HIH-4602-L

HIH-4602 Series monolithic IC humidity sensor with integral precision RTD in TO-39 can

Actual product appearance may vary.

Features

- Linear voltage output vs %RH
- Laser-trimmed interchangeability
- Chemically resistant
- Enhanced accuracy, fast response
- Stable, low drift performance
- Built-in static protection

Potential Applications

- Refrigeration equipment
- Drying
- Meteorology
- Battery-powered systems
- OEM assemblies

Description

The HIH-4602-L Relative Humidity (RH) sensors deliver instrumentation-quality RH sensing performance in a rugged, low cost, slotted TO-39 housing that provides a quick response while still maintaining the robustness of an enclosed component. The laser-trimmed, thermoset polymer capacitive sensing elements have on-chip integrated signal conditioning.The HIH-4602-L-CP includes calibration and data printout.
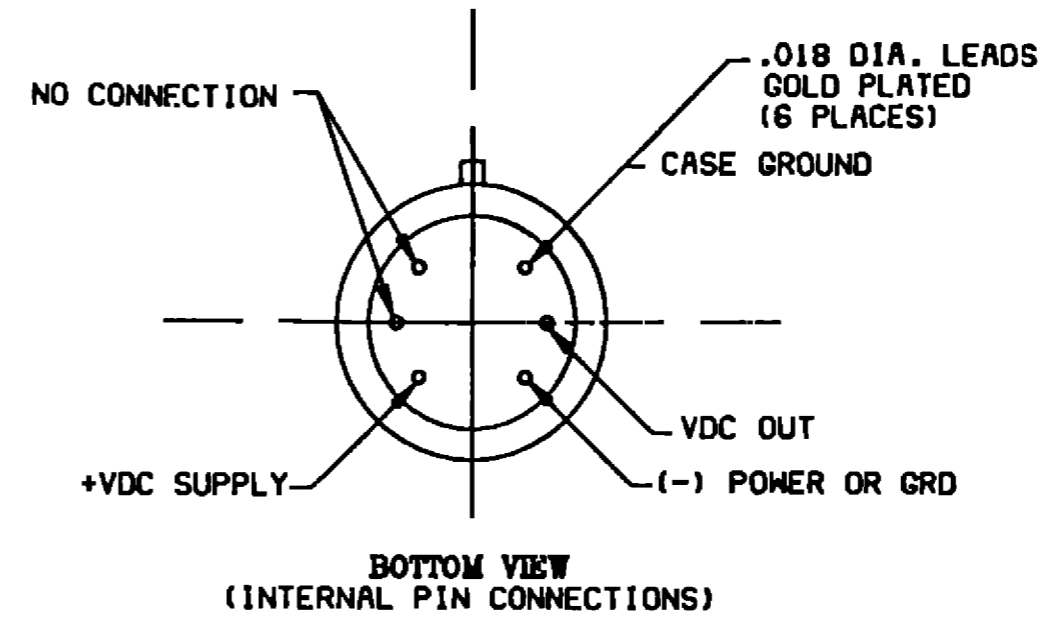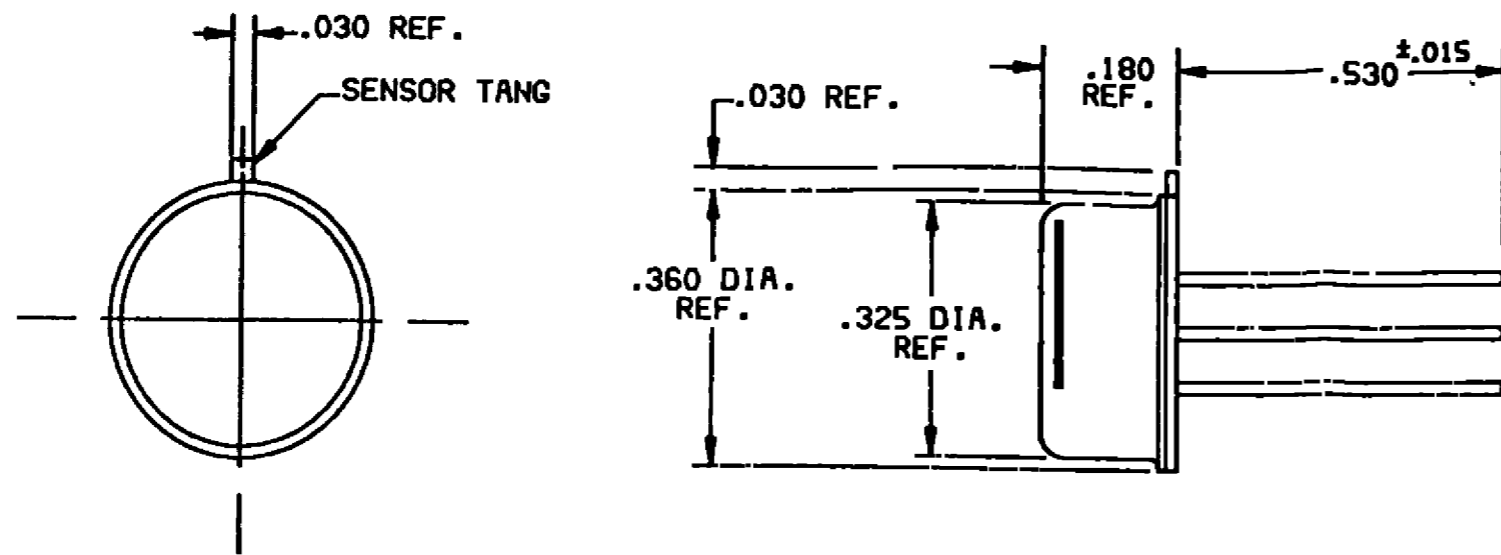
Product Specifications	
Package Type	TO-39 can
Operating Temperature Range	-40 °C to 85 °C [-40 °F to 185 °F]
Operating Humidity Range	0% RH to 100% RH
Interchangeability	0% RH to 59% RH ±5%, 60% RH to 100% RH ±8%
Accuracy (BFSL)	±3.5%
Hysteresis	3% RH
Response Time	5 s 1/e in slow moving air
Repeatability	±0.5% RH
Settling Time	70 ms max.
Max. Supply Voltage	5.8 Vdc
Max. Supply Current	500 µA

Stability at 50% RH	±1.2% RH
Output Signal	Analog voltage
Covered Device	Yes
Moisture/Dust Filter	No
Combined Humidity and Temperature Sensor	No
Calibration and Data Printout	No
Series Name	HIH-4602
Availability	Global

Stability at 50% RH	±1.2% RH
Output Signal	Analog voltage
Covered Device	Yes

HONEYWELL PART NUMBER

HIH-4602-L

.030 REF.

— SENSOR TANG

.030 REF.

.180 REF.

.530 ±.015

.360 DIA. REF.

.325 DIA. REF.

NO CONNECTION

.018 DIA. LEADS GOLD PLATED (6 PLACES)

CASE GROUND

VDC OUT

+VDC SUPPLY

(−) POWER OR GRD

BOTTOM VIEW (INTERNAL PIN CONNECTIONS)

OPERATING CHARACTERISTICS
at 5.0 VDC AND 25°C UNLESS OTHERWISE NOTED

SPECIFICATION	MIN	TYP	MAX	UNIT
INTERCHANGEABILITY				
0 to 60%RH	−5		5	% RH
60% to 100%RH	−8		8	% RH
ACCURACY, (BFSL)		±3.5		% RH
ACCURACY, (2nd ORDER CURVE)		±2.5		% RH
HYSTERESIS		3		% RH
REPEATABILITY		±0.5		% RH
SETTLING TIME			70	mS
RESPONSE TIME, 1/e IN SLOW MOVING AIR		30		Sec.
STABILITY, AT 50%RH IN 1 YEAR		1.2		% RH
POWER REQUIREMENTS				
VOLTAGE SUPPLY	4		5.8	VDC
CURRENT SUPPLY			500	µA
VOLTAGE OUTPUT, 1st ORDER CURVE FIT ⚠1	$V_{out} = (V_{supply})(0.0062\ (SENSOR\ RH) + 0.16)$ TYP at 25°C			
VOLTAGE OUTPUT, 2nd ORDER CURVE FIT	$V_{out} = 0.00003(SENSOR\ RH)^2 + 0.0281(SENSOR\ RH) + 0.820$, TYP at 25°C			
TEMPERATURE COMPENSATION	$V_{out} = (0.0305 + 0.000044T − 0.0000011T^2)(SENSOR\ RH) + (0.9237 − 0.0041T + 0.000040T^2)$, T=TEMPERATURE IN °C			
OPERATING TEMPERATURE	−40	SEE CHART	85	°C
OPERATING HUMIDITY ⚠2	0	SEE CHART	100	% RH
STORAGE TEMPERATURE	−40		125	°C
STORAGE HUMIDITY ⚠2		SEE CHART		% RH

DATA PRINTOUT (EXAMPLE)	
MODEL	HIH-4602-L
CHANNEL	92
WAFER	030996M
MRP	337313
CALCULATED VALUES AT 5 V V_{out} @ 0% RH V_{out} @ 75.3% RH	0.958 V 3.268 V
LINEAR OUTPUT FOR 2% RH ACCURACY @ 25 °C ZERO OFFSET SLOPE RH	0.958 V 30.680 mV/%RH (V_{out}−ZERO OFFSET)/SLOPE (V_{out}−0.958)/0.0307
RATIOMETRIC RESPONSE FOR 0 TO 100% RH V_{out}	V_{supply} (0.1915 TO 0.8130)

NOTES
⚠1 - DEVICE IS CALIBRATED AT 5 VDC AND 25°C
⚠2 - NONCONDENSING ENVIRONMENT
⚠3 - CROSS-HATCHED OPERATING ZONE LIMITED TO <50 HOURS
⚠4 - NO SPECIFICATION ZONE
5 - DEVICE IS RATIOMETRIC TO SUPPLY VOLTAGE
6 - EXTENDED EXPOSURE TO >=90% CAUSES A REVERSIBLE SHIFT OF 3% RH
7 - THIS SENSOR IS LIGHT SENSITIVE AND SHOULD BE SHIELDED FROM BRIGHT LIGHT TO ACHIEVE BEST PERFORMANCE

DESIGN UNITS: INCH
TOLERANCES UNLESS NOTED:

NO PLACE	X ±	0.040
ONE PLACE	.X ±	0.030
TWO PLACE	.XX ±	0.015
THREE PLACE	.XXX ±	0.005
FOUR PLACE	.XXXX ±	0.0005
ANGLES	±	2

THIRD ANGLE PROJECTION

DRAWN	AS	05NOV04
CHECK	AK	05NOV04

Honeywell

TITLE

RH SENSOR IN TO-5 CAN HIH-4602 SERIES

SIZE	TYPE	DRAWING NAME		REV
C	**I**		**HIH-4602-L**	**B**

SCALE 3:1

RASTER

SHEET 1 OF 2