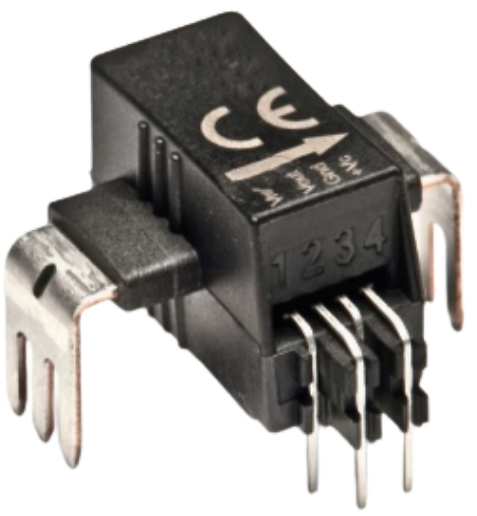
# Automotive Current Sensor ASIC Chip Series

## YC10..120LSR5



**Suitable for measuring DC, AC, and pulse currents; the primary and secondary circuits are completely isolated, with no insertion loss.**

| Product Model | Rated Current IpN(A) | Max Measurement Range IpM(A) | Sensitivity G(mV/A) | Rated Output Vout(V) |
|---|---|---|---|---|
| YCOV10LSR5 | 10 | ±25 | 80 | 0.8 |
| YCOV16LSR5 | 16 | ±40 | 50 | 0.8 |
| YCOV20LSR5 | 20 | ±50 | 40 | 0.8 |
| YCOV32LSR5 | 32 | ±80 | 25 | 0.8 |
| YCOV40LSR5 | 40 | ±100 | 20 | 0.8 |
| YCOV50LSR5 | 50 | ±125 | 16 | 0.8 |
| YCOV80LSR5 | 80 | ±200 | 10 | 0.8 |
| YCOV100LSR5 | 100 | ±250 | 8 | 0.8 |
| YCOV120LSR5 | 120 | ±300 | 6.67 | 0.8 |

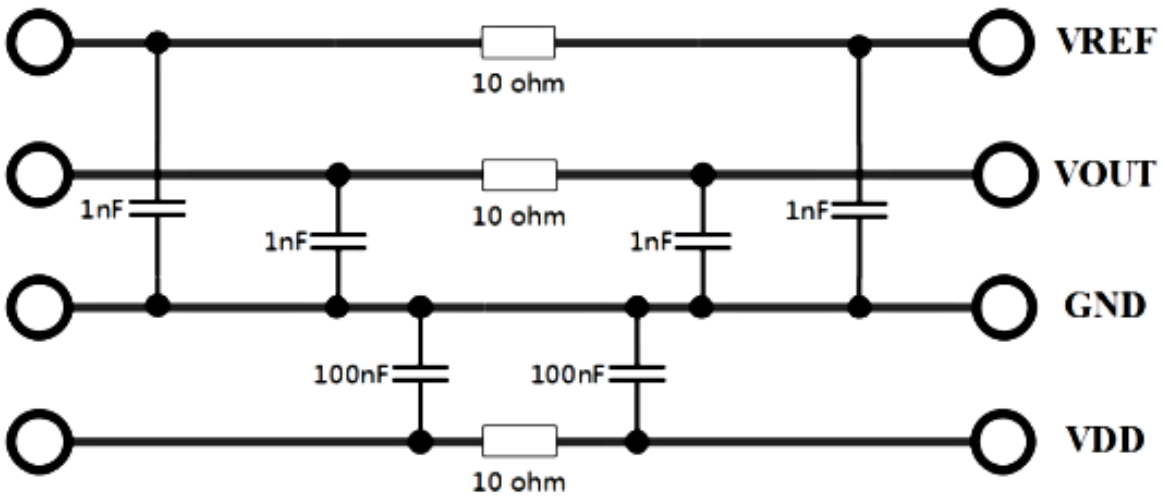
| Application Fields |
|---|
| • Servo Motors |
| • Battery Supply Applications |
| • Uninterruptible Power Supplies (UPS) |
| • Solar Controllers |
| • Welding Machine Power Applications |

| Parameter | Symbol | Unit | Min | Standard | Max |
|---|---|---|---|---|---|
| Operating Temperature Range | | ° C | -40 | | 105 |
| Storage Temperature Range | | ° C | -40 | | 105 |

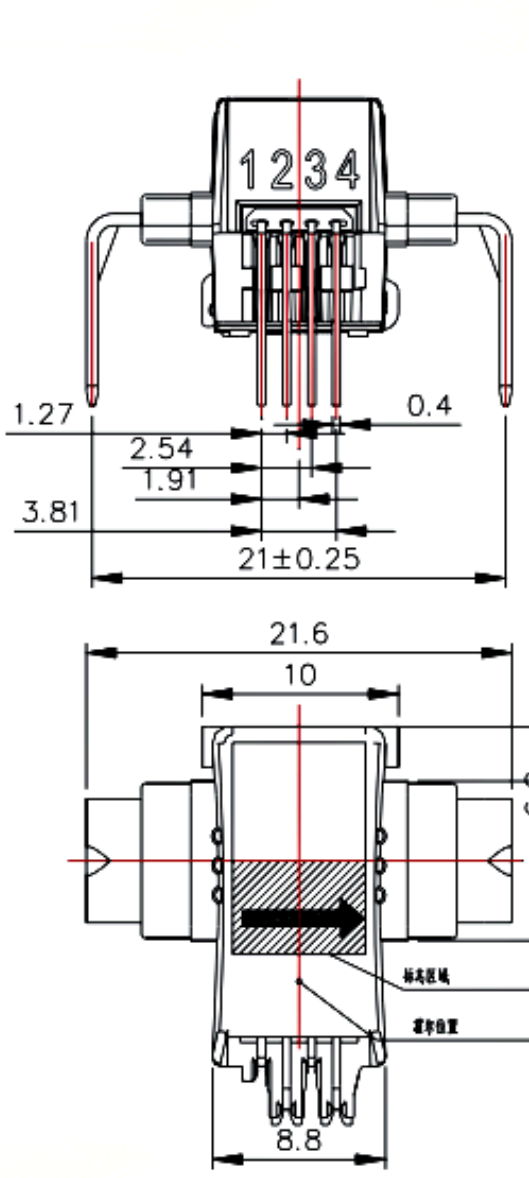
## Executive Standards

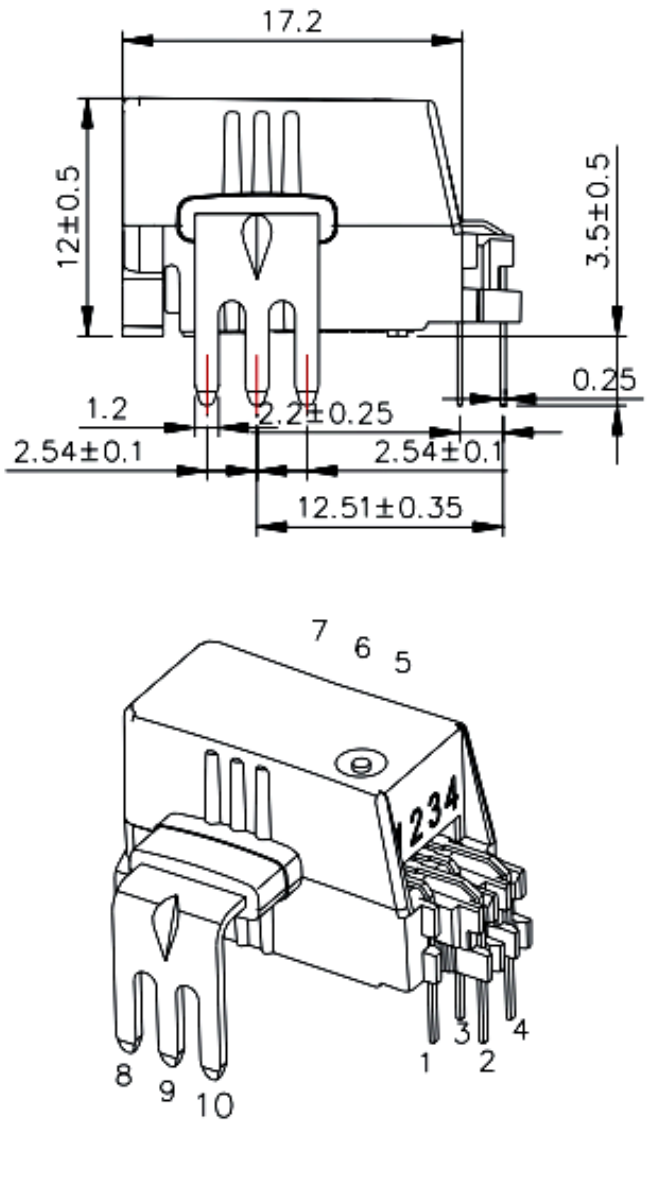
- JB/T 7490-2007 Hall Effect Current Sensors
- SJ20790-2000 General Specification for Current and Voltage Sensors

## Application Circuit



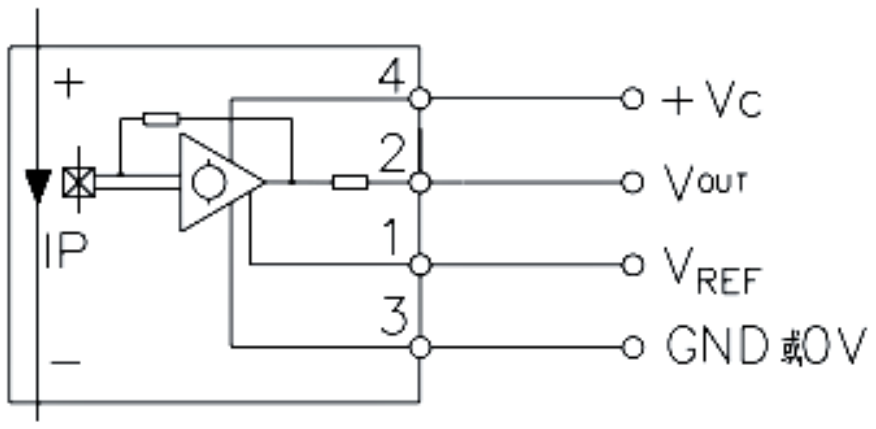

## Outline Dimensions and Pin Definition (Unit: mm)




| Pin Definition | | |
|---|---|---|
| 1 | VREF | Reference Voltage Output |
| 2 | VOUT | Output Pin |
| 3 | GND | Ground |
| 4 | +Vc | DC +5V |
| 5, 6, 7 | I+ | Input Current Positive |
| 8, 9, 10 | I- | Input Current Negative |

### Schematic Example

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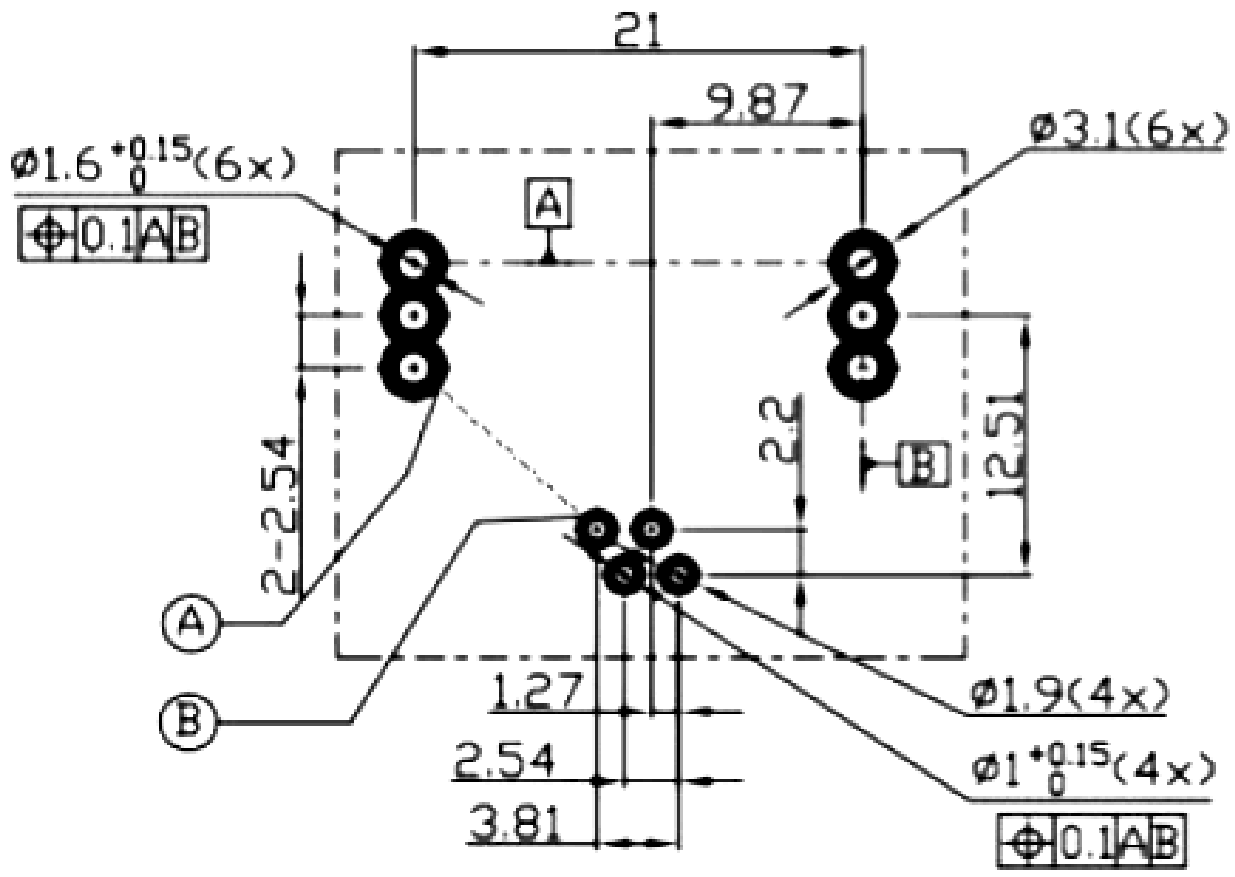
## PCB Dimension Drawing




| | $d_{CI}$(mm) | $d_{Cp}$(mm) |
|---|---|---|
| A-B | 9.42 | 9.42 |

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## YC0V10LSR5 Electrical Parameters @25°C, Vcc=5V, RL=10KΩ

| Parameter | Symbol | Unit | Min | Typ | Max | Remarks |
|---|---|---|---|---|---|---|
| Nominal Input Current | IPN | A | | 10 | | |
| Max Measurable Current | IPM | A | -25 | | 25 | Vcc > 4.6V |
| Overcurrent Copper Resistance | RP | mΩ | | 0.22 | | @TA=25 ° C |
| Supply Voltage | Vcc | V | 4.5 | 5 | 5.5 | |
| Power Consumption Current | IC | mA | | 8 | 10 | |
| Reference Voltage Output | Vref | V | 2.48 | 2.5 | 2.52 | |
| Output Voltage Range | Vout - Vref | V | -2 | | 2 | |
| Quiescent Output @IP=0 | VOE | mV | -5 | | 5 | Vout-Vref @ Vref=2.5V |
| Reference Voltage Temp Drift | TCVref | ppm/ ° C | -170 | | 170 | -40 ° C to 105 ° C |
| Quiescent Output Temp Drift | TCG | mV/ ° C | -0.075 | | 0.075 | -40 ° C to 105 ° C |
| Nominal Sensitivity | Gth | mV/A | | 80 | | 800mV@IPN |
| Sensitivity Error | ε G | % | -0.5 | | 0.5 | |
| Sensitivity Temp Drift @G | TCG | ppm/ ° C | -200 | | 200 | |
| Linearity 0-IPN | ε L | % of | -0.4 | | 0.4 | @0-IPN |
| Remanent Magnetism | IOM | A | -0.2 | | 0.2 | |
| Response Time 90% of IPN | tr | μs | | | 2.5 | @50A/μs |
| Bandwidth (-3dB) | BW | kHz | | 250 | | |
| Accuracy @ IPN @TA=25 ° C | X | % of IPN | -1 | | 1 | |
| Accuracy @ IPN @TA=-40-105 ° C | X | % of IPN | -2.5 | | 2.5 | |
| Insulation Voltage | KV | | | 2 | | |
| Overcurrent Copper Working Temp | ° C | | | | 120 | |

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## YC0V16LSR5 Electrical Parameters @25°C, Vcc=5V, RL=10KΩ

| Parameter | Symbol | Unit | Min | Typ | Max | Remarks |
|---|---|---|---|---|---|---|
| Nominal Input Current | IPN | A | | 16 | | |
| Max Measurable Current | IPM | A | -40 | | 40 | VCC > 4.6V |
| Overcurrent Copper Resistance | RP | mΩ | | 0.22 | | @TA=25 ° C |
| Supply Voltage | VCC | V | 4.5 | 5 | 5.5 | |
| Power Consumption Current | IC | mA | | 8 | 10 | |
| Reference Voltage Output | Vref | V | 2.48 | 2.5 | 2.52 | |
| Output Voltage Range | Vout - Vref | V | -2 | | 2 | |
| Quiescent Output @IP=0 | VOE | mV | -5 | | 5 | Vout-Vref @ |
| Reference Voltage Temp Drift | TCVref | ppm/ ° C | -170 | | 170 | -40 ° C to 105 ° C |
| Quiescent Output Temp Drift | TCG | mV/ ° C | -0.075 | | 0.075 | -40 ° C to 105 ° C |
| Nominal Sensitivity | Gth | mV/A | | 50 | | 800mV@IPN |
| Sensitivity Error | ε G | % | -0.5 | | 0.5 | |
| Sensitivity Temp Drift @G | TCG | ppm/ ° C | -200 | | 200 | |
| Linearity 0-IPN | ε L | % of | -0.4 | | 0.4 | @0-IPN |
| Remanence | IOM | A | -0.2 | | 0.2 | |
| Response Time 90% of IPN | tr | μs | | | 2.5 | @50A/μs |
| Bandwidth (-3dB) | BW | kHz | | 250 | | |
| Accuracy @ IPN @TA=25 ° C | X | % of IPN | -1 | | 1 | |
| Accuracy @ IPN @TA=-40~105 ° C | X | % of IPN | -2.5 | | 2.5 | |
| Insulation Voltage | KV | | | 2 | | |
| Overcurrent Busbar Operating Temp | ° C | | | | 120 | |

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## YC0V20LSR5 Electrical Parameters @25°C, Vcc=5V, RL=10KΩ

| Parameter | Symbol | Unit | Min | Typ | Max | Remarks |
|---|---|---|---|---|---|---|
| Nominal Input Current | IPN | A | | 20 | | |
| Max Measurable Current | IPM | A | -50 | | 50 | VCC > 4.6V |
| Overcurrent Copper Resistance | RP | mΩ | | 0.22 | | @TA=25 ° C |
| Supply Voltage | VCC | V | 4.5 | 5 | 5.5 | |
| Power Consumption Current | IC | mA | | 8 | 10 | |
| Reference Voltage Output | Vref | V | 2.48 | 2.5 | 2.52 | |
| Output Voltage Range | Vout - Vref | V | -2 | | 2 | |
| Quiescent Output @IP=0 | VOE | mV | -5 | | 5 | Vout-Vref @ Vref=2.5V |
| Reference Voltage Temp Drift | TCVref | ppm/ ° C | -170 | | 170 | -40 ° C to 105 ° C |
| Quiescent Output Temp Drift | TCVOE | mV/ ° C | -0.075 | | 0.075 | -40 ° C to 105 ° C |
| Nominal Sensitivity | Gth | mV/A | | 40 | | 800mV@IPN |
| Sensitivity Error | ε G | % | -0.5 | | 0.5 | |
| Sensitivity Temp Drift @G | TCG | ppm/ ° C | -200 | | 200 | |
| Linearity 0-IPN | ε L | % of | -0.4 | | 0.4 | @0-IPN |
| Remanence | IOM | A | -0.2 | | 0.2 | |
| Response Time 90% of IPN | tr | μs | | | 2.5 | @50A/μs |
| Bandwidth (-3dB) | BW | kHz | | 250 | | |
| Accuracy @ IPN @TA=25 ° C | X | % of IPN | -1 | | 1 | |
| Accuracy @ IPN @TA=-40-105 ° C | X | % of IPN | -2.5 | | 2.5 | |
| Insulation Voltage | KV | | | 2 | | |
| Overcurrent Copper Operating Temp | ° C | | | | 120 | |

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## YC0V32LSR5 Electrical Parameters @25°C, Vcc=5V, RL=10KΩ

| Parameter | Symbol | Unit | Min | Typ | Max | Remarks |
|---|---|---|---|---|---|---|
| Nominal Input Current | IPN | A | | 32 | | |
| Max Measurable Current | IPM | A | -80 | | 80 | VCC > 4.6V |
| Overcurrent Copper Resistance | RP | mΩ | | 0.22 | | @TA=25 ° C |
| Supply Voltage | VCC | V | 4.5 | 5 | 5.5 | |
| Power Consumption Current | IC | mA | | 8 | 10 | |
| Reference Voltage Output | Vref | V | 2.48 | 2.5 | 2.52 | |
| Output Voltage Range | Vout - Vref | V | -2 | | 2 | |
| Quiescent Output @IP=0 | VOE | mV | -5 | | 5 | Vout-Vref @ Vref=2.5V |
| Reference Voltage Temp Drift | TCVref | ppm/ ° C | -170 | | 170 | -40 ° C to 105 ° C |
| Quiescent Output Temp Drift | TCVOE | mV/ ° C | -0.075 | | 0.075 | -40 ° C to 105 ° C |
| Nominal Sensitivity | Gth | mV/A | | 25 | | 800mV@IPN |
| Sensitivity Error | ε G | % | -0.5 | | 0.5 | |
| Sensitivity Temp Drift @G | TCG | ppm/ ° C | -200 | | 200 | |
| Linearity 0-IPN | ε L | % of | -0.4 | | 0.4 | @0-IPN |
| Remanence (Magnetic Offset) | IOM | A | -0.2 | | 0.2 | |
| Response Time 90% of IPN | tr | μs | | | 2.5 | @50A/μs |
| Bandwidth (-3dB) | BW | kHz | | 250 | | |
| Accuracy @ IPN @TA=25 ° C | X | % of IPN | -1 | | 1 | |
| Accuracy @ IPN @TA=-40-105 ° C | X | % of IPN | -2.5 | | 2.5 | |
| Insulation Voltage | KV | | | 2 | | |
| Operating Temperature (Copper Bar) | ° C | | | | 120 | |

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## YC0V40LSR5 Electrical Parameters @25°C, Vcc=5V, RL=10KΩ

| Parameter | Symbol | Unit | Min | Typ | Max | Remarks |
|---|---|---|---|---|---|---|
| Nominal Input Current | IPN | A | | 40 | | |
| Max Measurable Current | IPM | A | -100 | | 100 | VCC > 4.6V |
| Overcurrent Copper Resistance | RP | mΩ | | 0.22 | | @TA=25 ° C |
| Supply Voltage | VCC | V | 4.5 | 5 | 5.5 | |
| Power Consumption Current | IC | mA | | 8 | 10 | |
| Reference Voltage Output | Vref | V | 2.48 | 2.5 | 2.52 | |
| Output Voltage Range | Vout -Vref | V | -2 | | 2 | |
| Quiescent Output @IP=0 | VOE | mV | -5 | | 5 | Vout-Vref @ Vref=2.5V |
| Reference Voltage Temp Drift | TCVref | ppm/ ° C | -170 | | 170 | -40 ° C to 105 ° C |
| Quiescent Output Temp Drift | TCVOE | mV/ ° C | -0.075 | | 0.075 | -40 ° C to 105 ° C |
| Nominal Sensitivity | Gth | mV/A | | 20 | | 800mV@IPN |
| Sensitivity Error | ε G | % | -0.5 | | 0.5 | |
| Sensitivity Temp Drift @G | TCG | ppm/ ° C | -200 | | 200 | |
| Linearity 0-IPN | ε L | % of | -0.4 | | 0.4 | @0-IPN |
| Remanence | IOM | A | -0.2 | | 0.2 | |
| Response Time 90% of IPN | tr | μs | | | 2.5 | @50A/μs |
| Bandwidth (-3dB) | BW | kHz | | 250 | | |
| Accuracy @ IPN @TA=25 ° C | X | % of IPN | -1 | | 1 | |
| Accuracy @ IPN @TA=-40-105 ° C | X | % of IPN | -2.5 | | 2.5 | |
| Insulation Voltage | KV | | | 2 | | |
| Overcurrent Copper Operating Temp | ° C | | | | 120 | |

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## YC0V50LSR5 Electrical Parameters @25°C, Vcc=5V, RL=10KΩ

| Parameter | Symbol | Unit | Min | Typ | Max | Remarks |
|---|---|---|---|---|---|---|
| Nominal Input Current | IPN | A | | 50 | | |
| Max Measurable Current | IPM | A | -125 | | 125 | VCC > 4.6V |
| Overcurrent Copper Resistance | RP | mΩ | | 0.22 | | @TA=25 ° C |
| Supply Voltage | VCC | V | 4.5 | 5 | 5.5 | |
| Power Consumption Current | IC | mA | | 8 | 10 | |
| Reference Voltage Output | Vref | V | 2.48 | 2.5 | 2.52 | |
| Output Voltage Range | Vout - Vref | V | -2 | | 2 | |
| Quiescent Output @IP=0 | VOE | mV | -5 | | 5 | Vout-Vref @ Vref=2.5V |
| Reference Voltage Temp Drift | TCVref | ppm/ ° C | -170 | | 170 | -40 ° C to 105 ° C |
| Quiescent Output Temp Drift | TCVOE | mV/ ° C | -0.075 | | 0.075 | -40 ° C to 105 ° C |
| Nominal Sensitivity | Gth | mV/A | | 16 | | 800mV@IPN |
| Sensitivity Error | ε G | % | -0.5 | | 0.5 | |
| Sensitivity Temp Drift @G | TCG | ppm/ ° C | -200 | | 200 | |
| Linearity 0-IPN | ε L | % of | -0.4 | | 0.4 | @0-IPN |
| Remanence | IOM | A | -0.2 | | 0.2 | |
| Response Time 90% of IPN | tr | μs | | | 2.5 | @50A/μs |
| Bandwidth (-3dB) | BW | kHz | | 250 | | |
| Accuracy @ IPN @TA=25 ° C | X | % of IPN | -1 | | 1 | |
| Accuracy @ IPN @TA=-40-105 ° C | X | % of IPN | -2.5 | | 2.5 | |
| Insulation Voltage | KV | | | 2 | | |
| Overcurrent Copper Operating Temp | ° C | | | | 120 | |

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## YC0V80LSR5 Electrical Parameters @25°C, Vcc=5V, RL=10KΩ

| Parameter | Symbol | Unit | Min | Typ | Max | Remarks |
|---|---|---|---|---|---|---|
| Nominal Input Current | IPN | A | | 80 | | |
| Max Measurable Current | IPM | A | -200 | | 200 | VCC > 4.6V |
| Overcurrent Copper Resistance | RP | mΩ | | 0.22 | | @TA=25 ° C |
| Supply Voltage | VCC | V | 4.5 | 5 | 5.5 | |
| Power Consumption Current | IC | mA | | 8 | 10 | |
| Reference Voltage Output | Vref | V | 2.48 | 2.5 | 2.52 | |
| Output Voltage Range | Vout -Vref | V | -2 | | 2 | |
| Quiescent Output @IP=0 | VOE | mV | -5 | | 5 | Vout-Vref @ Vref=2.5V |
| Reference Voltage Temp Drift | TCVref | ppm/ ° C | -170 | | 170 | -40 ° C to 105 ° C |
| Quiescent Output Temp Drift | TCVOE | mV/ ° C | -0.075 | | 0.075 | -40 ° C to 105 ° C |
| Nominal Sensitivity | Gth | mV/A | | 10 | | 800mV@IPN |
| Sensitivity Error | ε G | % | -0.5 | | 0.5 | |
| Sensitivity Temp Drift @G | TCG | ppm/ ° C | -200 | | 200 | |
| Linearity 0-IPN | ε L | % of | -0.4 | | 0.4 | @0-IPN |
| Remanence | IOM | A | -0.2 | | 0.2 | |
| Response Time 90% of IPN | tr | μs | | | 2.5 | @50A/μs |
| Bandwidth (-3dB) | BW | kHz | | 250 | | |
| Accuracy @ IPN @TA=25 ° C | X | % of IPN | -1 | | 1 | |
| Accuracy @ IPN @TA=-40-105 ° C | X | % of IPN | -2.5 | | 2.5 | |
| Insulation Voltage | KV | | | 2 | | |
| Overcurrent Copper Operating Temp | ° C | | | | 120 | |

## YC0V100LSR5 Electrical Parameters @25°C, Vcc=5V, RL=10KΩ

| Parameter | Symbol | Unit | Min | Typ | Max | Remarks |
|---|---|---|---|---|---|---|
| Nominal Input Current | IPN | A | | 100 | | |
| Max Measurable Current | IPM | A | -250 | | 250 | VCC > 4.6V |
| Overcurrent Copper Resistance | RP | mΩ | | 0.22 | | @TA=25 ° C |
| Supply Voltage | VCC | V | 4.5 | 5 | 5.5 | |
| Power Consumption Current | IC | mA | | 8 | 10 | |
| Reference Voltage Output | Vref | V | 2.48 | 2.5 | 2.52 | |
| Output Voltage Range | Vout -Vref | V | -2 | | 2 | |
| Quiescent Output @IP=0 | VOE | mV | -5 | | 5 | Vout-Vref @ Vref=2.5V |
| Reference Voltage Temp Drift | TCVref | ppm/ ° C | -170 | | 170 | -40 ° C to 105 ° C |
| Quiescent Output Temp Drift | TCVOE | mV/ ° C | -0.075 | | 0.075 | -40 ° C to 105 ° C |
| Nominal Sensitivity | Gth | mV/A | | 8 | | 800mV@IPN |
| Sensitivity Error | ε G | % | -0.5 | | 0.5 | |
| Sensitivity Temp Drift @G | TCG | ppm/ ° C | -200 | | 200 | |
| Linearity 0-IPN | ε L | % of | -0.4 | | 0.4 | @0-IPN |
| Remanence | IOM | A | -0.2 | | 0.2 | |
| Response Time 90% of IPN | tr | μs | | | 2.5 | @50A/μs |
| Bandwidth (-3dB) | BW | kHz | | 250 | | |
| Accuracy @ IPN @TA=25 ° C | X | % of IPN | -1 | | 1 | |
| Accuracy @ IPN @TA=-40-105 ° C | X | % of IPN | -2.5 | | 2.5 | |
| Insulation Voltage | KV | | | 2 | | |
| Overcurrent Copper Operating Temp | ° C | | | | 120 | |

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## YC0V120LSR5 Electrical Parameters @25°C, Vcc=5V, RL=10KΩ

| Parameter | Symbol | Unit | Min | Typ | Max | Remarks |
|---|---|---|---|---|---|---|
| Nominal Input Current | IPN | A | | 120 | | |
| Max Measurable Current | IPM | A | -300 | | 300 | VCC > 4.6V |
| Overcurrent Copper Resistance | RP | mΩ | | 0.22 | | @TA=25 ° C |
| Supply Voltage | VCC | V | 4.5 | 5 | 5.5 | |
| Power Consumption Current | IC | mA | | 8 | 10 | |
| Reference Voltage Output | Vref | V | 2.48 | 2.5 | 2.52 | |
| Output Voltage Range | Vout -Vref | V | -2 | | 2 | |
| Quiescent Output @IP=0 | VOE | mV | -5 | | 5 | Vout-Vref @ Vref=2.5V |
| Reference Voltage Temp Drift | TCVref | ppm/ ° C | -170 | | 170 | -40 ° C to 105 ° C |
| Quiescent Output Temp Drift | TCVOE | mV/ ° C | -0.075 | | 0.075 | -40 ° C to 105 ° C |
| Nominal Sensitivity | Gth | mV/A | | 6.67 | | 800mV@IPN |
| Sensitivity Error | ε G | % | -0.5 | | 0.5 | |
| Sensitivity Temp Drift @G | TCG | ppm/ ° C | -200 | | 200 | |
| Linearity 0-IPN | ε L | % of | -0.4 | | 0.4 | @0-IPN |
| Remanence | IOM | A | -0.2 | | 0.2 | |
| Response Time 90% of IPN | tr | μs | | | 2.5 | @50A/μs |
| Bandwidth (-3dB) | BW | kHz | | 250 | | |
| Accuracy @ IPN @TA=25 ° C | X | % of IPN | -1 | | 1 | |
| Accuracy @ IPN @TA=-40-105 ° C | X | % of IPN | -2.5 | | 2.5 | |
| Insulation Voltage | KV | | | 2 | | |
| Overcurrent Copper Operating Temp | ° C | | | | 120 | |

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