

EMERALD TECH

EMQ Series

30A High Efficiency Military Converter

Description

The EMQ series 28-volt, 48-volt and 110-volt DC-DC converters are rated up to 100 Watts output power over a -55° to +125°C temperature range with a 16-40 Vdc, 36-72 Vdc, 88-132 Vdc nominal input. Current sharing allows the units to be paralleled for total power of up to 800 Watts. The welded, hermetically sealed package is only 3.00 x 1.50 x 0.40 inches, giving the series an overall power density of up to 100 watts per cubic inch. With a wide input voltage range of 16-40Vdc, 36-75Vdc, 88-132Vdc they are available with an output voltage of either 15, 12, 5 and 3.3 Volts. All models feature an input filter, input undervoltage lockout, output overvoltage and overtemperature protection, output current limiting and short circuit protection. The fully enclosed, encapsulated construction with aluminum heat spreader design achieves efficient heat transfer with no hot spots. The use of Patent-pending Hybrid Planar Transformer technology and other patent-pending design concepts facilitate maximum power delivery with the highest efficiency up to 90% - 92%. The converters combine creative design concepts with highly derated power devices to achieve very high reliability, high performance and offer a low cost

Features

- Full Isolated
- Magnetic coupling
- Fixed frequency, 400KHz typical
- High efficiency patented topology
- Low profile of only 0.40 inch
- Sync function
- -55°C to +125 °C ambient operation
- Inhibit function – Input and Output
- Output trim on single output models
- Indefinite short circuit protection
- Remote sense on single output models
- Current Sharing-Parallelable up to 1000 Watts

Applications

- Aerospace, Aircraft
- Complex power system
- Portable weaponry
- Distributed Power Architecture

solution to systems designers that are challenged to maximize power and minimize board space.

100 Watts Output Power



Size (Max.): 3.00 x 1.50 x 0.40 in (76.5 x 38.2 x 10.0 mm)
Weight: 100 grams maximum

Specification Summary

- 30A @ 3.3V, 20A @ 5V, 10A @ 12V, 8A @ 15V
- Tightly output regulation, typical $\pm 0.1\%$
- No minimum load required
- Ripple & Noise (20Mhz BW) 100 mV (pk-pk)
- Wide input operating range 18-40V, 36-72V, 88-132V
- On/Off pin and remote sense
- Output adjustment +/-10% range
- 1500V, 10M Ω input-to-output isolation
- Full enclosed, encapsulated construction with heat spreader for low temperature rise
- Output overcurrent and overvoltage protection
- Over Temperature protection
- Input Under voltage protection
- MTBF of 1,600,000 hours @ 50°C (Bellcore)

Part Number and Selection Information

Model Part Number		Input				Output		Efficiency
Positive Logic	Negative Logic	Voltage (VDC)		Current (A)		Voltage	Current	75% Load
		Nominal	Range	No load	Full load	(Volts)	(Amps)	(%)
EMQ28033M30P	EMQ28033M30N	28	16-40	0.1	4.1	3.3	30	90
EMQ28050M20P	EMQ28050M20N	28	16-40	0.1	4.0	5	20	91
EMQ28120M10P	EMQ28120M10N	28	16-40	0.1	4.7	12	10	92
EMQ28150M08P	EMQ28150M08N	28	16-40	0.1	4.7	15	8	92
EMQ48033M30P	EMQ48033M30N	48	36-71	0.1	4.1	3.3	30	90
EMQ48050M20P	EMQ48050M20N	48	36-71	0.1	4.1	3.3	30	91
EMQ48120M10P	EMQ48120M10N	48	36-71	0.1	4.1	3.3	30	92
EMQ48150M08P	EMQ48150M08N	48	36-71	0.1	4.1	3.3	30	92
EMQ110033M30P	EMQ110033M30N	110	88-132	0.1	4.1	3.3	30	90
EMQ110050M20P	EMQ110050M20N	110	88-132	0.1	4.0	5	20	91
EMQ110120M10P	EMQ110120M10N	110	88-132	0.1	4.7	12	10	92
EMQ110150M08P	EMQ110150M08N	110	88-132	0.1	4.7	15	8	92

Typical at Ta= +25 °C under nominal line voltage and 75% load conditions, unless noted.

Consult factory for other output voltage configurations and optional accessories such as heatsinks and filters.

Outline Information and Pin-out

Pin Connection	
Pin#	Function
1	Positive Input (Vin +)
2	Input Common (Vin -)
3	
4	Inhibit (INHB)
5	
6	Sync Out (SYNC)
7	Positive Output (Vout +)
8	Output Common (Vout -)
9	Sense Return (S -)
10	Positive Sense (S +)
11	Trim (TRIM)
12	Current Sharing (ISHR)

All dimensions are in inches [mm]

Notes:

- 1). All dimensions are in inches [mm]
- 2). All pins are dia. 0.040 [1.02]
- 3). Pin material: Brass
- 4). Pin finish: Gold plated
- 5). Heat spreader (baseplate)
material: Aluminum
- 6). Weight: 100 gram Max.

Thermal Derating

The information and specifications contained in this specification are believed to be accurate and reliable at the time of publication. Specifications are subject to change without notice.

