

TTH0505-1T transformer



FEATURES

- Compact SMD package
- Reinforced insulation
- I/O isolation test voltage 5k VAC/6k VDC
- Operating ambient temperature range: -40°C to +125°C
- The patient leakage current: Max 2μA
- Transformer clearance & Transformer creepage ≥8mm

TTH0505-1T transformers is compatible with integrated IC used as an 1W DC-DC converter with 5V input, 5V output, meets reinforced insulation requirements. They are especially designed for applications where extremely high isolation, low insulation capacitor with low leakage current in a compact package size is required. They are widely used in applications such as medical, electrical grid, IGBT driver circuits.

Selection Guide

Part No.	Input Voltage(VDC)	Output Voltage(VDC)	Output Current(mA) Max.	Power (W)
	Nominal (Range)			
TTH0505-1T	5 (4.5-5.5)	5	200	1

Note: Pins and phase points of the transformers refer to Schematic.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Inductance(L) <sup>①</sup>	pin 1 to pin 3	--	291.6	--	μH
	pin 6 to pin 4	--	360	--	
DCR	pin 1 to pin 3	--	0.28	--	Ω
	pin 6 to pin 4	--	0.52	--	
Isolation	Primary-Secondary Electric Strength Test for 1 minute with a leakage current of 1mA max.	5000	--	--	VAC
		6000	--	--	VDC
Patient Leakage Current	250VAC, 50/60Hz	--	--	2	μA
Isolation Capacitance	Primary-Secondary capacitance at 100kHz/0.1V	--	6	--	pF
Voltage-Time <sup>②</sup>		11	--	--	Vus
Storage Humidity		--	--	95	%RH
Operating Temperature <sup>③</sup>		-40	--	+125	°C
Storage Temperature <sup>④</sup>		-55	--	+125	
Reflow Soldering Temperature <sup>⑤</sup>		Peak temp. ≤245°C, maximum duration time ≤60s over 217°C.			
Transformer clearance & Transformer creepage		8	--	--	mm
Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D.1	Level 1			

Notes: ① Test conditions: 100kHz/0.1V;

② Product of input voltage and excitation time;

③ The temperature of the transformer(ambient plus temperature rise) should be within the operating temperature range;

④ The storage temperature of the transformer only;

⑤ We suggest that times of reflow soldering should not exceed twice. For actual application, please refer to IPC/JEDEC J-STD-020D.1.

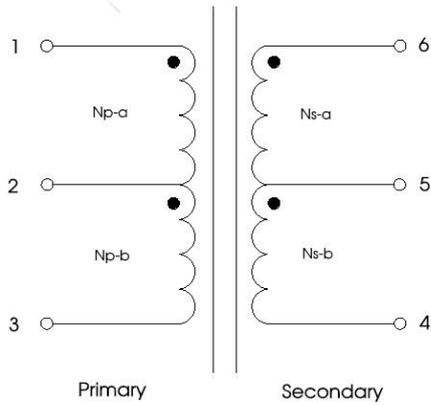
Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94 V-0)
Dimensions	13.20 x 9.00 x 7.62 mm
Weight	0.8g(Typ.)
Cooling Method	Free air convection

Material certification

Material	UL No.
Wire	E234867, E211989
Bobbin	E41429
Varnish	E317427

Phase Diagram



Turns Ratio (Np: Ns)	
Np-a: Ns-a	Np-b: Ns-b
1: 1.1 (Typ.)	

Fig. 1

Application Circuit

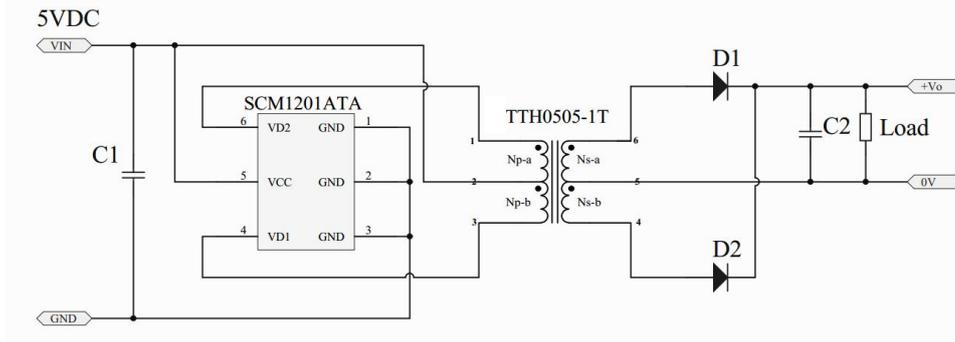


Table 1: Recommended parameters

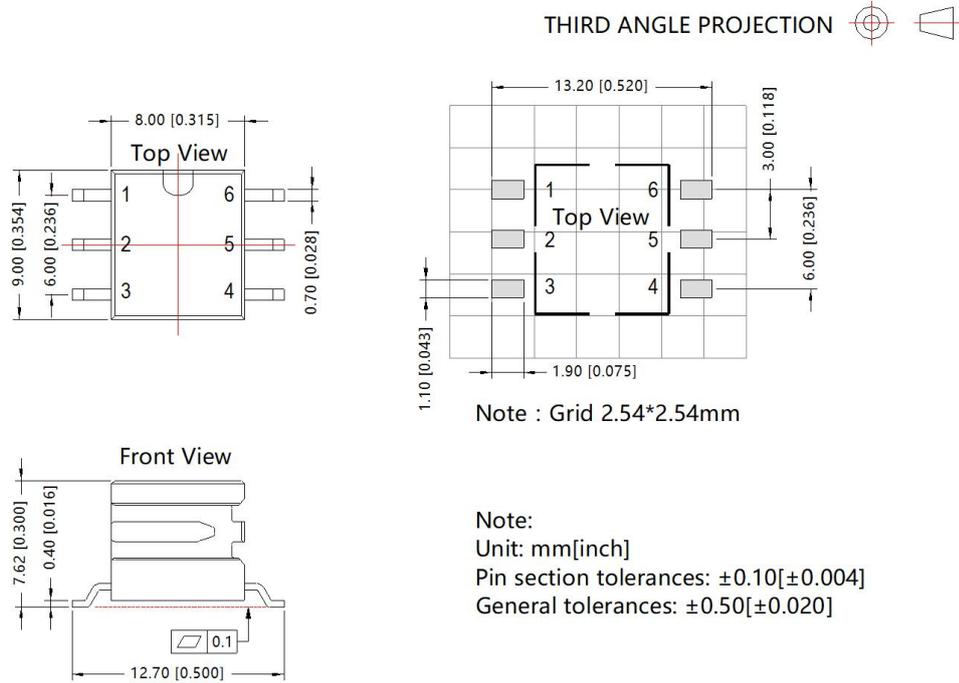
IC	MORNSUN SCM1201ATA
C1	1μF/25V
C2	1μF/25V
D1	40V/1A
D2	40V/1A

Fig. 2

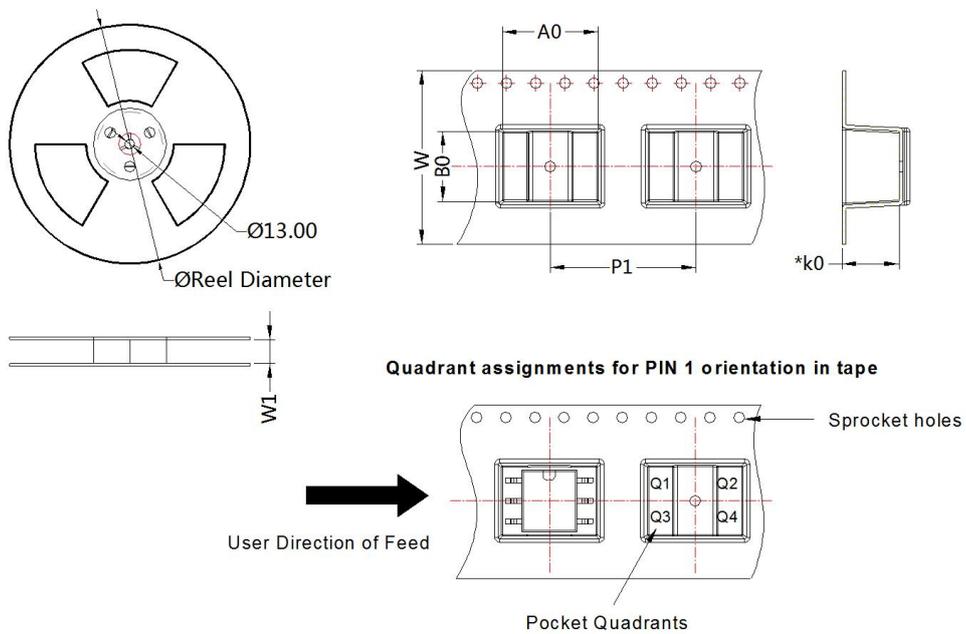
Notes:

1. If it is required to further reduce input and output ripple, the capacitance of C1 and C2 can be increased properly if required, and should be connected close to the pin terminal of the module;
2. In order to ensure the converter can work reliably with high efficiency, the minimum load should not less than 1% rated load when it is used. If the needed power is indeed small, please parallel a resistor on the output side (The sum of the efficient power and resistor consumption power is not less than 1%).

Dimensions and Recommended Layout



Tape and Reel Info



Device	Package Type	Pin	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
TTH0505-1T	SMD	6	300	330.0	24.4	13.15	9.65	7.80	20	24	Q1

Notes:

1. For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). Tube Packaging bag number: 58200075, Roll Packaging bag number: 58200074;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^{\circ}\text{C}$ , humidity<75%RH, 100kHz and 100mV;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. We can provide other analog transformer customization service, please contact our technicians directly for specific information;
5. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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