

3000VAC isolation test voltage, EPC13, flyback transformer

FEATURES

- 85 ~ 305VAC wide input voltage range
- EPC13 Bobbin
- Meets UL/EN 62368 standards



TTL503-15BxxT transformer series feature with 3000VAC primary to secondary isolation, an operating ambient temperature range of -40°C ~ +110°C. It can be used with our control IC SCM1702ASA to achieve flyback power supply design with wide input voltage range and various protection functions and superior EMI performance.

Selection Guide

Part No.	Input Voltage (VAC)	Output Voltage (VDC)	Output Current (mA)	Auxiliary Voltage (VDC)	Auxiliary Current (mA)	Typical Power (W)	Typical Operating Frequency (kHz)
TTL503-15B05T	85 ~ 305	5	600	18.65	20	3	65
TTL503-15B12T	85 ~ 305	12	250	17.76	20	3	65

Note: Refer to Schematic for pins and phase points of the transformers.

Electrical Specifications

Part No.	Inductance ^① (uH)		DCR(mΩ) Typ.			K (Flux Density Factor) (Gauss/A)
	Input Inductance	Leakage Inductance Max.	N1	N2	N3	
TTL503-15B05T	952.56±10%	80.00	3580	40	1620	5911
TTL503-15B12T	952.56±10%	80.00	3580	326	1500	5911

Notes: ①The test signal of the inductance are 10kHz and 100mV, test the leakage inductance of N1 based on N2 and N3 are shorted;
 ②To ensure the transformer will not saturate in all of the applications and conditions, the peak flux density(Bm) should remain below 3000Gauss. Use the following formula to calculate the peak flux density: $B_m = K \cdot I_{pk}$, I_{pk} stands for the peak current of input, which unit is A;
 ③Approximate transformer core loss(Pcv) can be calculated as following formula: $P_{cv} = 3.9E-14 \cdot f^{1.82} \cdot \Delta B^{2.59}$, the unit of Pcv is W, f stands for operating frequency, which unit is kHz, ΔB is the operating flux density, which unit is Gauss. ΔB can be calculated as: $\Delta B = K \cdot \Delta I$.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Isolation	N1, N3 to N2	Electric Strength Test for 1 minute, leakage current <5mA		3000	--	VAC
	N1 to N3	Electric Strength Test for 1 minute, leakage current <1mA		1000	--	VDC
Operating Temperature ^①		-40	--	+110	°C	
Storage Temperature ^②		-40	--	+110		
Storage Humidity	Non-condensing	--	--	95	%RH	
Reflow Soldering Temperature ^③		Peak temp. ≤245°C, maximum duration time ≤60s over 217°C.				
Creepage Distance		5.7	--	--	mm	
Clearance		5.7	--	--		

Notes: ①The temperature of the transformer (ambient plus temperature rise) should be within the operating temperature range;
 ②The storage temperature of the transformer only;
 ③We suggest that times of reflow soldering should not exceed twice.
 ④The isolation strap of the peripheral is designed to meet the clearance and creepage distance.

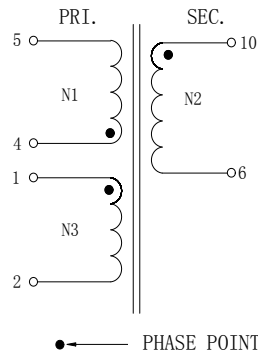
Mechanical Specifications

Weight	TTL503-15B05T	3.70g (Typ.)
	TTL503-15B12T	

Material Certification

Material	UL No.
Bobbin	E54705
Tape	E17385
Wire 1	E234867
Wire 2	E206440
Varnish	E317427
Glue	E250719

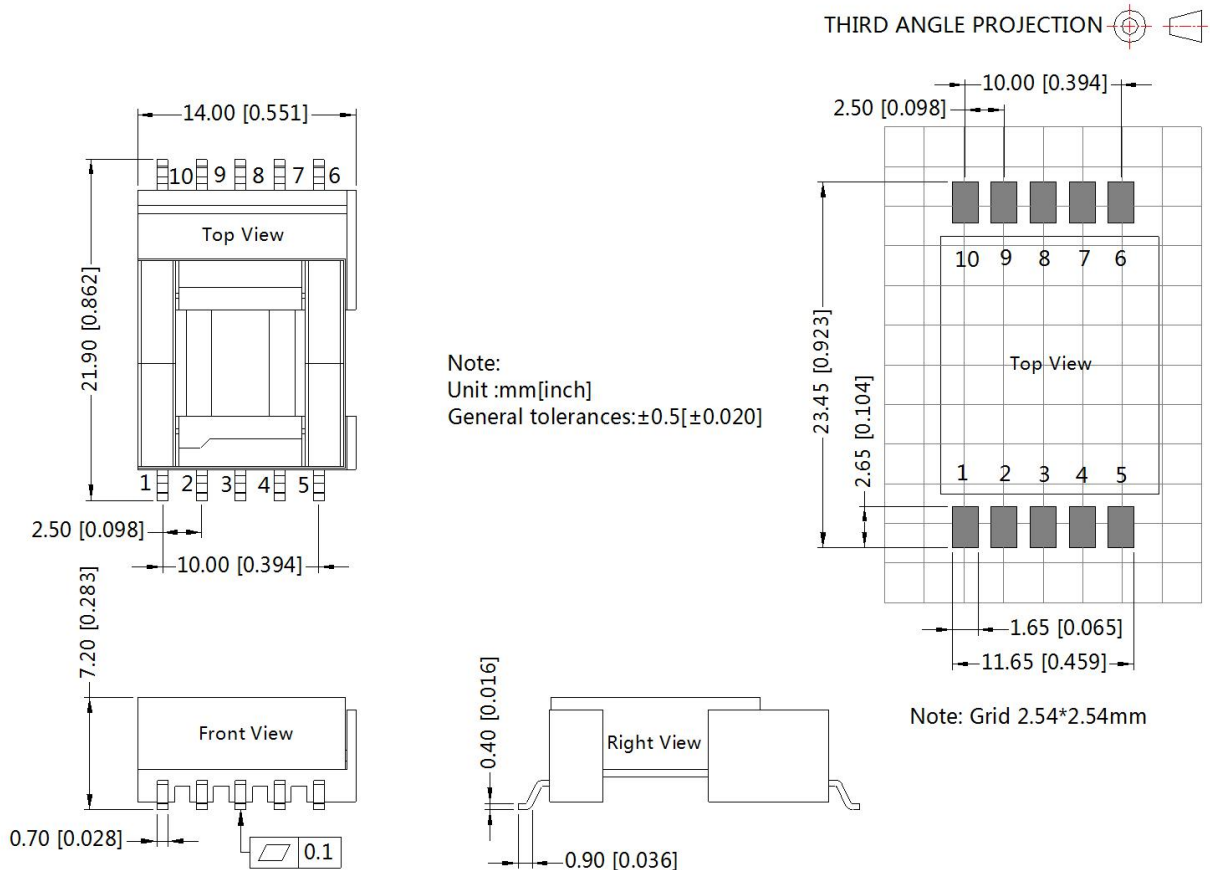
Schematic



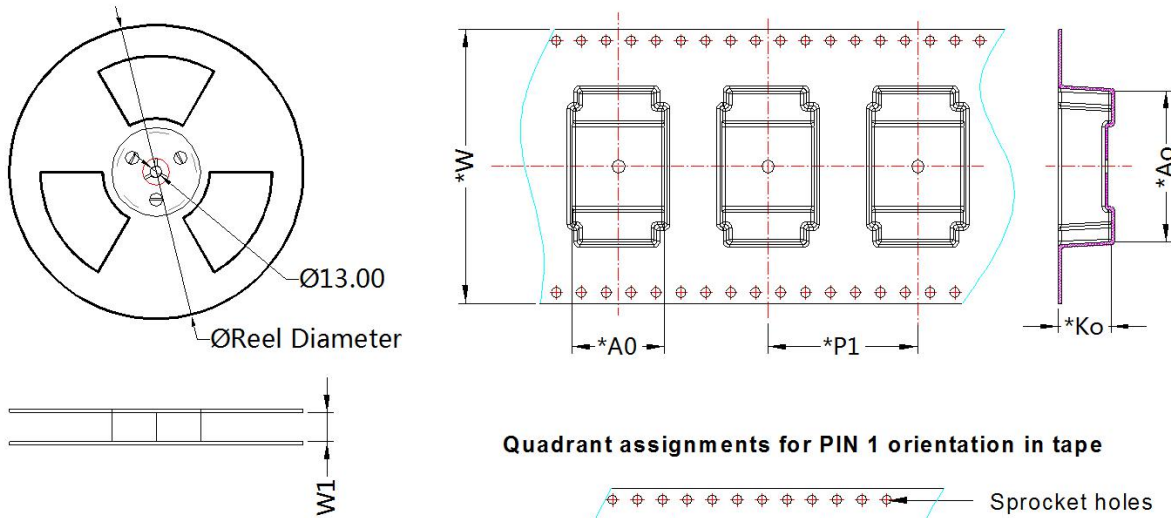
Turns Ratio	TTL503-15B05T	TTL503-15B12T
N1: N2: N3	11.45: 1: 3.73	5.04: 1: 1.48

Note: Input: N1, output: N2, auxiliary: N3.

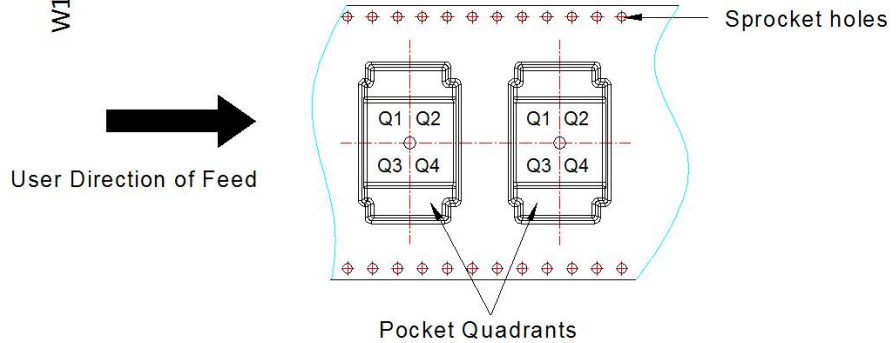
Dimensions and Recommended Layout



Tape and Reel Info



Quadrant assignments for PIN 1 orientation in tape



Device	Package Type	Pin	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
TTL503-15BxxT	SMD	10	300	330.0	44.4	24.21	14.81	8.50	24	44	Q3

- Note:
1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220092;
 2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75%, 10kHz and 100mV;
 3. All index testing methods in this datasheet are based on our company corporate standards;
 4. We can provide product 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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