

General Purpose, Low Voltage Comparator

Features

- Guaranteed 1.2V to 5.5V Performance
- Push Pull Output
- Input Common Mode Voltage Range Includes Ground
- Low Supply Current 13 μ A at 3V Power Supply
- Package available in ADFN1X1.45-6

General Description

The G1361 consists of a low voltage comparator with push-pull output. It is guaranteed to operate from 1.2V to 5.5V power supply. The current consumption is as low as 13 μ A at 3V supply voltage. So it is very suitable for portable electronic devices applications.

G1361 is available in ADFN1X1.45-6 package.

Applications

- Mobile communications
- Notebooks and PDA's
- Battery powered electronics
- General purpose portable device
- General purpose low voltage applications

Ordering Information

ORDER NUMBER	MARKING	TEMP. RANGE	PACKAGE (Green)
G1361A52U	131	-40°C~ +85°C	ADFN1X1.45-6

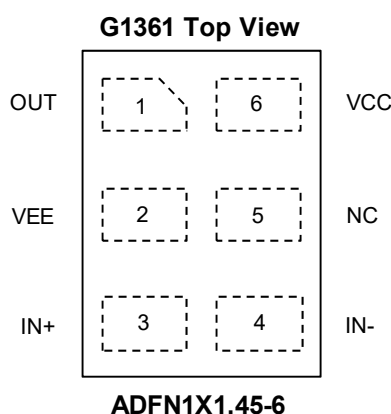
Note: A5: ADFN1X1.45-6

2: Bonding Code

U : Tape & Reel

Green: Lead Free / Halogen Free

Pin Configuration



Absolute Maximum Ratings

Differential Input Voltage. $\pm$ Supply Voltage
 Voltage on any pin (referred to VEE pin) 7V
 Continuous Power Dissipation ($T_A = +25^\circ\text{C}$)
 ADFN1X1.45-6 0.25W
 Thermal Resistance Junction to Ambient, (θ_{JA})
 ADFN1X1.45-6 315°C/W
 Thermal Resistance Junction to case, (θ_{JC})
 ADFN1X1.45-6 150°C/W

Reflow Temperature (soldering, 10 sec) 260°C
 Storage Temperature Range -65°C to $+150^\circ\text{C}$
 Junction Temperature 150°C
 ESD Tolerance (HBM) 2000V
 ESD Tolerance (CDM) $\pm 1000\text{V}$

Operating Ratings

Supply Voltage 1.2V to 5.5V
 Temperature Range $-40^\circ\text{C} \leq T_J \leq +85^\circ\text{C}$

Electrical Characteristics

1.2V DC Electrical Characteristics

Unless otherwise specified, all limits guaranteed for $T_J=25^\circ\text{C}$, $V_{CC}=1.2\text{V}$, $V_{EE}=0\text{V}$.

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{OS}		-10	0.5	10	mV
Input Voltage Range	V_{CM}		---	V_{EE} to V_{CC}	---	V
Input current	I_B		---	10	150	nA
Output Voltage	V_{OH}	$I_{Source}=0.5\text{mA}$	---	$V_{CC}-0.15$	$V_{CC}-0.2$	V
Output Voltage	V_{OL}	$I_{Sink}=0.5\text{mA}$	---	$V_{EE}+0.1$	$V_{EE}+0.2$	V
Output Short-Circuit Sourcing or Sinking	I_O	$V_O \leq 1.5\text{V}$	---	60	---	mA
Supply Current	I_S		---	12	---	μA

1.2V AC Electrical Characteristics

$T_J=25^\circ\text{C}$, $V_{CC}=1.2\text{V}$, $V_{EE}=0\text{V}$, $R_L=100\text{k}\Omega$.

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Propagation Delay (High to Low)	t_{PHL}	Input Overdrive=20mV	---	400	---	ns
		Input Overdrive=100mV	---	300	---	ns
Propagation Delay (Low to High)	t_{PLH}	Input Overdrive=20mV	---	400	---	ns
		Input Overdrive=100mV	---	300	---	ns

3V DC Electrical Characteristics

Unless otherwise specified, all limits guaranteed for $T_J=25^\circ\text{C}$, $V_{CC}=3\text{V}$, $V_{EE}=0\text{V}$.

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{OS}		-8	0.5	8	mV
Input Voltage Range	V_{CM}		---	V_{EE} to V_{CC}	---	V
Input current	I_B		---	10	150	nA
Output Voltage	V_{OH}	$I_{Source}=3\text{mA}$	---	$V_{CC}-0.15$	$V_{CC}-0.2$	V
Output Voltage	V_{OL}	$I_{Sink}=3\text{mA}$	---	$V_{EE}+0.12$	$V_{EE}+0.2$	V
Output Short-Circuit Sourcing or Sinking	I_O	$V_O \leq 1.5\text{V}$	---	60	---	mA
Supply Current	I_S		---	13	---	μA

3V AC Electrical Characteristics

$T_J=25^\circ\text{C}$, $V_{CC}=3\text{V}$, $V_{EE}=0\text{V}$, $R_L=5.1\text{k}\Omega$.

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Propagation Delay (High to Low)	t_{PHL}	Input Overdrive=20mV	---	400	---	ns
		Input Overdrive=100mV	---	300	---	ns
Propagation Delay (Low to High)	t_{PLH}	Input Overdrive=20mV	---	400	---	ns
		Input Overdrive=100mV	---	300	---	ns

5.5V DC Electrical Characteristics

 Unless otherwise specified, all limits guaranteed for $T_J=25^{\circ}\text{C}$, $V_{CC}=5.5\text{V}$, $V_{EE}=0\text{V}$.

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{OS}		-7	0.5	7	mV
Input Voltage Range	V_{CM}		---	V_{EE} to V_{CC}	---	V
Input current	I_B		---	10	150	nA
Output Voltage	V_{OH}	$I_{Source}=3\text{mA}$	---	$V_{CC}-0.15$	$V_{CC}-0.2$	V
Output Voltage	V_{OL}	$I_{Sink}=3\text{mA}$	---	$V_{EE}+0.12$	$V_{EE}+0.2$	V
Output Short-Circuit Sourcing or Sinking	I_O	$V_O \leq 1.5\text{V}$	---	60	---	mA
Supply Current	I_S		---	15	---	μA

5.5V AC Electrical Characteristics
 $T_J=25^{\circ}\text{C}$, $V_{CC}=5.5\text{V}$, $V_{EE}=0\text{V}$, $R_L=5.1\text{k}\Omega$.

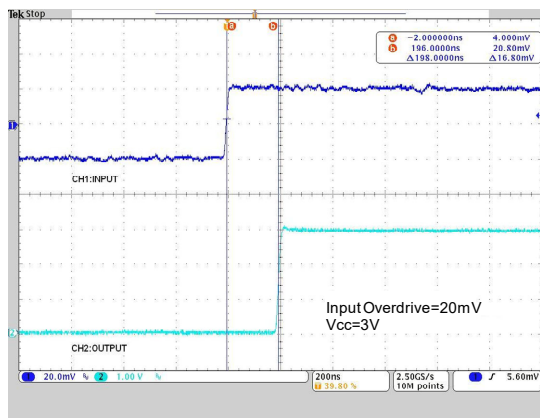
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Propagation Delay (High to Low)	t_{PHL}	Input Overdrive=20mV	---	400	---	ns
		Input Overdrive=100mV	---	300	---	ns
Propagation Delay (Low to High)	t_{PLH}	Input Overdrive=20mV	---	400	---	ns
		Input Overdrive=100mV	---	300	---	ns

Typical Performance Characteristics

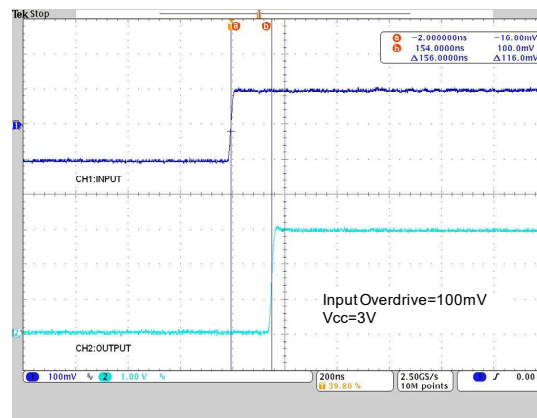
$V_{CC}=5V$, $T_A=25^{\circ}C$, unless otherwise noted.

G1361 for Push Pull Output

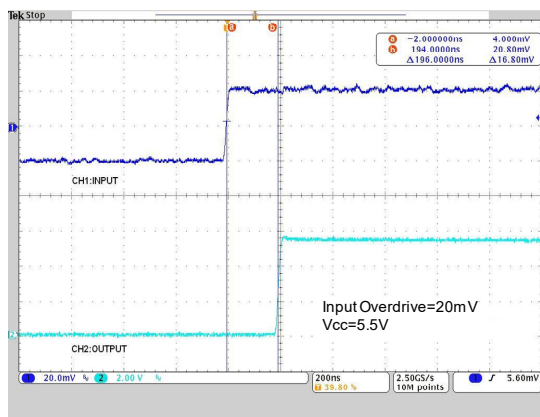
Propagation Delay (Low to High)



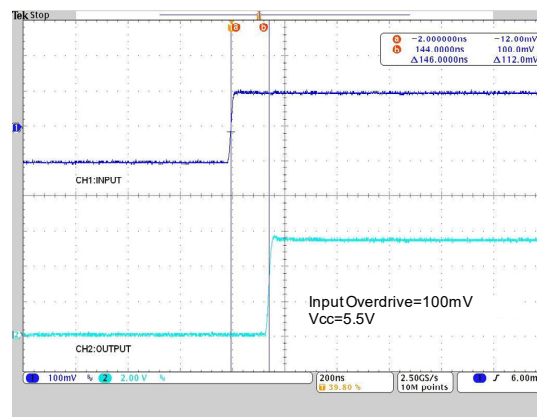
Propagation Delay (Low to High)



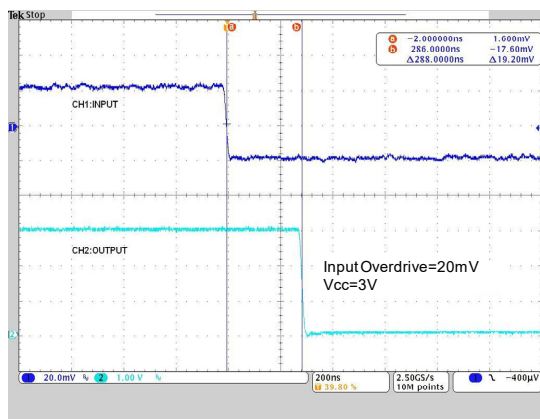
Propagation Delay (Low to High)



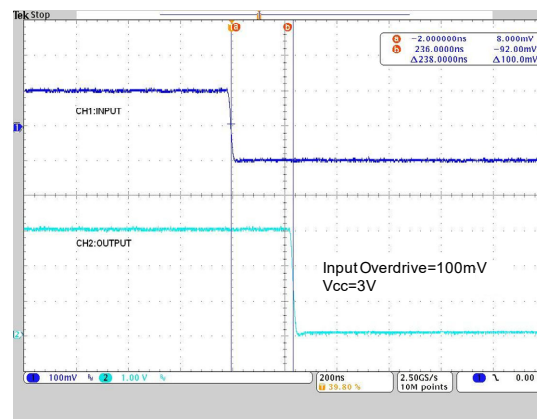
Propagation Delay (Low to High)



Propagation Delay (High to Low)

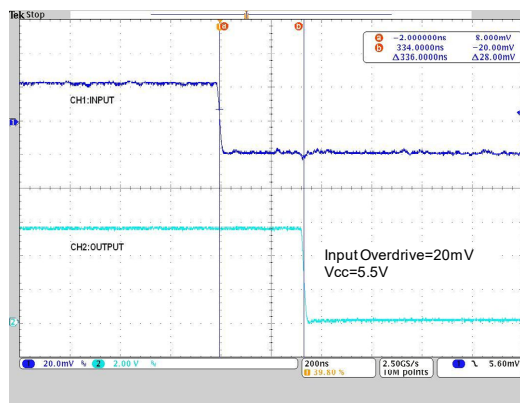


Propagation Delay (High to Low)

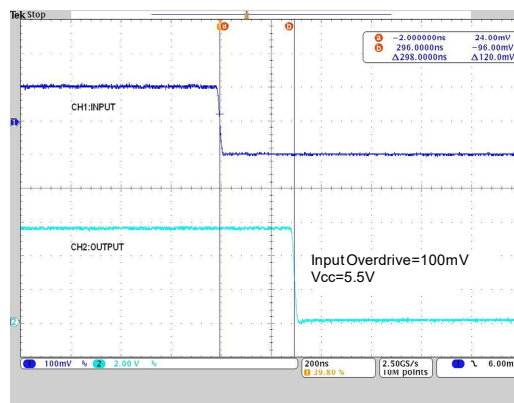


Typical Performance Characteristics (continued)

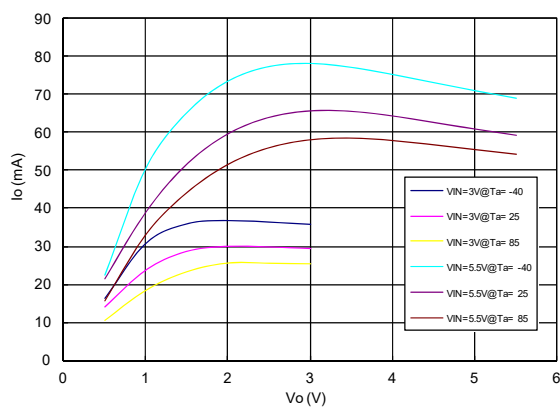
Propagation Delay (High to Low)



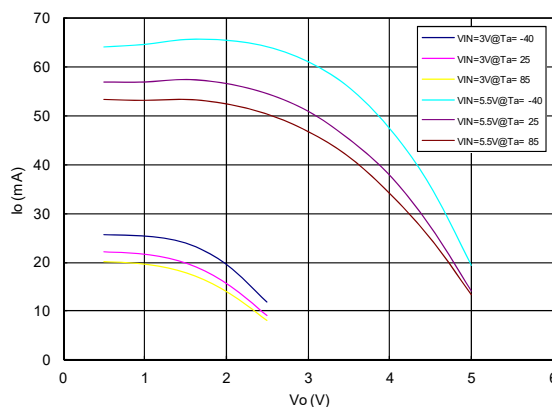
Propagation Delay (High to Low)



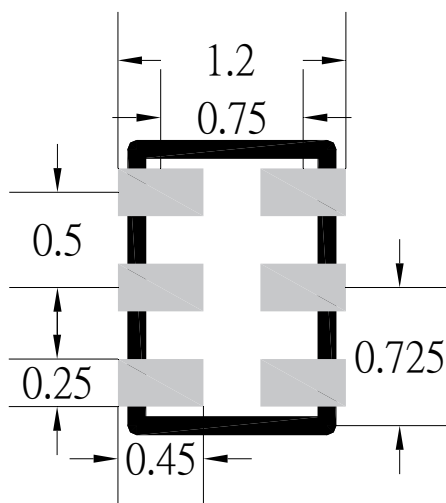
Isnk _ Vo vs. Io



Isrc _ Vo vs. Io



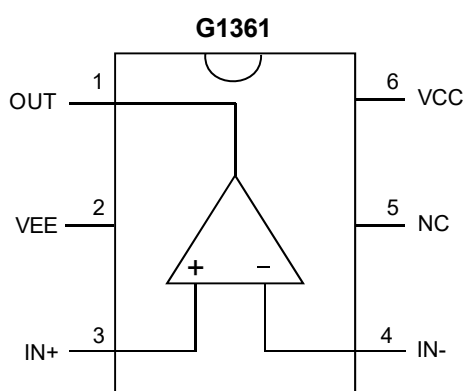
Minimum Footprint PCB Layout Section



Pin Description

PIN	NAME	I/O	FUNCTION
1	OUT	O	Comparator Output terminal
2	VEE	I	Negative supply voltage terminal or ground connection
3	IN+	I	Comparator Positive differential input
4	IN-	I	Comparator Negative differential input
5	NC		No Connection
6	VCC	I	Positive supply voltage terminal

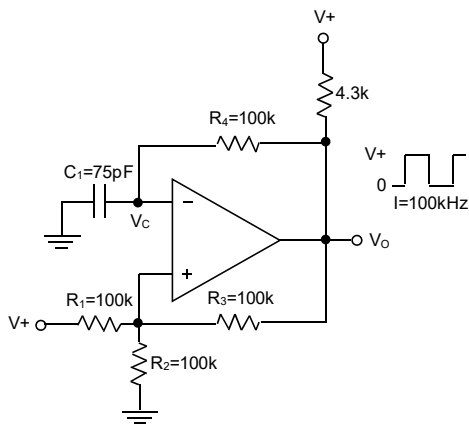
Block Diagram



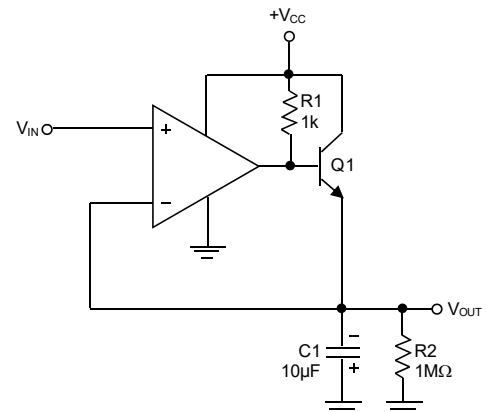
Function Description

G1361 is a low-voltage, low-power push-pull output comparator which a complementary P- and N-Channel output stage. It also is designed for rail-to-rail input and output. When the output switches, there is a direct patch between VCC and VEE, causing increased output sinking or sourcing current during the transition.

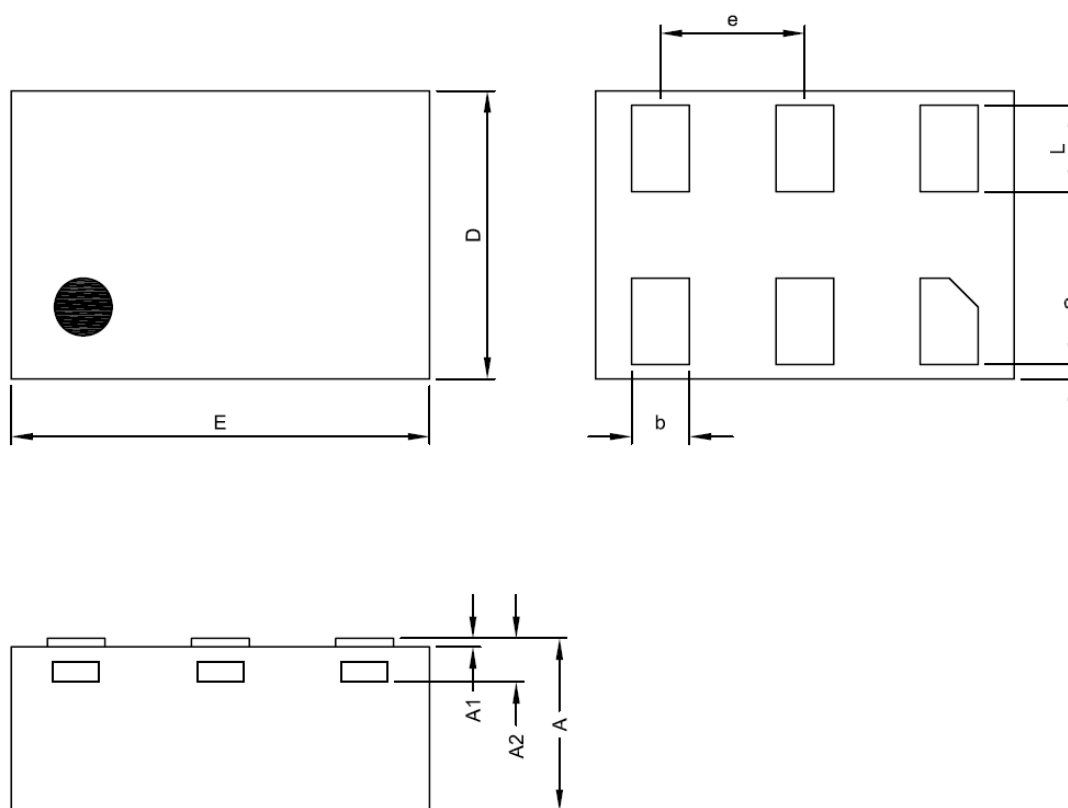
Typical Application Circuits



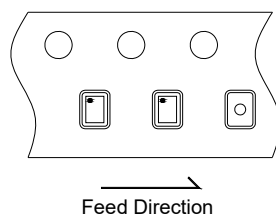
Squarewave Oscillator



Positive Peak Detector

Package Information

ADFN1X1.45-6 Package

Symbol	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.50	0.55	0.60	0.0197	0.0217	0.0236
A1	0.00	---	0.05	0.0000	---	0.0020
A2	0.15 REF			0.0059 REF		
D	0.95	1.00	1.05	0.0374	0.0394	0.0413
E	1.40	1.45	1.50	0.0551	0.0570	0.0590
b	0.15	0.20	0.25	0.0059	0.0079	0.0098
e	0.50 BSC			0.0197 BSC		
L	0.25	0.30	0.35	0.0098	0.0118	0.0138
S	0.05 REF			0.0020 REF		

Taping Specification


PACKAGE	Q'TY/REEL
ADFN1X1.45-6	5,000 ea

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