

TTB05xxM-1T Transformer



RoHS

FEATURES

- Compact SMD package
- I/O isolation test voltage 2250VDC
- Operating ambient temperature range:
-40°C to +125°C

TTB05xxM-1T transformers feature 2250VDC 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.

Selection Guide

Part No.	Input Voltage(VDC)	Output Voltage(VDC)	Output Current(mA) Max.	Power (W)
	Nominal (Range)			
TTB0503M-1T	5 (4.5-5.5)	3.3	303	1
TTB0505M-1T	5 (4.5-5.5)	5	200	1

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

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Inductance(L) ^①	TTB0503M-1T	pin 1 to pin 4	56	68	--	μ H
		pin 2 to pin 3	52	57	--	
	TTB0505M-1T	pin 1 to pin 4	40	47	--	
		pin 2 to pin 3	56	68	--	
DCR	TTB0503M-1T	pin 1 to pin 4	--	520	--	m Ω
		pin 2 to pin 3	--	500	--	
	TTB0505M-1T	pin 1 to pin 4	--	450	--	
		pin 2 to pin 3	--	520	--	
Isolation	Primary-Secondary Electric Strength Test for 1 minute with a leakage current of 1mA max.		2250	--	--	VDC
Isolation Capacitance	Primary-Secondary capacitance at 100kHz/0.1V		--	20	--	pF
Voltage-Time ^②			10	--	--	μVs
Storage Humidity	Non-condensing		5	--	95	%RH
Operating Temperature ^③			-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

Dimensions	5.90 x 3.20 x 2.4mm
Weight	0.14g(Typ.)
Cooling Method	Free air convection

Material certification

Material	UL No.
Wire	E234867
Bobbin	E314793

Phase Diagram

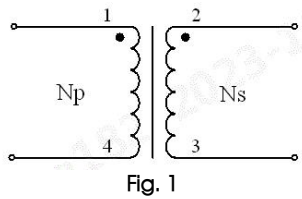


Fig. 1

Output Voltage(VDC)	Turns Ratio (Np: Ns)
3.3VDC	27: 25±0.5 (TYP)
5VDC	22: 27±0.5 (Typ.)

Application Circuit

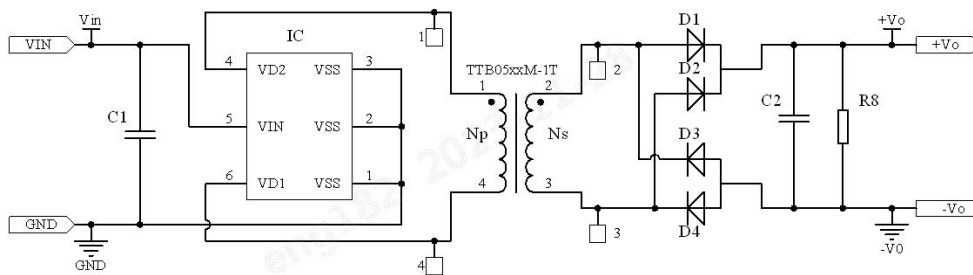


Fig. 2

Table 1: Recommended parameters

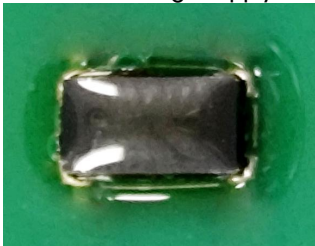
IC	SCM1208
C1	1μF/25V
D1	40V/1A
D2	40V/1A
D3	40V/1A
D4	40V/1A
C2	1μF/25V
R8	1kΩ

Notes:

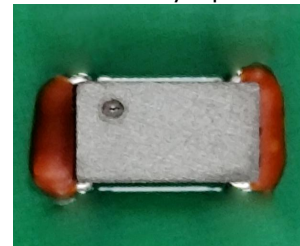
1. If it is required to further reduce input and output ripple, the capacitance of C1 and C2 can be increased properly if required, and should be connected close to the pin terminal of the module.
2. In order to ensure the converter can work reliably with high efficiency, the minimum load should not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



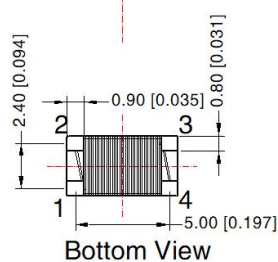
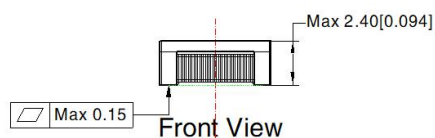
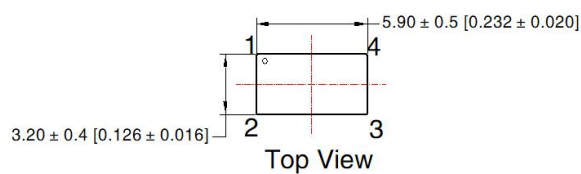
Schematic diagram of applying conformal coating
(The transformer is completely wrapped)



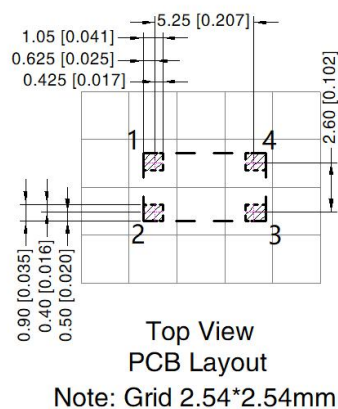
Schematic diagram of applying red glue
(Apply red glue to the pins of the transformer)

Dimensions and Recommended Layout

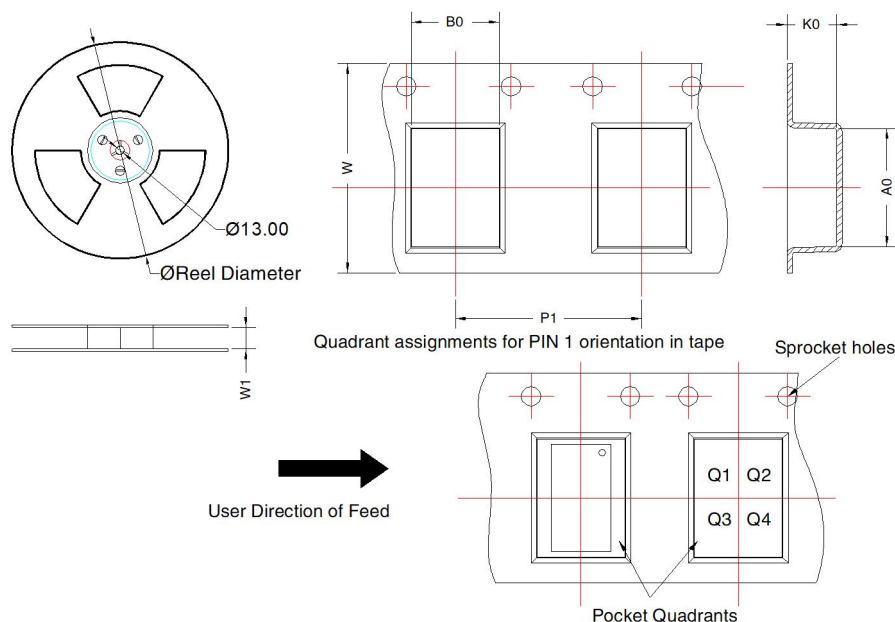
THIRD ANGLE PROJECTION 



Note:
Unit: mm[inch]
Pin diameter tolerances: $\pm 0.10 [\pm 0.004]$
General tolerances: $\pm 0.10 [\pm 0.004]$
The layout of the device is for reference only, please refer to the actual product



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
TTB05xxM-1T	SMD	4	2500	330.0	16.4	6.20	4.00	2.35	8.00	16	Q2

Notes:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58240108;
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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