SPECIFICATION

SPEC. No. U227NAA00270

DATE: November 11, 2013

To

BBK

CUSTOMER'S PRODUCT NAME	TDK'S PRODUCT NAME
	MLG0603P series

RECEIPT CONFIRMATION

DATE: YEAR MONTH DAY

TDK Corporation

Sales

Electronic Components
Sales & Marketing Group

Engineering

TDK-EPC Corporation
Magnetics Business Group
Multilayer Products Business Unit

APPROVED	PERSON IN CHARGE

APPROVED	CHECKED	PERSON IN CHARGE
Y.Abe	K.Sasaki	S.Abe

Confidential

CAUTION WHEN HANDLING

Before use the products, please read this specification.

CAUTION FOR SAFETY USING

When use the products, be careful to the mentioned below for safety using.

CAUTION

* Do not use and store the product in condition of gas corrosion (Salt, Acid, Alkaline).
* The product must be preheated before soldering. Difference between preheat and soldering temperature must be within 150°C.
* Rework by soldering iron ; Please keep the mentioned conditions in this specification.
* In case of insert P.C. Board on chassis, do not add mechanical stress to the product.
* The product has self heat (temperature rise) by current, so keep margin for heat design.
* Be careful to arrange of non-magnetic shield type inductors.
  The error may be caused by magnetic field coupling.
* In case handle the products, please use wrist strap for ground static discharge on human body.
* The product keeps away from magnet or magnetized things.
* Do not use the product beyond the mentioned conditions in this specification.
* About an application

The products listed on this specification sheet are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition. The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property. Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this specification sheet.

1)Aerospace/Aviation equipment
2)Medical equipment which directly endanger human life
3)Power-generation control equipment
4)Atomic energy-related equipment
5)Seabed equipment
6)Transportation control equipment
7)Military equipment
8)Safety equipment
9)Other applications that are not considered general-purpose applications

If you intend to use the products in the following applications, please contact our sales office.

+ Transportation equipment (cars, electric trains, ships, etc.),
+ Public information-processing equipment,
+ Electric heating apparatus / burning equipment,
+ Disaster prevention/crime prevention equipment

When using this product in general-purpose applications, you are kindly requested to take into consideration securing protection circuit/equipment or providing backup circuits, etc., to ensure higher safety.

1. SCOPE

This specification applies to the MULTILAYER CERAMIC COIL (MLG0603P series).
It is delivered to BBK.

2. PRODUCT NAME

Product name decided in this specification is due to Table3 on page3 to 6.

3. CONTENT MENTIONED

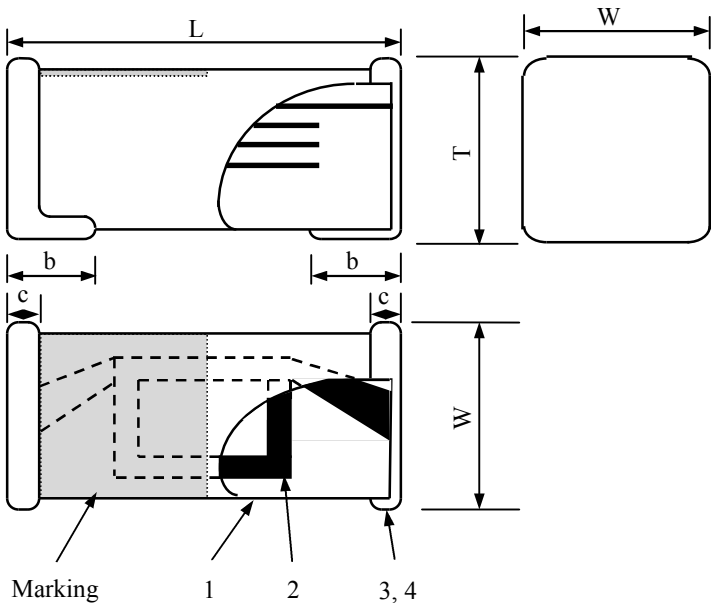
Measurement condition:
Unless otherwise specified, the standard measurement conditions are as follow;
Ambient temperature : 5°C to 35°C
Relative humidity : 35 % to 85 %
Air pressure : 86 to 106kPa
If there is any doubt about the results, measurements shall be made within the following conditions;
Ambient temperature : 20 ± 2°C
Relative humidity : 60 % to 70 %
Air pressure : 86 to 106kPa

Revision Records

Rev.	Date	Revised By	Change Description

	Initial Date	Spec. No.
	November 11, 2013	U227NAA00270

1-1) Outline drawing and Dimension



[Figure 1]

*) Take care of direction of marking to prevent inductance unevenness.
(There is no polarity, however unevenness of inductance could occur)

[Table 1]

Dimension and Tolerance (mm)				
L	W	T	b	c
0.60±0.03	0.30±0.03	0.30±0.03	0.15±0.05	0.09±0.04

1-2) Making of material

[Table 2]

No.	Item	Material
1	Core	Dielectric ceramics
2	Internal electrode	Ag
3	Terminal electrode (Inside)	Ag
4	Terminal electrode (Outside)	Electro plating (Ni-Sn)

[Table 3]

Customer's Product Name	TDK's Product Name	Inductance L[nH] and Tolerance		L,Q test freq. [MHz]	Q Min.	S.R.F. [GHz] Min.	R.D.C. [ohm] Max.	I.D.C. [mA] Max.
	MLG0603P0N6BTZ10	0.60	B:±0.1nH C:±0.2nH	500	-	10.0	0.06	1000
	MLG0603P0N6CTZ10							
	MLG0603P0N7BTZ10	0.70				10.0	0.06	1000
	MLG0603P0N7CTZ10							
	MLG0603P0N8BTZ10	0.80				10.0	0.06	1000
	MLG0603P0N8CTZ10							
	MLG0603P0N9BTZ10	0.90				10.0	0.06	1000
	MLG0603P0N9CTZ10							
	MLG0603P1N0BTZ10	1.00	B:±0.1nH C:±0.2nH S:±0.3nH		14	10.0	0.07	1000
	MLG0603P1N0CTZ10							
	MLG0603P1N0STZ10							
	MLG0603P1N1BTZ10	1.10				10.0	0.07	1000
	MLG0603P1N1CTZ10							
	MLG0603P1N1STZ10							
	MLG0603P1N2BTZ10	1.20				10.0	0.08	800
	MLG0603P1N2CTZ10							
	MLG0603P1N2STZ10							
	MLG0603P1N3BTZ10	1.30				10.0	0.08	800
	MLG0603P1N3CTZ10							
	MLG0603P1N3STZ10							
	MLG0603P1N4BTZ10	1.40				10.0	0.09	800
	MLG0603P1N4CTZ10							
	MLG0603P1N4STZ10							
	MLG0603P1N5BTZ10	1.50				10.0	0.10	800
	MLG0603P1N5CTZ10							
	MLG0603P1N5STZ10							
	MLG0603P1N6BTZ10	1.60				10.0	0.10	700
	MLG0603P1N6CTZ10							
	MLG0603P1N6STZ10							
	MLG0603P1N7BTZ10	1.70				10.0	0.10	700
	MLG0603P1N7CTZ10							
	MLG0603P1N7STZ10							
	MLG0603P1N8BTZ10	1.80				9.0	0.10	700
	MLG0603P1N8CTZ10							
	MLG0603P1N8STZ10							
	MLG0603P1N9BTZ10	1.90				9.0	0.10	600
	MLG0603P1N9CTZ10							
	MLG0603P1N9STZ10							
	MLG0603P2N0BTZ10	2.00				8.5	0.10	600
	MLG0603P2N0CTZ10							
	MLG0603P2N0STZ10							
	MLG0603P2N1BTZ10	2.10				8.0	0.10	600
	MLG0603P2N1CTZ10							
	MLG0603P2N1STZ10							
	MLG0603P2N2BTZ10	2.20				7.5	0.10	600
	MLG0603P2N2CTZ10							
	MLG0603P2N2STZ10							
	MLG0603P2N3BTZ10	2.30				7.5	0.20	600
	MLG0603P2N3CTZ10							
	MLG0603P2N3STZ10							

[Table 3]

Customer's Product Name	TDK's Product Name	Inductance L[nH] and Tolerance		L,Q test freq. [MHz]	Q Min.	S.R.F. [GHz] Min.	R.D.C. [ohm] Max.	I.D.C. [mA] Max.
	MLG0603P2N4BTZ10	2.40	B:±0.1nH C:±0.2nH S:±0.3nH	500	14	7.5	0.20	500
	MLG0603P2N4CTZ10							
	MLG0603P2N4STZ10							
	MLG0603P2N5BTZ10	2.50				7.5	0.20	500
	MLG0603P2N5CTZ10							
	MLG0603P2N5STZ10							
	MLG0603P2N6BTZ10	2.60				7.5	0.20	500
	MLG0603P2N6CTZ10							
	MLG0603P2N6STZ10							
	MLG0603P2N7BTZ10	2.70				7.5	0.20	500
	MLG0603P2N7CTZ10							
	MLG0603P2N7STZ10							
	MLG0603P2N8BTZ10	2.80				7.5	0.20	500
	MLG0603P2N8CTZ10							
	MLG0603P2N8STZ10							
	MLG0603P2N9BTZ10	2.90				7.5	0.20	500
	MLG0603P2N9CTZ10							
	MLG0603P2N9STZ10							
	MLG0603P3N0BTZ10	3.00				7.5	0.20	450
	MLG0603P3N0CTZ10							
	MLG0603P3N0STZ10							
	MLG0603P3N1BTZ10	3.10				7.5	0.20	450
	MLG0603P3N1CTZ10							
	MLG0603P3N1STZ10							
	MLG0603P3N2BTZ10	3.20				7.5	0.20	450
	MLG0603P3N2CTZ10							
	MLG0603P3N2STZ10							
	MLG0603P3N3BTZ10	3.30				7.5	0.20	450
	MLG0603P3N3CTZ10							
	MLG0603P3N3STZ10							
	MLG0603P3N4BTZ10	3.40				7.0	0.20	450
	MLG0603P3N4CTZ10							
	MLG0603P3N4STZ10							
	MLG0603P3N5BTZ10	3.50				6.5	0.20	450
	MLG0603P3N5CTZ10							
	MLG0603P3N5STZ10							
	MLG0603P3N6BTZ10	3.60				6.5	0.20	400
	MLG0603P3N6CTZ10							
	MLG0603P3N6STZ10							
	MLG0603P3N7BTZ10	3.70				6.5	0.20	400
	MLG0603P3N7CTZ10							
	MLG0603P3N7STZ10							
	MLG0603P3N8BTZ10	3.80				5.8	0.30	400
	MLG0603P3N8CTZ10							
	MLG0603P3N8STZ10							
	MLG0603P3N9BTZ10	3.90				5.8	0.30	400
	MLG0603P3N9CTZ10							
	MLG0603P3N9STZ10							

[Table 3]

Customer's Product Name	TDK's Product Name	Inductance L[nH] and Tolerance		L,Q test freq. [MHz]	Q Min.	S.R.F. [GHz] Min.	R.D.C. [ohm] Max.	I.D.C. [mA] Max.
	MLG0603P4N0BTZ10	4.00	B:±0.1nH C:±0.2nH S:±0.3nH	500	14	5.8	0.40	350
	MLG0603P4N0CTZ10							
	MLG0603P4N0STZ10							
	MLG0603P4N1BTZ10	4.10				5.8	0.40	350
	MLG0603P4N1CTZ10							
	MLG0603P4N1STZ10							
	MLG0603P4N2BTZ10	4.20				5.8	0.40	350
	MLG0603P4N2CTZ10							
	MLG0603P4N2STZ10							
	MLG0603P4N3STZ10	4.30	S:±0.3nH H:±3% J:±5%			5.8	0.40	350
	MLG0603P4N3HTZ10							
	MLG0603P4N3JTZ10							
	MLG0603P4N7STZ10	4.70				5.5	0.40	350
	MLG0603P4N7HTZ10							
	MLG0603P4N7JTZ10							
	MLG0603P5N1STZ10	5.10				5.5	0.40	350
	MLG0603P5N1HTZ10							
	MLG0603P5N1JTZ10							
	MLG0603P5N6STZ10	5.60				4.0	0.40	350
	MLG0603P5N6HTZ10							
	MLG0603P5N6JTZ10							
	MLG0603P6N2STZ10	6.20				4.0	0.70	300
	MLG0603P6N2HTZ10							
	MLG0603P6N2JTZ10							
	MLG0603P6N8HTZ10	6.80	H:±3% J:±5%			4.0	0.75	300
	MLG0603P6N8JTZ10							
	MLG0603P7N5HTZ10	7.50				4.0	0.80	300
	MLG0603P7N5JTZ10							
	MLG0603P8N2HTZ10	8.20				4.0	0.85	250
	MLG0603P8N2JTZ10							
	MLG0603P9N1HTZ10	9.10				4.0	0.90	250
	MLG0603P9N1JTZ10							
	MLG0603P10NHTZ10	10.0				4.0	0.95	250
	MLG0603P10NJTZ10							
	MLG0603P11NHTZ10	11.0				3.5	1.00	250
	MLG0603P11NJTZ10							
	MLG0603P12NHTZ10	12.0				3.5	1.10	250
	MLG0603P12NJTZ10							
	MLG0603P13NHTZ10	13.0				3.2	1.10	250
	MLG0603P13NJTZ10							
	MLG0603P15NHTZ10	15.0				3.2	1.20	250
	MLG0603P15NJTZ10							
	MLG0603P16NHTZ10	16.0				3.0	1.20	200
	MLG0603P16NJTZ10							
	MLG0603P18NHTZ10	18.0				3.0	1.40	200
	MLG0603P18NJTZ10							
	MLG0603P20NHTZ10	20.0				2.2	1.90	150
	MLG0603P20NJTZ10							

[Table 3]

Customer's Product Name	TDK's Product Name	Inductance L[nH] and Tolerance		L,Q test freq. [MHz]	Q Min.	S.R.F. [GHz] Min.	R.D.C. [ohm] Max.	I.D.C. [mA] Max.
	MLG0603P22NHTZ10	22.0	H:±3% J:±5%	500	14	2.2	1.90	150
	MLG0603P22NJTZ10							
	MLG0603P24NHTZ10	24.0				2.2	2.10	140
	MLG0603P24NJTZ10							
	MLG0603P27NHTZ10	27.0				2.2	2.10	140
	MLG0603P27NJTZ10							
	MLG0603P30NHTZ10	30.0				1.8	2.20	130
	MLG0603P30NJTZ10							
	MLG0603P33NHTZ10	33.0		300	10	1.8	2.20	130
	MLG0603P33NJTZ10							
	MLG0603P36NHTZ10	36.0				1.8	2.40	120
	MLG0603P36NJTZ10							
	MLG0603P39NHTZ10	39.0				1.8	2.40	120
	MLG0603P39NJTZ10							
	MLG0603P43NHTZ10	43.0				1.6	2.90	110
	MLG0603P43NJTZ10							
	MLG0603P47NHTZ10	47.0				1.6	2.90	110
	MLG0603P47NJTZ10							
	MLG0603P51NHTZ10	51.0				1.4	3.50	100
	MLG0603P51NJTZ10							
	MLG0603P56NHTZ10	56.0				1.4	3.50	100
	MLG0603P56NJTZ10							
	MLG0603P62NHTZ10	62.0				1.2	3.50	100
	MLG0603P62NJTZ10							
	MLG0603P68NHTZ10	68.0			9	1.2	3.50	100
	MLG0603P68NJTZ10							
	MLG0603P75NHTZ10	75.0				1.0	4.00	80
	MLG0603P75NJTZ10							
	MLG0603P82NHTZ10	82.0				1.0	4.00	80
	MLG0603P82NJTZ10							
	MLG0603P91NHTZ10	91.0				0.9	4.50	80
	MLG0603P91NJTZ10							
	MLG0603PR10HTZ10	100				0.9	4.50	80
	MLG0603PR10JTZ10							
	MLG0603PR11HTZ10	110				0.8	5.00	80
	MLG0603PR11JTZ10							
	MLG0603PR12HTZ10	120				0.8	5.00	80
	MLG0603PR12JTZ10							

[Table 4]

TDK's Product Name	Reliability Spec.		L,Q Test freq. [MHz]
	Inductance L[nH]	Q	
MLG0603P0N6	Initial Value±0.3nH	-	500
MLG0603P0N7			
MLG0603P0N8			
MLG0603P0N9			
MLG0603P1N0		Initial Value±30%	
MLG0603P1N1			
MLG0603P1N2			
MLG0603P1N3			
MLG0603P1N4			
MLG0603P1N5			
MLG0603P1N6			
MLG0603P1N7			
MLG0603P1N8			
MLG0603P1N9			
MLG0603P2N0			
MLG0603P2N1			
MLG0603P2N2			
MLG0603P2N3			
MLG0603P2N4			
MLG0603P2N5			
MLG0603P2N6			
MLG0603P2N7			
MLG0603P2N8			
MLG0603P2N9			
MLG0603P3N0			
MLG0603P3N1			
MLG0603P3N2			
MLG0603P3N3			
MLG0603P3N4			
MLG0603P3N5			
MLG0603P3N6			
MLG0603P3N7			
MLG0603P3N8			
MLG0603P3N9			
MLG0603P4N0			
MLG0603P4N1			
MLG0603P4N2			
MLG0603P4N3			
MLG0603P4N7			
MLG0603P5N1			
MLG0603P5N6			
MLG0603P6N2			

[Table 4]

TDK's Product Name	Reliability Spec.		L,Q Test freq. [MHz]
	Inductance L[nH]	Q	
MLG0603P6N8	Initial Value±5%	Initial Value±30%	500
MLG0603P7N5			
MLG0603P8N2			
MLG0603P9N1			
MLG0603P10N			
MLG0603P11N			
MLG0603P12N			
MLG0603P13N			
MLG0603P15N			
MLG0603P16N			
MLG0603P18N			
MLG0603P20N			
MLG0603P22N			
MLG0603P24N			
MLG0603P27N			
MLG0603P30N			
MLG0603P33N			300
MLG0603P36N			
MLG0603P39N			
MLG0603P43N			
MLG0603P47N			
MLG0603P51N			
MLG0603P56N			
MLG0603P62N			
MLG0603P68N			
MLG0603P75N			
MLG0603P82N			
MLG0603P91N			
MLG0603PR10			
MLG0603PR11			
MLG0603PR12			

4-1) Inductance and Q values

4-1-1) Test equipment and test fixture

Test equipment: IMPEDANCE ANALYZER 4291A HP (or equivalent)

Test fixture: 16197A Agilent (or equivalent) *Residual inductance of short bar = 0.43nH

4-1-2) Test method

Set the chip on test fixture. Test frequency is due to Table 3.

4-2) Direct Current Resistance (R.D.C.)

4-2-1) Test equipment

Test equipment: DEGITAL MILLIOHM METER Type7561 YOKOGAWA (or equivalent)

4-3) Self Resonance Frequency (S.R.F.)

4-3-1) Test equipment

Test equipment: 8720C HP (or equivalent)

4-3-2) Test method

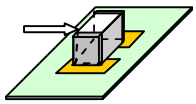
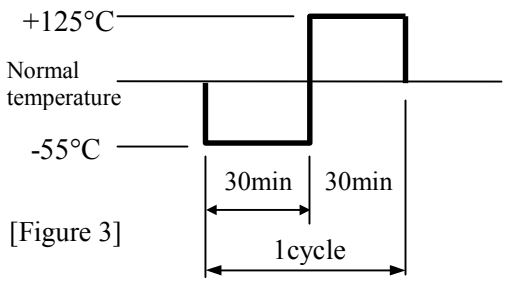
Self resonance frequency is “Frequency that phase becomes 0 degree” that means switching frequency between inductive reactance and capacitive reactance when measure attenuation with transmission characteristic measurement.

4-4) RATED CURRENT

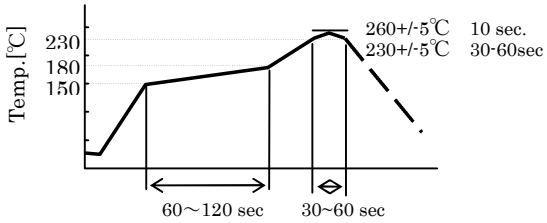
4-4-1) Temperature Rise

Rated current is the current which causes a temperature rise within 20°C.

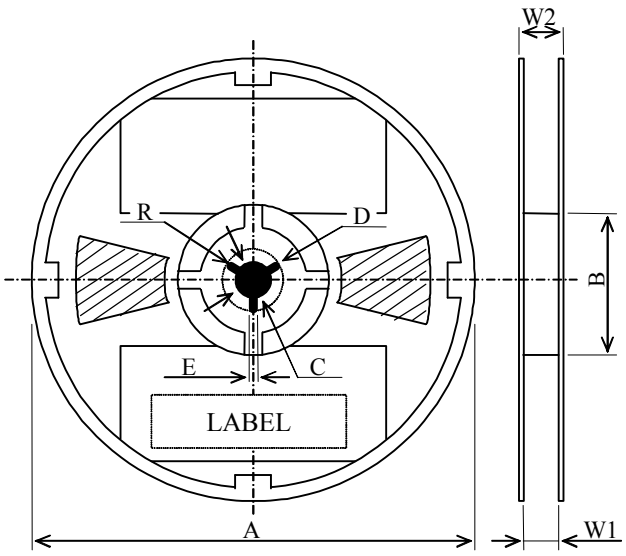
[Table 5]

No.	Item	Specification	Test method
5-1	Adhesive test	2N min.	Add the force to solder specimen inductor on the test printed circuit board. Pressure  [Figure 2]
5-2	Vibration test	Appearance : No mechanical damage. To satisfy reliability spec.(Table 4)	Solder specimen inductor on the test printed circuit board. Apply vibrations in each of the x, y and z directions for 2 hours (total of 6 hours). REF : JIS-C-0040 Frequency : 10 - 500 - 10Hz Total amplitude: 1.5mm
5-3	Shock test	Ditto	Solder specimen inductor on the test printed circuit board. Acceleration 1000m/s^2 ,action time 6ms, half wave sine 6×3.
5-4	Cold test	Ditto	Solder specimen inductor on the test printed circuit board, then leave it at temperature for –55±2°C for 500±12hours. Measure the test items after leaving the inductors at room temperature and humidity for 1 to 2 hours.
5-5	Heat shock test	Ditto	Solder specimen inductor on the test printed circuit board, then go through 100 cycles under the following conditions.  [Figure 3] Measure the test items after leaving the inductors at room temperature and humidity for 1 to 2 hours.

[Table 5]

No.	Item	Specification	Test method
5-6	Humidity with load test	Appearance : No mechanical damage. To satisfy reliability spec.(Table 4)	Solder specimen inductor on the test printed circuit board, then leave it at temperature for 60±2°C for 500±12hours, and relative humidity of 90% to 95% with the rated electric current applied. Measure the test items after leaving the inductors at room temperature and humidity for 1 to 2 hours.
5-7	High temperature with load test	Ditto	Solder specimen inductor on the test printed circuit board, then leave it at temperature for 125±2°C for 500±12hours with the rated electric current applied. Measure the test items after leaving the inductors at room temperature and humidity for 1 to 2 hours.
5-8	Resistance to soldering heat test	Appearance : No mechanical damage.	Solder specimen inductor on the test printed circuit board, then pass it 2 times under conditions. Measure the test items after leaving the inductors at room temperature and humidity for 1 to 2 hours. Solder : Sn-3Ag-0.5Cu.  [Figure4]
5-9	Solderability test	Terminal electrodes should be covered by new solder to a minimum of 95%	Apply flux application and preheat for 1 to 2 minutes at 150°C to 180°C , then dip in solder at 250~260°C for 4.0±0.5 seconds. Flux: Rosin (JIS-K-5902) dissolved in Isopropyl alcohol (JIS-K-8839) at 25 wt %. Solder: Sn-3Ag-0.5Cu.

6-1) Reel dimension



*) Shaded portion is hole

Material of reel: Polystyrene

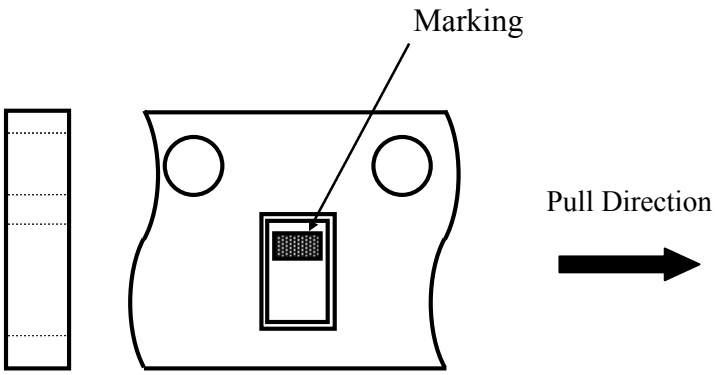
[Figure 5]

[Table 6] (Unit: mm)

Mark	A	B	C	D	E
Dimension	Φ180.0±2.0	Φ60.0 Min.	Φ13.0±0.2	Φ21.0±0.8	2.0±0.5
Mark	W1	W2	R		
Dimension	8.4 +2.0/0	14.4 Max.	1.0		

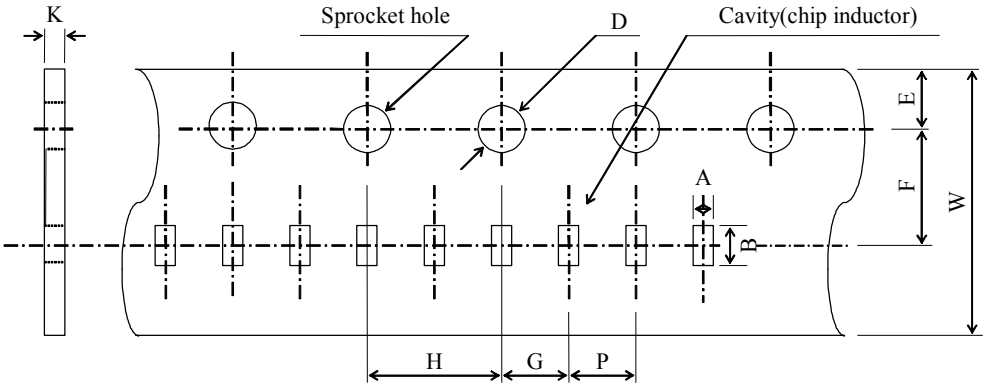
6-2) Marking

The marking shall be seen from the top cover tape side.



[Figure 6]

6-3) Tape dimension



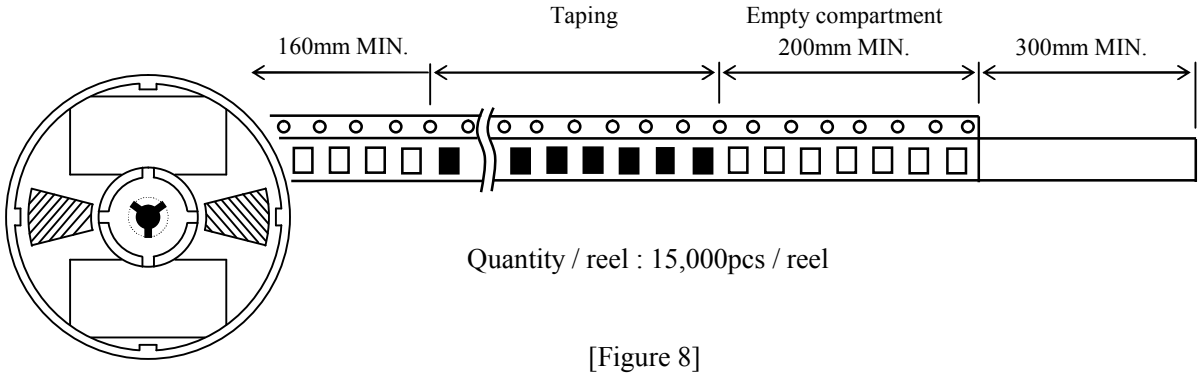
Material of carrier tape : paper
Material of cover tape : polyester

[Figure 7]

[Table 7] (unit: mm)

Mark	A	B	D	E	F
Dimension	0.38±0.05	0.68±0.05	Φ1.50+0.10 0	1.75±0.10	3.50±0.05
Mark	G	H	K	P	W
Dimension	2.00±0.05	4.00±0.10	0.50 MAX	2.00±0.05	8.00±0.30

6-4) Shape of packing

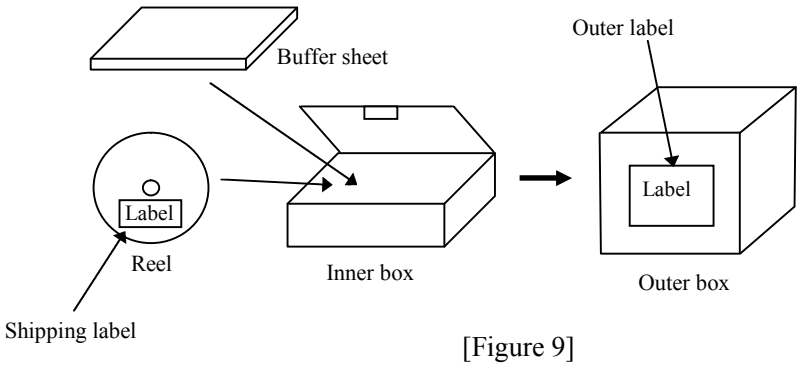


Quantity / reel : 15,000pcs / reel

[Figure 8]

6-5) Packing form and indication contents

(For example)



Indication contents of a label
1. ITEM CODE
2. INSP No.
3. ITEM
4. SHIPING DATE
5. QTY.
6. Origin country

[Figure 9]

*) In case of Japanese domestic shipping, Outer label is put on the Inner box.
Because Outer box isn't used.

6-6) Peel back force

Peel back force is 0.1N to 1.0N in accordance with JIS C 0806.

6-7) Storage conditions

After delivered, use the products within 12 months under the conditions 5 to 40 °C and 10 to 75%RH.
Solderability should be confirmed in case of exceeding 12 months.

7-1) Operating / Storage temperature range
-55 to +125°C

7-2) Humidity range
0 to 90%RH (The least upper wet-bulb temperature is 38°C)

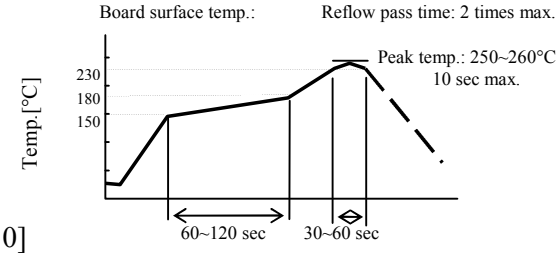
7-3) Product identification

MLG	0603	P	27N	J	#	***
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) Product symbol
(2) Dimensions (0.6×0.3mm)
(3) Series name
(4) Inductance (27N: 27nH)
(5) Inductance Tolerance (B: ±0.1nH, C: ±0.2nH, S: ±0.3nH, G: ±2%, H: ±3%, J: ±5%)
(6) Packing style (T: taping)
(7) Control number

7-4) Precautions

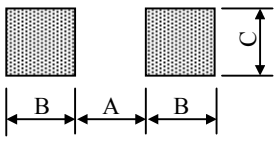
7-4-1) Recommended reflow soldering conditions.



[Figure 10]

7-4-2) Reworking condition
By using spot heater, in a temperature 350 °C max, more than a distance 3mm from the product within 5 seconds.

7-4-3) Recommended land pattern



[Figure 11]

A: 0.30
B: 0.25
C: 0.30
Unit: mm

7-3-4) Recommended cleaning conditions after soldering.
Recommended rinse agent is IPA (Isopropyl alcohol).
If use other agent, confirm soldering conditions in person.
Ultrasonic cleaning shall be in the normal temperature 20W/l max., 28kHz ~ 40kHz, 5 minute max.

7-5) This product contains no lead and also support lead-free soldering.

7-6) This product corresponds to ROHS.
It contains neither Cd, Pb, Hg, Cr6+, PBB nor PBDE.

7-7) MSL
MSL is in accordance with Level-1

7-8) Appearance
(1)Applied standard/Sampling inspection
JIS Z 9015
Single normal sampling / LV-II
(2)Shipment standard
Major defect (*1) : AQL 0.1
Minor defect (*2) : AQL 0.4
*1:Its appearance condition makes an effect on electrical characteristics that we assure.
*2:Its appearance condition does not make an effect on electrical characteristics that we assure.

单击下面可查看定价，库存，交付和生命周期等信息

>>TDK Corporation(东电化)