

## Series AM30K-IZ

### 30 Watt | DC-DC Converter

#### FEATURES:



- RoHS compliant
- Power modules for PCB mounting
- Capacitive loading up to 5500  $\mu$ F (36-75V Input)
- Remote On/Off control
- Operating temperature range: -40 to +85°C
- Soft start
- High efficiency
- Standard package
- UVLO / OVLO Shutdown
- Thermal shutdown

#### Models Single output



| Model            | Input Voltage (V) | Output Voltage (V) | Output Current max (A) | Ripple & Noise Typ. | Isolation (VDC) | Efficiency (%) |
|------------------|-------------------|--------------------|------------------------|---------------------|-----------------|----------------|
| AM30K-1203SIZ    | 9-18              | 3.3                | 5.5                    | 80 mV p-p           | 1500            | 81             |
| AM30K-1205SIZ    | 9-18              | 5                  | 5                      | 80 mV p-p           | 1500            | 83             |
| AM30K-1212SIZ    | 9-18              | 12                 | 2.5                    | 120 mV p-p          | 1500            | 86             |
| AM30K-1215SIZ    | 9-18              | 15                 | 2                      | 150 mV p-p          | 1500            | 87             |
| AM30K-1224SIZ    | 9-18              | 24                 | 1.25                   | 240 mV p-p          | 1500            | 86             |
| AM30K-2403SIZ    | 18-36             | 3.3                | 5.5                    | 80 mV p-p           | 1500            | 82             |
| AM30K-2405SIZ    | 18-36             | 5                  | 5                      | 80 mV p-p           | 1500            | 86             |
| AM30K-2412SIZ    | 18-36             | 12                 | 2.5                    | 120 mV p-p          | 1500            | 88             |
| AM30K-2415SIZ    | 18-36             | 15                 | 2                      | 150 mV p-p          | 1500            | 88             |
| AM30K-2424SIZ    | 18-36             | 24                 | 1.25                   | 240 mV p-p          | 1500            | 86             |
| AM30K-4803SIZ    | 36-75             | 3.3                | 5.5                    | 80 mV p-p           | 1500            | 82             |
| AM30K-4805SIZ    | 36-75             | 5                  | 5                      | 80 mV p-p           | 1500            | 86             |
| AM30K-4812SIZ    | 36-75             | 12                 | 2.5                    | 120 mV p-p          | 1500            | 88             |
| AM30K-4815SIZ    | 36-75             | 15                 | 2                      | 150 mV p-p          | 1500            | 88             |
| AM30K-4824SIZ    | 36-75             | 24                 | 1.25                   | 240 mV p-p          | 1500            | 86             |
| AM30K-1203SH30IZ | 9-18              | 3.3                | 6                      | 80 mV p-p           | 3000            | 80             |
| AM30K-1205SH30IZ | 9-18              | 5                  | 5                      | 80 mV p-p           | 3000            | 81             |
| AM30K-1212SH30IZ | 9-18              | 12                 | 2.5                    | 120 mV p-p          | 3000            | 84             |
| AM30K-1215SH30IZ | 9-18              | 15                 | 2                      | 150 mV p-p          | 3000            | 83             |
| AM30K-1224SH30IZ | 9-18              | 24                 | 1.2                    | 240 mV p-p          | 3000            | 82             |
| AM30K-2403SH30IZ | 18-36             | 3.3                | 6                      | 80 mV p-p           | 3000            | 80             |
| AM30K-2405SH30IZ | 18-36             | 5                  | 5                      | 80 mV p-p           | 3000            | 80             |
| AM30K-2412SH30IZ | 18-36             | 12                 | 2.5                    | 120 mV p-p          | 3000            | 84             |
| AM30K-2415SH30IZ | 18-36             | 15                 | 2                      | 150 mV p-p          | 3000            | 83             |
| AM30K-2424SH30IZ | 18-36             | 24                 | 1.2                    | 240 mV p-p          | 3000            | 83             |
| AM30K-4803SH30IZ | 36-75             | 3.3                | 6                      | 80 mV p-p           | 3000            | 77             |
| AM30K-4805SH30IZ | 36-75             | 5                  | 5                      | 80 mV p-p           | 3000            | 82             |
| AM30K-4812SH30IZ | 36-75             | 12                 | 2.5                    | 120 mV p-p          | 3000            | 84             |
| AM30K-4815SH30IZ | 36-75             | 15                 | 2                      | 150 mV p-p          | 3000            | 85             |
| AM30K-4824SH30IZ | 36-75             | 24                 | 1.2                    | 240 mV p-p          | 3000            | 85             |

#### Models Dual output

| Model         | Input Voltage (V) | Output Voltage (V) | Output Current max (A) | Ripple & Noise Typ. | Isolation (VDC) | Efficiency (%) |
|---------------|-------------------|--------------------|------------------------|---------------------|-----------------|----------------|
| AM30K-1205DIZ | 9-18              | $\pm$ 5            | $\pm$ 2.5              | 80 mV p-p           | 1500            | 83             |
| AM30K-1212DIZ | 9-18              | $\pm$ 12           | $\pm$ 1.25             | 120 mV p-p          | 1500            | 86             |
| AM30K-1215DIZ | 9-18              | $\pm$ 15           | $\pm$ 1                | 150 mV p-p          | 1500            | 87             |
| AM30K-2405DIZ | 18-36             | $\pm$ 5            | $\pm$ 2.5              | 80 mV p-p           | 1500            | 86             |
| AM30K-2412DIZ | 18-36             | $\pm$ 12           | $\pm$ 1.25             | 120 mV p-p          | 1500            | 88             |
| AM30K-2415DIZ | 18-36             | $\pm$ 15           | $\pm$ 1                | 150 mV p-p          | 1500            | 86             |
| AM30K-4805DIZ | 36-75             | $\pm$ 5            | $\pm$ 2.5              | 80 mV p-p           | 1500            | 86             |

## Models

### Dual output (continued)

| Model            | Input Voltage (V) | Output Voltage (V) | Output Current max (A) | Ripple & Noise Typ. | Isolation (VDC) | Efficiency (%) |
|------------------|-------------------|--------------------|------------------------|---------------------|-----------------|----------------|
| AM30K-4812DIZ    | 36-75             | ±12                | ±1.25                  | 120 mV p-p          | 1500            | 88             |
| AM30K-4815DIZ    | 36-75             | ±15                | ±1                     | 150 mV p-p          | 1500            | 88             |
| AM30K-1205DH30IZ | 9-18              | ±5                 | ±3                     | 80 mV p-p           | 3000            | 81             |
| AM30K-1212DH30IZ | 9-18              | ±12                | ±1.25                  | 120 mV p-p          | 3000            | 83             |
| AM30K-1215DH30IZ | 9-18              | ±15                | ±1                     | 150 mV p-p          | 3000            | 83             |
| AM30K-2405DH30IZ | 18-36             | ±5                 | ±3                     | 80 mV p-p           | 3000            | 83             |
| AM30K-2412DH30IZ | 18-36             | ±12                | ±1.25                  | 120 mV p-p          | 3000            | 85             |
| AM30K-2415DH30IZ | 18-36             | ±15                | ±1                     | 150 mV p-p          | 3000            | 85             |
| AM30K-4805DH30IZ | 36-75             | ±5                 | ±3                     | 80 mV p-p           | 3000            | 84             |
| AM30K-4812DH30IZ | 36-75             | ±12                | ±1.25                  | 120 mV p-p          | 3000            | 85             |
| AM30K-4815DH30IZ | 36-75             | ±15                | ±1                     | 150 mV p-p          | 3000            | 85             |

## Input Specifications

| Parameters                            | Nominal            | Typical                                                                    | Maximum | Units |
|---------------------------------------|--------------------|----------------------------------------------------------------------------|---------|-------|
| Voltage range                         | 12                 | 9-18                                                                       |         | VDC   |
|                                       | 24                 | 18-36                                                                      |         |       |
|                                       | 48                 | 36-75                                                                      |         |       |
| Filter                                | $\pi$ (Pi) Network |                                                                            |         |       |
| Recommended input fuse (Slow Blow)    | 12 Vin             | 8A/250V                                                                    |         |       |
|                                       | 24 Vin             | 4A/250V                                                                    |         |       |
|                                       | 48 Vin             | 2A/250V                                                                    |         |       |
| Remote On/Off Control                 | On                 | 3.5 to 12VDC or open circuit                                               |         |       |
|                                       | Off                | 0 to 1.2VDC or short circuit between pin 2 and 4; typical idle current 3mA |         |       |
| Absolute Maximum Rating               | 12 Vin             |                                                                            | 20      | VDC   |
|                                       | 24 Vin             |                                                                            | 40      |       |
|                                       | 48 Vin             |                                                                            | 80      |       |
| Permissible absolute maximum duration |                    |                                                                            | 2       | hours |

## Isolation Specifications

| Parameters         | Conditions | Typical     | Maximum | Units |
|--------------------|------------|-------------|---------|-------|
| Tested I/O voltage | 3 sec      | 1500 & 3000 |         | VDC   |
| Resistance         |            | > 1000      |         | MOhm  |

## Output Specifications

| Parameters                       | Conditions                                  | Typical | Maximum | Units |
|----------------------------------|---------------------------------------------|---------|---------|-------|
| Voltage accuracy                 |                                             | ±2      |         | %     |
| Short Circuit protection         | Continuous                                  |         |         |       |
| Short Circuit restart            | Auto recovery                               |         |         |       |
| Over load protection             | Auto recovery works at 110% of rated output |         |         |       |
| Over voltage protection          | Zener diode clamp protection                |         |         |       |
| Line voltage regulation (Single) | HL-LL                                       | ±0.5    |         | %     |
| Line voltage regulation (Dual)   | HL-LL                                       | ±0.5    |         | %     |
| Load voltage regulation (Single) | 25-100%                                     | ±0.5    |         | %     |
| Load voltage regulation (Dual)   | 25-100%                                     | ±2      |         | %     |
| Temperature coefficient          |                                             | ±0.05   |         | %/°C  |
| Voltage adjustment range         |                                             | ±10     |         | %     |

## General Specifications

| Parameters               | Conditions               | Typical     | Maximum | Units |
|--------------------------|--------------------------|-------------|---------|-------|
| Switching frequency      | 100% load                | 250         |         | KHz   |
| Operating temperature    | With derating above 70°C | -40 to +85  |         | °C    |
| Storage temperature      |                          | -55 to +105 |         | °C    |
| Maximum case temperature |                          |             | 95      | °C    |
| Thermal shutdown         |                          | +105        | +115    | °C    |

## General Specifications (continued)

| Parameters             | Conditions                                                              | Typical                   | Maximum                  | Units              |
|------------------------|-------------------------------------------------------------------------|---------------------------|--------------------------|--------------------|
| Cooling                |                                                                         | Free air convection       |                          |                    |
| Humidity               |                                                                         |                           | 95                       | %                  |
| Case material          | Nickel coated copper with non conductive base. Six Sided Shielded       |                           |                          |                    |
| Weight                 |                                                                         | 50                        |                          | g                  |
| Dimensions (L x W x H) | Tolerance $\pm 0.5\text{mm}$                                            | 2.00 x 1.60 x 0.40 inches | 50.80 x 40.60 x 10.16 mm |                    |
| MTBF                   | > 550 000 hrs (MIL-HDBK -217F, Ground Benign, $t=+25^{\circ}\text{C}$ ) |                           |                          |                    |
| Soldering Temperature  | 1.5 mm from case for 10 sec                                             |                           | 260                      | $^{\circ}\text{C}$ |

NOTE: All specifications in this datasheet are measured at an ambient temperature of  $25^{\circ}\text{C}$ , humidity < 75%, nominal input voltage and at rated output load unless otherwise specified.

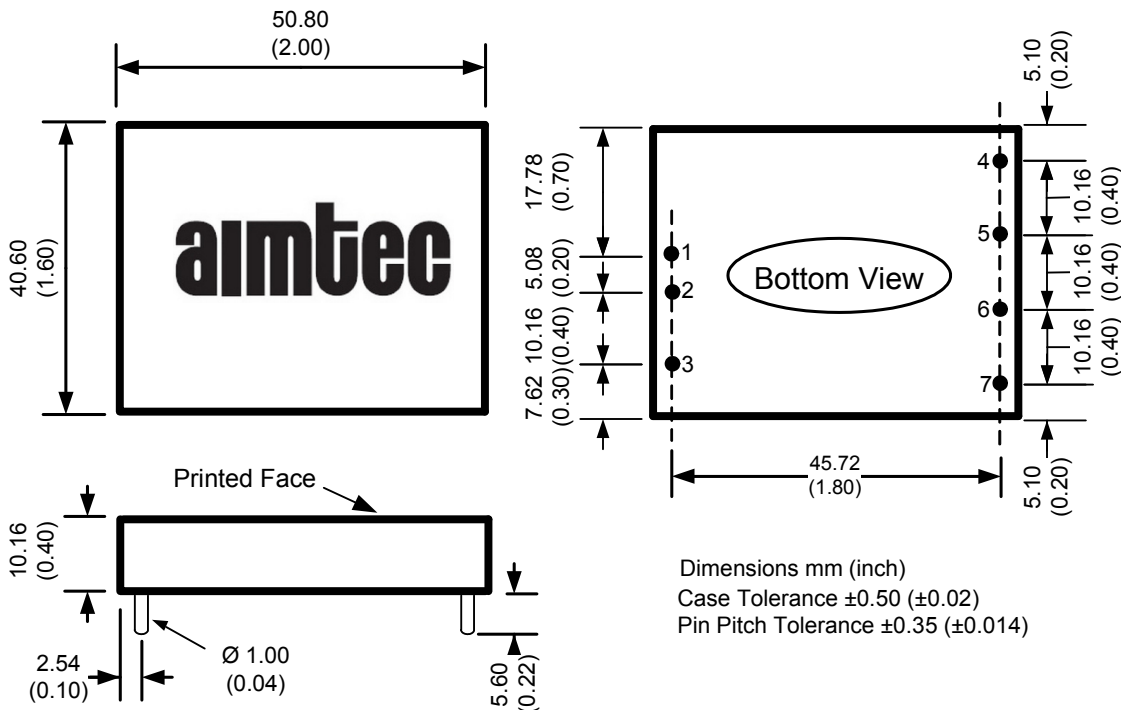
## Safety Specifications

| Parameters       |                            |
|------------------|----------------------------|
| Agency approvals | CE                         |
| Standards        | EN 55022, EN 55024 class A |

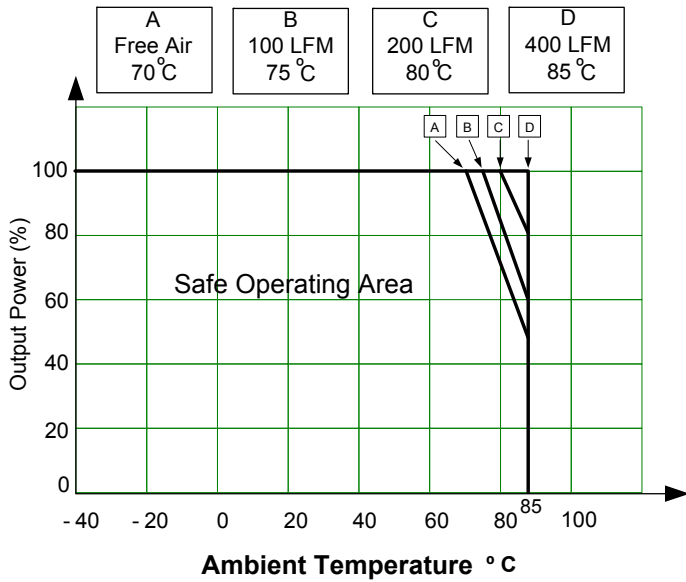
## Pin Out Specifications

| Pin | Single         | Dual           |
|-----|----------------|----------------|
| 1   | +V Input       | +V Input       |
| 2   | -V Input       | -V Input       |
| 3   | On/OFF Control | On/OFF Control |
| 4   | No pin         | +V Output      |
| 5   | +V Output      | Common         |
| 6   | -V Output      | -V Output      |
| 7   | Trim           | Trim           |

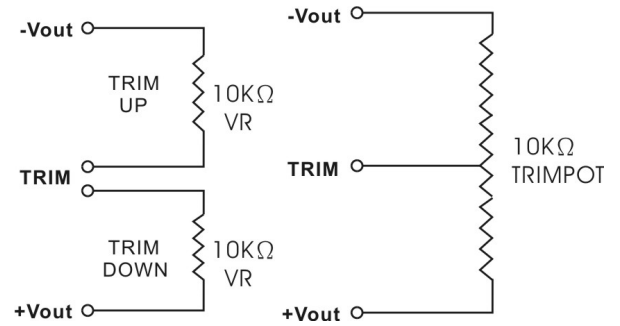
## Dimensions



## Derating 1500VDC Isolation

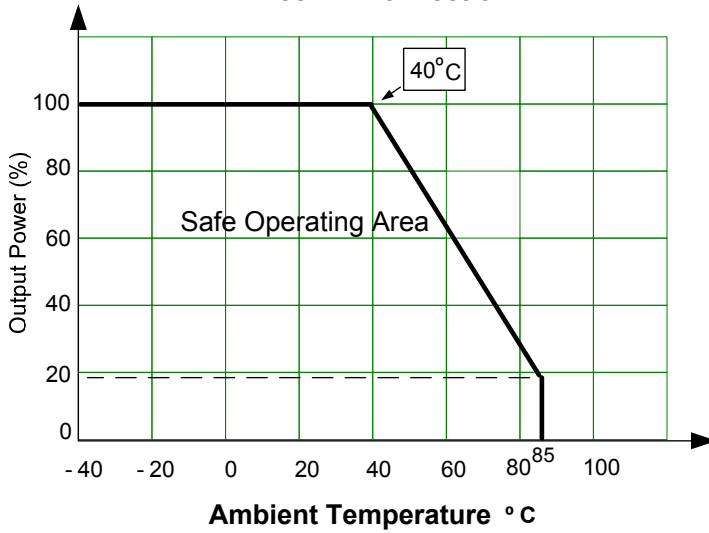


## Trimming



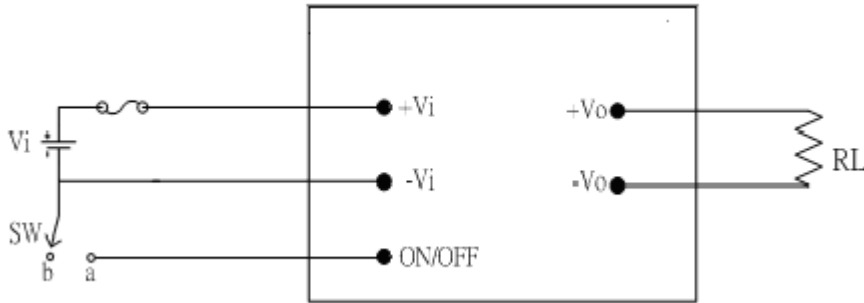
## 3000VDC Isolation

Free Air Convection

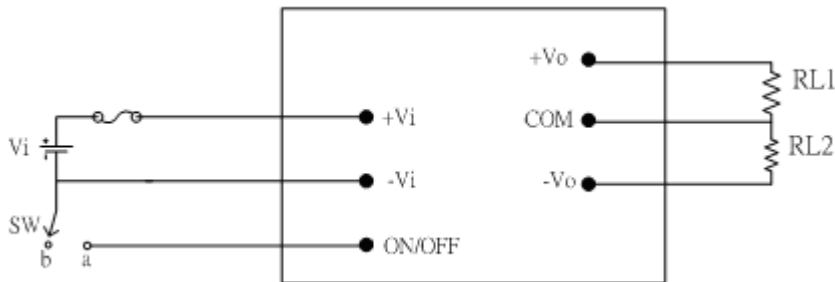


## Control ON/OFF pin connection example

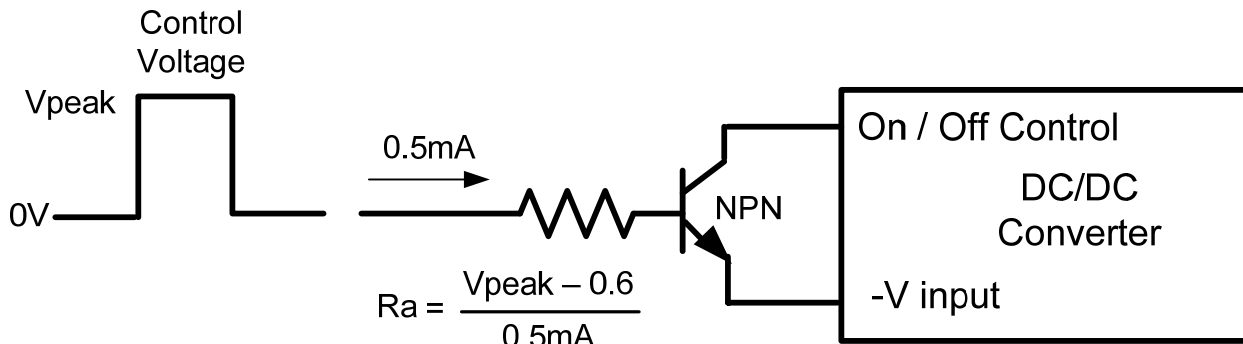
### Single Output



### Dual Output



### Digital Control Circuit:



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