

TTH05xxM-1T Transformer



RoHS

FEATURES

- Small SMD package
- I/O isolation test voltage 5000VAC/6000VDC
- Operating ambient temperature range:
-40°C to +125°C

TTH05xxM-1T transformers feature 5000VAC/6000VDC 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, analog acquisition circuit, data exchange circuit.

Selection Guide

Part No.	Input Voltage(VDC)	Output Voltage(VDC)	Output Current(mA) Max.	Power (W)
	Nominal (Range)			
TTH0503M-1T	5 (4.5-5.5)	3.3	303	1
TTH0505M-1T		5	200	
TTH0509M-1T		9	111	
TTH0512M-1T		12	84	
TTH0515M-1T		15	67	
TTH0524M-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	TTH0503M-1T	pin 1 to pin 2	50	75	100	μ H
		pin 4 to pin 3	25	50	75	
	TTH0505M-1T	pin 1 to pin 2	40	60	90	
		pin 4 to pin 3	50	70	100	
	TTH0509M-1T	pin 1 to pin 2	40	60	90	
		pin 4 to pin 3	150	250	350	
	TTH0512M-1T	pin 1 to pin 2	40	60	90	
		pin 4 to pin 3	60	105	150	
	TTH0515M-1T	pin 1 to pin 2	50	75	100	
		pin 4 to pin 3	110	200	290	
	TTH0524M-1T	pin 1 to pin 2	40	60	90	
		pin 4 to pin 3	250	380	550	
DCR	TTH0503M-1T	pin 1 to pin 2	--	0.11	--	Ω
		pin 4 to pin 3	--	0.17	--	
	TTH0505M-1T	pin 1 to pin 2	--	0.10	--	
		pin 4 to pin 3	--	0.20	--	
	TTH0509M-1T	pin 1 to pin 2	--	0.10	--	
		pin 4 to pin 3	--	0.37	--	
	TTH0512M-1T	pin 1 to pin 2	--	0.10	--	
		pin 4 to pin 3	--	0.24	--	
	TTH0515M-1T	pin 1 to pin 2	--	0.11	--	
		pin 4 to pin 3	--	0.33	--	
	TTH0524M-1T	pin 1 to pin 2	--	0.10	--	
		pin 4 to pin 3	--	0.45	--	

Isolation	Primary-Secondary Electric Strength Test for 1 minute with a leakage current of 1mA max.	5000	--	--	VAC
		6000	--	--	VDC
Insulation resistance	Input-output, insulation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Primary-Secondary capacitance at 100kHz/0.1V	--	3	--	pF
Voltage-Time ^②		11	--	--	uVs
Storage Humidity	Non-condensing	5	--	95	%RH
Operating Temperature ^③		-40	--	+125	℃
Storage Temperature ^④		-55	--	+125	
Reflow Soldering Temperature ^⑤		Peak temp. ≤245℃ , maximum duration time≤60s over 217℃			
Pin flatness		--	--	0.1	mm
Altitude		Altitude: ≤2000m (atmospheric pressure: 80 ~ 110KPa)			

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

Case Material	Black plastic; flame-retardant and heat-resistant (UL94 V-0)
Dimensions	12.6 x 8 x 5.4mm
Weight	0.6g(Typ.)
Cooling Method	Free air convection

Material certification

Material	UL No.
Wire	E211989
Bobbin	E41429

Phase Diagram

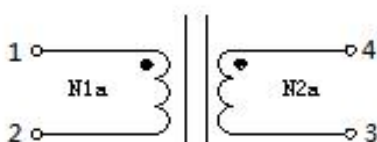


Fig. 1

Table 1

Turns Ratio (Np: Ns)	
Part No.	N1a: N2a
TTH0503M-1T	1: 0.82 (Typ.)
TTH0505M-1T	1: 1.10 (Typ.)
TTH0509M-1T	1: 2.00 (Typ.)
TTH0512M-1T	1: 1.30 (Typ.)
TTH0515M-1T	1: 1.64 (Typ.)
TTH0524M-1T	1: 2.50 (Typ.)

Application Circuit

TTH0505M-1T application circuit recommendation

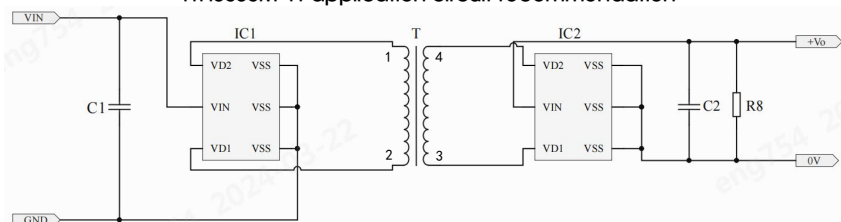


Fig. 2

Table 2 Recommended parameters

IC1	SCM1208
C1	1μF/25V
C2	
IC2	SCM2306
R8	10kΩ

Table 3 Recommended parameters

IC	SCM1208
C1	1μF/25V
C2	
D11	40V/1A
D12	
D21	
D22	
R8	10kΩ

Table 4 Recommended parameters

IC	SCM1208
C1	1μF/25V
C2/C3	
D11	40V/1A
D12	
R8	10kΩ

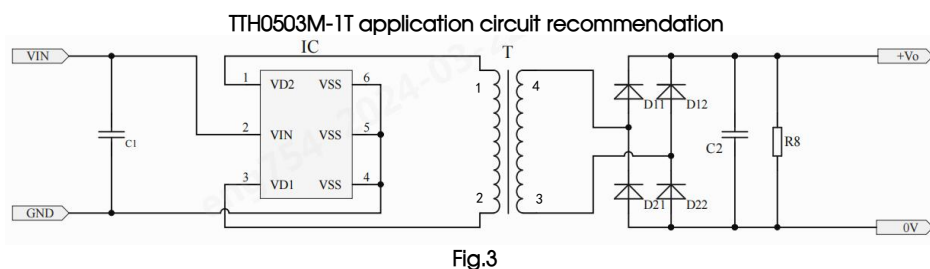


Fig.3

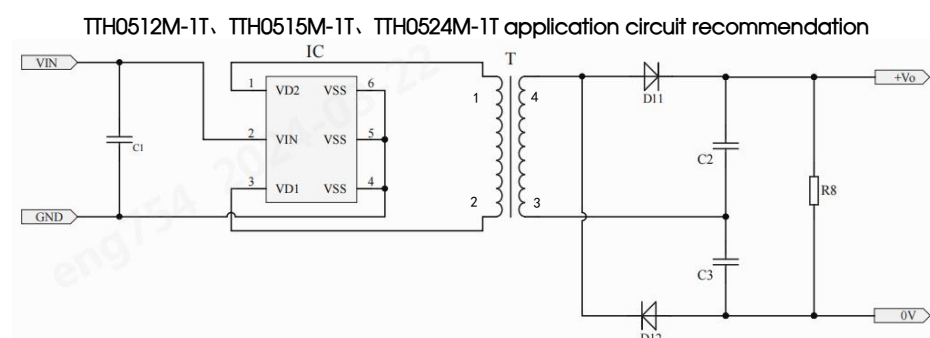


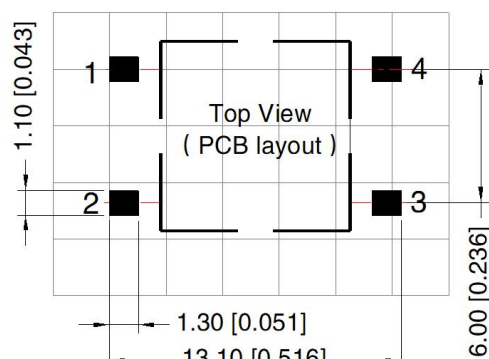
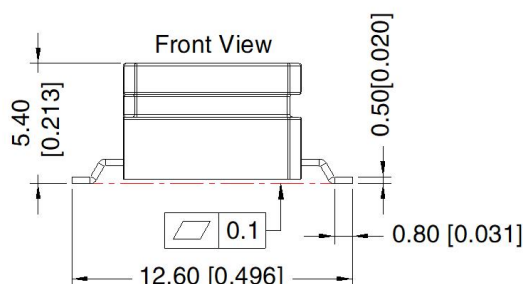
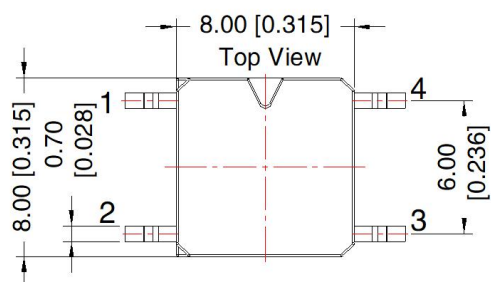
Fig.4

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

THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm

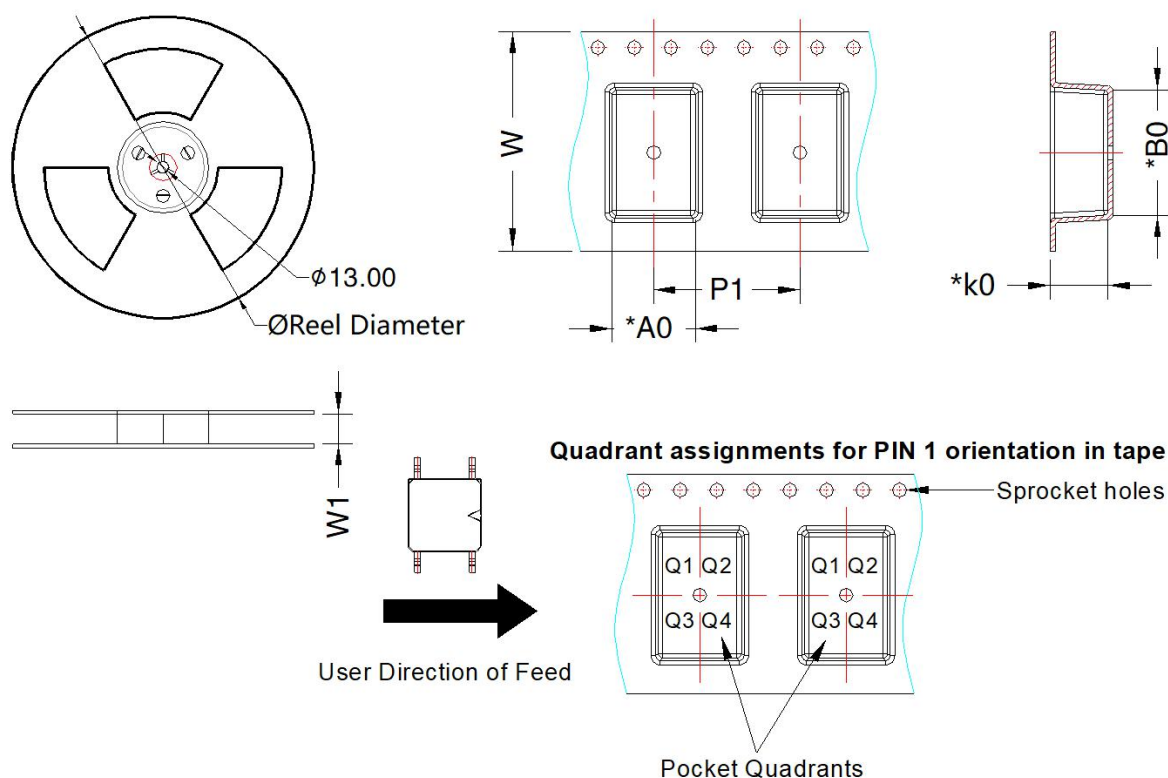
Note:

Unit: mm[inch]

Pin section tolerances: $\pm 0.25[\pm 0.010]$

General tolerances: $\pm 0.50[\pm 0.020]$

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
TTH05xxM-1T	SMD	4	600	330.0	24.4	9.1	13.7	6.3	16	24	Q2

Notes:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Roll packaging bag number: 58210410;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, 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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