



## 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 Input/Output Isolation	Filter Capacitor 10 <sup>3</sup> megohms (Min) 40pf (Max) 500 VDC (Min)	All Device Types
Output Accuracy 2SP5U5.	± 5% ± 3%	Nominal Line, Full Load
Load Regulation <i>Regulated Models</i>	0.5% 1% 2%	NL to FL Dual O/P NL to FL Single O/P NL to FL Q5R5-5
<i>Unregulated Models</i> Line Regulation	10%	NL to FL Nom. Input
<i>Regulated Models</i> <i>Unregulated Models</i>	0.5% 1.2% per 1%	FL, Low Line to High Line $\Delta V_o / \Delta V_{in}$

Parameter	Limits	Conditions
Output Voltage Temperature Coefficient:		
Regulated	± .015% per °C	Typical
Unregulated	± 0.05% per °C	Typical
Output Noise/Ripple	Dual 30mV P-P Single 100mV P-P	20Hz - 20 MHz Bandwidth (15µf, across each output)
Short Circuit Protection Duration	Current Limited Continuous	All Units
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***

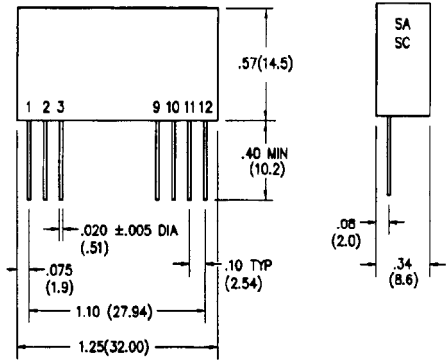
Device Type	Input Voltage Range VDC	Input Current (A) @ Max	Output Voltage VDC	Max Output Current (mA)	Package/ Pinout
S5R5	4.75 - 5.25	.275	+ or - 5	100	SA
Q5R5	4.75 - 5.25	.275	+ or - 5	100	QA
S5R12	4.75 - 5.25	.400	+ or - 12	80	SA
Q5R12	4.75 - 5.25	.400	+ or - 12	80	QA
S5R15	4.75 - 5.25	.365	+ or - 15	65	SA
Q5R15	4.75 - 5.25	.365	+ or - 15	65	QA
Q5R12-12	4.75 - 5.25	.440	±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



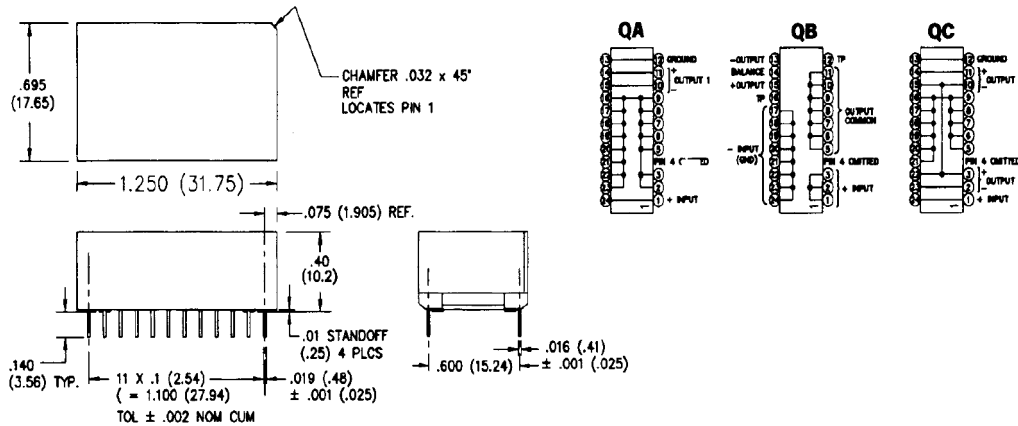
SA (SINGLE OUTPUT)		SC (DUAL OUTPUTS)	
PIN	PIN CONNECTIONS	PIN	PIN CONNECTIONS
1	+INPUT	1	+INPUT
2	NC	2	-OUTPUT 2
3	NC	3	+OUTPUT 2
9	NC	9	NC
10	-OUTPUT	10	-OUTPUT 1
11	+OUTPUT	11	+OUTPUT 1
12	-INPUT	12	-INPUT

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 - OPAC .

Reliability Incorporated Locations		
Headquarters	Sales	Far East Sales
Reliability Incorporated P.O. Box 218370 Houston, Texas 77218 USA Tel: 281 492-0550 Fax 281 492-0615 <a href="http://www.relinc.com">www.relinc.com</a> ISO 9001 Certified	Reliability Incorporated Tel: 281 492-0550 Fax 281 492-0615 <a href="mailto:dcdcinfo@relinc.com">dcdcinfo@relinc.com</a> <a href="http://www.dc-dcpower.com">www.dc-dcpower.com</a> ISO 9001 Certified	Reliability Singapore Pte. Ltd. Blk 103 Boon Keng Rd. Singapore 339774 Tel: 65 299 4938 Fax: 65 299 4829 ISO 9002 Certified