

## 1 and 2 WATT DC/DC CONVERTERS

### Key Features

- Compact SIP and DIP Packages
- Input/Output Isolated
- Self-recovering Short Circuit Protection
- No derating to 71° C
- Single and Dual Output Models
- Designed to Meet FCC SEC 15, Sub Part J, A and B



### Applications

- OP-Amps
- A/D, D/A and F/V converters
- RAM
- EPROMS and EEPROMS
- ECL
- microprocessors negative biasing

These converters provide economical space and efficiency solutions where systems require isolation at the load point. Wherever 5 VDC or 12 VDC are available, these converters enable the designer to have either a positive or negative voltage compatible with today's design and assembly requirements. They operate without derating or heat sinking. Solid tantalum capacitors are used to provide reliability. Applications include OP-Amps, A/D, D/A and F/V converters, RAM, EPROMS, EEPROMS, ECL and microprocessors or negative biasing applications.

### General Electrical Specifications

(Specifications at Nominal Input and 25 C, nominal input voltage and rated output current unless otherwise noted.)

| Parameter                                                 | Limits                                                                            | Conditions                                                  |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------|
| Input Voltage Range                                       | 4.75 - 5.25 VDC<br>10.80 - 13.20 VDC                                              | 5V Input Devices<br>12V Input Devices                       |
| Input Filter<br>Input/Output Isolation                    | Filter Capacitor<br>10 <sup>-3</sup> megohms (Min)<br>40pf (Max)<br>500 VDC (Min) | All Device Types                                            |
| Output Accuracy<br>2SP5U5.                                | ± 5%<br>± 3%                                                                      | Nominal Line, Full Load                                     |
| Load Regulation<br>Regulated Models                       | 0.5%<br>1%<br>2%                                                                  | NL to FL Dual O/P<br>NL to FL Single O/P<br>NL to FL Q5R5-5 |
| Unregulated Models                                        | 10%                                                                               | NL to FL Nom. Input                                         |
| Line Regulation<br>Regulated Models<br>Unregulated Models | 0.5%<br>1.2% per 1%                                                               | FL, Low Line to High Line<br>$\Delta V_o / \Delta V_{in}$   |



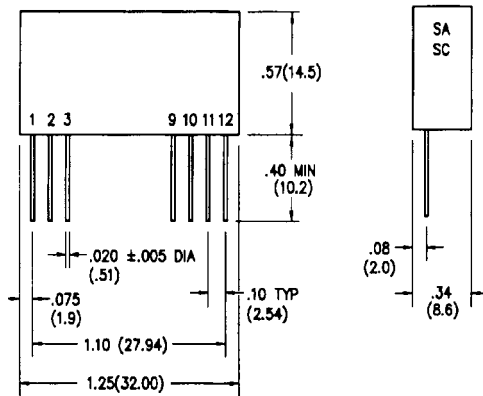
| Parameter                                                           | Limits                                     | Conditions                                            |
|---------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------|
| Output Voltage Temperature Coefficient:<br>Regulated<br>Unregulated | $\pm .015\%$ per °C<br>$\pm 0.05\%$ per °C | Typical<br>Typical                                    |
| Output Noise/Ripple                                                 | Dual 30mV P-P<br>Single 100mV P-P          | 20Hz - 20 MHz Bandwidth<br>(15µf, across each output) |
| Short Circuit Protection                                            | Current Limited                            | All Units                                             |
| Duration                                                            | Continuous                                 |                                                       |
| Switching Frequency                                                 | 100 KHz                                    | Typical                                               |
| Operating Temperature                                               | -25°C to +71°C                             |                                                       |
| Derating                                                            | None                                       | To 71°C                                               |
| Storage Temperature                                                 | -55°C to +125°C                            |                                                       |

### Selection Guide - Regulated Products

| Device Type | Input Voltage Range VDC | Input Current (A) @ Max | Output Voltage VDC | Max Output Current (mA) | Package/ Pinout |
|-------------|-------------------------|-------------------------|--------------------|-------------------------|-----------------|
| S5R5        | 4.75 - 5.25             | .275                    | + or - 5           | 100                     | SA              |
| Q5R5        | 4.75 - 5.25             | .275                    | + or - 5           | 100                     | QA              |
| S5R12       | 4.75 - 5.25             | .400                    | + or - 12          | 80                      | SA              |
| Q5R12       | 4.75 - 5.25             | .400                    | + or - 12          | 80                      | QA              |
| S5R15       | 4.75 - 5.25             | .365                    | + or - 15          | 65                      | SA              |
| Q5R15       | 4.75 - 5.25             | .365                    | + or - 15          | 65                      | QA              |
| Q5R12-12    | 4.75 - 5.25             | .440                    | $\pm 12$           | $\pm 40$                | QB              |
| Q5R15-15    | 4.75 - 5.25             | .500                    | $\pm 15$           | $\pm 33$                | QB              |
| Q12R5       | 10.80 - 13.20           | .120                    | + or - 5           | 100                     | QA              |
| Q12R12      | 10.80 - 13.20           | .177                    | + or - 12          | 80                      | QA              |
| S12R15      | 10.80 - 13.20           | .177                    | + or - 15          | 65                      | SA              |
| Q12R15-15   | 10.80 - 13.20           | .185                    | $\pm 15$           | $\pm 33$                | QB              |

### Selection Guide - Unregulated Products

| Device Type | Input Voltage Range VDC | Input Current (A) @ Max | Output Voltage VDC | Max Output Current (mA) | Package/ Pinout |
|-------------|-------------------------|-------------------------|--------------------|-------------------------|-----------------|
| SP5         | 4.75 - 5.25             | .400                    | + or - 5           | 200                     | SA              |
| QP5         | 4.75 - 5.25             | .400                    | + or - 5           | 200                     | QA              |
| SA12-12     | 4.75 - 5.25             | .400                    | $\pm 12$           | $\pm 40$                | SC              |
| QA12-12     | 4.75 - 5.25             | .400                    | $\pm 12$           | $\pm 40$                | QC              |
| SA15-15     | 4.75 - 5.25             | .400                    | $\pm 15$           | $\pm 33$                | SC              |
| QA15-15     | 4.75 - 5.25             | .400                    | $\pm 15$           | $\pm 33$                | QC              |
| S24P5       | 21.60 - 26.40           | .090                    | + or - 5           | 250                     | SA              |

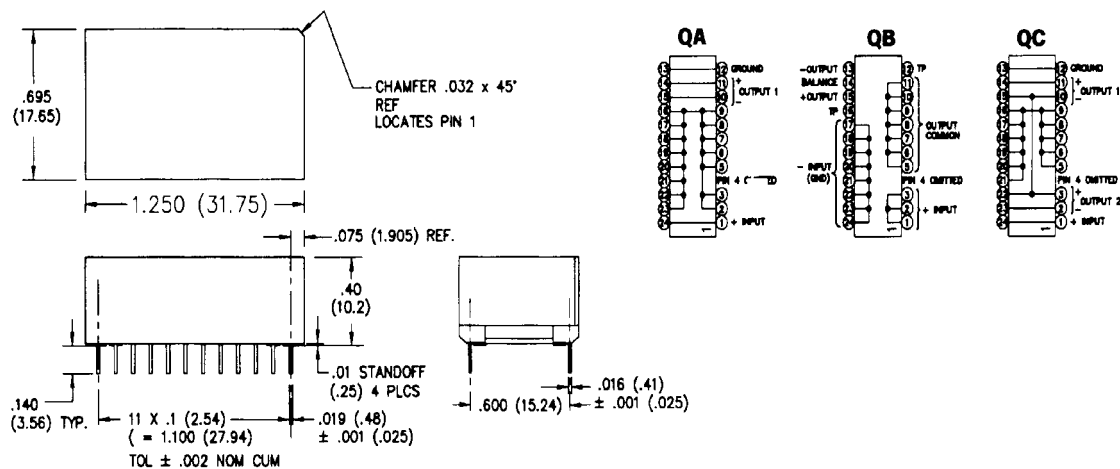
**Mechanical Specification (dimensions in inches)**
**S-PAC**


| SA(SINGLE OUTPUT) |                 | SC(DUAL OUTPUTS) |                 |
|-------------------|-----------------|------------------|-----------------|
| PIN               | PIN CONNECTIONS | PIN              | PIN CONNECTIONS |
| 1                 | +INPUT          | 1                | +INPUT          |
| 2                 | NC              | 2                | -OUTPUT 2       |
| 3                 | NC              | 3                | +OUTPUT 2       |
| 9                 | NC              | 9                | NC              |
| 10                | -OUTPUT         | 10               | -OUTPUT 1       |
| 11                | +OUTPUT         | 11               | +OUTPUT 1       |
| 12                | -INPUT          | 12               | -INPUT          |

SC series pins 3 and 10 connected internally.

**NOTES (ALL DEVICES & PACKAGES):**

- All dimensions in parentheses are metric.
- Tolerances unless otherwise specified:  
.xx ± .03 (.76) .xxx = ± .015 (.38)

**QPAC**


**MATERIALS:** Base and cover: Black Stanyl 4/6 nylon TE250F6 UL 94V-0 rated. Post style contact: half hard brass.

**PLATING:** Post style contact: 100µ" min 60/40 bright tin/lead per Mil-T-10727 over 50µ" min nickel per QQ-N-290

Pin 4 is missing - QPAC .

**Reliability Power Locations**

| HEADQUARTERS & CUSTOMER SERVICE                                                                                                                                                              | SALES                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reliability Power, Incorporated<br>33 Musick<br>Irvine, CA 92618 USA<br>Tel: (949) 305-6700<br>Fax: (949) 305-6701<br><a href="http://www.reliabilitypower.com">www.reliabilitypower.com</a> | Reliability Power, Incorporated<br>Attention: SALES<br>Tel: (805) 449-1667<br>Fax: (805) 557-4530<br><a href="mailto:sales@reliabilitypower.com">sales@reliabilitypower.com</a> |