

DC-DC step down power supply

Preliminary Data

Features

- Module DC-DC step down single output
- Wide range input voltage $100 \div 370 \text{ V}_{\text{dc}}$
- Output power 4.0 W Typ
- Output voltage precision 5%
- Output short circuit protection
- No heatsink required
- Not - latching overload and short circuit protection
- MTBF > 1.000.000 hours ($T_A = 25^\circ\text{C}$)
- Incapsulated or open frame packages
- Pins or comb insertion
- RoHS compliant

Description

The DC-DC module is a high efficiency DC-DC not insulated switch mode constant voltage generator.

Designed for industrial application where low voltages are required from main.

Step down converter performs a typ 4.0 W power conversion.

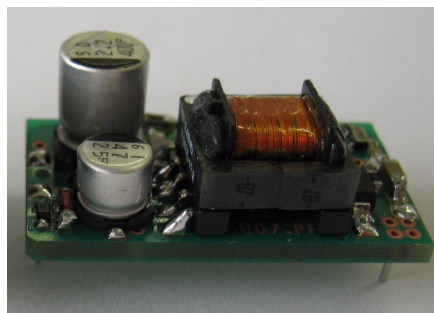
The output voltages and current level are set up by design in accordance with customer requirements.

Typical reference values for the shelf solution are:

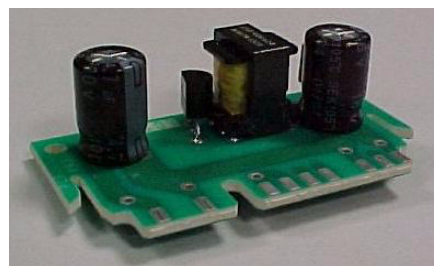
- Single output -12 V, $\pm 5\%$, 0.35 A.



BT = Encapsulated through hole



FT = Open frame through hole



FC = Open Frame

Table 1. Device summary

Order codes	Package	Connections
SPDC400BT12M0.35	Encapsulated	Through hole
SPDC400FT12M0.35	Open frame	Through hole
SPDC400FC12M0.35	Open frame	Comb

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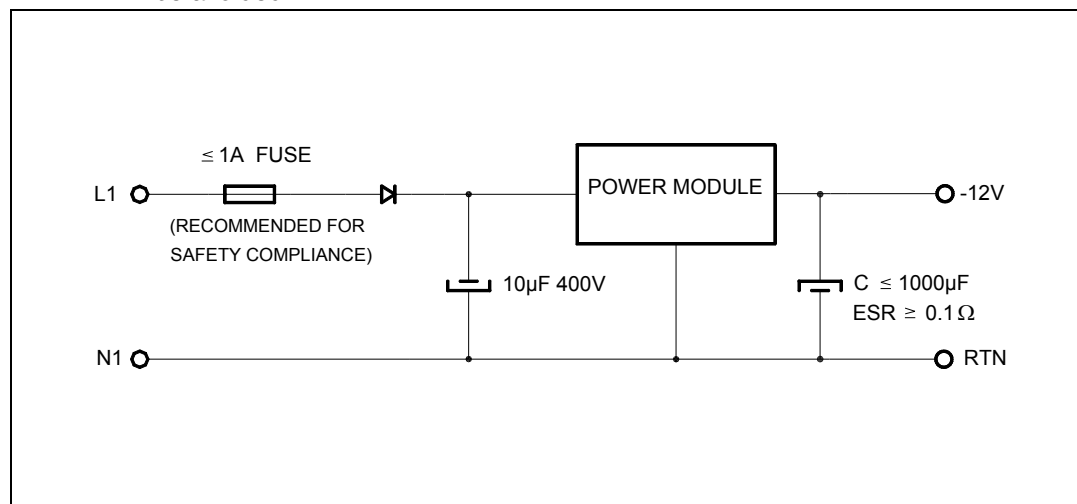
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1 Application diagram

Figure 1. Application diagram

(For through hole version C must be 100 μ F minimum, for Comb version C can be avoided)



2 Electrical characteristics

Table 2. Electrical characteristics ($T_A = 25^\circ\text{C}$, unless otherwise specified.)

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
V_i	Input voltage		100		370	V_{dc}
V_{o1}	Output voltage	$V_i = 100$ to $370 V_{dc}$	-12.6	-12	-11.4	V
I_{o2}	Output current	$V_i = 100$ to $370 V_{dc}$	0.35			A
V_{or}	Output ripple	$V_i = 100$ to $370 V_{dc}$			5%	mVpp
I_{osc}	Output short circuit current	$V_i = 100$ to $370 V_{dc}$	Hiccup Mode			A
η	Efficiency	$V_i = 100$ to $370 V_{dc}$ $I_o = 0.35$ A		80		%
$P_{stand\ by}$	Power losses in no load condition	$V_i = 320 V_{dc}$ $I_o = 0$ mA			0.3	W
I_{ir}	Inrush input current	$V_i = 320 V_{dc}$		30		A
T_{op}	Operating ambient temperature		-10		85	$^\circ\text{C}$
T_{stg}	Storage temperature range		-20		90	$^\circ\text{C}$

- Agency approvals
The safety and EMI compliance has to be assured by the user.

3 Mechanical dimensions

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

Figure 2. SPDC400BT mechanical data (dimensions in mm)

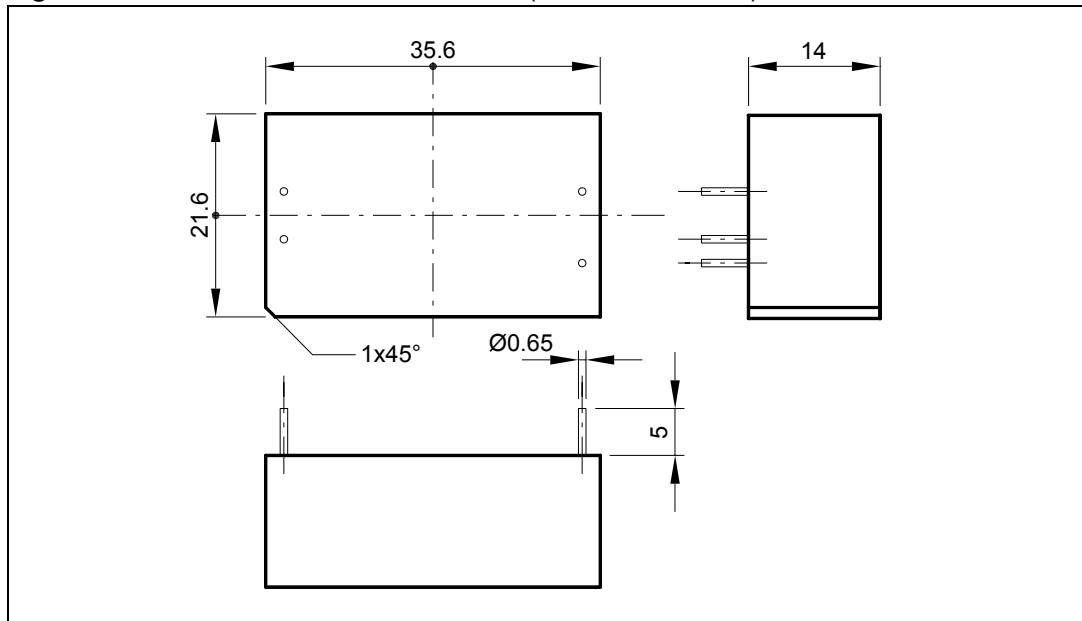


Figure 3. SPDC400FT mechanical data (dimensions in mm)

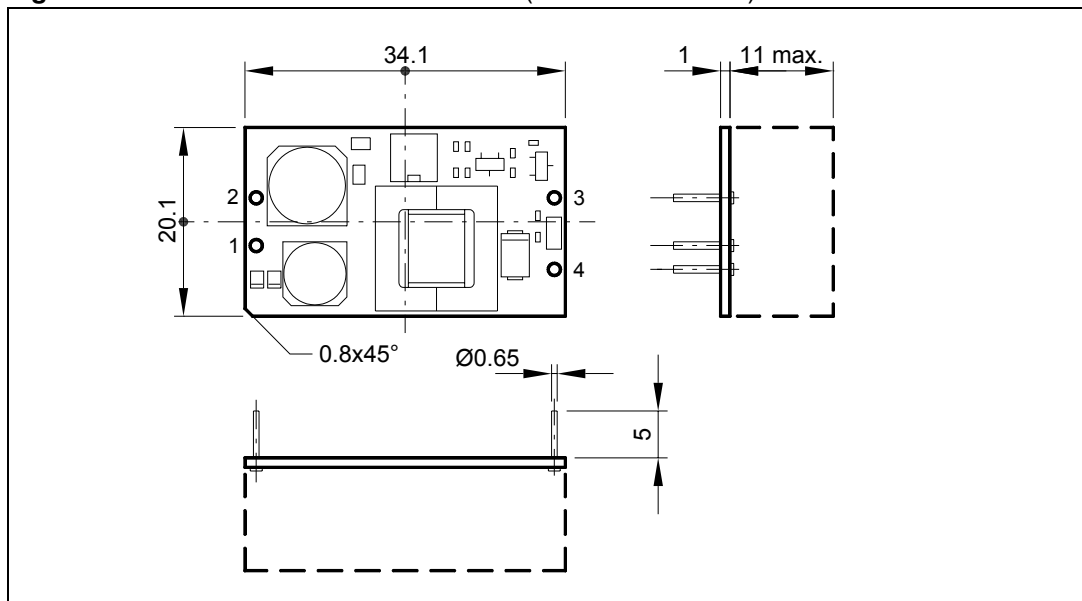


Figure 4. SPDC400FC mechanical data side view (dimensions in mm)

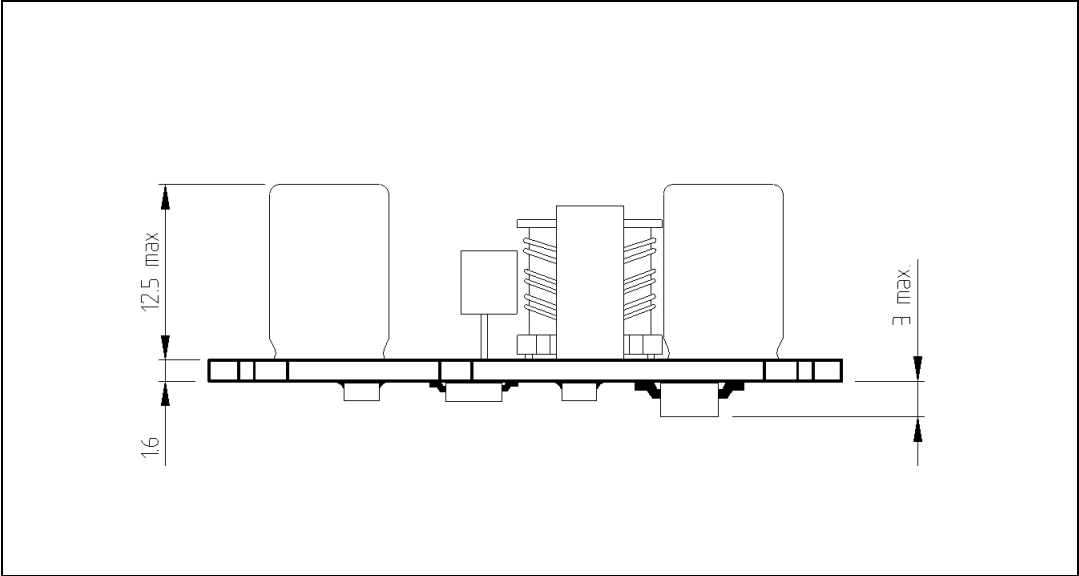
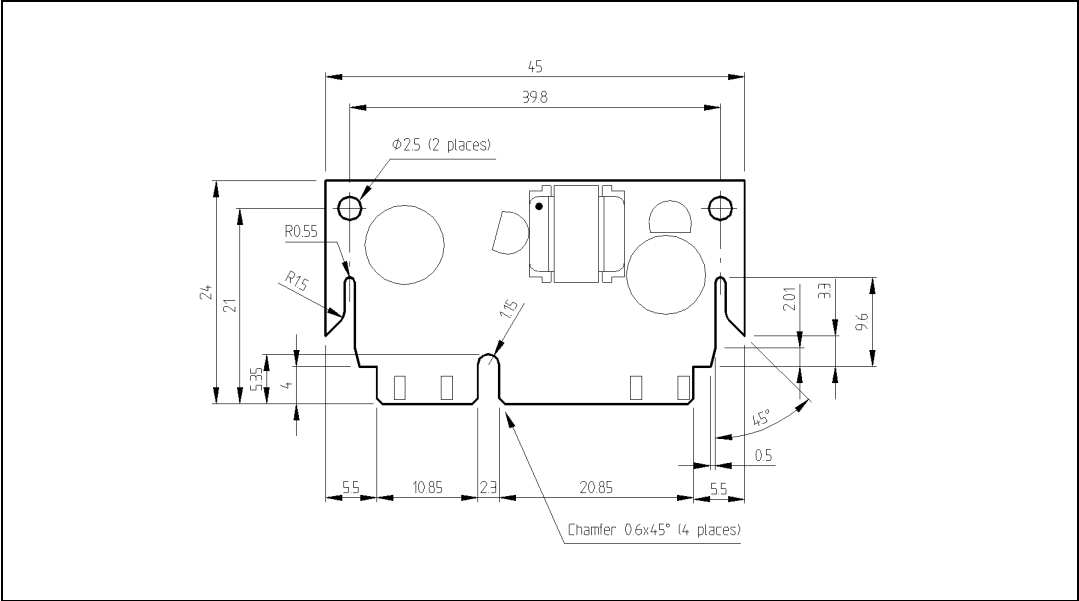


Figure 5. SPDC400FC mechanical data top view (dimensions in mm)



4 Connection diagram

Table 3. Pin description

Pin	Function	Description
1	L1	DC input voltage
2	N1	DC input voltage
3	-12V	Output voltage
4	RTN	Output voltage return

Figure 6. SPDC400BT and SPDC400FT connection diagram

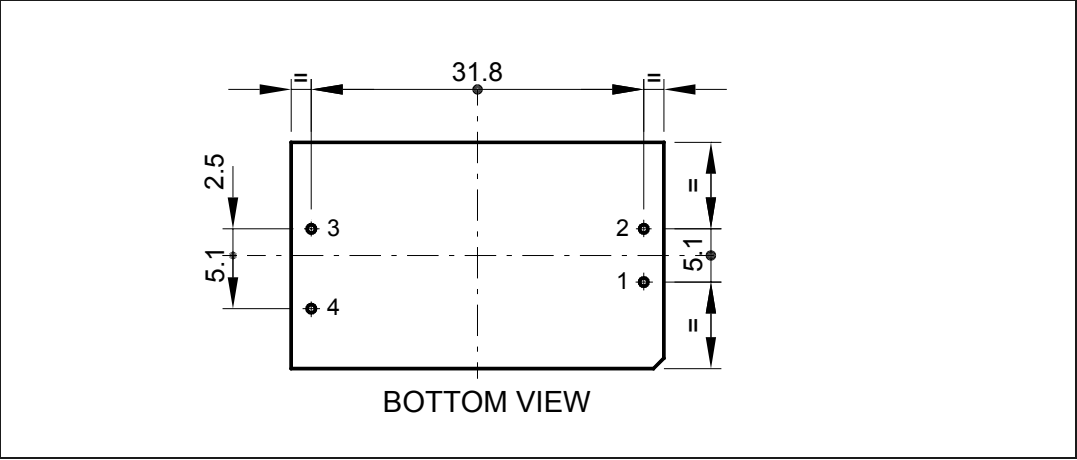
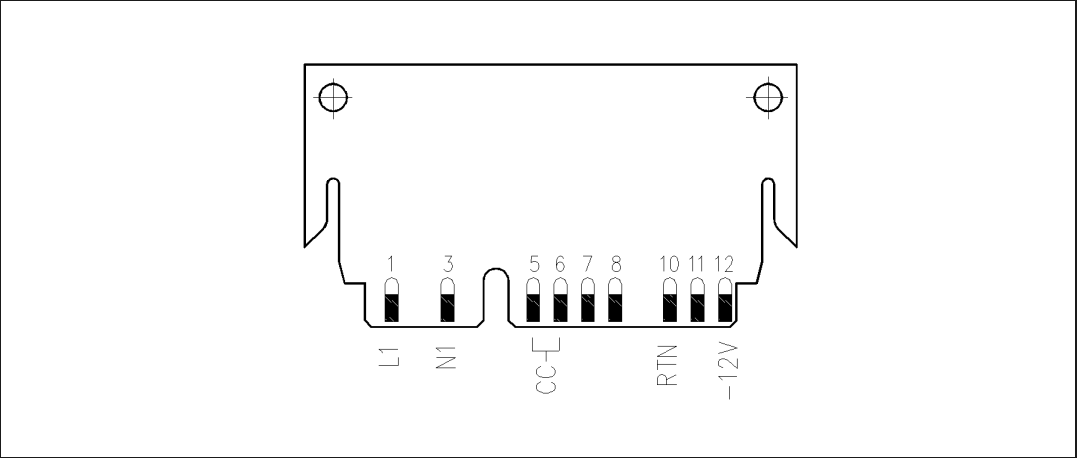


Figure 7. SPDC400FC connection diagram



5 **Ordering information scheme**

Table 4. Ordering information scheme

	SPDC	400	X	Y	12	Z	0.35
DC-DC converter							
Max VDC input							
F:Open Frame	Package						
B:Encapsulated							
C: Comb	Connection						
T:Through Hole							
Typ VDC Output							
P:Plus	Output voltage polarity						
M:Minus							
Typ IDC Output							

6 Revision history

Table 5. Document revision history

Date	Revision	Changes
11-Oct-2007	1	First release

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