



1 & 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 applications



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.

Reliability Incorporated also provides custom designed DC/DC Converters to meet customer specifications. Reliability Incorporated is based in Houston, Texas, USA and is a leading provider of semiconductor processing equipment and DC/DC converters. Corporate headquarters, located in Houston, TX, USA is ISO 9001 certified. DC/DC converters are manufactured in Costa Rica.

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 10.80 - 13.20 VDC | 5V Input Devices 12V Input Devices |
| Input Filter | Filter Capacitor | |
| Input/Output Isolation | 10 ³ megohms (Min) 40pf (Max) 500 VDC (Min) | All Device Types |
| Output Accuracy | ± 5% | Nominal Line, Full Load |
| 2SP5U5. | ± 3% | |
| Load Regulation | | |
| Regulated Models | 0.5% 1% 2% | NL to FL Dual O/P NL to FL Single O/P NL to FL Q5R5-5 |
| Unregulated Models | 10% | NL to FL Nom. Input |
| Line Regulation | | |
| Regulated Models | 0.5% | FL, Low Line to High Line |
| Unregulated Models | 1.2% per 1% | ΔVo/ΔVin |

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

Selection Guide - Regulated Products

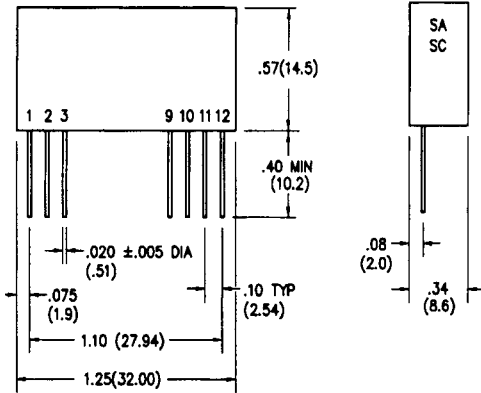
| Device Type | Input Voltage Range VDC | Input Current (A) @ Max | Output Voltage VDC | Max Output Current (mA) | Package/ Pinout |
|-------------|-------------------------|-------------------------|--------------------|-------------------------|-----------------|
| S5R5 | 4.75 - 5.25 | .275 | + or - 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 | ± 12 | ± 40 | QB |
| Q5R15-15 | 4.75 - 5.25 | .500 | ± 15 | ± 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 | ± 15 | ± 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 | ± 12 | ± 40 | SC |
| QA12-12 | 4.75 - 5.25 | .400 | ± 12 | ± 40 | QC |
| SA15-15 | 4.75 - 5.25 | .400 | ± 15 | ± 33 | SC |
| QA15-15 | 4.75 - 5.25 | .400 | ± 15 | ± 33 | QC |
| S24P5 | 21.60 - 26.40 | .090 | + or - 5 | 250 | SA |

Mechanical Specification (dimensions in inches)

S-PAC



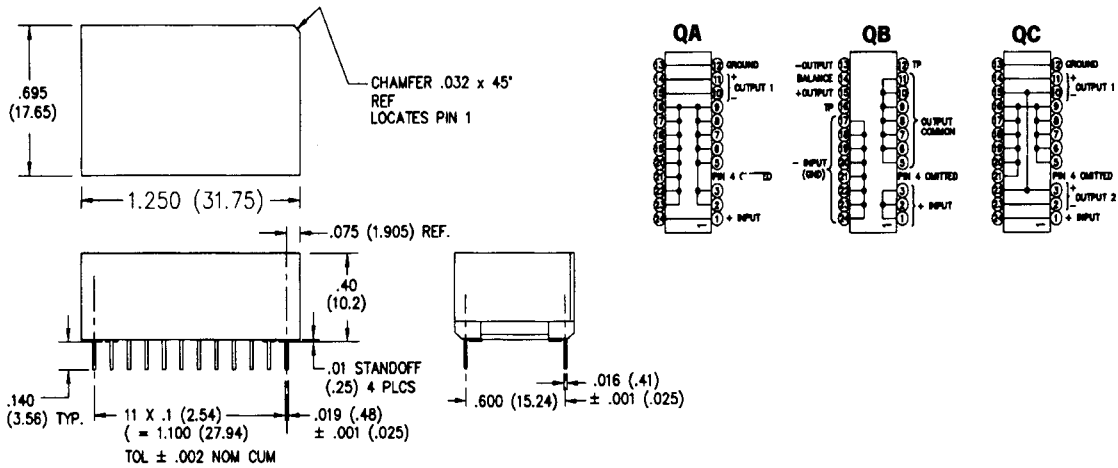
| SA(SINGLE OUTPUT) | | SC(DUAL OUTPUTS) | |
|-------------------|-----------------|------------------|-----------------|
| PIN | PIN CONNECTIONS | PIN | PIN CONNECTIONS |
| 1 | +INPUT | 1 | +INPUT |
| 2 | NC | 2 | -OUTPUT 2 |
| 3 | NC | 3 | +OUTPUT 2 |
| 9 | NC | 9 | NC |
| 10 | -OUTPUT | 10 | -OUTPUT 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:
 $.xx \pm .03 (.76)$ $.xxx \pm .015 (.38)$

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 Incorporated Locations | | |
|---|---|--|
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