# SQBF Series

## 300W / Quarter Brick Full Size DC/DC

### Applications

Railway | Industry | Military

Automation | Semiconductor | Network / Telecom

Boat | Aviation | Medical

Automobile | Charger


3 Years Warranty

CE RoHS COMPLIANT ISO REACH

### Features

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **1/4 Brick** | **2:1 / 4:1** Wide input range | **DOSA** Pin out | **2250 VDC** Insulation | **MLCC** No life-span constrained | **93 %** High efficiency | **ON / OFF** REMOTE | **Plastic CASE** |
| **M3 thread** (optional) | **UVLO** | **OCP** | **OVP** | **OTP** | | | |

### Model Number Structure

SQBF 300 120 - S - P - F 300

| Series Name | Input Voltage (VDC) | Output Voltage (VDC) | Pin out | Remote Control Option | Shape | Watt |
|---|---|---|---|---|---|---|
| **S**upreme series **Q**uarter **B**rick **F**ull Size | **024** : 18-36<br>**036** : 18-75<br>**300** : 180-425 | **120** : 12<br>**150** : 15<br>**240** : 24<br>**280** : 28<br>**480** : 48 | **S** : Dosa | **P** : Positive logic<br>**N** : Negative logic | **F** : No Flange | **200**<br>**300** |

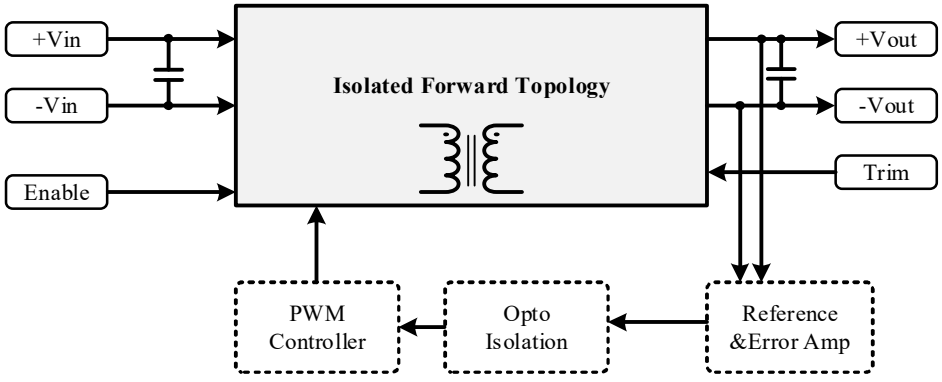
## Model Selection Guide

Typical @ Ta=+25 ℃ under nominal line voltage conditions unless noted

| Model | Input | | | Output | | | Efficiency |
|---|---|---|---|---|---|---|---|
| | Voltage (V) | | Current (A) | Voltage | Current | Power | |
| | Range | Nominal | Full load | (V) | (A) | (W) | Typ. (%) |
| SQBF024120-□-□-F300 | 18-36 | 24 | 13.44 | 12 | 25 | 300 | 93 |
| SQBF024150-□-□-F300 | 18-36 | 24 | 13.58 | 15 | 20 | 300 | 92 |
| SQBF024240-□-□-F300 | 18-36 | 24 | 13.58 | 24 | 12.5 | 300 | 92 |
| SQBF024280-□-□-F300 | 18-36 | 24 | 13.58 | 28 | 10.71 | 300 | 92 |
| SQBF024480-□-□-F300 | 18-36 | 24 | 13.44 | 48 | 6.25 | 300 | 93 |
| SQBF036120-□-□-F200 | 18-75 | 36 | 6.10 | 12 | 16.66 | 200 | 91 |
| SQBF036150-□-□-F200 | 18-75 | 36 | 6.17 | 15 | 13.33 | 200 | 90 |
| SQBF036240-□-□-F200 | 18-75 | 36 | 6.17 | 24 | 8.33 | 200 | 90 |
| SQBF036280-□-□-F200 | 18-75 | 36 | 6.17 | 28 | 7.14 | 200 | 90 |
| SQBF036480-□-□-F200 | 18-75 | 36 | 6.10 | 48 | 4.16 | 200 | 91 |
| SQBF300120-□-□-F300 | 180-425 | 300 | 1.08 | 12 | 25 | 300 | 92 |
| SQBF300150-□-□-F300 | 180-425 | 300 | 1.09 | 15 | 20 | 300 | 91 |
| SQBF300240-□-□-F300 | 180-425 | 300 | 1.09 | 24 | 12.5 | 300 | 91 |
| SQBF300280-□-□-F300 | 180-425 | 300 | 1.09 | 28 | 10.71 | 300 | 91 |
| SQBF300480-□-□-F300 | 180-425 | 300 | 1.08 | 48 | 6.25 | 300 | 92 |

## Description

**PowerGood DC DC CONVERTER - Supreme series –Quarter Brick Full Size converter** 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.




SQBF Series Block Diagram

## Electrical Specifications

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

| Parameter | Notes and Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Transient Input Voltage Ranges | SQBF024 models (100ms Max)<br>SQBF036 models (100ms Max)<br>SQBF300 models (100ms Max) | | | 50<br>100<br>500 | VDC |
| Operating Input Voltage Ranges | SHBF024 models<br>SHBF036 models<br>SHBF300 models | 18<br>18<br>180 | 24<br>36<br>300 | 36<br>75<br>425 | VDC |
| Under-Voltage Lockout Start up Voltage | SHBF024 models<br>SHBF036 models<br>SHBF300 models | | | 18<br>18<br>180 | VDC |
| Under-Voltage Lockout Shutdown Voltage | SHBF024 models<br>SHBF036 models<br>SHBF300 models | | 17<br>17<br>176 | | VDC |
| Over-Voltage Lockout Turn OFF Threshold | SHBF024 models<br>SHBF036 models<br>SHBF300 models | | | 50<br>80<br>450 | VDC |
| Over-Voltage Lockout Turn ON Threshold | SHBF024 models<br>SHBF036 models<br>SHBF300 models | 36<br>75<br>425 | | | VDC |
| Input Current | See model selection guide, Standby mode (OFF, UVLO) 8mA | | | | |
| Enable Function Input | Positive logic ON | Open | | | VDC |
| | Positive logic OFF | Short or 0 ~ 1.2 | | | VDC |
| | Negative logic ON | Short or 0 ~ 1.2 | | | VDC |
| | Negative logic OFF | Open | | | VDC |

### 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 | % |
| Output Ripple & Noise Voltage | Bandwidth 20MHz and with 1µF MLCC Output Capacitor | | 1.5 | | $\%V_{pk-pk}$ |
| Temperature Coefficient | | | | ±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 & Environmental Specifications

| Parameter | Notes and Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Switching Frequency | $V_{NOM}$ | 200 | | 300 | kHz |
| Storage Temperature Range | All models | -60 | | 125 | ˚C |
| Operating Case Temperature | All models | -45 | | 105 | ˚C |
| Over temperature Protection | All models, Auto. Recovery | | 110 | | |
| Isolation Voltage<br>Input to Output | All models, 1 Minute | 2250 | | | VDC |
| Isolation Resistance<br>Input to Output | All models,<br>500VDC, At 70%RH | 100 | | | MΩ |
| Isolation Capacitance<br>Input to Output | All models | | 1500 | | pF |
| Humidity (non condensing) | All models | | | 95 | % |
| Calculated MTBF | BellCore-TR-332@ 50˚C G.B | | 1.5 | | M HR |
| Thermal shock | Environmental Engineering Experimental Tests | MIL-STD-810F | | | |
| Vibration | | MIL-STD-810F | | | |
| Drop | | MIL-STD-810F | | | |
| Weight | Shape-F (No Flange) | 115 (4.06) | | | g (oz.) |
| Dimensions | Shape-F (No Flange) | 2.40” x 1.60” x 0.50” (60.0 x 40 x 12.7mm) | | | |
| Case Material | Metal | | | | |
| Potting Material | Silicone | | | | |

## Standards Compliance

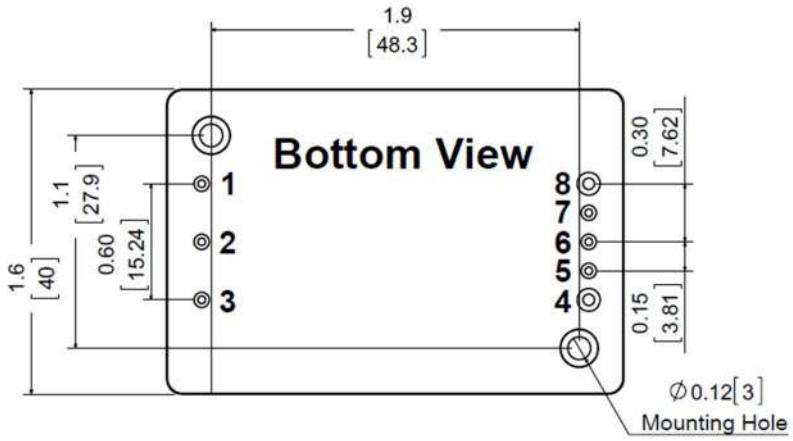
| Parameter | Standard | Test Conditions | Performance Criteria |
|---|---|---|---|
| Environmental Compliance | Reach; RoHS | | PASS |
| EMI | EN55022 | | Class A / Class B |
| ESD | EN61000-4-2 | ±4 kV Air Discharge<br>±4 kV Contact Discharge | Crit. A |
| Radiated Immunity | EN61000-4-3 | Level 2, 3 V/m | Crit. A |
| Fast Transient | EN61000-4-4 | ±2 kV Applied | Crit. A |
| Surge | EN61000-4-5 | ±2 kV Applied | Crit. A |
| Conducted Immunity | EN61000-4-6 | Level 2, 3 V rms | Crit. A |

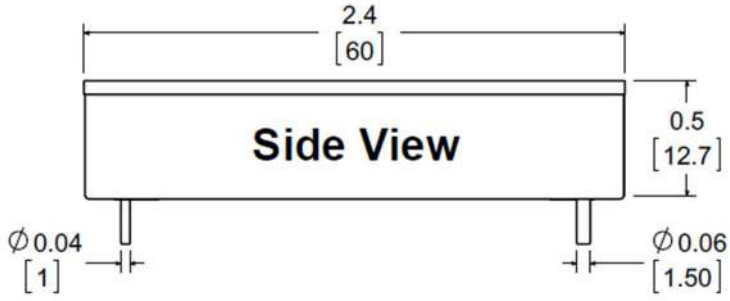
It is recommended to protect the input by fuses or other protection devices.

Modules could meet EN55022 Class A and Class B standard with external components.

## Mechanical Dimensions & Pin Assignments

**Shape – F** (No Flange)




Pin Assignments:

| Pin# | Dosa |
|---|---|
| 1 | -Vin |
| 2 | Enable |
| 3 | +Vin |
| 4 | +Vout |
| 5 | +Sense |
| 6 | Trim |
| 7 | -Sense |
| 8 | -Vout |

Note:

**Pin Material:** Copper Alloy
**Pin Plating:** Gold
**Dimensions in** inches [mm]
**Tolerances:** .XX±0.02 [ .X±0.5mm]

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

The figures of SQBF300280-S-P-F300

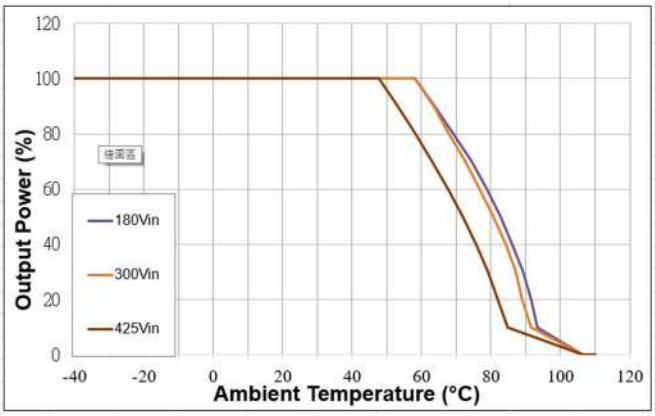



Figure 1 : Ambient Temperature VS. Output Power Derating Curves (Note: 600LFM with Heat Sink)

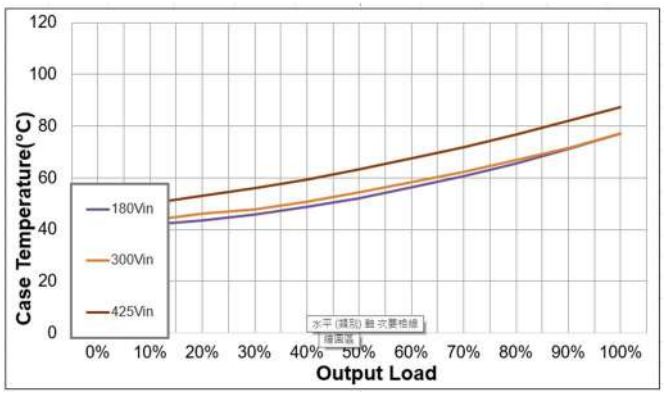



Figure 2 : Case Temperature VS. Output rated Power (Note: 600LFM with Heat Sink)

**PowerGood Tech. Research Co., Ltd.**
Address：5F, No. 40, Keya Rd., Daya Dist., Taichung City 42881, Taiwan
Website：www.powergood.com
Email：sales1@powergood.com
TEL：+886 4 2568 0448
FAX：+886 4 2568 0438

MORE INFO