

CYTY SERIES (InSb) HALL-EFFECT ELEMENTS

CYTY series Hall-effect elements are made of compound semiconductor material indium stibnite (InSb), which utilizes the Hall Effect principle. It can convert a magnetic flux density signal linearly into voltage output.

FEATURES

- High Magnetic Sensitivity
- Low Offset Voltage
- Miniature Package

TYPICAL APPLICATION

- Magnetic Field Measurement
- Current Sensor
- Detection of Speed
- DC Brushless Motor
- Position Control

ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|-----------------------------|--------|----------------------------------|------------------|
| Input Current | I_i | 20 ($T_A=40^\circ\text{C}$) | mA |
| Input Voltage | V_i | 2 ($T_A=40^\circ\text{C}$) | V |
| Operating Temperature Range | T_A | -40~110 | $^\circ\text{C}$ |
| Storage Temperature Range | T_S | -40~120 | $^\circ\text{C}$ |

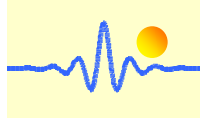
Hall Output Voltage V_H (mV)

| Label | Hall Output Voltage |
|-------|---------------------|
| Q | 45~60 |
| R | 55~75 |
| D | 195~230 |
| E | 225~275 |
| F | 270~320 |
| G | 315~370 |

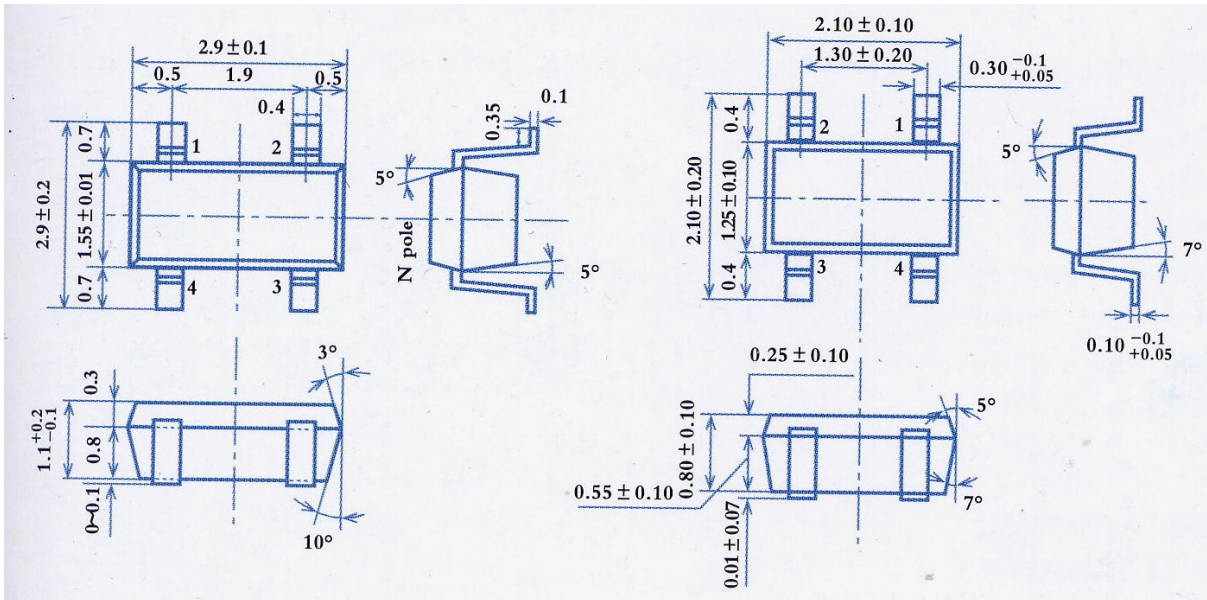
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$)

| Parameter | Symbol | Test Condition | Type and Value | | | | |
|--|------------------------|--|----------------|---------|----------|---------|-------------|
| | | | | CYTY211 | CYTY108A | CYTY320 | CYTY300B-CS |
| Hall output voltage | V_H (mV) | Constant voltage driven, $V_i=1\text{V}$ $B=50\text{mT}$ | Min | 45 | 195 | 195 | 195 |
| | | | Max | 75 | 370 | 370 | 370 |
| Offset voltage | V_o (mV) | $B=0$ $V_i=1\text{V}$ | Min | -7 | -7 | -7 | -7 |
| | | | Max | +7 | +7 | +7 | +7 |
| Input resistance | $R_i(\Omega)$ | $B=0$ $I_i=0.1\text{mA}$ | Min | 240 | 240 | 240 | 240 |
| | | | Max | 550 | 550 | 550 | 550 |
| Output resistance | $R_o(\Omega)$ | $B=0$ $I_i=0.1\text{mA}$ | Min | 240 | 240 | 240 | 240 |
| | | | Max | 550 | 550 | 550 | 550 |
| Output voltage temperature coefficient | αV_H (%/°C) | $B=50\text{mT}$ $I_i=5\text{mA}$ | Max | -2 | -2 | -2 | -2 |
| Input, Output resistance temperature coefficient | αR_i (%/°C) | $B=0$ $I_i=0.1\text{mA}$ | | | | | |
| Isolation resistance | (M Ω) | 100V DC | | >1.0 | >1.0 | >1.0 | >1.0 |

- Note:** 1. The Hall output voltage V_H = the effective voltage - V_o
2. The types are different according to the Hall output voltage V_H (mV)

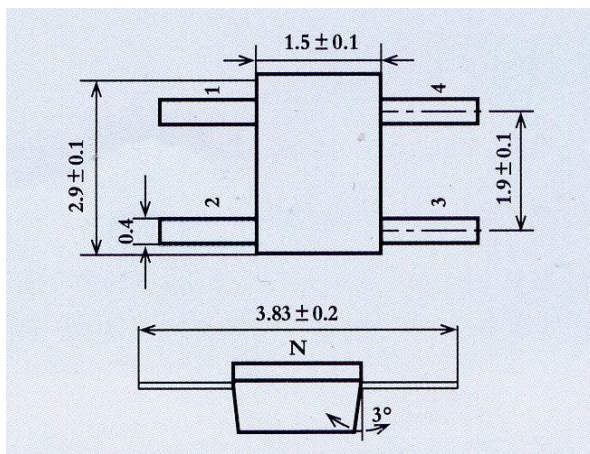


Package Outline Drawing (Unit: mm)

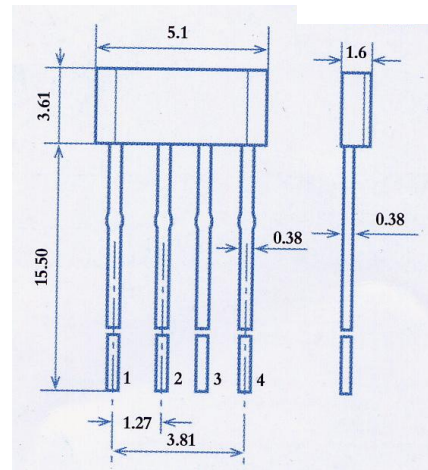


CYTY211 (SOT-143)
2, 4: Input; 1, 3: Output

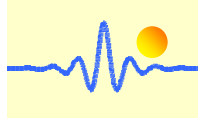
CYTY108A
1, 3: Input; 2, 4: Output



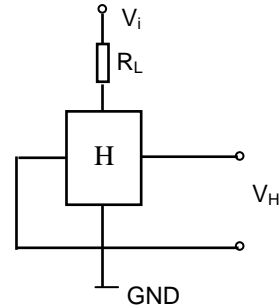
CYTY320 (SOT-143-1)
1, 3: Input; 2, 4: Output



CYTY300B-CS
1, 3: Input; 2, 4: Output

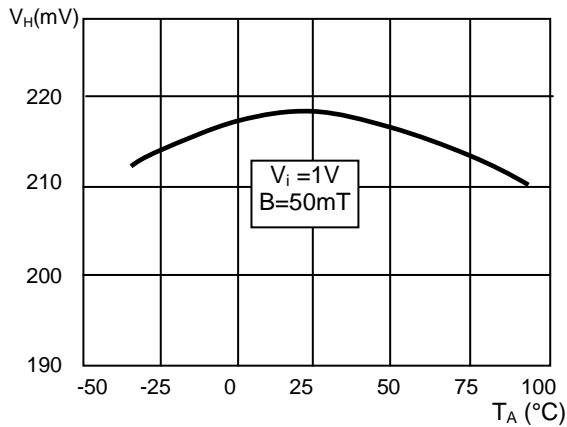


FUNCTIONAL BLOCK DIAGRAM

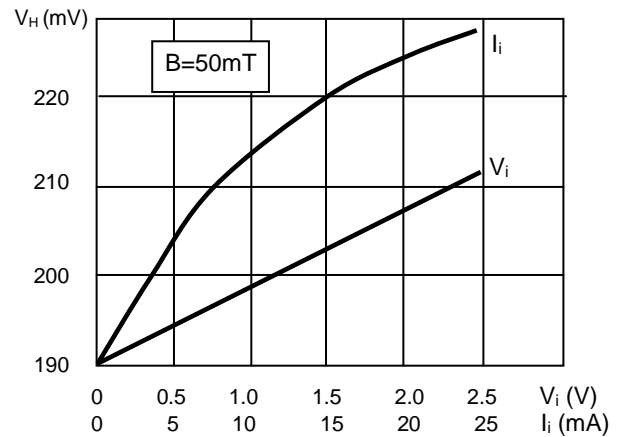


CHARACTERISTICS CURVES

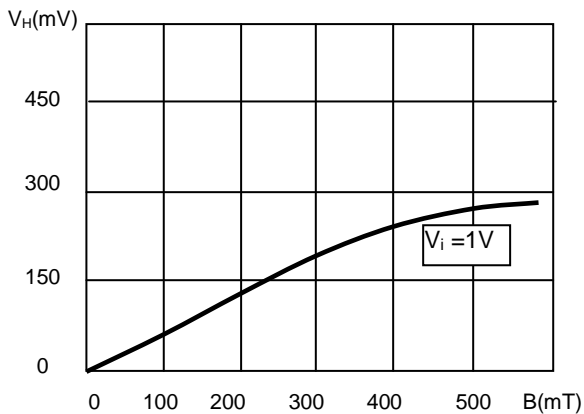
$V_H \sim T_A$ (CYTY320, CYTY108A, CYTY300B-CS)



$V_H \sim V_i, I_i$ (CYTY320, CYTY108A, CYTY300B-CS)



$V_H \sim B$ (CYTY211)



$V_H \sim B$ (CYTY320, CYTY300B-CS)

