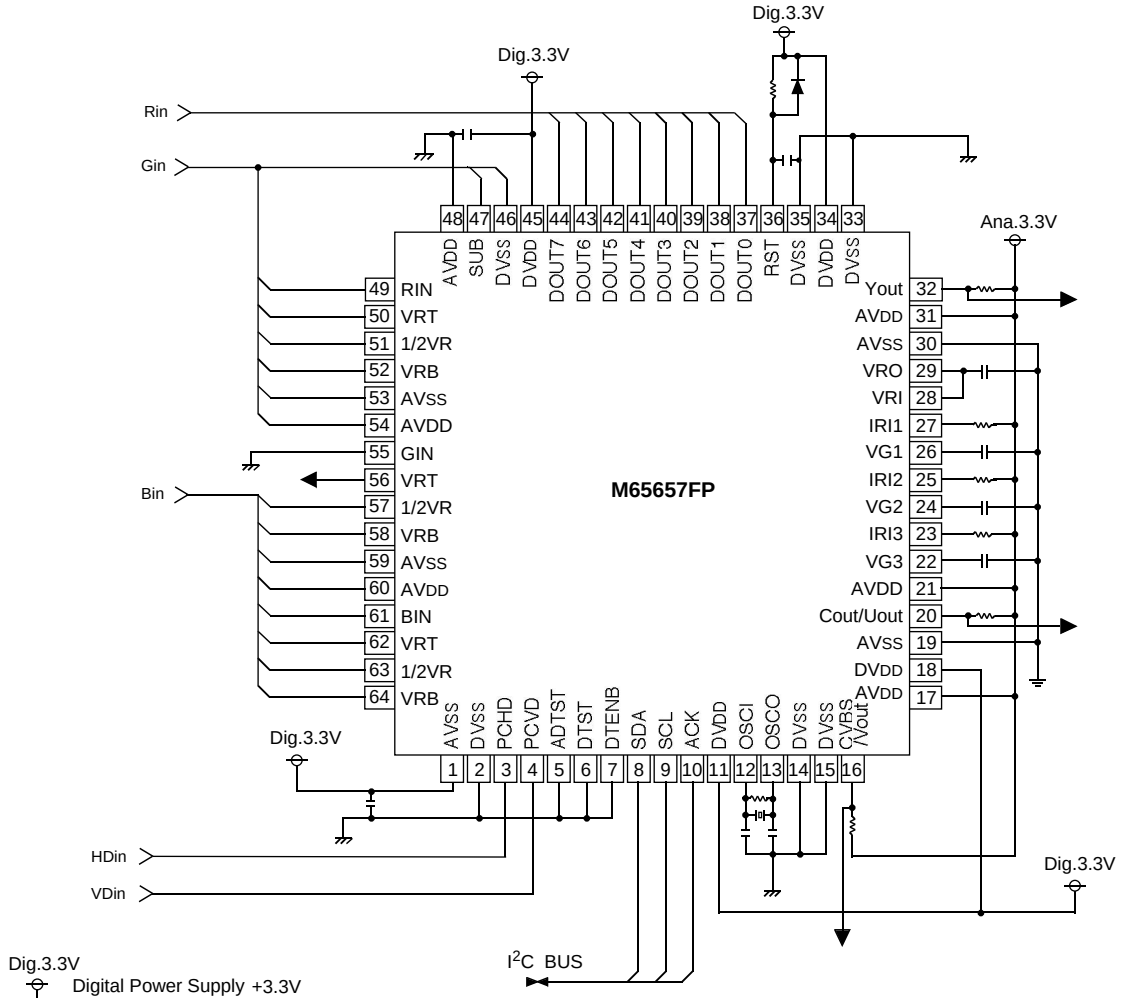
DESCRIPTION OF PIN

Pin No.	Name	I/O	Function	Remarks
1	DV_{DD}		Digital power supply	
2	DV_{SS}		Digital GND	
3	PCHD	I	HD signal input from PC	
4	PCVD	I	VD signal input from PC	
5	DTST1	I	for TEST	TEST
6	DTST0	I	for TEST	
7	DTENB	I	for TEST	
8	SDA	I/O	I^2C Bus data input	I^2C Control
9	SCL	I	I^2C Bus clock input	
10	ACK	I/O	I^2C Bus data/acknowledge signal	
11	DV_{DD}		Digital V_{DD} for OSC	OSC
12	OSCI	I	OSC input	
13	OSCO	O	OSC output	
14	DV_{SS}		Digital GND for OSC	
15	DV_{SS}		Digital GND	D/A
16	CVBS/Vout	O	Composite/V output	
17	AV_{DD}		Analog power suplly	
18	DV_{DD}		Digital power supply	
19	AV_{SS}		Analog GND	
20	Cout/Uout	O	Chrominance/V output	
21	AV_{DD}		Analog power supply	
22	VG3	O	Bias voltage for CVBS/Vout output	
23	IRI3	I	Reference Current for CVBS/Vout output	
24	VG2	O	Bias voltage for Cout/Uout output	
25	IRI2	I	Reference Current for Cout/Uout output	
26	VG1	O	Bias Voltage for Y output	
27	IRI1	I	Reference Current for Y output	
28	VRI	I	Reference voltage input for 3DACs	
29	VRO	O	Reference voltage output for 3DACs	
30	AV_{SS}		Analog GND	
31	AV_{DD}		Analog power supply	
32	YOUT	O	Luminance output	
33	DV_{SS}		Digital GND	
34	DV_{DD}		Digital power supply	
35	DV_{SS}		Digital GND	
36	RST	I	Reset signal input	
37	RIN7	I	R signal input	(MSB)
38	RIN6	I	R signal input	
39	RIN5	I	R signal input	
40	RIN4	I	R signal input	
41	RIN3	I	R signal input	LSB
42	RIN2	I	R signal input	
43	RIN1	I	R signal input	
44	RIN0	I	R signal input	
45	DV_{DD}		Digital power supply	
46	GIN7	I	G signal input	MSB
47	GIN6	I	G signal input	
48	DV_{SS}		Digital GND	AD
49	GIN5	I	G signal input	LSB
50	GIN4	I	G signal input	
51	GIN3	I	G signal input	
52	GIN2	I	G signal input	

DESCRIPTION OF PIN (CONT.)

Pin No.	Name	I/O	Function	Remarks
53	GIN1	I	G signal input	LSB
54	GIN0	I	G signal input	
55	DVSS		Digital GND	
56	CLAMP	O	Clamp pulse output signal	
57	BIN7	I	B signal input	MSB
58	BIN6	I	B signal input	
59	BIN5	I	B signal input	
60	BIN4	I	B signal input	
61	BIN3	I	B signal input	
62	BIN2	I	B signal input	
63	BIN1	I	B signal input	
64	BIN0	I	B signal input	LSB

APPLICATION EXAMPLE



Dig.3.3V
Digital Power Supply +3.3V

Digital Ground

Ana.3.3V
Analog Power Supply +3.3V

Analog Ground