



BD25008

25W DUAL DC/DC CONVERTER

36–72V_{IN} + 5V_{OUT}@+5000mA

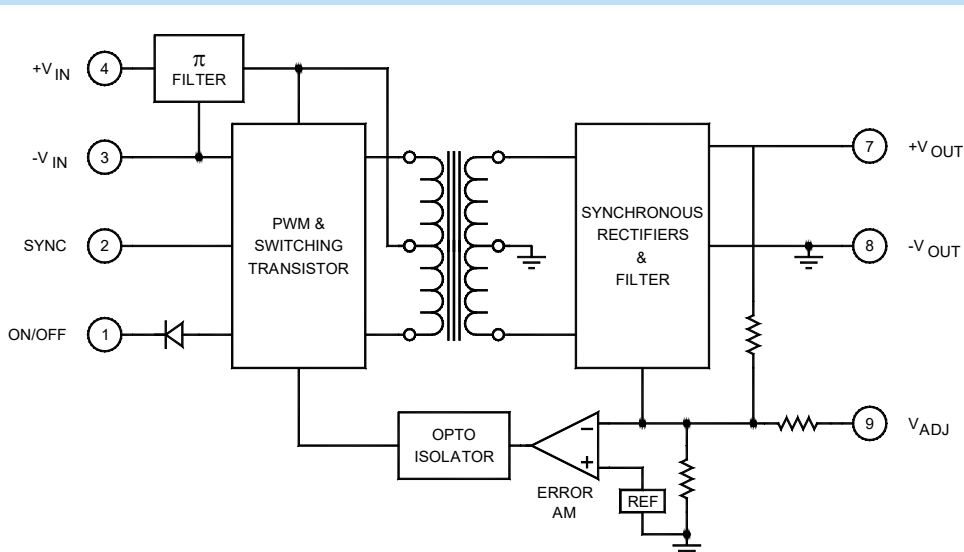
KEY FEATURES

- 25μS TRANSIENT RESPONSE
- 84% EFFICIENCY
- SIX-SIDED SHIELDING
- SOFT START
- SHIELDING CONNECTION TO -V_{INPUT}
- SHORT CIRCUIT PROTECTION
- ADJUSTABLE OUTPUT
- 75μA OFF STATE CURRENT
- WIDE INPUT VOLTAGE RANGE (2:1)
- SYNCHRONIZATION
- INPUT OVER/UNDER VOLTAGE PROTECTION
- OUTPUT OVER/UNDER VOLTAGE PROTECTION
- INDUSTRY PINOUT
- THERMAL PROTECTION



Functional Description

The BD25008 is a 25S5/48 with shielding connection to -V_{IN}.The converter can be synchronized to an external clock frequency of 310KHz or higher.




Typical Block Diagram

Electrical Specifications

INPUT SPECIFICATIONS

Unless otherwise specified, all parameters are given under typical +25°C with nominal input voltage and under full output load conditions.

| PARAMETER | CONDITION / NOTE | MIN | TYP | MAX | UNIT |
|------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----|-----|-----|-------------------|
| Input Voltage Range | | 36 | 48 | 72 | Vdc |
| No Load Input Current | | | 30 | | mA |
| Full Load Input Current | | | 620 | | mA |
| Sync Frequency | | 300 | 330 | 360 | kHz |
| Input Filter | LC | | | | |
| Reverse Polarity Input Current  | External series-blocking diode | | | 12 | A |
| Input Surge Current (20µS Spike) | | | | 10 | A |
| Short Circuit Current Limit | | | 150 | | % I _{IN} |
| Undervoltage Shutdown | | | 34 | | Vdc |
| Off State Current | | | 75 | | µA |
| Remote ON/OFF Control | | | | | |
| Supply ON | Open (Open circuit voltage: 12V Max.) | | | | |
| Supply OFF | | 0 | | 0.8 | Vdc |
| Logic Input Reference | -Input | | | | |
| Logic Compatibility | TTL Open Collector or CMOS Open Drain | | | | |
| Converter Standby Current | | | 32 | | mA |

OUTPUT SPECIFICATIONS

| PARAMETER | CONDITION / NOTE | MIN | TYP | MAX | UNIT |
|-------------------------------|----------------------------------------------------|-----|------|-----|--------------------------------------|
| Output Voltage | | | +5 | | Vdc |
| Output Current | | | 5000 | | mA |
| Output Voltage Accuracy | | | ±1 | ±2 | % |
| Output Voltage Adjustment | | | ±3 | ±5 | % |
| Minimum Load | | 10 | | | % of FL |
| Ripple & Noise | (See App. Note DC-003) | | 1 | 2 | %V _{PP} of V _{OUT} |
| Line Regulation | Minimum V _{IN} to maximum V _{IN} | | ±1 | ±2 | % |
| Load Regulation | NL to FL | | ±1 | ±2 | % |
| Temperature Coefficient @ FL | | | 0.02 | | %/°C |
| Transient Response Time | 50% FL to FL to 50% FL | | 25 | | µS |
| Short Circuit Protection | All outputs, by input current limiting | | | | |
| Output Short Circuit Duration | Continuous | | | | |

GENERAL SPECIFICATIONS

| PARAMETER | CONDITION / NOTE | MIN | TYP | MAX | UNIT |
|----------------------------|------------------|-----|-----------------|-----|------|
| Efficiency | | | 84 | | % |
| Isolation Voltage (1 min.) | | | 1500 | | Vdc |
| Isolation Resistance | | | 10 ⁹ | | Ω |
| Isolation Capacitance | | | 80 | | pF |
| Switching Frequency | | | 160 | | kHz |

PHYSICAL CHARACTERISTICS

| PARAMETER | CONDITION / NOTE | MIN | TYP | MAX | UNIT |
|----------------------|-------------------------------------------|-----|-----|-----|------|
| Dimensions (L×W×H) | 2.00×2.00×0.395 in. (50.80×50.80×10.03mm) | | | | |
| Weight | 2 oz. (58g) | | | | |
| Case Material | Coated metal | | | | |
| Shielding Connection | -Input (Pin 3) | | | | |

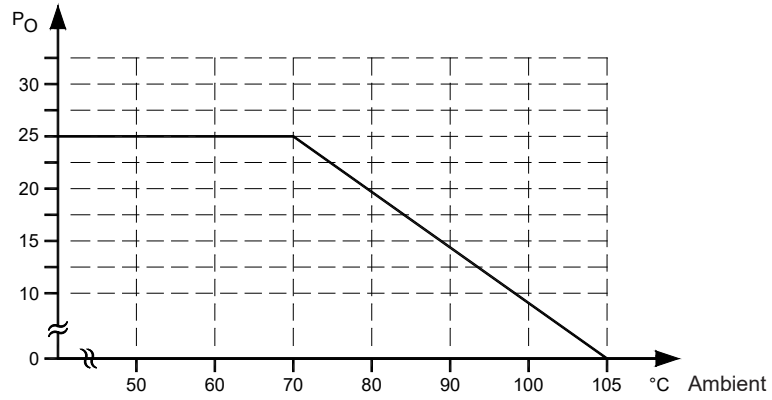


FIGURE 2. Typical derating curve

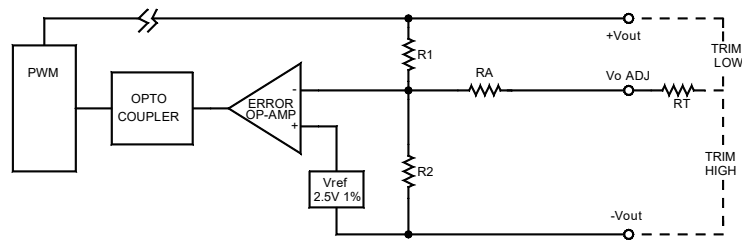


FIGURE 3. Output control circuit

To trim V_o higher to V_o' , where V_o is the actual measured value:

$$RT = \frac{R1 \cdot V_{REF}}{V_o' - V_o}$$

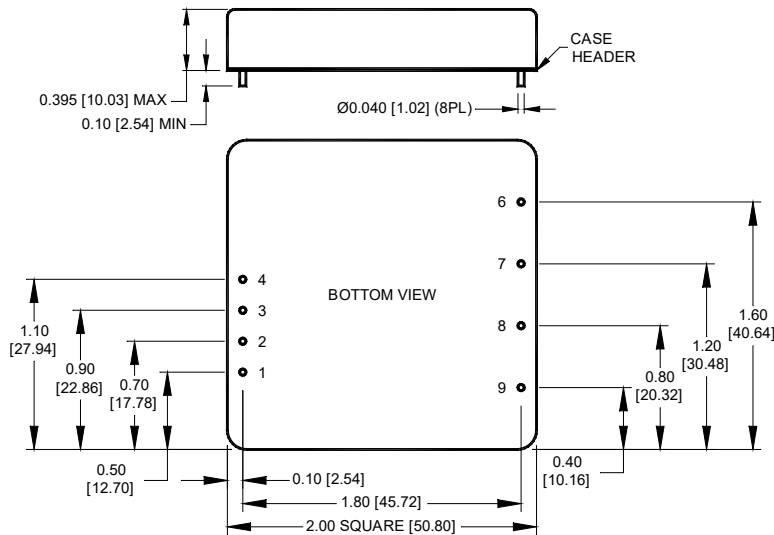
To trim V_o lower to V_o'' , where V_o is the actual measured value:

$$RT = \left[\left(\frac{R_1 \cdot 2 \cdot V_{REF}}{R_2 \cdot (V_o - V_o'')} - R1 \right) \cdot RA \right]$$

| Resistor | Value (K) |
|----------|-----------|
| R1 | 27.4 |
| R2 | 2.49 |
| RA | 24 |

MECHANICAL SPECIFICATIONS

in inches [mm]



| Pin | Function |
|-----|---------------|
| | SINGLE |
| 1 | ON/OFF |
| 2 | SYNC |
| 3 | $-V_{IN}$ |
| 4 | $+V_{IN}$ |
| 5 | No Pin |
| 6 | No Pin |
| 7 | $+V_{out}$ |
| 8 | $-V_{out}$ |
| 9 | $V_{out} ADJ$ |