VTC Incorporated

VC7698

T-73-53

DUAL VERY FAST TTL OUTPUT COMPARATOR

FEATURES
- Dual Version of VC7696
- Propagation Delay
- Latch Set-Up Time
- +5, -5.2V Supply Voltages
- Available In Commercial Version
- Available In SOIC

APPLICATIONS
- High-Speed A/D Converters
- High-Speed Line Receiver
- Peak Detector
- Threshold Detector

DESCRIPTION
The VC7698 is a dual version of the VC7696, a very fast TTL comparator manufactured with a high frequency bipolar process (f_T= 6GHz) that is capable of very short propagation delays, while still maintaining the excellent DC matching characteristics that are normally found in much slower IC's.

The part has differential inputs and complementary outputs that are fully compatible with TTL logic levels. The ultra-short propagation delays makes signal processing possible at frequencies in excess of 200MHz.

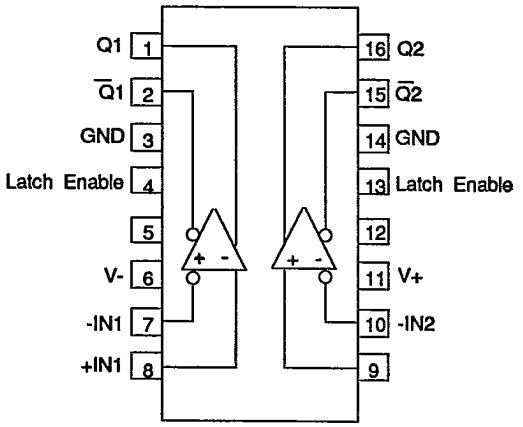
When the latch input goes high, the ouputs go to the states defined by the input condition at the time of the latch transition. The outputs remain latched as long as the latch pin remains high. If the latch function is not used, the LE pin must be tied to ground.

ABSOLUTE MAXIMUM RATINGS

Supply Voltages	±6V
Power Dissipation (Note 1)	336mW
Output Short Circuit Duration (Note 2)	Indefinite
Input Voltages	±5V
Differential Input Voltages	3.5V
Output Current	20mA
Operating Temperature Range:	
Commercial (VC7698 J)	0°C to +75°C
Storage Temperature Range	-55°C to +150°C
Lead Temperature (Soldering, 10 Sec.)	300°C

Note 1: Power derating above T_A= 70°C to be based on a maximum junction temperature of 150°C and the thermal resistance factors of θ_{JC}= 75°C/W and θ_{JA}= 145°C/W.
Note 2: Continuous short-circuit protection is allowed on one comparator per time up to case temperatures of 85°C and ambient termperatures of 30°C.

CONNECTION DIAGRAM
16- Lead Dual In-Line/SOIC Package



Top View

PACKAGE TYPES AVAILABLE
- 16-Pin Plastic DIP
- 16-Pin CERDIP
- 16-Pin SOIC

T-73-53

ELECTRICAL CHARACTERISTICS (Each Comparator)

(V_S= ±5V, T_A = 25° C unless otherwise stated)

PARAMETER	SYMBOL	CONDITIONS	VC7698J MIN	VC7698J TYP	VC7698J MAX	UNITS
Input Offset Voltage	V_{OS}	R_S = 100Ω	-3		+3	mV
Temperature Coefficient	$\Delta V_{OS}/\Delta T$			4		µV/°C
Input Offset Current	I_{OS}				5.0	µA
Input Bias Current	I_B				25	µA
Common Mode Rejection Ratio	CMRR		80	96		dB
Input Voltage Range	V_{CM}		-3.0		+3.0	V
Latch HI Input Voltage	V_{IH}		2.0			V
Latch Low Input Voltage	V_{IL}				0.8	V
Latch Low Input Current	I_{IL}	V_{LE} =0V			-750	µA
I/O Logic Levels						
Output High Voltage	V_{OH}	I_{OUT}= -3mA	2.4	3.0		V
Output Low Voltage	V_{OL}	I_{OUT}= 8mA			0.5	V
Positive Supply Current	I_{CC}			32	50	mA
Negative Supply Current	I_{EE}			26	40	mA
Supply Voltage Rejection Ratio	SVRR		70	85		dB

SWITCHING CHARACTERISTICS (Each Comparator)

(V_S= ±5V, T_A = 25° C unless otherwise stated)

PARAMETER	SYMBOL	CONDITIONS	VC7698J MIN	VC7698J TYP	VC7698J MAX	UNITS
Propagation Delays (guaranteed over full temperature range)						
Input to Output High	t_{pd+}	100mV pulse; 10mV overdrive		6.0	9	ns
Input to Output Low	t_{pd-}	100mV pulse; 10mV overdrive		5.7	8.5	ns
Propagation Delay Skew	$t_{pd+} - t_{pd-}$			0.3		ns
Latch Setup				2		ns