



## 1TM14\_3UP series

1W - Single Output DC-DC Converter - Fixed Input - Isolated - Unregulated

### DC-DC Converter

1 Watt

- ⊕ Small footprint, ultra-thin package
- ⊕ 3kVDC isolation
- ⊕ Temperature range: -40°C to +125°C
- ⊕ High efficiency up to 85%
- ⊕ IEC62368, UL62368, EN62368 approved
- ⊕ International Standard Pinout
- ⊕ Short circuit protection (SCP)
- ⊕ RoHS Compliance

The 1TM14\_3UP series is specially designed for use in distributed power supply systems and especially suitable in applications such as digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits.



UL-62368-1 (E347551)

#### Common specifications

Short circuit protection*:	Continuous, automatic recovery
Temperature rise at full load:	25°C typ
Cooling:	Free air convection
Operation temperature range:	-40°C~+125°C
Storage temperature range:	-55°C ~+125°C
Lead temperature:	250°C max, 1.5mm from case for 10 sec
Reflow soldering temperature:	Peak temp. ≤245°C 60sec. max. over 217°C
Vibration:	10-150Hz, 0.75mm, 5G, 90Min. along X, Y and Z
Storage humidity range:	< 95%
Package material:	Epoxy Resin [UL94-V0]
MTBF:	>7,500 khours
Dimensions:	9.00 x 7.00 x 3.10mm
Weight:	0.5g
MSL (Moisture sensitivity level):	J-STD-020D standard - Level 3

#### Input specifications

Item	Test condition	Min	Typ	Max	Units
Input current (no load / full load)			7/235	15/247	mA
Surge voltage		-0.7		9	VDC
Reflected ripple current			10		mA
Input filter	Capacitance filter				
Hot plug	Unavailable				

#### Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute and 1mA max	3000		1500	VDC VAC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V		8		pF

#### Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy	See tolerance envelope graph				
Line regulation	For Vin change of 1%			1.2	%
Load regulation	10% to 100% load		8	15	%
Temperature drift	100% full load			±0.02	%/°C
Ripple & Noise*	20MHz Bandwidth, nominal input		30	75	mVp-p
Switching frequency	Full load, nominal input		300		KHz

\* Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

#### EMC specifications

EMI	CE	CISPR32/EN55032	CLASS B	(see EMC recommended circuit)
EMI	RE	CISPR32/EN55032	CLASS B	(see EMC recommended circuit)
EMS	ESD	IEC/EN61000-4-2	Contact ±8KV	perf. Criteria B
EMS	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
EMS	CS	IEC/EN61000-4-6	3V.r.m.s	perf. Criteria A

#### Example:

##### 1TM14A\_0505S3UP

1 = 1Watt; T14 = SMT14; M = series, A = Pinning; 5Vin; 5Vout;  
S = Single Output; 3 = 3kVDC isolation; U = Unregulated Output;  
P = Short Circuit Protection (SCP)

#### Note:

- If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- The maximum capacitive load offered were tested at input voltage range and full load;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta = 25°C, humidity <75%RH with nominal input voltage and rated output load;
- All index testing methods in this datasheet are based on our company corporate standards;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see „Features“ and „EMC“;
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

# 1TM14\_3UP series

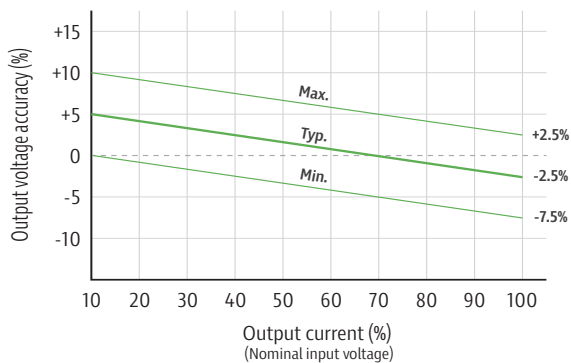
1W- Single Output DC-DC Converter - Fixed Input - Isolated & Regulated

## Product Selection Guide

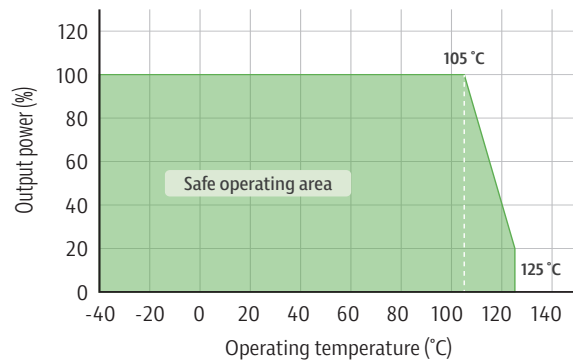
Part Number	Input Voltage [V]	Output Voltage [VDC]	Output Current [mA, min/max]	Efficiency [%, min/typ]	Capacitive load [ $\mu$ F, max]
1TM14_0505S3UP	5	5	20/200	81/85	2400

## Typical characteristics

Output regulation curve

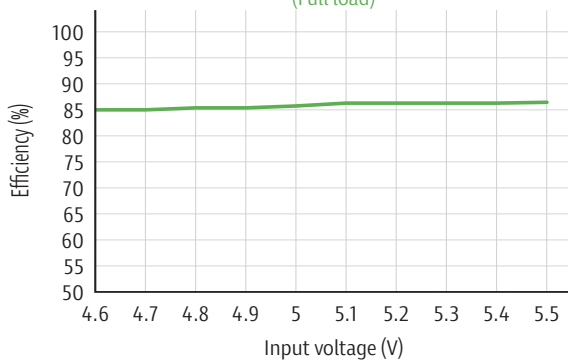


Temperature derating graph

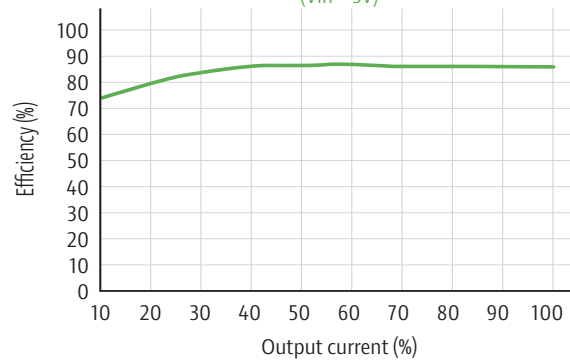


## Efficiency

Efficiency vs input voltage (Full load)



Efficiency vs output load (Vin = 5V)



## Typical application

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown on the right.

Choosing suitable filter capacitor values is very important for a smooth operation of the modules. For recommended input and output capacitor values refer to Table 1.



Table 1: Recommended input and output capacitor values

$V_{in}$ (VDC)	$C_{in}$ ( $\mu$ F)	$V_o$ (VDC)	$C_{out}$ ( $\mu$ F)
5	4.7	5	10

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## EMC recommended circuit

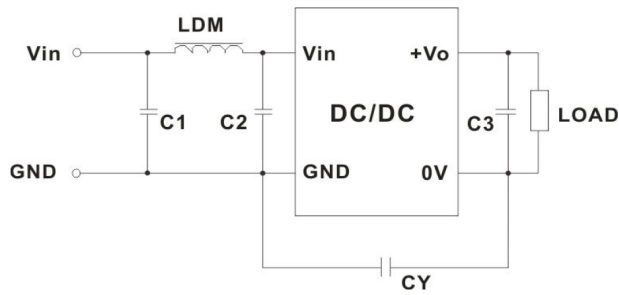
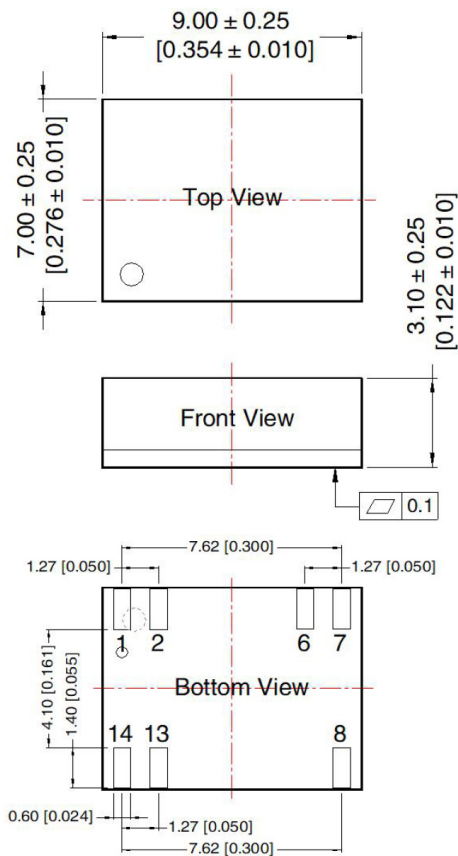


Table 2: Recommended EMC filter values

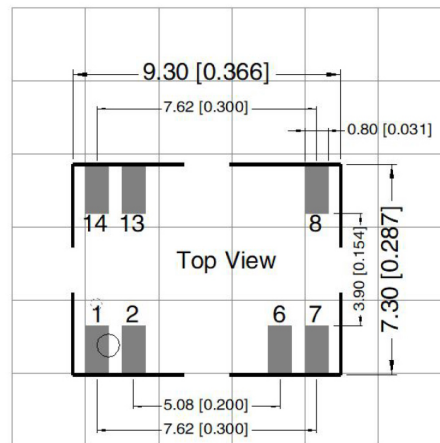
Input voltage 5VDC	Output voltage(VDC)	
	5	
Emissions	C1/C2	4.7µF /25V
	CY	47pF/4KVDC
	C3	Refer to the Cout in table 1
	LDM	6.8µH

## Mechanical dimensions



Note:  
Unit :mm[inch]  
Pin diameter tolerances : ± 0.10 [± 0.004]

THIRD ANGLE PROJECTION



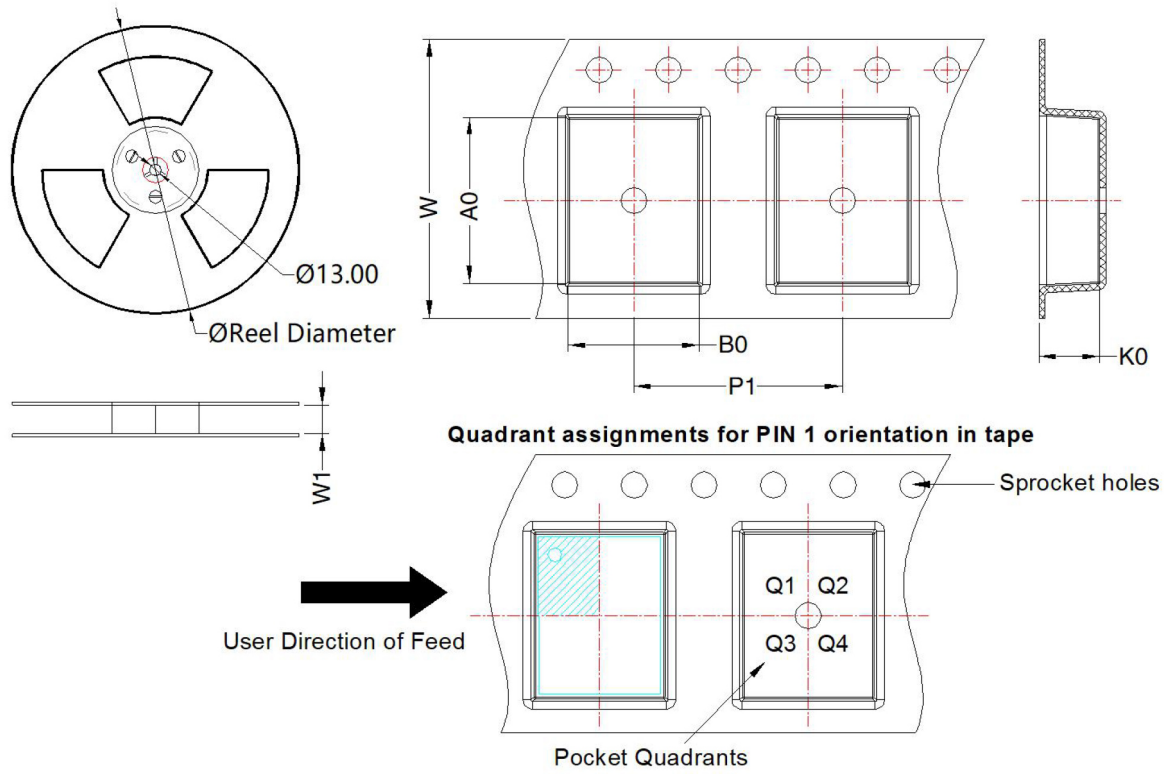
Note: Grid 2.54\*2.54mm

Pin-Out	
Pin	Function
1,2	GND
6,7	0V
8	+Vo
13,14	Vin

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### Mechanical dimensions



Device	Pin	MPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
1TM14_0505S3UP	7	1200	330.0	12.4	9.56	7.56	3.5	12.0	16.0	Q1