



Features

- High efficiency
- Fixed switching frequency provides predictable EMI
- No life-span constrained Capacitor inside
- 4:1 & 8:1 & 12:1 Ultra-Wide input range
- Isolation 2250V Input-to-output
- Fully protected: **OVP**, **OTP**, **OC**P and **UVLO**
- Output voltage trim range of -10%, +10%
- Single, Dual, & Multiple Outputs available
- RoHS compliant

| | | | |
|-------------------|----------------------|---------------------------|-------------------------------------|
| UVLO | OC P | OVP | OT P |
| Metal Case | ON/OFF Remote | PI Filter Built-in | 2250V_{DC} Isolation |

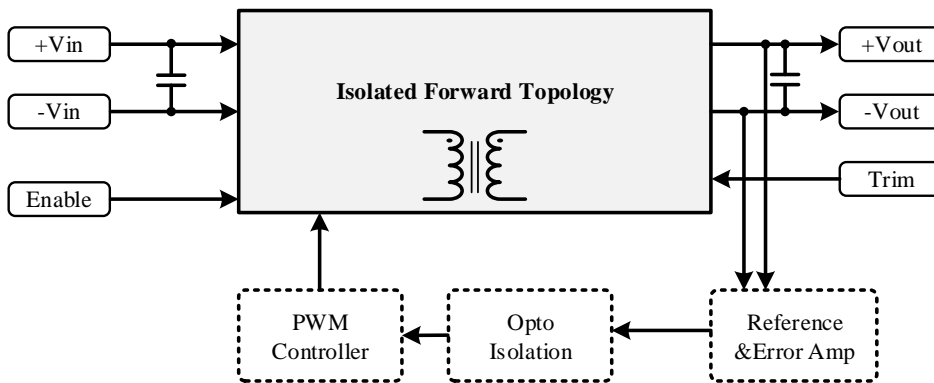


Applications

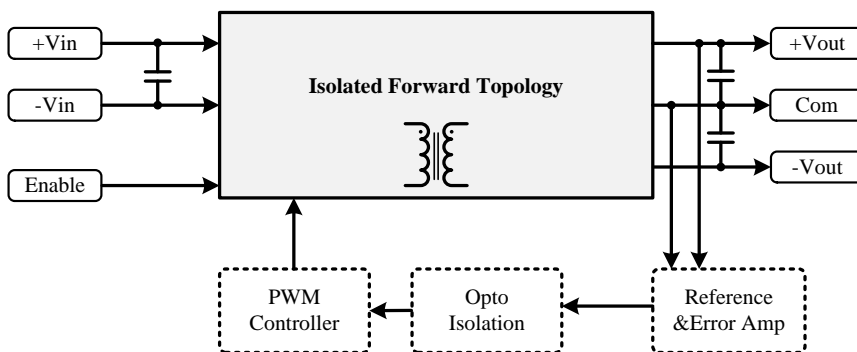
- Railway System
- Transportation
- Telecommunication
- Industry Control System
- Embedded Systems
- Semiconductor Equipment

Description

MQB Quarter-Brick converter series is composed of Isolated, board-mountable, fixed switching frequency dc-dc converters that use synchronous rectification to achieve extremely high-power conversion efficiency. These DC-DC converter modules use advanced power processing, control and packaging technologies to enhance the performance, flexibility, reliability and cost effectiveness of mature power components. Each module is six-sided metal case enclosed to provide protection from the harsh environments seen in many industrial and transportation applications.



MQB Single Series Block Diagram



MQB Dual Series Block Diagram



MODEL NUMBER STRUCTURE

| MQB | 028 | 050 | - S - | P | - B | 50V0 |
|------------------------------|-----------------------|----------------------|----------------------|--|----------------|------|
| Series Name | Input Voltage (VDC) | Output Voltage (VDC) | Output Quantity | Remote Control Option | Shape | Watt |
| Mercury series Quarter Brick | 018 : 9 - 36 | 050 : 5 | S: Single D: Dual | P: Positive logic N: Negative logic | B : Base Plate | 50 |
| | 028 : 9 - 75 | 120 : 12 | | | | 75 |
| | 036 : 18 - 75 | 150 : 15 | | | | 100 |
| | 054 : 14 - 154 | 240 : 24 | | | | 150 |
| | | 120 : ±12 | | | | |
| | | 150 : ±15 | | | | |
| | | 240 : ±24 | | | | |

Model Selection Guide

(Typical @ Ta=+25 °C under nominal line voltage conditions unless otherwise noted.)

| Model | Input | | Output | | | Efficiency |
|----------------------|------------|---------|---------|---------|-------|------------|
| | Voltage(V) | | Voltage | Current | Power | |
| | Range | Nominal | (V) | (A) | (W) | Typ.(%) |
| MQB028050-S-P-B50V0 | 9 - 75 | 28 | 5 | 10.0 | 50 | 90 |
| MQB028120-S-P-B50V0 | 9 - 75 | 28 | 12 | 4.2 | 50 | 89 |
| MQB028150-S-P-B50V0 | 9 - 75 | 28 | 15 | 3.3 | 50 | 89 |
| MQB028240-S-P-B50V0 | 9 - 75 | 28 | 24 | 2.1 | 50 | 89 |
| MQB028120-D-P-B50V0 | 9 - 75 | 28 | ±12 | 2.1 | 50 | 89 |
| MQB028150-D-P-B50V0 | 9 - 75 | 28 | ±15 | 1.7 | 50 | 89 |
| MQB028240-D-P-B50V0 | 9 - 75 | 28 | ±24 | 1.0 | 50 | 89 |
| MQB054050-S-P-B50V0 | 14 - 154 | 54 | 5 | 10.0 | 50 | 90 |
| MQB054120-S-P-B50V0 | 14 - 154 | 54 | 12 | 4.2 | 50 | 89 |
| MQB054150-S-P-B50V0 | 14 - 154 | 54 | 15 | 3.3 | 50 | 89 |
| MQB054240-S-P-B50V0 | 14 - 154 | 54 | 24 | 2.1 | 50 | 89 |
| MQB054120-D-P-B50V0 | 14 - 154 | 54 | ±12 | 2.1 | 50 | 89 |
| MQB054150-D-P-B50V0 | 14 - 154 | 54 | ±15 | 1.7 | 50 | 89 |
| MQB054240-D-P-B50V0 | 14 - 154 | 54 | ±24 | 1.0 | 50 | 89 |
| MQB018050-S-P-B100V0 | 9 - 36 | 18 | 5 | 20.0 | 100 | 91 |
| MQB018120-S-P-B100V0 | 9 - 36 | 18 | 12 | 8.3 | 100 | 90 |
| MQB018150-S-P-B100V0 | 9 - 36 | 18 | 15 | 6.7 | 100 | 90 |
| MQB018240-S-P-B100V0 | 9 - 36 | 18 | 24 | 4.2 | 100 | 90 |
| MQB018120-D-P-B100V0 | 9 - 36 | 18 | ±12 | 4.2 | 100 | 90 |
| MQB018150-D-P-B100V0 | 9 - 36 | 18 | ±15 | 3.3 | 100 | 90 |
| MQB018240-D-P-B100V0 | 9 - 36 | 18 | ±24 | 2.1 | 100 | 90 |
| MQB036050-S-P-B100V0 | 18 - 75 | 36 | 5 | 20.0 | 100 | 91 |
| MQB036120-S-P-B100V0 | 18 - 75 | 36 | 12 | 8.3 | 100 | 90 |
| MQB036150-S-P-B100V0 | 18 - 75 | 36 | 15 | 6.7 | 100 | 90 |
| MQB036240-S-P-B100V0 | 18 - 75 | 36 | 24 | 4.2 | 100 | 90 |
| MQB036120-D-P-B100V0 | 18 - 75 | 36 | ±12 | 4.2 | 100 | 90 |
| MQB036150-D-P-B100V0 | 18 - 75 | 36 | ±15 | 3.3 | 100 | 90 |
| MQB036240-D-P-B100V0 | 18 - 75 | 36 | ±24 | 2.1 | 100 | 90 |

※ Modification or customized design is available. Please contact us for detail.



Electrical Specifications (Typical @ Ta=+25°C under nominal line voltage conditions unless otherwise noted.)

Input Specifications

| Parameter | Notes and Conditions | Min. | Typ | Max. | Unit |
|---|---------------------------|------|------------------|------|------|
| Transient Input Voltage ranges | MQB018 models (100ms max) | | | 50 | VDC |
| | MQB028 models (100ms max) | | | 80 | |
| | MQB036 models (100ms max) | | | 80 | |
| | MQB054 models (100ms max) | | | 160 | |
| Operating Input Voltage ranges | MQB018 models | 9 | 18 | 36 | VDC |
| | MQB028 models | 9 | 28 | 75 | |
| | MQB036 models | 18 | 36 | 75 | |
| | MQB054 models | 14 | 54 | 154 | |
| Under-Voltage Lockout Start up voltage | MQB018 models | | | 9 | VDC |
| | MQB028 models | | | 9 | |
| | MQB036 models | | | 18 | |
| | MQB054 models | | | 14 | |
| Under-Voltage Lockout Shutdown voltage | MQB018 models | | 7 | | VDC |
| | MQB028 models | | 7 | | |
| | MQB036 models | | 16 | | |
| | MQB054 models | | 12 | | |
| Enable Function Input | Positive logic | ON | Open or 8 ~ 20 | | VDC |
| | | OFF | Short or 0 ~ 1.2 | | |
| | Negative logic | ON | Short or 0 ~ 1.2 | | VDC |
| | | OFF | Open or 8 ~ 20 | | |

Output Specifications

| Parameter | Notes and Conditions | Min. | Typ | Max. | Unit |
|-------------------------------|--|------|-----|-------|--------|
| Output Voltage Accuracy | V _{NOM} 50% Load | | | ±1.5 | % |
| Line Regulation | Low line to High line | | | ±0.3 | % |
| Load Regulation | 10% to 100% load | | | ±0.5 | % |
| Minimum Load | Single Output | 0 | | | % |
| | Dual Output | 10 | | | % |
| Output Ripple & Noise Voltage | Bandwidth 20MHz and with 1uF MLCC.Output Capacitor each output | | 1.5 | | % |
| Temperature Drift | | | | ±0.04 | % / °C |
| Transient Recovery Time | 25% load step change | | 800 | | µSec. |
| Transient Peak Deviation | ΔIo/Δt=2.5A/us | | ±2 | | %Vo |
| Start-Up time | When use Enable Function | | 20 | | mSec. |
| Trimming Output Voltage | V _{NOM} 10% Load | | ±10 | | % |
| Over voltage protection | V _{NOM} 10% Load | | 120 | | % |
| Output Power Protection | V _{NOM} | | 120 | | % |



General Specifications

| Parameter | Notes and Conditions | Min. | Typ | Max. | Unit |
|--|---|------|------|------|---------|
| Switching Frequency | V _{NOM} | 220 | | 330 | kHz |
| Storage Temperature Range | All models | -60 | | 125 | °C |
| Operating Case Temperature | All models | -45 | | 115 | °C |
| Over temperature Protection | All models, Auto. Recovery | | 120 | | |
| Isolation Voltage Input to Output | All models, 1 Minute | 2250 | | | VDC |
| Isolation Resistance Input to Output | All models, 500VDC, At 70%RH | 100 | | | MΩ |
| Isolation Capacitance Input to Output | All models | | 1500 | | pF |
| Humidity (non condensing) | All models | | | 95 | % |
| Calculated MTBF | BellCore-TR-332@ 50 °C G.B | 1 | | | M HR |
| Weight | | | 65 | | g (oz.) |
| Dimensions | 1.56" x 2.36" x 0.51" (39.7x 60 x 12.9mm) | | | | |
| Case Material | Aluminum | | | | |

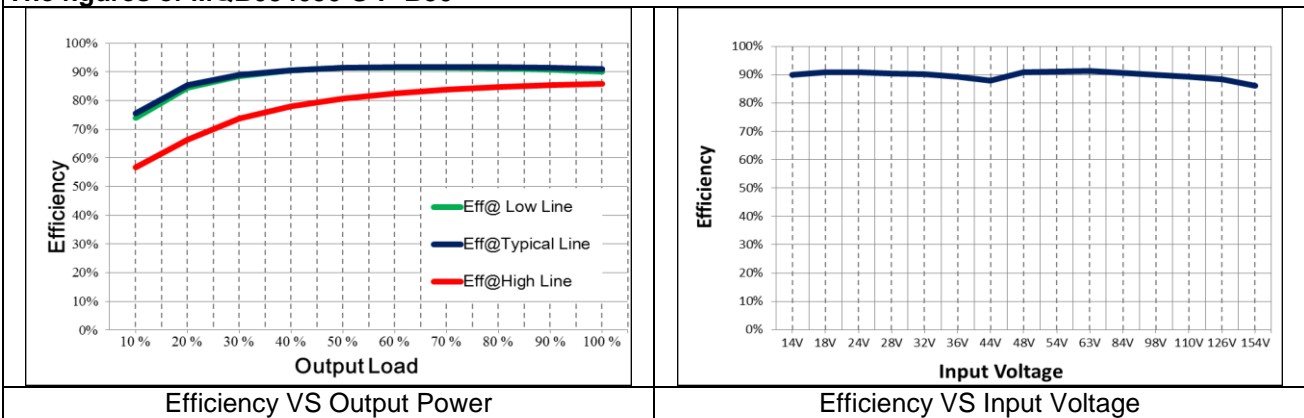
It is recommended to protect the input by fuses or other protection devices.

Characteristic Curves

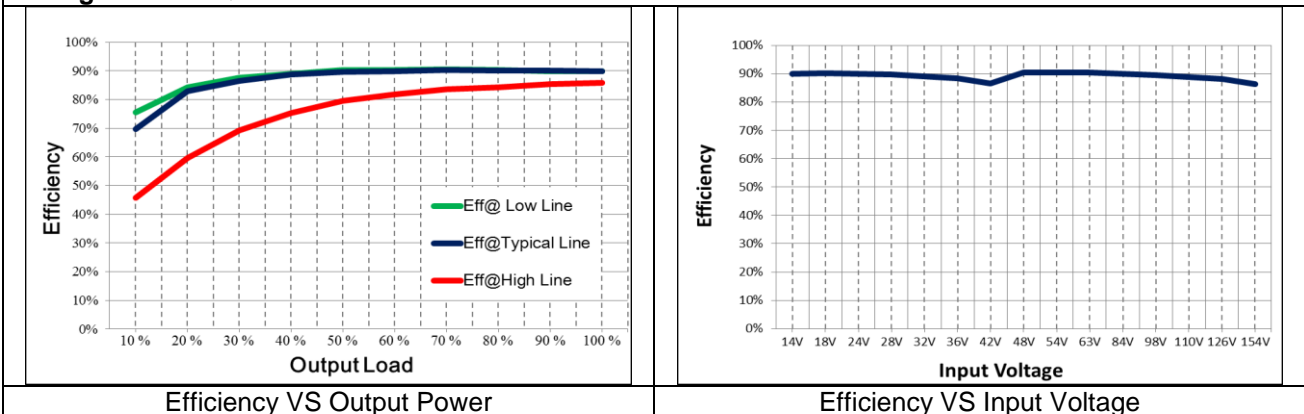
Testing conditions are at typical input, Ta=+25°C, full load (horizontal mount) Unless otherwise indicated

Efficiency Curves

The figures of MQB054050-S-P-B50

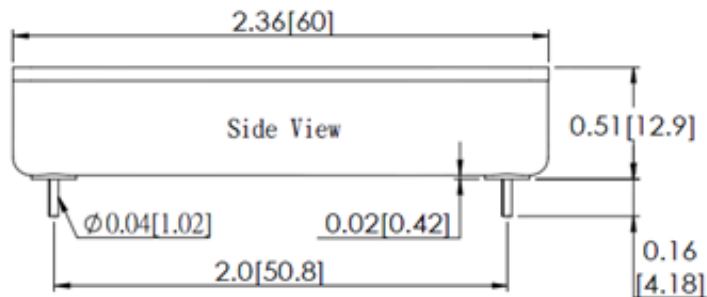
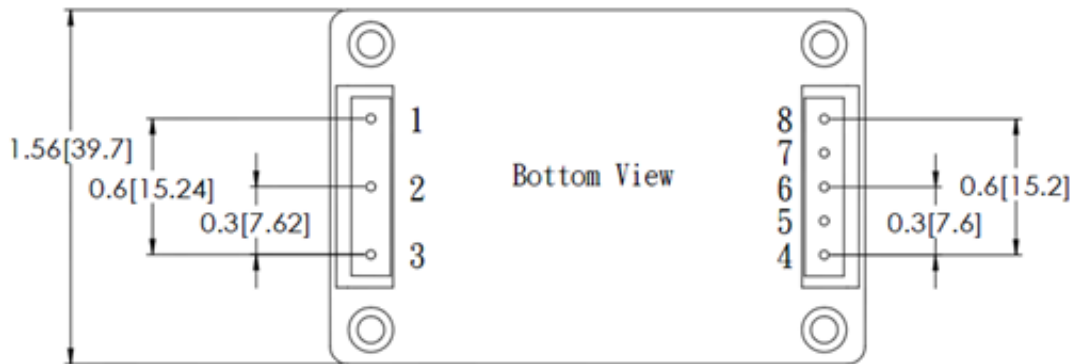


The figures of MQB054240-S-P-B50





Mechanical Drawing & Pin Assignments



Note:

All pins are 0.040" (1.02mm)
 Pins Material: Copper Alloy
 Pins Plating: Gold
 All dimensions in inches [mm]
 Tolerances: .XX±0.02[.X±0.5mm]

Pin Connections

| Pin# | Single | Dual |
|------|--------|--------|
| 1 | -Vin | -Vin |
| 2 | Enable | Enable |
| 3 | +Vin | +Vin |
| 4 | +Vout | +Vout |
| 5 | NA | NA |
| 6 | Trim | Common |
| 7 | NA | NA |
| 8 | -Vout | -Vout |

The information and specifications contained in this data sheet are believed to be correct at time of publication.

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