

## DIO2561

### One-Channel, 11MHz, 6<sup>th</sup>-Order Standard Definition Video Filter

#### Features

- One-ch 6<sup>th</sup>-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
- SOIC-8 and SC70-5 Package
- 8kV ESD protection

#### Applications

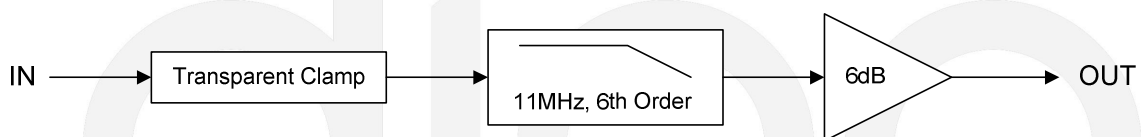
- DVD Players
- Video Amplifiers
- Cable set-top boxes
- Personal Video Recorders
- Communications Devices
- Video on Demand

#### Descriptions

DIO2561 is a low voltage, one channel video amplifier with integrated reconstruction filter and input clamps. DIO2561 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.

DIO2561 can be directly driven by a DC-coupled DAC output or an AC-coupled signal. Internal diode-like clamps and bias circuitry may be used if AC-coupled inputs are required. The output in DIO2561 can also drive AC or DC coupled single (150Ω) or dual (75Ω) loads. The DC coupling capacitors can be removed.

#### Block Diagram



#### Ordering Information

Order Part Number	Top Marking		T <sub>A</sub>	Package	
DIO2561SC5	YW(X)Z	RoHS or Green	-40 to +85°C	SC70-5	Tape & Reel, 3000
DIO2561SO8	DIO2561	RoHS or Green	-40 to +85°C	SOIC-8	Tape & Reel, 2500

## Pin Assignments

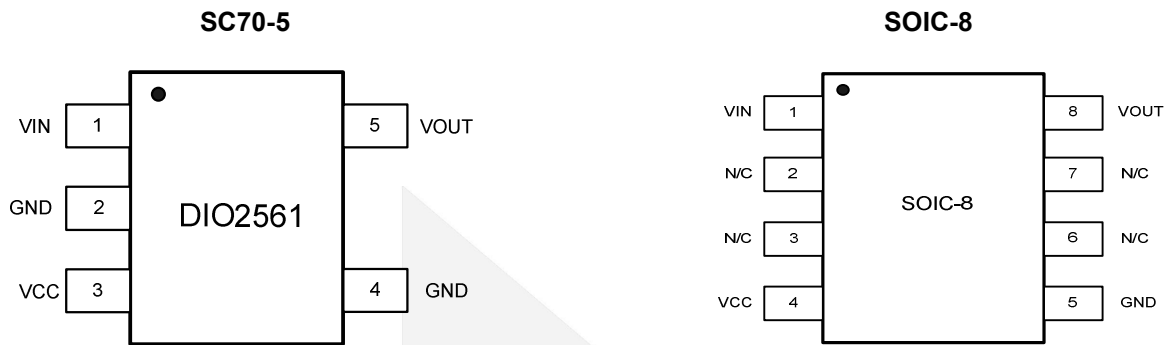


Figure 1 Pin Assignment

## Pin Description

Pin name	Description
VIN	Video input
VCC	Power supply
GND	Ground
VOUT	Filtered output
N/C	No Connect

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## 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 VCC+0.3	V
Storage Temperature Range		-65 to 150	°C
Junction Temperature		150	°C
Lead Temperature Range		260	°C
Junction-to-ambient thermal resistance, $\theta_{JA}$ , SC70-5		330	°C/W
Junction-to-case (top) thermal resistance, $\theta_{JC}$ , SC70-5		59.2	°C/W
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
<b>DC ELECTRICAL CHARACTERISTICS</b>						
$I_{CC}$	Supply Current			8	12	mA
$V_{IN}$	Video Input Voltage Range		GND	1.4		$V_{PP}$
PSRR	Power Supply Rejection			-50		dB
<b>DYNAMIC PERFORMANCE</b>						
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		°
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.

## CONTACT US

**D**ioo 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 equipment 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 followed by the word "dioo" in a lowercase, sans-serif font.