SMD Power Inductor

TMPA0603S-Series(N)-D

ECN HISTORY LIST

REV	DATE	DESCRIPTION	APPROVED	CHECKED	DRAWN
1.0	15/07/02	新發行	楊祥忠	詹偉特	何秦芝
備注					

SMD Power Inductor

TMPA0603S-Series(N)-D

1. Features

1. Shielded construction.
2. Capable of corresponding high frequency (5MHz).
3. Low loss realized with low DCR.
4. High performance (Isat) realized by metal dust core.
5. Ultra low buzz noise, due to composite construction.
6. 100% Lead(Pb)-Free and RoHS compliant.

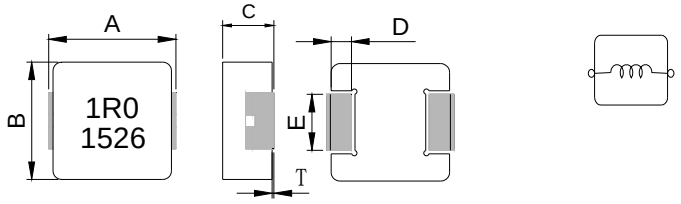
Halogen-free

Pb-free

2. Applications

1. DC/DC converters in distributed power systems.
2. DC/DC converter for Field Programmable Gate Array(FPGA).
3. Battery powered devices.
4. Thin type on-board power supply module for exchanger.
5. VRM for server.
6. High current, low profile POL converters.
7. PDA/notebook/desktop/server and battery powered devices.

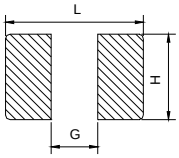
3. Dimensions



Series	A	B	C	D	E	T
TMPA0603	7.1±0.3	6.6±0.2	2.8±0.2	1.6±0.3	3.0±0.2	0~0.15

Unit:mm

Recommend PC Board Pattern



L(mm)	G(mm)	H(mm)
8.0	3.7	3.4

Note: Only for reference.

4. Part Numbering

TMPA	0603	S	-	1R0	MN	-	D
A	B	C		D	E		F

A: Series
B: Dimension — BxC
C: Type — Standard.
D: Inductance — R10=0.1uh，1R0=1.0uh，100=10uh，101=100uh，102=1000uh.
E: Inductance Tolerance — K=±10%，L=±15%，M=±20%，N=±25%，Y=±30%
F: Code — Marking: Black.1R0 and 1526(15 YY, 26 WW,follow production date).

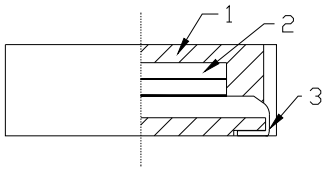
5. Specification

Part Number	Inductance L0 A(uH) ±20%	Heat Rating Current DC Typ (A) Irms.	Saturation Current DC Typ (A)I sat	DCR (mΩ)Typ	DCR (mΩ)Max
TMPA0603S-R15YN-D	0.15±30%	30	40	1.7	2.1
TMPA0603S-R22MN-D	0.22	23	34	2	2.5
TMPA0603S-R33MN-D	0.33	21	25	2.8	3.4
TMPA0603S-R36MN-D	0.36	20	24	3.3	3.9
TMPA0603S-R47MN-D	0.47	18	20	3.4	4
TMPA0603S-R56MN-D	0.56	16.5	18	3.9	4.5
TMPA0603S-R68MN-D	0.68	16	17	4.7	5.3
TMPA0603S-R82MN-D	0.82	14	16	5.4	6
TMPA0603S-1R0MN-D	1.00	12	15	6.7	7.4
TMPA0603S-1R2MN-D	1.20	10	14	7.7	9.5
TMPA0603S-1R5MN-D	1.50	10	14	10.2	12.1
TMPA0603S-2R2MN-D	2.20	8	10	13.5	15
TMPA0603S-3R3MN-D	3.30	6.5	9.5	19	22
TMPA0603S-4R7MN-D	4.70	5.5	6.5	28	33
TMPA0603S-5R6MN-D	5.60	5.5	6	39	42
TMPA0603S-6R8MN-D	6.80	4.5	6	43	50
TMPA0603S-8R2MN-D	8.20	4.5	6	54	60
TMPA0603S-100MN-D	10.0	4	5.5	62	68
TMPA0603S-150MN-D	15.0	3	4.5	110	140
TMPA0603S-220MN-D	22.0	2.5	3	150	190

Note:

1. Test frequency : Ls : 100KHz /1.0V.
2. All test data referenced to 25℃ ambient.
3. Testing Instrument(or equ) : L: HP4284A,CH11025,CH3302,CH1320,CH1320S LCR METER / Rdc:CH16502,Agilent33420A MICRO OHMMETER.
4. Heat Rated Current (Irms) will cause the coil temperature rise approximately △T of 40℃
5. Saturation Current (Isat) will cause L0 to drop approximately 30%.
6. The part temperature (ambient + temp rise) should not exceed 125℃ under 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. Special inquiries besides the above common used types can be met on your requirement.

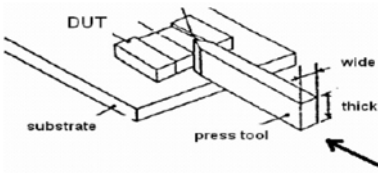
6. Material List



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

7. Reliability and Test Condition

Item	Performance	Test Condition
Operating temperature	-40~+125℃ (Including self - temperature rise)	
Storage temperature	-40~+125℃ (on board)	
Electrical Performance Test		
Inductance	Refer to standard electrical characteristics list.	HP4284A,CH11025,CH3302,CH1320,CH1320S LCR Meter.
DCR		CH16502,Agilent33420A Micro-Ohm Meter.
Saturation Current (Isat)	△L≦30% typical.	Saturation DC Current (Isat) will cause L0 to drop △L(%)(keep quickly).
Heat Rated Current (Irms)	Approximately △T≦40℃	Heat Rated Current (Irms) will cause the coil temperature rise △T(℃) without core loss. 1.Applied the allowed DC current(keep 1 min.). 2.Temperature measured by digital surface thermometer
Reliability Test		
Life Test	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 IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles) Temperature：125±2℃(Bead) Temperature： 85±2℃(Inductor) Applied current：rated current Duration：1000±12hrs Measured at room temperature after placing for 24±2 hrs
Load Humidity		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-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
Thermal shock		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Condition for 1 cycle Step1：-40±2℃ 30±5min Step2：25±2℃ ≦0.5min Step3：105±2℃ 30±5min Number of cycles： 500 Measured at room temperature after placing for 24±2 hrs
Vibration		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)。
Shock		<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>1500</td><td>0.5</td><td>Half-sine</td><td>15.4</td></tr><tr><td>Lead</td><td>100</td><td>6</td><td>Half-sine</td><td>12.3</td></tr></table>
Bending		Shall be mounted on a FR4 substrate of the following dimensions: >=0805:40x100x1.2mm <0805:40x100x0.8mm Bending depth: >=0805:1.2mm <0805:0.8mm duration of 10 sec.

<table>
<tr><th>Item</th><th>Performance</th><th>Test Method and Remarks</th></tr>
<tr><td>Soderability</td><td>More than 95% of the terminal electrode should be covered with solder。</td><td>Preheat: 150℃,60sec.。
Solder: Sn99.5%-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</td><td>Number of heat cycles: 1
<table><tr><td>Temperature (°C)</td><td>Time(s)</td><td>Temperature ramp/immersion and emersion rate</td></tr><tr><td>260 ±5(solder temp)</td><td>10 ±1</td><td>25mm/s ±6 mm/s</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>

8. Soldering and Mounting

(1) Soldering

Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. 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.

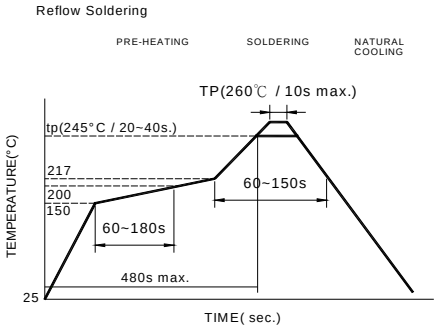
(2) Solder re-flow:

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

(3) Soldering Iron:

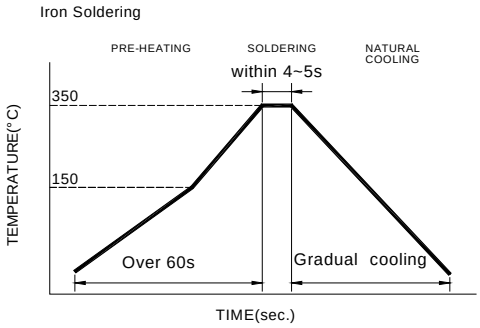
Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

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



Reflow times: 3 times max.

Fig.1



Iron Soldering times: 1 times max.

Fig.2

9. Friendly reminder

(1) When there are questions concerning measurement result : measurement shall be made after 48 ± 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.

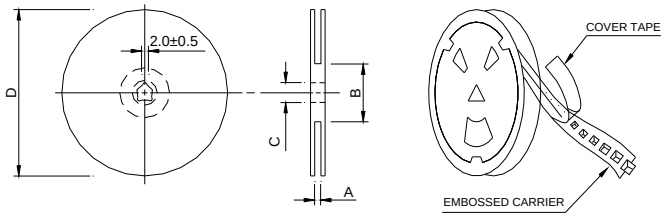
(4) Dielectric withstanding test with higher voltage than specific value will damage insulating material and shorten its life.

(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.

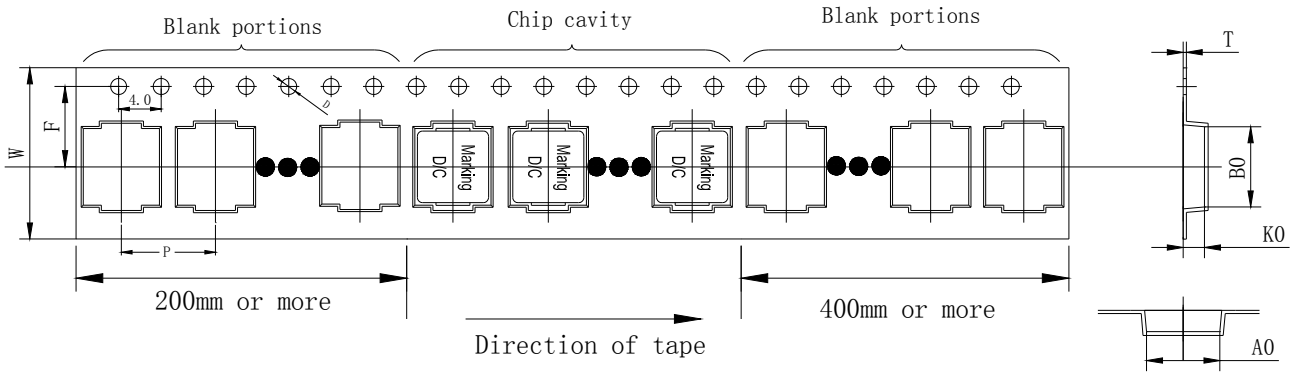
10. Packaging Information

(1) Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
13"x16mm	16.0±0.5	100±2	13.5±0.5	330

(2) Tape Dimension

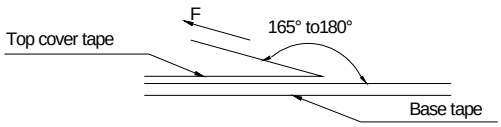


Series	Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	W(mm)	F(mm)	t(mm)	D(mm)
TMPA	0603	7.7±0.1	7.0±0.1	3.3±0.1	12.0±0.1	16±0.3	7.5±0.1	0.35±0.05	1.5±0.1

(3) Packaging Quantity

TMPA	0603
Chip / Reel	1000
Inner box	2000
Carton	8000

(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-C-2003 of 4.11 stadnard).

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

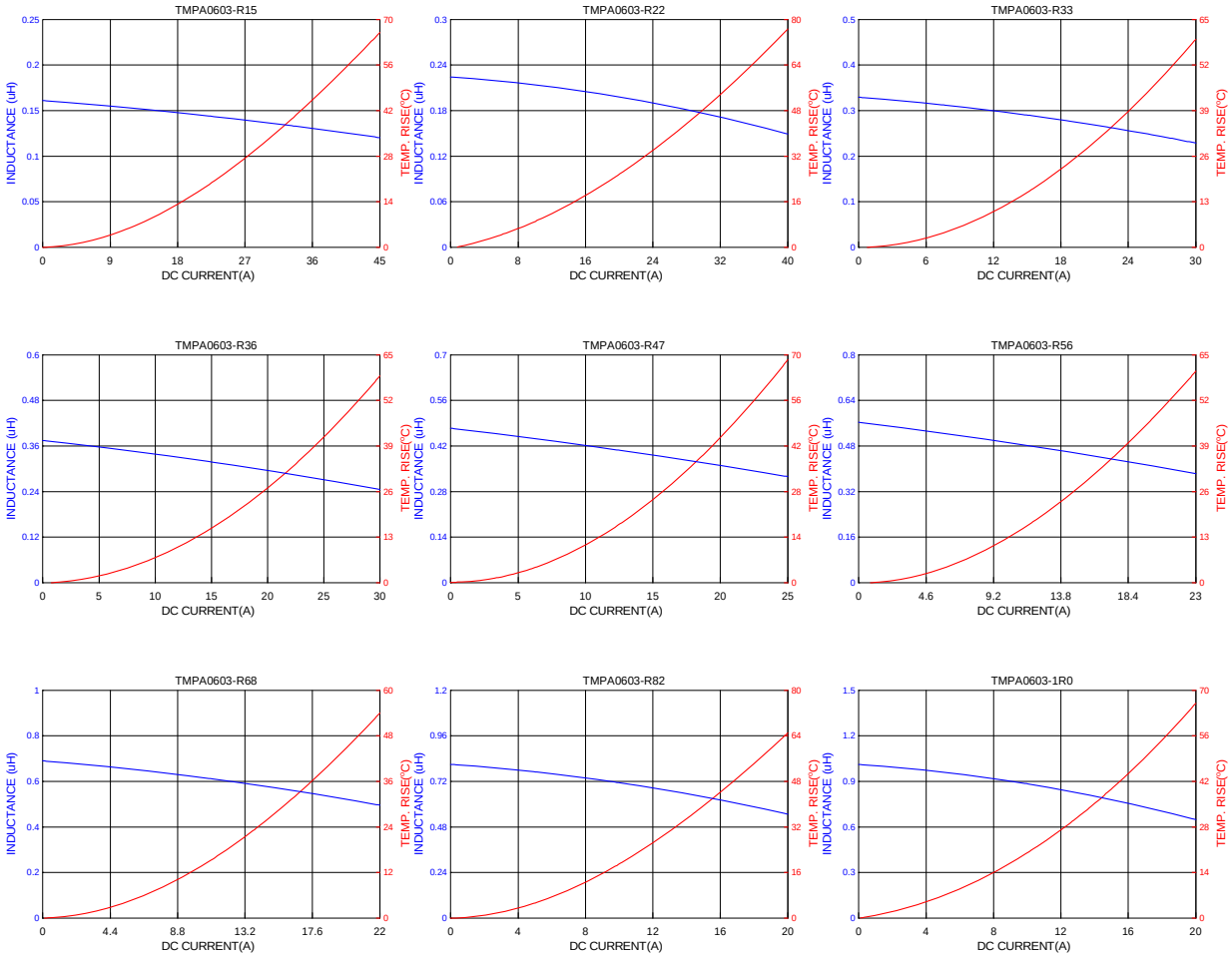
Application Notice

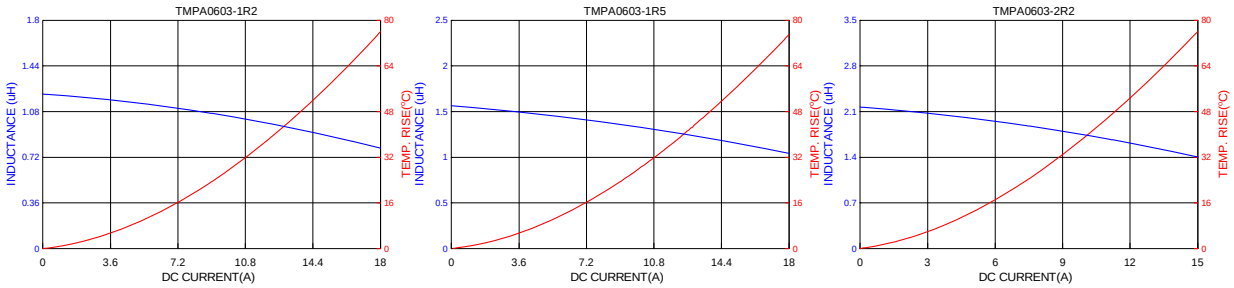
・Storage Conditions(component level)
To maintain the solderability of terminal electrodes:
1. TAI-TECH products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
2. Temperature and humidity conditions: Less than 40℃ and 60% RH.
3. Recommended products should be used within 12 months form the time of delivery.
4. The packaging material should be kept where no chlorine or sulfur exists in the air.

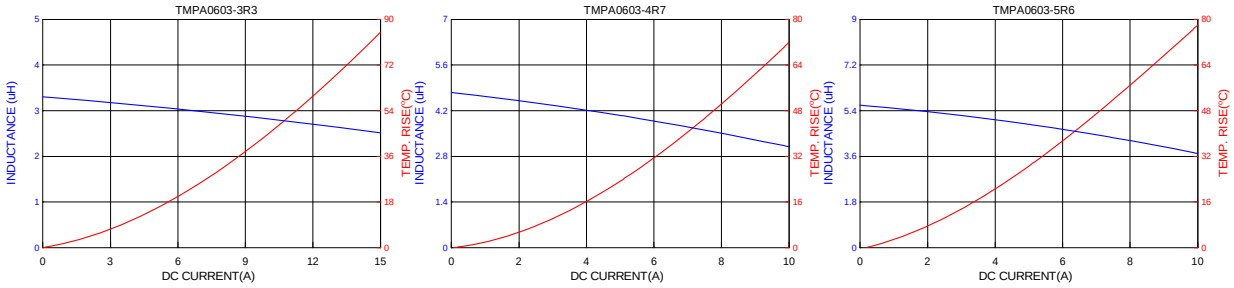
・Transportation
1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

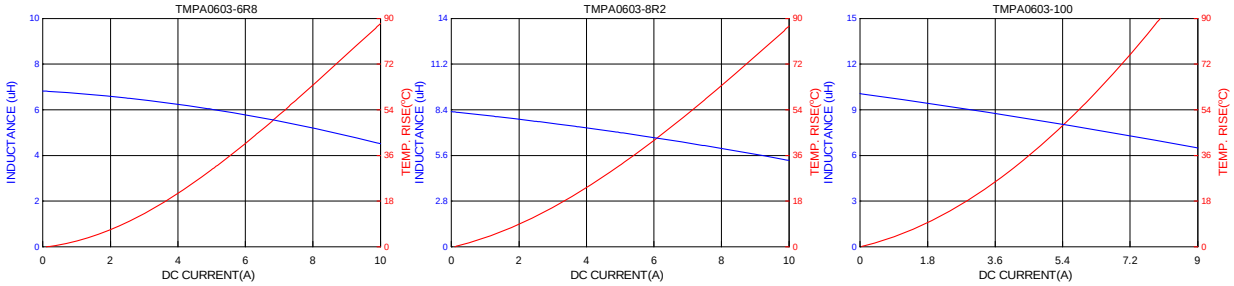
11. Typical Performance Curves

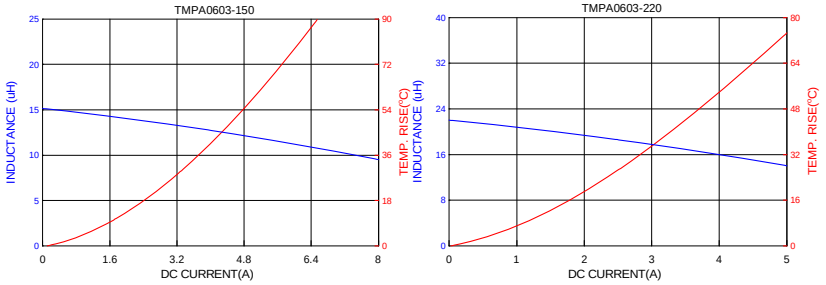
a. Inductance vs. DC Current , Temperature vs. DC Current



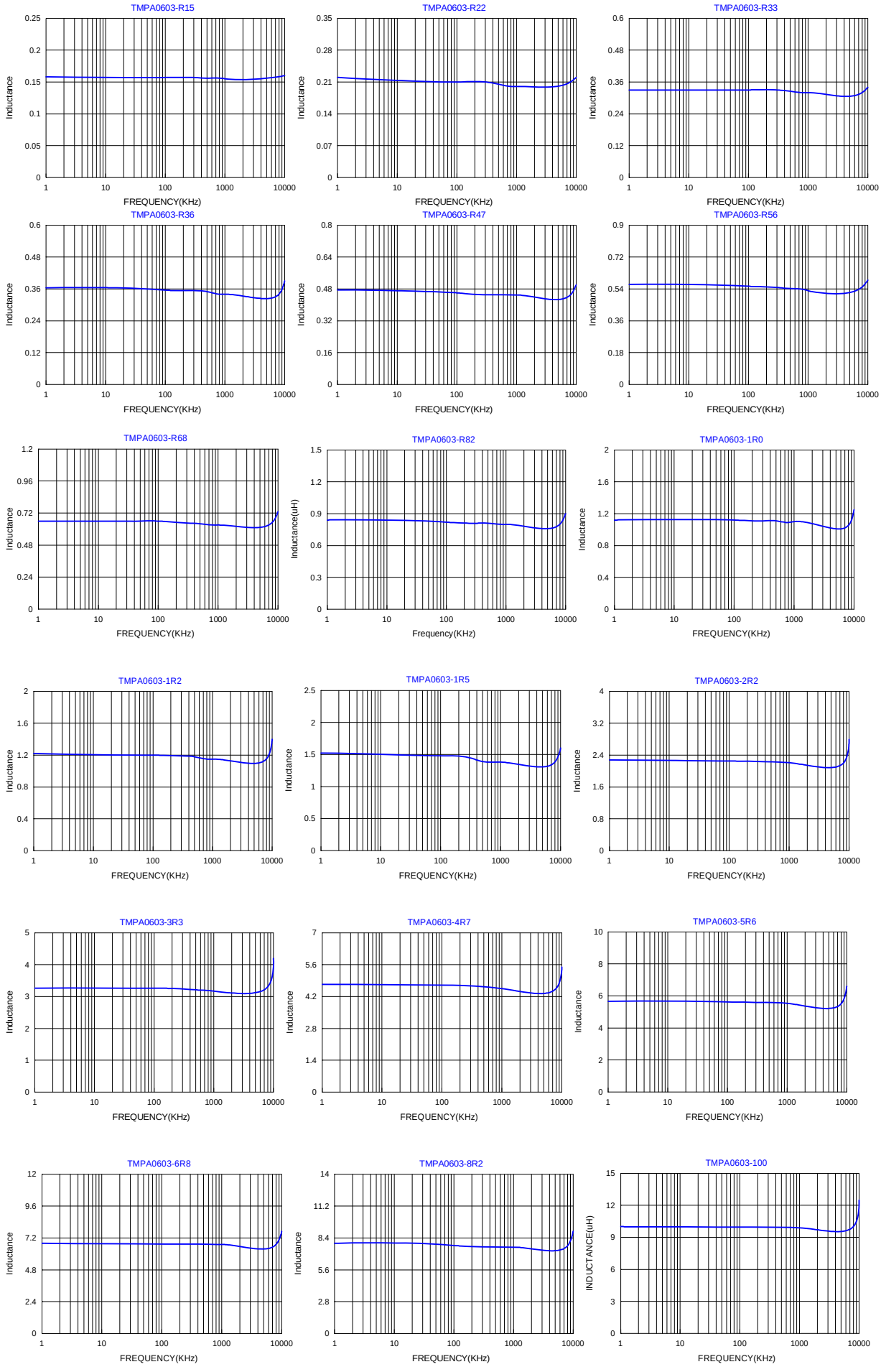

TMPA0603-1R2
INDUCTANCE (uH)
TEMP. RISE(°C)
DC CURRENT(A)
TMPA0603-1R5
INDUCTANCE (uH)
TEMP. RISE(°C)
DC CURRENT(A)
TMPA0603-2R2
INDUCTANCE (uH)
TEMP. RISE(°C)
DC CURRENT(A)


TMPA0603-3R3
INDUCTANCE (uH)
TEMP. RISE(°C)
DC CURRENT(A)
TMPA0603-4R7
INDUCTANCE (uH)
TEMP. RISE(°C)
DC CURRENT(A)
TMPA0603-5R6
INDUCTANCE (uH)
TEMP. RISE(°C)
DC CURRENT(A)

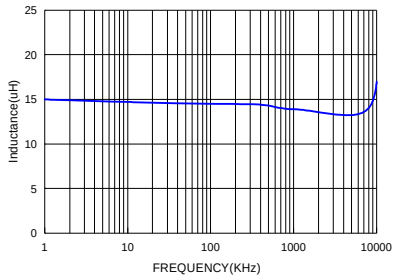

TMPA0603-6R8
INDUCTANCE (uH)
TEMP. RISE(°C)
DC CURRENT(A)
TMPA0603-8R2
INDUCTANCE (uH)
TEMP. RISE(°C)
DC CURRENT(A)
TMPA0603-100
INDUCTANCE (uH)
TEMP. RISE(°C)
DC CURRENT(A)


TMPA0603-150
INDUCTANCE (uH)
TEMP. RISE(°C)
DC CURRENT(A)
TMPA0603-220
INDUCTANCE (uH)
TEMP. RISE(°C)
DC CURRENT(A)

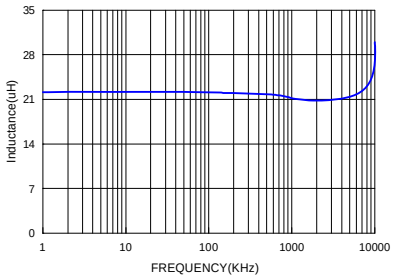
b. Inductance vs. Frequency



TMPA0603-150

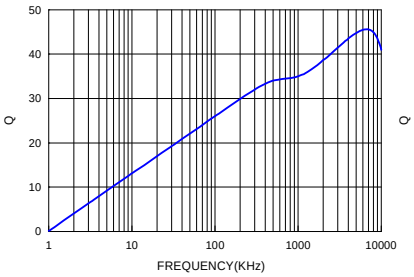


TMPA0603-220

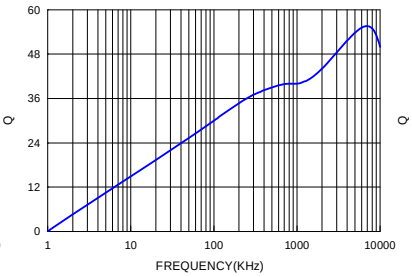


c. Q vs. Frequency

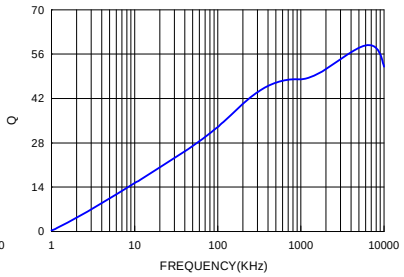
TMPA0603-R15



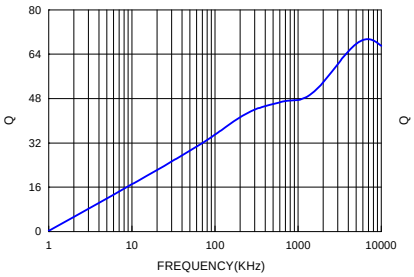
TMPA0603-R22



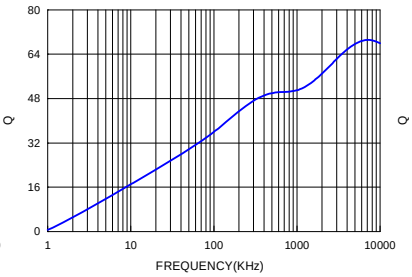
TMPA0603-R33



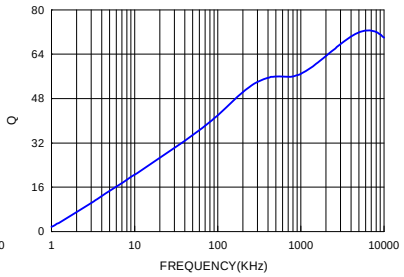
TMPA0603-R36



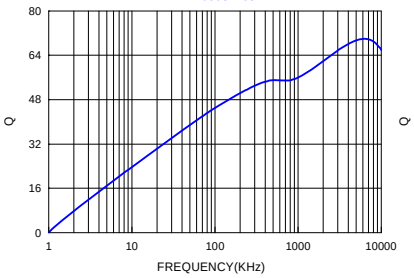
TMPA0603-R47



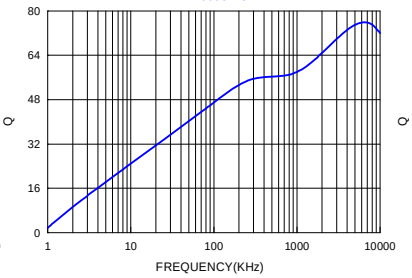
TMPA0603-R56



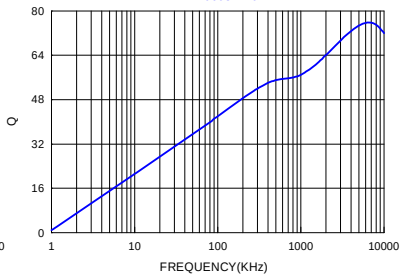
TMPA0603-R68



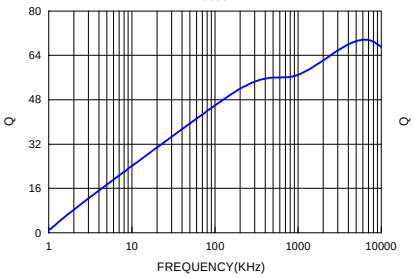
TMPA0603-R82



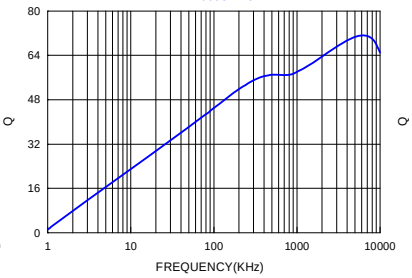
TMPA0603-1R0



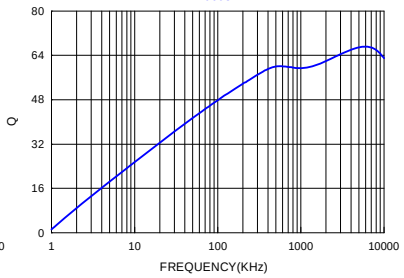
TMPA0603-1R2



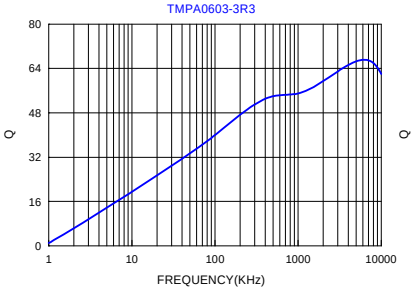
TMPA0603-1R5



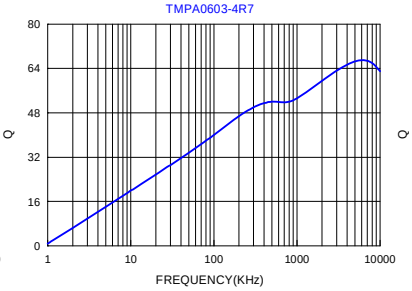
TMPA0603-2R2



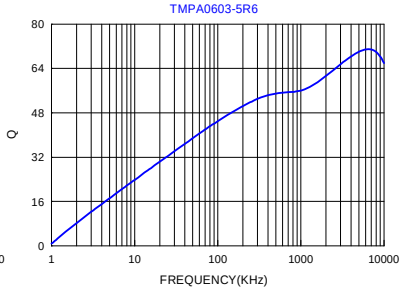
TMPA0603-3R3



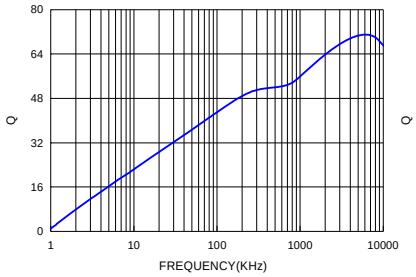
TMPA0603-4R7



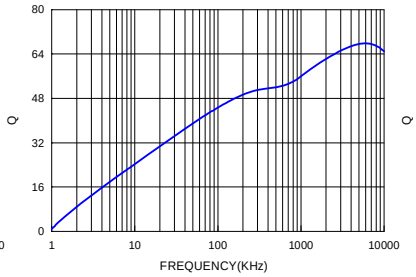
TMPA0603-5R6



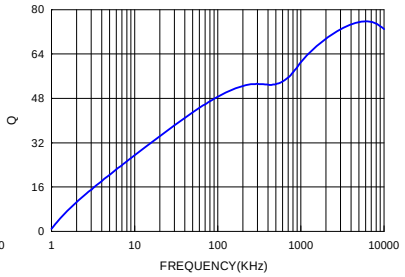
TMPA0603-6R8



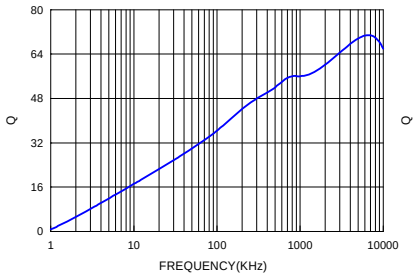
TMPA0603-8R2



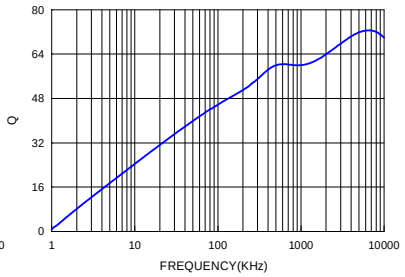
TMPA0603-100



TMPA0603-150



TMPA0603-220



X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Fixed Inductors ***category:***

Click to view products by TAITEC ***manufacturer:***

Other Similar products are found below :

CR32NP-151KC CR32NP-180KC CR32NP-181KC CR32NP-1R5MC CR32NP-390KC CR32NP-3R9MC CR32NP-680KC CR32NP-820KC CR32NP-8R2MC CR43NP-390KC CR43NP-560KC CR43NP-680KC CR54NP-181KC CR54NP-470LC CR54NP-820KC CR54NP-8R5MC 70F224AI MGDQ4-00004-P MHL1ECTTP18NJ MHQ1005P10NJ MHQ1005P1N0S MHQ1005P2N4S MHQ1005P3N6S MHQ1005P5N1S MHQ1005P8N2J PE-51506NL PE-53601NL PE-53602NL PE-53630NL PE-53824SNLT PE-92100NL PG0434.801NLT PG0936.113NLT 9220-20 9310-16 PM06-2N7 PM06-39NJ A01TK 1206CS-471XJ HC2LP-R47-R HC2-R47-R HC3-2R2-R HCF1305-3R3-R 1206CS-151XG RCH664NP-140L RCH664NP-4R7M RCH8011NP-221L RCP1317NP-332L RCP1317NP-391L RCR1010NP-470M