



REVISION					
REV	DESCRIPTION	DATE	DESIGNED	CHECKED	APPROVED
A0	Initial Release	2023/05/23	Nina	Pool	Darren
A1	Modified dimensional drawing	2023/10/27	Nina	Pool	Darren
A2	Add R15 Spec	2023/11/21	Nina	Pool	Darren
A3	Add R68 Spec	2024/01/26	Nina	Pool	Darren
A4	Add 4R7 Spec	2024/05/09	Nina	Pool	Darren
A5	Add 3R3 Spec	2024/06/06	Nina	Pool	Darren
A6	Add R22 Spec	2024/10/09	Nina	Pool	Darren
A7	Add 1R5 Spec	2025/07/28	Nina	Pool	Darren

1 SPECIFICATION



1.2 APPLICATIONS

- Automotive applications

1.1 DESCRIPTION

- AEC-Q200 qualified
- Halogen Free
- 165°C maximum total temperature operation
- 2.7 x 2.2 x 1.2mm maximum surface mount package
- Magnetically shielded, low EMI
- High current carrying capacity, Low core losses
- RoHS compliant

1.3 ENVIRONMENTAL DATA

- Storage temperature range: -55°C to +165°C
- Operating temperature range: -55°C to +165°C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020 compliant

1.4 PRODUCT IDENTIFICATION

MATB-252012-R15-M-6A

(1) (2) (3) (4) (5)

(1) Product Series

(2) Choke Size

(3) Initial Inductance(L @ 0A):R15=0.15 μ H

(4) Inductance Tolerance:M=L $\pm$ 20%

(5) Max. Operating Temperature:6A=165°C

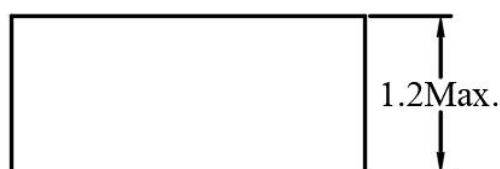
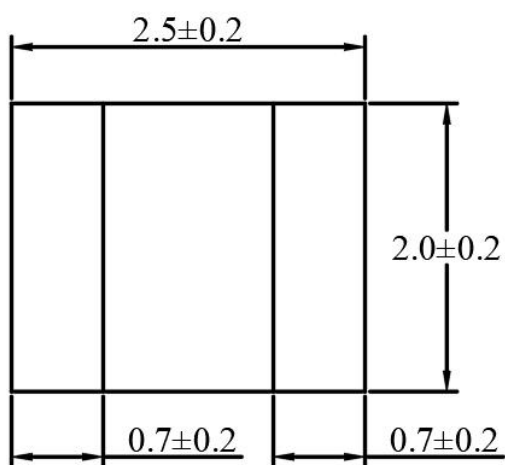
1.5 ELECTRICAL PARAMETERS

Part No.	Inductance	DC Resistance		Heating Rating Current		Saturation Current	
	L0 (μH)	DCR (mΩ)		Idc (A)		Isat (A)	
	±20 %, 1MHz, 1V	TYP.	MAX.	TYP.	MAX.	TYP.	MAX.
MATB-252012-R15-M-6A	0.15	12.0	15.0	6.5	5.8	10.2	8.7
MATB-252012-R22-M-6A	0.22	15.0	18.0	6.3	5.7	9.0	8.0
MATB-252012-R47-M-6A	0.47	21.0	26.0	4.7	4.0	6.5	5.6
MATB-252012-R68-M-6A	0.68	30.0	37.0	4.1	3.5	5.3	4.8
MATB-252012-1R0-M-6A	1.0	35.0	42.0	3.8	3.4	4.8	4.2
MATB-252012-1R5-M-6A	1.5	50.0	60.0	3.1	2.7	3.9	3.3
MATB-252012-2R2-M-6A	2.2	70.0	84.0	2.6	2.2	3.5	3.0
MATB-252012-3R3-M-6A	3.3	115.0	140.0	2.0	1.8	2.7	2.3
MATB-252012-4R7-M-6A	4.7	165.0	200.0	1.7	1.4	2.2	2.0

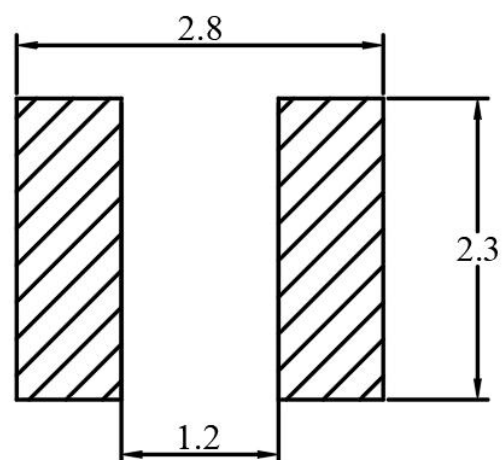
Notes:

1. Initial Inductance (L0) Test Parameters: 1MHz, 1V, Idc=0.0A, +25°C
2. Operating temperature range - 55°C to + 165°C
3. Idc(A): DC current (A) that will cause an approximate ΔT of 40°C
4. Isat(A): DC current (A) that will cause L0 to drop approximately 30%
5. The part temperature (ambient + temp rise) should not exceed 165°C under worst case operating conditions. Circuit design, component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.
6. The rated current as listed is either the saturation current or the heating current depending on which value is lower.

1.6 MECHANICAL PARAMETERS-mm



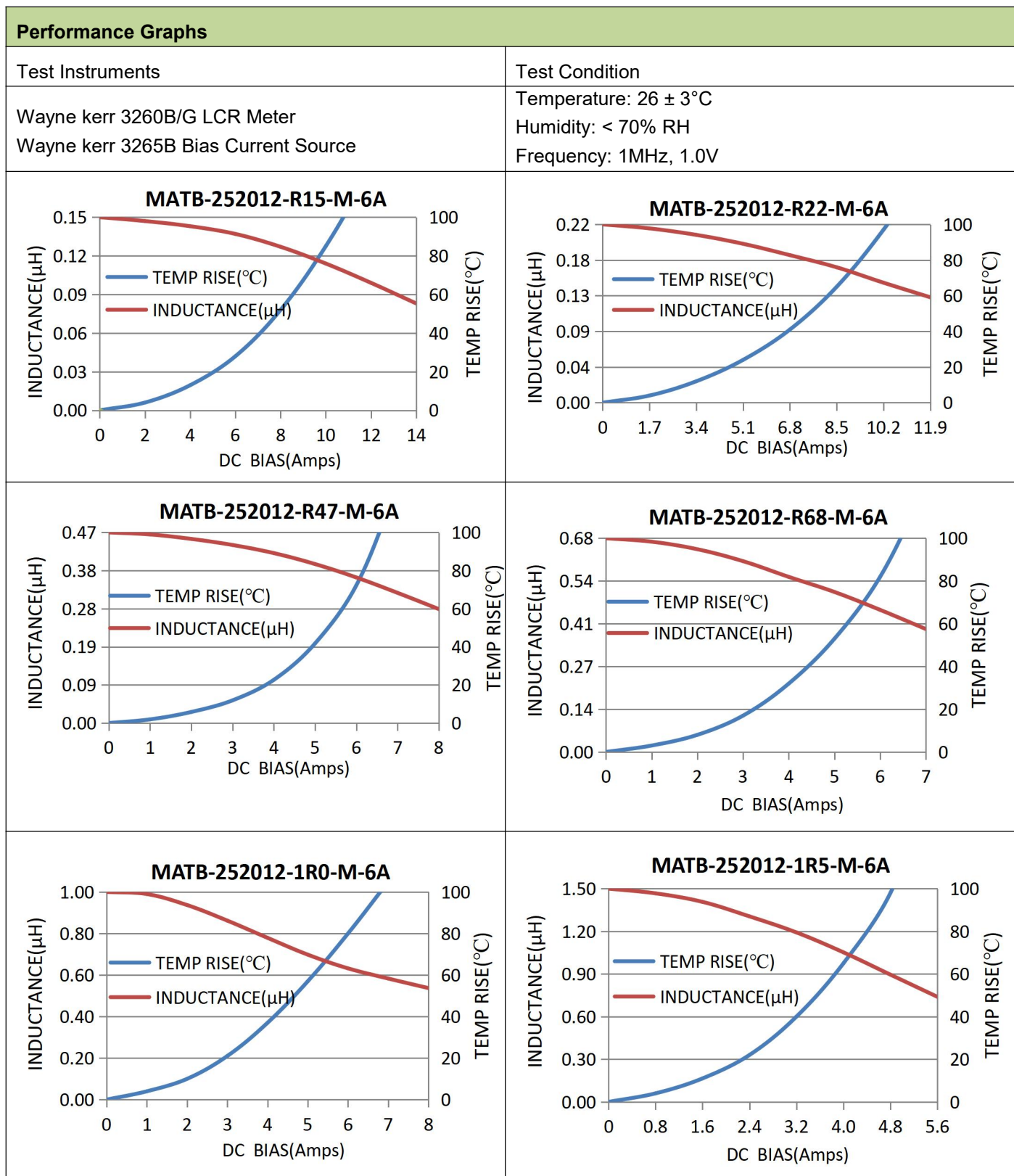
1.7 RECOMMENDED PCB LAYOUT-mm

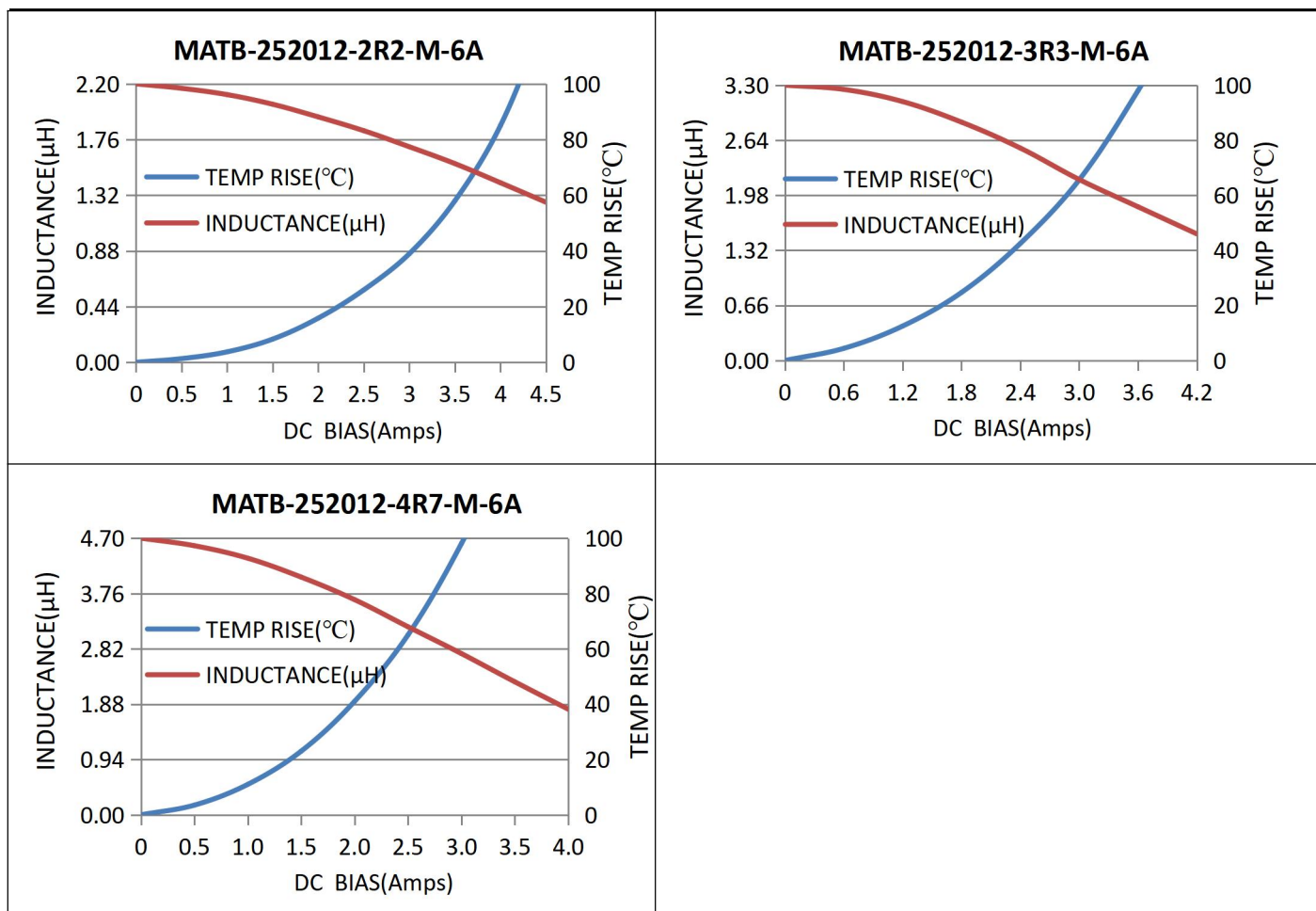


Notes:

1. Tolerances are ± 0.1 millimeters unless stated otherwise
2. Dimensions of recommended PCB layout are reference only
3. Do not route traces nor place vias underneath the inductor. Proper layout is required.

2 INDUCTANCE & TEMPERATURE RISE VS IDC





3 REFLOW PROFILE

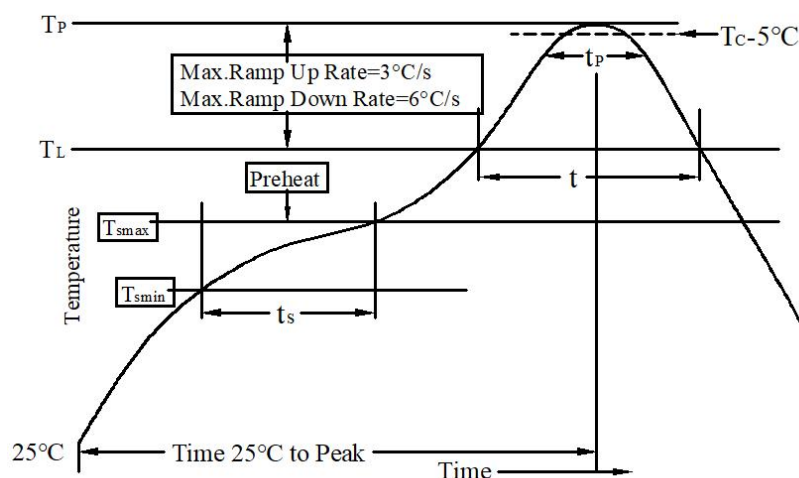


Table 1-Standard SnPb Solder(T_C)

Package Thickness	Volume mm^3	Volume mm^3
	<350	<350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2-Lead(Pb) Free Solder(T_C)

Package Thickness	Volume mm^3	Volume mm^3	Volume mm^3
	<350	350-2000	>2000
<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

Reference JDEC J-STD-020

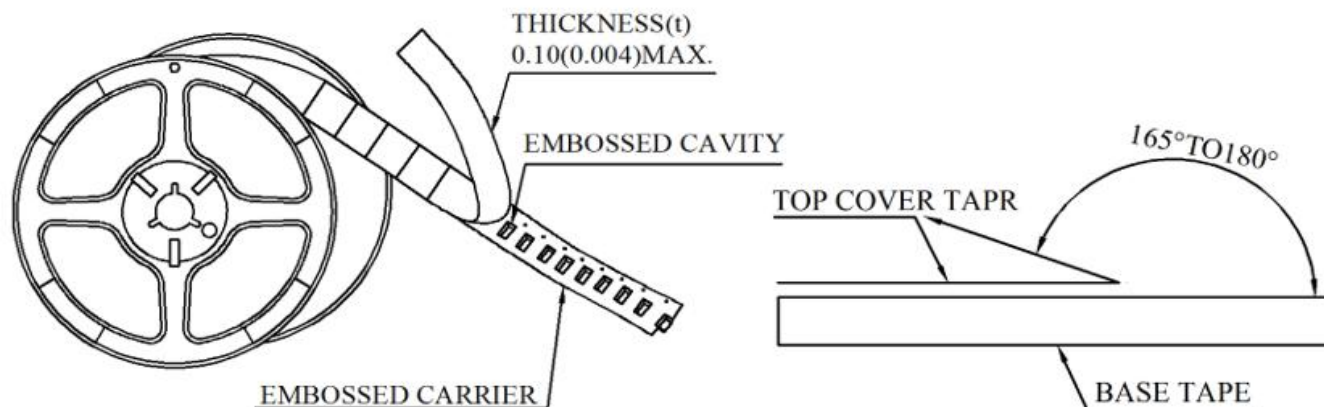
Profile Feature	Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak		
• Temperature min. (T_{smin})	100°C	150°C
• Temperature max. (T_{smax})	150°C	200°C
• Time (T_{smin} to T_{smax})(t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate T_{smax} to T_P	3°C/Second Max.	3°C/Second Max.
Liquidous temperature (T_L)	183°C	217°C
Time at liquidous(t_L)	60-150 Seconds	60-150 Seconds
Peak package body temperaure (T_P)*	Table 1	Table 2
Time (t_p)** within 5°C of the specified classification temperature(T_C)	20 Seconds**	30 Seconds**
Average ramp-down rate (T_P to T_{smax})	6°C/Second Max.	6°C/Second Max.
Time 25°C to Peak Temperature	6 Minutes Max.	8 Minutes Max.

* Tolerance for peak profile temperature (T_P) is defined as a supplier minimum and a user maximum.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

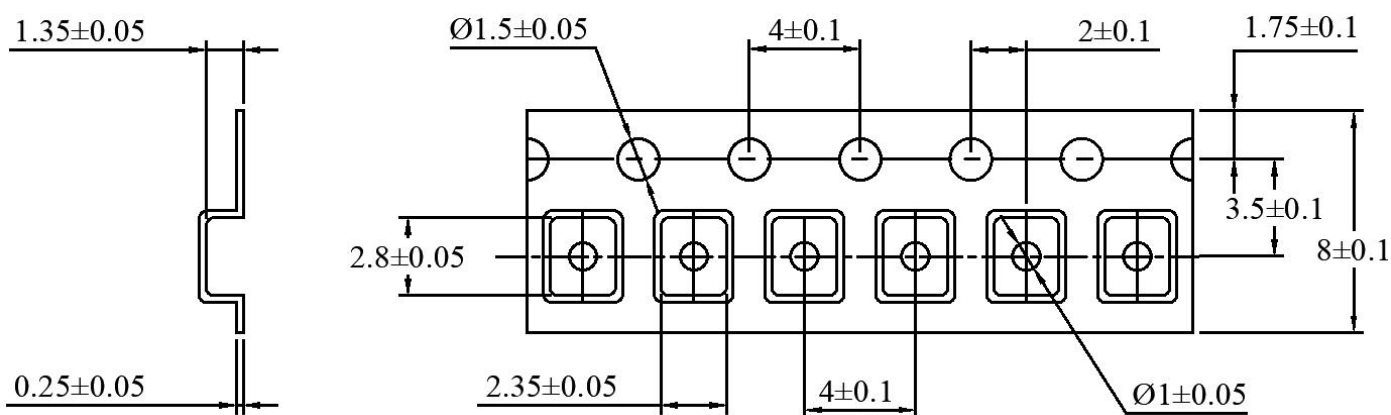
4 PACKAGE INFORMATION-mm

Peel-off Force

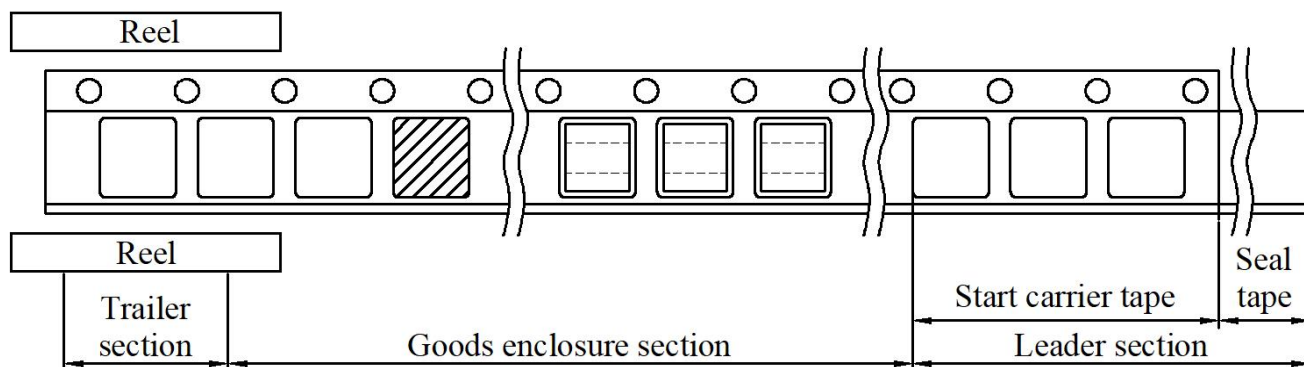


The force for peeling off cover tape is 10 to 100 grams in the arrow direction

4.1 Tape Packaging Dimensions-mm

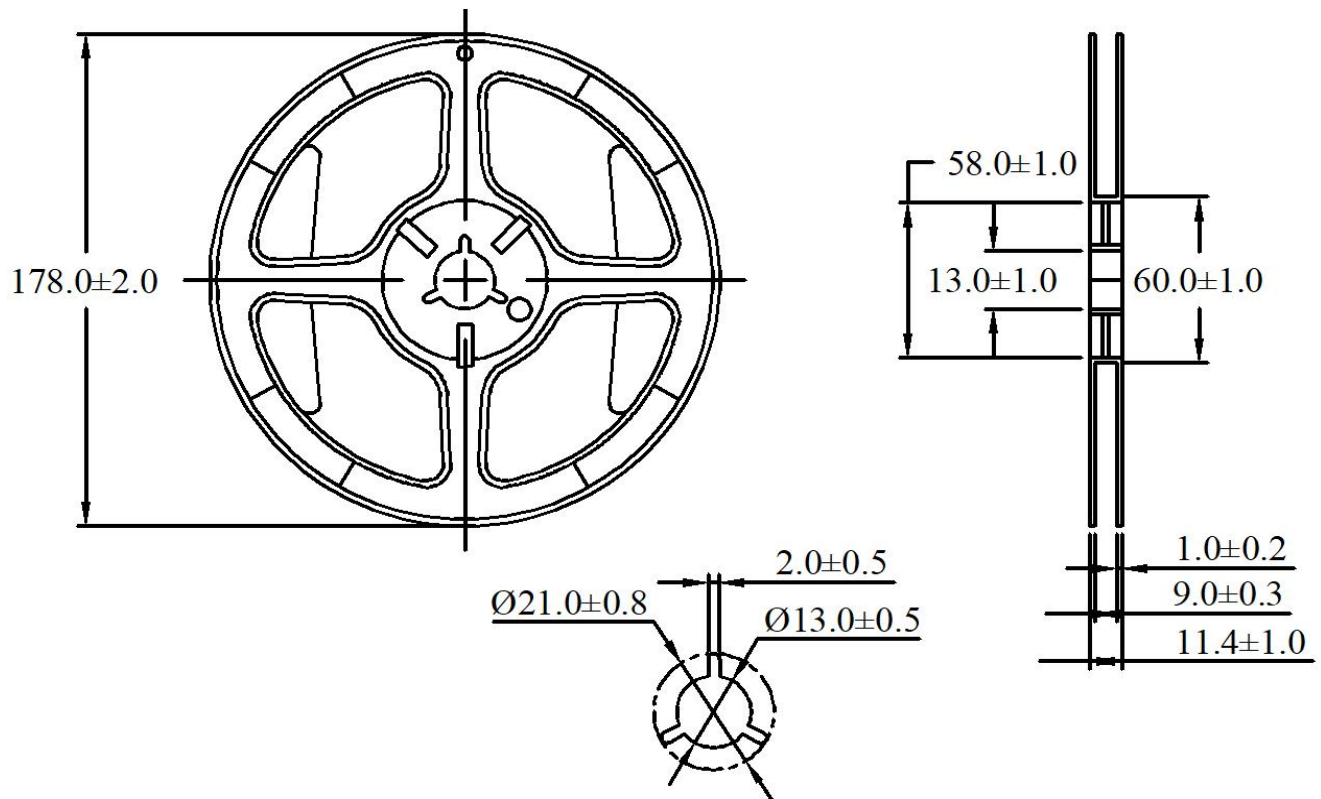


Taping dimension and tape direction, Leader ,Trailer, section dimension



Leader section	Min.400mm
Carrier tape start size	Min.100mm
Trailer section size	Min.160mm

4.2 Reel Dimensions-mm



4.3 Taping Quantity

3000pieces/Reel