

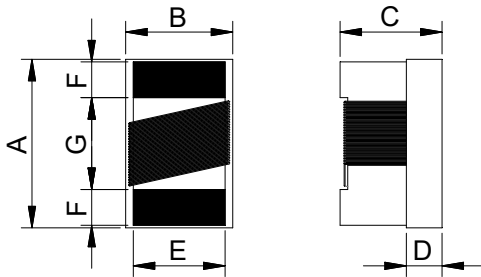
### Features

- \* RoHS Compliant
- \* Ceramic body and wire wound construction provide high SRFs.
- \* These ultra - compact inductors provided exceptional Q values, even at high frequencies.
- \* Their ceramic construction delivers the highest possible SRFs as well as excellent Q values.
- \* The non-magnetic coil form also assures the utmost in thermal stability, predictability and batch consistency.
- \* ECS series is standard parts for RF designers.

### Applications

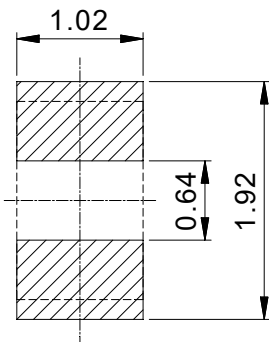
- \* cellular phone, GPS receiver, Base Station, Repeater, Wireless LAN/Mouse/Keyboard/earphone, remote control, security system and other RF modules.

### Appearance and Dimensions

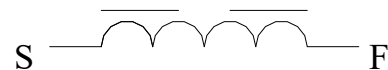


Dimensions(mm)							
Series	A	B	C	D	E	F	G
ECS0603	1.6+0.2/-0.1	1.02±0.1	0.82+0.2/-0.1	0.51typ.	0.76typ.	0.33typ.	0.86typ.

### Land Pattern Dimensions



### Circuit Diagram



### Product Identification

**ECS 0603 - 5N6 G - S**

- ① ② ③ ④ ⑤

- ① Product Symbol
- ② Dimensions
- ③ Inductance Value (5N6:5.6nH; 56N:56nH; R56:560nH)
- ④ Inductance Tolerance (S:±0.3; G:±2%; J:±5%; K:±10%; M:±20%)
- ⑤ Internal No

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### Electrical Characteristics

Part No.	Inductance	Tol.	Q min.	Test Frequenc y MHz	Self-resonant Frequency min.	DC Resistance max.	Heat Rating Current max.
Unit	nH	-	-	MHz	MHz	Ω	mA
Symbol	L	-	-	-	f <sub>res</sub>	R <sub>DC</sub>	I <sub>RMS</sub>
ECS0603-1N5□-S	1.50	±0.3,±10%,±20%	24	250	12500	0.030	700
ECS0603-1N6□-S	1.60	±0.3,±10%,±20%	24	250	12500	0.030	700
ECS0603-1N8□-S	1.80	±0.3,±5%,±10%,±20%	16	250	12500	0.045	700
ECS0603-2N0□-S	2.00	±0.3,±5%,±10%,±20%	12	250	12500	0.250	700
ECS0603-2N2□-S	2.20	±0.3,±5%,±10%,±20%	12	100	12500	0.250	700
ECS0603-2N7□-S	2.70	±0.3,±5%,±10%,±20%	22	250	5900.0	0.045	700
ECS0603-3N3□-S	3.30	±0.3,±5%,±10%,±20%	22	250	5900.0	0.045	700
ECS0603-3N6□-S	3.60	±0.3,±5%,±10%,±20%	22	250	5900.0	0.063	700
ECS0603-3N9□-S	3.90	±0.3,±5%,±10%,±20%	22	250	6900.0	0.080	700
ECS0603-4N3□-S	4.30	±0.3,±5%,±10%,±20%	22	250	5900.0	0.063	700
ECS0603-4N7□-S	4.70	±0.3,±5%,±10%,±20%	20	250	5800.0	0.116	700
ECS0603-5N1□-S	5.10	±5%,±10%,±20%	20	250	5700.0	0.140	700
ECS0603-5N6□-S	5.60	±2%,±5%,±10%,±20%	26	250	4760.0	0.075	700
ECS0603-6N2□-S	6.20	±2%,±5%,±10%,±20%	20	250	5700.0	0.140	700
ECS0603-6N3□-S	6.30	±2%,±5%,±10%,±20%	20	250	5700.0	0.140	700
ECS0603-6N8□-S	6.80	±2%,±5%,±10%,±20%	27	250	5800.0	0.110	700
ECS0603-7N5□-S	7.50	±2%,±5%,±10%,±20%	28	250	4800.0	0.106	700
ECS0603-8N0□-S	8.00	±2%,±5%,±10%,±20%	28	250	4700.0	0.109	700
ECS0603-8N2□-S	8.20	±2%,±5%,±10%,±20%	30	250	4200.0	0.115	700
ECS0603-8N7□-S	8.70	±2%,±5%,±10%,±20%	28	250	4600.0	0.109	700
ECS0603-9N1□-S	9.10	±2%,±5%,±10%,±20%	28	250	5400.0	0.125	700
ECS0603-9N5□-S	9.50	±2%,±5%,±10%,±20%	28	250	5400.0	0.125	700
ECS0603-10N□-S	10.0	±2%,±5%,±10%,±20%	31	250	4800.0	0.130	700
ECS0603-11N□-S	11.0	±2%,±5%,±10%,±20%	30	250	4000.0	0.130	700
ECS0603-12N□-S	12.0	±2%,±5%,±10%,±20%	35	250	4000.0	0.130	700
ECS0603-13N□-S	13.0	±2%,±5%,±10%,±20%	35	250	4000.0	0.130	700

ECS0603-15N□-S	15.0	±2%,±5%,±10%,±20%	35	250	4000.0	0.170	700
ECS0603-16N□-S	16.0	±2%,±5%,±10%,±20%	34	250	3300.0	0.170	700
ECS0603-18N□-S	18.0	±2%,±5%,±10%,±20%	35	250	3100.0	0.170	700
ECS0603-20N□-S	20.0	±2%,±5%,±10%,±20%	36	250	3000.0	0.180	700
ECS0603-22N□-S	22.0	±2%,±5%,±10%,±20%	38	250	3000.0	0.190	700
ECS0603-23N□-S	23.0	±2%,±5%,±10%,±20%	38	250	3000.0	0.190	700
ECS0603-24N□-S	24.0	±2%,±5%,±10%,±20%	36	250	2650.0	0.135	700
ECS0603-27N□-S	27.0	±2%,±5%,±10%,±20%	40	250	2800.0	0.220	600
ECS0603-30N□-S	30.0	±2%,±5%,±10%,±20%	37	250	2250.0	0.220	600
ECS0603-33N□-S	33.0	±2%,±5%,±10%,±20%	40	250	2300.0	0.220	600
ECS0603-36N□-S	36.0	±2%,±5%,±10%,±20%	37	250	2080.0	0.250	600
ECS0603-39N□-S	39.0	±2%,±5%,±10%,±20%	40	250	2200.0	0.250	600
ECS0603-43N□-S	43.0	±2%,±5%,±10%,±20%	38	250	2000.0	0.280	600
ECS0603-47N□-S	47.0	±2%,±5%,±10%,±20%	38	200	2000.0	0.280	600
ECS0603-51N□-S	51.0	±2%,±5%,±10%,±20%	35	200	1900.0	0.270	600
ECS0603-56N□-S	56.0	±2%,±5%,±10%,±20%	38	200	1900.0	0.310	600
ECS0603-60N□-S	60.0	±2%,±5%,±10%,±20%	37	200	1800.0	0.330	600
ECS0603-62N□-S	62.0	±2%,±5%,±10%,±20%	37	200	1800.0	0.330	600
ECS0603-68N□-S	68.0	±2%,±5%,±10%,±20%	37	200	1700.0	0.340	600
ECS0603-72N□-S	72.0	±2%,±5%,±10%,±20%	34	150	1700.0	0.490	400
ECS0603-75N□-S	75.0	±2%,±5%,±10%,±20%	28	150	1700.0	0.520	400
ECS0603-82N□-S	82.0	±2%,±5%,±10%,±20%	34	150	1700.0	0.540	400
ECS0603-85N□-S	85.0	±2%,±5%,±10%,±20%	34	150	1700.0	0.580	400
ECS0603-91N□-S	91.0	±2%,±5%,±10%,±20%	28	150	1600.0	0.580	400
ECS0603-R10□-S	100	±2%,±5%,±10%,±20%	34	150	1400.0	0.580	400
ECS0603-R11□-S	110	±2%,±5%,±10%,±20%	32	150	1350.0	0.610	300
ECS0603-R12□-S	120	±2%,±5%,±10%,±20%	32	150	1300.0	0.650	300
ECS0603-R13□-S	130	±2%,±5%,±10%,±20%	32	150	1150.0	0.920	290
ECS0603-R135□-S	135	±2%,±5%,±10%,±20%	32	150	990.0	0.920	290
ECS0603-R15□-S	150	±2%,±5%,±10%,±20%	28	150	990.0	0.920	280
ECS0603-R16□-S	160	±2%,±5%,±10%,±20%	28	150	990.0	1.250	280
ECS0603-R18□-S	180	±2%,±5%,±10%,±20%	25	100	990.0	1.250	240

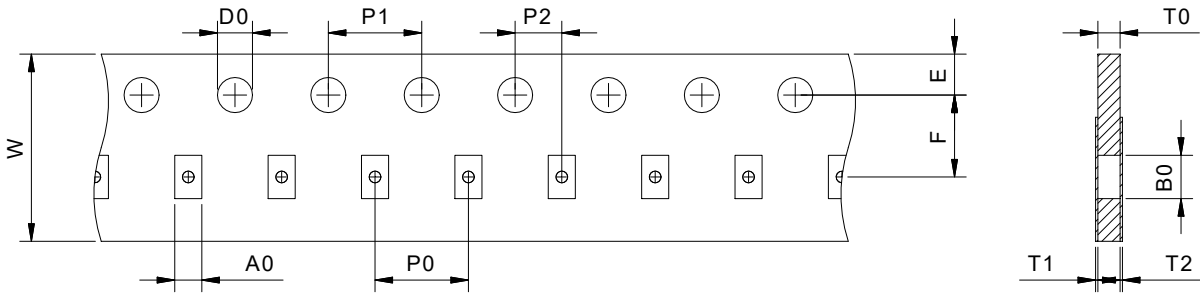
ECS0603-R20□-S	200	±2%,±5%,±10%,±20%	25	100	900.0	1.980	200
ECS0603-R215□-S	215	±2%,±5%,±10%,±20%	25	100	900.0	2.100	200
ECS0603-R22□-S	220	±2%,±5%,±10%,±20%	25	100	900.0	2.100	200
ECS0603-R24□-S	240	±2%,±5%,±10%,±20%	25	100	900.0	2.200	200
ECS0603-R25□-S	250	±2%,±5%,±10%,±20%	25	100	882.0	2.550	120
ECS0603-R27□-S	270	±2%,±5%,±10%,±20%	26	100	830.0	2.160	170
ECS0603-R29□-S	290	±2%,±5%,±10%,±20%	25	100	800.0	3.200	100
ECS0603-R30□-S	300	±2%,±5%,±10%,±20%	25	100	790.0	2.500	100
ECS0603-R33□-S	330	±2%,±5%,±10%,±20%	25	100	790.0	3.890	100
ECS0603-R39□-S	390	±2%,±5%,±10%,±20%	25	100	780.0	4.350	100
ECS0603-R47□-S	470	±2%,±5%,±10%,±20%	25	100	700.0	4.500	100
ECS0603-R56□-S	560	±2%,±5%,±10%,±20%	23	100	460.0	5.000	90.0

**Remark:**

- ※1: All test data is referenced to 20°C ambient.
- ※2: Q: The power periodically exchanged between an inductor and a power source in an AC circuit.
- ※3: Self-resonant Frequency: The self-resonant frequency is the high-frequency critical point of practical passive components.
- ※4: DC Resistance: DC resistance at 20°C.
- ※5: Heat Rating Current: DC current that causes the temperature rise ( $\Delta T$ ) from 20°C ambient,  
for max. Value,  $\Delta T < 40^\circ\text{C}$ .
- ※6: Specifications subject to change without notice. Please check our website for latest information.

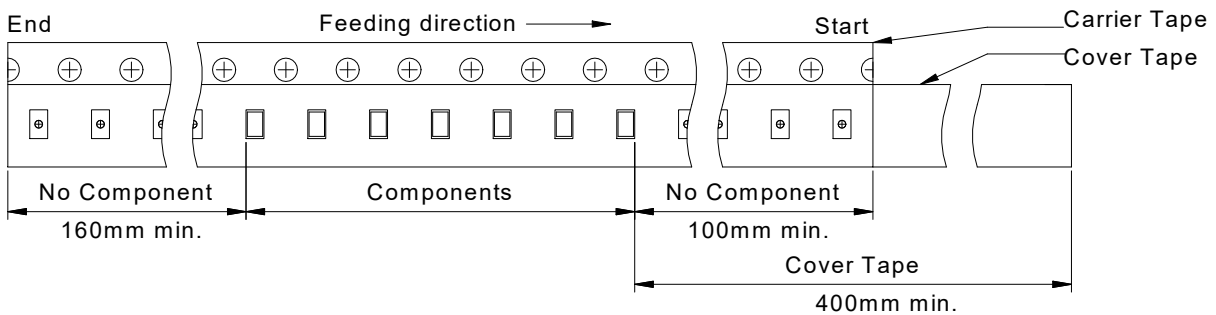
### Packing specification

#### Carrier tape dimensions (mm)



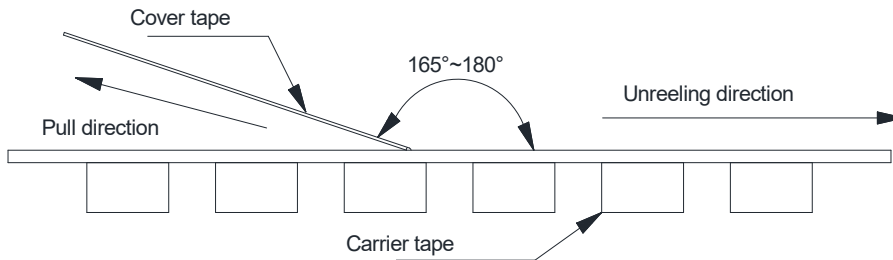
ITEM	W	P0	E	F	T0	T1	T2	A0	B0	D0	P1	P2
Size(mm)	8.0	4.0	1.75	3.50	0.95	0.10	0.10	0.10	0.74	1.55	4.00	2.00
Tolerance	±0.30	±0.10	±0.10	±0.10	ref.	max.	max.	typ.	typ.	±0.10	±0.10	±0.10

#### Taping dimensions (mm)

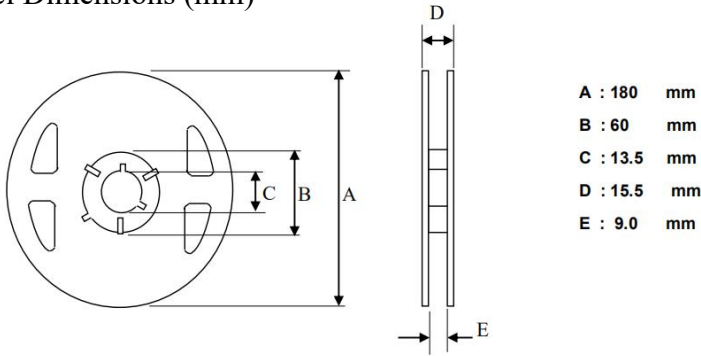


#### Cover Tape Peel Off Condition

Cover tape peel force shall be 10g to 130g.

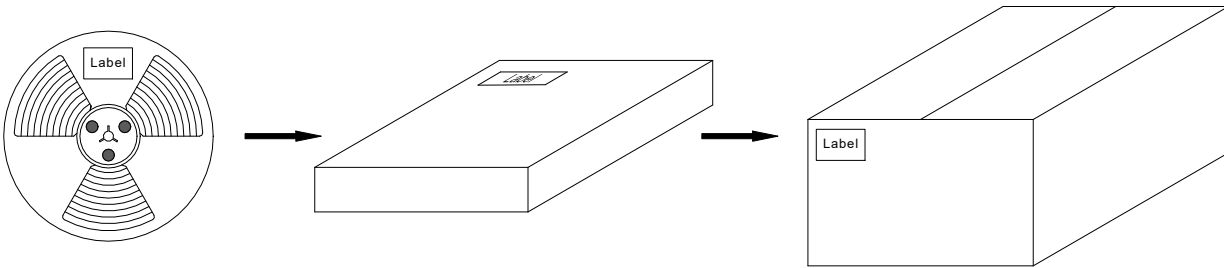


### Reel Dimensions (mm)



### Packing Quantity

Product Series	Quantity/Reel	Inner Carton Quantity	Outer Carton Quantity
ECS0603	4000pcs	(4000X6)=24000pcs	(24000X3)=72000pcs



### Recommended Soldering Conditions

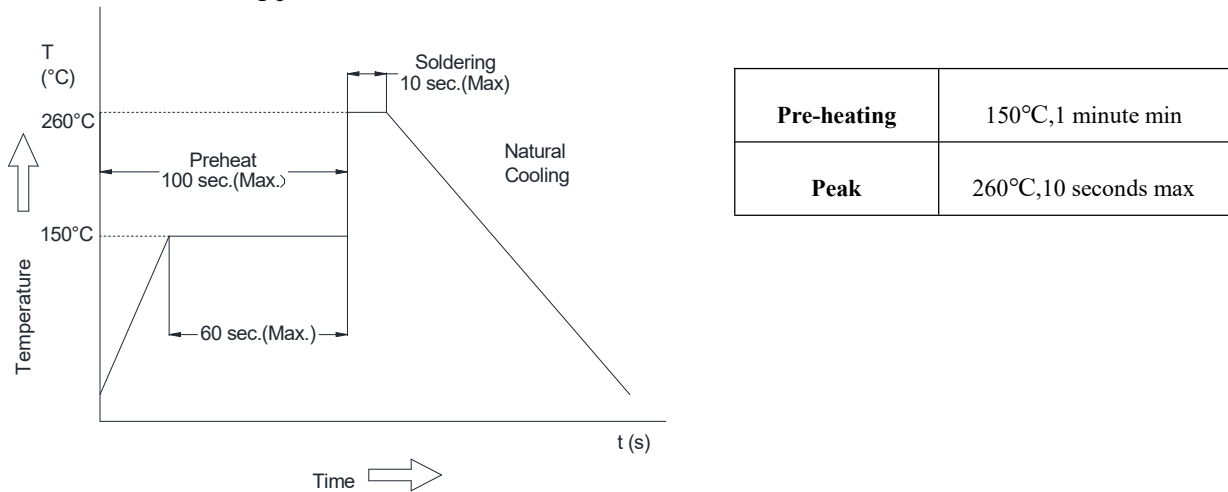
Product can be applied to flow and reflow soldering.

(1) Flux, Solder

- ① Use rosin-based flux. Don't use highly acidic flux with halide content exceeding 0.2wt% (chlorine conversion value).
- ② Use Sn solder.

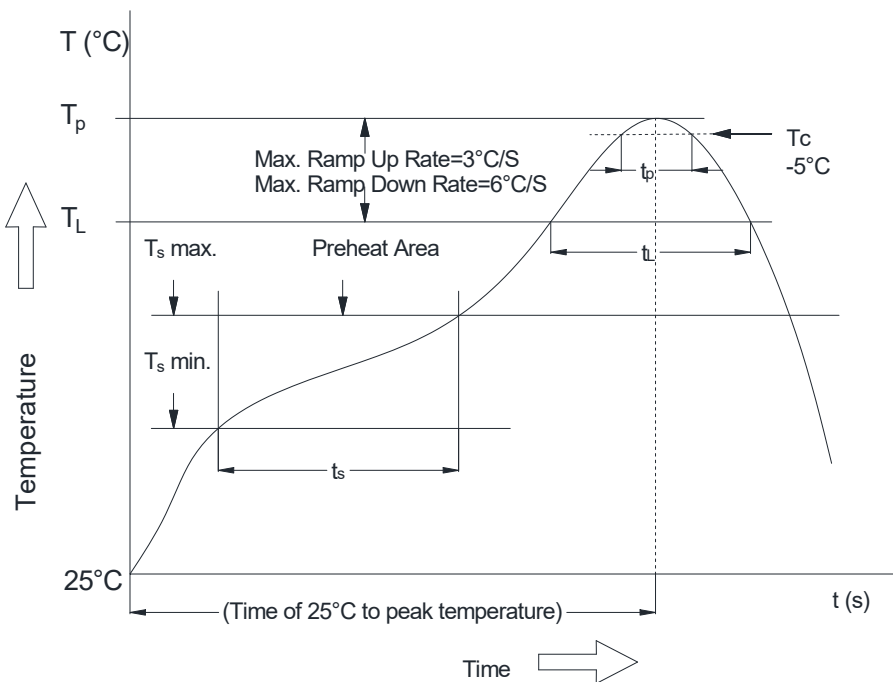
(2) Flow soldering conditions

- ① Pre-heating should be in such a way that the temperature difference between solder and product surface is limited to 150°C max. Cooling into solvent after soldering also should be in such a way that temperature difference is limited to 100°C max. Unwrought pre-heating may cause cracks on the product, resulting in the deterioration of products quality.
- ② Standard soldering profile.



(3) Reflow soldering conditions

Classification Reflow Profile for SMT components:



Classification Reflow Soldering Profile:

Profile Feature		Lead-Free Assembly
Average Ramp-Up Rate (Ts max. to Tp)		3°C/second max.
Preheat	- Temperature Min (Ts min.)	150°C
	- Temperature Max (Ts max.)	200°C
	- Time (Ts min to Ts max.)	60-120 seconds
Time maintained above	- Temperature (TL)	217°C
	- Time (tL)	60-150 seconds
Peak/Classification Temperature (Tp)		see table below
Peak/Classification Time (Tp)		3-4 seconds
Time within 5 °C of actual Peak Temperature (tp)		20-30 seconds
Ramp-Down Rate		6°C/second max.
Time 25 °C to Peak Temperature		8 minutes max.

Note 1: All temperatures refer to topside of the package, measured on the package body surface.

2: Refer to IPC/ JEDEC J-STD-020E

Package Classification Reflow Temperature:

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

Refer to IPC/ JEDEC J-STD-020E

(4) The method on Re-work with using the iron:

The following conditions must be strictly followed when using a soldering iron

Pre-heating	150°C, 1 minute
Tip temperature	280°C max
Soldering iron output	20w max
End of soldering iron	φ1mm max
Soldering time	3 seconds max

## Products Storage

(1) Storage period

Products which inspected in LYEC over 12 months ago should be examined and used, which can be confirmed with inspection No. marked on the container. Solderability should be checked if this period is exceeded.

(2) Storage conditions

Products should be storage in the warehouse on the following conditions:

Temperature: Less than 40°C

Humidity : Less than 75% relative and humidity

No rapid change on temperature and humidity

- (3) Don't keep products in corrosive gases such as sulfur, chlorine gas or acid, or it may cause oxidization of electrode, resulting in poor solderability.
- (4) Products should be storage on the palette for the prevention of the influence from humidity, dust and so on.
- (5) Products should be storage in the warehouse without heat shock, vibration, direct sunlight and so on.
- (6) Products should be storage under the airtight packaged condition.