

Single Channel Video Filter Driver

PRODUCT DESCRIPTION

The MS1676 integrates Single rail-to-rail output driver with 12dB Gain and 6th output reconstruction filter . Its -3dB bandwidth is 30MHz.

MS1676 Operating from single supplies ranging from +2.7V to +5V and sinking an ultra-low 35mA quiescent current, the MS1676 is ideally suited for battery powered applications.

The MS1676 has lead SOT23-6 package, and ESD (HBM) reaches over 3KV.

FEATURES

- 30MHz -3dB ,10th order filter
- 12dB 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 35mA Supply Current
- Lead SOT23-6 package

APPLICATIONS

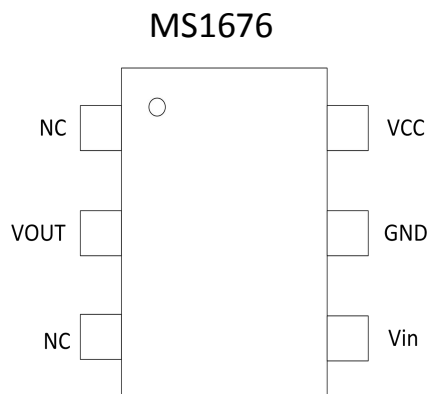
- Communications device
- Portable and handheld product
- AHD/TVI/CVI video driver



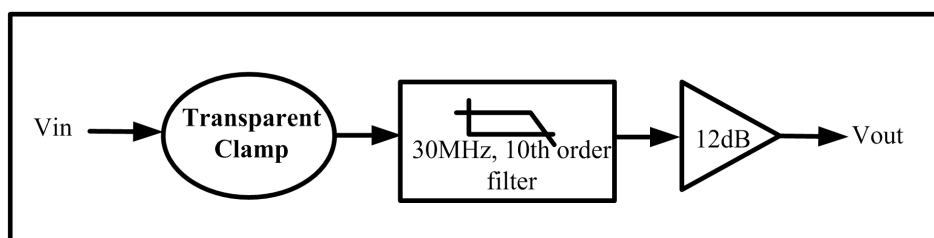
SOT23-6

PACKAGE/ORDERING INFORMATION

Part Number	Package	Marking
MS1676	SOT23-6	1676

PIN CONFIGURATIONS

Pin Description of Fig1

Pin	Name	Function Description
1	NC	N.C.
2	VOUT	12dB Video output
3	NC	N.C.
4	Vin	Video input
5	GND	Ground
6	VCC	Power supply

BLOCK DIAGRAM


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 GND	6V
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
Lead Temperature Range (Soldering 10 sec)	260℃
ESD Susceptibility(HBM)	>3000V
ESD Susceptibility (MM)	>300V

Electrical Characteristics(3.3V)

(VCC=3.3V, TA = 25℃, unless otherwise noted.)

Operational amplifier channel:

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Voltage Gain	Av	Vpp=0.5V, RL=150Ω		12.4		dB
-1dB Bandwidth		RL=150Ω		22		MHz
-3dB Bandwidth		RL=150Ω		30		MHz
Stop-Band Rejection	At	f=60MHz,RL=150Ω		32		dB
Slew Rate	SR	Vin=0.5V step , 20%-80%, f=100k, RL=150Ω		83		V/us
Group Delay	GD	F=400kHz		29		ns
Rise time	ts	Vout=2Vp-p, 80%-20%		14.3		ns
Fall time				9.9		
Output Voltage Swing		Vin=3V, RL=150Ω		3.14		V
Output Level Shift Voltage		Vin=0V, no load, Vin to GND		560		mV
Output Short-Circuit Current	Isc	Vin 10Ω to VDD		147		mA

Supply Voltage:

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Voltage operating range		Vin=1M, Vpp=0.5V, RL=150Ω	2.5		5.5	V
Power Supply Rejection Ration	PSRR	Vs=+2.7V to 5.5V	52	60	63	dB
Supply current	I _{SY}	No input , No load		16		mA

Electrical Characteristics(5V)

(VCC=5V, TA = 25°C, unless otherwise noted.)

Operational amplifier channel:

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Voltage Gain	Av	Vpp=0.5V, RL=150Ω		12.7		dB
-1dB Bandwidth		RL=150Ω		21		MHz
-3dB Bandwidth		RL=150Ω		30		MHz
Stop-Band Rejection	At	f=160MHz, RL=150Ω		-30		dB
Slew Rate	SR	Vin=0.5V step, 20%-80%, f=100k, RL=150Ω		93		V/us
Group Delay	GD	F=400kHz		29		ns
Rise time	ts	Vout=2Vp-p, 80%-20%		12.8		
Fall time				10.1		
Output Voltage Swing		Vin=3V, RL=150Ω		4.76		V
Output Level Shift Voltage		Vin=0V, no load, Vin to GND		650		mV
Output Short-Circuit Current	Isc	Vin=0.1V, 10Ω to VDD		221		mA

Supply Voltage:

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Voltage operating range		Vin=1M, Vpp=0.5V, RL=150Ω	2.5		5.5	V
Power Supply Rejection Ration	PSRR	Vs=+2.7V to 5.5V	52	60	63	dB
Supply current	ISV	Vin=1M, Vpp=0.5V, REF=0.5V, RL=150Ω		35		mA

APPLICATIONS INFORMATION

Functional Description

MS1676 operates from a single +2.7V to +5V supply. In application, MS1676 is a fully integrated solution for filtering and buffering HDTV signals in front of video decoder or behind video encoder.

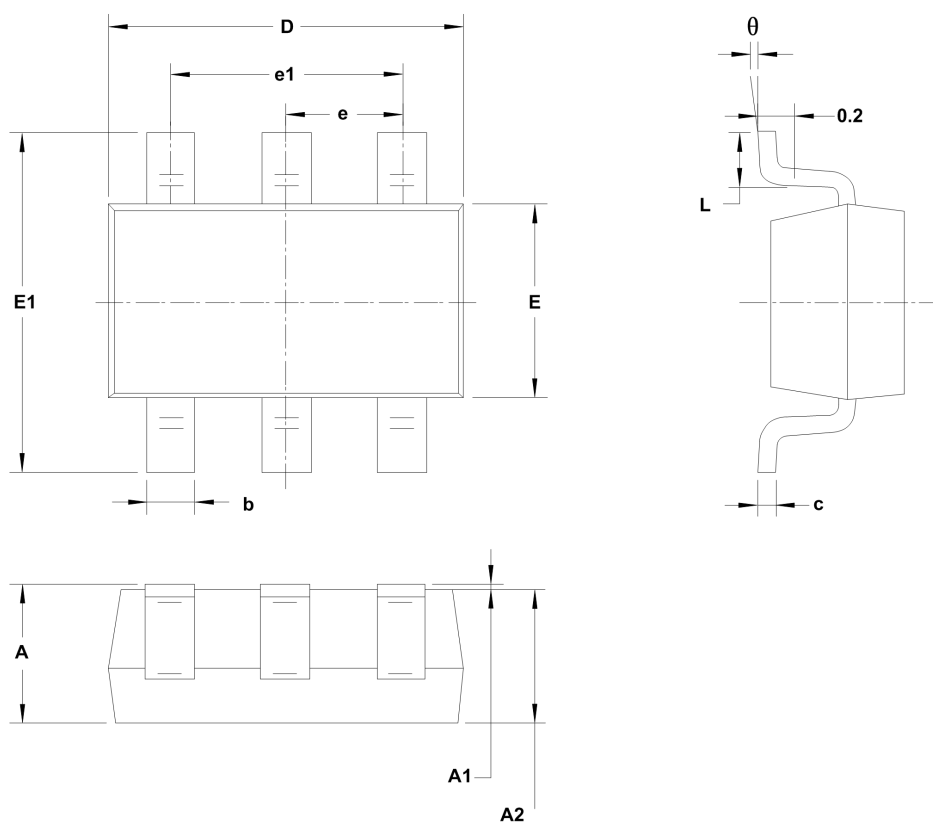
MS1676 features a DC-coupled input buffer, 10th low-pass filter to eliminate out-of-band noise of video encoder, and a gain of +12dB in the output amplifier to drive 75Ω load. The AC or DC-coupled input buffer eliminates sync crush, droop, and field tilt. The output of MS1676 also can be DC-coupled or 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 22μF electrolytic capacitors are always used to Bypass VCC pin of MS1676, please place these two capacitors as close to the MS1676 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 MS1676 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 MS1676 as short as possible to minimize the parasitic stray capacitance and noise pickup.

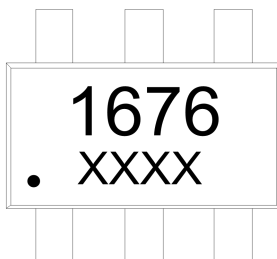
0.1uF capacitor is used to stabilize Vref pin of MS1676.

PACKAGE OUTLINE DIMENSIONS
SOT23-6:


Symbol	Dimensions In Millimeters		Dimensions in Inches	
	MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 BSC		0.037 BSC	
e1	1.900 BSC		0.075 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Marking and Packaging Specifications

1、Marking drawing description



1676: product name

XXXX: Product code

2、Marking drawing pattern

Laser printing, contents in the middle, font type Arial.

3、Packaging Specifications

Device	Package	piece/reel	reel/box	piece /box	box/carton	piece/carton
MS1676	SOT23-6	3000	10	30000	4	120000



MOS circuit operation precautions:

Static electricity can be generated in many places. The following precautions can be taken to effectively prevent the damage of MOS circuit caused by electrostatic discharge:

- 1, The operator shall ground through the anti-static wristband.
- 2, The equipment shell must be grounded.
- 3, The tools used in the assembly process must be grounded.
- 4, must be used conductor packaging or antistatic materials packaging or transportation.



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