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

M65656FP

SCAN CONVERTER

DESCRIPTION

The M65656FP is an integrated circuit that converts analog VGA inputs directly into NTSC/PAL TV format outputs.

This circuit integrates a digital NTSC/PAL encoder with 8bit ADC's and 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
- Built-in triple 8bit-A/D converters for RGB
- 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

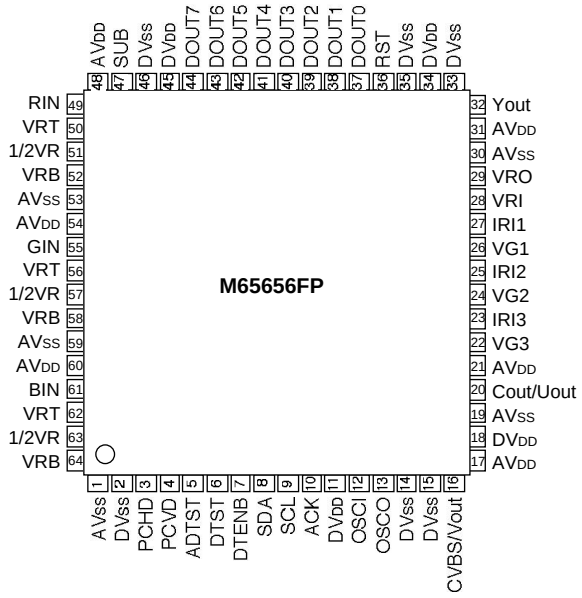
Multi-media Systems (Set-Top-Box)

RECOMMENDED OPERATING CONDITION

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

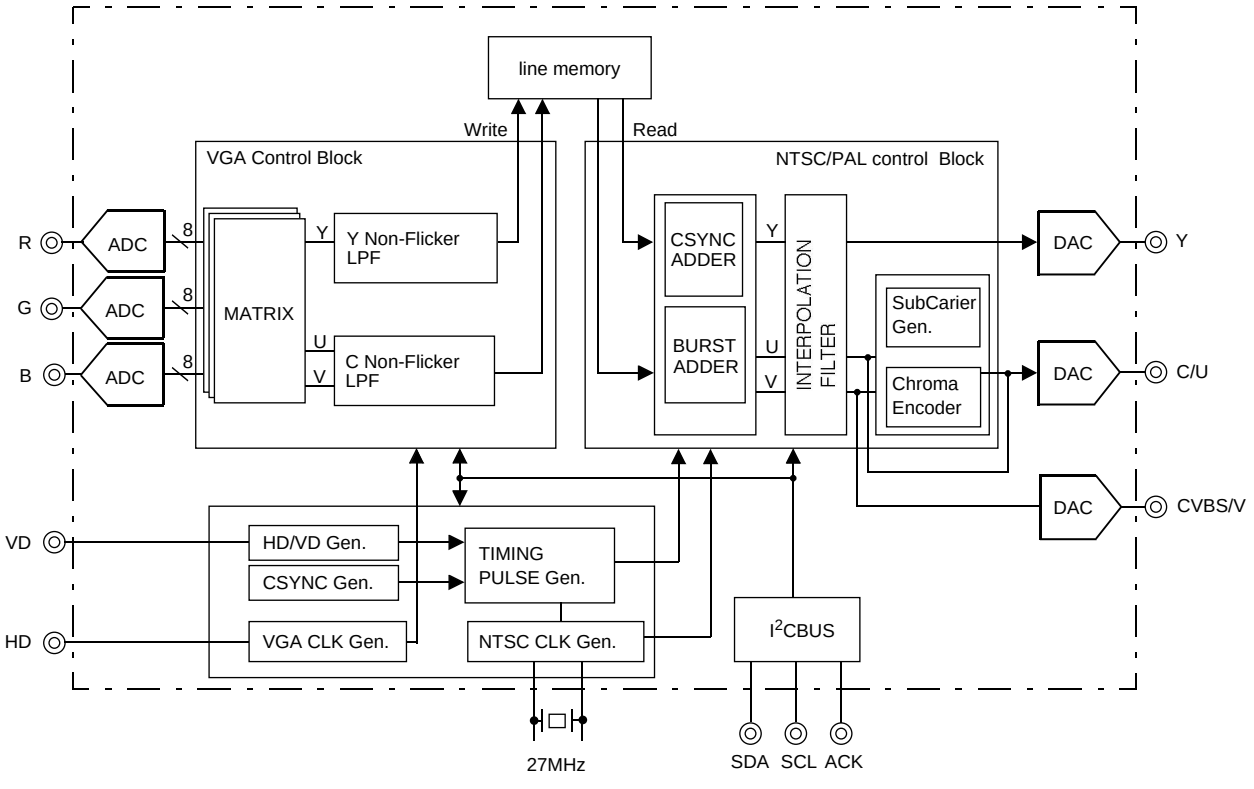
Rated supply voltage.....3.3V

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	mA
		−	I_{OH}=-26	
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

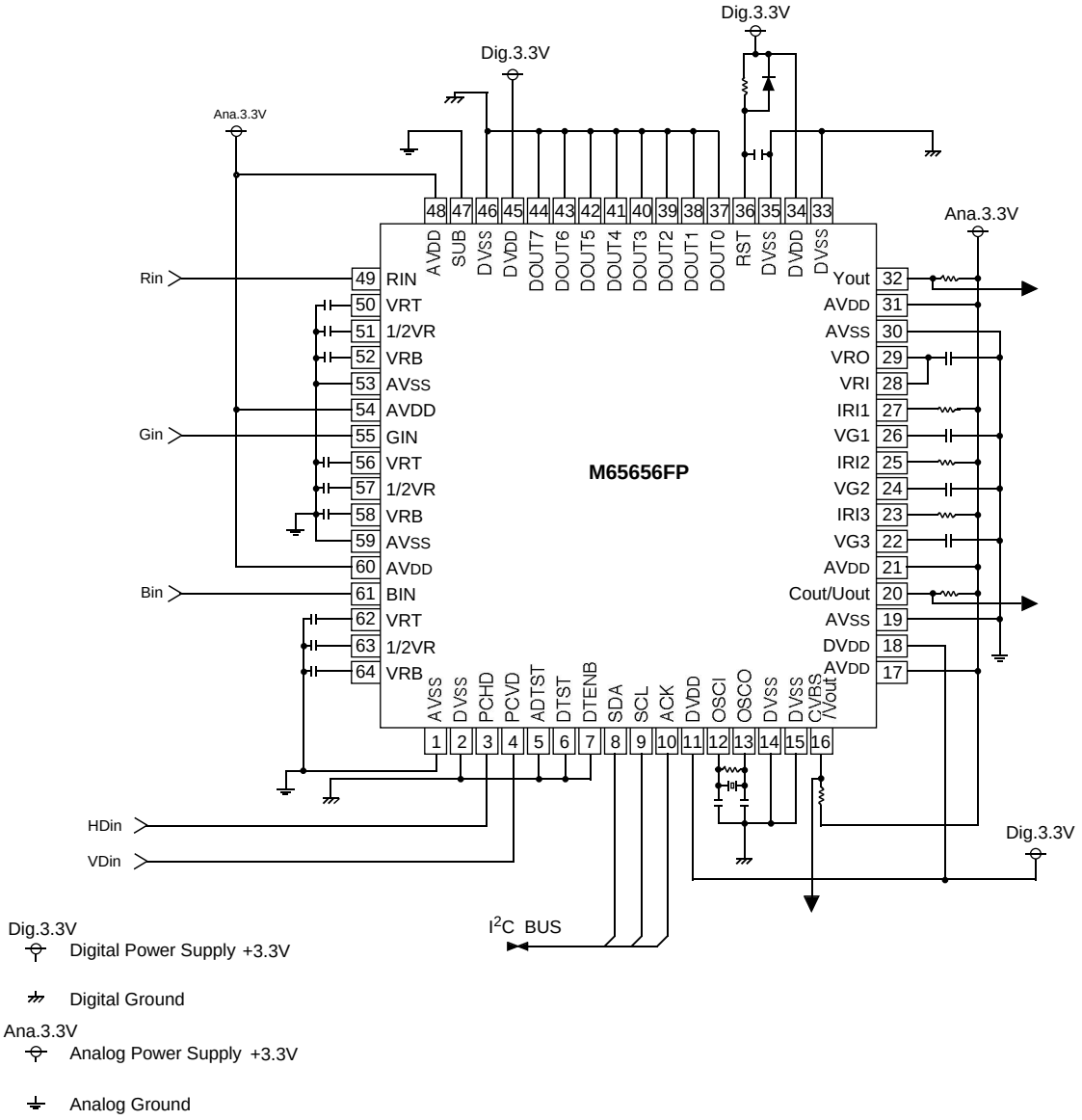
DESCRIPTION OF PIN

Pin No.	Name	I/O	Function	Remarks
1	AVSS		Analog GND	A/D
2	DVSS		Digital GND	
3	PCHD	I	HD signal input from PC	
4	PCVD	I	VD signal input from PC	
5	ADTST	I	for TEST	
6	DTST	I	for TEST	TEST
7	DTENB	I	for TEST	
8	SDA	I/O	I^2C Bus data input	
9	SCL	I	I^2C Bus clock input	I^2C Control
10	ACK	I/O	I^2C Bus data/acknowledge signal	
11	DVDD		Digital VDD for OSC	
12	OSCI	I	OSC input	OSC
13	OSCO	O	OSC output	
14	DVSS		Digital GND for OSC	
15	DVSS		Digital GND	
16	CVBS/Vout	O	Composite/V output	
17	AVDD		Analog power suplly	
18	DVDD		Digital power supply	
19	AVSS		Analog GND	
20	Cout/Uout	O	Chrominance/V output	
21	AVDD		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	D/A
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	AVSS		Analog GND	
31	AVDD		Analog power supply	
32	YOUT	O	Luminance output	
33	DVSS		Digital GND	
34	DVDD		Digital power supply	
35	DVSS		Digital GND	
36	RST	I	Reset signal input	
37	DOUT0	I/O	for TEST	
38	DOUT1	I/O	for TEST	
39	DOUT2	I/O	for TEST	
40	DOUT3	I/O	for TEST	TEST
41	DOUT4	I/O	for TEST	
42	DOUT5	I/O	for TEST	
43	DOUT6	I/O	for TEST	
44	DOUT7	I/O	for TEST	
45	DVDD		Digital power supply	
46	DVSS		Digital GND	
47	SUB		Substrate	
48	AVDD		Analog power supply	
49	RIN	I	R signal input from PC	
50	VRT	O	Vref+ for R Signal	AD
51	1/2VR	O	Reference voltage for R Signal	
52	VRB	O	Vref- for R Signal	

DESCRIPTION OF PIN (CONT.)

Pin No.	Name	I/O	Function	Remarks
53	AVSS		Analog GND	A/D
54	AVDD		Analog power supply	
55	GIN	I	G signal input from PC	
56	VRT	O	Vref+ for G Signal	
57	1/2VR	O	Reference voltage for G Signal	
58	VRB	O	Vref- for G Signal	
59	AVSS		Analog GND	
60	AVDD		Analog power supply	
61	BIN	I	B signal input from PC	
62	VRT	O	Vref+ for B Signal	
63	1/2VR	O	Reference voltage for B Signal	
64	VRB	O	Vref- for B Signal	

APPLICATION EXAMPLE



Dig.3.3V
Digital Power Supply +3.3V

Digital Ground

Ana.3.3V
Analog Power Supply +3.3V

Analog Ground