



## DIO2663

# Three-Channel, 35MHz, 6<sup>th</sup>-Order High Definition Video Filter Driver

### Features

- Triple 6<sup>th</sup>-order 35MHz HD 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 3.135V to 5.25V
- Single Power Supply
- 40mA Typical Supply Current
- RoHS or Green SOIC-8 Package
- 8kV ESD protection

### Applications

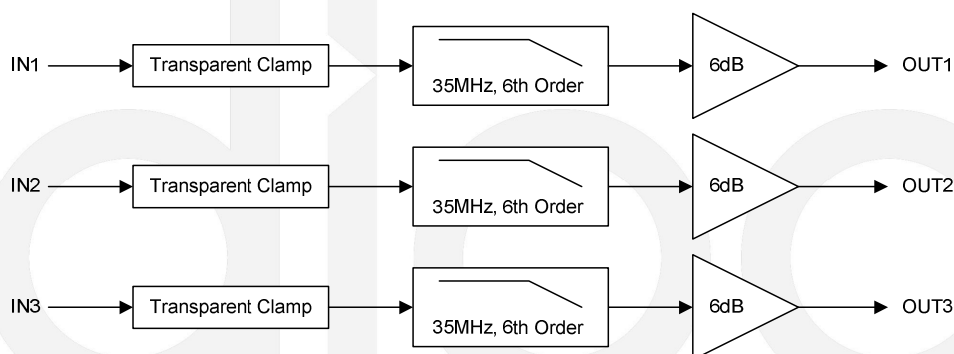
- DVD Players
- Video Amplifiers
- Cable set-top boxes
- Personal Video Recorders
- Communications Devices
- Video on Demand

### Descriptions

DIO2663 is a low voltage, triple video amplifier with integrated 6dB reconstruction filter and input clamps. All three channels can accept Component and RGB video signals. It provides improved image quality compared to the passive LC filters.

DIO2663 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 DIO2663 can also drive AC or DC coupled single (150Ω) or dual (75Ω) loads. The DC coupling capacitors can be removed.

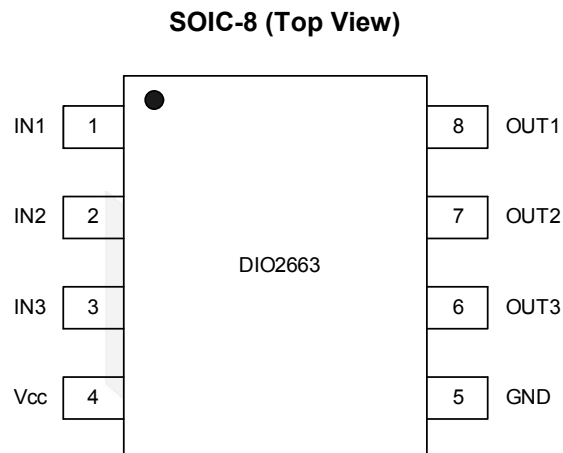
### Block Diagram



### Ordering Information

Order Part Number	Top Marking		T <sub>A</sub>	Package	
DIO2663CS8	DIO2663	Green	-40 to +85°C	SOIC-8	Tape & Reel, 2500

## Pin Assignments



**Figure 1 Pin Assignment (Top View)**

## Pin Description

Pin	Name	Description
1	IN1	Video input, channel 1
2	IN2	Video input, channel 2
3	IN3	Video input, channel 3
4	V <sub>CC</sub>	Power supply
5	GND	Ground
6	OUT3	Filtered output, channel 3
7	OUT2	Filtered output, channel 2
8	OUT1	Filtered output, channel 1



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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 $V_{CC}+0.3$	V
Storage Temperature Range		-65 to 150	°C
Junction Temperature		150	°C
Lead Temperature Range		260	°C
SOIC-8 $\theta_{JA}$		130	°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 5.25	V
Operating Temperature Range	-40 to 85	°C



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## Electrical Characteristics

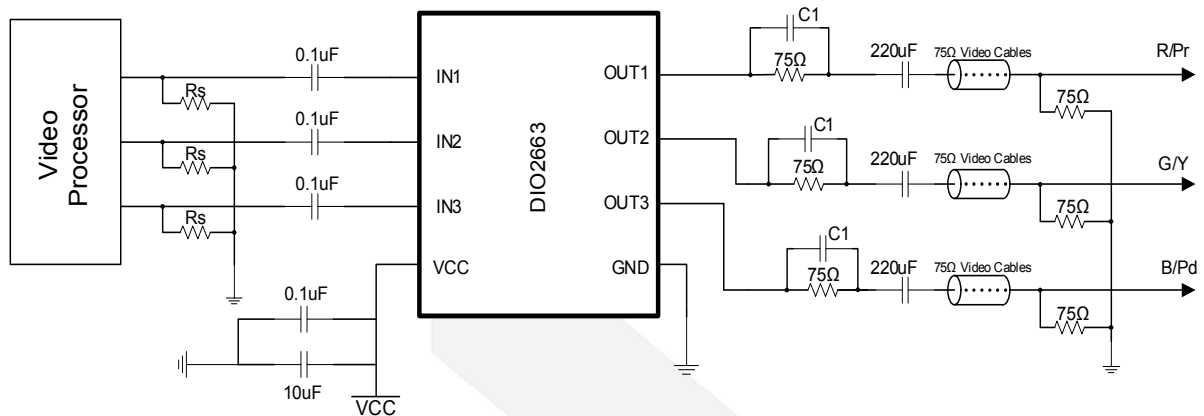
Typical value:  $T_A = 25^\circ\text{C}$ ,  $V_{CC}=5\text{V}$ ,  $R_{SOURCE}=37.5\Omega$ ,  $R_L=150\Omega$  loads; all inputs are AC couple with  $0.1\mu\text{F}$ ; all outputs are AC coupled with  $220\mu\text{F}$ ; unless otherwise specified.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
<b>DC ELECTRICAL CHARACTERISTICS</b>						
$I_{CC}$	Supply Current			40	56	mA
$V_{IN}$	Video Input Voltage Range		GND		1.4	$V_{PP}$
PSRR	Power Supply Rejection			-50		dB
<b>DYNAMIC PERFORMANCE</b>						
$A_V$	Channel Gain		5.8	6.0	6.2	dB
BW	Band Width	$\pm 0.5\text{dB}$ , $R_{SOURCE}=75\Omega$		26		MHz
		-1dB, $R_{SOURCE}=75\Omega$		30		
		-3dB, $R_{SOURCE}=75\Omega$		35		
AR	Attenuation	$f=37.125\text{MHz}$ , $R_{SOURCE}=75\Omega$		-4.6		dB
		$f=44.25\text{MHz}$ , $R_{SOURCE}=75\Omega$		-10.5		
		$f=74.25\text{MHz}$ , $R_{SOURCE}=75\Omega$		-37		
THD	Output Distortion	$V_{OUT}=1.4V_{PP}$ , $f=10\text{MHz}$		0.6		%
		$V_{OUT}=1.4V_{PP}$ , $f=15\text{MHz}$		0.8		
$X_{TALK}$	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%		90		V/ $\mu\text{s}$

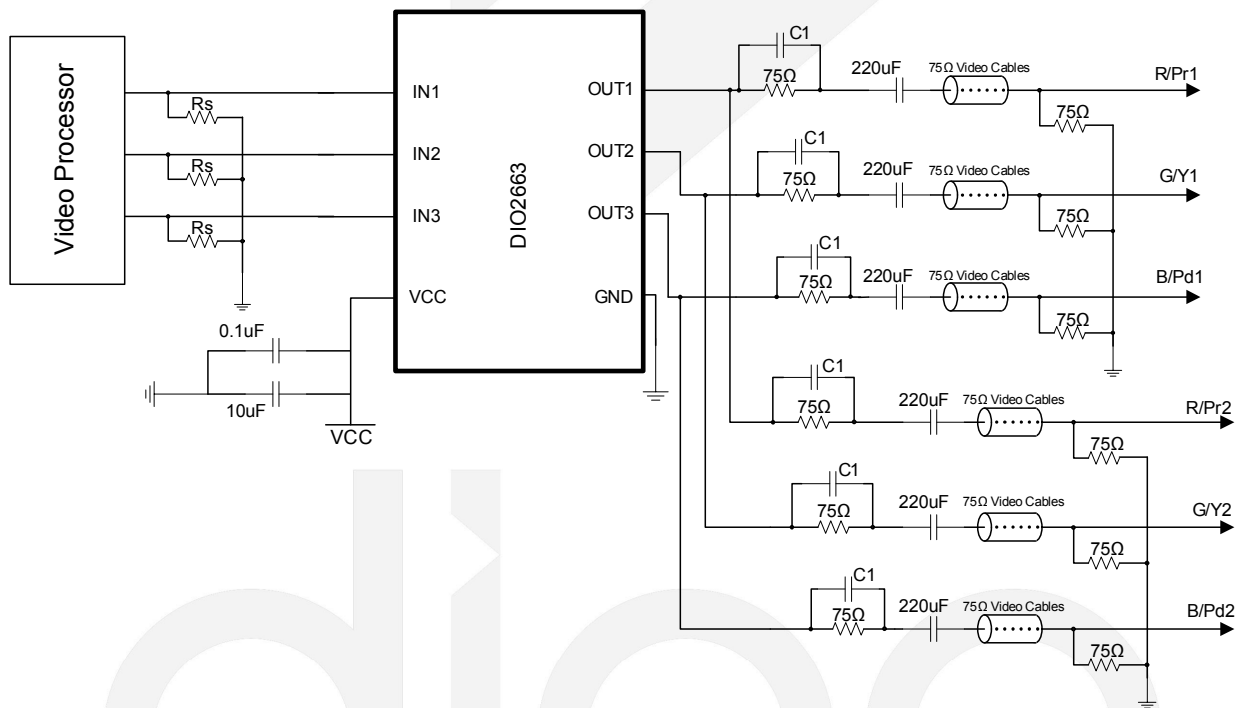
Notes:  $\text{SNR}=20 \cdot \log(714\text{mV} / \text{rms noise})$ .

Specifications subject to change without notice.

## Application Circuit

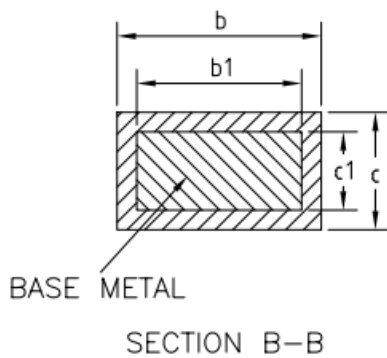
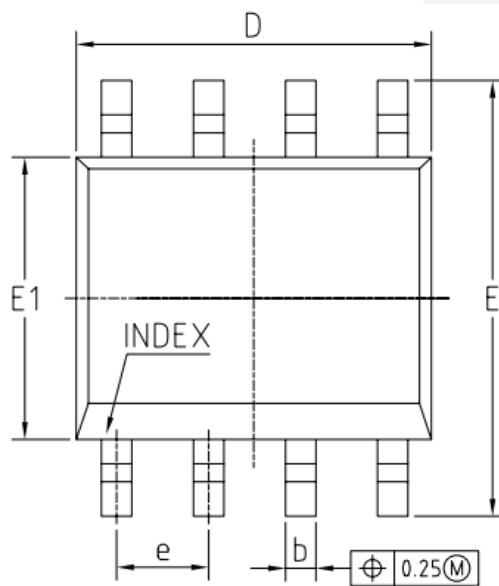
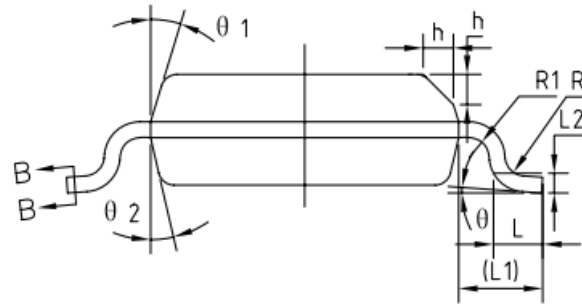
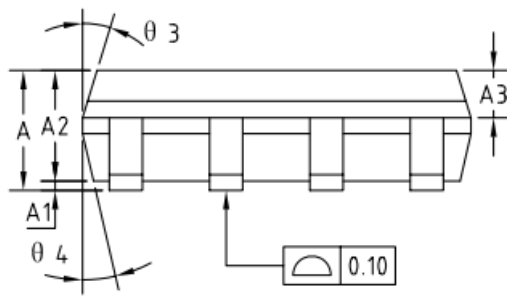


**Figure 2 Input and Output AC-Coupling Application**



**Figure 3 Input DC-Coupling Application and Output AC-Coupling with Double Load**

**Note:** The value of C1 is recommended 2 to 4pF

**Physical Dimensions: SOIC-8**


COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	1.35	1.55	1.75
A1	0.10	0.15	0.25
A2	1.25	1.40	1.65
A3	0.50	0.60	0.70
b	0.38	-	0.51
b1	0.37	0.42	0.47
c	0.17	-	0.25
c1	0.17	0.20	0.23
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
L	0.45	0.60	0.80
L1	1.04REF		
L2	0.25BSC		
R	0.07	-	-
R1	0.07	-	-
h	0.30	0.40	0.50
θ	0°	-	8°
θ1	15°	17°	19°
θ2	11°	13°	15°
θ3	15°	17°	19°
θ4	11°	13°	15°

## 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.

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