



HV17

7-51-11

4-Channel High Voltage Switch

Ordering Information

V _{PP}	V _{NN}	V _{SIG}	Package Options		
			16-pin ceramic side-brazed DIP	16-pin Plastic DIP	Die in wafer pack
+70V	-70V	110V P-P	HV1714C	HV1714P	HV1714X
+80V	-80V	130V P-P	HV1716C	HV1716P	HV1716X

Features

- HVCMOS® Technology
- Up to 130V peak to peak switching capability
- Output On-resistance typically 25 ohms
- Low parasitic capacitances
- DC to 10MHz analog signal frequency
- 45 dB typical output off isolation at 5 MHz
- CMOS logic circuitry for low power and excellent noise immunity

Absolute Maximum Ratings*

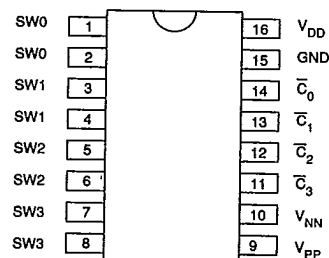
V _{DD} Logic power supply voltage	-0.5V to +18V
V _{PP} Positive high voltage supply	-0.5V to +90V
V _{NN} Negative high voltage supply	+0.5V to -90V
Logic input voltages	-0.5V to V _{DD} +0.3V
Peak analog signal current/channel	3A
Storage temperature	-65°C to +150°C
Power dissipation	800mW

* Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied. Continuous operation of the device at the absolute rating level may affect device reliability.

General Description

This device is a 4-channel high-voltage switch intended for use in applications requiring high voltage switching controlled by low voltage signals; e.g., ultrasound imaging and printers. Using HVCMOS technology, this HVIC combines high voltage bi-lateral DMOS switches and low power CMOS logic to provide efficient control of high voltage analog signals.

Pin Configuration



top view

16-pin DIP

Electrical Characteristics (over recommended operating conditions unless noted)

T-51-11

DC Characteristics

Characteristics	Sym	0°C		+25°C			+70°C		Units	Test Conditions
		min	max	min	typ	max	min	max		
Switch (ON) Resistance	R _{SW}		35		25	40		45	ohms	I _{SW} = 5mA
Switch (ON) Resistance	R _{SW}		25		15	30		35	ohms	I _{SW} = 200mA
Switch (ON) Resistance	R _{SW}		35		28	40		50	ohms	V _{PP} = +50V V _{NN} = -50V I _{SW} = 5mA
Switch (ON) Resistance	R _{SW}		30		18	35		40	ohms	V _{PP} = +50V V _{NN} = -50V I _{SW} = 200mA
Switch (ON) Resistance Matching	R _{SW}		15		5	15		15	%	I _{SW} = 5mA
Switch Off Leakage	I _{SWL}		50		0.5	50		150	µA	V _{OUT} = V _{PP} -10V thru 10K with 8 SWS in parallel
DC Offset Switch Off			500		100	500		500	mV	RL = 100K
DC Offset Switch On			500		100	500		500	mV	RL = 100K
Pole to Pole Switch Capacitance	C _{SW}		10		4.5	10		10	pF	DC Bias = 40V f = 1MHz
Logic Input Capacitance	C _{IN}				3.5				pF	
Pos. HV Supply Current	I _{PPQ}				50	200			µA	ALL SWS OFF
Neg. HV Supply Current	I _{NNQ}				-50	-200			µA	
Pos. HV Supply Current	I _{PP}				1.6	3.2			mA	1 SW ON
Neg. HV Supply Current	I _{NN}				-1.6	-3.2			mA	
Pos. HV Supply Current	I _{PP}				1.2	2.4			mA	V _{PP} = +50V
Neg. HV Supply Current	I _{NN}				-1.2	-2.4			mA	V _{NN} = -50V 1 SW ON
Switch Output Peak Current					3				A	
Logic Supply Current	I _{DD}				0.001	0.5			mA	

AC Characteristics

Characteristics	Sym	0°C		+25°C			+70°C		Units	Test Conditions
		min	max	min	typ	max	min	max		
Turn On Time	t _{ON}	2.5	5		2.5	5	2.5	5	µs	
Turn Off Time	t _{OFF}	5.0	10		5.0	10	5.0	10	µs	
Off Isolation	KO			35	45				dB	f = 5MHz

Recommended Operating Conditions

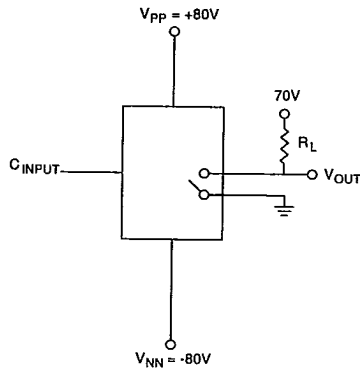
T-51-11

HV17

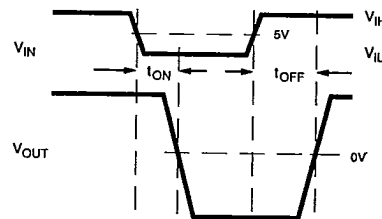
Symbol	Parameter	Device		Value
		HV1714	HV1716	
V_{DD}	Logic power supply voltage	X	X	+10.0V to +15.5V
V_{PP}	Positive high voltage supply	X		+50.0V to +70.0V
			X	+50.0V to +80.0V
V_{NN}	Negative high voltage supply	X		-50.0V to -70.0V
			X	-50.0V to -80.0V
V_{IH}	High level input voltage	X	X	$V_{DD} - 2V$ to V_{DD}
V_{IL}	Low-level input voltage	X	X	0 to 2.0V
V_{SIG}	Analog signal voltage peak to peak	X	X	$V_{NN} + 15V$ to $V_{PP} - 15V$
T_A	Operating free air-temperature	X	X	0° to 70°C

Note: For non-ground referenced systems the following must be used:
 Power up sequence: GND VNN VDD VPP
 Power down sequence: VPP VDD VNN GND

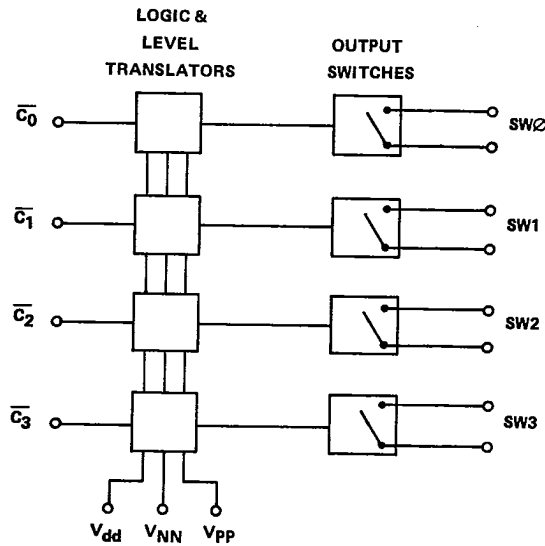
T_{ON}/T_{OFF} Measurement Circuit



Switching Waveforms



Logic Diagram



Typical Performance Curves

