

FEATURES

- 2.25 V to 5.5 V operating voltage range
- Low power consumption (4 μ A)
- High voltage (22 V) tolerance on inputs
- Push-pull output
- 50 nA input bias current
- 150 nA input offset current
- 9 mV input offset voltage
- Rail-to-rail, common-mode input range
- Specified over -40°C to $+85^{\circ}\text{C}$ temperature range
- 5-lead SC70 packaging
- Known Good Die (KGD): these die are fully guaranteed to data sheet specifications

APPLICATIONS

- Voltage detectors
- Battery management systems
- Analog-to-digital converters
- Low voltage applications
- Battery-powered electronics
- Portable equipment

GENERAL DESCRIPTION

The [ADCMP371-KGD](#) is a general-purpose comparator with an input offset voltage of 9 mV (maximum) and low power consumption, which makes it ideal for battery-powered, portable equipment.

The [ADCMP371-KGD](#) has a push-pull output stage. The inputs on the [ADCMP371-KGD](#) can tolerate voltages up to 22 V, making it suitable for use as voltage detectors in portable equipment. Additional application and technical information can be found in the [ADCMP371](#) data sheet.

FUNCTIONAL BLOCK DIAGRAM

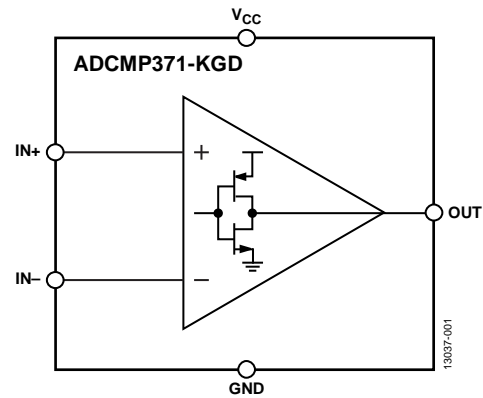


Figure 1.

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REVISION HISTORY

4/15—Revision 0: Initial Version

SPECIFICATIONS

V_{CC} = full operating range, T_A = -40°C to $+85^{\circ}\text{C}$, unless otherwise noted.

Table 1.

Parameter	Min	Typ	Max	Unit	Test Conditions/Comments
SUPPLY					
V_{CC} Operating Voltage Range	2.25		5.5	V	
Supply Current		4	7	μA	
COMMON-MODE INPUT RANGE	0		V_{CC}	V	
INPUT OFFSET VOLTAGE			9	mV	$V_{IN} = V_{CC}/2$
INPUT OFFSET VOLTAGE AVERAGE DRIFT		5		$\mu\text{V}/^{\circ}\text{C}$	$V_{CM} = 0\text{ V}$
INPUT BIAS CURRENT			50	nA	$V_{IN} = V_{CC}/2$
INPUT OFFSET CURRENT			150	nA	$V_{IN} = V_{CC}/2$
OUT VOLTAGE LOW			0.4	V	$IN+ < IN-, I_{SINK} = 1.2\text{ mA}$
OUT VOLTAGE HIGH	0.8 VCC			V	$IN+ > IN-, I_{SOURCE} = 500\ \mu\text{A}$
Output Rise Time		30		ns	$C_{OUT} = 15\ \text{pF}$
Output Fall Time		45		ns	$C_{OUT} = 15\ \text{pF}$
TIMING					
Propagation Delay		5		μs	Input overdrive = 10 mV
		2		μs	Input overdrive = 100 mV

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise noted.

Table 2.

Parameter	Rating
V _{CC}	-0.3 V to +6 V
IN+, IN-	-0.3 V to +25 V
OUT	-0.3 V to V _{CC} + 0.3 V
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-65°C to +150°C
θ _{JA} Thermal Impedance, SC70	146°C/W
Lead Temperature	
Soldering (10 sec)	300°C
Vapor Phase (60 sec)	215°C
Infrared (15 sec)	220°C

Stresses at or above those listed under Absolute Maximum Ratings may cause permanent damage to the product. This is a stress rating only; functional operation of the product at these or any other conditions above those indicated in the operational section of this specification is not implied. Operation beyond the maximum operating conditions for extended periods may affect product reliability.

ESD CAUTION



ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

PIN CONFIGURATION AND FUNCTION DESCRIPTIONS

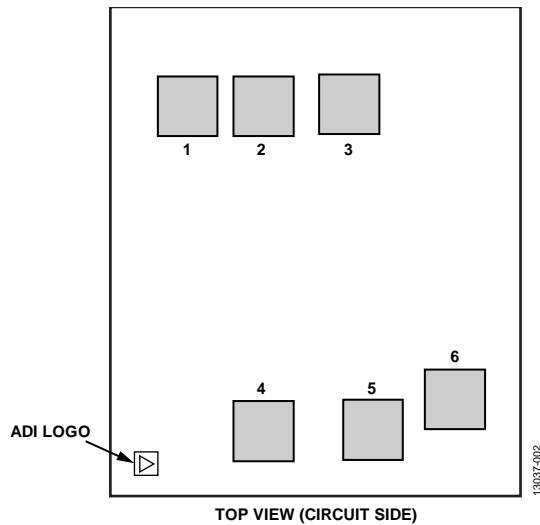


Figure 2. Pad Configuration

Table 3. Pad Function Descriptions

Pad No.	X-Axis (μm)	Y-Axis (μm)	Mnemonic	Pad Type	Description
1	-162	+184	V _{CC}	Single	Power Supply.
2	-66	+184	NC	Single	No Connect.
3	+43	+187	IN+	Single	Noninverting Input.
4	-66	-228	OUT	Single	Comparator Output, Push-Pull Type.
5	+73	-226	GND	Single	Ground.
6	+177	-187	IN-	Single	Inverting Input.

OUTLINE DIMENSIONS

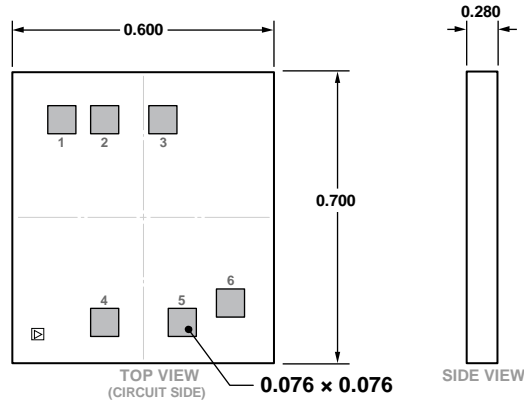


Figure 3. 6-Pad Bare Die [CHIP]
(C-6-7)
Dimensions shown in millimeter

DIE SPECIFICATIONS AND ASSEMBLY RECOMMENDATIONS

Table 4. Die Specifications

Parameter	Value	Unit
Chip Size	520 × 620	μm
Scribe Line Width	80 × 80	μm
Die Size	600 × 700	μm (maximum)
Thickness	280	μm
Bond Pad	76 × 76	μm (minimum)
Bond Pad Composition	98.5 Al, 0.5 Cu, 1 Si	%
Backside	Bare	Not applicable
Passivation	Nitride	Not applicable

Table 5. Assembly Recommendations

Assembly Component	Recommendation
Die Attach	Epoxy adhesive
Bonding Method	Gold ball or aluminum wedge
Bonding Sequence	Pin five first

ORDERING GUIDE

Model	Temperature Range	Package Description	Package Option
ADCMP371-KGD-RL7	−40°C to +85°C	6-Pad Bare Die [CHIP]	C-6-7