

DC-DC step down power supply

Features

- Module DC-DC step down single output
- Wide range input voltage: 100÷370 V_{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 °C)
- Encapsulated or open frame packages
- Comb insertion
- RoHS compliant
- Module weight: 9 grams typ.



Description

ST's power modules are highly integrated, high efficiency switch mode converters.

The SPDC400-4W non isolated series delivers 4 W at -12 V from DC input that is the rectified universal AC

It is an immediate drop-in solution requiring no additional external circuitry.

The power supply modules are suited for auxiliary power requirements in appliance, industrial and communication applications.

The open frame version is intended to offer a low-cost version of ST's easy to use, compact size power modules.

Table 1. Device summary

Order code	Package	Connections
SPDC400FC12M0.35	Open frame	Comb

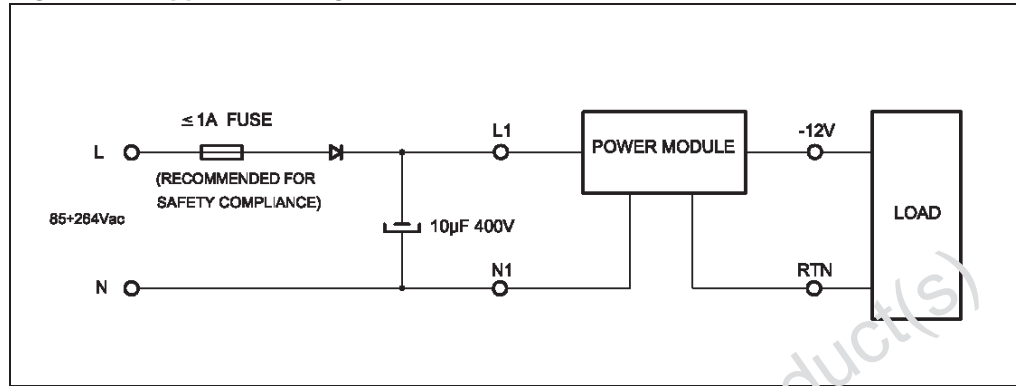
Contents

1	Application diagram	3
2	Electrical characteristics	4
3	PCB footprint	5
4	Mechanical dimensions	6
5	Connection diagram	7
6	Ordering information scheme	8
7	Revision history	9

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1 Application diagram

Figure 1. Application diagram



Note: N1 pin is electrically connected to RTN, on the power module printed circuit board.

2 Electrical characteristics

$T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified.

Table 2. Electrical characteristics

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
V_i	Input voltage		100		370	V_{dc}
V_{o1}	Output voltage	$V_i = 100$ to $370\text{ }V_{dc}$	-12.6	-12	-11.4	V
I_{o2}	Output current	$V_i = 100$ to $370\text{ }V_{dc}$	0.35			A
V_{or}	Output ripple	$V_i = 100$ to $370\text{ }V_{dc}$			5%	n Vpp
I_{osc}	Output short-circuit current	$V_i = 100$ to $370\text{ }V_{dc}$	Hiccup mode			A
η	Efficiency	$V_i = 100$ to $370\text{ }V_{dc}$ $I_o = 0.35\text{ A}$		50		%
$P_{stand\ by}$	Power losses in no load condition	$V_i = 320\text{ }V_{dc}$ $I_o = 0\text{ mA}$			0.3	W
I_{ir}	Inrush input current	$V_i = 320\text{ }V_{dc}$		30		A
T_{op}	Operating ambient temperature		-10		85	$^\circ\text{C}$
T_{stg}	Storage temperature range		-20		90	$^\circ\text{C}$

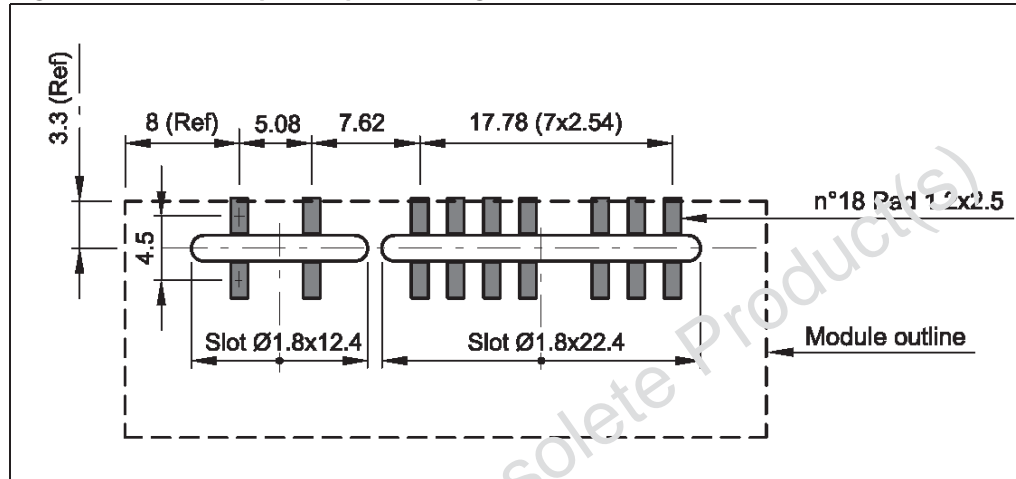
- Agency approval: The safety and EMI compliance has to be assured by the user.

3 PCB footprint

Use *Figure 2* as suggested PCB footprint.

PCB footprint for SPDC400FC12M0.35 (dimensions in mm).

Figure 2. PCB footprint top side trough view



4 Mechanical dimensions

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

Figure 3. SPDC400FC mechanical data side view (dimensions in mm)

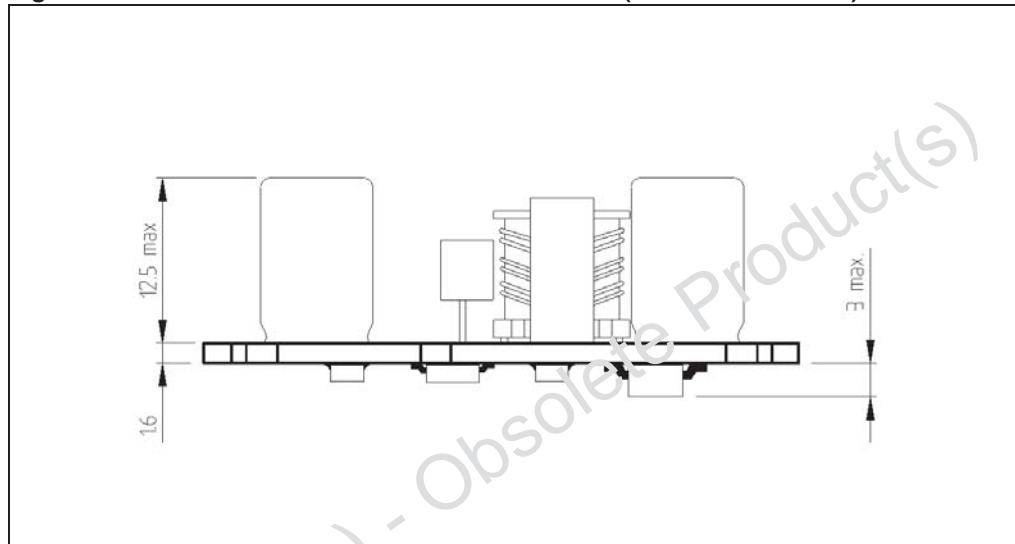
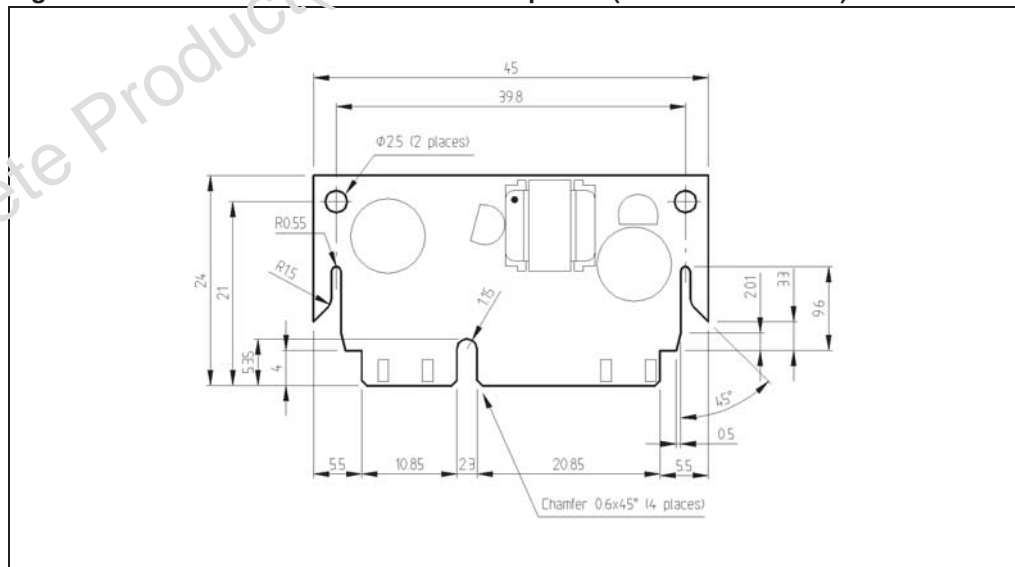


Figure 4. SPDC400FC mechanical data top view (dimensions in mm)

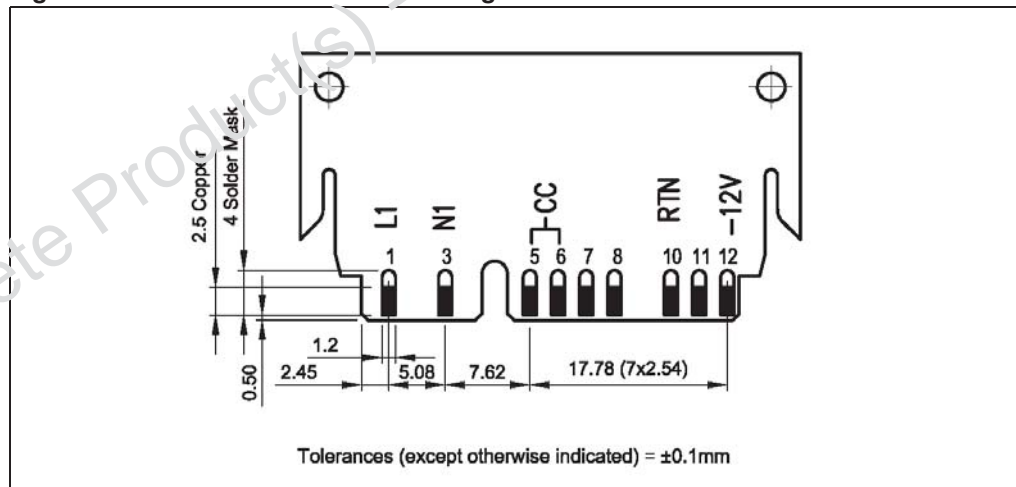


5 Connection diagram

Table 3. Pin description

Pin	Function	Description
1	L1	DC input voltage
2		Not present
3	N1	DC input voltage
4		Polarization key
5		Connected to pin 6
6		Connected to pin 5
7		Not connected
8		Not connected
9		Not present
10	RTN	Output voltage return
11		Not connected
12	- 12 V	Output voltage

Figure 5. SPDC400FC connection diagram



6 Ordering information scheme

Table 4. Ordering information scheme

	SPDC	400	F	C	12	Z	0.35
DC-DC converter							
Max VDC input							
F: Open Frame	Package						
C: Comb	Connection						
Typ VDC output							
P: Plus	Output voltage polarity						
M: Minus							
Typ IDC output							

7 Revision history

Table 5. Document revision history

Date	Revision	Changes
11-Oct-2007	1	First release
19-Jan-2009	2	Updated cover page. Deleted SPDC400BT12M0.35 and SPDC400FT12M0.35
10-Apr-2009	3	Updated <i>Table 3 on page 7</i>
25-May-2009	4	Updated <i>Figure 1 on page 3, Figure 5 on page 7</i> Added <i>Section 3 on page 5</i>

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