

DIO2694

Four-Channel, 6th-Order SD and 1080p HD Video Filter

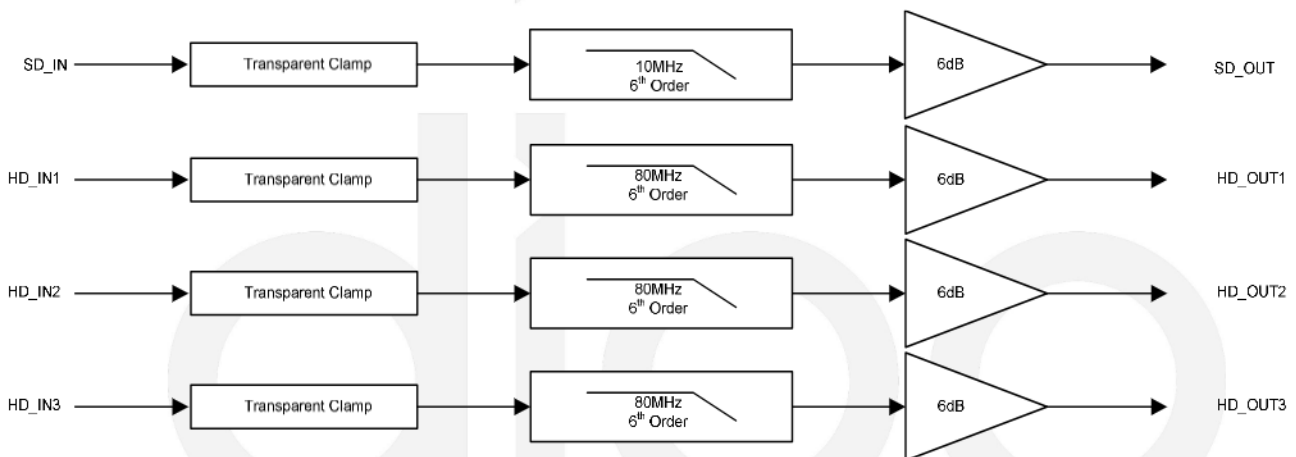
Features

- One CVBS channel with 6th-order, 10MHz filter
- Three channels with per channel a 6th-order, 80MHz filter
- Transparent Input Clamping
- Fixed 6dB Gain
- AC or DC Coupled Inputs
- AC or DC Coupled Outputs
- Operates from 3.135V to 5.25V
- Single Power Supply
- Green MSOP-10 Package with exposed pad

Applications

- DVD Players
- Video Amplifiers
- Cable set-top boxes
- Personal Video Recorders
- Communications Devices
- Video on Demand

Block Diagram



Ordering Information

Order Part Number	Top Marking		T _A	Package	
DIO2694XM10	DIO2694	Green	-40 to +85°C	EP-MSOP-10	Tape & Reel, 3000

Descriptions

DIO2694 is a low voltage, four channels video amplifier with integrated 6dB reconstruction filter and input clamps. In fact, DIO2694 integrates a single CVBS (SD) video driver plus a triple HD video driver. DIO2694 can improve image quality compared to the passive LC filters.

All channels can be directly driven by a DC-coupled or an AC-coupled signal. Internal diode-like clamps and bias circuitry may be used if AC-coupled inputs are required. The output in DIO2694 can also drive AC or DC coupled single (150Ω) or dual (75Ω) loads. The DC coupling capacitors can be removed.

Pin Assignments

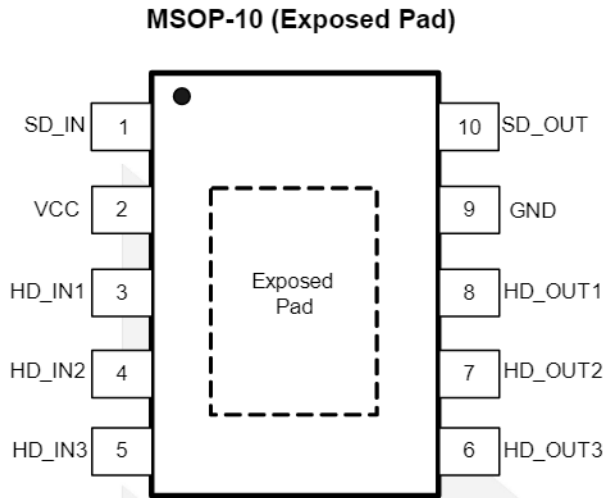


Figure 1 Pin Assignment (Top View)

Pin Description

Pin	Name	Type	Description
1	SD_IN	Input	Channel SD Video Input
2	V _{CC}	Power	Positive Power Supply
3	HD_IN1	Input	Channel HD Video Input (Pr)
4	HD_IN2	Input	Channel HD Video Input (Pb)
5	HD_IN3	Input	Channel HD Video Input (Y)
6	HD_OUT3	Output	Channel HD Video Output (Y)
7	HD_OUT2	Output	Channel HD Video Output (Pb)
8	HD_OUT1	Output	Channel HD Video Output (Pr)
9	GND	Ground	Ground
10	SD_OUT	Output	Channel SD Video Output

Absolute Maximum Ratings

Stresses beyond those listed under “Absolute Maximum Rating” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other condition beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Parameter		Rating	Unit
Supply Voltage		-0.3 to 6.0	V
Input Voltage		-0.3 to $V_{CC}+0.3$	V
Storage Temperature Range		-65 to 150	°C
Junction Temperature		150	°C
Lead Temperature Range		260	°C
MSOP-10 Θ_{JA}		190	°C/W
ESD	CDM, JEDEC: JESD22-C101	2	kV

Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation to ensure optimal performance to the datasheet specifications. DIOO does not recommend exceeding them or designing to Absolute Maximum Ratings.

Parameter		Rating	Unit
Supply Voltage		3.135 to 5.5	V
Operating Temperature Range		-40 to 85	°C

Electrical Characteristics

Typical value: $T_A = 25^\circ\text{C}$, $V_{CC}=5\text{V}$, $R_{SOURCE}=37.5\Omega$, $R_L=150\Omega$ loads; referenced to 400kHz, all inputs are AC couple with $0.1\mu\text{F}$; all outputs are AC coupled with $220\mu\text{F}$; unless otherwise specified.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
DC ELECTRICAL CHARACTERISTICS						
I_{CC}	Supply Current	HD Channels Selected + Cvbs		78	90	mA
V_{IN}	Input Common Mode Voltage Range		GND		1.4	V
PSRR	Power Supply Rejection			-50	-60	dB
HIGH DEFINITION AC PERFORMANCE						
AV	Channel Gain		5.8	6.0	6.2	dB
BW	Band Width	-1dB, $R_{SOURCE}=75\Omega$		58		MHz
		-3dB, $R_{SOURCE}=75\Omega$		80		
AR	Attenuation	$f=148\text{MHz}$, $R_{SOURCE}=75\Omega$		-27		dB
THD	Output Distortion	$V_{OUT}=1.4V_{PP}$, $f=10\text{MHz}$		0.6	1.4	%
		$V_{OUT}=1.4V_{PP}$, $f=20\text{MHz}$		0.8	2.0	
X_{TALK}	Crosstalk	$f=1\text{MHz}$, $V_{IN}=1.4V_{PP}$		-75		dB
SNR	Signal to Noise Ratio	100kHz to 30MHz, 100% White Signal		65		dB
	Group Delay	100kHz to 30MHz		5		ns
	Propagation Delay	Input to Output		20		ns
SR	Slew Rate	2V Output 80% to 20%		100		V/ μs
STANDARD DEFINITION AC PERFORMANCE						
AV	Channel Gain		5.8	6.0	6.2	dB
BW	Bandwidth	-1dB		9		MHz
		-3dB		10		
AR	Attenuation	$f=27\text{MHz}$		-53		dB
DG	Differential Gain			0.6		%
DP	Differential Phase			1.2		$^\circ$
THD	Output Distortion	$f=4\text{MHz}$			1.5	%
X_{TALK}	Crosstalk	$f=1\text{MHz}$		-75		dB
SNR	Signal to Noise Ratio			70		dB
t_{PD}	Propagation Delay			80		ns
	Group Delay	$f=400\text{kHz}$, 6.5MHz		10		ns
CLG_SD	Chroma Luma Gain	$f=3.58\text{MHz}$ ref to SD in at 400kHz	95	100	105	%
CLD_SD	Chroma Luma Delay	$f=3.58\text{MHz}$ ref to SD in at 400kHz		5.5		ns

Notes: $\text{SNR}=20 \cdot \log(714\text{mV} / \text{rms noise})$.

Specifications subject to change without notice.

CONTACT US

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For additional product information, or full datasheet, please contact with our Sales Department or Representatives.

