TAI-TECH

Form No:

Specification for Approval

Date: 2021/08/16

Customer : 天诚科技

TAI-TECH P/N: SWI0805UF-SERIES

CUSTOMER P/N:

DESCRIPTION:

QUANTITY:

REMARK:	
Customer Approval Feedback	

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TAI-TECH Advanced Electronics Co., Ltd

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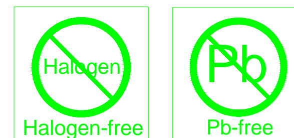
TA734003

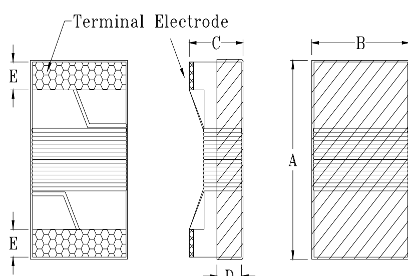
High Frequency Winding Type Chip Inductor SWI0805UF-SERIES

1. Features

1. Ceramic core wire wound construction.
2. No batch to batch variations in inductance
3. High Reliability due to ceramic wire wound construction.
4. High frequency application.
5. Small footprint as well as low profile.
6. 100% Lead(Pb) & Halogen-Free and RoHS compliant.
7. Operating temperature -40~+125℃ (Including self - temperature rise)



2. Dimensions



Size	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)
SWI0805	2.29 max.	1.73 max.	1.52 max.	0.51 ref.	0.44±0.1

Unit:mm

3. Part Numbering

SWI 0805 UF - 2N8 S

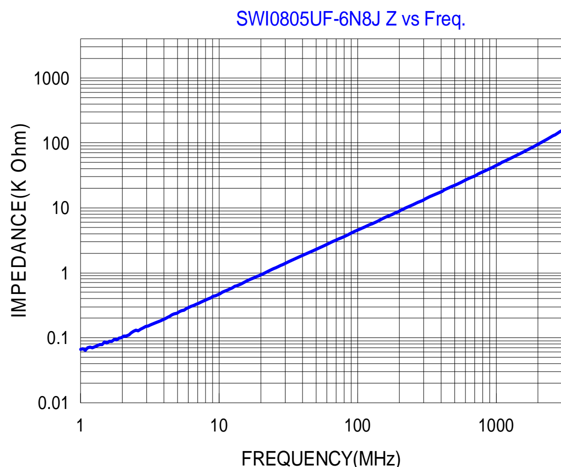
A B C D E

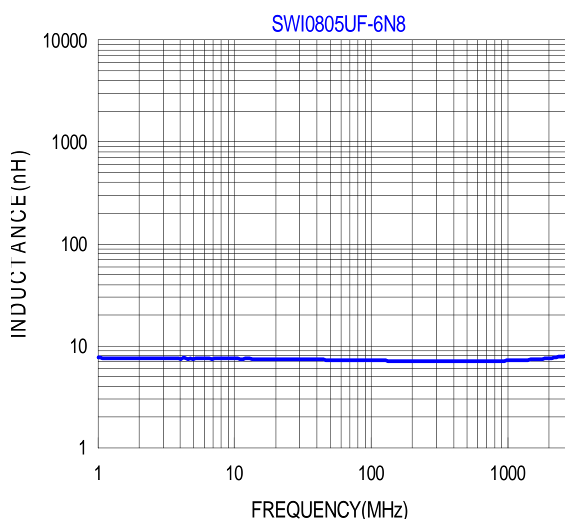
A: Series
B: Dimension LxW
C: Material
D: Inductance 2N8=2.8nH
E: Inductance Tolerance C=±0.2nH, S=±0.3nH, G=±2%, J=±5%

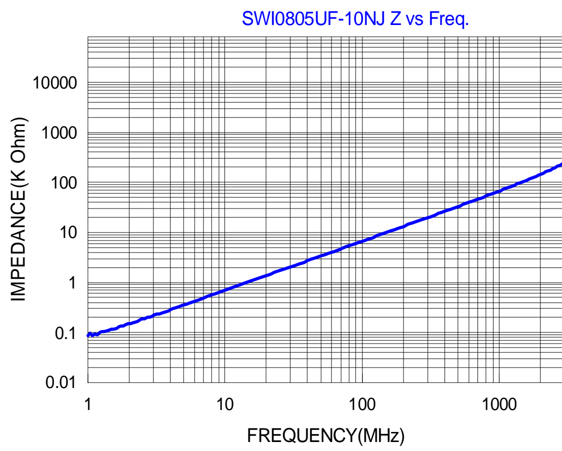
4. Specification

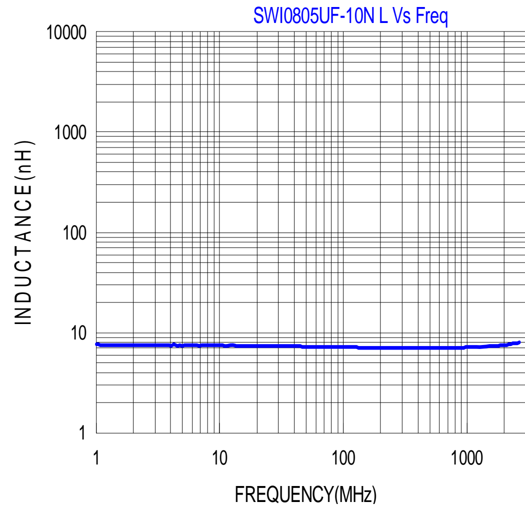
Part Number	Inductance (nH)	Tolerance	Test Frequency (Hz)	Q @ Test Freq. min.	I rms (mA) max.	DCR (Ω) max.	SRF (MHz) min.
SWI0805UF-2N8□	2.8	C,S	0.1V/250M	80/1500	800	0.06	7900
SWI0805UF-3N0□	3.0	C,S	0.1V/250M	65/1500	800	0.06	7900
SWI0805UF-3N3□	3.3	C,S	0.1V/250M	50/1500	600	0.08	7900
SWI0805UF-5N6□	5.6	C,S	0.1V/250M	65/1000	600	0.08	5500
SWI0805UF-6N8□	6.8	C,J	0.1V/250M	50/1000	600	0.11	5500
SWI0805UF-7N5□	7.5	C,J	0.1V/250M	50/1000	600	0.14	4500
SWI0805UF-8N2□	8.2	C,J	0.1V/250M	50/1000	600	0.12	4700
SWI0805UF-10N□	10	G,J	0.1V/250M	60/500	600	0.10	4200
SWI0805UF-12N□	12	G,J	0.1V/250M	50/500	600	0.15	4000
SWI0805UF-15N□	15	G,J	0.1V/250M	50/500	600	0.17	3400
SWI0805UF-18N□	18	G,J	0.1V/250M	50/500	600	0.20	3300
SWI0805UF-22N□	22	G,J	0.1V/250M	55/500	500	0.22	2600
SWI0805UF-24N□	24	G,J	0.1V/250M	50/500	500	0.22	2000
SWI0805UF-27N□	27	G,J	0.1V/250M	55/500	500	0.25	2500
SWI0805UF-33N□	33	G,J	0.1V/250M	60/500	500	0.27	2050

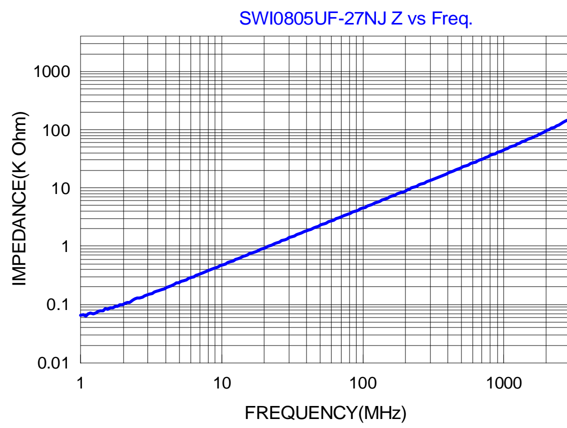
Part Number	Inductance (nH)	Tolerance	Test Frequency (Hz)	Q @ Test Freq. min.	I rms (mA) max.	DCR (Ω) max.	SRF (MHz) min.
SWI0805UF-36N□	36	G,J	0.1V/250M	55/500	500	0.27	1700
SWI0805UF-39N□	39	G,J	0.1V/250M	60/500	500	0.29	2000
SWI0805UF-43N□	43	G,J	0.1V/200M	60/500	500	0.34	1650
SWI0805UF-47N□	47	G,J	0.1V/200M	60/500	500	0.31	1650
SWI0805UF-56N□	56	G,J	0.1V/200M	60/500	500	0.34	1550
SWI0805UF-68N□	68	G,J	0.1V/200M	60/500	500	0.38	1450
SWI0805UF-82N□	82	G,J	0.1V/150M	65/500	400	0.42	1300
SWI0805UF-91N□	91	G,J	0.1V/150M	65/500	400	0.48	1200
SWI0805UF-R10□	100	G,J	0.1V/150M	65/500	400	0.46	1200
SWI0805UF-R11□	110	G,J	0.1V/150M	50/250	400	0.48	1000
SWI0805UF-R12□	120	G,J	0.1V/150M	50/250	400	0.51	1100
SWI0805UF-R15□	150	G,J	0.1V/100M	50/250	400	0.56	920
SWI0805UF-R18□	180	G,J	0.1V/100M	50/250	400	0.64	870
SWI0805UF-R20□	200	G,J	0.1V/100M	50/250	400	0.68	860
SWI0805UF-R22□	220	G,J	0.1V/100M	50/250	400	0.70	850
SWI0805UF-R24□	240	G,J	0.1V/100M	44/250	350	1.00	690
SWI0805UF-R25□	250	G,J	0.1V/100M	45/250	350	1.20	660
SWI0805UF-R27□	270	G,J	0.1V/100M	48/250	350	1.00	650
SWI0805UF-R33□	330	G,J	0.1V/100M	48/250	310	1.40	600
SWI0805UF-R39□	390	G,J	0.1V/100M	48/250	290	1.50	560
SWI0805UF-R47□	470	G,J	0.1V/50M	33/100	250	1.70	375
SWI0805UF-R56□	560	G,J	0.1V/25M	23/50	230	1.90	340
SWI0805UF-R62□	620	G,J	0.1V/25M	23/50	210	2.20	220
SWI0805UF-R68□	680	G,J	0.1V/25M	23/50	190	2.20	188
SWI0805UF-R82□	820	G,J	0.1V/25M	23/50	180	2.35	215
SWI0805UF-1R0□	1000	G,J	0.1V/25M	15/50	170	2.5	100
SWI0805UF-1R2□	1200	G,J	0.1V/7.9M	18/25	170	2.5	100

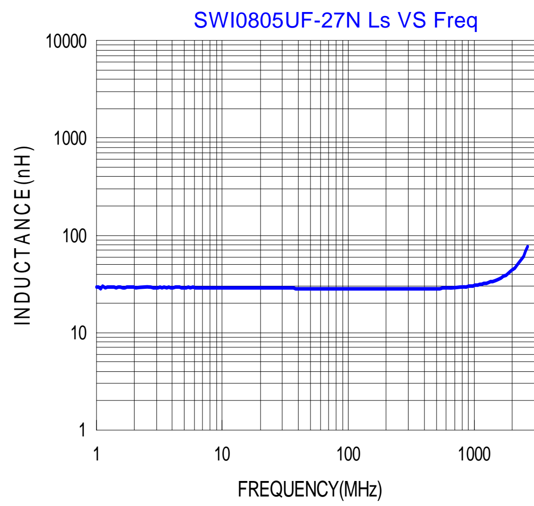


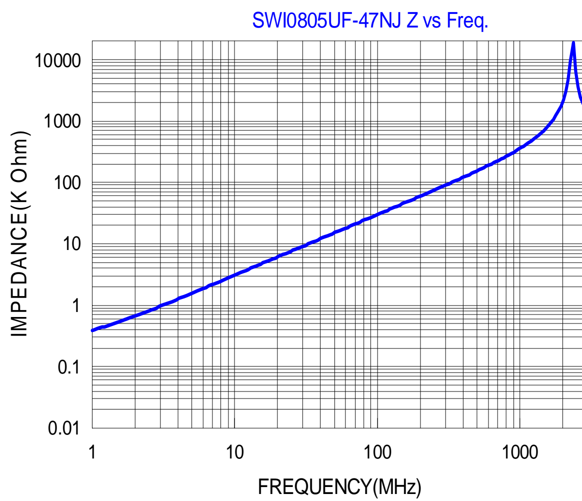


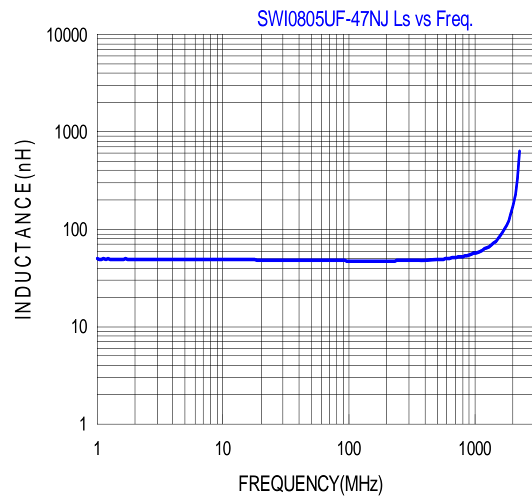

SWI0805UF-10NJ Z vs Freq.
IMPEDANCE(K Ohm)
10000
1000
100
10
1
0.1
0.01
1
10
100
1000
FREQUENCY(MHz)

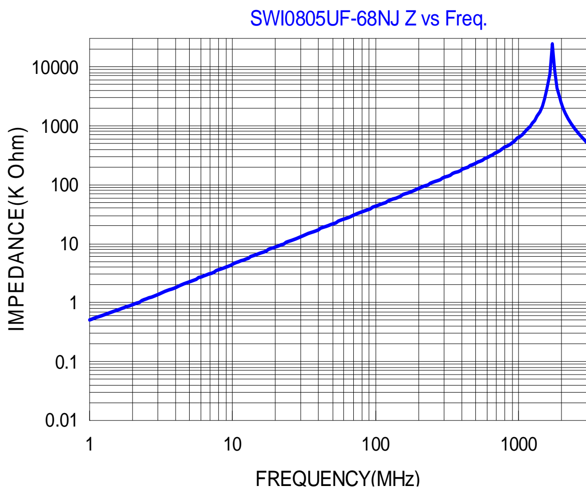

SWI0805UF-10N L Vs Freq
INDUCTANCE(nH)
10000
1000
100
10
1
1
10
100
1000
FREQUENCY(MHz)

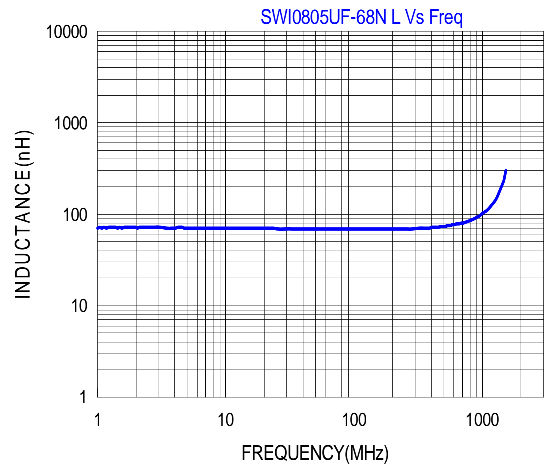

SWI0805UF-27NJ Z vs Freq.
IMPEDANCE(K Ohm)
1000
100
10
1
0.1
0.01
1
10
100
1000
FREQUENCY(MHz)

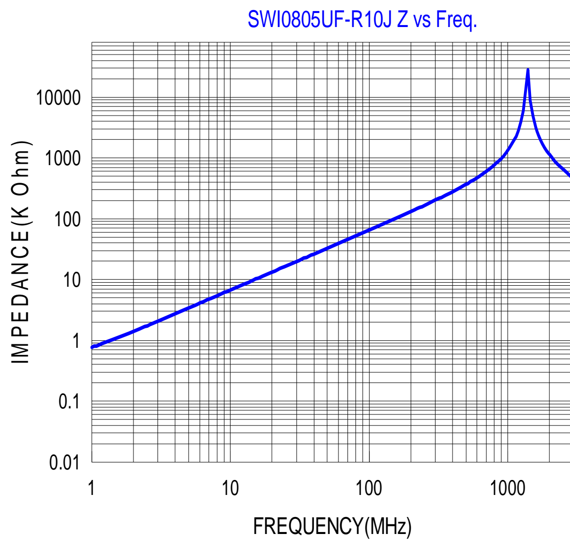

SWI0805UF-27N Ls VS Freq
INDUCTANCE(nH)
10000
1000
100
10
1
1
10
100
1000
FREQUENCY(MHz)

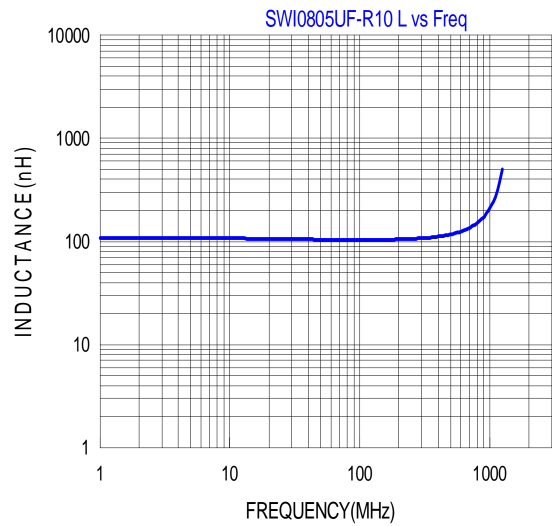

SWI0805UF-47NJ Z vs Freq.
IMPEDANCE(K Ohm)
10000
1000
100
10
1
0.1
0.01
1
10
100
1000
FREQUENCY(MHz)

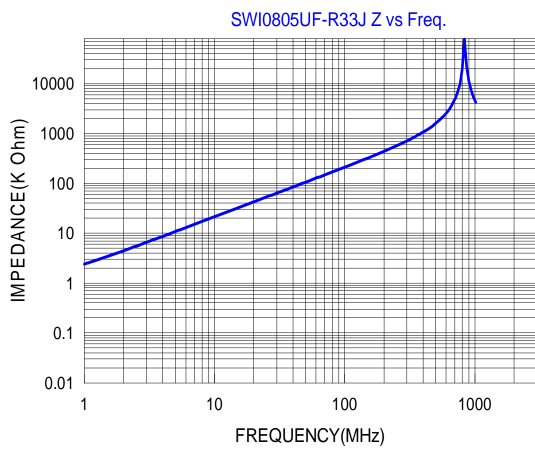

SWI0805UF-47NJ Ls vs Freq.
INDUCTANCE(nH)
10000
1000
100
10
1
1
10
100
1000
FREQUENCY(MHz)

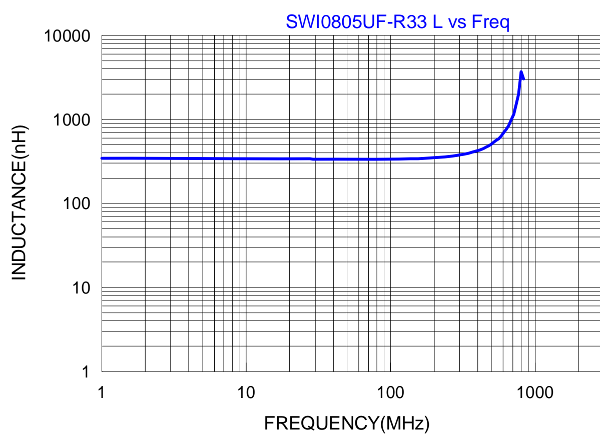

SWI0805UF-68NJ Z vs Freq.
IMPEDANCE(K Ohm)
10000
1000
100
10
1
0.1
0.01
1
10
100
1000
FREQUENCY(MHz)


SWI0805UF-68N L Vs Freq
INDUCTANCE(nH)
10000
1000
100
10
1
1
10
100
1000
FREQUENCY(MHz)


SWI0805UF-R10J Z vs Freq.
IMPEDANCE(K Ohm)
10000
1000
100
10
1
0.1
0.01
1
10
100
1000
FREQUENCY(MHz)

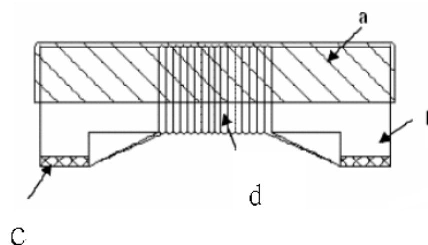

SWI0805UF-R10 L vs Freq
INDUCTANCE(nH)
10000
1000
100
10
1
1
10
100
1000
FREQUENCY(MHz)


SWI0805UF-R33J Z vs Freq.
IMPEDANCE(K Ohm)
10000
1000
100
10
1
0.1
0.01
1
10
100
1000
FREQUENCY(MHz)


SWI0805UF-R33 L vs Freq
INDUCTANCE(nH)
10000
1000
100
10
1
1
10
100
1000
FREQUENCY(MHz)

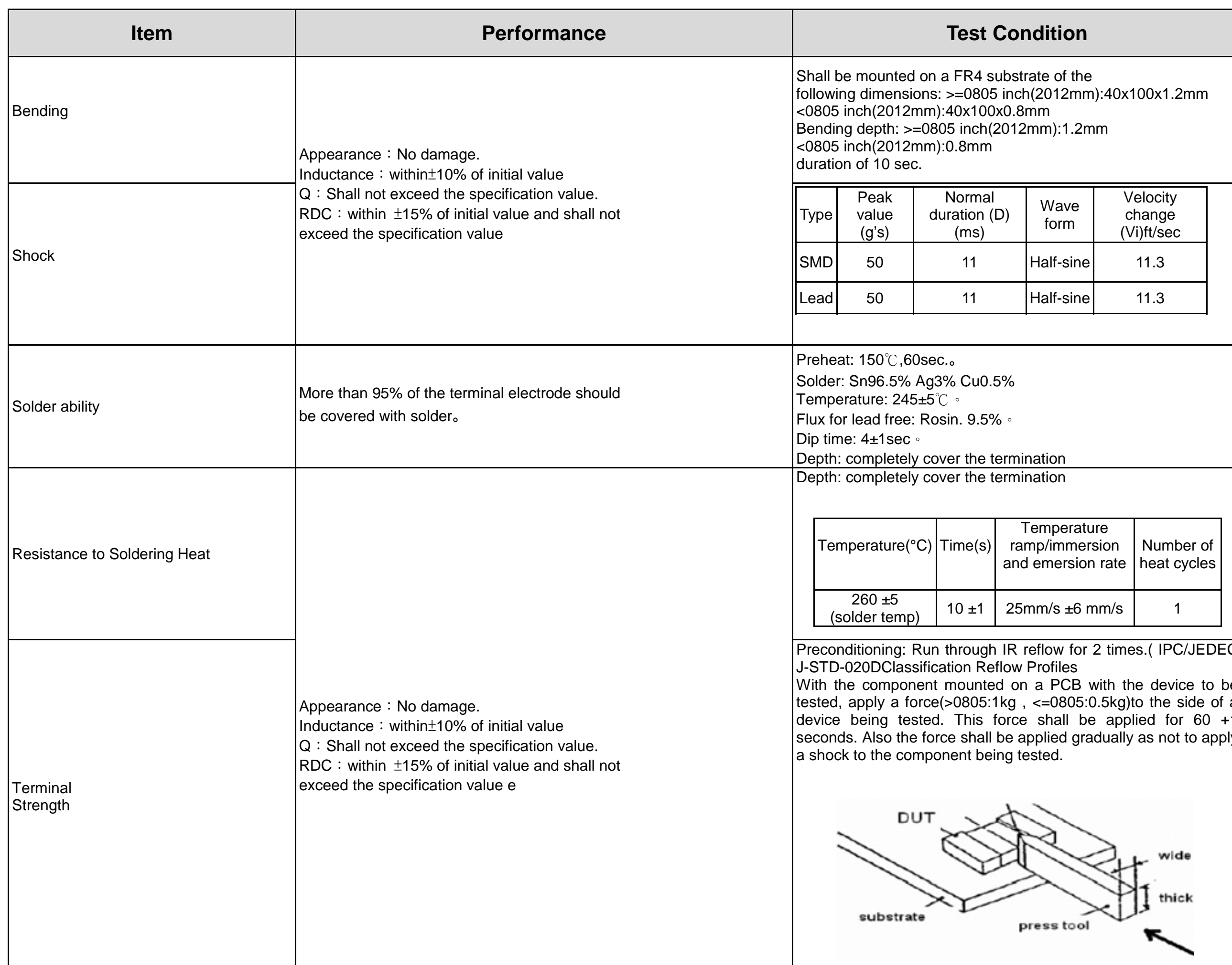
5. Materials

No.	Description	Specification
a.	Upper Plate	UV Glue
b.	Core	Ceramics Core
c	Termination	Tin Pb Free
d	Wire	Enameled Copper Wire



6. Reliability and Test Condition

<table>
<tr><th>Item</th><th>Performance</th><th>Test Condition</th></tr>
<tr><td>Operating temperature</td><td>-40~+125℃ (Including self - temperature rise)</td><td></td></tr>
<tr><td>Storage temperature</td><td>-40~+125℃ (on board)</td><td></td></tr>
<tr><td colspan="3">Electrical Performance Test</td></tr>
<tr><td>Inductance L</td><td rowspan="6">Refer to standard electrical characteristic list</td><td rowspan="2">Agilent-4291, Agilent-4287
Agilent-4192, Agilent-4285</td></tr>
<tr><td>Q</td></tr>
<tr><td>SRF</td><td>Agilent-4291
Agilent-4192</td></tr>
<tr><td>DC Resistance</td><td>Agilent-34420A</td></tr>
<tr><td rowspan="2">Rated Current</td><td rowspan="2">Applied the current to coils, the inductance change shall be less than 20% to initial value.</td></tr>
<tr></tr>
<tr><td>Reliability Test</td><td></td><td></td></tr>
<tr><td>Life Test</td><td rowspan="5">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</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDECJ-STD-020DClassification Reflow Profiles)
Temperature： 125±2℃
Applied current：rated current
Duration：1000±12hrs
Measured at room temperature after placing for 24±2 hrs.</td></tr>
<tr><td>Load Humidity</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDECJ-STD-020DClassification Reflow Profiles)
Humidity：85±2% R.H,
Temperature：85℃±2℃
Duration：1000hrs Min. with 100% rated current
Measured at room temperature after placing for 24±2 hrs.</td></tr>
<tr><td>Moisture Resistance</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDECJ-STD-020DClassification Reflow Profiles)
1. Baked at50℃ for 25hrs, measured at room temperature after placing for 4 hrs.
2. Raise temperature to 65±2℃ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25℃ in 2.5hrs.
3. Raise temperature to 65±2℃ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25℃ in 2.5hrs,keep at 25℃ for 2 hrs then keep at -10℃ for 3 hrs
4. Keep at 25℃ 80-100%RH for 15min and vibrate at the frequency of 10 to 55 Hz to 10 Hz, measure at room temperature after placing for 1~2 hrs.</td></tr>
<tr><td>Thermal shock</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDECJ-STD-020DClassification Reflow Profiles)
Condition for 1 cycle
Step1：-40±2℃ 30±5min
Step2：25±2℃ ≦0.5min
Step3：125±2℃ 30±5min
Number of cycles： 500
Measured at room fempraturc after placing for 24±2 hrs.</td></tr>
<tr><td>Vibration</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDECJ-STD-020DClassification Reflow Profiles)
Oscillation Frequency: 10～2K～10Hz for 20 minutes
Equipment： Vibration checker
Total Amplitude:1.52mm±10%
Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations)。</td></tr>
</table>

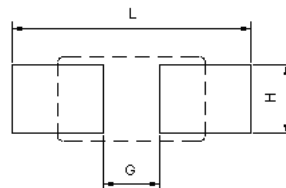


<table>
<tr><th>Item</th><th>Performance</th><th>Test Condition</th></tr>
<tr><td>Bending</td><td rowspan="2">Appearance：No damage.
Inductance：within±10% of initial value
Q：Shall not exceed the specification value.
RDC：within ±15% of initial value and shall not exceed the specification value</td><td>Shall be mounted on a FR4 substrate of the following dimensions: >=0805 inch(2012mm):40x100x1.2mm
<0805 inch(2012mm):40x100x0.8mm
Bending depth: >=0805 inch(2012mm):1.2mm
<0805 inch(2012mm):0.8mm
duration of 10 sec.</td></tr>
<tr><td>Shock</td><td><table>
<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>
<tr><td>SMD</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr>
<tr><td>Lead</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr>
</table></td></tr>
<tr><td>Solder ability</td><td>More than 95% of the terminal electrode should be covered with solder。</td><td>Preheat: 150℃,60sec.。
Solder: Sn96.5% Ag3% Cu0.5%
Temperature: 245±5℃。
Flux for lead free: Rosin. 9.5%。
Dip time: 4±1sec。
Depth: completely cover the termination</td></tr>
<tr><td>Resistance to Soldering Heat</td><td rowspan="2">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 e</td><td>Depth: completely cover the termination<table>
<tr><th>Temperature(°C)</th><th>Time(s)</th><th>Temperature ramp/immersion and emersion rate</th><th>Number of heat cycles</th></tr>
<tr><td>260 ±5 (solder temp)</td><td>10 ±1</td><td>25mm/s ±6 mm/s</td><td>1</td></tr>
</table></td></tr>
<tr><td>Terminal Strength</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles
With the component mounted on a PCB with the device to be tested, apply a force(>0805:1kg , <=0805:0.5kg)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.
</td></tr>
</table>

7. Soldering and Mounting

7-1. Recommended PC Board Pattern

Chip size							Land Patterns For Reflow Soldering		
Series	Type	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	L(mm)	G(mm)	H(mm)
SWI	0805	2.29max.	1.73max.	1.52max	0.51 ref	0.44±0.1	2.80	1.25	1.78



7-2. Soldering

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

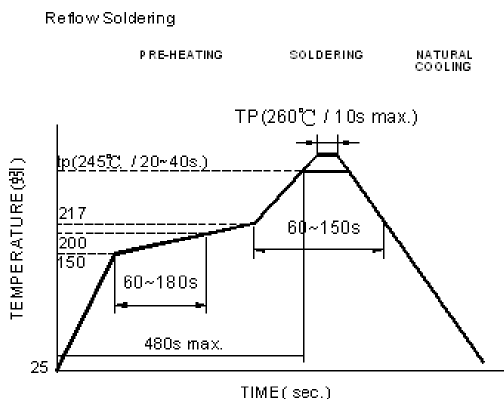
7-2.1 Solder re-flow:

Recommended temperature profiles for re-flow soldering in Figure 1.

7-2.2 Soldering Iron(Figure 2):

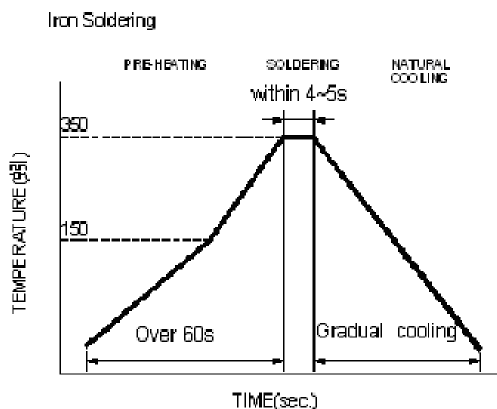
Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

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



Reflow times: 3 times max.

Fig.1

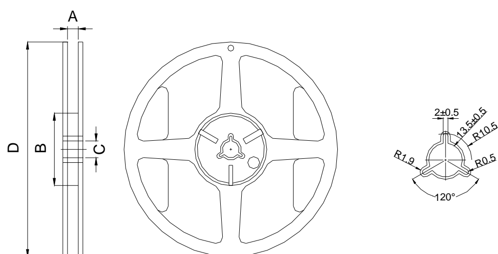


Iron Soldering times: 1 times max.

Fig.2

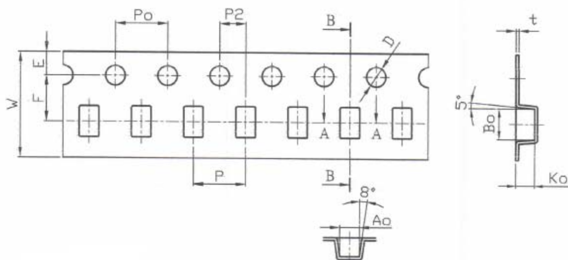
8. Packaging Information

8-1. Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	8.4±0.5	60±2	13.5±0.5	178±2

8-2. Tape Dimension / 8mm

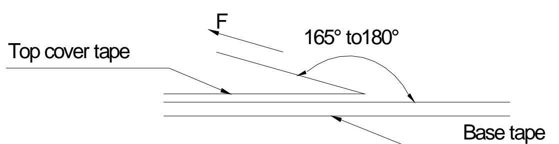


Series	W(mm)	P(mm)	E(mm)	F(mm)	P2(mm)	D(mm)	P0(mm)	A0(mm)	B0(mm)	K0(mm)	t(mm)
SWI0805UF	8.00±0.10	4.00±0.10	1.75±0.10	3.50±0.05	2.00±0.05	1.50+0.10/-0.00	4.00±0.10	1.80±0.10	2.30±0.10	1.60±0.10	0.23±0.05

8-3. Packaging Quantity

Chip size	0805
Reel	2000
Reel Size	7"x8mm

8-4. 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. (℃)	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-020D standard-MSL, level 1.
2. Temperature and humidity conditions: Less than 40℃ 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.