

CMOS/DMOS Wideband High-Frequency Multiplexer



CWB4500

FEATURES

- High OFF Isolation. > 62dB @ 10MHz
- Low Channel-to-Channel Crosstalk. . . > 80dB @ 10MHz
- TTL Capatible Inputs. 5V
- Low ON Resistance. 40ohm typical
- Wide Bandwidth. -3.0dB @ 100MHz
- High Speed Logic Control

APPLICATIONS

- RF and Video Switching
- High Speed Precision Data Acquisition
- ATE

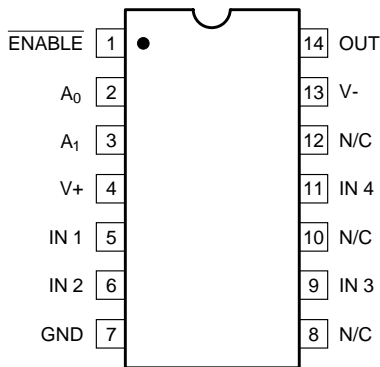
DESCRIPTION

The CWB4500 is a very high performance Monolithic 4 Channel Wideband/Video Multiplexer designed for switching wide bandwidth analog and digital signals. The high speed, low ON resistance and low capacitance is achieved through Calogic's proprietary CMOS/DMOS process that combines low-power CMOS control logic with very fast DMOS switching FETs.

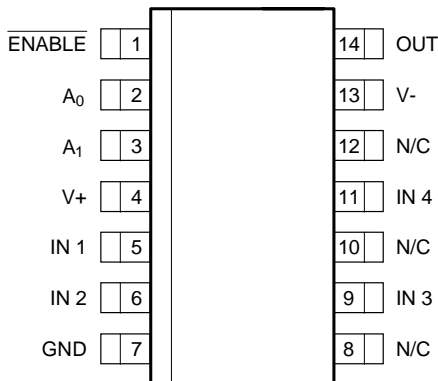
ORDERING INFORMATION

Part	Package	Temperature Range
CWB4500CP	Plastic 14-Pin Dip	0 to +85°C
CWB4500CY	Plastic SO-14 Surface Mount	0 to +85°C
XCWB4500	Sorted Chips in Carriers	0 to +85°C

PIN CONFIGURATION



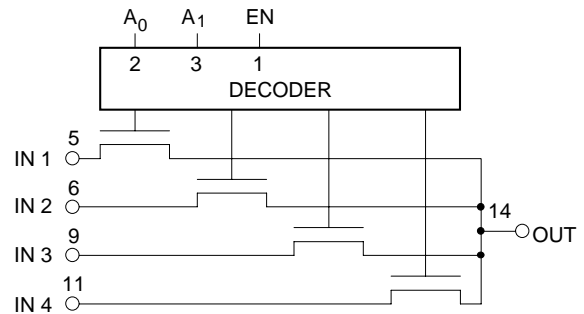
CWB4500CP



CWB4500CY

CWB

FUNCTION DIAGRAM



FUNCTION TABLE

ENABLE	A ₀	A ₁	CHANNEL
H	x	x	OFF
L	L	L	S ₁
L	H	L	S ₂
L	L	H	S ₃
L	H	H	S ₄

X = Undefined

All devices contain diodes to protect inputs against damage due to high static voltages or electric fields; however, it is advised that precautions be taken not to exceed the maximum recommended input voltages. All unused inputs must be connected to an appropriate logic level (either V_{CC} or GND).

ABSOLUTE MAXIMUM RATINGS

V-	Negative Supply Voltage	-20V
V+	Positive Supply Voltage	+20V
V _{IN}	Control Input Voltage Range	V+ +0.3V V- -0.3V
I _L	Continuous Current, any Pin except S or D	20mA
I _S	Continuous Current, S or D	30mA
I _S	Peak Pulsed Current, S or D, 80μsec, 1%, Duty Cycle	100mA
T _J	Junction Temperature Range	-55 to +125°C
T _S	Storage Temperature Range	-55 to +125°C
P _D	Power Dissipation (derate at 12mW/°C, above +85°C)	500mW

RECOMMENDED OPERATING CONDITIONS

V-	Negative Supply Voltage	-8.0 to -15V
V+	Positive Supply Voltage	+8.0 to +15V
V _{IN}	Control Input Voltage Range	0 to +5V
T _{OP}	Operating Temperature	0 to 85°C

ELECTRICAL CHARACTERISTICS (V- = -15V, V+ = +15V unless otherwise noted, T_A = +25°C)

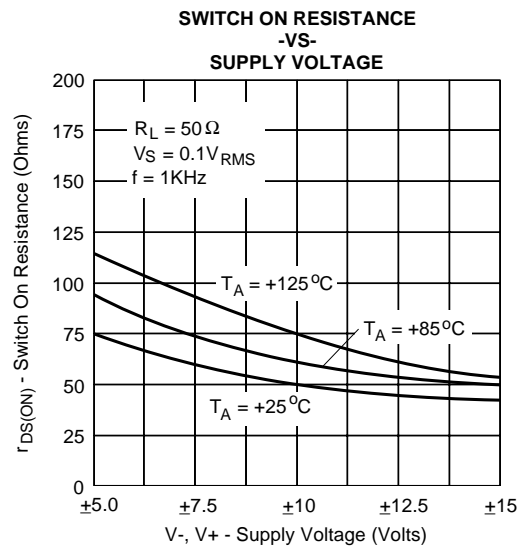
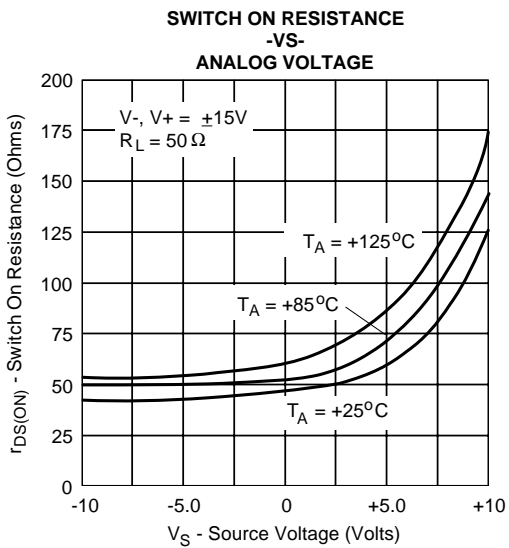
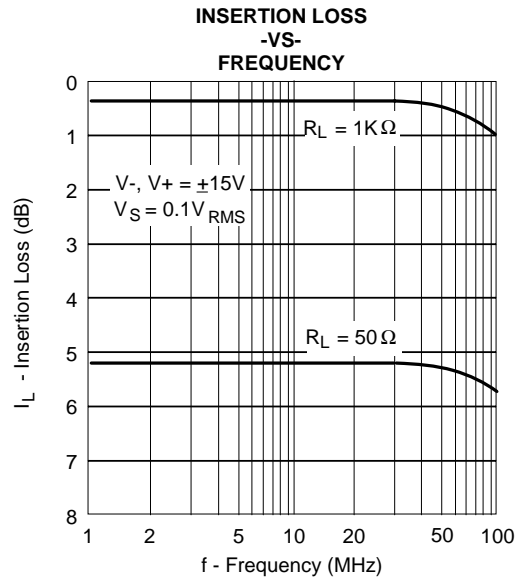
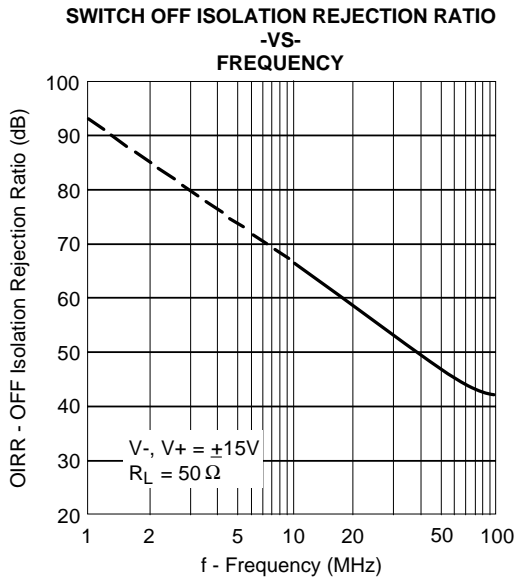
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
STATIC						
V _{ANALOG}	Analog Signal Range	-10		+10	V	
r _{DS(ON)}	Channel ON Resistance		40	80	Ω	V _S = -10V
			45	80		V _S = +2.0V
			100	160		V _S = +10V
V _{IH}	Logic High Level Input Voltage	4.5	3.4		V	
V _{IL}	Logic Low Level Input Voltage			1.0		
I _{IN}	Logic Input Leakage Current		0.01	0.1	μA	V _{IN} = +5.0V
				0.02		0.1
I _{D(OFF)}	Switch OFF Leakage Current		0.2	5.0	nA	V _D = +10V, V _S = -10V
I _{S(OFF)}			0.4	5.0		V _S = +10V, V _D = -10V
I-	Negative Supply Quiescent Current		-1.4	-4.0	mA	V _{IN} = 0 or V+
I+	Positive Supply Quiescent Current		1.6	4.0		
DYNAMIC						
t _{ON}	Switch Turn-ON Time (All inputs)		150	250	nsec	V _{IN} = 5.0V
t _{OFF}	Switch Turn-OFF Time (All inputs)		120	220		
C _{CRR}	All Crosstalk	62			dB	f = 10MHz, R _L = 50Ω
	Single Channel Crosstalk	80				
	Frequency Roll-OFF (Bandwidth)		1.0	3.0		
C _d	Output Node Capacitance		8.0	12.0	pF	f = 1MHz, V _{IN} = 0
C _s	Input Node Capacitance		2.5	4.0		

ELECTRICAL CHARACTERISTICS (V- = -15V, V+ = +15V unless otherwise noted)

LIMITS AT TEMPERATURE EXTREMES

SYMBOL	PARAMETER	MAXIMUM @ T _A =		UNITS	TEST CONDITIONS
		+85°C			
STATIC					
V _{ANALOG}	Analog Signal Range	±10		V	
r _{DS(ON)}	Channel ON Resistance	120		Ω	V _S = -10V, I _S = -1.0mA
		120			V _S = +2.0V, I _S = +1.0mA
		240			V _S = +10V, I _S = +1.0mA
I _{IN}	Logic Input Leakage Current	1.0		μA	V _{IN} = +5.0V
		2.0			V _{IN} = +15V
I _{D(OFF)}	Switch OFF Leakage Currents	100		nA	V _D = +10V, V _S = -10V
I _{S(OFF)}		100			V _S = +10V, V _D = -10V
I-	Supply Quiescent Currents	-4.0		mA	V _{IN} = 0 or V+
I+		4.0			

TYPICAL PERFORMANCE CHARACTERISTICS ($T_A = +25^\circ\text{C}$ unless otherwise specified)



TYPICAL PERFORMANCE CHARACTERISTICS ($T_A = +25^\circ\text{C}$ unless otherwise specified)

