

BOURNS®

Features

- Low cost
- 10 amp output current
- 94 % efficiency
- Industry-standard pin-out
- Low 0.6" profile
- Remote sense
- Trim function
- Short-circuit protection with auto-restart
- Fast transient response
- High-temperature operation
- 75 W/in³ power density
- Remote enable
- Output precharge capability
- Patents 5,770,940; 5,978,195; 6,127,814

SC10A DAC Series – Power Module

General Information

The SC10A DAC is a low-cost, 10 amp, non-isolated DC-DC converter with an amazingly small footprint. Designed for today's high power microprocessors, the SC15A accepts a 5 V input and a DAC controlled output from 1.25 V to 3.5 V.

Using Bourns proprietary V2™ architecture, the SC10A DAC provides ultrafast transient response, improved line and load regulation, and very high efficiency. It also incorporates short-circuit protection, Enable / Disable control, output voltage trim, and remote sense.

Input Specifications

Voltage
 5 V input4.5 VDC Min.
 5 VDC Nom.
 5.5 VDC Max.
 (4.75 Vin start-up)
 3.3 V input3.0 VDC Min.
 3.3 VDC Nom.
 3.6 VDC Max.

Current10 A Nom.

Enable Voltage
 High = On
2.4 VDC Min. (Source 500 mA)
 Low = Off
 -0.1 to 0.3 VDC (open = enable)

Inhibit Current0.1 mA Nom.

Output Specifications

Current0 to 10 A
 Current Limit.....11 A Min.

Voltage Setpoint Accuracy.....±1 %Vnom
 ±2 %Vnom max.

Voltage Trim Range.....-10 to +10 %Vnom

Line Regulation±0.1 %Vnom

Load Regulation±0.3 % Vnom
 (±0.5 % without remote sense)

Dynamic Response
 0 to 100 % load
 200 mV Nom. ($\Delta i/\Delta t = 3 \text{ A}/\mu\text{s}$)
 17 μs Nom.

100 to 0 % load
 200 mV Nom. ($\Delta i/\Delta t = 3 \text{ A}/\mu\text{s}$)
 20 μs Nom.

Temperature Regulation
 ±0.02 %Vout/°C Max.

General Specifications

MBTF...2,000 kHrs Nom. (40 °C, 80 % load)
 Operating Temperature0 to 100 °C
 (-40 to +100 °C optional)
 Storage Temperature.....-55 to +125 °C
 Switching Frequency.....500 kHz Nom.

Standard Options

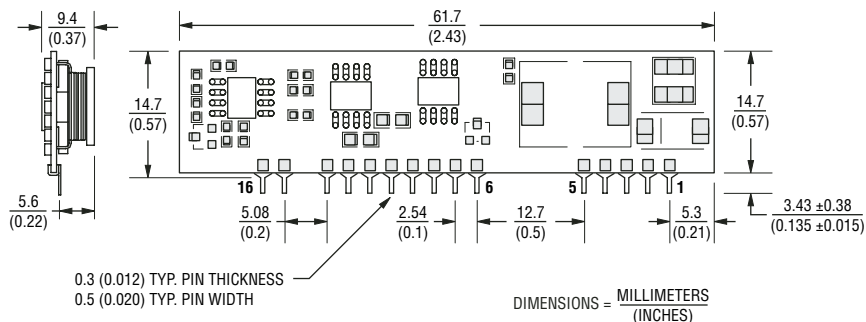
| | Nominal Input (V) | Output Voltage (V) | Output Current (A) | Ripple Max. (mV pp) | Efficiency Typ. (%) |
|------------|-------------------|--------------------|--------------------|---------------------|---------------------|
| SC10A5SDAC | 5 | 1.3 to 3.5 | 10 | 100 | 90 |
| SC10A3SDAC | 3.3 | | | | |

Output Voltage Selection

| VID4 | VID3 | VID2 | VID1 | VID0 | Output | VID4 | VID3 | VID2 | VID1 | VID0 | Output |
|------|------|------|------|------|--------|------|------|------|------|------|-------------------|
| 0 | 1 | 1 | 1 | 1 | 1.30 | 1 | 1 | 1 | 1 | 1 | 2.00 |
| 0 | 1 | 1 | 1 | 0 | 1.35 | 1 | 1 | 1 | 1 | 0 | 2.10 |
| 0 | 1 | 1 | 0 | 1 | 1.40 | 1 | 1 | 1 | 0 | 1 | 2.20 |
| 0 | 1 | 1 | 0 | 0 | 1.45 | 1 | 1 | 1 | 0 | 0 | 2.30 |
| 0 | 1 | 0 | 1 | 1 | 1.50 | 1 | 1 | 0 | 1 | 1 | 2.40 |
| 0 | 1 | 0 | 1 | 0 | 1.55 | 1 | 1 | 0 | 1 | 0 | 2.50 |
| 0 | 1 | 0 | 0 | 1 | 1.60 | 1 | 1 | 0 | 0 | 1 | 2.60 ¹ |
| 0 | 1 | 0 | 0 | 0 | 1.65 | 1 | 1 | 0 | 0 | 0 | 2.70 ¹ |
| 0 | 0 | 1 | 1 | 1 | 1.70 | 1 | 0 | 1 | 1 | 1 | 2.80 ¹ |
| 0 | 0 | 1 | 1 | 0 | 1.75 | 1 | 0 | 1 | 1 | 0 | 2.90 ¹ |
| 0 | 0 | 1 | 0 | 1 | 1.80 | 1 | 0 | 1 | 0 | 1 | 3.00 ¹ |
| 0 | 0 | 1 | 0 | 0 | 1.85 | 1 | 0 | 1 | 0 | 0 | 3.10 ¹ |
| 0 | 0 | 0 | 1 | 1 | 1.90 | 1 | 0 | 0 | 1 | 1 | 3.20 ¹ |
| 0 | 0 | 0 | 1 | 0 | 1.95 | 1 | 0 | 0 | 1 | 0 | 3.30 ¹ |
| 0 | 0 | 0 | 0 | 1 | 2.00 | 1 | 0 | 0 | 0 | 1 | 3.40 ¹ |
| 0 | 0 | 0 | 0 | 0 | 2.05 | 1 | 0 | 0 | 0 | 0 | 3.50 ¹ |

1 - Not available in 3.3 Vin.

Product Dimensions



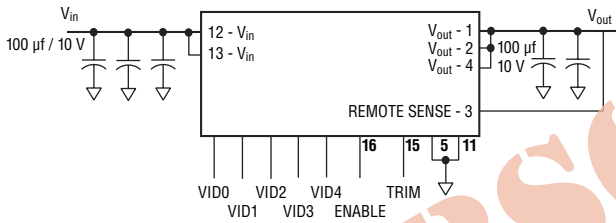
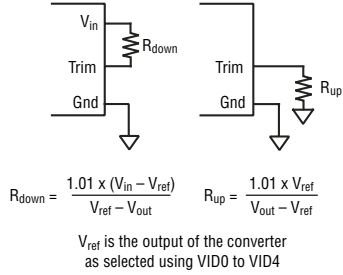
PIN DESCRIPTIONS:
 1 - Vout 5 - Gnd 9 - VID3 13 - Vin
 2 - Vout 6 - VID0 10 - VID4 14 - No Pin
 3 - Sense 7 - VID1 11 - Gnd 15 - Trim
 4 - Vout 8 - VID2 12 - Vin 16 - Enable

Specifications are subject to change without notice.
 Customers should verify actual device performance in their specific applications.

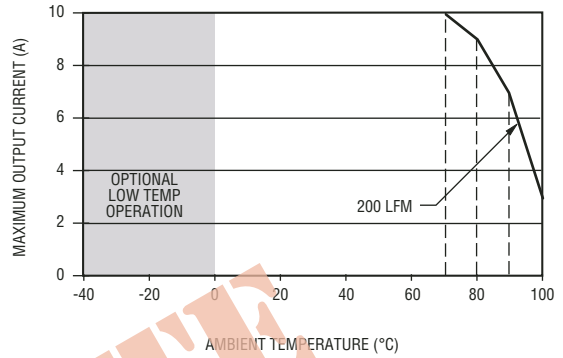
SC10A DAC Series – Power Module



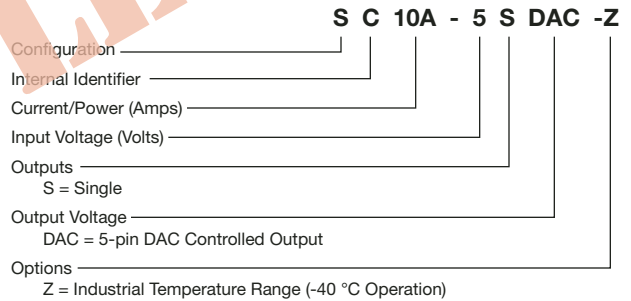
Product Schematic



Temperature Derating



How to Order



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