

DIO2514

One-Channel, 11MHz, 6th-Order Standard Definition Video Filter

Features

- One-ch 6th-order 11MHz SD filters
- 6dB Output Driver Gain and Drive Dual Video Load
- Transparent Input Clamping
- AC or DC Coupled Inputs
- AC or DC Coupled Outputs
- Operates from 3.135 to 5.5V Single Power Supply
- Low Power (8mA/Channel)
- RoHS or Green SOT23-6 Package
- 8kV ESD protection

Descriptions

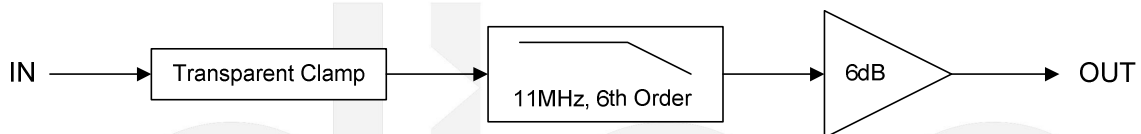
DIO2514 is a low voltage, one channel video amplifier with integrated reconstruction filter and input clamps. DIO2514 provides improved image quality compared with passive LC filters and discrete drivers solution, especially suited for standard definition video signals, such as television and set-top box applications. DIO2514 integrates equivalent SAG function being able to drive 47uF capacitor directly under output AC-coupled mode. This reduces the BOM cost effectively with smaller PCB board size.

DIO2514 can be directly driven by a DC-coupled DAC output or an AC-coupled signal. The output in DIO2514 can also drive AC or DC coupled single (150Ω) or dual (75Ω) loads. The DC coupling capacitors can be removed.

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	
DIO2514CST6	YW(X)Z	RoHS or Green	-40 to +85°C	SOT23-6	Tape & Reel, 3000

Marking Definition



Pin Assignments

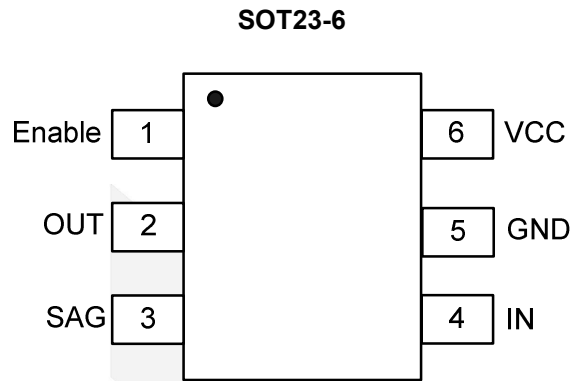


Figure 1 Pin Assignment

Pin Description

Pin name	Description
Enable	Enable / Disable Function: High = Enable, Low = Disable.
OUT	Filtered output
SAG	SAG Compensation
IN	Video input
GND	Ground
V _{cc}	Power supply



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 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
ESD	HBM, JEDEC: JESD22-A114	8	kV
	CDM, JEDEC: JESD22-C101	2	

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; 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			8	12	mA
V_{IN}	Video Input Voltage Range		GND	1.4		V_{PP}
PSRR	Power Supply Rejection			-50		dB
DYNAMIC PERFORMANCE						
AV	Channel Gain		5.8	6.0	6.2	dB
f_{1dB}	-1dB Bandwidth		8.0	10.5		MHz
f_{3dB}	-3dB Bandwidth		9	11.8		MHz
	Filter Response	$f=27\text{MHz}$		-40		dB
DG	Differential Gain			0.2		%
DP	Differential Phase			0.36		$^\circ$
THD	Output Distortion	$f=1\text{MHz}$		0.38		%
SNR	Signal to Noise Ratio			70		dB
	Group Delay	$f=400\text{kHz}, 6.5\text{MHz}$		20		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.

Typical Application

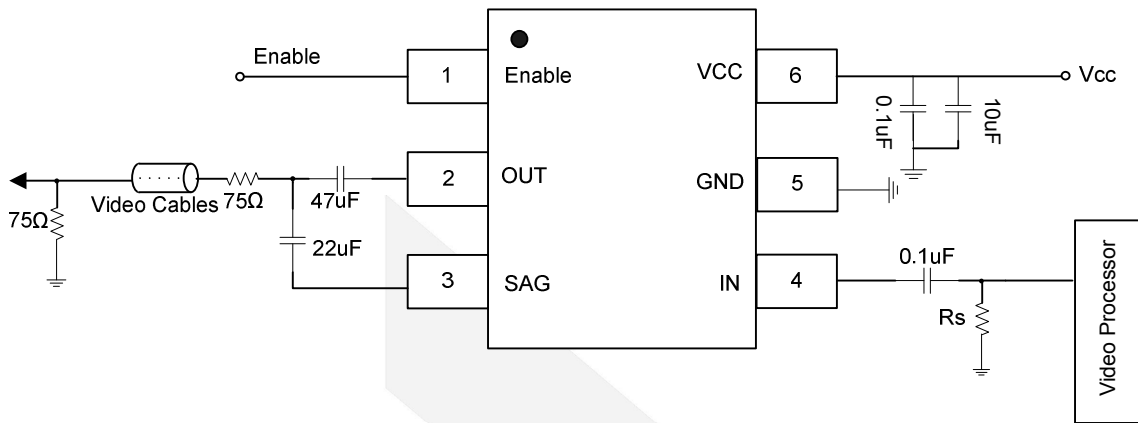


Figure 2 Input and Output AC-Coupling Application

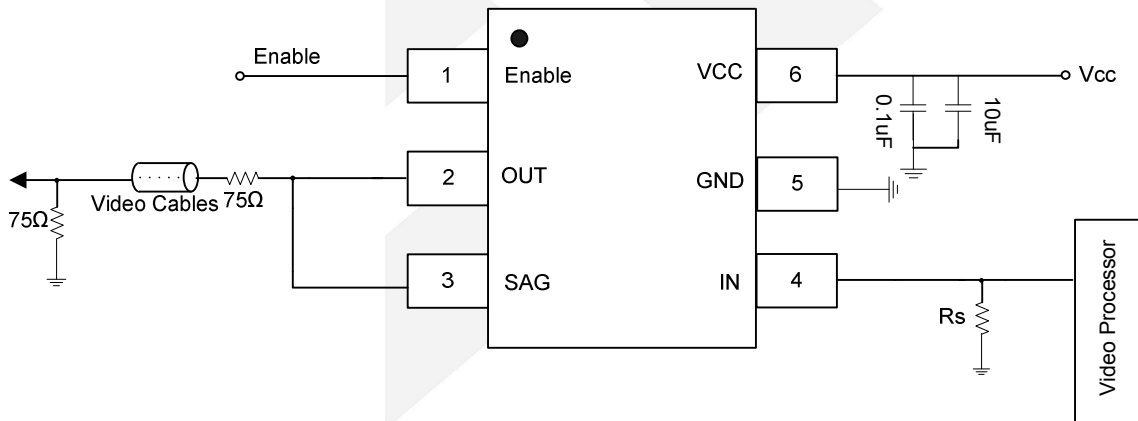


Figure 3 Input and Output DC-Coupling Application

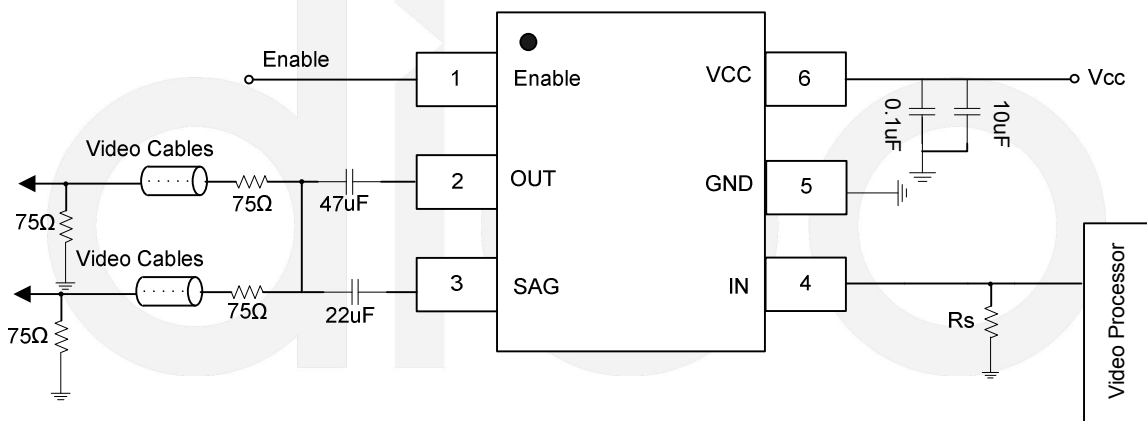


Figure 4 Input DC-Coupling Application and Output AC-Coupling with Double Load

Note: C_{SAG} 22uF capacitor can be optional.

CONTACT US

Dioo is a professional design and sales corporation for high-quality and performance analog semiconductors. The company focuses on industry markets, such as, cell phone, handheld products, laptop, and medical equipments and so on. Dioo's product families include analog signal processing and amplifying, LED drivers and charger IC. Go to <http://www.dioo.com> for a complete list of Dioo product families.

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

A large, light gray watermark of the Dioo logo is centered on the page. It consists of a stylized arrow pointing right above the word "dioo" in a lowercase, sans-serif font.