



方成电子（东莞）有限公司
SPECIFICATION FOR APPROVAL

CUSTOMER:
 Part Number : SMT Power Transformer
 CUSTOMER Number: 贴片驱动变压器
 CUSTOMER Part :
 Fangcheng part : FC-TSE050-5V-12V-T
 DATE: 2023-7-10
 REV: 01



Fang cheng Electronics (Dongguan) Co., LTD
made in fangcheng: CUSTOMER APPROD:

prepad	checd	Approd
黄敏	陈丽萍	刘凡

prepad	checd	Approd

THE INFORMATION CONTAINED IN THIS DOCUMENT IS OF A PROPRIETARY NATURE AND IS INTENDED TO BE KEPT CONFIDENTIAL BETWEEN THE SENDER AND THE INTENDED RECIPIENT. IT MAY NOT BE REPRODUCED OR USED WITHOUT EXPRESS WRITTEN PERMISSION OF FC TECHNOLOGIES, OR FC



Fangcheng Electronics (Dongguan) Co., Ltd.

Tel: +86 0769-82988010
 Fax: +86 0769-82988065
 E-mail: yhl@fangchengcoils.com
 URL: www.fangchengcoils.com



Address: Building 3, Jinmei Technology Park, No.16 Huanchang West Road, Changping Town, Dongguan City

Fangcheng Electronics (China-Taiwan) Office

Address: No. 31, MRT Road, Zhonghe District, New Taipei City
 Tel: +8869-983491379



Description of Revision

REV	Description of Revision	DATE	Prepad	Notes
01	Initial Release	2023. 7. 10	<i>zhangli</i>	

Prepad 黄敏	Checkd 陈丽萍	Approd 刘凡
------------------	-------------------	------------------

Customer:

made : 方成电子 (东莞) 有限公司

Part Number: FC-TSE050-5V-12V-T

Page: 3 ----- 8

Notice of Use

For the parameters not prescribed in the *Specification for Approval*, please refer to the following standards or the relative industry standards.

- 1. Product in packing storage condition : temperature 540, RH70%.
 - 2. A storage of - F C -Electronic products for longer than 12 months is not recommended, Within other effects, the terminals may suffer degradation, resulting in bad solderability. Therefore, all products shall be used within the period of 12 months based on the day of shipment.
 - 3. Do not keep products in unsuitable storage conditions, such as areas susceptible to high temperatures, high humidity, dust or corrosion.
 - 4 Always handle products with care.
 - 5 Don't touch electrodes directly with bare hands as oil secretions may inhibit soldering.
- Always ensure optimum conditions for soldering.
- 6 When this product will be used on a similar or new project to the original one, sometimes it might be unable to satisfy the specifications due to different condition of usage.
 - 7 This inductor itself does not have any protective function in abnormal condition, such as overload, short-circuit, open-circuit conditions, etc. Therefore, it shall be confirmed that there is no risk of smoke, fire, dielectric withstand voltage, insulation resistance, etc., or use in abnormal conditions protective devices or protection circuit in the end product.
 - 8 Hi-Pot test with higher voltage than spec value will damage insulating material and shorten its life.

IPC 020D Joint Industry standard

IEC1007 《Transformer and inductors for use in electronic and telecommunication equipment—Measuring methods and test procedures》

(ROHS or other environmental request)



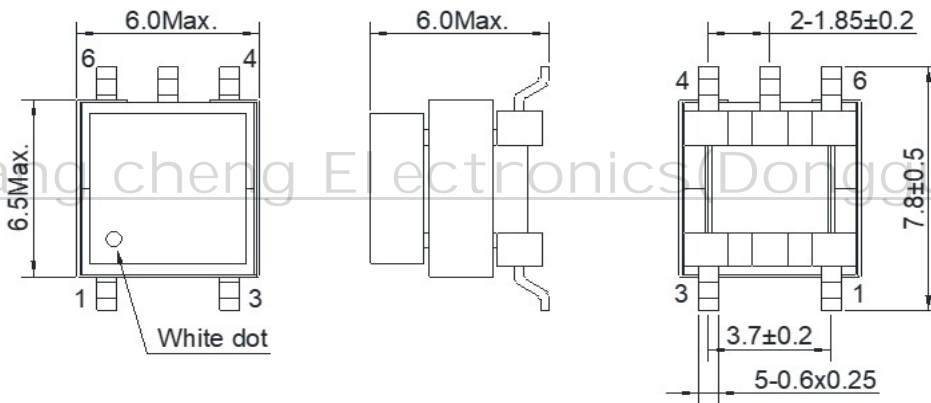
Prepad <p style="text-align: center;">黄敏</p>	Checd <p style="text-align: center;">陈丽萍</p>	Approd <p style="text-align: center;">刘凡</p>
---	---	---

1. Scope & Outline

This specification applies to the SMT Transformers for Automotive FC-TSE050-5V-12V-T.

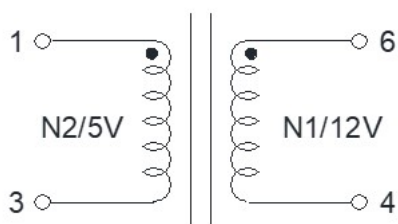
It is used as high reliability DC/DC Pulse transformer and complied with automotive reliability test standard AEC-Q200.

2. Appearance and Dimensions (mm)



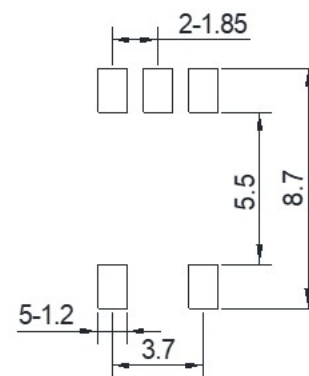
- * Terminals should be measured excluding the length of the soldered point.
- * Vacant terminal should be also soldered.
- * Dimension without tolerance is reference value.
- * Coplanarity: 0.13mm Max.
- * White dot Indicates pin#1.
- * Pin#2 cut.

2.1. Schematic:



“ ” Indicates the same polarity

2.2. Recommended Land Patterns(Unit: mm)



Prepad 黄敏	Checd 陈丽萍	Approd 刘凡
--------------	--------------	--------------

Customer:

made : 方成电子 (东莞) 有限公司

Part Number: FC-TSE050-5V-12V-T

Page: 5 ----- 8

3.1 Electrical Characteristics:

Item	Specification	Measuring condition
Inductance (6-4)	158μH±40%	1kHz,0.25V
Inductance (1-3)	7.3μH Ref.	1kHz,0.25V
DCR (6-4)	300mΩ Max.	
DCR (1-3)	90mΩ Max.	
Withstanding Voltage (1,3)-(4,6)	DC 1500Vrms 10S	50/60Hz,5mA
Withstanding Voltage Coil-Core	DC 500Vrms 10S	
Turns Ratio: N1:N2	4.5:1	

Fang cheng Electronics(Dongguang) Co., LTD

3.2 Materials list:

No.	Part name	Materials	UL No.
1	Bobbin	PM9630 (94V-0)	E41429
2	Core	Ferrite	N/A
3	Cover	LCP E4008 (94V-0)	E54705
4	Wire	Polyimide wire	E234867/E258243
4	Tape	Polyimide	E328315/ E165111
5	Clip	SUS-301	N/A
6	Epoxy	Epoxy resin	N/A
7	Terminal	Phosphor bronze	N/A
	Solder	Sn/Cu	N/A



Prepad 黄敏	Checkd 陈丽萍	Approd 刘凡
--------------	---------------	--------------

Customer:

made : 方成电子 (东莞) 有限公司

Part Number: FC-TSE050-5V-12V-T

Page: 6 ----- 8

4. Reliability and test condition:

Test item	test condition	Remark
Cold Operating Test	GB2423.1 Ad	
Heat Operating Test	GB2423.2 Bd	
Cold Storage Test	GB2423.1 Ab	
Heat Storage Test	GB2423.2 Bb	
Steady Damp Heat Test	GB2423.3 Cb	
Circular Damp Heat Test	GB2423.4 Db	
Temperature Cycling Test	GB2423.22 Nb	
Temperature Shock Test	GB2423.22 Na	
Vibration Test	GB2423.10~15 Fc, Fdb	
Mechanical Shock Test(Bump)	GB2423.5 Eb	
Free Fall Test	GB2423.8 Ed	
Solderability	GJB360A-96	
High Temperature Step Stress Test	Enhancement Test Specifications	
Low Temperature Step Stress Test		
High-speed Thermal Cycling		
Limit Vibration		
Composite Stress		
Highly-Accelerated Temperature and Humidity Stress Test (HAST) (

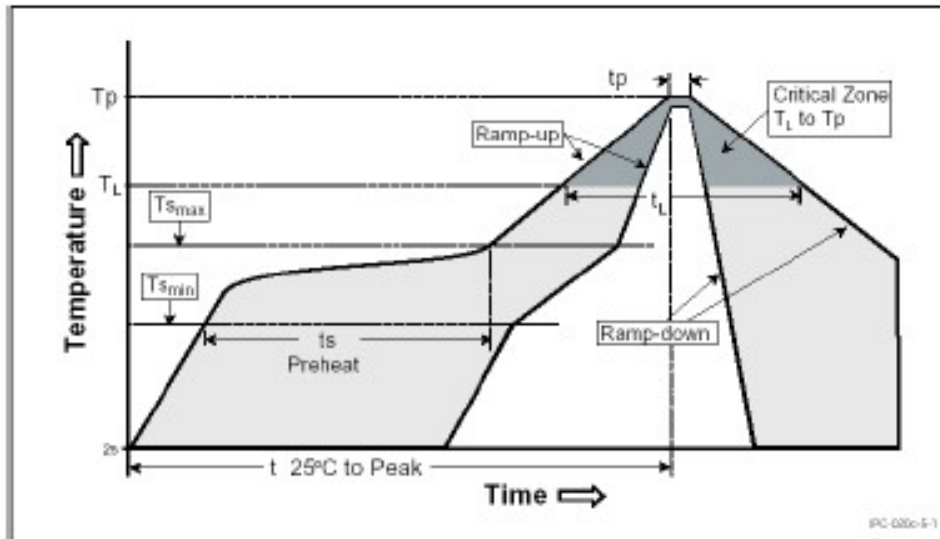


Prepad 黄敏	Checd 陈丽萍	Approd 刘凡
------------------	------------------	------------------

5. Soldering Specification: 元器件的推荐焊接方式是回流焊

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-Up Rate (T _{Smax} to T _p)	3 °C/second max.	3° C/second max.
Preheat - Temperature Min (T _{Smin}) - Temperature Max (T _{Smax}) - Time (t _{Smin} to t _{Smax})	100 °C 150 °C 60-120 seconds	150 °C 200 °C 60-180 seconds
Time maintained above: - Temperature (T _L) - Time (t _L)	183 °C 60-150 seconds	217 °C 60-150 seconds
Peak/Classification Temperature (T _p)	See Table 4.1	See Table 4.2
Time within 5 °C of actual Peak Temperature (t _p)	10-30 seconds	20-40 seconds
Ramp-Down Rate	6 °C/second max.	6 °C/second max.
Time 25 °C to Peak Temperature	6 minutes max.	8 minutes max.

Note 1: All temperatures refer to topside of the package, measured on the package body surface.



Package Thickness	Volume mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >2000
<1.6 mm	260 +0 °C *	260 +0 °C *	260 +0 °C *
1.6 mm - 2.5 mm	260 +0 °C *	250 +0 °C *	245 +0 °C *
≥2.5 mm	250 +0 °C *	245 +0 °C *	245 +0 °C *

* Tolerance: The device manufacturer/supplier shall assure process compatibility up to and including the stated classification temperature (this means Peak reflow temperature +0 °C. For example 260 °C+0°C) at the rated MSL level.

5.1 高温耐热性: 在260°C的熔融钎料中, 停留时间不少于10 秒, 无质量问题。

5.2 返修温度和时间温度: 350 度; 时间: 不少于5 秒。

5.3 焊接次数: 元器件能承受的焊接次数不少于5 次

Prepad 黄敏	Checkd 陈丽萍	Approd 刘凡
--------------	---------------	--------------

Customer:

made : 方成电子(东莞)有限公司

Part Number: FC-TSE050-5V-12V-T

Page: 8 ----- 8

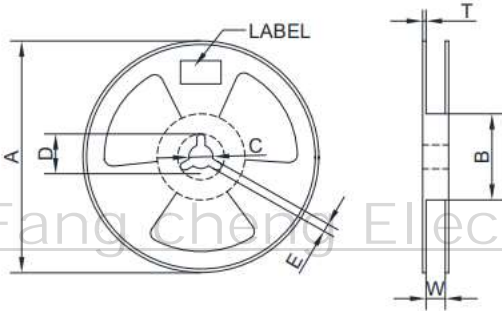
6.1 包装:

1) 包装箱上应标明产品型号、名称、数量、出厂日期、承制方名称及出厂检验章;

2) 货物运达客户方后, 包装箱封条应完好, 箱体无破损、开裂等现象;

3) 电感用木箱或其他材料包装, 方便拆卸, 四周用软性材料填充;

数量 1000PCS/R 5000PCS/BOX



A	B	C	D	E	W	T
330	100	13.5	21.5	2.5	16.4	2.0

6.2 外观:

1) 产品应有合格证和耐擦防水洗标签, 应注明型号、规格;

2) 产品外观整洁, 应无破损、划伤;

6.3 检验:

1) 产品生产中必须全数进行电气性能, 抗电强度检测; 箱内应有 100%电气性能合格保证书或检测报告;

2) 产品出货前按批次, 必须根据承认书按国家行业标准进行抽样检验, 合格后出具出厂检验报告, 记录抽样测试数据, 在每批次包装尾箱中放置一份; 检验报告须注明 100%耐压测试合格。注: 批次按定单号发货为准



Prepad 黄敏	Checd 陈丽萍	Approd 刘凡
------------------	------------------	------------------