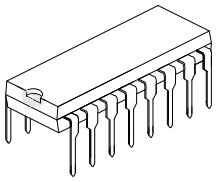
TRIPLE VIDEO DRIVER WITH SELECTABLE HD/SD VIDEO FILTERS FOR RGB OR YUV SIGNALS



DIP-16

■ DESCRIPTION

The UTC **VF8418** consists of a triple 6th order filter with selectable 30MHz or 8.0MHz frequencies. The triple filters are intended for either YUV or RGB signals. There is a 2-to-1 multiplexer in each filter channel. All channels accept DC coupled ground-referenced 1V signals.

The filters provide 2V pp signals into AC coupled terminated loads. The low-pass filters are powered by 3.3V and the outputs by 5.0V.

The UTC **VF8418** offers comprehensive filtering for cable set-top boxes, satellite set-top boxes, HDTV, video on demand (VOD), personal video recorders, or DVD applications.

■ FEATURES

* Three video anti-aliasing or reconstruction filters
* 2:1 Mux inputs for multiple RGB/YUV inputs
* Selectable 8MHz or 30MHz 6th order filters for SD/HD applications
* DC coupled input, AC coupled output
* Drives single, +6dB output AC coupled 150Ω loads
* 0.6% differential gain with 0.15° differential phase
* 36dB/octave roll-off on all channels

■ ORDERING INFORMATION

Ordering Number		Package Packing	
Lead Free	Halogen Free		
VF8418L-D16-T	VF8418G-D16-T	DIP-16	Tube

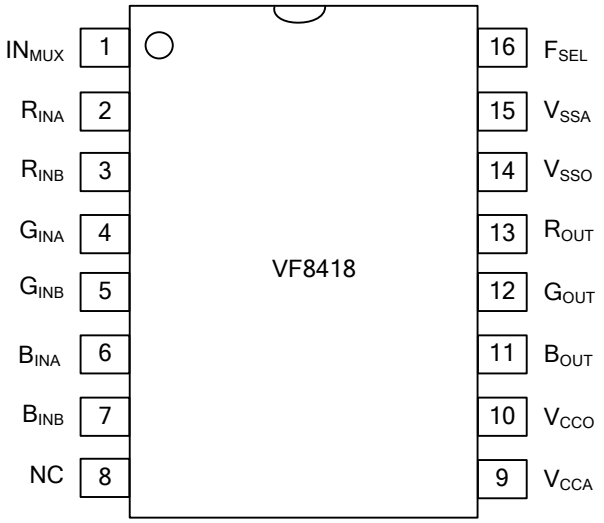
VF8418L-S08-T

(1)Packing Type — (1) T: Tube

(2)Package Type — (2) D16: DIP-16

(3)Lead Free — (3) L: Lead Free, G: Halogen Free

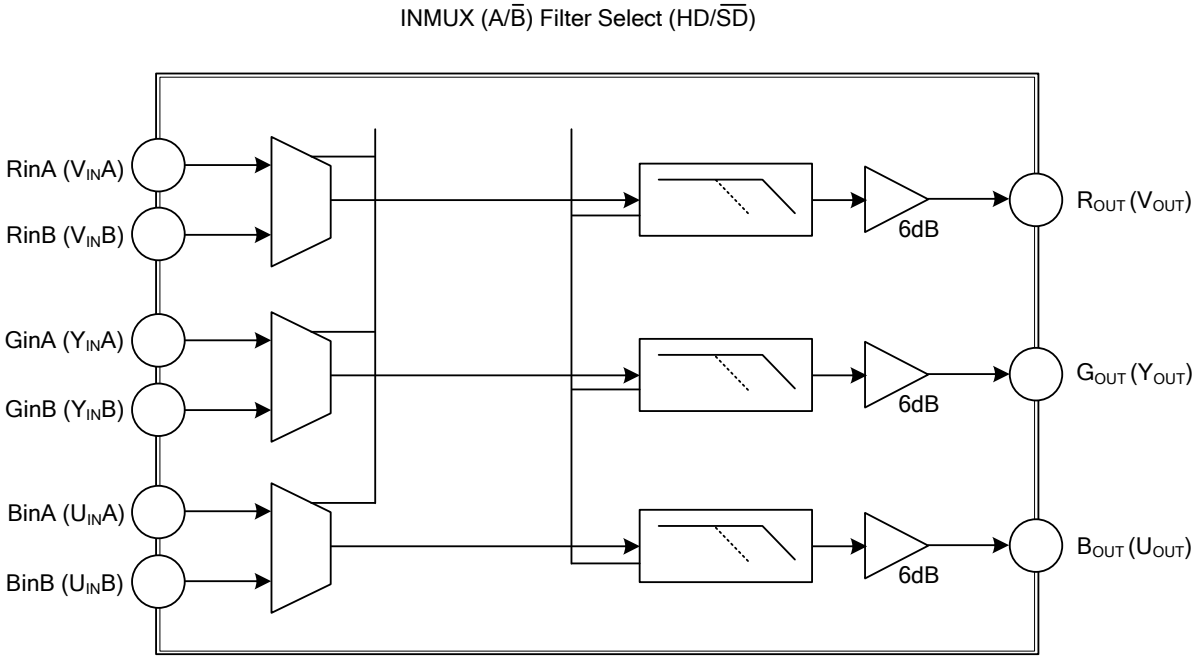
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1 IN	$_{MUX}$	Logic input selects between channel <A> or <B> of the RGB inputs. (1): RGB A input, (0): RGB B input
2 R	$_{INA}$	Analog RED video input - Channel A
3 R	$_{INB}$	Analog RED video input - Channel B
4 G	$_{INA}$	Analog GREEN video input - Channel A
5 G	$_{INB}$	Analog GREEN video input - Channel B
6 B	$_{INA}$	Analog BLUE video input - Channel A
7 B	$_{INB}$	Analog BLUE video input - Channel B
8	NC	No Connect (float pin)
9 V	$_{CCA}$	+3.3V power supply for filters
10 V	$_{CCO}$	+5V power supply for output buffers
11 B	$_{OUT}$	Filtered Analog BLUE video output from either B_{INA} or B_{INB}
12 G	$_{OUT}$	Filtered Analog GREEN video output from either G_{INA} or G_{INB}
13 R	$_{OUT}$	Filtered Analog RED video output from either R_{INA} or R_{INB}
14 V	$_{SSO}$	Ground for output buffers
15 V	$_{SSA}$	Ground for filters
16 F	$_{SEL}$	Logic Input selects between (0) SD (8.0MHz) and (1) HD (30.0MHz) filters
N/A V	$_{SS}$	Ground

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (beyond which the device may be damaged)

PARAMETER SYMBOL		RATINGS	UNIT
DC Supply Voltage	V_{DD}	-0.3~6.5	V
Analog and Digital I/O		-0.3~V_{CCO}+0.3	V
Output Current Any One Channel (Do Not Exceed)	120		mA
Reliability Information			
Junction Temperature	T_J	+ 150	°C
Operating Temperature Range	T_{OPR}	0~ 70	°C
Storage Temperature Range	T_{STG}	-65~ +150	°C

Notes: 1. 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.
2. Functional operation under any of these conditions is NOT implied. Performance and reliability are guaranteed only if operating conditions are not exceeded.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER SYMBOL		MIN	TYP	MAX	UNIT
V_{CCO} Range	V_{CCO}	4.75	5.0	5.25	V
V_{CCA} Range	V_{CCA}	3.135	3.3 3.465		V

■ THERMAL DATA

PARAMETER SYMBOL		RATINGS	UNIT
Junction to Ambient	θ_{JA}	80	°C/W

■ ELECTRICAL CHARACTERISTICS (T_C=25°C, V_{IN}=1V_{PP}, V_{CCA}= 3.3V, V_{CCO}= 5.0V, all inputs AC coupled with 0.1μF, all outputs AC coupled with 220μF into 150Ω, referenced to 400kHz, unless otherwise noted)

PARAMETER SYMBOL		TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current (Note 1)	I_{CCA}	V_{CCA} no load	35	45	70	mA
Supply Current (Note 1)	I_{CCO}	V_{CCO} no load	30	45	60	mA
Input Voltage Max	V_{IN}	Reference to ground		1.3		V
Digital Input Low (Note 1)	V_{IL}	F_{SEL}, IN_{MUX}	0		0.8	V
Digital Input High (Note 1)	V_{IH}	F_{SEL}, IN_{MUX}	2.4		V_{CCO}	V
PSSR (All Channels)	PSSR	DC		-40		dB

■ STANDARD DEFINITION ELECTRICAL SPECIFICATIONS

(T_C=25°C, V_{IN}=1V_{PP}, V_{CCA}= 3.3V, V_{CCO}= 5.0V, F_{SEL}=0, all inputs DC coupled all outputs AC coupled with 220μF into 150Ω, referenced to 400kHz, unless otherwise noted.)

PARAMETER SYMBOL		TEST CONDITIONS	MIN	TYP	MAX	UNIT
RGB SD Gain (Note 1) AV	$_{RGBSD}$	R, G ,B channels SD Mode	5.5	6.0	6.4	dB
-1dB Bandwidth for SD (Note 1)	f_{1dBSD}	R, G, B channels 4.5		6.0		MHz
-3dB Bandwidth for SD	f_{CSD}	R, G, B channels	8.2			MHz
Attenuation: SD (Stopband Reject) (Note 1)	f_{SBSD}	R, G, B channels at f = 27MHz	-40	-55		dB
Differential Gain dG		R, G, B channels	0.6			%
Differential Phase	dΦ	R, G, B channels	0.15			°
Output Distortion (All Channels) TH	D	V_{OUT}=1.8V_{PP}, RGB Out at 1MHz	0.4			%
Crosstalk (Channel-to-Channel)	X_{TALK}	at 1MHz		-70		dB
IN_{MUX} Isolation IN	$_{MUXISO}$	at 1MHz		-90		dB
Signal-to-Noise Ratio SNR		R,G,B channels, NTC-7 weighting 4.2MHz lowpass, 100kHz highpass	-73			dB
Prop Delay for SD	t_{pdSD}	Delay from input to output at 4.5MHz	70			ns

■ HIGHD DEFINITION ELECTRICAL SPECIFICATIONS

(T_C = 25°C, V_{IN}=1V_{PP}, V_{CCA}= 3.3V, V_{CCO}= 5.0V, F_{SEL}=1, all inputs DC coupled, all outputs AC coupled with 220μF into 150Ω, referenced to 400kHz, unless otherwise noted.)

PARAMETER SYMBOL		TEST CONDITIONS	MIN	TYP	MAX	UNIT
RGB HD Gain (Note 1) AV	$_{RGBHD}$	R, G, B channels HD Mode 5.6		6.0	6.4	dB
-1dB Bandwidth for HD (Note 1)	f_{1dBHD}	R, G, B channels 20		23		MHz
-3dB Bandwidth for HD	f_{CHD}	R, G, B channels		32		MHz
Attenuation: HD (Stopband Reject) (Note 1)	f_{SBHD}	R, G, B channels at f=74.25MHz	-30	-36		dB
Crosstalk (Channel-to-Channel)	X_{TALK}	at 1MHz		-70		dB
IN_{MUX} Isolation IN	$_{MUXISO}$	at 1MHz		-90		dB
Signal-to-Noise Ratio SNR		R, G, B channels		-73		dB
Prop Delay for HD	t_{pdHD}	Delay from input to output at 20MHz	20			ns

Note: 1. 100% tested at 25°C

■ TYPICAL APPLICATION CIRCUIT