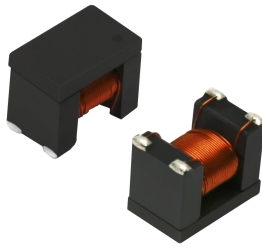


TTF05xxM-1T Transformer



RoHS

TTF05xxM-1T transformers feature 3000VAC primary side to secondary side and operating temperature of -40°C to +125°C. Compatible with IC SCM1208 used as an 1W DC-DC converter. They are suitable for: pure digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits.

FEATURES

- Compact SMD package
- I/O isolation test voltage 3000VAC
- Operating ambient temperature range: -40°C to +125°C

Selection Guide

Part No.	Input Voltage(VDC)	Output Voltage(VDC)	Output Current(mA) Max.	Power (W)
	Nominal (Range)			
TTF0503M-1T	5 (4.5-5.5)	3.3	303	1
TTF0505M-1T		5	200	
TTF0509M-1T		9	111	
TTF0512M-1T		12	84	
TTF0515M-1T		15	67	
TTF0524M-1T		24	42	

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

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Inductance(L) ^①	TTF0503M-1T	引脚 1-2	68	125	156	μH
		引脚 3-4	40	74	100	
	TTF0505M-1T	引脚 1-2	68	125	156	
		引脚 3-4	90	160	210	
	TTF0509M-1T	引脚 1-2	68	125	156	
		引脚 3-4	320	540	730	
	TTF0512M-1T	引脚 1-2	68	125	156	
		引脚 3-4	530	950	1230	
	TTF0515M-1T	引脚 1-2	68	125	156	
		引脚 3-4	810	1400	1850	
	TTF0524M-1T	引脚 1-2	68	125	190	
		引脚 3-4	2310	3000	5390	
DCR	TTF0503M-1T	引脚 1-2	--	500	--	mΩ
		引脚 3-4	--	480	--	
	TTF0505M-1T	引脚 1-2	--	500	--	
		引脚 3-4	--	700	--	
	TTF0509M-1T	引脚 1-2	--	500	--	
		引脚 3-4	--	1300	--	
	TTF0512M-1T	引脚 1-2	--	500	--	
		引脚 3-4	--	1710	--	
	TTF0515M-1T	引脚 1-2	--	500	--	
		引脚 3-4	--	2100	--	
	TTF0524M-1T	引脚 1-2	--	500	--	
		引脚 3-4	--	2900	--	

Isolation	Primary-Secondary Electric Strength Test for 1 minute with a leakage current of 1mA max.	3000	--	--	VAC	
Isolation Capacitance	Primary-Secondary capacitance at 100kHz/0.1V	TTF0503M-1T、TTF0505M-1T、TTF0509M-1T	--	20	--	pF
		TTF0512M-1T、TTF0515M-1T、TTF0524M-1T	--	40	--	
Voltage-Time ^②		10	--	--	uVs	
Storage Humidity	Non-condensing	5	--	95	%RH	
Operating Temperature ^③	Including temperature rise	-40	--	+125	℃	
Storage Temperature ^④		-55	--	+125		
Reflow Soldering Temperature ^⑤		Peak temp. ≤250℃, maximum duration time ≤60s over 217℃.				
Notes: ①Test conditions: 100kHz/0.1V; ②Product of input voltage and excitation time; ③The temperature of the transformer(ambient plus temperature rise) should be within the operating temperature range; ④The storage temperature of the transformer only; ⑤We suggest that times of reflow soldering should not exceed twice, For actual application, please refer to IPC/JEDEC J-STD-020D.1.						

Mechanical Specifications

封装尺寸	8.0 x 4.95 x 6.4mm
重量	0.85g(typ.)
冷却方式	自然空冷

Material certification

Material	UL No.
Wire	E234867
Bobbin	E314793

Phase Diagram

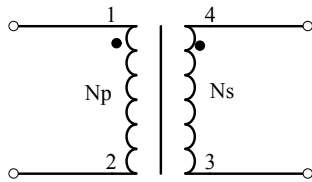


Fig. 1

Output Voltage(VDC)	Turns Ratio (Np: Ns)
3.3VDC	25: 20±0.5 (TYP)
5VDC	25: 29±0.5 (Typ.)
9VDC	25: 54±0.5 (Typ.)
12VDC	25: 70±0.5 (Typ.)
15VDC	25: 86±0.5 (Typ.)
24VDC	25: 133±0.5 (Typ.)

Application Circuit

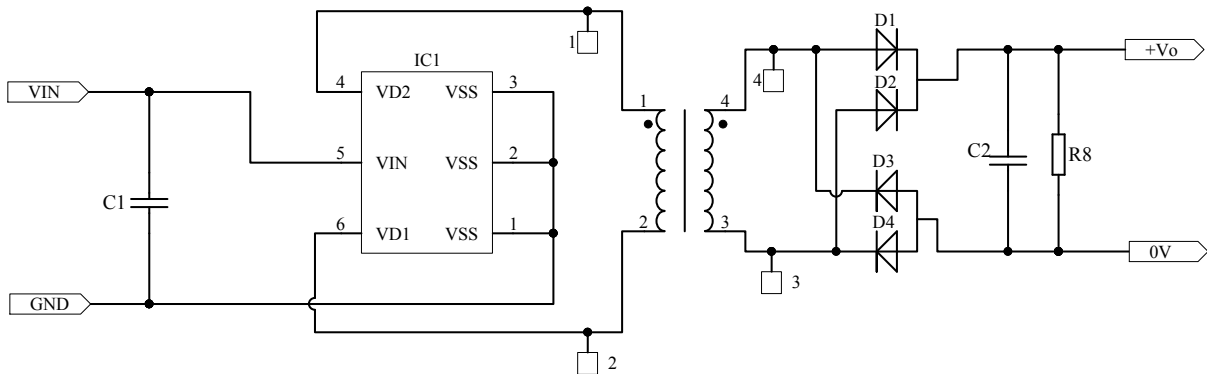


Fig. 2

Table 1: Recommended parameters

输出	9V	12V	15V	24V
IC1	SCM1208			
C1	1μF/25V			
D1	40V/1A			
D2	40V/1A			
D3	40V/1A			
D4	40V/1A			
C2	1μF/25V			1μF/50V
R8	27kΩ			

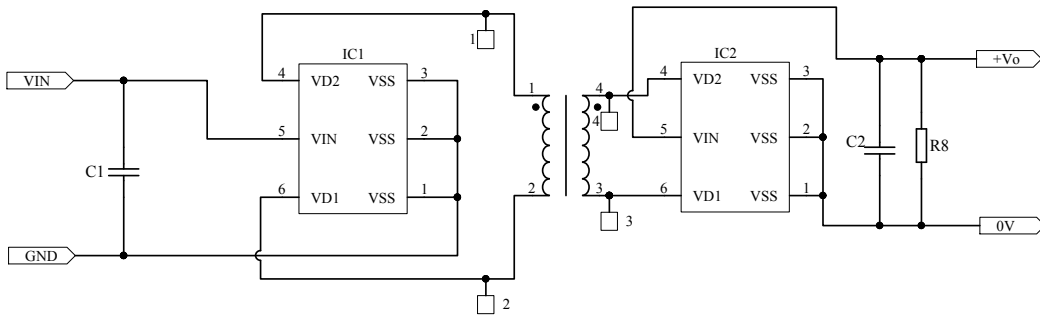


Fig. 3

Table 1: Recommended parameters

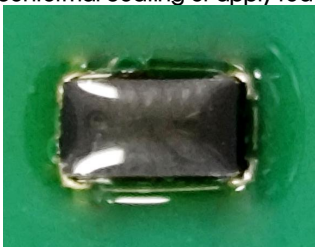
输出	3.3V	5V
IC1	SCM1208	
C1	1μF/25V	
IC2	SCM2306B	
C2	1μF/25V	
R8	5.1kΩ	

Notes:

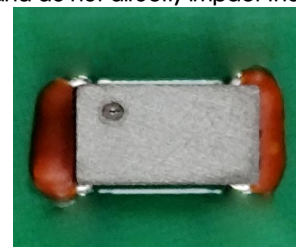
1. If it is required to further reduce input and output ripple, the capacitance of C1 and C2 can be increased properly if required, and should be connected close to the pin terminal of the module.
2. In order to ensure the converter can work reliably with high efficiency, the minimum load should not 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%).

Protection Recommendation

1. For customer systems that are open-board products (with transformers exposed), it is recommended to apply conformal coating or apply red glue for protection.
2. If the customer's system is an open-board product (with the transformer exposed), and there are scenarios of dropping or collision, it is essential to apply conformal coating or apply red glue for protection to the transformer, and do not directly impact the transformer.



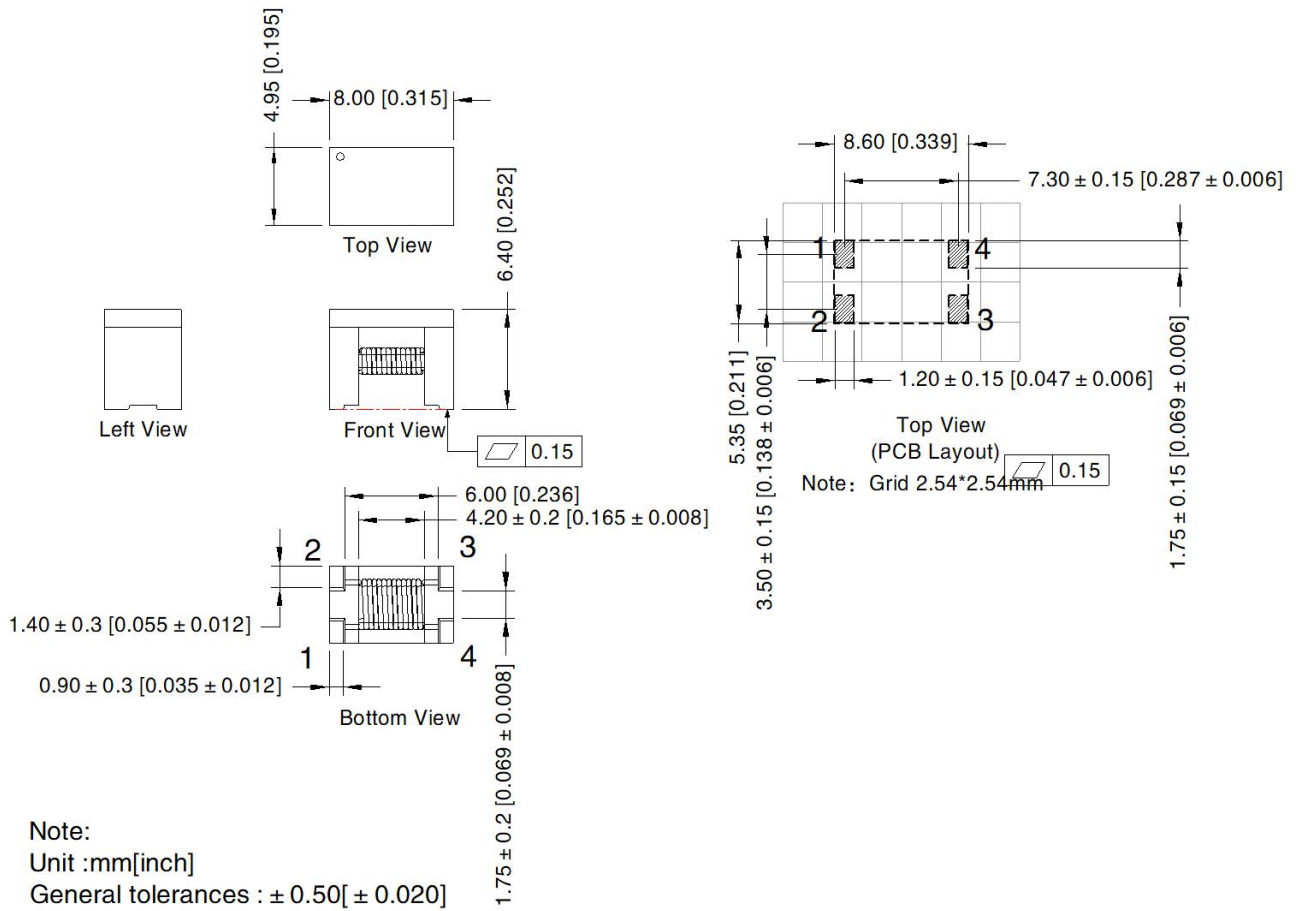
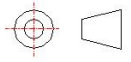
Schematic diagram of applying conformal coating
(The transformer is completely wrapped)



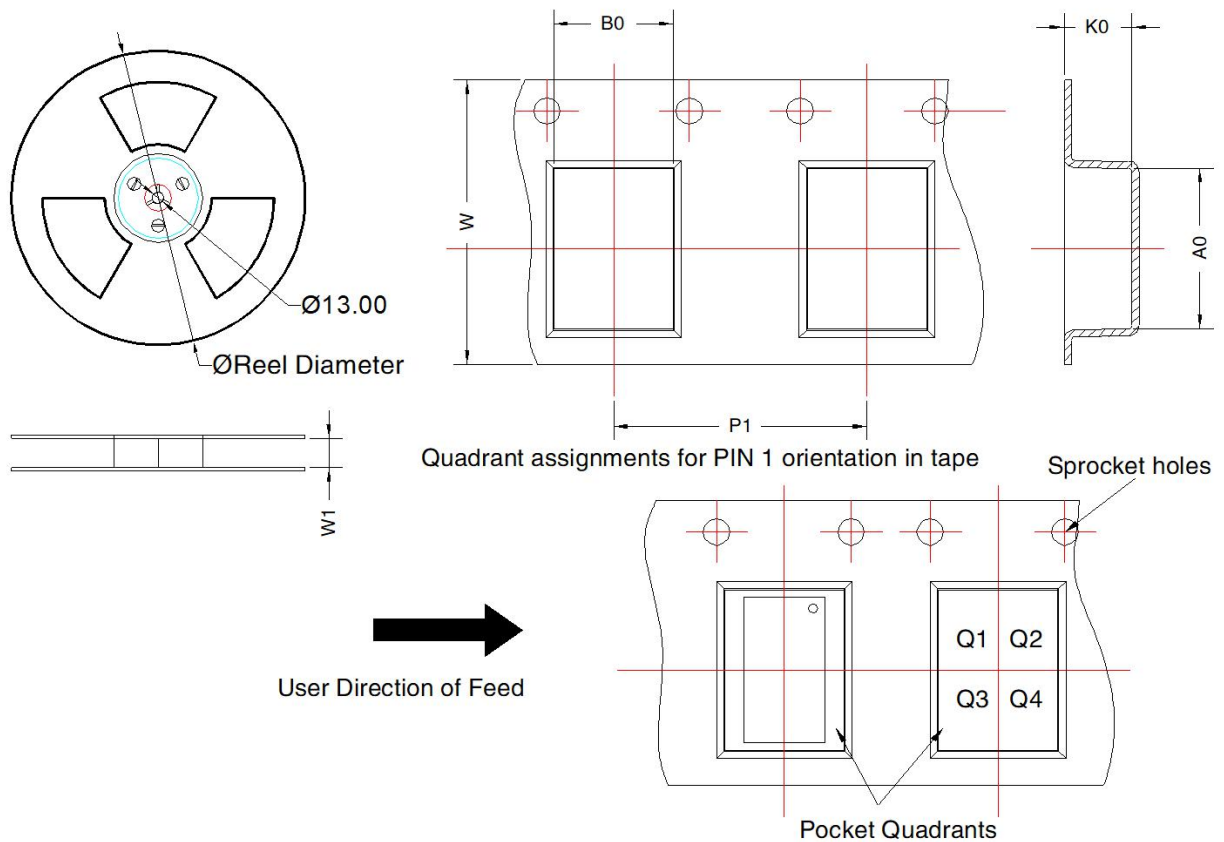
Schematic diagram of applying red glue
(Apply red glue to the pins of the transformer)

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



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
TTF05_M-1T	SMD	4	800	330.0	16.4	8.60	5.40	6.90	12	16	Q2

Notes:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number:58240124;
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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