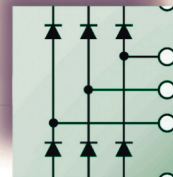
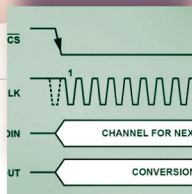
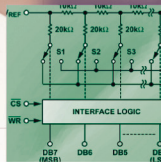
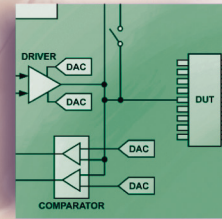
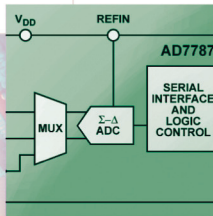
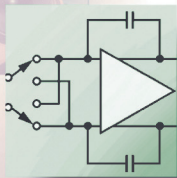


Comparator Selection Guide 2007



Overview

The basic function of a comparator is to determine whether an input voltage is higher or lower than a reference voltage and to set the output to one of two levels. Comparators have a wide range of uses, such as 1-bit analog-to-digital conversion, polarity identification, switch driving, square or triangular wave generation, pulse edge generation, voltage detectors, and battery management.

Analog Devices is proud to offer an exciting new portfolio of high speed and low power comparators to meet your most demanding applications. Combining ADI's comparators with other ADI components creates superior solutions, such as those highlighted in the application matrix below. For more detailed information about either of these applications, refer to the ADI Complementary Part Data Sheet Applications section or send an email to High_Speed_Comparators@analog.com.

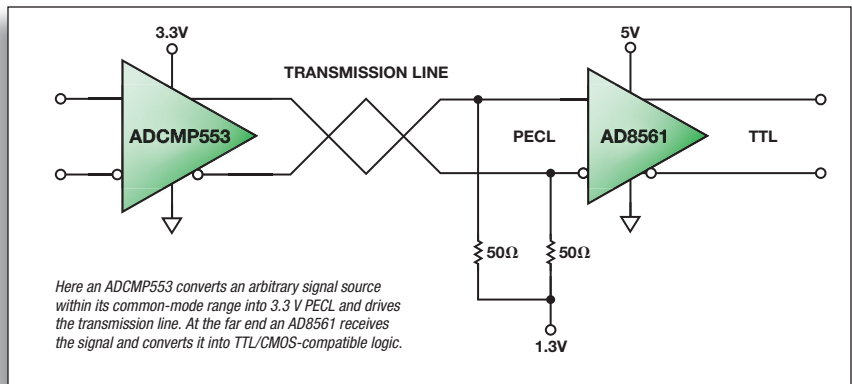
Application	ADI Comparator Part No.	ADI Complementary Part No./Type
Detect and amplify low level RF burst pulses	ADCMP580	AD8318/log amp
High speed, low jitter programmable clock generation	ADCMP572	AD9540/DDS
High speed, low jitter clock input for reduced phase noise and improved ADC performance	ADCMP552	AD9445, AD9446/ADC

High Speed Comparators

ADI's high speed comparators offer these features:

- Performance up to 150 ps prop delay
- >10 GHz input equivalent bandwidth
- <200 fs jitter with <15 ps of overdrive and slew

Superior performance makes ADI's new line of high speed comparators ideal for a wide variety of performance driven applications that range from high speed triggers to clock generation and recovery. These devices feature true differential inputs, making them ideal for line receiver applications. A differential latch and programmable hysteresis are included in most devices. Output options are ECL-, PECL-, CML-, and TTL/CMOS-compatible.

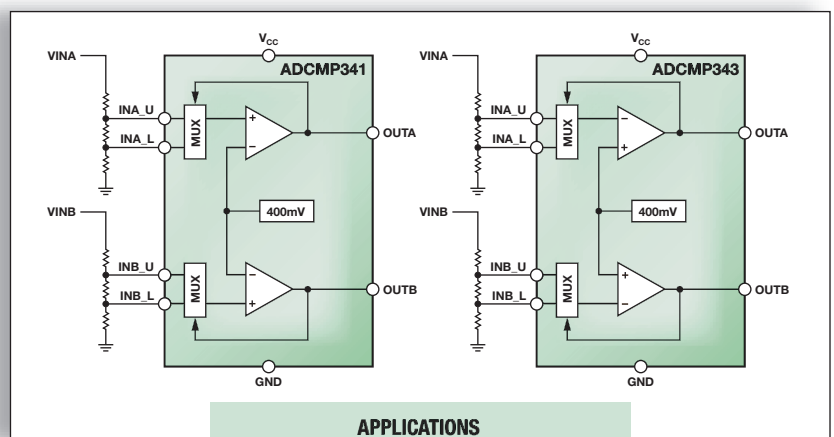


Signal distribution and translation.

Comparators are often used in digital systems to recover clock timing signals. High speed square waves transmitted over a distance, even tens of centimeters, can become distorted due to stray capacitance and inductance. Poor layout or improper termination can also cause reflections on the transmission line, further distorting the signal waveform. A high speed comparator can be used to recover the distorted waveform while maintaining a minimum of delay.

Low Power Comparators

The ADCMP341/ADCMP343 ICs combine two low power, low voltage comparators with a 400 mV reference in a tiny 5-lead SOT-23 package. Operating within a supply range of 1.7 V to 5.5 V, the devices only draw 6.5 μ A typical, making them ideal for low voltage system monitoring and portable applications. Hysteresis is determined using three resistors in a string configuration with the upper and lower tap points connected to the INA_U and INA_L pins of each comparator, respectively. The comparator's output internally selects which pin is connected to the comparator inputs. A change of state in the comparator output will result in one of the inputs being switched in to the comparator while the other is switched out. This functionality will provide the user with a fully flexible and simple method of setting the hysteresis. The comparator outputs are open-drain with the output stage sinking capability guaranteed greater than 5 mA over temperature. The IC family offers different features depending upon the design need—for example, the ADCMP341 has noninverting inputs and the ADCMP343 has inverting inputs. The devices are available in commercial, industrial, and automotive temperature ranges.



ADCMP341
ADCMP343

APPLICATIONS

- Portable applications
- Li-Ion monitoring
- Handheld instruments
- LED/relay driving
- Opto-isolator driving
- Control systems

\$0.90
\$0.90



High Speed Comparators

Part No.	Propagation Delay (ns) Typ	No. Per Package	Total Power (mW)	Supply Voltage (V)	No. of Supplies	Input Range (V)	Logic Output	Adjustable Hysteresis	Latch Enable Pin	Package	Minimum Pulse Width	Output Rise/Fall Time	Shutdown	Price @1k*
AD790	45	1	250	±15	3	-V _s to V _s - 2	TTL/CMOS	Fixed	Yes	8-lead DIP, 8-lead SOIC	—	—	—	3.67
AD8561	7	1	65	±5	2	-5.0 to +3.0	Diff/TTL	—	Yes	8-lead SOIC, 8-lead TSSOP	—	3.8/1.5 ns	—	1.76
AD8564	8	4	150	±5	2	-5.0 to +3.0	TTL/CMOS	—	—	16-lead SOIC, 16-lead TSSOP	—	3.8/1.5 ns	—	3.69
AD8611	5.5	1	50	3 to 5	1	0 to 3	Diff/TTL	—	Yes	8-lead MSOP, 8-lead SOIC	—	2.5/1.1 ns	—	2.00
AD8612	5.5	2	100	3 to 5	1	0 to 3	Diff/TTL	—	Yes	14-lead TSSOP	—	2.5/1.1 ns	—	3.37
AD96685	6	1	120	+5, -5.2	2	-2.5 to +5.0	Diff/ECL	—	Yes	16-lead SOIC	—	—	Yes	3.05
AD96687	6	2	240	+5, -5.2	2	-2.5 to +5.0	Diff/ECL	—	Yes	16-lead DIP, 16-lead SOIC, 20-lead PLCC	—	—	—	3.05
ADCMP551	0.75	2	60	3.3 to 5	1	-0.2 to V _{cc} - 2	PECL	—	Yes	16-lead QSOP	700 ps	500 ps	—	2.40
ADCMP552	0.75	2	60	3.3 to 5	1	-0.2 to V _{cc} - 2	PECL	Yes	Yes	20-lead QSOP	700 ps	500 ps	—	3.00
ADCMP553	0.75	1	30	3.3 to 5	1	-0.2 to V _{cc} - 2	PECL	—	Yes	8-lead MSOP	700 ps	500 ps	—	1.80
ADCMP561	0.75	2	160	+5, -5.2	2	-2 to +3	PECL	—	Yes	16-lead QSOP	700 ps	500 ps	—	2.40
ADCMP562	0.75	2	160	+5, -5.2	2	-2 to +3	PECL	Yes	Yes	20-lead QSOP	700 ps	500 ps	—	2.40
ADCMP563	0.75	2	120	+5, -5.2	2	-2 to +3	ECL	—	Yes	16-lead LFCSP, 16-lead QSOP	700 ps	500 ps	—	2.40
ADCMP564	0.75	2	120	+5, -5.2	2	-2 to +3	ECL	Yes	Yes	20-lead QSOP	700 ps	500 ps	—	2.40
ADCMP565	0.3	2	435	+5, -5.2	2	-2 to 3	ECL	—	Yes	20-lead PLCC	200 ps	165 ps	—	4.90
ADCMP566	0.25	2	450	+5, -5.2	2	-2 to +3	ECL	—	Yes	32-lead LFCSP	200 ps	165 ps	—	3.60
ADCMP567	0.25	2	520	+5, -5.2	2	-2 to +3	PECL	—	Yes	32-lead LFCSP	200 ps	165 ps	—	3.60
ADCMP572	0.15	1	145	3.3 to 5	1	-0.2 to V _{cc} - 2.1	CML	Yes	Yes	16-lead LFCSP	80 ps	35 ps	—	7.00
ADCMP573	0.15	1	145	3.3 to 5	1	-0.2 to V _{cc} - 2.1	PECL	Yes	Yes	16-lead LFCSP	80 ps	35 ps	—	7.00
ADCMP580	0.15	1	240	+5, -5.2	2	-2 to +3	CML	Yes	Yes	16-lead LFCSP	80 ps	35 ps	—	7.00
ADCMP581	0.15	1	240	+5, -5.2	2	-2 to +3	ECL	Yes	Yes	16-lead LFCSP	80 ps	35 ps	—	7.00
ADCMP582	0.15	1	240	+5, -5.2	2	-2 to +3	PECL	Yes	Yes	16-lead LFCSP	80 ps	35 ps	—	7.00
ADCMP600	3	1	6	2.5 to 5.5	1	-0.2 to V _{cc} + 0.2	TTL/CMOS	—	—	5-lead SC70, 5-lead SOT-23	3 ns	—	—	1.70
ADCMP601	3	1	6	2.5 to 5.5	1	-0.2 to V _{cc} + 0.2	TTL/CMOS	Yes	Yes	6-lead SC70	3 ns	—	—	1.75
ADCMP602	3	1	6	2.5 to 5.5	2	-0.2 to V _{cc} + 0.2	TTL/CMOS	Yes	Yes	8-lead MSOP	3 ns	—	Yes	1.85
ADCMP603	3	1	6	2.5 to 5.5	3	-0.5 to V _{cc} + 0.5	TTL/CMOS	Yes	Yes	12-lead LFCSP	3 ns	—	Yes	1.85
ADCMP604	1.5	1	42	2.5 to 5.5	1	-0.2 to V _{cc} + 0.2	LVDS	—	—	6-lead SC70	1 ns	—	—	2.15
ADCMP605	1.5	1	42	2.5 to 5.5	2	-0.2 to V _{cc} + 0.2	LVDS	Yes	Yes	12-lead LFCSP	1 ns	—	Yes	2.35
ADCMP606	1	1	62	2.5 to 5.5	1	-0.2 to V _{cc} + 0.2	CML	—	—	6-lead SC70	600 ps	—	—	2.15
ADCMP607	1	1	62	2.5 to 5.5	2	-0.2 to V _{cc} + 0.2	CML	Yes	Yes	12-lead LFCSP	600 ps	—	Yes	2.35
ADCMP608	30	1	1	2.5 to 5.5	1	-0.2 to V _{cc} + 0.2	TTL/CMOS	—	—	6-lead SC70	35 ns	—	Yes	0.58
ADCMP609	30	1	1	2.5 to 5.5	1	-0.2 to V _{cc} + 0.2	TTL/CMOS	Yes	Yes	8-lead MSOP	35 ns	—	Yes	0.63
CMP401	23	4	110	±5	2	-5.0 to +4.0	TTL/CMOS	—	—	16-lead SOIC, 16-lead TSSOP	—	—	—	3.35

Low Power Comparators

Part No.	No. Per Package	Internal Reference	Reference Accuracy (±%)	Supply Voltage (V)	Supply Current (µA) Typ	Input Range (V)	Propagation Delay (µs) Typ	Hysteresis	Logic I/O	Package	Price @1k*
ADCMP341	2	Yes	0.275	1.7 to 5.5	6.5	0 to V _{cc}	10.0	Adjustable	Open-drain	8-lead SOT-23	0.90
ADCMP343	2	Yes	0.275	1.7 to 5.5	6.5	0 to V _{cc}	10.0	Adjustable	Open-drain	8-lead SOT-23	0.90
ADCMP350	1	Yes	3.5	2.25 to 5.5	10.0	0 to 22	5.0	Internal	Open-drain/active low	4-lead SC70	0.31
ADCMP354	1	Yes	3.5	2.25 to 5.5	10.0	0 to 22	5.0	Internal	Open-drain/active high	4-lead SC70	0.31
ADCMP356	1	Yes	3.5	2.25 to 5.5	10.0	0 to 22	5.0	Internal	Push-pull/active high	4-lead SC70	0.31
ADCMP361	1	Yes	0.275	1.7 to 5.5	6.5	0 to V _{cc}	10.0	Internal	Open-drain	5-lead SOT-23	0.60
ADCMP370	1	No	—	2.25 to 5.5	4.0	0 to 22	5.0	Internal	Open-drain	5-lead SC70	0.28
ADCMP371	1	No	—	2.25 to 5.5	4.0	0 to 22	5.0	Internal	Push-pull	5-lead SC70	0.28
ADCMP670	2	Yes	1.50	1.7 to 5.5	5.7	0 to V _{cc}	10.0	Internal	Open-drain	6-lead TSOT	1.40
CMP04	4	No	—	5	800.0	0 to V _{cc} - 1.5	1.3	—	Open-collector	14-lead SOIC	4.75

*The pricing listed here is provided only for budgetary purposes as recommended list price in U.S. dollars in the United States ex factor per unit for the stated volume. Pricing displayed for evaluation boards and kits is based on 1-piece pricing.



Online Interactive Selection Tools

Analog Devices is committed to providing design engineers with the best components and technologies available in order to make their designs a reality. However, in a growing number of cases, the biggest challenge is finding that single component that completes your solution quickly. That is why Analog Devices has introduced its new suite of interactive selection tables. These interactive selection tables have been carefully designed to provide engineers with the flexibility, accuracy, and speed they need to define, prioritize, and select those parts that are best suited for their project. As depicted by the screen shot on right, each interactive selection guide contains a predefined list of critical design parameters associated with that particular technology. Understanding that each design is unique, this guide will allow the user to sort using a particular set of key parameters. Not only will this tool help you optimize your design, but it will do it in record time. For a complete listing of interactive selection tables go to www.analog.com/en/pSearch.

The screenshot shows a web browser window displaying the Analog Devices website. The main content area is titled "Comparators" and includes a description of the product portfolio. Below the description is a table of "High Speed Comparators". The table has columns for Part#, Prop Delay (ns), # of Pins, T_{TR} (ns), Vol (V), # of Supply, Input Range (V), Logic Output, Adj. Hysteresis, Latch Enable Pin, Package, Pin Count, Output Width, Output Prop. Delay (ns), and Price (1000 pcs.).

Part#	Prop Delay (ns)	# of Pins	T _{TR} (ns)	Vol (V)	# of Supply	Input Range (V)	Logic Output	Adj. Hysteresis	Latch Enable Pin	Package	Pin Count	Output Width	Output Prop. Delay (ns)	Price (1000 pcs.)
ADCM020	0.25	2	520	5.5-6.2	2	-1 to 3V	PECL	-	X	32-Lead LFCSP	20094	168 pins	-	\$3.50
ADCM020	0.25	2	400	5.5-6.2	2	-1 to 3V	ECL	-	X	32-Lead LFCSP	20094	168 pins	-	\$3.50
AD720	45	1	250	+1.5	3	+0.5 to 1.8V	TTL CMOS	Fixed	X	8-Lead DIP, 8-Lead MSOP, 8-Lead SOIC	-	-	-	\$3.67
AD8611	0.5	1	50	3 to 5	1	0 to 3V	DMTTL	-	X	8-Lead MSOP, 8-Lead SOIC	-	2.5/1.1 ns	-	\$2.00
AD8612	0.5	2	100	3 to 5	1	0 to 3V	DMTTL	-	X	14-Lead TSSOP	-	2.5/1.1 ns	-	\$3.37

Screen shot of interactive selection table.

Applications Engineering Support

Analog Devices provides the user with the opportunity to ask more in-depth questions to a network of design engineers whose expertise in comparators is unparalleled. This free service can be accessed by sending an email to High_Speed_Comparators@analog.com. In order for our engineers to thoroughly explore your specific inquiries, please allow up to 24 hours for a reply.

Samples and Evaluation Boards

For those engineers and technicians who need to satisfy their curiosity, Analog Devices offers samples and evaluation boards on a large number of the products listed in this selection guide. In most cases, samples and evaluation boards are available for immediate delivery. Please consult the online samples ordering page for additional information and restrictions. This page can be accessed from each individual product page by clicking on the Price, Packaging, and Availability link. You can also find out additional ordering and pricing information for evaluation boards in the individual product pricing charts located on the online product pages.

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