

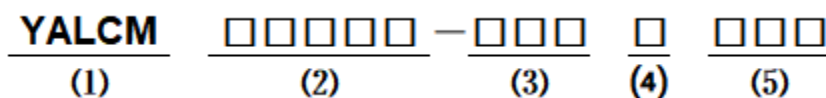
Features

- This filter is characterized by small size, highly effective in noise suppression.
- High common mode impedance at noise band and low differential mode impedance at signal band. Due to the low differential mode impedance with high coupling factor, there is almost no distortion on high speed transmission of high resolution video signals.
- Operating temperature: -40°C to $+125^{\circ}\text{C}$ (Including self-temperature rise).
- Reliability test complied to AEC-Q200.

Applications

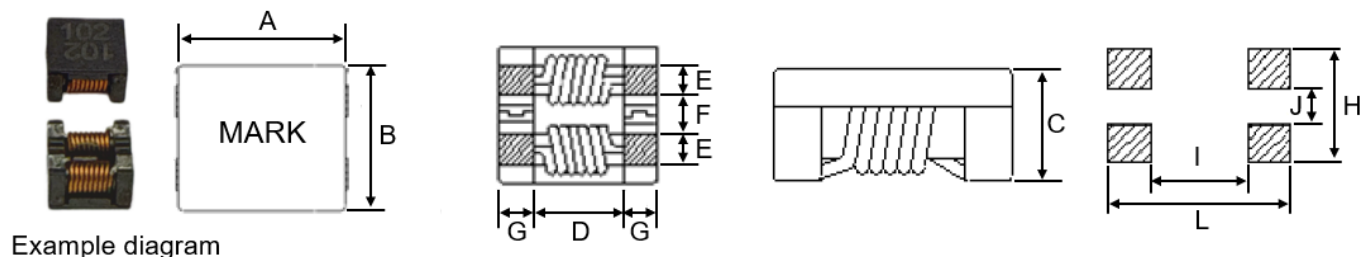
- DC power line common mode noise suppression;
- Switch Mode Power Supplies and regulators;
- Variable Frequency Drives;
- AC/DC power rectifiers.

Product Identification



- (1) : Type
- (2) : Dimensions
- (3) : Impedance
- (4) : Packaging
- (5) : Internal code

Shapes and Dimensions (Unit: mm)

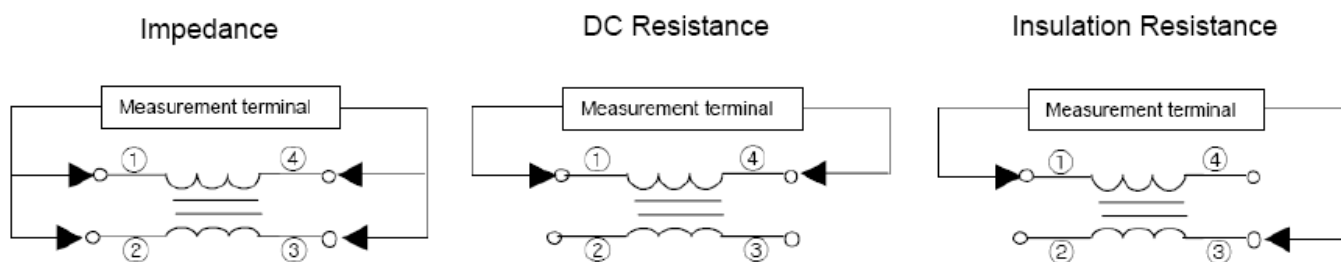


TYPE	A	B	C Max.	D Typ.	E	F	G	H Typ.	I Typ.	J Typ.	L Typ.
YALCM5555F	5.5±0.5	5.5±0.5	3.5	3.3	1.2±0.5	1.9±0.5	1.1±0.5	4.3	3.3	1.9	5.9

Electrical Characteristics

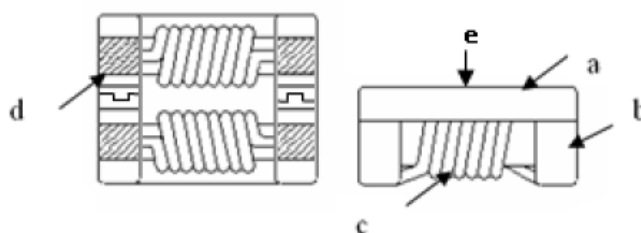
Part Number	Common mode Impedance (Ω) @100MHz		DC Resistance (1 line) (m Ω) Max.	Rated Current (A) Max.	Rated Volt. (Vdc)Max.	Insulation Resistance (M Ω) Min.
	Min.	Typ.				
YALCM5555F-101T	100	140	6.0	8.5	80	10
YALCM5555F-301T	150	300	7.5	4.8	80	10
YALCM5555F-501T	300	500	10.5	4.5	80	10
YALCM5555F-701T	500	700	13.0	3.8	80	10
YALCM5555F-102T	750	1000	20.0	3.0	80	10
YALCM5555F-142T	1000	1400	38.0	2.8	80	10

Schematic Diagram

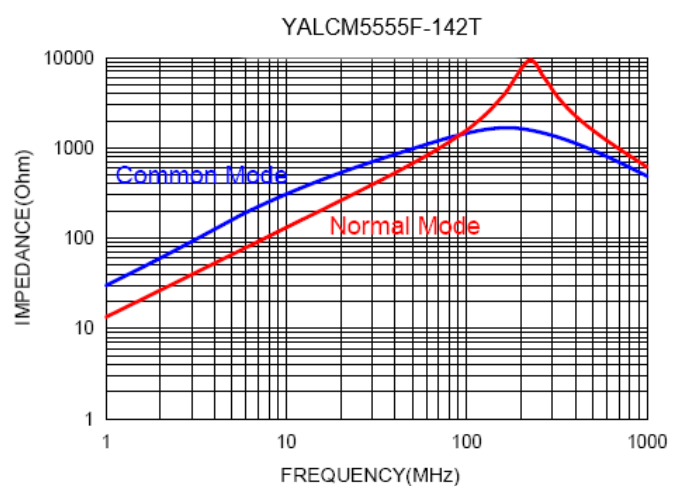
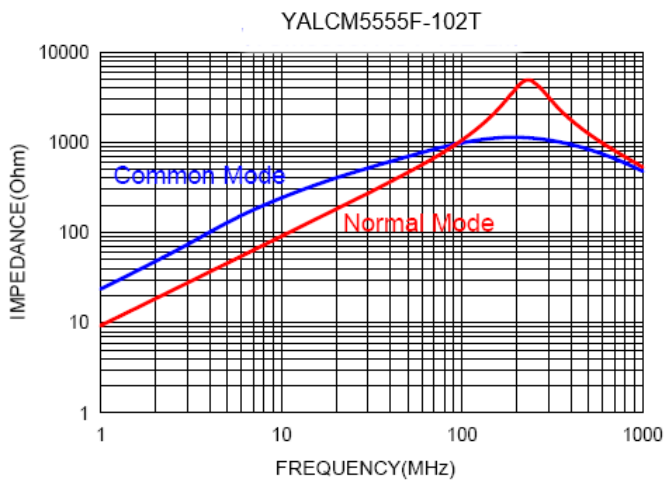
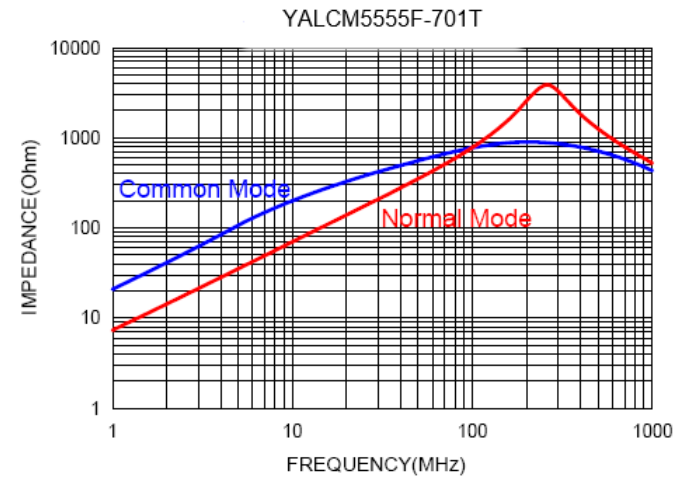
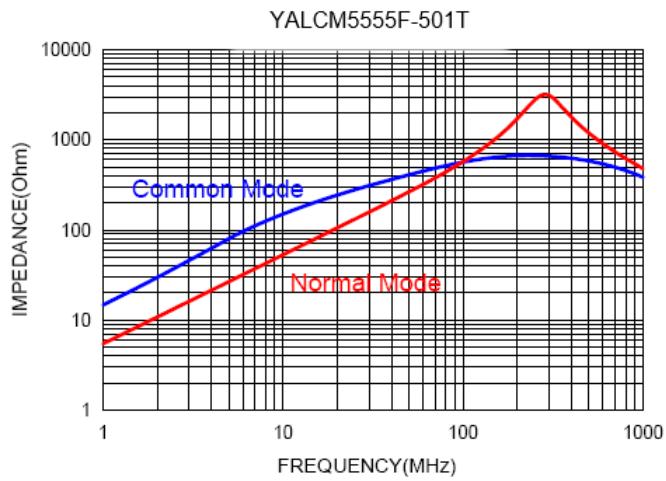
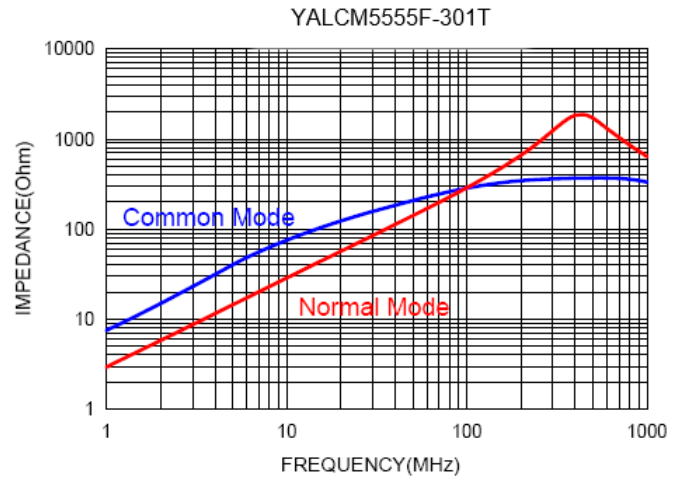
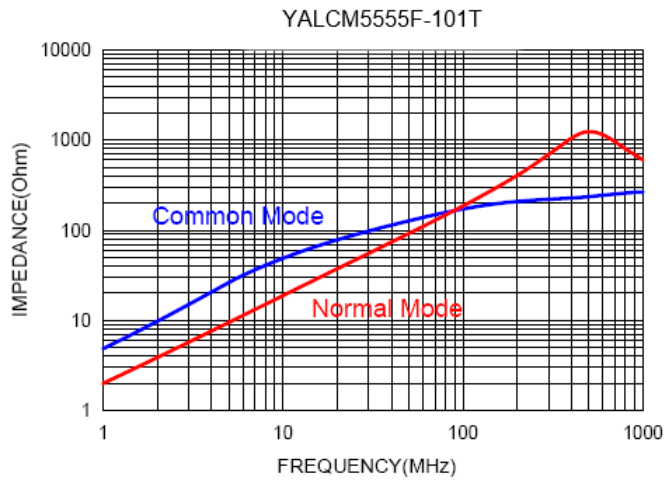


Materials

No.	Description	Specification
a.	Upper Plate	Plastic
b.	Core	Ferrite Core
c.	Wire	Enameled Copper
d.	Termination	Ag/Ni/Sn + Sn Solder
e.	Mark	Laser Marking



Electrical Characteristic Curve



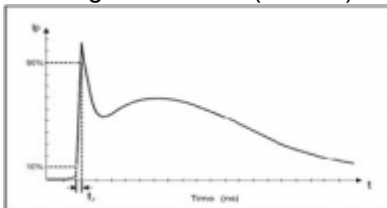
■ Reliability and Test Condition

Item	Performance	Test Condition
Operating temperature	-40~+125°C (Including self - temperature rise)	
Storage temperature	-40~+125°C (on board)	
Electrical Performance Test		
Z(common mode)	Refer to standard electrical characteristics list.	Agilent E4991A + Keysight 16092A
DCR		Agilent-34420A
I.R.		Chroma 19073
Temperature Rise Test	Rated Current $\geq 1A$ ΔT 40°C Max.	1.Applied the allowed DC current. 2.Temperature measured by digital surface thermometer
Reliability Test		
High Temperature Exposure(Storage)	Appearance:No damage. Impedance:within $\pm 15\%$ of initial value. RDC:within $\pm 15\%$ of initial value and shall not Exceed the specification value.	Preconditioning: Run through reflow for 3 times. (IPC/JEDECJ-STD-020F Classification Reflow Profiles) Unpowered. Temperature:125 $\pm 2^\circ C$. Upper Temperature:maximum specified operating temperature or maximum specified storage temperature (whichever is higher). Minimum test temperature shall be 85°C. (For ferrite EMI suppressors/filters only). Duration:1000hrs Min. Measured at room temperature after placing for 24 ± 4 hrs.
Temperature Cycling		Preconditioning:Run through reflow for 3 times. (IPC/JEDECJ-STD-020F Classification Reflow Profiles). Unpowered Lower Temperature of the Chamber: -40°C(For Inductors/Transformers) -55°C(For ferrite EMI suppressors/filters) Upper Temperature of the Chamber:maximum specified operating temperature and shall not exceed 125°C Condition for 1 cycle Step1:-40 $\pm 2^\circ C$ 30min Min. Step2:125 $\pm 2^\circ C$ transition time 1min MAX. Step3:125 $\pm 2^\circ C$ 30min Min. Step4:Dwell Time (Soak Time) 15 minutes minimum, 30 minutes minimum if component weighs above 28g. Transition Time:1 minute maximum. Number of cycles:1000. Measured at room temperature at least 24 hours after test conclusion.

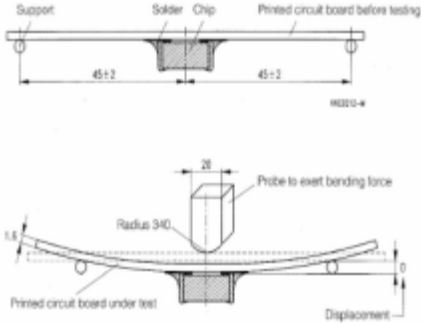
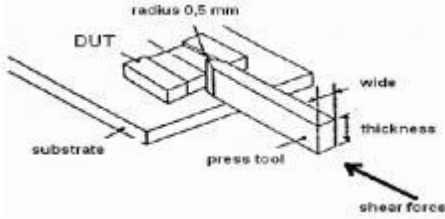
■ Reliability and Test Condition

Item	Performance	Test Condition																												
Humidity Bias		Preconditioning: Run through reflow for 3 times. (IPC/JEDEC J-STD-020F Classification Reflow Profiles) Unpowered(For Inductors/Transformers). Apply 10% of maximum rated power. (For ferrite EMI suppressors/filters) Humidity:85±3% R.H, Temperature:85°C±2°C Duration: 1000hrs Min. Measured at room temperature after placing for 24±4hrs.																												
High Temperature Operating Life	Appearance:No damage. Impedance:within±15% of initial value. RDC:within±15% of initial value and shall not exceed the specification value.	Preconditioning: Run through reflow for 3 times. (IPC/JEDECJ-STD-020F Classification Reflow Profiles) Temperature:125±2°C. Upper Temperature of the Chamber: maximum specified operating. temperature (not including heat rise) at maximum rated power and shall not exceed 125°C.(For Inductors/Transformers) Temperature of the Chamber: maximum specified operating temperature up to 150°C (For ferrite EMI suppressors/filters) Duration:1000hrs Min. with 100% rated current. Measured at room temperature after placing for 24±4 hrs. Rated IL applied.(For ferrite EMI suppressors/filters).																												
External Visual	Appearance:No damage.	Inspect device construction, marking and workmanship. Pre and Post Electrical Test not required.																												
Physical Dimension	According to the product Specification size measurement	Verify physical dimensions to the applicable component detail specification. Pre and Post Electrical Test not required.																												
Terminal Strength (for axial and radial THT components)	Appearance:No damage. Impedance:within±15% of initial value. RDC:within±15% of initial Value and shall not exceed the specification value.	Test THT component lead integrity only. Test Condition A (pull test). <table><tr><th>Nominal cross- sectional area (mm²)</th><th>Force (N)</th></tr><tr><td>≤ 0.05</td><td>1</td></tr><tr><td>0.06 to 0.10</td><td>2.5</td></tr><tr><td>0.11 to 0.20</td><td>5</td></tr><tr><td>0.21 to 0.50</td><td>10</td></tr><tr><td>0.51 to 1.20</td><td>20</td></tr><tr><td>> 1.20</td><td>40</td></tr></table> Test Condition C (wire-lead bend test): <table><tr><th>Section Modulus (Z_x) (mm³)</th><th>Force (N)</th></tr><tr><td>≤ 1.5x10⁻³</td><td>0.5</td></tr><tr><td>1.6x10⁻³ to 4.2x10⁻³</td><td>1.25</td></tr><tr><td>4.3x10⁻³ to 1.2x10⁻²</td><td>2.5</td></tr><tr><td>1.3x10⁻² to 0.5x10⁻¹</td><td>5</td></tr><tr><td>0.6x10⁻¹ to 1.9x10⁻¹</td><td>10</td></tr><tr><td>> 1.9x10⁻¹</td><td>20</td></tr></table> For round terminations: ZX = (πd ³)/32 where d is the lead diameter. For strip terminations: ZX = (ba ²)/6 where is the thickness of the rectangular strip perpendicular to the bending axis, b is the other dimension of the rectangular strip.	Nominal cross- sectional area (mm ²)	Force (N)	≤ 0.05	1	0.06 to 0.10	2.5	0.11 to 0.20	5	0.21 to 0.50	10	0.51 to 1.20	20	> 1.20	40	Section Modulus (Z _x) (mm ³)	Force (N)	≤ 1.5x10 ⁻³	0.5	1.6x10 ⁻³ to 4.2x10 ⁻³	1.25	4.3x10 ⁻³ to 1.2x10 ⁻²	2.5	1.3x10 ⁻² to 0.5x10 ⁻¹	5	0.6x10 ⁻¹ to 1.9x10 ⁻¹	10	> 1.9x10 ⁻¹	20
Nominal cross- sectional area (mm ²)	Force (N)																													
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Section Modulus (Z _x) (mm ³)	Force (N)																													
≤ 1.5x10 ⁻³	0.5																													
1.6x10 ⁻³ to 4.2x10 ⁻³	1.25																													
4.3x10 ⁻³ to 1.2x10 ⁻²	2.5																													
1.3x10 ⁻² to 0.5x10 ⁻¹	5																													
0.6x10 ⁻¹ to 1.9x10 ⁻¹	10																													
> 1.9x10 ⁻¹	20																													

■ Reliability and Test Condition

Item	Performance	Test Condition																	
Resistance to Solvents	Appearance:No damage. Impedance:within±15% of initial value. RDC:within±15% of initial Value and shall not exceed the specification value.	Add an Aqueous wash chemical and follow chemical manufacturer’s recommended parameters (i.e. solution temperature and immersion time). Applicable to ink marked components and not laser marked components.																	
Resistance to Solvents		<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>100</td><td>6</td><td>Half-sine</td><td>12.3</td></tr><tr><td>THT</td><td>100</td><td>6</td><td>Half-sine</td><td>12.3</td></tr></table> 3 shocks in each direction along 3 perpendicular axes. (18 shocks).	Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec	SMD	100	6	Half-sine	12.3	THT	100	6	Half-sine	12.3		
Type		Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec														
SMD		100	6	Half-sine	12.3														
THT	100	6	Half-sine	12.3															
Vibration	Preconditioning: Run through reflow for 3 times. (IPC/JEDEC J-STD-020F Classification Reflow Profiles) . Oscillation Frequency:10Hz ~ 2kHz ~ 10Hz for 20 minutes Equipment:Vibration checker Total Amplitude:5g Testing Time:12 hours(20 minutes, 12 cycles each of 3 orientations).																		
Resistance to Soldering Heat	Test condition : THT: Conditions B or C <table><tr><th>Solder technique simulation</th><th>Test condition</th><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>Dip</td><td>B</td><td>260±5 (solder temp)</td><td>10±1</td><td>25mm/s ±6mm/s</td><td>1</td></tr><tr><td>Wave:Topside board-mount product</td><td>C</td><td>260±5 (solder temp)</td><td>20±1</td><td></td><td>1</td></tr></table> Depth: completely cover the termination SMD:Condition K, time above 217°C, 60s-150s, Number of heat cycles:3 Continental	Solder technique simulation	Test condition	Temperature (°C)	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles	Dip	B	260±5 (solder temp)	10±1	25mm/s ±6mm/s	1	Wave:Topside board-mount product	C	260±5 (solder temp)	20±1		1
Solder technique simulation	Test condition	Temperature (°C)	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles														
Dip	B	260±5 (solder temp)	10±1	25mm/s ±6mm/s	1														
Wave:Topside board-mount product	C	260±5 (solder temp)	20±1		1														
ESD	Direct Contact and Air Discharge PASSIVE COMPONENT HBM ESD Discharge Waveform to a Coaxial Target Test method:AEC-Q200-002 Test mode:Contact Discharge Discharge level:4 KV (Level:2) 																		

■ Reliability and Test Condition

Item	Performance	Test Condition
Solderability	More than 95% of the terminal electrode should be covered with solder	Through-hole Technology (THT: Method A1, Coating Durability Category 2) SMD: Method B1, Coating Durability Category 2 Method D, Coating Durability Category 2 Magnification 50x Pre and Post Electrical Test not required. Non-soldered type mounting/attach are not applicable.
Electrical Characterization	Refer Specification for Approval	Parametrically test per lot and sample size requirements, summary to show Min, Max, Mean and Standard deviation at room as well as Min and Max operating temperatures. Pre and Post Electrical Test not required
Flammability	In accordance with Referenced Standards	UL-94 or IEC 60695-11-5
Board Flex (SMD)	Appearance: No damage. Impedance: within $\pm 15\%$ of initial value. RDC: within $\pm 15\%$ of initial value and shall not exceed the specification value.	Preconditioning: Run through reflow for 3 times. (IPC/JEDEC J-STD-020F Classification Reflow Profiles). Place the 100mm X 40mm board into a fixture similar to the one shown in below Figure with the component facing down. The apparatus shall consist of mechanical means to apply a force which will bend the board (D) x = 2 mm minimum. The duration of the applied forces shall be 60 (+ 5) sec. The force is to be applied only once to the board. 
Terminal Strength(SMD)		Preconditioning: Run through reflow for 3 times. (IPC/JEDEC J-STD-020F Classification Reflow Profiles) With the component mounted on a PCB with the device to be tested, apply a 17.7 N (1.8 Kg) force 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. 

Soldering and Mounting

Soldering:

Mildly activated rosin fluxes are preferred. 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.

Soldering Reflow:

Recommended temperature profiles for lead free re-flow soldering in Figure 1. Table 1.1&1.2 (J-STD-020E)

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. (Figure 2.)

·Preheat circuit and products to 150°C

·Never contact the ceramic with the iron tip

·Use a 20 watt soldering iron with tip diameter of 1.0mm

·350°C tip temperature (max)

·1.0mm tip diameter (max)

·Limit soldering time to 4~5sec.

Fig.1 Soldering Reflow

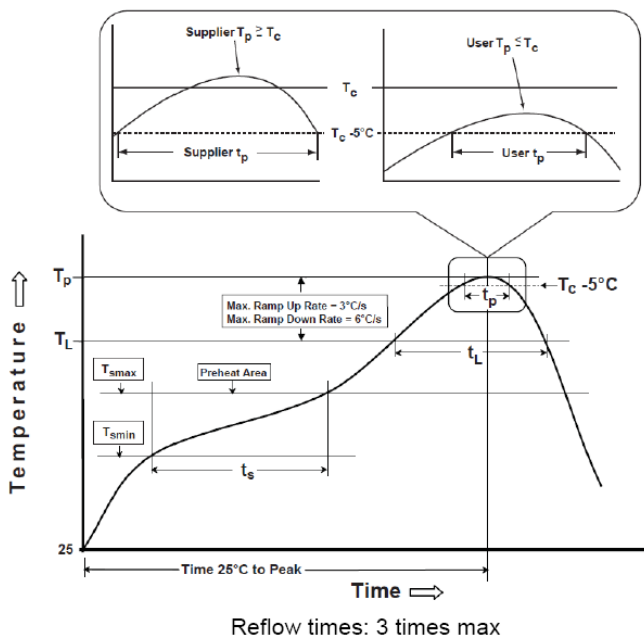


Fig.2 Iron soldering temperature profiles

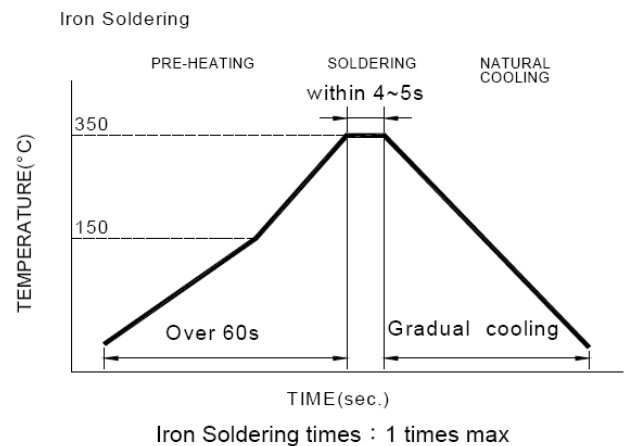


Table (1.1): Reflow Profiles

Profile Type:	Pb-Free Assembly
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(t_s)from(T_{smin} to T_{smax})	150°C 200°C 60-120seconds
Ramp-up rate(T_L to T_p)	3°C/second max.
Liquidus temperature(T_L) Time(t_L)maintained above T_L	217°C 60-150 seconds
Classification temperature(T_c)	See Table (1.2)
Time(t_p) at $T_c - 5^\circ\text{C}$ (T_p should be equal to or less than T_c .)	< 30 seconds
Ramp-down rate(T_p to T_L)	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

T_p : maximum peak package body temperature, **T_c** : the classification temperature.

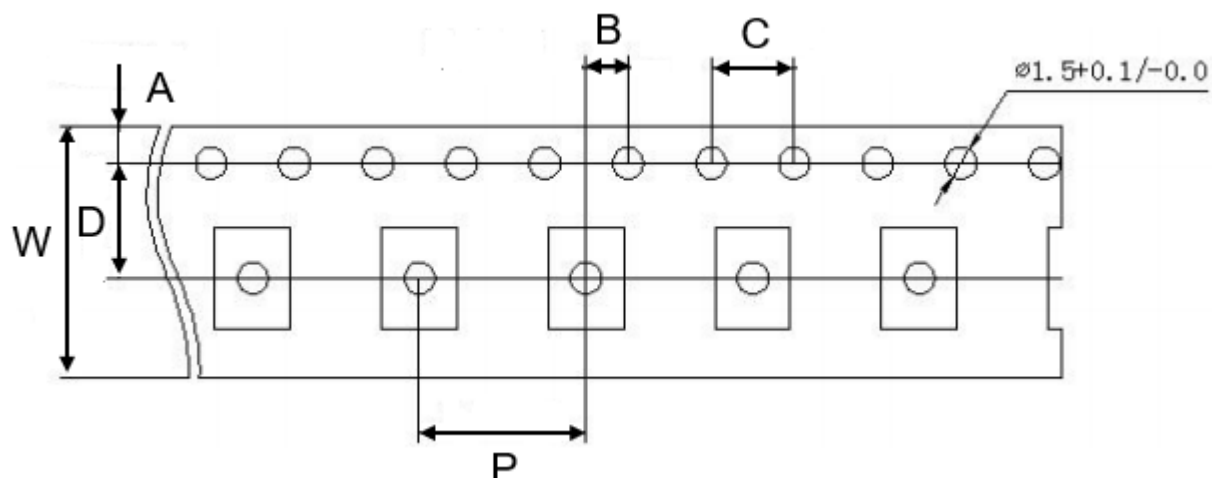
For user (customer) **T_p** should be equal to or less than **T_c** .

Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

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

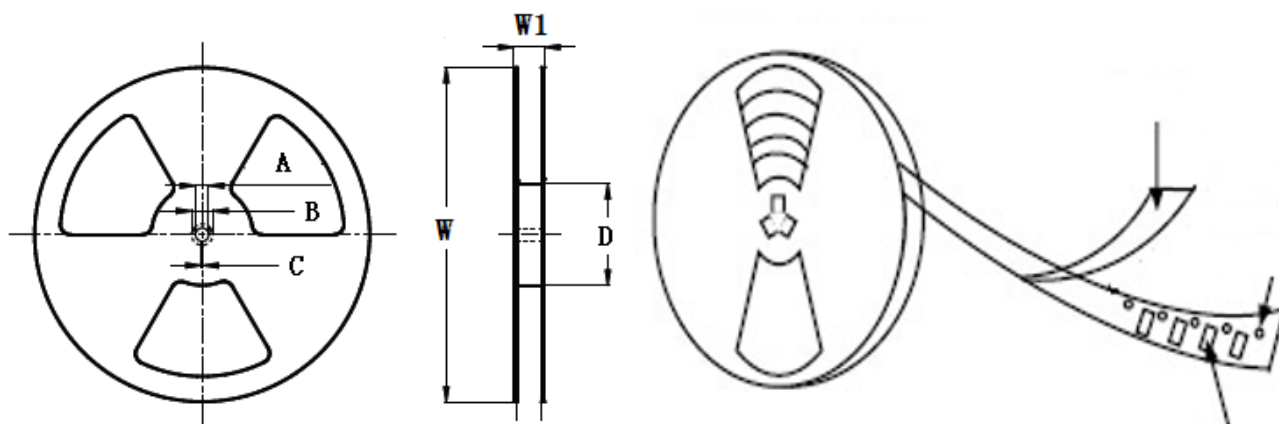
Reflow is referred to standard IPC/JEDEC J-STD-020E °

■ Taping Dimensions(Unit:mm)



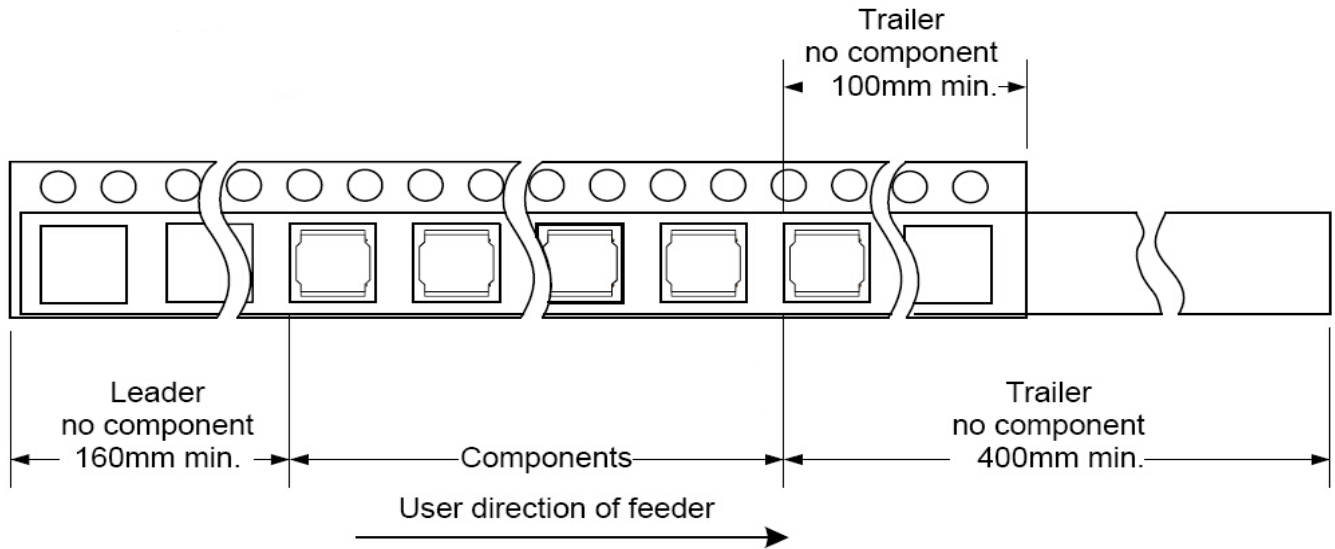
TYPE	W	A	B	C	D	P	MPQ
YALCM5555F	12.0±0.3	1.75±0.1	2.0±0.1	4.0±0.1	5.5±0.1	12.0±0.1	1500

■ Reel Dimensions(Unit:mm)

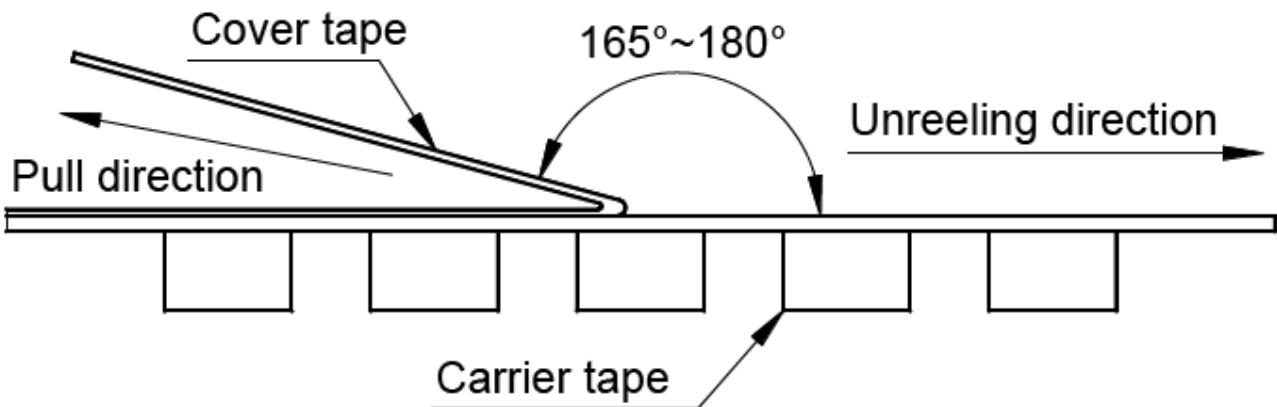


TYPE	W	W1	A	B	C	D
YALCM5555F	330±2.0	12.5±0.5	13.0±0.50	21.0±0.80	2.0±0.50	100.0±2.0

■ Direction of rolling



■ Cover tape peel off condition



Cover tape peel force shall be 0.1N to 1.3N.

Reference peel speed 300 ± 10 mm/min.