



UQQ Series

Wide Input Range Single Output DC/DC Converters



Typical unit

For applications requiring wide range input, improved electrical and thermal performance consider Murata Power Solutions' new UQQ Series "Quarter-Brick" DC/DC Converters. They measure just 1.45 x 2.22 x 0.43 inches (36.8 x 56.4 x 10.92mm) and fit the industry-standard footprint.

FEATURES

- RoHS compliant
- Standard quarter-brick package/pinout in through-hole version
- Low cost; Low profile, 0.43"(10.92mm)
- 9-36V or 18-75V wide range inputs
- Output current: 4 to 25 Amps
- Output voltages: 3.3, 5, 12, 15 or 24V
- Interleaved synchronous-rectifier topology
 - Ultra high efficiency
 - No output reverse conduction
- Outstanding thermal performance
- On/off control, trim & sense functions
- Fully isolated, up to 2250Vdc (48 V_{IN})
- Output overvoltage protection
- Fully I/O protected; Thermal shutdown
- Designed to meet UL/EN/IEC60950-1 safety approvals
- RoHS hazardous substance compliant

PRODUCT OVERVIEW

From an 9-36V or 18-75V input, UQQ's deliver outputs of 3.3V, 5V, 12V, 15V, or 24V. They employ an interleaved, synchronous-rectifier topology that exploits 100% of their duty cycle. They simultaneously achieve ultra-high efficiency (to 90%), tight line/load regulation, low noise, and quick step response.

A state of the art, single-board, open-frame design with reduced component count, high efficiency, low-on-resistance FET's, and planar magnetics embedded in heavy-copper pc boards all contribute to impressive thermal derating.

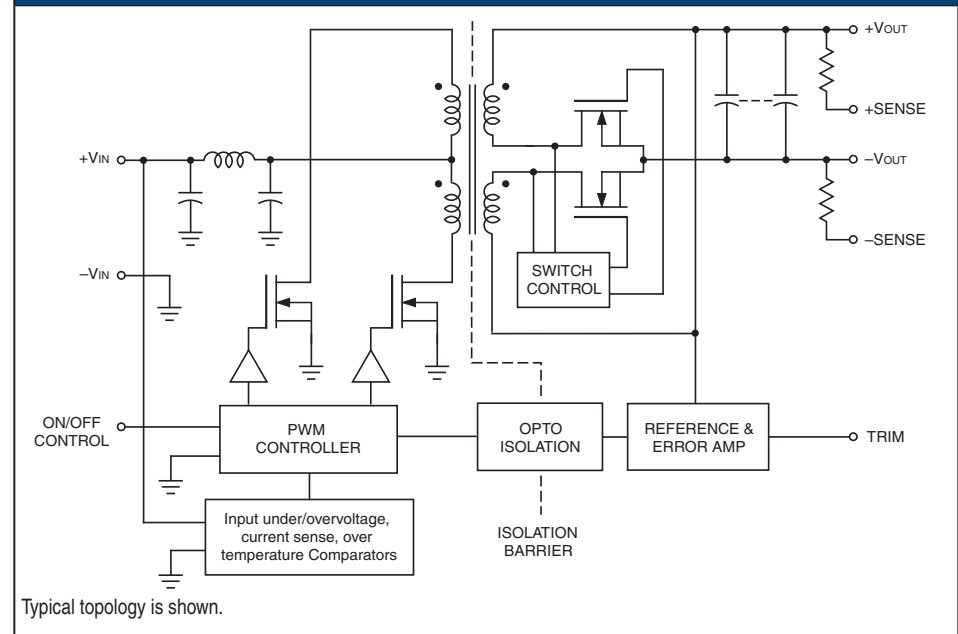
The UQQ's feature set includes high isolation, input pi filters, input undervoltage shutdown, output overvoltage protection, current limiting, short-circuit protection and thermal shutdown. The standard footprint carries on/off control (positive or negative polarity), output trim (+10/-20%) and output sense functions.

All UQQ quarter-bricks are designed with full magnetic and optical isolation up to 2250 Volts DC (basic insulation).

Contents of full data sheet

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SIMPLIFIED SCHEMATIC



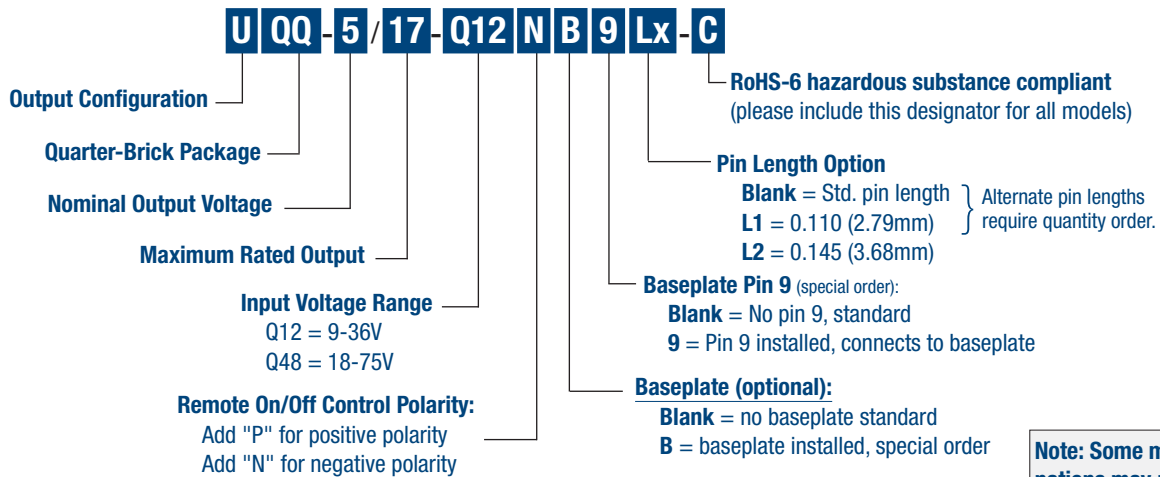
Performance Specifications and Ordering Guide ①

PERFORMANCE SPECIFICATIONS AND ORDERING GUIDE														
Root Model ③	Output					Input				Efficiency		Package (Case/ Pinout)		
	V _{OUT} (V)	I _{OUT} (A)	Power (Watts)	R/N (mVp-p)		Regulation		V _{IN} Nom. (Volts)	Range (Volts)	I _{IN} , no load (mA)	I _{IN} , full load (A)		Min.	Typ.
				Typ.	Max.	Line	Load							
UQQ-3.3/25-Q12P-C	3.3	25	82.5	50	80	±0.05%	±0.125%	12	9-36	180	7.81	86%	88%	C68,P32
UQQ-3.3/25-Q48N-C	3.3	25	82.5	80	125	±0.05%	±0.2%	48	18-75	80	2.01	86%	88%	C68,P32
UQQ-5/17-Q12P-C	5	17	85	40	75	±0.05%	±0.06%	12	9-36	150	7.83	88.5%	90.5%	C68,P32
UQQ-5/20-Q48N-C	5	20	100	100	140	±0.05%	±0.165%	48	18-75	65	2.47	82.5%	84.5%	C68,P32
UQQ-12/8-Q12P-C	12	8	96	40	75	±0.05%	±0.05%	12	9-36	180	8.99	87%	89%	C68,P32
UQQ-12/8-Q48N-C	12	8	96	95	150	±0.05%	±0.1%	48	18-75	70	2.3	87.5%	89.5%	C68,P32
UQQ-15/7-Q12P-C	15	7	105	56	100	±0.05%	±0.1%	12	9-36	250	9.67	89%	90.5%	C68,P32
UQQ-24/4-Q12P-C	24	4	96	125	170	±0.05%	±0.075%	12	10-36	120	8.99	87.7	89%	C68,P32

- ① Typical at TA = +25°C under nominal line voltage and full-load conditions. All models are specified with an external 1µF multi-layer ceramic and 10µF capacitors across their output pins and 100µF external input capacitor.
- ② Ripple/Noise (R/N) measured over a 20MHz bandwidth.
- ③ Devices have no minimum-load requirements and will regulate under no-load conditions. Regulation specifications describe the output voltage deviation as the line voltage or load is varied from its nominal/midpoint value to either extreme. (Load step = 50%.)

- ④ Nominal line voltage, no load/full load condition.
- ⑤ Please refer to the Part Number Structure for additional part numbers and options.
- ⑥ RoHS does not claim EU exemption 7B-lead in solder.

PART NUMBER STRUCTURE



Some model options may require minimum order quantities.

Note: Some model number combinations may not be available. Contact Murata Power Solutions.

Pin 9 Baseplate Connection

The UQQ series may include an optional installed baseplate for extended thermal management. This baseplate is electrically isolated from the rest of the converter. Various UQQ models are also available with an additional pin 9 on special quantity order which electrically connects to the baseplate. Pin 9 is also isolated from the rest of the converter. Please refer to the mechanical drawings.

Pin 9 offers a positive method of controlling the electrical potential of the baseplate, independent of the converter. If you do not include pin 9, the baseplate may also be grounded by the mounting bolts.

The baseplate may be ordered by adding a "B" to the model number tree and pin 9 will be pre-installed by adding a "9". The two options are separate. Please refer to the Ordering Guide. **Do not order pin 9 without the baseplate.** Note that "pin 9" converters may be on limited forecast, requiring minimum order quantities and scheduled deliveries.

Please see page 9 for heatsink information.

MECHANICAL SPECIFICATIONS

INPUT/OUTPUT CONNECTIONS

Pin	Function P32
1	-Input
2	Remote On/Off*
3	+Input
4	-Output
5	-Sense
6	Output Trim
7	+Sense
8	+Output
9	Baseplate (optional)

* The Remote On/Off can be provided with either positive ("P" suffix) or negative ("N" suffix) polarity.

Important! *Always* connect the sense pins; see Application Notes.

Dimensions are in inches (mm shown for ref. only).

Third Angle Projection

Tolerances (unless otherwise specified):
 .XX ± 0.02 (0.5)
 .XXX ± 0.010 (0.25)
 Angles ± 2°

Components are shown for reference only.

Soldering Guidelines

Murata Power Solutions recommends the specifications below when installing these converters. These specifications vary depending on the solder type. Exceeding these specifications may cause damage to the product. Your production environment may differ; therefore please thoroughly review these guidelines with your process engineers.

Wave Solder Operations for through-hole mounted products (THMT)			
For Sn/Ag/Cu based solders:		For Sn/Pb based solders:	
Maximum Preheat Temperature	115° C.	Maximum Preheat Temperature	105° C.
Maximum Pot Temperature	270° C.	Maximum Pot Temperature	250° C.
Maximum Solder Dwell Time	7 seconds	Maximum Solder Dwell Time	6 seconds

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 ISO 9001 and 14001 REGISTERED

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