

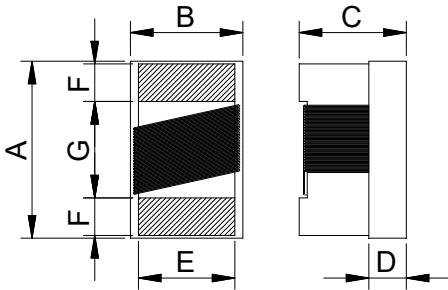
Features

- * RoHS compliant
- * Very strong solderability by reflow soldering and soldering iron
- * Highly accurate dimensions can be mounted automatically.
- * Terminals are highly resistant to pull forces.
- * Highly resistant to mechanical shocks and pressure.
- * Highly reliable in environments of sudden temperature change and humidity.
- * Low DCR & better Q value in ferrite series.

Applications

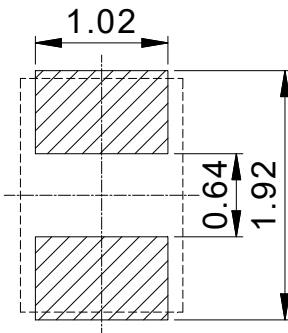
- * Telecom and datacom applications such as xDSL, Cable Modem, Set-top Box, CATV filter/tuner, wireless LAN and so on.

Appearance and Dimensions



Dimensions(mm)							
Series	A	B	C	D	E	F	G
ELS0603	1.80max.	1.25max.	1.02max.	0.38typ.	0.86typ.	0.33typ.	0.76typ.

Land Pattern Dimensions



Circuit Diagram



Product Identification

ELS 0603 - R22 K - N

① ② ③ ④ ⑤

- ① Product Symbol
- ② Dimensions
- ③ Inductance Value (R22:0.22μH; 2R2:2.2μH; 220:22μH)
- ④ Inductance Tolerance (J:5%; K:10%; M:20%)
- ⑤ Internal No

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Electrical Characteristics

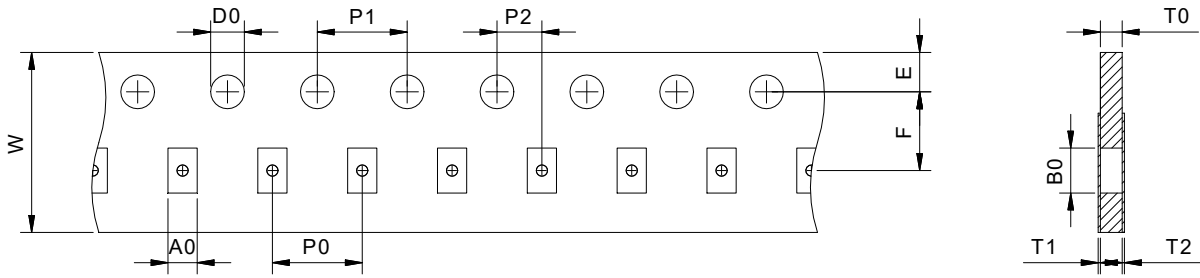
Part No.	Inductance	Tol.	Q min.	Test Frequency	Self-resonant Frequency typ.	DC Resistance max.	Heat Rating Current typ.
Unit	μH	±%	-	MHz	MHz	Ω	mA
Symbol	L	-	-	-	-	R _{DC}	I _{RMS}
ELS0603-R12□-N	0.120	10	12	7.9	1000	0.150	1000
ELS0603-R18□-N	0.180	10	12	7.9	950.0	0.200	1000
ELS0603-R22□-N	0.220	10	12	7.9	775.0	0.300	700.0
ELS0603-R27□-N	0.270	10	12	7.9	775.0	0.300	700.0
ELS0603-R33□-N	0.330	10	12	7.9	725.0	0.320	600.0
ELS0603-R39□-N	0.390	10	12	7.9	620.0	0.510	500.0
ELS0603-R47□-N	0.470	10	12	7.9	540.0	0.430	570.0
ELS0603-R56□-N	0.560	10	12	7.9	600.0	0.650	400.0
ELS0603-R68□-N	0.680	10	12	7.9	500.0	1.000	380.0
ELS0603-R82□-N	0.820	10	12	7.9	500.0	1.300	350.0
ELS0603-1R0□-N	1.000	10	12	7.9	400.0	0.810	330.0
ELS0603-1R2□-N	1.200	10	12	7.9	380.0	1.700	320.0
ELS0603-1R5□-N	1.500	10	12	7.9	300.0	1.300	310.0
ELS0603-1R8□-N	1.800	10	12	7.9	180.0	2.200	300.0
ELS0603-2R2□-N	2.200	10	12	7.9	180.0	2.300	280.0
ELS0603-2R7□-N	2.700	10	12	7.9	150.0	2.600	250.0
ELS0603-3R3□-N	3.300	10	12	7.9	150.0	2.900	230.0
ELS0603-3R9□-N	3.900	10	12	7.9	100.0	2.000	200.0
ELS0603-4R7□-N	4.700	10	12	7.9	100.0	4.000	200.0
ELS0603-5R6□-N	5.600	10	12	7.9	32.00	2.600	240.0
ELS0603-6R8□-N	6.800	10	12	7.9	31.00	3.900	200.0
ELS0603-8R2□-N	8.200	10	12	7.9	26.00	4.200	190.0
ELS0603-100□-N	10.00	10	12	2.5	25.00	4.800	180.0
ELS0603-150□-N	15.00	10	10	2.5	23.00	8.500	170.0
ELS0603-220□-N	22.00	10	10	2.5	10.00	12.00	100.0

Remark:

- ※1:All test data is referenced to 20°C ambient.
- ※2:Self-resonant Frequency:The self-resonant frequency is the high-frequency critical point of practical passive components.
- ※3:DC Resistance:DC resistance at 20°C.
- ※4:Saturation Current:For max. Value, DC current at which the inductance drops less than 30% from its value without current.
- ※5:Specifications subject to change without notice. Please check our website for latest information.

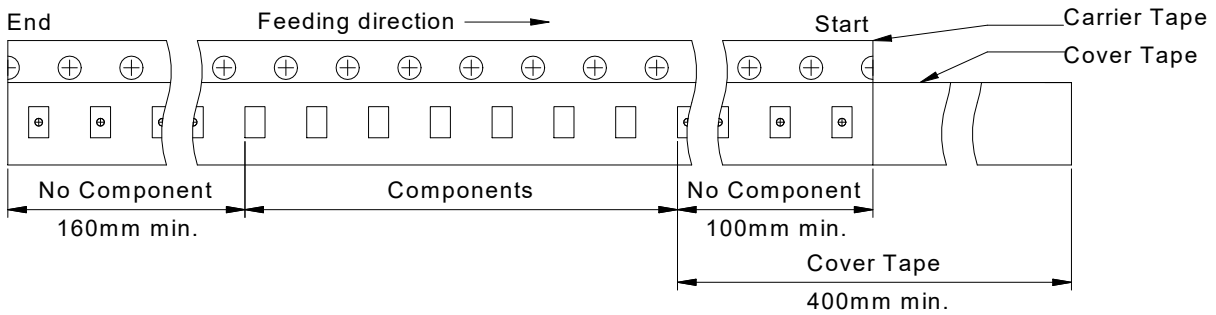
Packing specification

Carrier tape dimensions (mm)



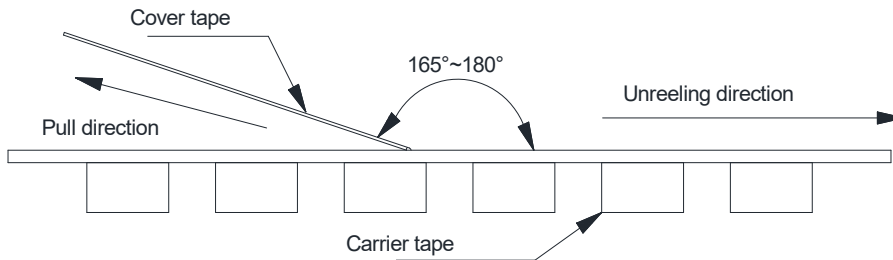
ITEM	W	P0	E	F	T0	T1	T2	A0	B0	D0	P1	P2
Size(mm)	8.0	4.0	1.75	3.50	0.97	0.10	0.10	1.30	2.00	1.55	4.00	2.00
Tolerance	±0.30	±0.10	±0.10	±0.10	ref.	max.	max.	typ.	typ.	±0.10	±0.10	±0.10

Taping dimensions (mm)

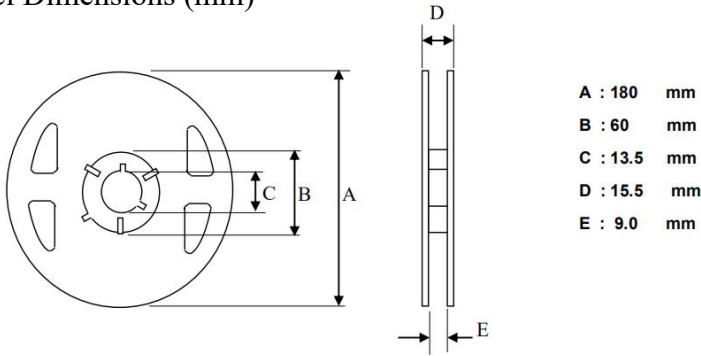


Cover Tape Peel Off Condition

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



Reel Dimensions (mm)



Packing Quantity

Product Series	Quantity/Reel	Inner Carton Quantity	Outer Carton Quantity
ELS0603	4000pcs	(4000X6)=24000pcs	(24000X3)=72000pcs



Recommended Soldering Conditions

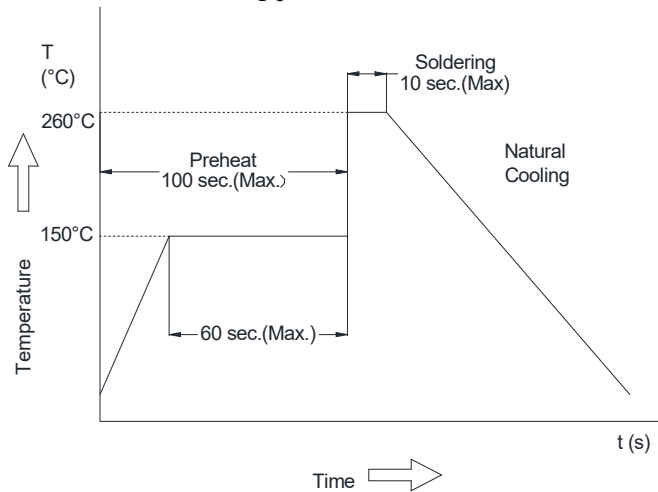
Product can be applied to flow and reflow soldering.

(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

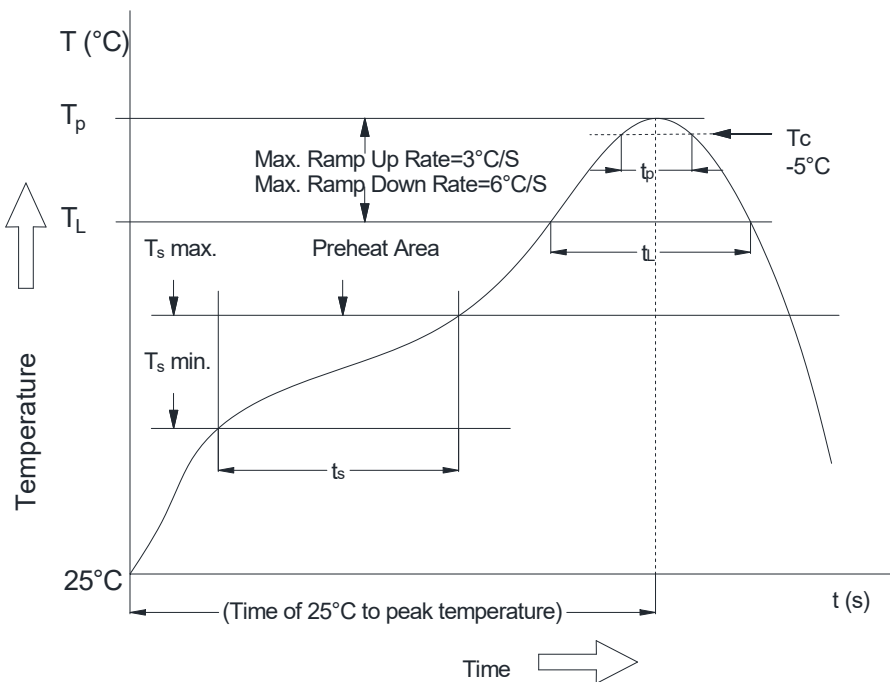
- ① Pre-heating should be in such a way that the temperature difference between solder and product surface is limited to 150°C max. Cooling into solvent after soldering also should be in such a way that temperature difference is limited to 100°C max. Unwrought pre-heating may cause cracks on the product,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



Pre-heating	150°C, 1 minute min
Peak	260°C, 10 seconds max

(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 ³ <350	Volume mm ³ 350-2000	Volume mm ³ >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.