

Specification for Approval

Date: 2023/07/18

Customer : Blume

TAI-TECH P/N: **PASU3225V-SERIES**

CUSTOMER P/N:

DESCRIPTION:

QUANTITY: _____ pcs

REMARK:		
Customer Approval Feedback		

西北臺慶科技股份有限公司
TAI-TECH Advanced Electronics Co., Ltd

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Transponder Coils

PASU3225V-SERIES

ECN HISTORY LIST

REV	DATE	DESCRIPTION	APPROVED	CHECKED	DRAWN
1.0	23/07/18	新發行	楊祥忠	徐鋒強	林靜婷
備 註					

Transponder Coils

PASU3225V-SERIES

1. Features

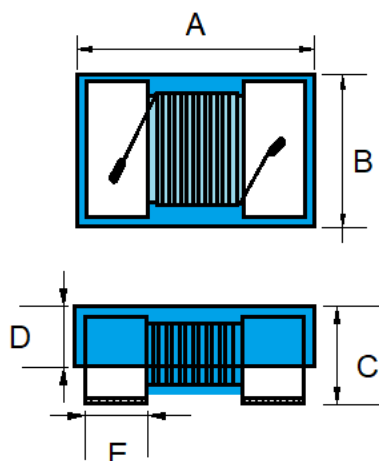
1. Suitable for pick and place and AOI (Automatic Optical Inspection)
2. PASU3225V-series realizes small size and low profile. 3.2x2.5x2.2mm.
3. All coated structure for better wiring protection.
4. 100% Lead(Pb) & Halogen-Free and RoHS compliant.
5. Suitable for lead-free reflow soldering
6. High reliability -Reliability tests comply with AEC-Q200
7. Operating temperature -55~+125°C (Including self - temperature rise)
8. Patent pending



2. Applications

1. T-coil/HAC-coil for hearing and aid compatible cell phones.
2. Decoupling in RF and IF-circuit.
3. Transponder antenna.

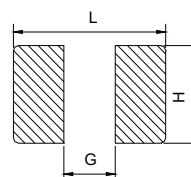
3. Dimension



Size	A	B	C	D	E
PASU3225	3.20±0.30	2.50±0.30	2.20±0.30	1.80 ref.	0.65±0.10

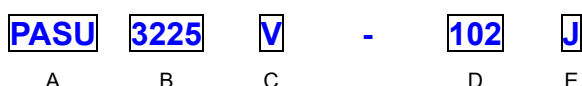
Unit:mm

Recommend PC Board Pattern



L(mm)	G(mm)	H(mm)
3.82	1.78	2.80

4. Part Numbering



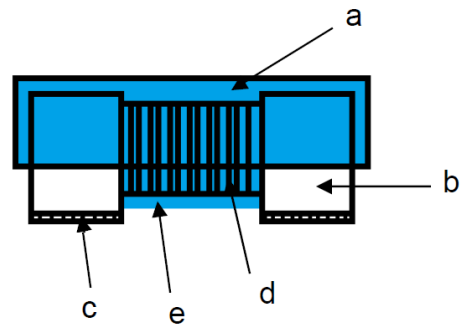
A: Series
 B: Dimension L x W
 C: Category Code V=Vehicle
 D: Inductance 102=1080uH
 E: Inductance Tolerance J =±5%, K =±10%, M =±20%

5. Specification

TAI-TECH Part Number	Inductance (uH)	Tolerance	Test Frequency(Hz)	Q min.	Test Frequency(KHz)	IDC (mA) max.	DCR(Ω) max.	SRF(MHz) Typ.
PASU3225V-102□	1080	J,K,M	0.1V/125K	15	125K	50	35	2.0
PASU3225V-132□	1340	J,K,M	0.1V/125K	15	125K	50	42	2.0

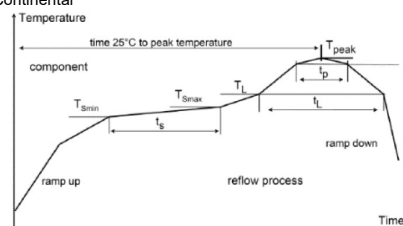
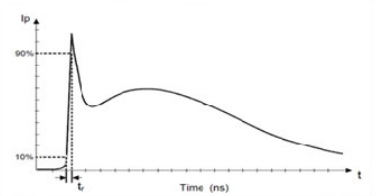
6. Materials

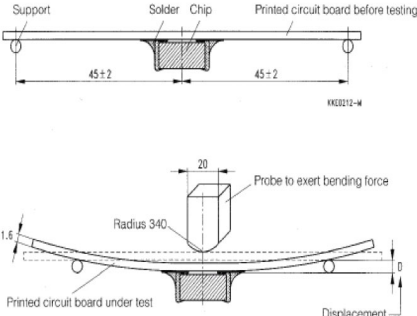
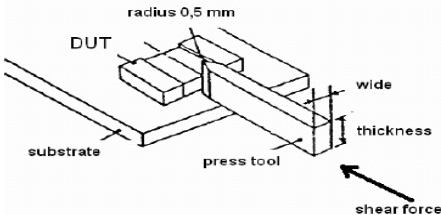
No.	Description	Specification
a.	Upper Plate	UV Glue
b.	Core	Ferrite Core
c.	Termination	Ag/Ni/Sn
d.	Wire	Enameled Copper Wire
e.	Adhesive	UV Glue



7. Reliability and Test Condition

Item	Performance	Test Condition															
Operating temperature	-55~+125℃(Including self - temperature rise)																
Storage temperature	-55+125℃(on board)																
Electrical Performance Test																	
Inductance L	Refer to standard electrical characteristic list	Agilent E4991A , Keysight E4991B ,Keysight 4980AL															
Q		Agilent-4287, Agilent-4285															
SRF		Agilent E4991A , Keysight E4991B															
IDC		Agilent-34420A Agilent-4338B															
Reliability Test																	
High Temperature Exposure(Storage) 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	Preconditioning: Run through reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Temperature : 125±2℃ Duration : 1000hrs Min. Measured at room temperature after placing for 24±4 hrs.															
Temperature Cycling AEC-Q200		Preconditioning: Run through reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Condition for 1 cycle Step1 : -55±2℃ 30min Min. Step2 : 125±2℃ transition time 1min MAX. Step3 : 125±2℃ 30min Min. Step4 : Low temp. transition time 1min MAX. Number of cycles : 1000 Measured at room temperature after placing for 24±4 hrs.															
Moisture Resistance (AEC-Q200)		t=24 hours/cycle. Note: Steps 7a & 7b not required. Unpowered. Measurement at 24±2 hours after test conclusion.															
		Preconditioning: Run through reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Humidity : 85±3% R.H. Temperature : 85℃±2℃ Duration : 1000hrs Min. Measured at room temperature after placing for 24±4hrs.															
Biased Humidity (AEC-Q200)		Preconditioning: Run through reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Temperature : 125±2℃ Duration : 1000hrs Min. with 100% rated current. Measured at room temperature after placing for 24±4hrs.															
High Temperature Operational Life (AEC-Q200)		Inspect device construction, marking and workmanship. Electrical Test not required.															
External Visual	Appearance : No damage.	According to the product specification size measurement															
Physical Dimension	According to the product specification size measurement	Add aqueous wash chemical - OKEM clean or equivalent.															
Resistance to Solvents		<table border="1"> <thead> <tr> <th>Type</th> <th>Peak value (g's)</th> <th>Normal duration (D) (ms)</th> <th>Wave form</th> <th>Velocity change (Vi)ft/sec</th> </tr> </thead> <tbody> <tr> <td>SMD</td> <td>100</td> <td>6</td> <td>Half-sine</td> <td>12.3</td> </tr> <tr> <td>Lead</td> <td>100</td> <td>6</td> <td>Half-sine</td> <td>12.3</td> </tr> </tbody> </table>	Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec	SMD	100	6	Half-sine	12.3	Lead	100	6	Half-sine	12.3
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SMD	100	6	Half-sine	12.3													
Lead	100	6	Half-sine	12.3													
Mechanical Shock	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	3 shocks in each direction along 3 perpendicular axes. (18 shocks)															

Item	Performance	Test Condition																																				
Vibration		Preconditioning: Run through reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Oscillation Frequency : 10Hz~2kHz~10Hz for 20 minutes. Equipment : Vibration checker Total Amplitude : 5g Testing Time : 12 hours (20 minutes, 12 cycles each of 3 orientations)																																				
Resistance to Soldering Heat	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	Test condition : <table border="1" data-bbox="944 383 1425 499"> <thead> <tr> <th>Temperature(°C)</th> <th>Time(s)</th> <th>Temperature ramp/immersion and emersion rate</th> <th>Number of heat cycles</th> </tr> </thead> <tbody> <tr> <td>260 ±5 (solder temp)</td> <td>10 ±1</td> <td>25mm/s ±6 mm/s</td> <td>1</td> </tr> </tbody> </table> Depth: completely cover the termination Continental  <table border="1" data-bbox="944 813 1415 987"> <thead> <tr> <th>Component Size</th> <th>Ramp up to 180°C</th> <th>T_{min}</th> <th>t_s</th> <th>T_{max}</th> <th>T_L</th> <th>t_L</th> <th>T_{min}*</th> <th>t_p**</th> <th>time 25°C to peak</th> <th>Ramp down</th> </tr> </thead> <tbody> <tr> <td>Thickness < 1.5mm or Thickness 1.5mm-2.5mm and Volume < 350 mm³</td> <td rowspan="3">3.0±0.1°C/s (The component should be specified for solder reflow production with up to 3.0°C/s)</td> <td rowspan="3">≥100°C</td> <td rowspan="3">≥110s</td> <td rowspan="3">≤200°C</td> <td rowspan="3">≤217°C</td> <td rowspan="3">≤50s</td> <td>≤260°C</td> <td>≤40s</td> <td rowspan="3">≤300s</td> <td rowspan="3">6.0±0.1°C/s (The component shall be specified for usage in serial production with up to 6.0°C/s)</td> </tr> <tr> <td>Thickness > 2.5mm and Volume < 350 mm³</td> <td>≤250°C</td> <td>≤30s</td> </tr> <tr> <td>Thickness 1.5mm-2.5mm and Volume > 350 mm³ or Thickness > 2.5mm and Volume > 350 mm³</td> <td>≤245°C</td> <td>≤25s</td> </tr> </tbody> </table> Table 1: Minimum requirements for lead-free soldering *peak temperature is measured on the centre top of the component package ** t _p measured @ T _{peak} -5°C	Temperature(°C)	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles	260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s	1	Component Size	Ramp up to 180°C	T _{min}	t _s	T _{max}	T _L	t _L	T _{min} *	t _p **	time 25°C to peak	Ramp down	Thickness < 1.5mm or Thickness 1.5mm-2.5mm and Volume < 350 mm ³	3.0±0.1°C/s (The component should be specified for solder reflow production with up to 3.0°C/s)	≥100°C	≥110s	≤200°C	≤217°C	≤50s	≤260°C	≤40s	≤300s	6.0±0.1°C/s (The component shall be specified for usage in serial production with up to 6.0°C/s)	Thickness > 2.5mm and Volume < 350 mm ³	≤250°C	≤30s	Thickness 1.5mm-2.5mm and Volume > 350 mm ³ or Thickness > 2.5mm and Volume > 350 mm ³	≤245°C	≤25s
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Thickness 1.5mm-2.5mm and Volume > 350 mm ³ or Thickness > 2.5mm and Volume > 350 mm ³							≤245°C	≤25s																														
Thermal shock (AEC-Q200)		Preconditioning: Run through reflow for 3 times.(IPC/JEDEC J-STD-020DE Classification Reflow Profiles) Condition for 1 cycle Step1 : -55±2°C 15±1min Step2 : 125±2°C within 20Sec. Step3 : 125±2°C 15±1min Number of cycles : 300 Measured at room temperature after placing for 24±4hrs.																																				
ESD	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	 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	More than 95% of the terminal electrode should be covered with solder	a. Method B, 4hrs @155°C dry heat @235°C±5°C Testing Time :5 +0/-0.5 seconds b. Method D category 3. (8hours ± 15 min)@ 260°C±5°C Testing Time :30 +0/-0.5 seconds																																				
Electrical Characterization	Refer Specification for Approval	Summary to show Min, Max, Mean and Standard deviation .																																				
Flammability	Electrical Test not required.	V-0 or V-1 are acceptable.																																				

Item	Performance	Test Condition
<p>Board Flex</p>	<p>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</p>	<p>Preconditioning: Run through 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.</p> 
<p>Terminal Strength(SMD)</p>	<p>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</p>	<p>Preconditioning: Run through 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.</p> 

8. Soldering and Mounting

8-1 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.

8-2.1 Soldering Reflow:

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

8-2.2 Soldering Iron:

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. (Figure 2.)

- Preheat circuit and products to 150°C
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 350°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4~5sec.

Fig.1 Soldering Reflow

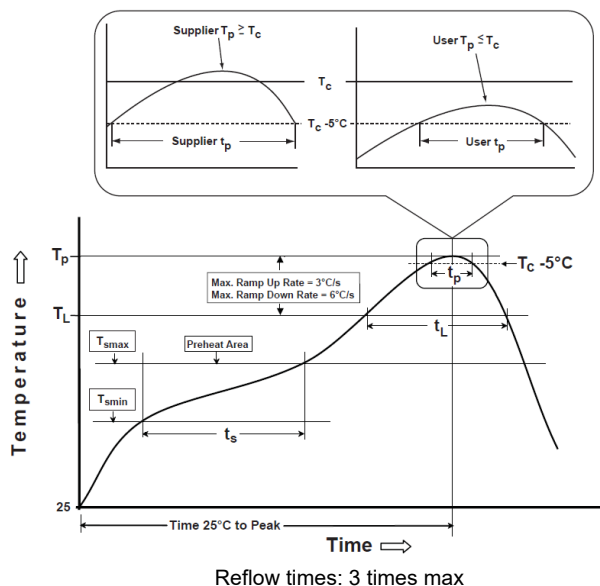


Fig.2 Iron soldering temperature profiles

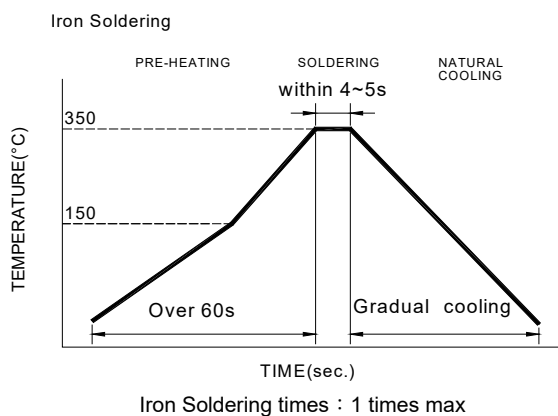


Table (1.1): Reflow Profiles

Profile Type:	Pb-Free Assembly
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(t_s)from(T_{smin} to T_{smax})	150°C 200°C 60-120seconds
Ramp-up rate(T_L to T_p)	3°C/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(t_p) at $T_c - 5^\circ\text{C}$ (T_p should be equal to or less than T_c .)	< 30 seconds
Ramp-down rate(T_p to T_L)	6°C /second max.
Time 25°C to peak temperature	8 minutes max.

T_p: maximum peak package body temperature, **T_c**: the classification temperature.

For user (customer) **T_p** should be equal to or less than **T_c**.

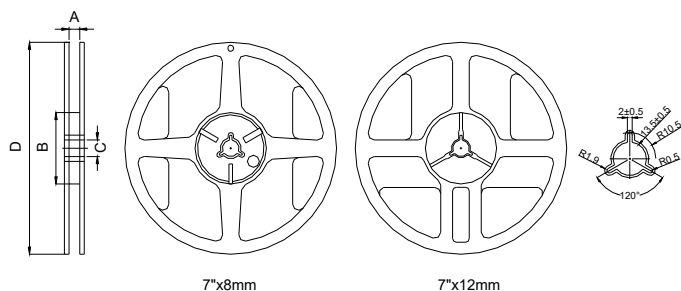
Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

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

Reflow is referred to standard IPC/JEDEC J-STD-020E ◦

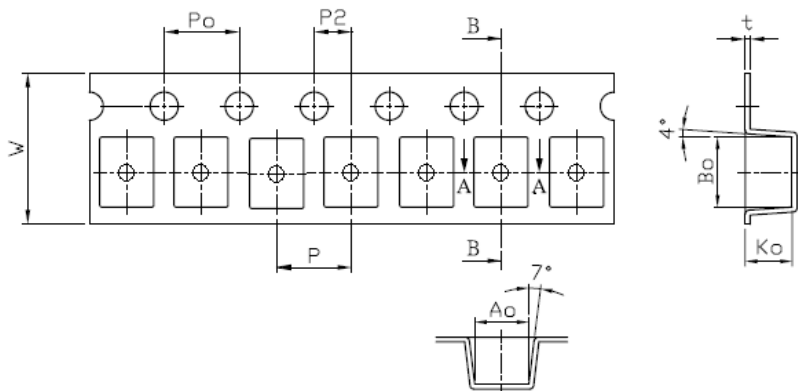
9. Packaging Information

9-1. Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	9.0±0.5	60.0±2.0	13.5±0.5	178.0±2.0

9-2. Tape Dimension / 8mm

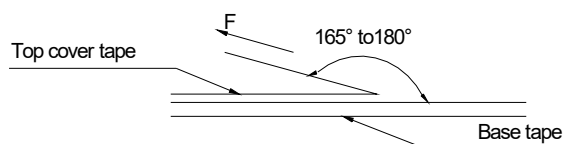


Series	P(mm)	Po(mm)	P2(mm)	Bo(mm)	Ao(mm)	Ko(mm)	W(mm)	t(mm)
PASU	4.00±0.10	4.00±0.10	2.00±0.05	3.72±0.10	2.88±0.10	2.50±0.10	8.00±0.10	0.26±0.05

9-3. Packaging Quantity

PASU	3225
Chip / Reel	2000
Reel Size	7"x8mm

9-4. Tearing Off Force



The force for tearing off cover tape is 15 to 80 grams in the arrow direction under the following conditions.

Room Temp. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5~35	45~85	860~1060	300

Application Notice

- Storage Conditions(component level)
To maintain the solderability of terminal electrodes:
 1. TAI-TECH products meet IPC/JEDEC J-STD-020E standard-MSL, level 1.
 2. Temperature and humidity conditions: Less than 40°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.