# KAS10 SERIES

AC - DC POWER MODULE
10W SINGLE OUTPUT

## FEATURES

- AC/DC POWER MODULE
- UNIVERSAL INPUT 85 ~ 265 VAC, 47 - 440Hz
- HIGH EFFICIENCY UP TO 82%
- SHORT CIRCUIT PROTECTION
- COMPLY WITH ErP
- 3 YEARS WARRANTY

UL 62368-1 EN 62368-1

## MODEL LIST

| MODEL NO. | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (min.) | EFF. (typ.) | EFF. (avg.) | CAPACITOR LOAD (max.) |
|---|---|---|---|---|---|---|---|---|
| **Single Output Models** | | | | | | | | |
| KAS1003 | 85~265 VAC | 8.2 WATTS | + 3.3 VDC | 2500 mA | 72% | 74% | 72% | 7000 μF |
| KAS1005 | 85~265 VAC | 10 WATTS | + 5 VDC | 2000 mA | 77% | 79% | 74% | 7000 μF |
| KAS1009 | 85~265 VAC | 10 WATTS | + 9 VDC | 1120 mA | 78% | 80% | 77% | 3300 μF |
| KAS1012 | 85~265 VAC | 10 WATTS | + 12 VDC | 840 mA | 80% | 82% | 77% | 2200 μF |
| KAS1015 | 85~265 VAC | 10 WATTS | + 15 VDC | 670 mA | 80% | 82% | 77% | 1500 μF |
| KAS1024 | 85~265 VAC | 10 WATTS | + 24 VDC | 420 mA | 80% | 82% | 77% | 680 μF |

## SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

### GENERAL

| Characteristics | Conditions | | min. | typ. | max. | unit |
|---|---|---|---|---|---|---|
| Switching frequency | Vi nom, Io nom | | | 132 | | KHz |
| Isolation voltage | Input - Output | | 3,000/4,242 | | | VAC/VDC |
| Isolation resistance | Input - Output, @ 500VDC | | 100 | | | MΩ |
| Ambient temperature | Operating at Vi nom, Io nom | | -40 | | + 71 | °C |
| Case temperature | Operating at Vi nom, Io nom | | | | + 85 | °C |
| Derating | Vi nom, +51 to + 71°C | 3.3V & 5V | | | 2 | % / °C |
| | Vi nom, +61 to + 71°C | Other | | | 4 | % / °C |
| Storage temperature | Non operational | | -40 | | +100 | °C |
| Relative humidity | Vi nom, Io nom | | 20 | | 95 | % RH |

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All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

## GENERAL

| Characteristics | Conditions | | min. | typ. | max. | unit |
|---|---|---|---|---|---|---|
| Temperature coefficient | Vi nom, Io min | | | | ± 0.03 | % / °C |
| MTBF | Bellcore issue 6 @40°C, GB | 3.3V | | 850,000 | | Hours |
| | | 5V & 9V | | 860,000 | | Hours |
| | | 12V & 15V | | 880,000 | | Hours |
| | | 24V | | 925,000 | | Hours |
| Altitude during operation | EN 62368-1 | | | | 5,000 | m |
| Dimension | | | | L52.4 x W27.2 x H22.8 | | mm |
| Cooling | Free air convection | | | | | |

## INPUT SPECIFICATIONS

| Characteristics | Conditions | | min. | typ. | max. | unit |
|---|---|---|---|---|---|---|
| Rated input voltage | Io nom | | 100 | | 240 | VAC |
| Input voltage range | Ta min ... Ta max, Io nom | AC in | 85 | | 265 | VAC |
| | | DC in | 120 | | 375 | VDC |
| Input current | Vi : 115 / 230 VAC, Io nom | | | 210 / 145 | | mA |
| Rated input current | Vi : 85 VAC, Io nom | | | | 300 | mA |
| Line frequency | Vi nom, Io nom | | 47 | | 440 | Hz |
| Inrush current | Vi : 115 / 230 VAC, Io nom | | | | 10/18 | A |
| Leakage current | Input - Output | | | | 0.25 | mA |
| Standby power consumption | Vi nom, Io = No Load | | | | 0.3 | W |

## OUTPUT SPECIFICATIONS

| Characteristics | Conditions | min. | typ. | max. | unit |
|---|---|---|---|---|---|
| Output voltage accuracy | Vi nom, Io nom | | | ± 2 | % |
| Minimum load | Vi nom | 0 | | | % |
| Line regulation | Io nom, Vi min ...Vi max | | | ± 1 | % |
| Load regulation | Vi nom, Io min ...Io nom | | | ± 2 | % |
| Hold up time | Vi:115/230 VAC, Io nom | 15 / 30 | | | ms |
| Turn on time | Vi nom, Io nom | | | 1,000 | ms |
| Rise time | Vi nom, Io nom | | | 150 | ms |
| Fall time | Vi nom, Io nom | | | 150 | ms |
| Transient recovery time | Vi nom, 1~0.5 Io nom | | | 2 | ms |
| Ripple & noise | Vi nom, Io nom, BW = 20MHz | | | 100 | mV |
| Efficiency | Vi nom, Io nom, Po / Pi | Up to 82%, See model list and typ efficiency curve | | | |

## CONTROL AND PROTECTION

| Characteristics | Conditions | min. | typ. | max. | unit |
|---|---|---|---|---|---|
| Input fuse | | T1A / 250VAC internal | | | |
| Output short circuit | | Hiccup mode | | | |
| Rated over load protection | Vi nom (see typ current limited curve) | 130 | | 180 | % |

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### APPROVALS AND STANDARDS

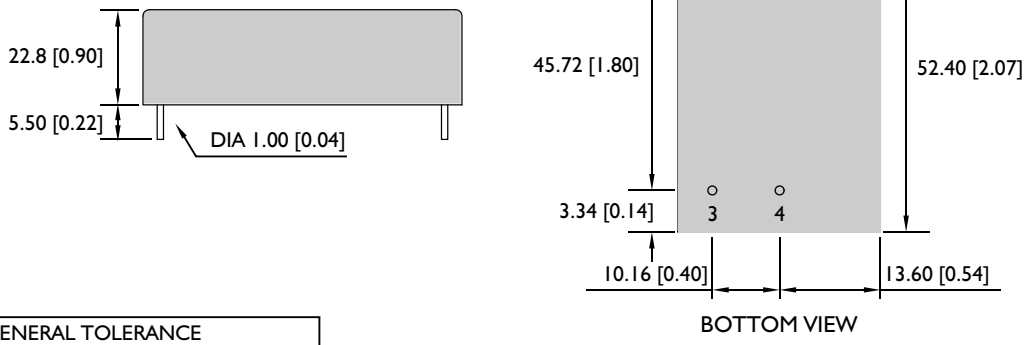
| | |
|---|---|
| cTUVus | UL 62368-1 |
| TUV | EN 62368-1 |
| CE | EN 61000-6-3, EN 55032 Class B, EN 61000-3-2, EN 61000-3-3<br>EN 61000-6-2, EN 55024, EN 61000-4-2, EN 61000-4-3<br>EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8<br>EN 61000-4-11, EN 61204-3 |
| Vibration resistance | meet IEC 60068-2-6 (10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis ) |
| Shock resistance | meet IEC 60068-2-27 (15G, 11ms, 3 axes, 6 Faces, 3 times for each Face) |

## PHYSICAL CHARACTERISTICS

| | |
|---|---|
| Case size | 52.4 x 27.2 x 22.8mm ( 2.06 x 1.07 x 0.9 inches) |
| Case material | Plastic |
| Weight | 55g |
| Potting material | Epoxy |

## MECHANISM & PIN CONFIGURATION

mm [inch]




| GENERAL TOLERANCE | |
|---|---|
| 0.00[0.00] - 30.00[1.18] | ±0.30[0.01] |
| 30.00[1.18] - 120.00[4.72] | ±0.50[0.02] |

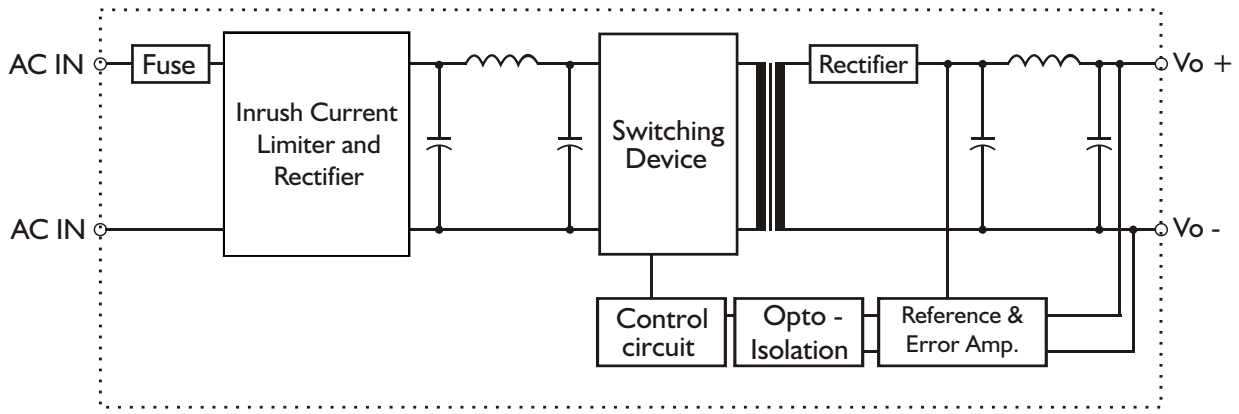
## PIN ASSIGNMENT

### GENERAL

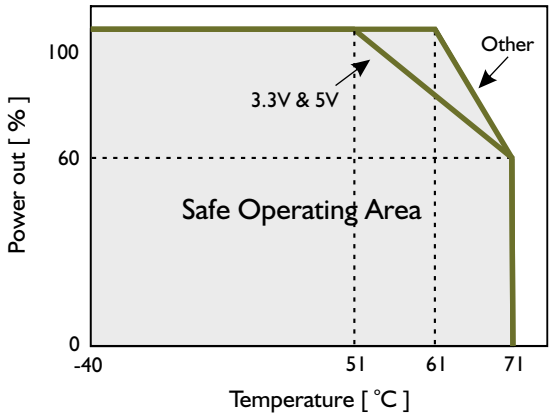
| PIN NO. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| SINGLE | AC IN | AC IN | Vo + | Vo - |

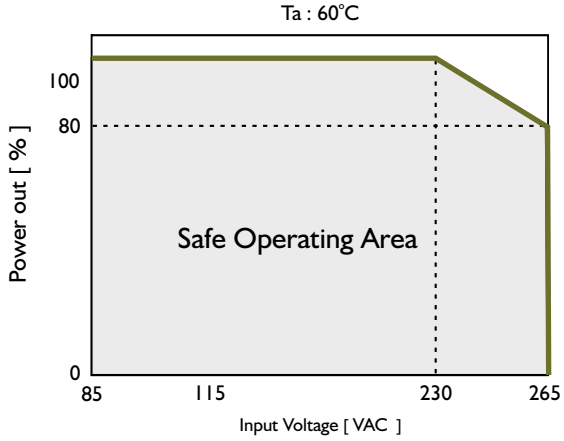
## CIRCUIT SCHEMATIC

• Block diagram for KAS10 series with single output

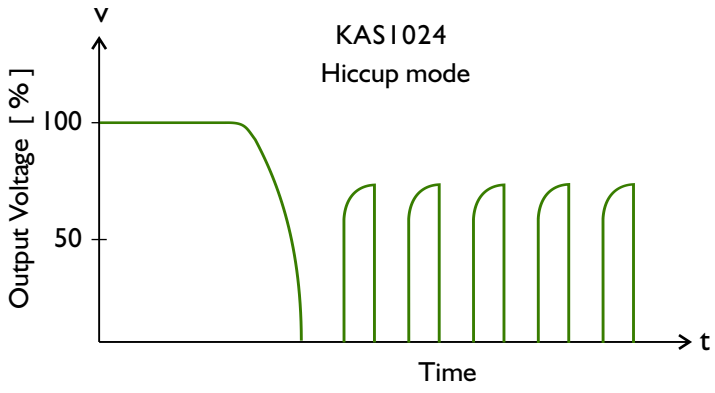


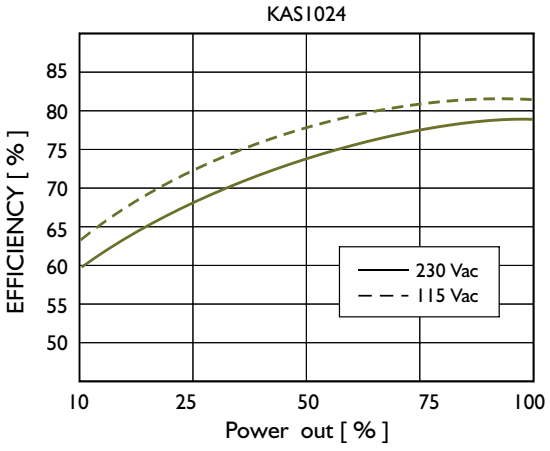

## DERATING CURVE




## TYP. CURRENT LIMITED CURVE




## TYP. EFFICIENCY CURVE