



# SV5104C

**Low Power, 5th-order 8MHz filter, Quality Enhanced,  
Standard Definition Video Driver**

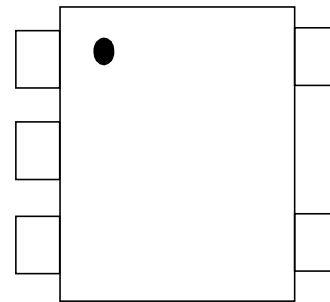
Revision v1.1a  
**SAVITECH Corporation**

# SV5104C

## Low Power, 5th-order 8MHz filter, Quality Enhanced, Standard Definition Video Driver

### Features

- Low power, low voltage design
- Operating voltage from +2.7V to +5.5V
- Low quiescent current: 6mA
- High PSRR: 62dB
- No compromised HBM 8KV ESD protection
- 5th-order filter integrated : 8MHz
- High-performance, +6dB-gain driver design
- Support driving single video cable or 150Ω load and two video cables or 75Ω loads
- Rail-to-Rail output
- Transparent input clamping
- Versatile AC- or DC-coupled configurations at inputs and outputs
- PCB space saving design in green SC70-5 package.



SC70-5

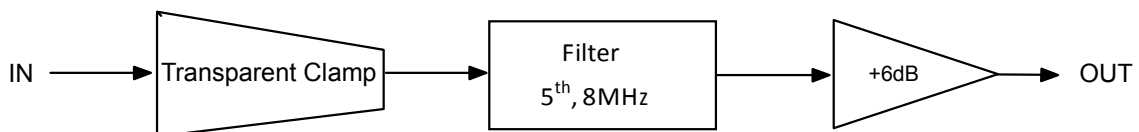
### Description

The SV5104C are cost-effective, Standard Definition (SD) Video Drivers with enhanced video quality. With state-of-art low voltage and low power design, makes it ideal for low power CVBS-/SD- video system design. It features 5th-order filter and +6dB driver designed for replacing traditional 2nd~3th-order passive LC filtering solution that improves output video quality and reduces PCB space.

The SV5104C supports driving single video cable or 150Ω load and two video cables or 75Ω loads.

The 8KV ESD protection design also helps to reduce ESD protection cost, but still provides robust ESD protection and reduces any potential system reliability and safety issues from ESD threats.

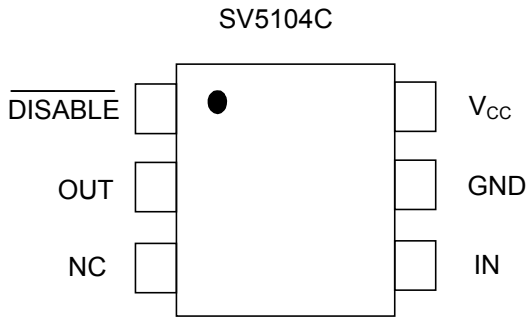
### Block Diagram



### Ordering Information

Order Codes	Operation Range	Package	Packing
SV5104C-06SC-TR3	-40°C, +85°C	SO70-6	Tape & Reel, 3000pcs

### Pin Configuration (Top view)



### Pin Description

NAME	FUNCTION
$\overline{\text{DISALBE}}$	Shutdown input
OUT	Filter output channel
IN	Video input channel
NC	No connect
GND	Ground
V <sub>CC</sub>	Power supply

### Absolute Maximum Ratings

Parameter	Value	Unit
V <sub>CC</sub> to GND, Supply Voltage,	6	V
Input Voltage	GND - 0.3 to (V <sub>CC</sub> ) +0.3	V
Storage Temperature Range	-65 to +150	°C
Continuous current through V <sub>DD</sub> or GND	100	mA
ESD Susceptibility: HBM	8000	V
ESD Susceptibility: MM	400	V

Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only; functional operation of the device at these or any other conditions above those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

### Caution

This integrated circuit can be damaged by ESD if you don't pay attention to ESD protection. SAVITECH recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

## DC Electrical Characteristics

At  $R_L = 150\Omega$  connected to GND,  $V_{IN} = 1V_{pp}$ , and  $C_{IN} = 0.1\mu F$ , all outputs AC coupled with  $220\mu F$ , referenced to 400kHz, unless otherwise noted.

PARAMETER	CONDITIONS	TEMP	MIN	TYP	MAX	UNITS
<b>INPUT CHARACTERISTICS</b>						
Output Level Shift Voltage ( $V_{OLS}$ )	$V_{IN} = 0V$ , no load	+25°C		386	572	mV
		-40°C to +85°C			670	
Input Voltage Clamp ( $V_{CLAMP}$ )	$I_{IN} = -3.5mA$	+25°C	-220	-104		mV
		-40°C to +85°C	-300			
Clamp Charge Current	$V_{IN} = V_{CLAMP} - 100mV$	+25°C	-600	-470		uA
		-40°C to +85°C	-780			
Voltage Gain ( $A_v$ )	$R_L = 150\Omega$	+25°C	5.7	6	6.4	dB
		-40°C to +85°C	5.4		6.6	
<b>OUTPUT CHARACTERISTICS</b>						
Output Voltage High Swing	$V_{IN} = 3V$ , $R_L = 150\Omega$ to GND	+25°C	4.3	4.74		V
		-40°C to +85°C	4.2			
<b>POWER SUPPLY</b>						
Operating Voltage Range		+25°C	2.7		5.5	V
Power Supply Rejection Ratio (PSRR)	$V_{CC} = 3.5V$ to $5.0V$	+25°C		62		dB
Quiescent Current ( $I_Q$ )	$V_{IN} = 0V$	+25°C		6		mA

Specifications are subject to change without notice.

## Electrical characteristics: Standard-Definition Filter Driver

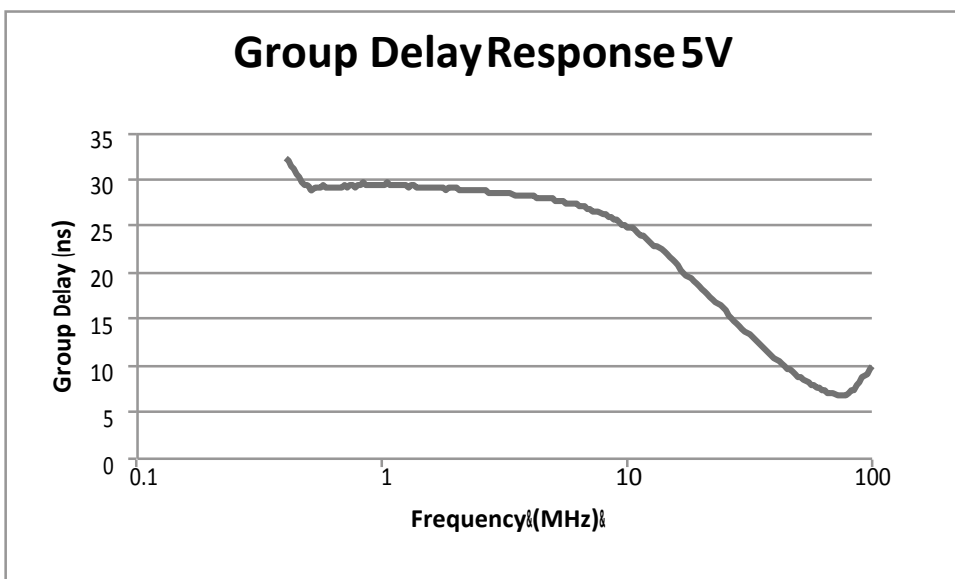
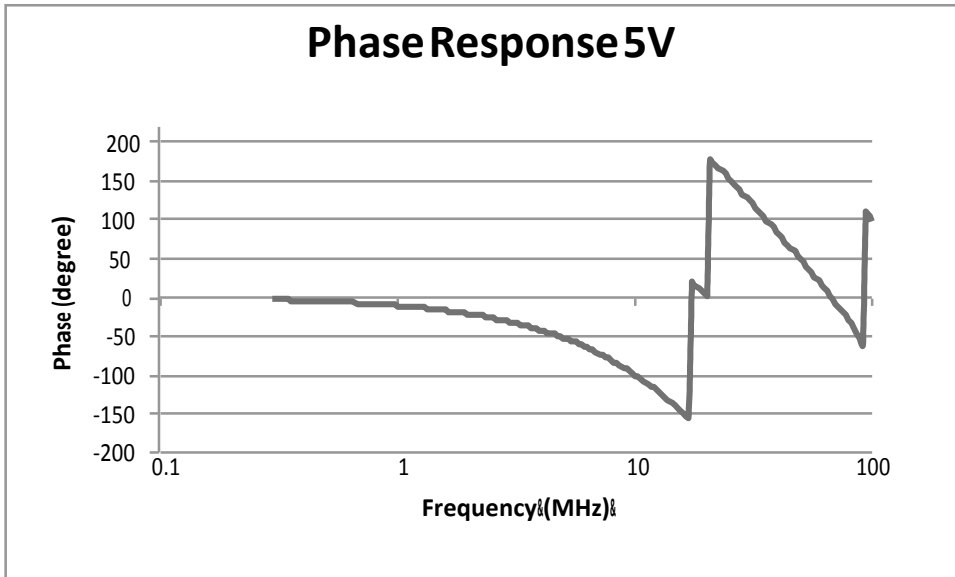
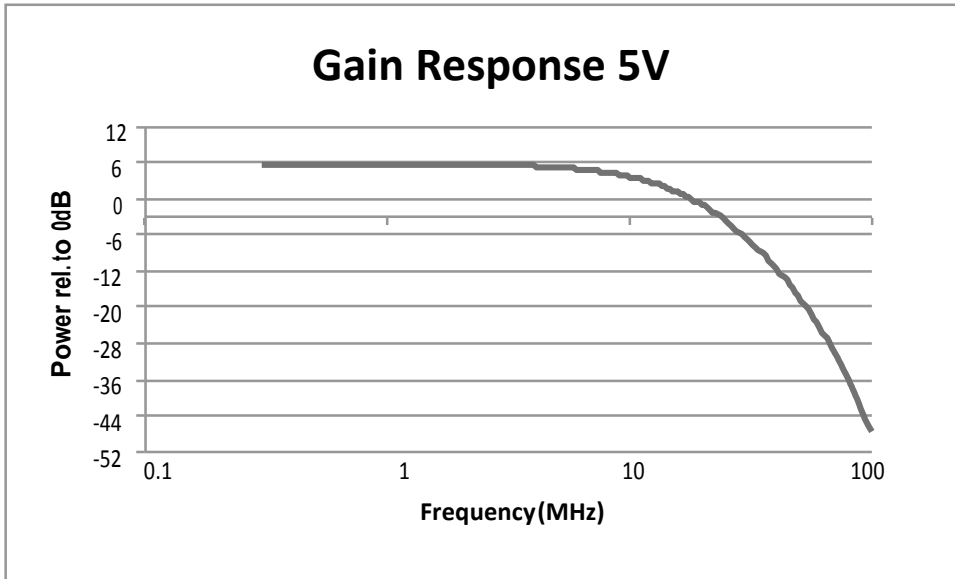
$V_{CC} = +4.2V$ ,  $GND = 0V$ ,  $TA = -40^\circ C$  to  $+85^\circ C$ .  $R_L = 150\Omega$  connected to GND,  $V_{IN} = 1V_{pp}$ , and  $C_{IN} = 0.1\mu F$ , all outputs AC coupled with  $220\mu F$ , referenced to 400kHz. Typical values are tested at  $V_{CC} = +4.2V$ ,  $TA = +25^\circ C$  unless otherwise noted.

PARAMETER	CONDITIONS	TEMP	MIN	TYP	MAX	UNITS
<b>AC PERFORMANCE</b>						
-3dB Bandwidth	$R_L = 150\Omega$	+25°C		8		MHz
-0.1dB to -1dB Bandwidth	$R_L = 150\Omega$	+25°C		5.8		MHz
Filter Response (Normalized Gain)	$f_{IN} = 27MHz$	+25°C		-30		dB
Slew Rate	2V Output Step, 80% to 20%	+25°C		35		V/√s
Differential Gain (DG)	PAL AC coupled	+25°C		0.43		%
Differential Phase (DP)	PAL AC coupled	+25°C		0.94		%
Group Delay Variation (D/DT)	Difference between 400kHz and 5.8MHz	+25°C		12		ns
Fall Time	2V Output Step, 80% to 20%	+25°C		26		ns
Rise Time	2V Output Step, 80% to 20%	+25°C		20		ns

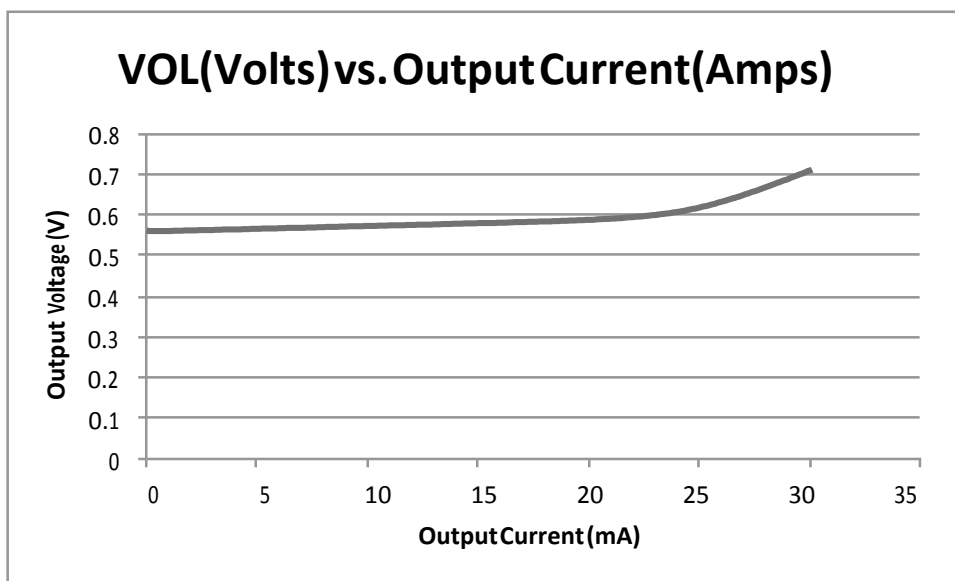
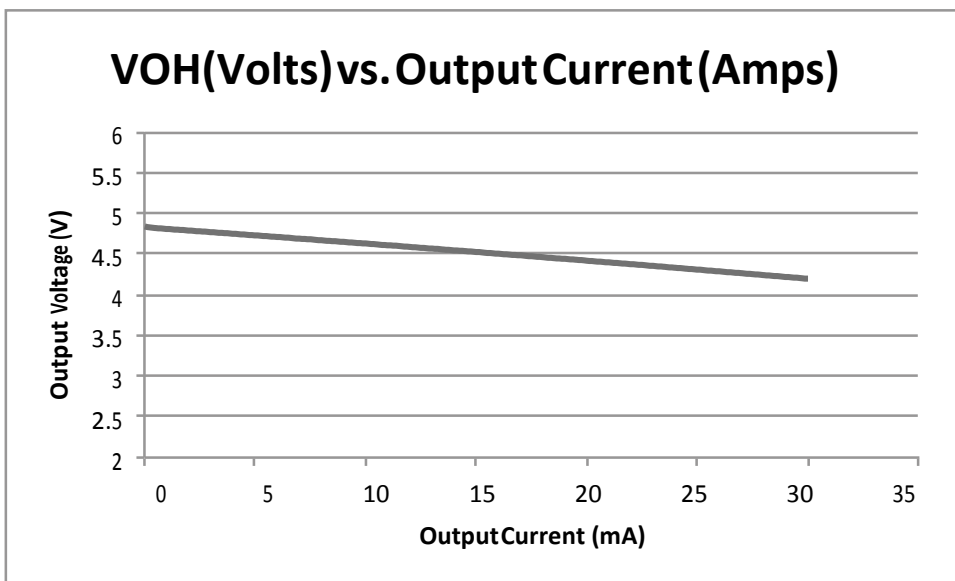
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**Typical Performance Characteristics**

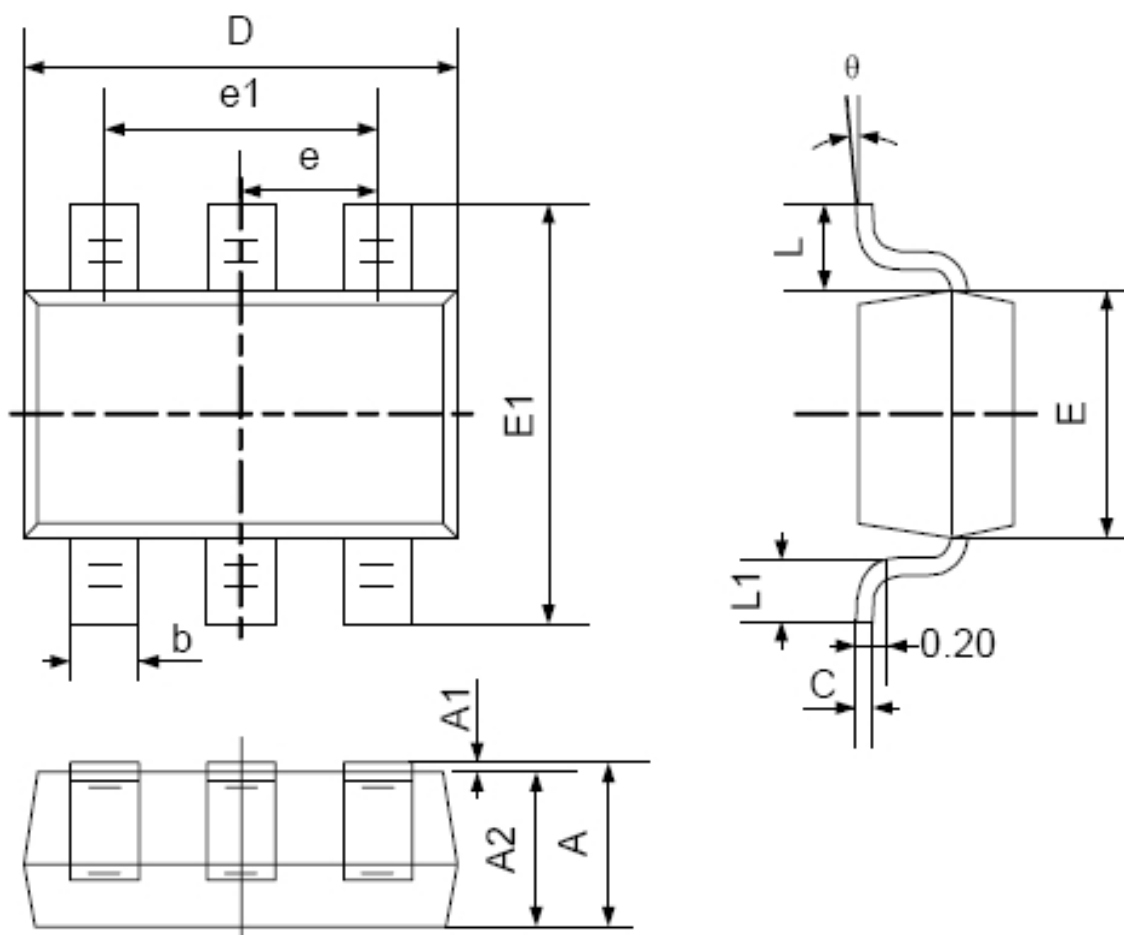
At VCC= 5V, TA = +25°C, RL = 150Ω, all outputs AC coupled with 220uF, unless otherwise noted.



### Typical Performance Characteristics



## SC70-6 MECHANICAL DATA



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.525REF		0.021REF	
L1	0.260	0.460	0.010	0.018
$\theta$	0°	8°	0°	8°

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