

48-78W, 18 to 60V or 36 to 75V Input Isolated DC-DC Eighth Brick

<https://product.tdk.com/en/power/iEA>
www.emea.lambda.tdk.com/iEA



Industrial



Test



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Broadcast

The iEA series of isolated DC-DC converters deliver up to 78W in a compact industry eighth brick footprint. Available in 36-75V or 18-60V inputs with single outputs from 5V, 12V, 15V, 18V and 28V, these converters are designed primarily for use in 48V and 24V input bus architectures in communications, test and measurement, and industrial applications. Its single board open frame design allows the iEA series to achieve a low profile design of 8.81mm max to support tight board-to-board spacing and still provide high useable power at elevated ambient temperatures.

Features

- High Operating Efficiency up to 90.5%
- Open Frame, Single Board Construction
- Constant Switching Frequency
- -40 to 125 °C Operating Temperature With Minimal Derating

Benefits

- Reduces Heat Losses/Dissipation in System
- Low Profile for Tight Board to Board Spacing
- Predictable EMI
- High Useable Power At Elevated Ambient Temperature

Model Selector

| Model | Input Voltage (V) | Output Voltage (V) | Maximum Current (A) | Maximum Power (W) | On/Off Polarity | Efficiency, Full Load (typ) | Pin Length (inch) |
|-------------------------------------|-------------------|--------------------|---------------------|-------------------|-----------------|-----------------------------|-------------------|
| IEA48003A280V-001-R | 36 - 75 | 28 | 2.67 | 75 | Neg | 90% | 0.145 |
| IEA48003A280V-005-R | 36 - 75 | 28 | 2.67 | 75 | Neg | 90% | 0.200 |
| IEA48004A180V-001-R | 36 - 75 | 18 | 3.75 | 68 | Neg | 90.5% | 0.145 |
| IEA48005A150V-001-R | 36 - 75 | 15 | 4.5 | 68 | Neg | 90% | 0.145 |
| IEA48007A120V-000-R | 36 - 75 | 12 | 6.5 | 78 | Pos | 90.5% | 0.145 |
| IEA48007A120V-001-R | 36 - 75 | 12 | 6.5 | 78 | Neg | 90.5% | 0.145 |
| IEA48007A120V-005-R | 36 - 75 | 12 | 6.5 | 78 | Neg | 90.5% | 0.200 |
| IEA48015A050V-000-R | 36 - 75 | 5 | 15 | 75 | Pos | 90% | 0.145 |
| IEA48015A050V-001-R | 36 - 75 | 5 | 15 | 75 | Neg | 90% | 0.145 |
| IEA4W004A120V-003-R | 18 - 60 | 12 | 4 | 48 | Neg | 91% | 0.110 |

Related Products

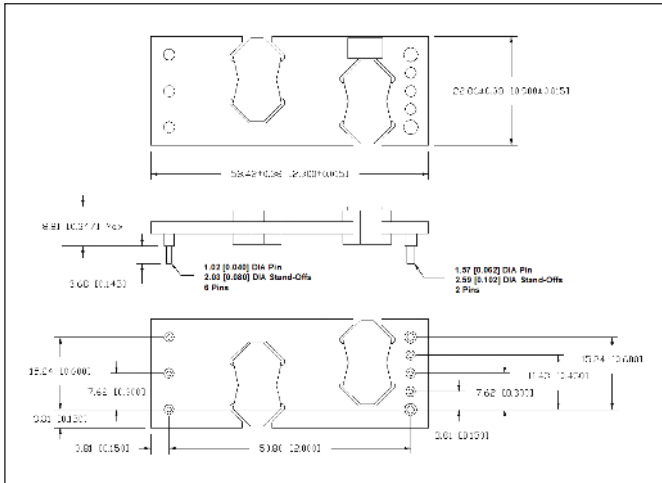
| Type | Part Number | Description |
|------------------------------|--------------------------------|---|
| Isolated DC-DC Converter | iQL | 300W, Input 36-75V or 18-36V, Isolated Quarter Brick |
| Isolated DC-DC Converter | iQG | 300W~504W, Input 36-75V, Isolated Quarter Brick |
| Isolated DC-DC Converter | iEH | 300W, Input 36-75V, Isolated Eighth Brick |
| Isolated DC-DC Converter | GQA | 120W Industrial, Input 9-36V, Isolated Quarter Brick |
| Non-Isolated DC-DC Converter | iBH | 80W/20A, 3.5-14Vin, 0.7 - 5.5Vout, DOSA Compatible |
| Non-Isolated DC-DC Converter | iCH | 85W/12A, 4.5-14Vin, 0.7 - 8.5Vout, DOSA Compatible |
| Input Filter | iDQ | 75V / 10A Filter |
| Evaluation Board | FQX-HQA-EVK-D0 | Evaluation board (no modules) accepting standard Eighth or Quarter brick and FQx or iDQ input filters |

| Specifications | | | | | | | |
|---|------|--|---------------|---------------|---------------|---------------|---------------|
| Model | | 5V | 12V (iEA48) | 12V (iEA4W) | 15V | 18V | 28V |
| Input | | | | | | | |
| Input Voltage Range | Vdc | 36 - 75 | | 18 - 60 | 36 - 75 | | |
| Input Transient (100 ms) | Vdc | 100 | | 72 | 100 | | |
| Input Current (max) | A | 4 | | 5 | 4 | | |
| Turn-On Input Voltage (typ) | Vdc | 33 | | 17 | 33 | | |
| Turn-Off Input Voltage (typ) | Vdc | 30 | | 15.5 | 30 | | |
| Efficiency (typical) | % | See Model Selector Table | | | | | |
| Safety Certifications and Markings | - | IEC/UL/CSA/EN 62368-1, 60950-1, CE Mark and UKCA Mark | | | | | |
| Output | | | | | | | |
| Output Voltage Initial Setpoint | Vdc | 4.92 - 5.08 | 11.64 - 12.36 | 11.64 - 12.36 | 14.55 - 15.45 | 17.5 - 18.5 | 27.16 - 28.84 |
| Output Voltage Tolerance | Vdc | 4.85 - 5.15 | 11.58 - 12.42 | 11.52 - 12.48 | 14.47 - 15.52 | 17.28 - 18.72 | 26.88 - 29.12 |
| Line Regulation (typ) | mV | 2 | 10 | | | | 20 |
| Load Regulation (typ) | mV | 1 | 10 | | | | 15 |
| External Load Capacitance | uF | 0 - 5000 | 0 - 2000 | 200 - 2000 | 0 - 1500 | 0 - 1000 | 0 - 470 |
| Ripple & Noise (typ) | mVpp | 55 | 80 | 75 | 40 | 50 | 80 |
| Switching Frequency (fixed) | kHz | 400 | 400 | 215 | 300 | 375 | 450 |
| Overcurrent Protection Threshold (Hiccup) | A | 20 | 8.5 | 5.5 | 6 | 4.4 | 4 |
| Over Voltage Protection | Vdc | 5.7 - 6.7 | 13.6 - 15.7 | 16.5 | 16.8 - 22 | 20 - 26 | 32-38 |
| Over Temperature Protection | - | Auto recovery | | | | | |
| Environmental | | | | | | | |
| Operating Temperature (Tc) | °C | -40 to 125 | | | | | |
| Storage Temperature | °C | -55 to 125 | | | | | |
| Humidity (non condensing) | %RH | 10 - 95 | | | | | |
| Cooling | - | Conduction, convection or forced air (See product specifications for derating) | | | | | |
| Isolation Voltage (Input to Output) | Vdc | 1500 | | | | | |
| Isolation Resistance | MΩ | ≥10 | | | | | |
| Shock | - | MIL-STD-202G, Method 213B, Test Condition 1 | | | | | |
| Vibration | - | 5 to 50 Hz (0.5g); 50 to 500 Hz (1.5g); three axes; Bellcore TR-EOP-000063-5.4.4 | | | | | |
| Other | | | | | | | |
| Weight (max) | g | 30.4 | | | | | |
| Size (LxWxH) | inch | 2.3 x 0.9 x 0.347 | | | | | |
| | mm | 58.42 x 22.86 x 8.81 | | | | | |
| MTBF - Telcordia SR-332 (100% Load, 40°C) | MHrs | > 4.8 | | | | | |
| Warranty | yrs | 3 | | | | | |

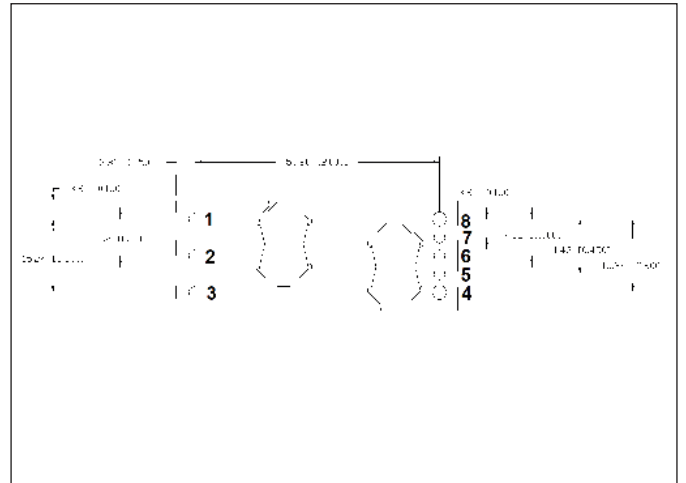
Notes

See website for detailed product specifications and test methods

Mechanical Specification iEA48 Series



Recommended PCB Hole Pattern iEA48 Series

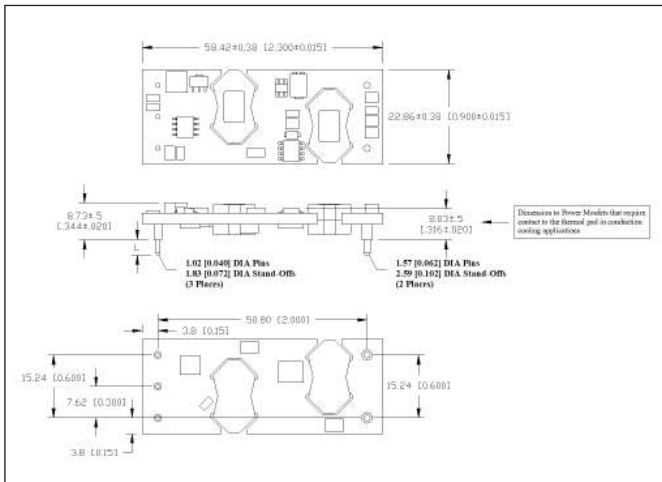


PIN Assignment iEA48 Series

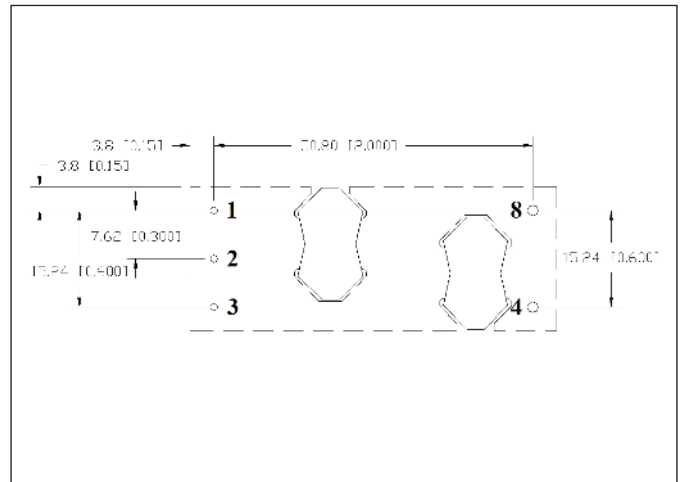
| Pin | Function | Pin | Function |
|-----|----------|-----|----------|
| 1 | Vin(+) | 5 | Sense(-) |
| 2 | On/Off | 6 | Trim |
| 3 | Vin(-) | 7 | Sense(+) |
| 4 | Vo(-) | 8 | Vo(+) |

Pin base material is brass with tin plating.

Mechanical Specification iEA4W Series



Recommended PCB Hole Pattern iEA4W Series



PIN Assignment iEA4W Series

| Pin | Function | Pin | Function |
|-----|----------|-----|----------|
| 1 | Vin(+) | 4 | Vo(-) |
| 2 | On/Off | 8 | Vo(+) |
| 3 | Vin(-) | | |

Pin base material is brass with gold over nickel plating.



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