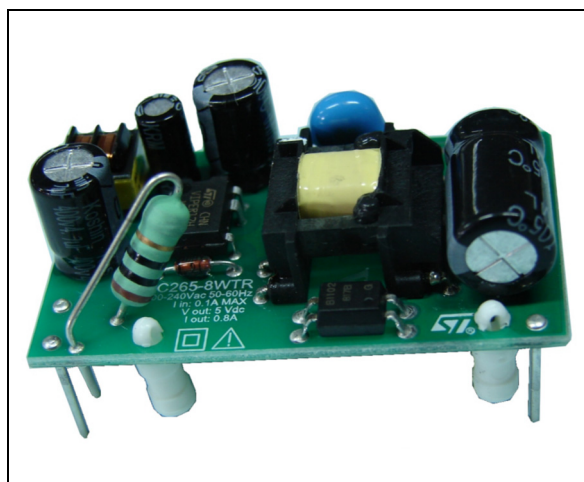


Features

- Open frame switch mode power supply
- European input voltage range
- Single output 5 V, 8 W peak power, 4 W continuous operating mode
- EMC compliance according to EU directive EN55011, and EN55022 Class-B
- Harmon. current compliance to EN61000-3-2-3
- EMS immunity compliance to EN61000-4-2,3,4,5,6,8,11, ENV50204, EN55024, EN60601-1-2, and EN61204-3
- Safety compliance according to UL60601-1, TUV EN60601-1, IE60601-1, and EN60950-1
- CE approval files. Report reference number: 165170-1TRFEMC, 165170-2TRFEMC, 165170-TRFSAF, 165170-1TRFSAF
- Input fuse protection
- Voltage and current regulation
- Output short-circuit protection
- Low standby power consumption
- MTBF 175000 hours at 40 °C max. load according to MILHDBK217E
- RoHS compliant
- Operating temperature range -30 °C to 70 °C

Applications

- Telecom and industrial systems
- Distributed power systems
- Medical safety systems



Description

ST's power modules are highly integrated, high efficiency switch mode converters. The SPAC265 family of converters includes isolated AC-DC, single output modules. The module can operate in accordance with the European input voltage range. It's a turnkey drop-in solution requiring no additional external circuitry. This specific version performs 8 W peak output power at 5 Vdc. It can support 800 mA output current in continuous mode, and can withstand 1.75 A peak 25% of the time.

Table 1. Device summary

Order code	Output power
SPAC265-8W	8 W peak

1.1 Pin connection and mechanical data (dimensions in mm)

The technical drawing consists of two views of the AM02791V module:

- Top View (Bottom):** Shows the module's footprint with overall dimensions of 52.5 mm by 31.1 mm. Key dimensions include:
 - Pin pitch: 2.50 mm
 - Pin 1 offset: 12.50 mm
 - IC1 offset: 33.05 mm
 - IC2 offset: 6.95 mm
 - Pin 1 offset: 2.85 mm
 - Pin 2 offset: 2.00 mm
 - Pin 3 offset: 2.00 mm
 - Pin 4 offset: 2.00 mm
 - Pin 5 offset: 2.00 mm
 - Pin 6 offset: 2.00 mm
 - Pin 7 offset: 2.00 mm
 - Pin 8 offset: 2.00 mm
 - Pin 9 offset: 2.00 mm
 - Pin 10 offset: 2.00 mm
 - Pin 11 offset: 2.00 mm
 - Pin 12 offset: 2.00 mm
 - Pin 13 offset: 2.00 mm
 - Pin 14 offset: 2.00 mm
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 - Pin 91 offset: 2.00 mm
 - Pin 92 offset: 2.00 mm
 - Pin 93 offset: 2.00 mm
 - Pin 94 offset: 2.00 mm
 - Pin 95 offset: 2.00 mm
 - Pin 96 offset: 2.00 mm
 - Pin 97 offset: 2.00 mm
 - Pin 98 offset: 2.00 mm
 - Pin 99 offset: 2.00 mm
 - Pin 100 offset: 2.00 mm
- Side View (Top):** Shows the module's profile with overall dimensions of 14.60 mm. Key dimensions include:
 - Pin height: 7.90 mm
 - Pin pitch: 1.60 mm
 - Pin offset: 13.00 mm

Component labels include: I1, C1, C2, C3, C9, IC1, IC2, D3, F1, TR1, C6, OUT1, OUT2, AC1, AC2, and various pins (1-32).

1.2 Pin description

Table 2. Pin description

Name	Function	Description
AC1	Line connection	Input voltage Vi main supply
AC2	Line connection	Input voltage Vi main supply
OUT1	Vdc output	Output voltage 5.0 Vdc +/- 5%
OUT2	Ground	Output voltage ground GND

2 Thermal data

Table 3. Thermal data

Symbol	Parameter	Value	Unit
T _{STG}	Storage temperature range	-40 to +105	°C
T _{OP}	Operating temperature range	-30 to +70	°C
Hw	Working humidity (non-condensing)	10 to 90	Rh%
Hs	Storage humidity	10 to 95	Rh%
Ps	Storage and transportation pressure	1.016	hPa
H	Altitude	<2.000	m

3 Label description and safety requirements

-  Double insulation primary to secondary side.
-  Attention: Read carefully the datasheet safety note.

3.1 Safety note:

The SPAC265-8W is not provided with the disconnection tools from the main. The final application must include this item having the following characteristics:

1. On equipment suitable for application to overvoltage category 2 the minimum distance between the electrical contacts must be 3 mm.
2. The equipment suitable for application to overvoltage category 4 must comply with the IEC60947-1 norm.

4 Electrical characteristics

Table 4. Electrical characteristics

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
V_i	Input voltage	50 Hz +/- 10%	184		264	V _{rms}
I_o	Output current	$V_i = 184$ to 264 Vac current limitation condition ⁽¹⁾	1.75		2.0	A
I_{om}	Output current	$V_i = 184$ to 264 Vac minimum load for continuous operation mode		20		mA
V_o	Output voltage	$V_i = 184$ to 264 Vac, $I_o = 0$ to I_{max}	4.75	5.0	5.25	V
V_{or}	Output ripple	$V_i = 184$ to 264 Vac $I_o = \text{max. load, with external LC}$ ⁽²⁾			50	mV _{pp}
I_{osc}	Output short-circuit current	$V_i = 184$ to 264 Vac Hiccup mode – $V_{out} < 1$ V		2.5		A
η	Efficiency	$V_i = 184$ to 264 Vac $P_o = 2$ W, $V_i = 230$ V _{ac}	70			%
P_{stby}	Power consumption in no load conditions	$V_i = 230$ V _{RMS} , $I_o = 0$ mA			300	mW
V_{is}	Isolation voltage	Input to output	3000			V _{RMS}
T_{op}	Operating ambient temperature		-30		+70	°C
R_{is}	Isolation resistance	Input to output, 500 Vdc	100			MΩ
Wh	Working humidity	Non-condensing	10		90	%
Life	Life time	Max. load, 40 °C,	20			Years
MTBF	Mean time before failure	Max. load, 40 °C, MILHDBK217E	175			Khours

1. The module can perform 1.75 A output current with 25% duty cycle, for time <10 sec at $V_i = 184$ to 264 Vac. The module can perform 0.8A output current in continuous mode.

2. $L = 1$ mH; $C = 1000$ μF low ESR.

5 Soldering

The module is a THT component designed to be assembled on a motherboard with double wave soldering process.

6 Electromagnetic compatibility

This section contains specific information about the conformity of the device according to the Standard IEC 60601-1-2: 2001 + A1:2006.

The SPAC265-8W is a medical device that requires special precautions regarding electromagnetic compatibility and must be installed and used in accordance with the EMC information contained in [Table 5](#) below.

Portable and mobile radio communication, mobile telephones, and pagers can interfere with the operation of the medical device.

The use of accessories, transducers and cables other than those specified, with the exception of transducers and cables sold by the manufacturer of the device and the system as alternatives, can result in an increase of the emissions or in a reduction of the immunity of the device or system.

Warning: The SPAC265-8W is intended for use in the electromagnetic environment specified below. The customer or the user of the SPAC265-8W should assure that it is used in such an environment

Table 5. Guidance and manufacturer's declaration of electromagnetic emissions

Emission test	Compliance	Electromagnetic environment - guidance
RF emission CISPR11	Group 1	The SPAC265-8W uses RF energy only for its internal function. Therefore its RF emissions are very low and not likely to cause any interference in nearby electronic equipment
RF emission	Class-B	The SPAC265-8W is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emission IEC 61000-3-2	Class-A	
Voltage fluctuations/flicker emission IEC 61000-3-3	Complies	

Table 6. Guidance and manufacturer's declaration of electromagnetic immunity

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guide
Electrostatic discharge (ESD) IEC61000-4-2	±6 kV contact	The SPAC265-8W doesn't change its state.	Floor should be concrete, wood or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC61000-4-4	±2 kV power supply	The SPAC265-8W doesn't change its state.	--
Surge IEC61000-4-5	±1 kV differential mode	The SPAC265-8W doesn't change its state.	--
Voltage dips, short interruption and voltage variation IEC61000-4-11	<5% U_T (>95% dip in U_T) for 0,5 cycles 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 s	--	
Power frequency (50/60 Hz) magnetic field IEC61000-4-8	3 A/m	The SPAC265-8W doesn't change its state.	Power frequency magnetic fields should be at a level characteristic of a typical location in a typical commercial or hospital environment

7 Revision history

Table 7. Document revision history

Date	Revision	Changes
06-Jun-2012	1	Initial release



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