

# Hall Effect Current Sensors L32P\*\*\*S05BFS Series



### Features:

- Open Loop type
- Printed circuit board mounting
- Unipolar power supply
- Industrial temperature range
- Sulfur-proof as standard
- Bus bar version available for 50A & 100A models
- Insulated plastic case according to UL94V0

### Advantage:

- Excellent accuracy and linearity
- Wide nominal current range
- Low temperature drift
- Wide frequency bandwidth
- No insertion loss
- High Immunity To External Interference
- Optimised response time
- Current overload capability

## Specifications

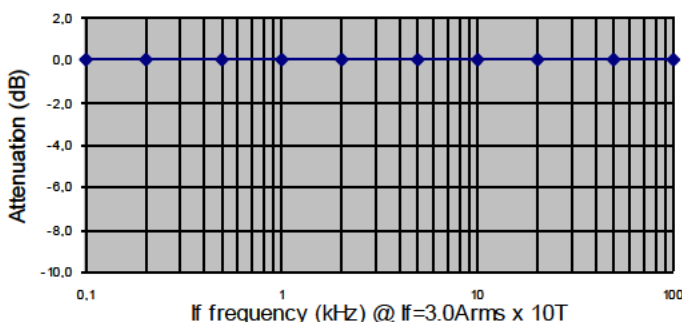
$T_A=25^{\circ}\text{C}$ ,  $V_{CC}=+5\text{V}$ ,  $R_L=10\text{k}\Omega$

| Parameters                                     | Symbol             | L32P050S05BFS  | L32P100S05BFS  | L32P150S05BFS  | L32P200S05BFS     | L32P300S05BFS           | L32P400S05BFS           |
|--|--------------------|--|--|--|-------------------|-------------------------|-------------------------|
| Rated current                                  | $I_f$              | 50A  | 100A   | 150A   | 200A              | 300A                    | 400A                    |
| Maximum Current                                | $I_{fmax}$         | $\pm 150\text{A}$  | $\pm 300\text{A}$  | $\pm 450\text{A}$  | $\pm 600\text{A}$ | $\geq \pm 600\text{AT}$ | $\geq \pm 600\text{AT}$ |
| Primary conductor                              |                    | Aperture or Bus Bar  |  | Aperture   |                   |                         |                         |
| Output Voltage                                 | $V_{OUT}$          | $V_{REF} + 0.625\text{V} \pm 0.015\text{V} @ \pm I_f$                                      |  |  |                   |                         |                         |
| Offset Voltage                                 | $V_{OE}$           | $V_{REF} \pm 0.025\text{V} @ I_f = 0\text{A}$  |  |  |                   |                         |                         |
| Reference voltage                              | $V_{REF}$          | $+2.5\text{V} \pm 0.020\text{V}$   |  |  |                   |                         |                         |
| Output Linearity <sup>1</sup>                  | $\epsilon_L$       | $\leq \pm 0.5\% @ 0\text{A}, 0.5 I_f, I_f$   |  |  |                   |                         |                         |
| Power Supply                                   | $V_{CC}$           | $+ 5\text{V} \pm 5\%$  |  |  |                   |                         |                         |
| Current Consumption                            | $I_C$              | $\leq 15\text{mA}$   |  |  |                   |                         |                         |
| Response Time <sup>2</sup>                     | $t_r$              | $\leq 5\mu\text{s} (@ di/dt = \text{F.S.} / \mu\text{s})$                                  |  |  |                   |                         |                         |
| Output Temperature Characteristic <sup>1</sup> | $\text{TCV}_{OUT}$ | $\leq \pm 1.5\text{mV}/^{\circ}\text{C}$   |  |  |                   |                         |                         |
| Offset Temperature Characteristic              | $\text{TCV}_{OE}$  | $\leq \pm 1.0\text{mV}/^{\circ}\text{C} @ I_f = 0\text{A}$                                 | $\leq \pm 0.5\text{mV}/^{\circ}\text{C} @ I_f = 0\text{A}$ | $\leq \pm 0.3\text{mV}/^{\circ}\text{C} @ I_f = 0\text{A}$ |                   |                         |                         |
| Reference Temperature Characteristic           | $\text{TCV}_{REF}$ | $\leq \pm 0.012\% / ^{\circ}\text{C}$  |  |  |                   |                         |                         |
| Hysteresis error                               | $V_{OH}$           | $\leq 7.5\text{mV} (0\text{A} \leftrightarrow I_f)$  | $\leq 5.0\text{mV} (0\text{A} \leftrightarrow I_f)$        | $\leq 2.5\text{mV} (0\text{A} \leftrightarrow I_f)$        |                   |                         |                         |
| Withstand Voltage                              | $V_d$              | AC2500V for 1minute (sensing current 0.5mA), inside of aperture $\leftrightarrow$ terminal |  |  |                   |                         |                         |
| Insulation Resistance                          | $R_{IS}$           | $> 500\text{M}\Omega (500\text{V DC})$ , inside of aperture $\leftrightarrow$ terminal     |  |  |                   |                         |                         |
| Frequency Bandwidth <sup>3</sup>               | $f$                | DC .. 50kHz  |  |  |                   |                         |                         |
| Operating Temperature                          | $T_A$              | $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$   |  |  |                   |                         |                         |
| Storage Temperature                            | $T_S$              | $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$   |  |  |                   |                         |                         |

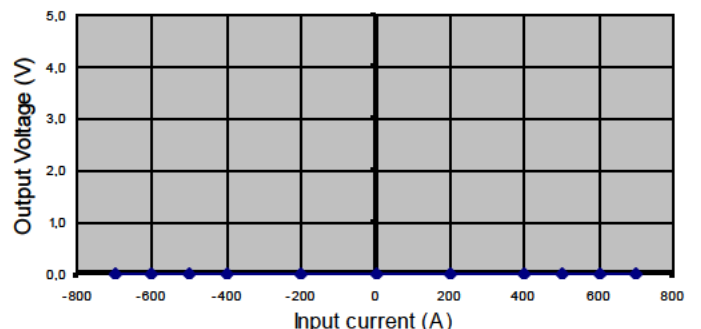
<sup>1</sup> Without offset — <sup>2</sup> Time between 10% input current full scale and 90% of sensor output full scale — <sup>3</sup> Small signal only to avoid excessive heating of magnetic core

## Electrical Performances

Frequency Characteristic data not yet available

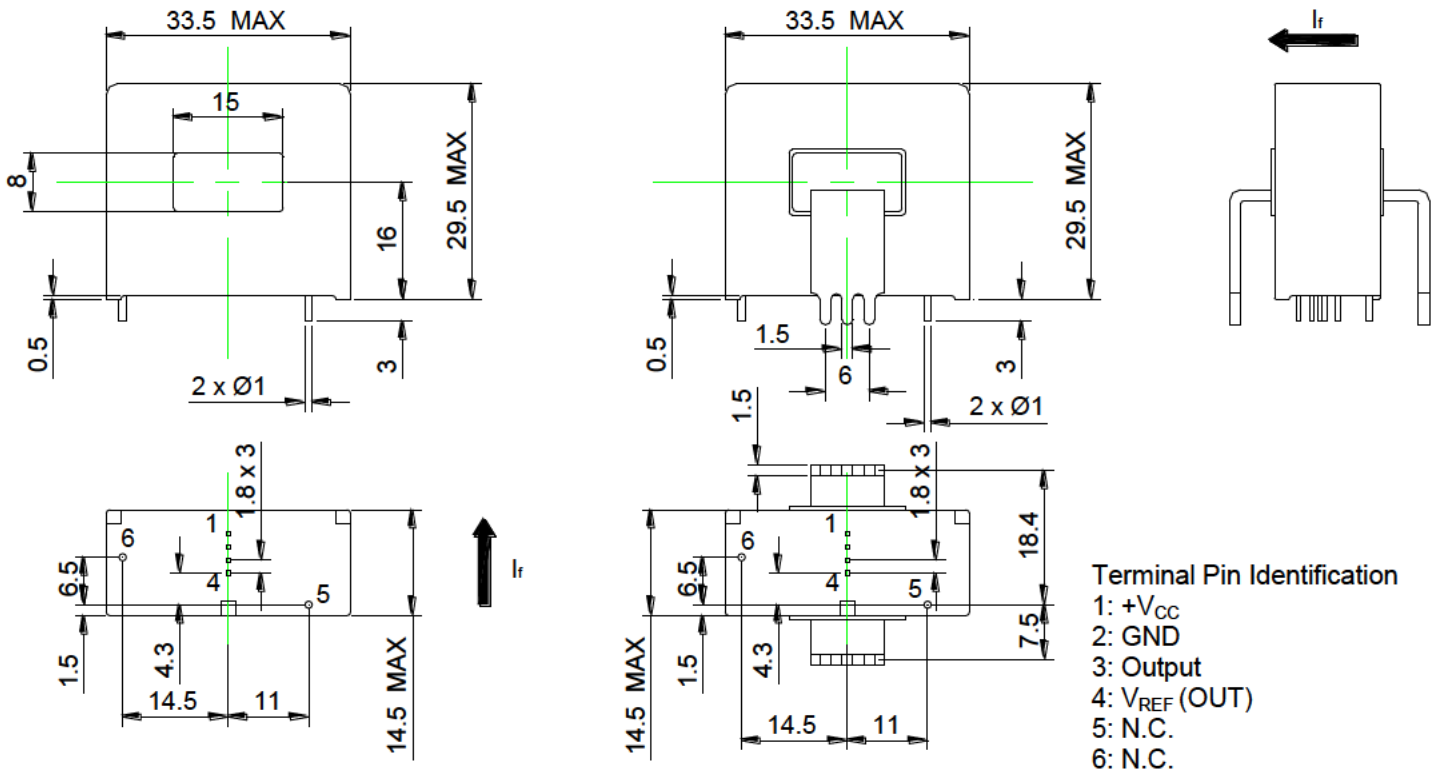


Saturation Characteristic data not yet available

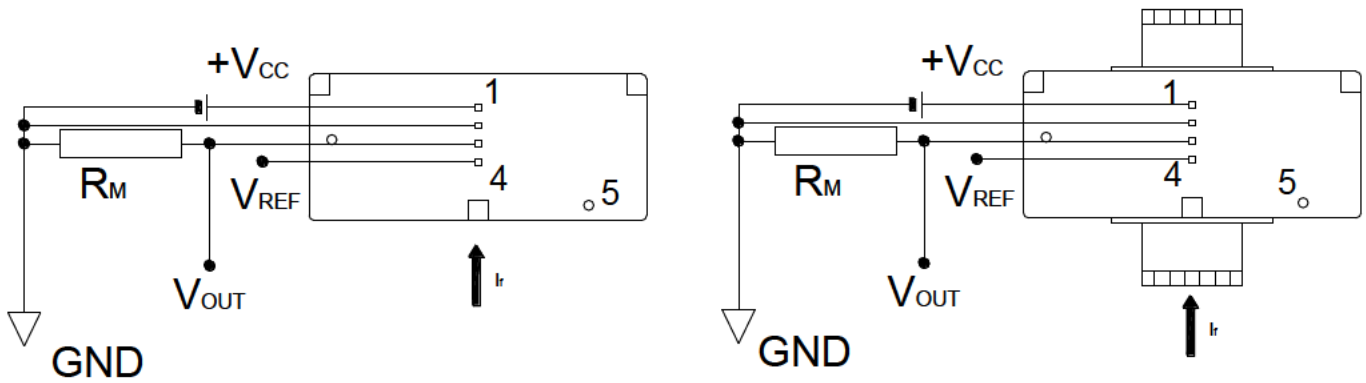


# Hall Effect Current Sensors L32P\*\*\*S05BFS Series

## Mechanical dimensions in mm



## Electrical connection diagram



## Package & Weight Information

| Weight | Pcs/box | Pcs/carton | Pcs/pallet |
|--------|---------|------------|------------|
|        |         |            |            |

## Saturation Characteristics

L32P050S05(B)FS

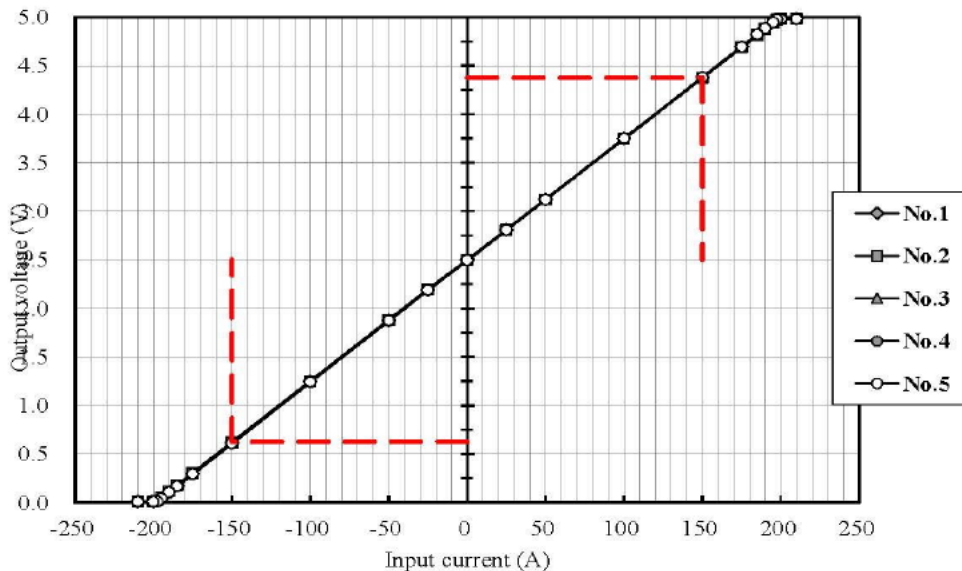
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### Saturation characteristic

at  $V_{cc}=+5V$ ,  $R_L=10k\Omega$ ,  $T_a=+25^\circ C$

| Input current (A) | Output voltage (V) |       |       |       |       | Theoretical value (V) |
|-------------------|--------------------|-------|-------|-------|-------|-----------------------|
|                   | No.1               | No.2  | No.3  | No.4  | No.5  |                       |
| 210.0             | 4.981              | 4.981 | 4.981 | 4.981 | 4.981 | 5.000                 |
| 200.0             | 4.980              | 4.981 | 4.980 | 4.980 | 4.980 | 4.995                 |
| 197.5             | 4.975              | 4.975 | 4.971 | 4.978 | 4.976 | 4.964                 |
| 195.0             | 4.945              | 4.945 | 4.940 | 4.947 | 4.945 | 4.933                 |
| 190.0             | 4.882              | 4.882 | 4.877 | 4.884 | 4.882 | 4.870                 |
| 185.0             | 4.819              | 4.819 | 4.814 | 4.821 | 4.819 | 4.808                 |
| 175.0             | 4.693              | 4.693 | 4.689 | 4.695 | 4.693 | 4.683                 |
| 150.0             | 4.378              | 4.378 | 4.374 | 4.380 | 4.378 | 4.370                 |
| 100.0             | 3.749              | 3.750 | 3.746 | 3.749 | 3.748 | 3.745                 |
| 50.0              | 3.120              | 3.122 | 3.120 | 3.119 | 3.120 | 3.120                 |
| 25.0              | 2.807              | 2.809 | 2.807 | 2.805 | 2.807 | 2.808                 |
| 0.0               | 2.495              | 2.499 | 2.498 | 2.494 | 2.495 | 2.495                 |
| -25.0             | 2.190              | 2.194 | 2.195 | 2.188 | 2.189 | 2.183                 |
| -50.0             | 1.874              | 1.878 | 1.880 | 1.871 | 1.873 | 1.870                 |
| -100.0            | 1.243              | 1.248 | 1.251 | 1.239 | 1.242 | 1.245                 |
| -150.0            | 0.612              | 0.617 | 0.621 | 0.606 | 0.610 | 0.620                 |
| -175.0            | 0.296              | 0.301 | 0.306 | 0.290 | 0.295 | 0.308                 |
| -185.0            | 0.169              | 0.175 | 0.180 | 0.163 | 0.168 | 0.183                 |
| -190.0            | 0.106              | 0.112 | 0.117 | 0.100 | 0.105 | 0.120                 |
| -195.0            | 0.043              | 0.049 | 0.054 | 0.037 | 0.042 | 0.058                 |
| -197.5            | 0.013              | 0.018 | 0.022 | 0.008 | 0.011 | 0.026                 |
| -200.0            | 0.008              | 0.008 | 0.008 | 0.008 | 0.008 | 0.000                 |
| -210.0            | 0.008              | 0.008 | 0.008 | 0.008 | 0.008 | 0.000                 |

### Saturation characteristic (Internal Reference)



## Frequency Characteristics

L32P150S05FS

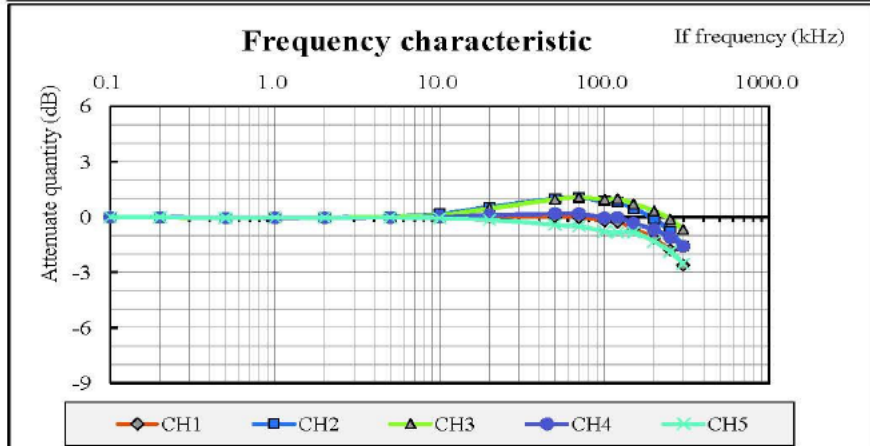
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### Frequency characteristic (Reference)

at Detected current  $I_f = 3.2 \times 12 \text{ A}$ ,  $V_{cc} = +5 \text{ V}$ ,  $R_L = 10 \text{ k}\Omega$ ,  $T_a = +25^\circ \text{C}$

| If frequency (kHz) | Output voltage - Offset voltage (mVrms) |     |     |     |     | Remarks |
|--------------------|---|-----|-----|-----|-----|---------|
|                    | CH1                                     | CH2 | CH3 | CH4 | CH5 |         |
| 0.1                | 165                                     | 165 | 168 | 166 | 166 |         |
| 0.2                | 165                                     | 165 | 168 | 166 | 166 |         |
| 0.5                | 164                                     | 164 | 167 | 165 | 165 |         |
| 1.0                | 165                                     | 164 | 168 | 166 | 166 |         |
| 2.0                | 165                                     | 164 | 168 | 166 | 165 |         |
| 5.0                | 165                                     | 166 | 169 | 166 | 166 |         |
| 10.0               | 165                                     | 168 | 171 | 166 | 165 |         |
| 20.0               | 166                                     | 176 | 178 | 168 | 163 |         |
| 50.0               | 165                                     | 185 | 188 | 170 | 158 |         |
| 70.0               | 165                                     | 186 | 191 | 170 | 157 |         |
| 100.0              | 161                                     | 182 | 188 | 166 | 152 |         |
| 120.0              | 160                                     | 181 | 189 | 166 | 151 |         |
| 150.0              | 154                                     | 174 | 183 | 160 | 151 |         |
| 200.0              | 145                                     | 163 | 175 | 154 | 143 |         |
| 250.0              | 134                                     | 151 | 166 | 147 | 134 |         |
| 300.0              | 122                                     | 137 | 156 | 139 | 124 |         |

| If frequency (kHz) | Output voltage attenuate quantity (dB) |        |        |        |        | Remarks |
|--------------------|--|--------|--------|--------|--------|---------|
|                    | CH1                                    | CH2    | CH3    | CH4    | CH5    |         |
| 0.1                | 0.000                                  | 0.000  | 0.000  | 0.000  | 0.000  |         |
| 0.2                | -0.011                                 | -0.003 | -0.022 | -0.011 | -0.016 |         |
| 0.5                | -0.054                                 | -0.054 | -0.054 | -0.058 | -0.052 |         |
| 1.0                | -0.029                                 | -0.029 | -0.028 | -0.038 | -0.029 |         |
| 2.0                | -0.034                                 | -0.033 | -0.031 | -0.044 | -0.039 |         |
| 5.0                | -0.005                                 | 0.031  | 0.009  | -0.026 | -0.029 |         |
| 10.0               | 0.003                                  | 0.170  | 0.111  | -0.008 | -0.071 |         |
| 20.0               | 0.030                                  | 0.541  | 0.457  | 0.107  | -0.153 |         |
| 50.0               | 0.002                                  | 0.995  | 0.960  | 0.189  | -0.422 |         |
| 70.0               | -0.026                                 | 1.040  | 1.067  | 0.180  | -0.505 |         |
| 100.0              | -0.229                                 | 0.853  | 0.954  | -0.037 | -0.793 |         |
| 120.0              | -0.287                                 | 0.822  | 0.986  | -0.021 | -0.838 |         |
| 150.0              | -0.621                                 | 0.456  | 0.702  | -0.340 | -0.833 |         |
| 200.0              | -1.155                                 | -0.090 | 0.327  | -0.693 | -1.333 |         |
| 250.0              | -1.805                                 | -0.768 | -0.111 | -1.106 | -1.876 |         |
| 300.0              | -2.623                                 | -1.593 | -0.667 | -1.594 | -2.548 |         |





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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