Comparator and Reference Circuits

Preliminary Technical Data

ADCMP350–ADCMP357

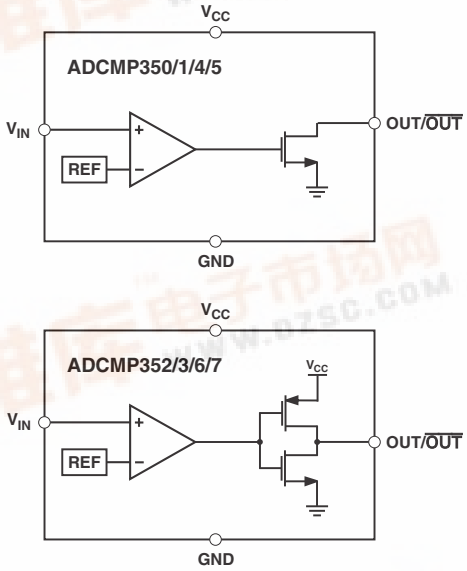
FEATURES

- Comparators with 0.6V or 1.2V On-Chip References
- Output Stages
  - Open-Drain Active-Low (ADCMP350/1)
  - Push-Pull Active-Low (ADCMP352/3)
  - Open-Drain Active-High (ADCMP354/5)
  - Push-Pull Active-High (ADCMP356/7)
- High Voltage (up to 22V) tolerance on V_{IN} and Open-Drain Output Pins
- Low Power Consumption (10µA)
- 10nA Input Bias Current
- 20mV Hysteresis
- Specified Over -40°C to +125°C Temperature Range
- 4-Lead SC70 Package

APPLICATIONS

- Microprocessor Systems
- Computers
- Controllers
- Intelligent Instruments
- Portable Equipment

FUNCTIONAL BLOCK DIAGRAMS



GENERAL DESCRIPTION

The ADCMP350-ADCMP357 are comparator and reference circuits suitable for use in general purpose applications. High performance over the -40°C to +125°C temperature range make them suitable for use in automotive and other thermally harsh applications, while low power consumption and space efficient SC70 packaging make them ideal for battery powered portable equipment

Table 1. Selection Table

Part No.	Reference Voltage (V)	Output Stage	
		$\overline{OUT}$	OUT
ADCMP350	0.6	Open-Drain	-
ADCMP351	1.2	Open-Drain	-
ADCMP352	0.6	Push-Pull	-
ADCMP353	1.2	Push-Pull	-
ADCMP354	0.6	-	Open-Drain
ADCMP355	1.2	-	Open-Drain
ADCMP356	0.6	-	Push-Pull
ADCMP357	1.2	-	Push-Pull

One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106, U.S.A.
Tel: 781.329.4700 www.analog.com
Fax: 781.326.8703

SPECIFICATIONS

(V_{CC}=Full Operating Range, T_A=-40°C to +125°C, unless otherwise noted.)

Parameter	Min	Typ	Max	Units	Test Conditions/Comments
SUPPLY					
V_{CC} Operating Voltage Range	2.25		3.6	V	
V_{IN} Operating Voltage Range			22	V	
Supply Current		10	15	µA	
INTERNAL REFERENCE					
ADCMP350/2/4/6	0.585	0.6	0.615	V	V_{CC}=3.3V, T_A=-40°C to +85°C
	0.579	0.6	0.621	V	V_{CC}=3.3V, T_A=-40°C to +125°C
ADCMP351/3/5/7	1.17	1.2	1.23	V	V_{CC}=3.3V, T_A=-40°C to +85°C
	1.158	1.2	1.242	V	V_{CC}=3.3V, T_A=-40°C to +125°C
V_{IN} HYSTERESIS		20		mV	
INPUT BIAS CURRENT		10		nA	V_{CC}=3.3V
THRESHOLD TEMPERATURE COEFFICIENT		30		ppm/°C	
V_{IN} TO OUT DELAY		5		µs	V_{IN}= V_{TH} to (V_{TH}-100mV)
OUT/$\overline{OUT}$ VOLTAGE LOW			0.3	V	V_{IN}<V_{TH} min, I_{SINK}=1.2mA
OUT/$\overline{OUT}$ VOLTAGE HIGH	0.8xV_{cc}			V	V_{IN}>V_{TH} max, I_{SOURCE}=500µA
OUT/$\overline{OUT}$ OPEN-DRAIN OUTPUT LEAKAGE CURRENT			1	µA	V_{CC}>V_{TH}, OUT/$\overline{OUT}$=22V

ABSOLUTE MAXIMUM RATINGS

Table 3. T_A = 25°C unless otherwise noted.

Parameter	Rating
V_{CC}	-0.3V to +6V
V_{IN}	-0.3V to +25V
OUT, $\overline{OUT}$ (Open-Drain)	-0.3V to +25V
OUT, $\overline{OUT}$ (Push-Pull)	-0.3V to (V_{CC}+0.3V)
Operating Temperature Range	-40°C to +125°C
Storage Temperature Range	-65°C to +150°C
θ_{JA} Thermal Impedance, SC70	146°C/W
Lead Temperature	
Soldering (10 sec)	300°C
Vapour Phase (60 sec)	215°C
Infrared (15 sec)	220°C

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

PIN CONFIGURATION AND FUNCTIONAL DESCRIPTIONS

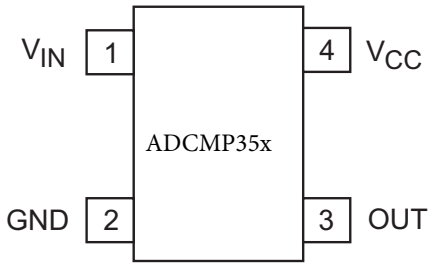


Table 4. Pin Functional Descriptions

Pin No.	Name	Description
1	V_{IN}	Monitors analog input voltage
2	GND	Ground
3	OUT/$\overline{OUT}$	Digital output. Active-high or active-low and open-drain or push-pull options depending on model number
4	V_{CC}	Power supply

ESD CAUTION

ESD (electrostatic discharge) sensitive device. Electrostatic charges as high as 4000 V readily accumulate on the human body and test equipment and can discharge without detection. Although this product features proprietary ESD protection circuitry, permanent damage may occur on devices subjected to high energy electrostatic discharges. Therefore, proper ESD precautions are recommended to avoid performance degradation or loss of functionality.

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OUTLINE DIMENSIONS

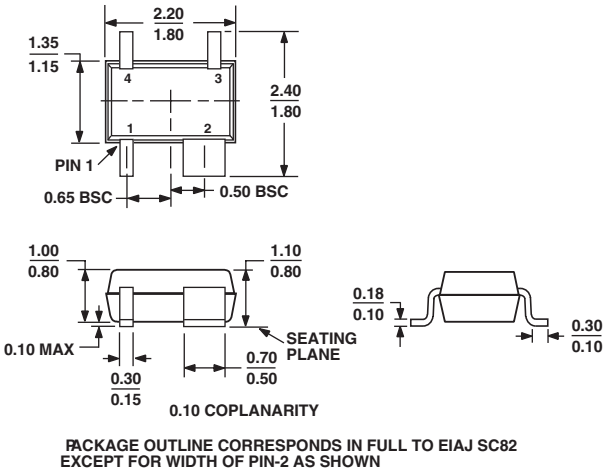

Figure 1. 4-Lead Thin Shrink Small Outline Transistor Package [SC70]

(EIAJ SC82 body)

(KS-4)

Dimensions shown in millimeters

ORDERING GUIDE

Model	Temperature Range	Package Type	Branding
ADCMP350AKS	-40°C to +125°C	SC70-4	M0Z
ADCMP351AKS	-40°C to +125°C	SC70-4	M10
ADCMP352AKS	-40°C to +125°C	SC70-4	M11
ADCMP353AKS	-40°C to +125°C	SC70-4	M12
ADCMP354AKS	-40°C to +125°C	SC70-4	M13
ADCMP355AKS	-40°C to +125°C	SC70-4	M14
ADCMP356AKS	-40°C to +125°C	SC70-4	M15
ADCMP357AKS	-40°C to +125°C	SC70-4	M16