



### **Features**

- RoHS lead-solder-exempt compliant
- · Independent dual outputs
- · Flexible load sharing
- High efficiency
- Open-frame design
- Planar magnetics
- Independent trim for each output
- · Synchronous rectification
- 1500 V isolation
- 100 °C base plate operation

# Description

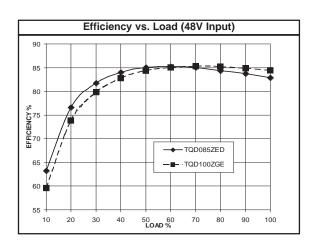
The TQD dc-dc converters are high power, dual output, fully-isolated converters that feature high efficiency, 1500 VDC isolation, and open-frame packaging. The TQD Series allows board designers to deliver any combination of power from either output, up to each model's maximum rating. The TQD Series is available in 5V/3.3V or 3.3V/2.5V combinations, uses planar magnetics, and has an MTBF of over a million hours.

# **Technical Specifications**

Input	
Voltage range 5 VDC nominal 12 VDC nominal Reflected ripple Input Reverse Voltage Protection	18 - 36 VDC 36 - 72 VDC 50 mA Shunt Diode

Output	
Setpoint Accuracy	±1%
Line Regulation V <sub>in</sub> Min V <sub>in</sub> Max., I <sub>out</sub> Rated, Output Load Regulation I <sub>out</sub> Min I <sub>out</sub> Max., V <sub>in</sub> Nom., Output	t 1 0.3% V <sub>out</sub>
Minimum Output Current, Each Output Dynamic Regulation, Loadstep	10 % I <sub>out</sub> Rated 25% I <sub>out</sub>
Pk Deviation Settling Time	4% V <sub>out</sub> 500 μs
Voltage Trim Range Power Limit Threshold Range, % of I <sub>OUT</sub> Rated	±10% 110 - 130%
OVP Trip Range 1 UVP Trip Range	15 - 140% V <sub>out</sub> Nom. 70 - 90%

General	
Turn-On Time	20 ms
Remote Shutdown	Positive Logic
Switching Frequency	250 kHz
Isolation	
Input - Output	1500 VDC
Input - Case	1050 VDC
Output - Case	500 VDC
Temperature Coefficient	0.03 %/°C
Case Temperature	
Operating Range	-40 To +100 °C
Storage Range	-40 To +125 °C
Thermal Shutdown Range	105 To 115 °C
Humidity Max., Non-Condensing	95%
Vibration, 3 Axes, 5 Min Each	5 g
MTBF <sup>†</sup> (Bellcore TR-NWT-000332)	1.2 X 10 <sup>6</sup> hrs
Safety	UL, cUL, TUV
Weight (Approx.)	3.8 oz



# Notes † MTBF predictions may vary slightly from model to model. Specifications typically at 25 °C, normal line, and full load, unless otherwise stated. Soldering Conditions: I/O pins, 260 °C, ten seconds; fully compatible with commercial wave-soldering equipment. Units are water-washable and fully compatible with commercial spray or immersion post wave-solder washing equipment.



# **Model Selection**

MODEL	INPUT VOLTAGE (VOLTS)	INPUT VOLTAGE Range (Volts)	MAXIMUM INPUT CURRENT (AMPS)*	OUTPUT Voltage (volts)	RATED OUTPUT CURRENT (AMPS)	RIPPLE & NOISE pk-pk (mV)	TYPICAL Efficiency**
TQD080ZE2.0-A	48	36-72	1.9	3.3/2.0	15/15	100/75	80%
TQD085ZED-A	48	36-72	2.5	3.3/2.5	20/25	100/75	82%
TQD100ZGE-A	48	36-72	3.7	5.0/3.3	20/25	100/75	83%

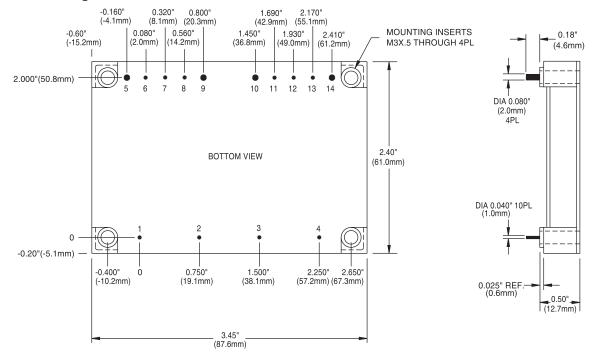
## NOTES:

- \* Maximum input current at minimum input voltage, maximum rated output power.
- \*\* At nominal V<sub>in</sub>, rated output.

Current can be drawn from either output to its maximum value, or from both outputs.

Model numbers highlighted in yellow or shaded are not recommended for new designs.

## **Mechanical Drawing**



Thermal Impedance			
Natural Convection 100 LFM 200 LFM 300 LFM 400 LFM	5.7 °C/W 3.9 °C/W 2.6 °C/W 1.9 °C/W 1.7 °C/W		
Note: Thermal impedance data i on many environmental fa exact thermal performanc validated for specific appli	ctors. The e should be		

Pin	Pin Function	
1	-V <sub>in</sub>	
2	Enable	
2 3 4	Case	
4	+V <sub>in</sub>	
5	+V <sub>out1</sub>	
6	+ Sense 1	
7 8	Trim 1	
	- Sense 1	
9	-V <sub>out1</sub>	
10	-V <sub>out2</sub>	
11	- Sense 2	
12	Trim 2	
13	+ Sense 2	
14	+ V <sub>out2</sub>	

Tolerances		
Inches: .XX ± 0.020 .XXX ± 0.010	(Millimeters) .X ± 0.5 .XX ± 0.25	
Pin: ± 0.002	± 0.05	
(Dimensions as listed unless otherwise specified.)		

NUCLEAR AND MEDICAL APPLICATIONS - Power-One products are not authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional president of Power-One, Inc.

TECHNICAL REVISIONS - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.