



Specification for Approval

Date: 2024/03/12

	Custon	ner:	
	TAI-TECH P/N:	TMPA1265SPV-Ser	ries(N)-D-HD
	CUSTOMER P/N:		
	DESCRIPTION:		
	QUANTITY:	pcs	_
REM	MARK:		
	Cu	stomer Approval Feedba	ck

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APPROVED	CHECKED
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R&D Center

APPROVED	CHECKED	DRAWN		
Sky Luo	Mr.Liang	Cui lingling		

REV	DATE	DESCRIPTION	APPROVED	CHECKED	DRAWN
1.0	24/03/12	New Issue	Sky Luo	Mr.Liang	Cui lingling
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注					

SMD Power Inductor

1. Features

- 1. Low loss realized with low DCR.
- 2. High performance realized by metal dust core.
- 3. Ultra low buzz noise, due to composite construction.
- 4. 100% Lead(Pb)-Free and RoHS compliant.
- 5. High reliability -Reliability test complied to AEC-Q200.



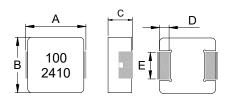


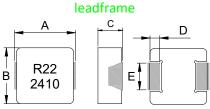


2. Applications

Automotive applications.

3. Dimensions





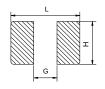


non-leadframe

Α	В	С	D	E
13.5±0.5	12.6±0.2	6.2±0.3	2.3±0.3	See Spec table

Unit:mm

Recommend PC Board Pattern



L	G	Н		
14.5	8.0	5.0		

Note: 1.PCB layout is referred to standard IPC-7351B

- 2. The above PCB layout reference only.
- 3. Recommend solder paste thickness at 0.15mm and above.

4. Part Numbering

TMPA	1265	SPV	-	100	MN	-	D-	HD
Α	В	С		D	Е		F	G

- A: Series
- B: Dimension
- C: Type
- BxC.
 - Standard. P:PAD broaden. V=Vehicle.
- D: Inductance R10=0.1uh, 1R0=1.0uh, 100=10uh, 101=100uh, 102=1000uh.
- $K=\pm 10\%$, $L=\pm 15\%$, $M=\pm 20\%$, $N=\pm 25\%$, $Y=\pm 30\%$ E: Inductance Tolerance
- F: Date Code Marking Black 100 and 2410 (24 YY 10 WW follow production date).
- G: Code

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5. Specification

Part Number	Inductance (uH) ±20%	-		(A)	DCR (mΩ)		E(mm) ±0.3	Type	
	@ 0 A DC	Тур	Max	Тур	Max	Тур	Max	±0.3	
TMPA1265SPV-R10YN-D-HD	0.10±30%	65	60	120	115	0.2	0.25	4.7	non-leadframe
TMPA1265SPV-R22MN-D-HD	0.22	53	42	112	105	0.4	0.46	4.7	non-leadframe
TMPA1265SPV-R33MN-D-HD	0.33	46	36	75	65	0.6	0.7	4.7	non-leadframe
TMPA1265SPV-R47MN-D-HD	0.47	42	35	68	58	0.88	1.02	4.7	non-leadframe
TMPA1265SPV-R56MN-D-HD	0.56	37	33.5	57	50	1.1	1.3	4.0	non-leadframe
TMPA1265SPV-R68MN-D-HD	0.68	36.5	33	55	46	1.25	1.5	4.0	non-leadframe
TMPA1265SPV-1R0MN-D-HD	1.00	33	29	45	36	1.5	1.8	4.0	non-leadframe
TMPA1265SPV-1R5MN-D-HD	1.50	29	25	35	30	2.2	2.53	4.0	non-leadframe
TMPA1265SPV-1R8MN-D-HD	1.80	27	23	31	27	3.2	3.6	4.7	leadframe
TMPA1265SPV-2R2MN-D-HD	2.20	25	21	28.5	24	3.7	4.2	4.7	leadframe
TMPA1265SPV-3R3MN-D-HD	3.30	22	19	27	22.5	5.3	6.2	4.7	leadframe
TMPA1265SPV-4R7MN-D-HD	4.70	20	17	25	21	6.8	8.0	4.7	leadframe
TMPA1265SPV-5R6MN-D-HD	5.60	18	15	23	19.5	8.3	9.8	4.7	leadframe
TMPA1265SPV-6R8MN-D-HD	6.80	16.5	14	21	18	9.8	11.3	4.7	leadframe
TMPA1265SPV-8R2MN-D-HD	8.20	15	12.5	19	17	12	13.8	4.7	leadframe
TMPA1265SPV-100MN-D-HD	10.0	13	11	17	15	13	15.8	4.7	leadframe
TMPA1265SPV-150MN-D-HD	15.0	11	9.5	13.5	12	22	26	4.7	leadframe
TMPA1265SPV-220MN-D-HD	22.0	10	8	10	9	31	35	4.7	leadframe
TMPA1265SPV-330MN-D-HD	33.0	9.0	6.5	9.0	8.0	46	55	4.7	leadframe
TMPA1265SPV-470MN-D-HD	47.0	8.0	5.7	7.6	6.8	58	67	4.7	leadframe
TMPA1265SPV-680MN-D-HD	68.0	5.8	4.8	6.0	5.0	82	100	4.7	leadframe
TMPA1265SPV-820MN-D-HD	82.0	5.0	4.0	5.0	4.2	110	132	4.7	leadframe
TMPA1265SPV-101MN-D-HD	100	5.0	3.8	5.0	4.0	140	161	4.7	leadframe

Note:

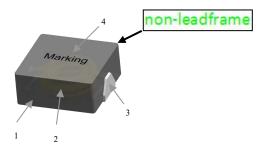
- 1. Test frequency: Ls: 100KHz /1.0V.
- 3. Testing Instrument(or equ) :Agilent 4284A,E4991A,4339B,KEYSIGHT E4980A/AL,chroma3302,3250,16502.
- 4. Heat Rated Current (Irms) will cause the coil temperature rise approximately $\,^\Delta \, T$ of 40 $^\circ \! C$
- 5. Saturation Current (Isat) will cause L0 to drop approximately 30%.
- 6. The part temperature (ambient + temp rise) should not exceed 155°Cunder worst case operating conditions. Circuit design, component, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.
- 7. Irms Testing: Temperature rise is highly dependent on many factors including pcb land pattern, trace size, and proximity to other components.

 Therefore temperature rise should be verified in application conditions.
- 8. Rated DC current: The lower value of Irms and Isat.

6. Material List



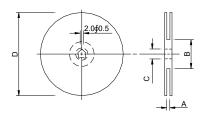
NO	Items	Materials
1	Core	Alloy Powder .
2	Wire	Polyester Wire or equivalent.
3	Clip	100% Pb free solder(Ni+SnPlating)
4	Ink	Halogen-free ketone

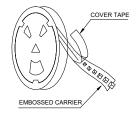


NO	Items	Materials
1	Core	Alloy Powder .
2	Wire	Polyester Wire or equivalent.
3	Solder	100% Pb free solder
4	Ink	Halogen-free ketone

7. Packaging Information

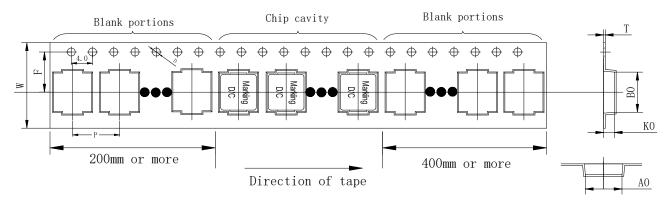
(1) Reel Dimension





Туре	A(mm)	B(mm)	C(mm)	D(mm)
13"x24mm	24.4+2/-0	100±2	13+0.5/-0.2	330

(2) Tape Dimension

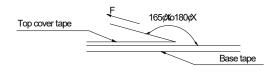


В0	A0	K0	Р	w	F	т	D
14.1±0.1	12.9±0.1	7.0±0.1	16.0±0.1	24±0.3	11.5±0.1	0.35±0.05	1.5±0.1
Unit:mm							

(3) Packaging Quantity

TMPA	1265	
Chip / Reel	500	

(4) Tearing Off Force



The force for tearing off cover tape is 10 to 130 grams in the arrow direction under the following conditions(referenced ANSI/EIA-481-D-2008 of 4.11 stadnard).

Tearing Speed	Room Temp.	Room Humidity	Room atm
mm	(℃)	(%)	(hPa)
300±10%	5~35	45~85	

8. Reliability and Test Condition

Item	Performance	Test Condition		
Operating temperature	-55~+155℃(Including self - temperature rise)			
Storage temperature and Humidity range	110~+40°C,50~60%RH (Product with taping) 255~+155°C(on board)			
Electrical Performance Test				
Inductance		HP4284A,CH11025,CH3302,CH1320,CH1320S LCR Meter.		
DCR	Refer to standard electrical characteristics list.	CH16502,Agilent33420A Micro-Ohm Meter.		
Saturation Current (Isat)	Approximately △L30%	Saturation DC Current (Isat) will cause L0 to drop △L(%)		
Heat Rated Current (Irms)	Approximately △T40°C	Heat Rated Current (Irms) will cause the coil temperature rise \triangle T($^{\circ}$ C). 1.Applied the allowed DC current 2.Temperature measured by digital surface thermometer		
Reliability Test		and the second of the second o		
High Temperature Exposure(Storage) AEC-Q200		Preconditioning: Run through IR reflow for 3 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Temperature: 155±2°C (Inductor, ambient + temp rise) Duration: 1000hrs Min. Measured at room temperature after placing for 24±2 hrs Preconditioning: Run through IR reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles		
Temperature Cycling AEC-Q200	Appearance: No damage. Inductance: within±10% of initial value Q: Shall not exceed the specification value. RDC: within ±15% of initial value and shall not exceed the specification value	Condition for 1 cycle Step1: -55±2°C 30min Min.(Inductor) Step2: 155±2°C transition time 1min MAX. Step3: 155±2°C 30min Min. Step4: Low temp. transition time 1min MAX. Number of cycles: 1000 Measured at room temperature after placing for 24±2 hrs		
Moisture Resistance (AEC-Q200)		t=24 hours/cycle. Note: Steps 7a & 7b Unpowered. 1811ac Core		
Biased Humidity (AEC-Q200)		Preconditioning: Run through IR reflow for 3 times. (IPC/JEDEC J-STD-020E Classification Reflow Profiles) Humidity: 85±3 % R.H, Temperature: 85°C±2°C Duration: 1000hrs Min Measured at room temperature after placing for24±2hrs		
High Temperature Operational Life (AEC-Q200)		Preconditioning: Run through IR reflow for 3 times. (IPC/JEDECJ-STD-020E Classification Reflow Profiles Temperature: 155±2°C (Inductor) Duration: 1000hrs Min. With 100% rated current. Measured at room temperature after placing for24±2hrs		
External Visual	Appearance: No damage.	Inspect device construction, marking and workmanship. Electrical Test not required.		
Physical Dimension		According to the product specification size measurement		
Resistance to Solvents	Appearance: No damage.	Add aqueous wash chemical - OKEM clean or equivalent.		
Mechanical Shock	Appearance: No damage. Inductance: within $\pm 10\%$ of initial value Q: Shall not exceed the specification value. RDC: within $\pm 15\%$ of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Test condition Type Peak value Normal duration (D) (ms) form change (Vi)ft/sec SMD 100 6 Half-sine 12.3 Lead 100 6 Half-sine 12.3 3 shocks in each direction along 3 perpendicular axes(18 shocks).		

Thermal shock (AEC-Q200) Appearance: No damage. ESD Appearance: No damage. Direct Contact and Air Discharge PASSIVE COMPONENT HBM ESD Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact and Seconds. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. Appearance: No damage. J.STD-Q20E Classification Reflow Profiles Condition for 1 cycle Step: 155±2°C 15±1min (Inductor) Step: 155±2°C 15±1min (Inductor) Step2: 155±2°C within 20Sec. Step3: 155±2°C with	Item	Performance	Test Condition		
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Resistance to Soldering Heat Appearance. No damage. Impedance, within ±15% of initial value Inductance. Within ±15% of initial value Inductance. Within ±15% of initial value Inductance. Within ±15% of initial value and shall not exceed the operation of the property of the second					
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Appearance: No damage. Appear		Impedance: within ± 15% of initial value	T _{Sron} T _{Sroae} t _L ramp down		
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Preconditioning: Run through IR reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles Condition for 1 cycle Step1: -55±2°C 15±1min(Inductor) Step2: 155±2°C 15±1min (Inductor) Step3: 155±2°C 15±1min (Number of cycles: 300 Measured at room fempraturc after placing fo24±2hrs Direct Contact and Air Discharge PASSIVE COMPONENT HBM ESE Discharge Waveform to a Coaxial Target Test method: AEC-0200-002 Test mode: Contact Discharge Discharge level: 4 kV (Level: 2) More than 95% of the terminal electrode should be covered with solder Solderability			of courses 2.5 mm and water 5.5 mm and w		
Appearance: No damage. Direct Contact and Air Discharge PASSIVE COMPONENT HBM ESE Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact Discharge Discharge elvel: 4 KV (Level: 2) a. Method B1, 4 hrs @155°C dry heat @255°C±5°C Test time:5 +0/-0.5 seconds. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. Direct Contact and Air Discharge PASSIVE COMPONENT HBM ESE Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact Discharge PASSIVE COMPONENT HBM ESE Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact Discharge Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact Discharge Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact Discharge Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact Discharge Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact Discharge Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact Discharge Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact Discharge Test method: AEC-Q200-002 Test mode: Contact Discharge Test mode: Contact Discharge Test mode: Contact Discharge Test method: AEC-Q200-002 Test mode: Contact Discharge Test mode: Contact Discharge Test method: AEC-Q200-002 Test mode: Contact Discharge Test mode: Co			Preconditioning: Run through IR reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles Condition for 1 cycle Step1: -55±2°C 15±1min(Inductor) Step2: 155±2°C within 20Sec. Step3: 155±2°C 15±1min Number of cycles: 300		
Direct Contact and Air Discharge PASSIVE COMPONENT HBM ESE Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact Discharge Discharge level: 4 KV (Level: 2) More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder. More than 95% of the terminal electrode should be covered with solder.	ESD	Appearance: No damage.	10 A 00%		
Test time: 5 +0/-0.5 seconds. More than 95% of the terminal electrode should be covered with solder. Description: Test time: 5 +0/-0.5 seconds. Test time: 5 +0/-0.5 seconds. Test time: 5 +0/-0.5 seconds. Test time: 30 +0/-0.5 seconds.			Direct Contact and Air Discharge PASSIVE COMPONENT HBM ESD Discharge Waveform to a Coaxial Target Test method: AEC-Q200-002 Test mode: Contact Discharge Discharge level: 4 KV (Level: 2)		
	Solderability		Test time:5 +0/-0.5 seconds. b. Method D category 3. (steam aging 8hours ± 15 min)@ 260°C±5°C		
	Electrical Characterization	Refer Specification for Approval			
Flammability Electrical Test not required. V-0 or V-1 are acceptable.					

Board Flex	Appearance: No damage	Preconditioning: Run through IR reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles Place the 100mm X 40mm board into a fixture similar to the one shown in below Figure with the component facing down. The apparatus shall consist of mechanical means to apply a force which will bend the board (D) x = 2 mm minimum. The duration of the applied forces shall be 60 (+ 5) sec. The force is to be applied only once to the board. Support Solder Chip Printed circuit board before testing Printed circuit board before testing
Terminal Strength(SMD)	Appearance: No damage	Preconditioning: Run through IR reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles With the component mounted on a PCB with the device to be tested, apply a 17.7 N (1.8 Kg) force to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested. Tradius 0,5 mm DUT Wide thickness shear force

Note : When there are questions concerning measurement result : measurement shall be made after 48 ± 2 hours of recovery under the standard condition.

9. Soldering Specifications

(1) Soldering

Mildly activated rosin fluxes are preferred. TAI-TECH terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

(2) Soldering Reflow:

Recommended temperature profiles for lead free re-flow soldering in Figure 1. Table 1.1&1.2 (J-STD-020E)

(3) Iron Reflow:

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended. (Fig. 2)

- · Preheat circuit and products to 150℃
- · Never contact the ceramic with the iron tip
- $\cdot\;$ Use a 20 watt soldering iron with tip diameter of 1.0mm

- · 355℃ tip temperature (max) · 1.0mm
 - · 1.0mm tip diameter (max) · Limit soldering time to 4~5sec.

Fig.1 Soldering Reflow

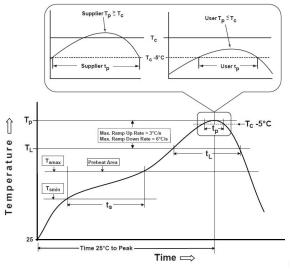
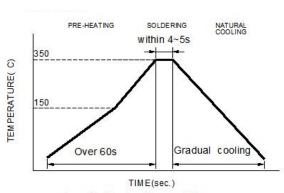


Fig.2 Iron soldering temperature profiles



Iron Soldering times: 1 times max.

Soldering iron Method : 350± 5℃ max

Reflow times: 3 times max

Table (1.1): Reflow Profiles

Profile Type:	Pb-Free Assembly
Preheat -Temperature Min(T _{smin}) -Temperature Max(T _{smax}) -Time(t _s)from(T _{smin} to T _{smax})	150℃ 200℃ 60-120seconds
Ramp-up rate(T _L to T _p)	3℃/second max.
Liquidus temperature(T _L) Time(t _L)maintained above T _L	217°C 60-150 seconds
Classification temperature(T _c)	See Table (1.2)
Time(tp) at Tc- $5^{\circ}\mathrm{C}$ (Tp should be equal to or less than Tc.)	*< 30 seconds
Ramp-down rate(T _p to T _L)	6℃ /second max.
Time 25℃ to peak temperature	8 minutes max.

Tp: maximum peak package body temperature, Tc: the classification temperature.

For user (customer) Tp should be equal to or less than Tc.

Table (1.2) Package Thickness/Volume and Classification Temperature (Tc)

	Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
	<1.6mm	260℃	260℃	260°C
PB-Free Assembly	1.6-2.5mm	260℃	250℃	245℃
	≥2.5mm	250℃	245℃	245°C

Reflow is referred to standard IPC/JEDEC J-STD-020E $_{\circ}$

^{*} Tolerance for peak profile temperature (Tp) is defined as a supplier minimum and a user maximum.

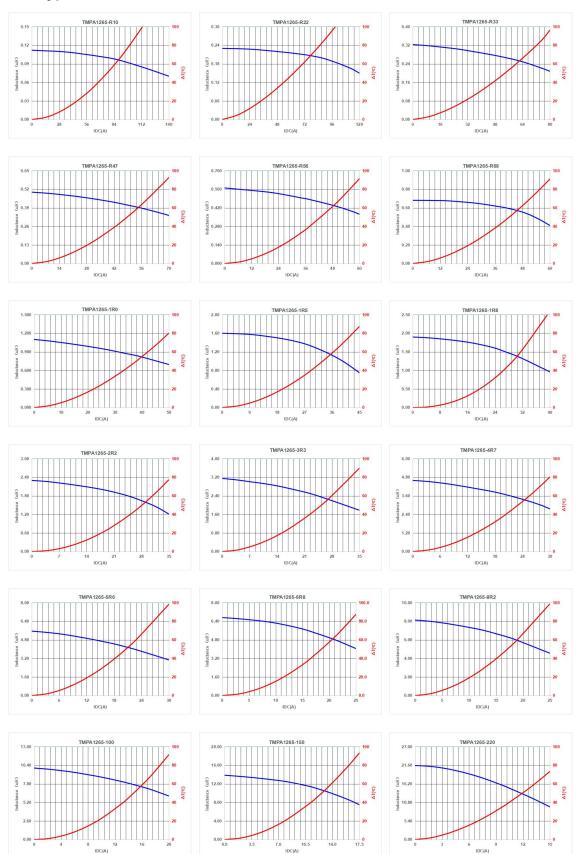
10. Notes

- (1) When there are questions concerning measurement result : measurement shall be made after 48 \pm 2 hours of recovery under the standard condition
- (2) This power choke coil itself does not have any protective function in abnormal condition such as overload, short-circuit and open-circuit conditions, etc. Therefore, it shall be confirmed as the end product that there is no risk of smoking, fire, dielectric withstand voltage, insulation resistance, etc. in abnormal conditions to provide protective devices and/or protection circuit in the end product.
- (3) When this power choke coil was used in a similar or new product to the original one, sometimes it might not be able to satisfy the specifications due to different condition of use.
- (4) Dielectric withstanding test with higher voltage than specific value will damage insulating material and shorten its life.
- (5) This power choke coil must not be used in wet condition by water, coffee or any liquid because insulation strength becomes very low in this condition.
- (6) Please consult our company to confirm the reliability of the process required to wash or use or exposure to a chemical solvent used in this product. PCB washing tested to MIL-STD-202 Method, and dry it off immediately.
- (7) The rated current as listed is either the saturation current or the heating current depending on which value is lower.
- (8) If this power choke is dipped in the cleaning agent, such as toluene, xylene, ketone, and ether system, there is a possibility that the performance decreases greatly, and marking disappearnc.
- (9) The high power ultrasonic washing may damage the choke body.
- (10) Before use, the user should determine whether this product is suitable for their own design, Our company only guarantees that the product meets the requirements of this specification.

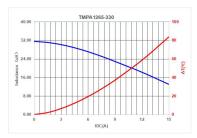
Application Notice

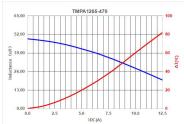
- · Storage Conditions
- To maintain the solderability of terminal electrodes:
- 1. TAI-TECHproducts meet IPC/JEDEC J-STD-020E standard-MSL, level 1.
- 2. Temperature and humidity conditions: Less than 40 $^{\circ}\mathrm{C}$ $\,$ and 60% RH.
- 3. Recommended products should be used within 12 months form the time of delivery.
- 4. The packaging material should be kept where no chlorine or sulfur exists in the air.
- Transportation
- 1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
- 2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
- 3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

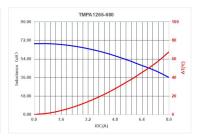
11. Typical Performance Curves

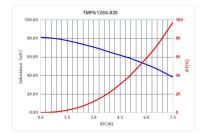


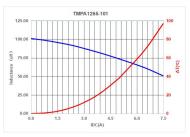
TAI-TECH











单击下面可查看定价,库存,交付和生命周期等信息

>>TAI-TECH(台庆)