

One Channel FHD Video Filter

1. Feature

- 6th order 72MHz(-3dB) Butterworth video filter
- 6dB DC gain
- Allowed drive 2 video channels (drive 75ohm load)
- AC or DC coupled input
- DC & AC coupled Rail to Rail output
- 3.3V or 5V power supply operation
- Attenuation -39dB @144MHz
- Quiescent current (no load): 12mA(3.3V)
- Chip available in SOT23-6 and SC70-5 Package

2. Applications

- FHD TVI/AHD/CVI Camera
- FHD DVD video players
- Digital Set Top Box, etc
- Automotive FHD Camera

3. General Description

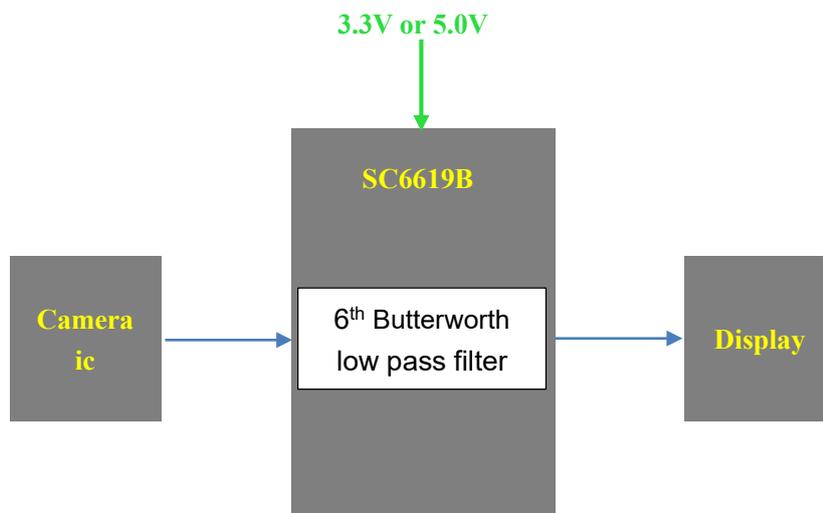
The SC6619B is a low power consuming, 6th order Butterworth Filter, it's suitable for the application in DAC reconstruction, such as FHD TVI/AHD/CVI video camera.

SC6619B supports AC or DC coupling input for the filter, it applies 80mV level shift.

The LPF applies 6dB gain in pass band, and it applies attenuation -20dB @100MHz/-39dB@144MHz, the high attenuation is great useful for Improving the quality of the image, reducing the noise;

4. Device Information

Part Number	Package	Body Size
SC6619B	SOT23-6	2.8mm x 2.9mm
SC6619B	SC70-5	2.2mm x 2.45mm



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5. Pin Configuration

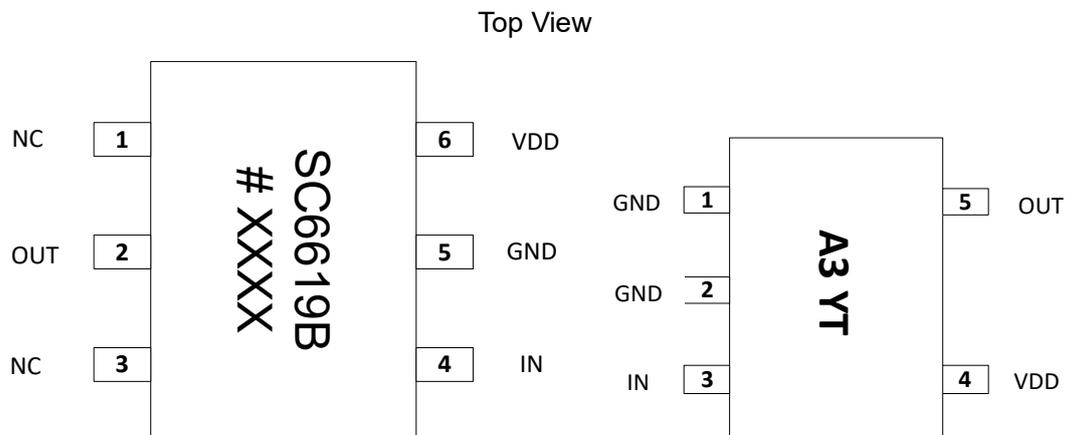


Fig. 1 Pin Definition

Table. 1 Pin Function Description

PIN NO.		PIN NAME	TYPE	Description
SOT23-6	SC70-5			
1		NC	-	Floating Pad
2	5	OUT	Output	Video signal output Pin, typical load is 150ohm, however could drive 75ohm load for 2 channel video.
3		NC	-	Floating Pad
4	3	IN	Input	Video signal input Pin, AC coupled in;
5	1,2	GND	GND	Ground pin. Connect to the most negative supply, ALL GND pads are connected on die.
6	4	VDD	Power supply	Power supply (3.3V/5V) ,connect to positive voltage supply

6. Specifications

6.1. Absolute Maximum Ratings

(Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device.)

SYMBOL	PARAMETER	MIN	MAX	UNITS
V _{DD}	Power supply	-0.3	6	V
T _A	Operating ambient Temperature Range	-40	85	°C
T _{STG}	Storage Temperature	-65	150	°C

6.2. Recommended Operating Conditions

SYMBOL	PARAMETER	MIN	MAX	UNITS
V _{DD}	Device power supply voltage	2.7	5.5	V
T _A	Operating ambient Temperature Range	-40	85	°C

6.3. Electrical Characteristics

1) DC Characteristics (FHD)

Specifications are at TA=+25°C, VDD=3V, RL=150ohm Vin=1Vpp Cin=0.1uF output coupling cap=220uF (unless otherwise noted)

SYMBOL	PARAMETER	TEST CONDITIONS	SPEC			UNITS
			MIN	TYP	MAX	
IDD	VDD operating supply current	VDD=3.3V		15		mA
		VDD =5V		17		
Iq	Quiescent current	VDD =3.3V ,NO input& load		10		mA
Isc	Short to GND or VDD current	vin=VDD, Output to VDD		72		mA
		vin=VDD, Output to GND		85		
VoIs	output offset Voltage	AC coupled Vin=0V, input referred		150		mV
		DC coupled Vin=0V, input referred		100		mV
VOH	Output Voltage High Swing	VDD=3.3V		2.8		V
		VDD =5V		4.5		V
VOL	Output Voltage Low Swing	VDD=3.3V/5V		224		mV
Av	Output Voltage Gain			6		dB
PSRR	Power supply rejection ratio	f=50Hz		-58		dB
		f=1MHz		-39		

2) AC Characteristics (FHD)

Specifications are at TA=+25°C, VDD=3V, RL=150ohm Vin=1Vpp Cin=0.1uF output coupling cap=220uF (unless otherwise noted)

SYMBOL	PARAMETER	TEST CONDITIONS	SPEC			UNITS
			MIN	TYP	MAX	
BW(-1dB)	The Band width of -1dB			68		MHz
BW(-3dB)	The Band width of -3dB			72		MHz
Att	Stop band Attenuation	f=100MHz		-20		dB
		f=50MHz		0		
dG	Differential Gain			0.1		%
dP	Differential Phase			1		°
THD	Total Harmonic Distortion	f=50MHz, Vpp=0.6V		-42		dB
SNR	Signal to Noise Ratio*1			75		dB
TGD	Group Delay Variation	f=100k~46MHz		6		ns
Rout	Output Impedance	f=10MHz		1.5		Ω
SR	Slow Rate	Vin=1V, 20%~80%		210		V/us

*1: White Signal, 100 kHz~30MHz, SNR=20*Log (714mV/RMS noise)

6.4. Typical Characteristic Curves

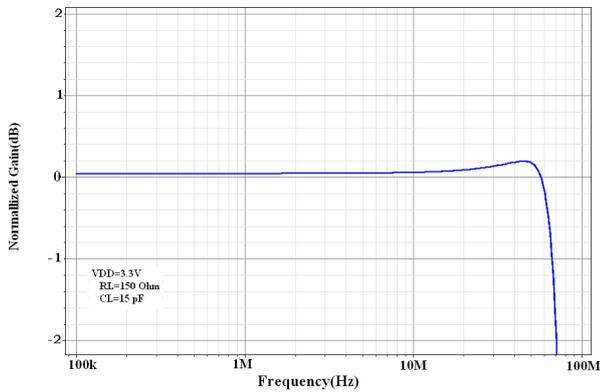


Fig.2 Small Signal AC frequency response

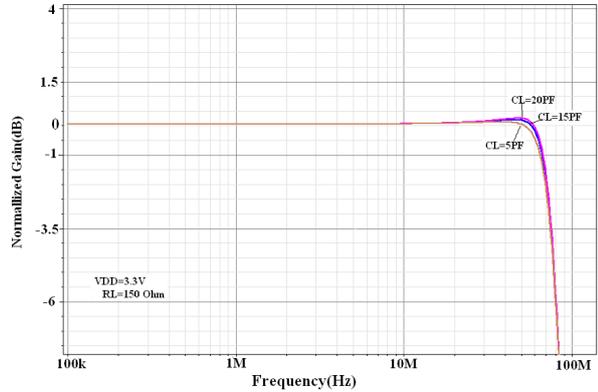


Fig.3 Cloud Variation For Gain Vs Frequency

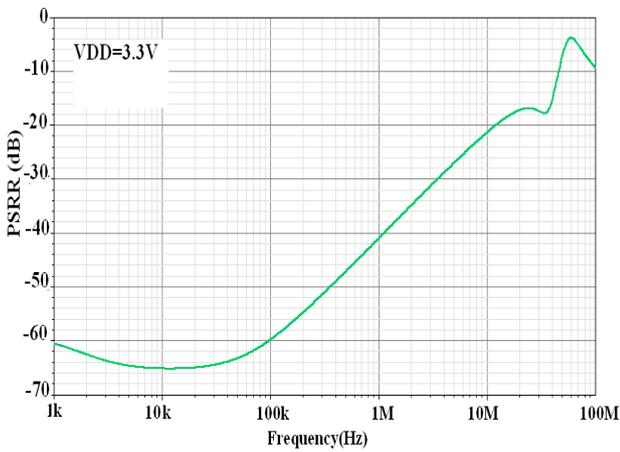


Fig.4 PSRR Vs Frequency

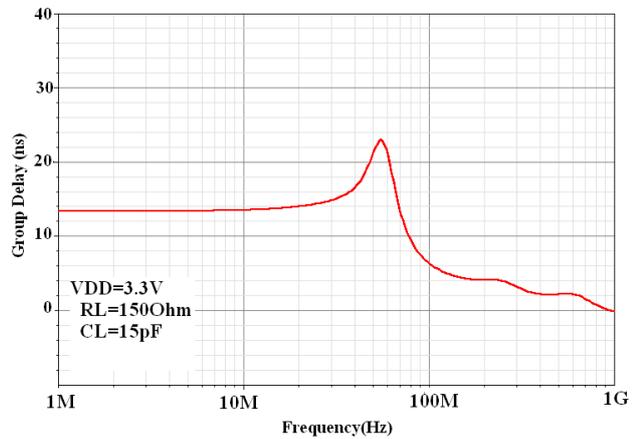


Fig.5 Group Delay Vs Frequency

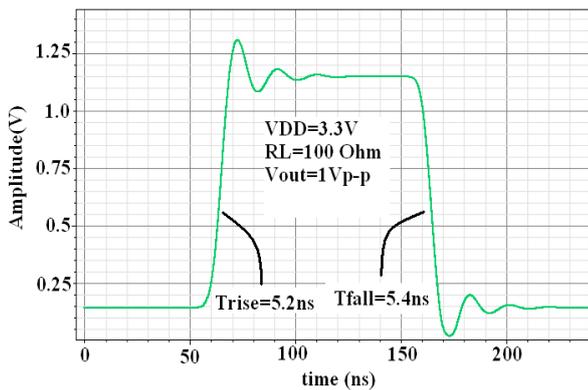


Fig.6 Large Signal Transient Response

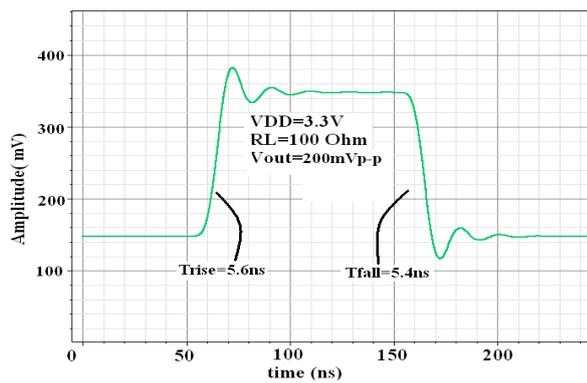


Fig.7 Small Signal Transient Response

7. Typical Application

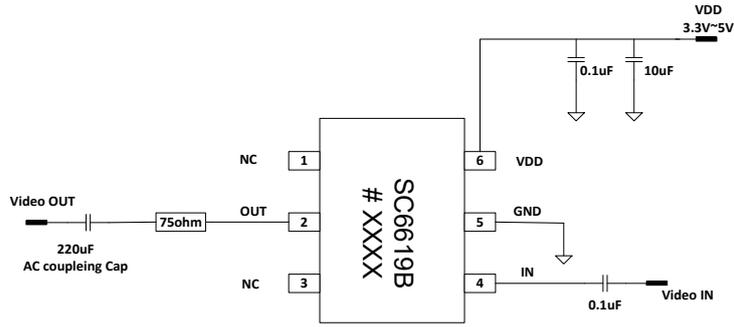


Fig. 8 AC couple Input and AC couple Output Application Circuit

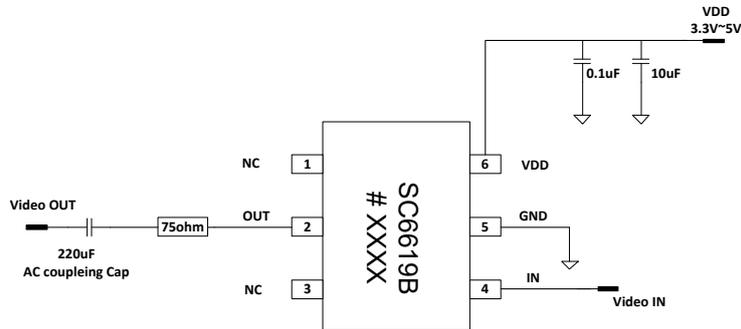


Fig. 9 DC couple Input and AC couple Output Application Circuit

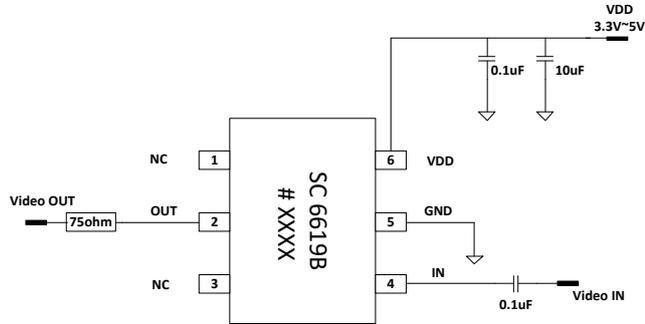


Fig. 10 AC couple Input and DC couple Output Application Circuit

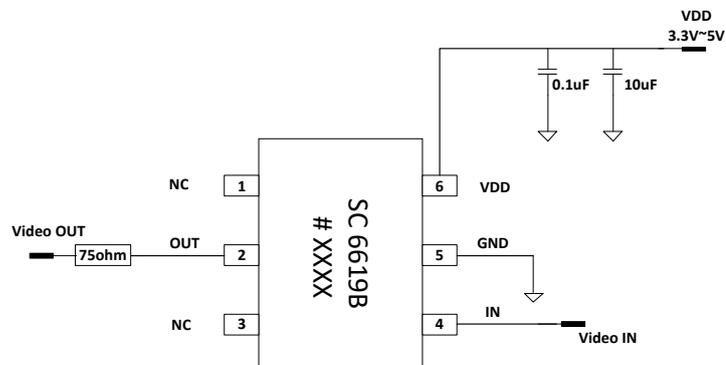
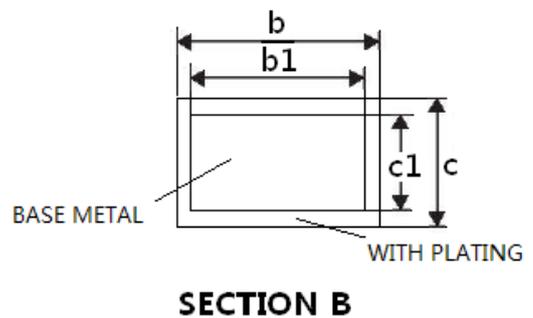
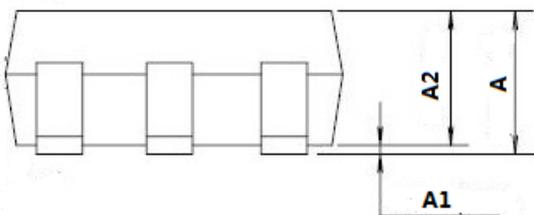
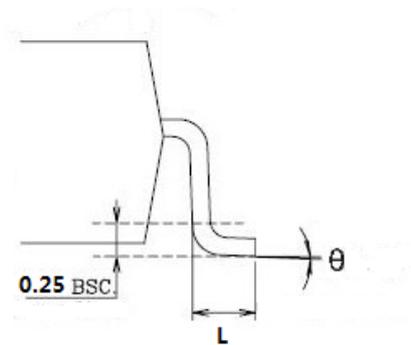
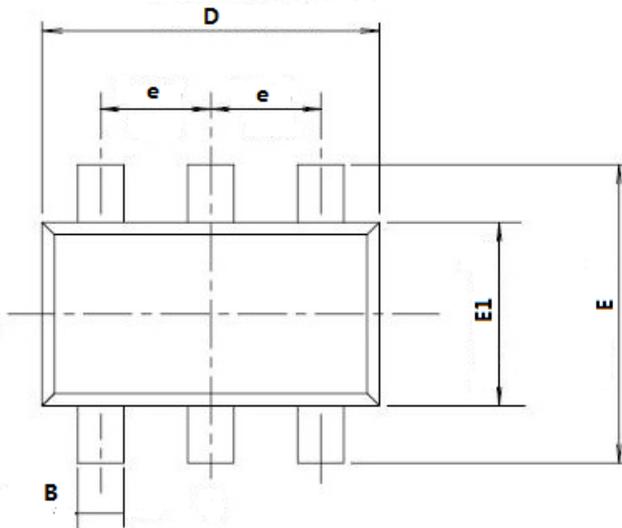
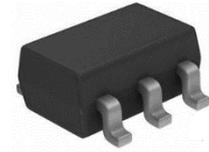


Fig. 11 DC couple Input and DC couple Output Application Circuit

Package Outline Dimensions

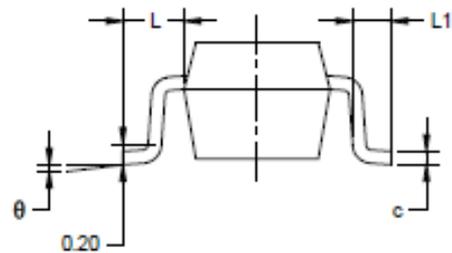
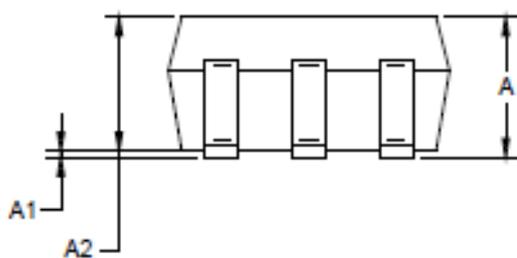
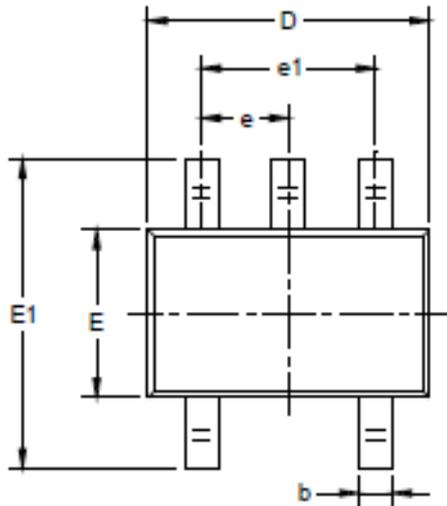
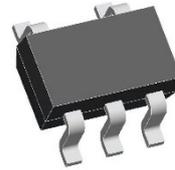
SOT23-6- 2.8mmx2.92mm

Symbol	Unit(mm)		
	MIN	NOM	MAX
A	-	-	1.35
A1	0.04	-	0.15
A2	1.00	1.10	1.20
b	0.38	-	0.48
b1	0.37	0.40	0.43
c	0.11	-	0.21
c1	0.10	0.13	0.16
D	2.72	2.92	3.12
E	2.60	2.80	3.00
E1	1.40	1.60	1.80
e	0.95BSC		
θ	0°	-	8°
L	0.30	-	0.60



SC70-5- 2.2mmx2.45mm

Symbol	Unit(mm)		
	MIN	NOM	MAX
A	0.900	-	1.100
A1	0.000	-	0.100
A2	0.900	-	1.000
b	0.150	-	0.350
c	0.080	-	0.150
D	2.000	-	2.200
E	1.150	-	1.350
E1	2.150	-	2.450
e	-	0.65	-
e1	1.300BSC		
L	0.525REF		
L1	0.260	-	0.460
θ	0°	-	8°



EVISION HISTORY

DATE	REVISION	CHANGES
	1.0	Initial Release.
2022-4-16	1.3	Update the document template.

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Contact Information

Web: <http://www.steadichips.com>

E-mail: sales@steadichips.com

Phone: (86) 510-81819665

Fax: (86) 0510-81819676

StediChips Co., Ltd. 1402 Jingyuan International Building A, No. 2 Xiangjiang Road, Wuxi, China 214142