

# UNISONIC TECHNOLOGIES CO., LTD

VF8143 **Preliminary CMOS IC** 

# LOW-COST Three-Channel 4TH-ORDER STANDARD-**DEFINITION VIDEO FILTERS**

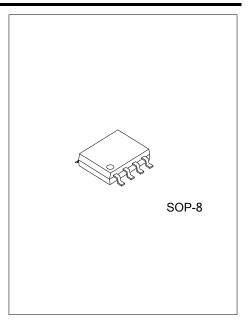
#### DESCRIPTION

The UTC VF8143 Low-Cost Video Filter (LCVF) offers three channels of 4th-order filters for standard-definition and drivers with a low-cost integrated device.

The UTC VF8143 inputs feature a transparent clamp compatible with AC- coupled and DC-coupled input signals and allows DAC outputs to be directly coupled.

The outputs can drive AC- or DC-coupled single (150 $\Omega$ ) or dual (75Ω) loads. The input DC levels are offset approximately +280mV at the output (see Applications section for details).

The UTC VF8143 is ideal for DAC smoothing in applications such as cable set-top boxes, satellite set-top boxes, HDTV, video on demand (VOD), DVD players, and personal video recorders.

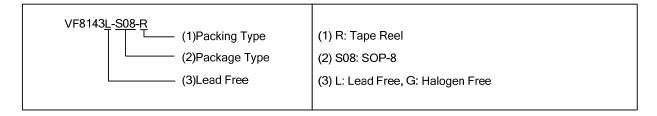


#### **FEATURES**

- \* Three-Channel 4th-order 8MHz filters for SD video
- \* Transparent input clamping
- \* AC-or DC-coupled inputs
- \* AC-or DC-coupled outputs
- \* Drives single, +6dB output (150 $\Omega$ )
- \* Drives dual, +6dB output (75Ω)
- \* DC-coupled outputs eliminate AC-coupling capacitors
- \* Single +5V power supply
- \* Robust 8kV ESD protection

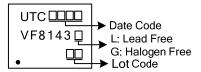
#### ORDERING INFORMATION

Ordering	Number	Doolsono	Dooking	
Lead Free	Halogen Free	Package	Packing	
VF8143L-S08-R	VF8143GS08-R	SOP-8	Tape Reel	

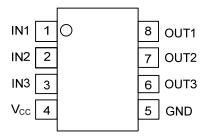


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# ■ MARKING



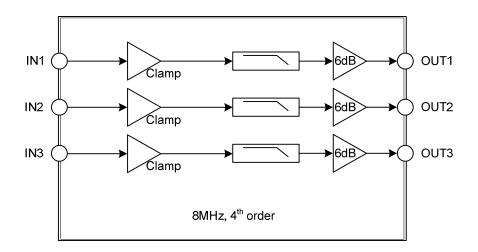
# ■ PIN CONFIGURATION



# **■ PIN DESCRIPTION**

PIN NO.	PIN NAME	DESCRIPTION
1	IN1	Video input, Channel 1
2	IN2	Video input, Channel 2
3	IN3	Video input, Channel 3
4	$V_{CC}$	+5V supply, do not float
5	GND	Must be tied to ground, do not float
6	OUT3	Filtered output, Channel 3
7	OUT2	Filtered output, Channel 2
8	OUT1	Filtered output, Channel 1

# ■ BLOCK DIAGRAM



#### ■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
DC Supply Voltage	$V_{CC}$	-0.3~6	V
Analog and Digital I/O		-0.3~V <sub>CC</sub> +0.3	V
Output Channel-Any One Channel (Do Not Exceed)		50	mA
Junction Temperature	$T_J$	+150	°C
Operating Temperature	$T_OPR$	-40~+85	°C
Storage Temperature	T <sub>STG</sub>	-65~+150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

#### ■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Thermal Resistance, JEDEC Standard Multi-layer Test Boards, Still Air	θја	115	°C/W

# ■ RECOMMENDED OPERATING CONDITIONS

Ī	PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
,	V <sub>CC</sub> Range			4.75	5.0	5.25	V

# ■ DC ELECTRICAL CHARACTERISTICS

 $(T_A=25^{\circ}C, V_{CC}=5V, R_{SOURCE}=37.5\Omega, all inputs are AC coupled with 0.1 \mu F, all outputs are AC coupled with 220 \mu F into 150 \Omega loads, unless otherwise noted.)$ 

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current (Note 1)	Icc	No Load		19	27	mA
Video Input Voltage	$V_{IN}$	Referenced to GND if DC coupled		1.4		$V_{PP}$
Power Supply Rejection	PSRR	DC (All Channels)		-50		dB

Note: 1.100% tested at 25°C.

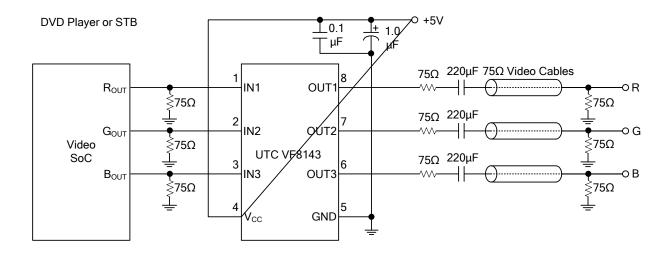
## ■ AC ELECTRICAL CHARACTERISTICS

 $(T_A=25^{\circ}C, V_{IN}=1V_{PP}, V_{CC}=5V, R_{SOURCE}=37.5\Omega, all inputs are AC coupled with 0.1 \mu F, all outputs are AC coupled with 220 \mu F into 150 \Omega loads, unless otherwise noted.)$ 

	/					
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Channel Gain (Note 1)	AV	All Channels	6.0	6.2	6.4	dB
-1dB Bandwidth (Note 1)	f <sub>1dB</sub>	All Channels	5.6	6.5		MHz
-3dB Bandwidth	fc	All Channels		7.7		MHz
Attenuation (Stopband Reject)	f <sub>SB</sub>	All Channels at f=27MHz		48		dB
Differential Gain	dG	All Channels		0.3		%
Differential Phase	dФ	All Channels		0.6		٥
Output Distortion (All Channels)	THD	V <sub>OUT</sub> =1.8V <sub>PP</sub> , 1MHz		0.4		%
Crosstalk (Channel-to-Channel)	X <sub>TALK</sub>	at 1MHz		-60		dB
Signal-to-Noise Ratio	SNR	All Channels NTC-7 Weighting: 100kHz~4.2MHz		75		dB
Propagation Delay	t <sub>pd</sub>	Delay from Input-to-Output, 4.5MHz		59		ns

Note: 1.100% tested at 25°C.

## ■ TYPICAL APPLICATION CIRCUIT



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