HD/FHD Selectable Video Filter Driver And Video Coaxial Control Decoder ------MS7336M

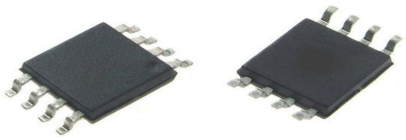
PRODUCT DESCRIPTION

The MS7336M integrated a bandwidth selectable video amplifier and video coaxial control decoder. The video amplifier integrates Single rail-to-rail output driver with 6dB Gain and 10th output reconstruction filter, which also can select 35MHz/55MHz -3dB bandwidth. The video coaxial control decoder integrated a high-speed processor, effective separation for mixed-signal. MS7336M provides improved image quality compared with passive LC filters and discrete drivers solution. Operating from single supplies ranging from +2.7V to +5V and sinking an ultra-low 25mA quiescent current, the MS7336M is ideally suited for battery powered applications.

The MS7336M has lead MSOP-8 package, and ESD (HBM) reaches over 3KV.

FEATURES

- 35MHz/55MHz -3dB selectable 10^{th} order filter
- Transparent input clamping
- 6dB output driver Gain and drive dual video load
- Rail-to-Rail Output
- Input Voltage Range Includes Ground
- AC or DC Coupled Inputs
- AC or DC Coupled Outputs
- Operates from 2.7V to 5V Single power supply
- Low Power 25mA Supply Current
- Lead MSOP-8 package

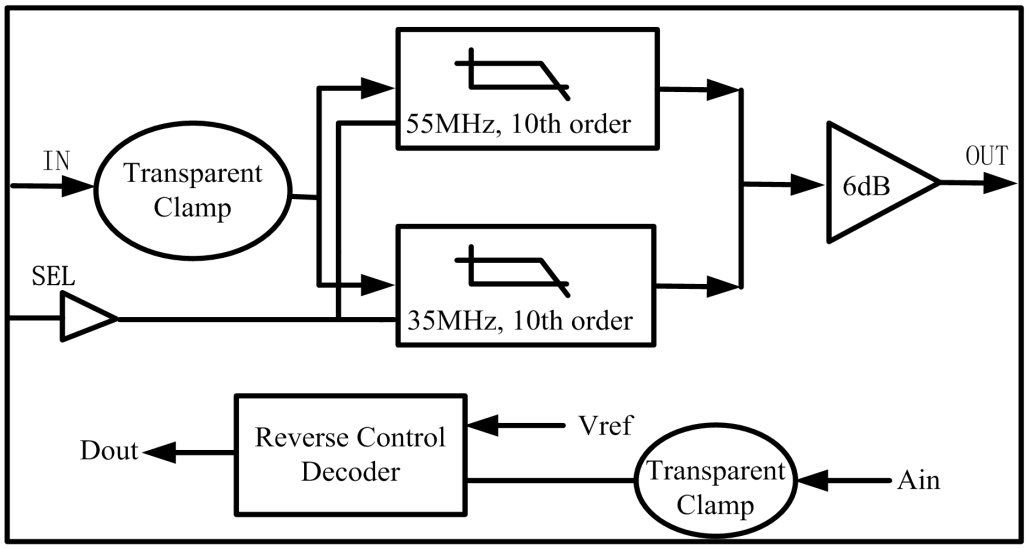


MSOP-8

APPLICATIONS

- Video On Demand (VOD)
- Communications device
- Portable and handheld product
- AHD/TVI/CVI video driver and reverse control decoder

BLOCK DIAGRAM



PIN CONFIGURATIONS

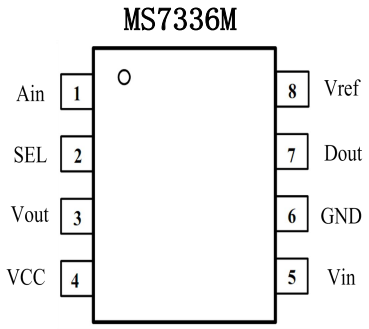


Figure1.MSOP-8

Pin Description of Fig1

Pin	Name	Function Description
1	Ain	Comparator input
2	SEL	SEL is low： FHD(55MHz) SEL is high： HD(35MHz) SEL is float: HD(35MHz)
3	Vout	Video output
4	VCC	Power supply
5	Vin	Video input
6	GND	Ground
7	Dout	Reverse control output
8	Vref	Internal reference

PACKAGE/ORDERING INFORMATION

Part Number	Package	Marking
MS7336M	MSOP-8	MS7336M

ABSOLUTE MAXIMUM RATINGS

Stresses below those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only; functional operation of the device at these or any other conditions below those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

PARAMETER	MAXIMUM
Supply Voltage, V+ to V-	7.5V
Input Voltage	GND-0.3V to (+VS)+0.3V
Storage Temperature Range	-65℃ to +150℃
Junction Temperature	160℃
Operating Temperature Range	-40℃ to +125℃
Power Dissipation, PD @ TA = 25℃	0.8W
Package Thermal Resistance，θJA	128℃/W
Lead Temperature Range (Soldering 10 sec)	260℃
ESD Susceptibility（HBM）	>3000V
MM	>300V

ELECTRICAL CHARACTERISTICS(VCC = 3.3V，T_A=27℃)

PARAMETER		CONDITION		MIN	TYP	MAX	UNITS
Output Level Shift Voltage(Vclp)		Vin=0V, no load		230	235	370	mV
Input Voltage Clamp		Iin= -1mA		-4	-4.5	-22	mV
Clamp Charge Current		Vin=Vclp-100mV		-5.7	-4.2	-3	mA
Voltage Gain (Av)		RL=150		1.90	2	2.1	V/V
Output Voltage Swing		Vin=3V, RL=150Ω		3.21	3.23	3.25	V
Output Short-Circuit Current		Vin=2V, 10Ω to GND			37	45	mA
		Vin=0.1V, 10Ω to VDD					mA
Operating Voltage Range				2.5	3.3	5.5	V
Power Supply Rejection Ration		Vs=+2.7 to +5.5V		72	60	63	dB
Operating Current		Vin=500mV		24	25	27	mA
		no input, no load		12	13	15	mA
-1dB Bandwidth	HD	RL=150Ω		28	29	30	MHz
	FHD			45	46	47	
-3dB Bandwidth	HD	RL=150Ω		34	35	36	MHz
	FHD			54	55	58	
Stop-Band Rejection	HD	f=50MHz,RL=150Ω		-14	-16	-20	dB
	FHD	f=100MHz,RL=150Ω		-40	-44	-47	
Slew Rate	HD	Vin=1V step,20% to 80%		85	90	99	V/us
	FHD			88	95	105	
Differential Gain (DG)		Input SD Source For Testing	HD Channel	-	0.5	-	%
			FHD Channel	-	0.5	-	%
Differential Phase (DP)			HD Channel	-	1.14	-	°
			FHD Channel	-	0.8	-	°
Group Delay Variation f = 100KHz-4.45MHz			HD Channel	-	-	40	ns
			FHD Channel	-	-	45	ns
Rise Time	HD	V_{OUT}=2V_{P-P},80%--20%		6.4	6.8	7	ns
	FHD			7	7.2	7.4	ns
Fall Time	HD			8	8.2	8.4	ns
	FHD			7	7.2	7.4	ns

CAUTION

This integrated circuit can be damaged by Static electricity if you don't pay attention to ESD protection. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

APPLICATIONS INFORMATION

Functional Description

MS7336M operates from a single +2.7V to +5V supply. In application, MS7336M is a fully integrated solution for filtering and buffering HDTV signals in front of video decoder or behind video encoder, and reverse control decoder. MS7336M's solution can help you save PCB size and production cost, it also improves video signal performance comparing with traditional design using discrete components. MS7336M features a DC-coupled input buffer, 10th low-pass filter to eliminate out-of-band noise of video encoder, and a gain of +6dB in the output amplifier to drive 75Ω load. The AC or DC-coupled input buffer eliminates sync crush, droop, and field tilt. The output of MS7336M also can be DC-coupled or AC-coupled.

Power-Supply Bypassing and Layout

Correct power supply bypassing is very important for optimizing video performance in design. both 0.1μF ceramic and 10μF electrolytic capacitors are always used to Bypass VCC pin of MS7336M, please place these two capacitors as close to the MS7336M output pin as possible, a large ground plane is also needed to ensure optimum performance. The input and output termination resistors should be placed as close to the related pin of MS7336M as possible to avoid performance degradation. The PCB traces at the output side should have 75Ω characteristic impedance in order to match the 75Ω characteristic impedance cable connecting external load. In design, please keep the board trace at the inputs and outputs of the MS7336M as short as possible to minimize the parasitic stray capacitance and noise pickup.

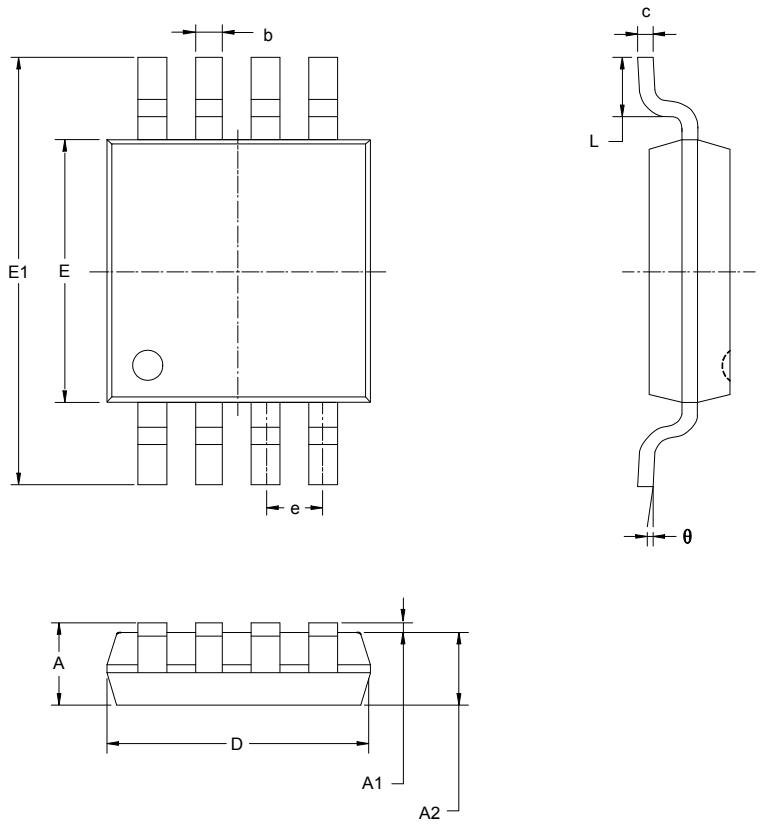
0.1uF capacitor is used to stabilize Vref pin of MS7336M.

Different Bandwidth To Choose

The SEL pin of MS7336M can select 35MHz/55MHz -3dB bandwidth. SEL is high select 35MHz, 55MHz select is low.

PACKAGE OUTLINE DIMENSIONS

MSOP-8



Symbol	Dimensions In Millimeters		Dimensions in Inches	
	MIN	MAX	MIN	MAX
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
e	0.650BSC		0.026BSC	
L	0.400	0.800	0.016	0.031
θ	0º	6º	0º	6º