

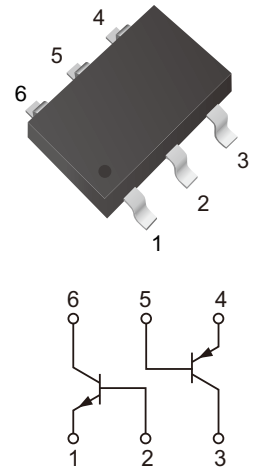
## Dual Transistor (PNP+NPN)

### Features

- Epitaxial Planar DieConstruction
- Ideal for Low Power Amplification and Switching
- One 5551(NPN),One 5401(PNP)
- Lead free in comply with EU RoHS 2011/65/EU directives

### Ordering Information

Part Number	Marking	Shipping	Reel
LTDT5451-TR3	KNM	3000PCS Tape&Reel	7 inches
LTDT5451-TR10	KNM	10000PCS Tape&Reel	13 inches



### Maximum Rating NPN5551 (Ta=25 unless otherwise noted)

Symbol	Parameter	Value	Units
$V_{CB0}$	Collector- Base Voltage	180	V
$V_{CEO}$	Collector-Emitter Voltage	160	V
$V_{EBO}$	Emitter-Base Vo	6	V
$I_C$	Collector Current -Continuous	0.2	A
$P_C$	Collector Power Dissipation	0.2	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	625	°C/W
$T_J$	Junction Temperature	150	°C
$T_{stg}$	Storage Temperature	-55-150	°C

### Electrical Characteristics NPN5551 (Ta=25 unless otherwise noted)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CB0}$	$I_C=100\mu A, I_E=0$	180			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1mA, I_B=0$	160			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6			V
Collector cut-off current	$I_{CB0}$	$V_{CB}=120V, I_E=0$			0.05	$\mu A$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=4V, I_C=0$			0.05	$\mu A$
DC current gain	$h_{FE1}$	$V_{CE}=5V, I_C=1mA$	80			
	$h_{FE2}$	$V_{CE}=5V, I_C=10mA$	100		300	
	$h_{FE3}$	$V_{CE}=5V, I_C=50mA$	30			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=10mA, I_B=1mA$			0.15	V
		$I_C=50mA, I_B=5mA$			0.2	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=10mA, I_B=1mA$			1	V
		$I_C=50mA, I_B=5mA$			1	V
Output Capacitance	$C_{obo}$	$V_{CB} = 10V, f = 1.0MHz, I_E = 0$			6.0	pF
Current Gain-Bandwidth Product	$f_T$	$V_{CE} = 10V, I_C = 10mA, f = 100MHz$	100		300	MHz
Noise Figure	NF	$V_{CE}= 5.0V, I_C = 200\mu A, R_S = 1.0k\Omega, f = 1.0kHz$			8.0	dB



Maximum Rating PNP5401 ( Ta=25 unless otherwise noted )

Symbol	Parameter	Value	Units
V <sub>CBO</sub>	Collector- Base Voltage	-160	V
V <sub>CEO</sub>	Collector-Emitter Voltage	-150	V
V <sub>EBO</sub>	Emitter-Base Voltage	-5	V
I <sub>C</sub>	Collector Current -Continuous	-0.2	A
P <sub>C</sub>	Collector Power Dissipation	0.2	W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	625	°C/W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55-150	°C

Electrical Characteristics PNP5401 ( Ta=25 unless otherwise noted )

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =-100μA, I <sub>E</sub> =0	-160			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =-1mA, I <sub>B</sub> =0	-150			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =-10μA, I <sub>C</sub> =0	-5			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =-120V, I <sub>E</sub> =0			-50	nA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =-3V, I <sub>C</sub> =0			-50	nA
DC current gain	h <sub>FE1</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-1mA	50			
	h <sub>FE2</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-10mA	100		300	
	h <sub>FE3</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-50mA	50			
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =-10mA, I <sub>B</sub> =-1mA			-0.2	V
		I <sub>C</sub> =-50mA, I <sub>B</sub> =-5mA			-0.5	V
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =-10mA, I <sub>B</sub> =-1mA			-1	V
		I <sub>C</sub> =-50mA, I <sub>B</sub> =-5mA			-1	V
Output Capacitance	C <sub>obo</sub>	V <sub>CB</sub> =-10V, f = 1.0MHz, I <sub>E</sub> = 0			6.0	pF
Current Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =-10V, I <sub>C</sub> =-10mA, f = 100MHz	100		300	MHz
Noise Figure	NF	V <sub>CE</sub> =-5.0V, I <sub>C</sub> =-200μA, R <sub>S</sub> = 10 Ω , f = 1.0kHz			8.0	dB



Characteristics Curves (NPN 5551)

Fig.1 Static Characteristic

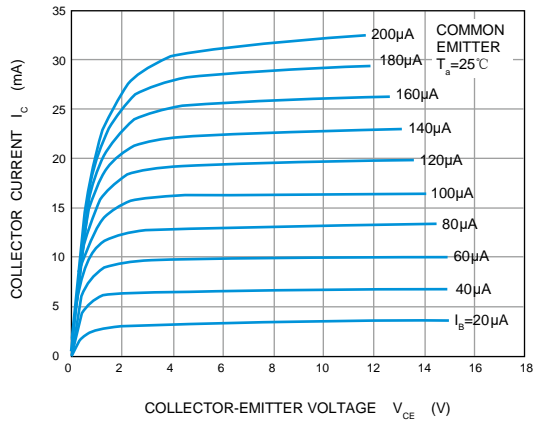


Fig.2  $h_{FE}$  vs  $I_c$

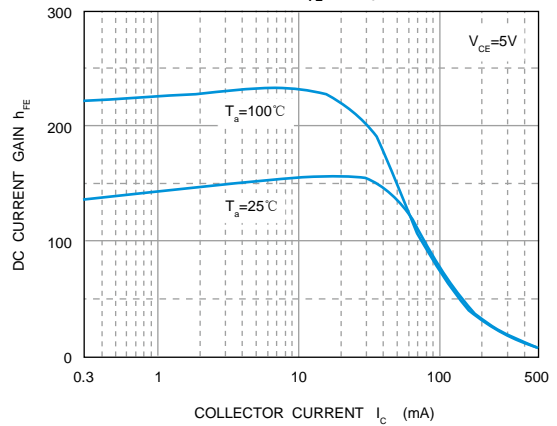


Fig.3  $V_{BEsat}$  vs  $I_c$

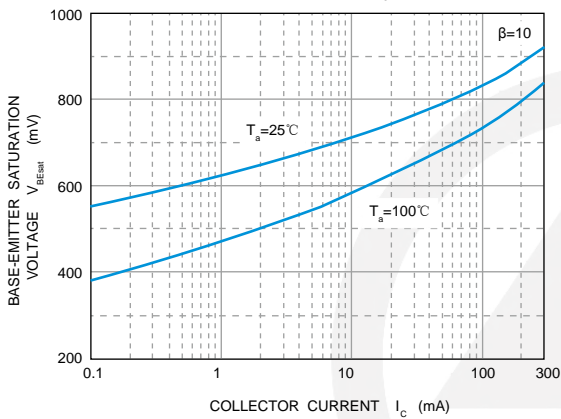


Fig.4  $V_{CEsat}$  vs  $I_c$

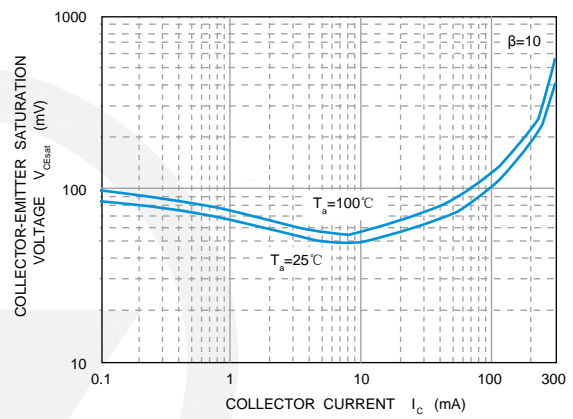


Fig.5  $C_{ob}/C_{ib}$  vs  $V_{CB}/V_{EB}$

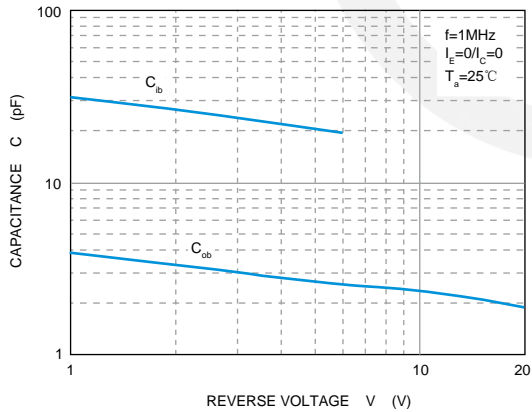


Fig.6  $f_T$  vs  $I_c$

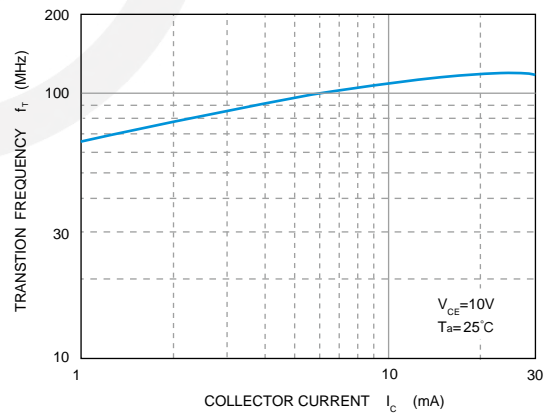
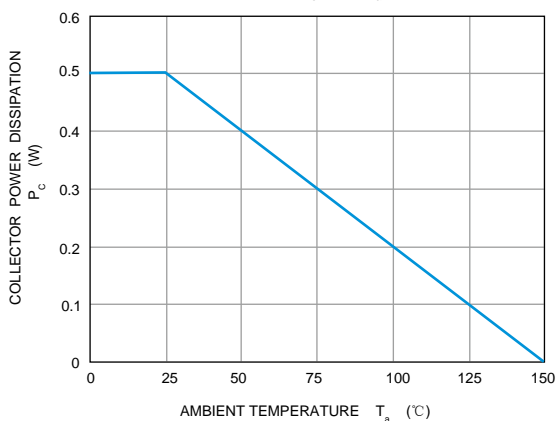


Fig.7  $P_c$  vs  $T_a$





Characteristics Curves (PNP 5401)

Fig.1 Static Characteristic

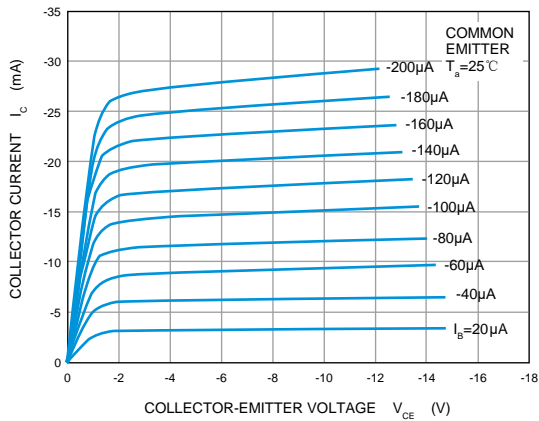


Fig.2  $h_{FE}$  vs  $I_c$

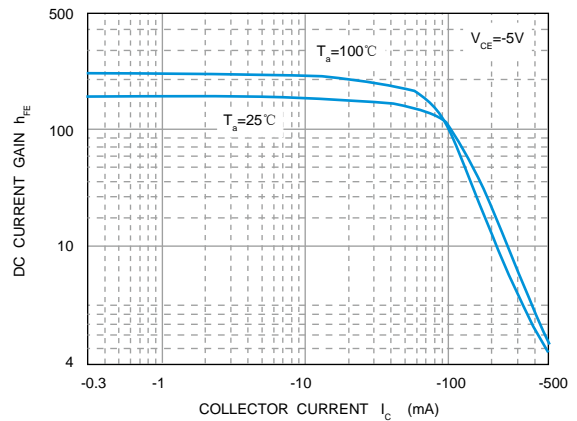


Fig.3  $V_{BEsat}$  vs  $I_c$

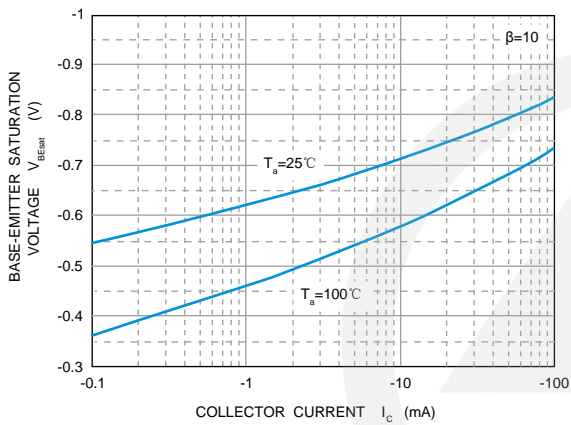


Fig.4  $V_{CEsat}$  vs  $I_c$

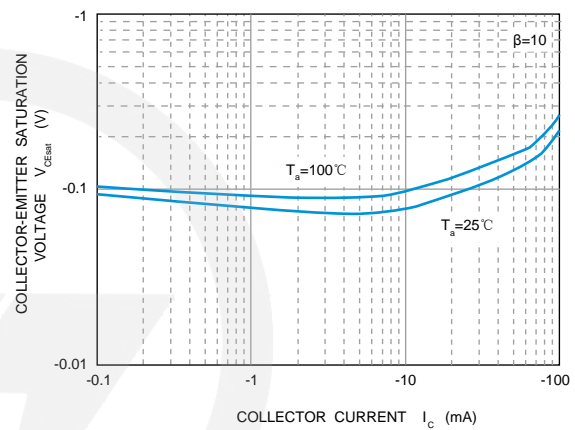


Fig.5  $C_{ob}/C_{ib}$  vs  $V_{CB}/V_{EB}$

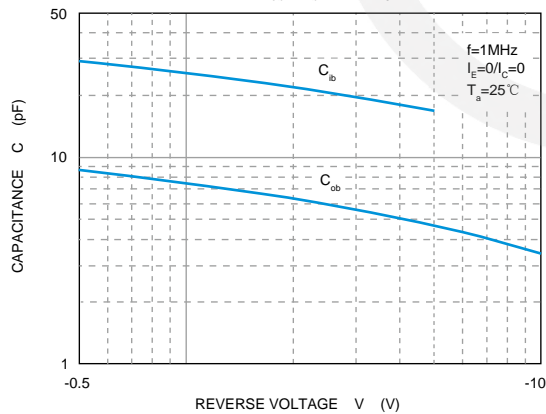


Fig.6  $f_T$  vs  $I_c$

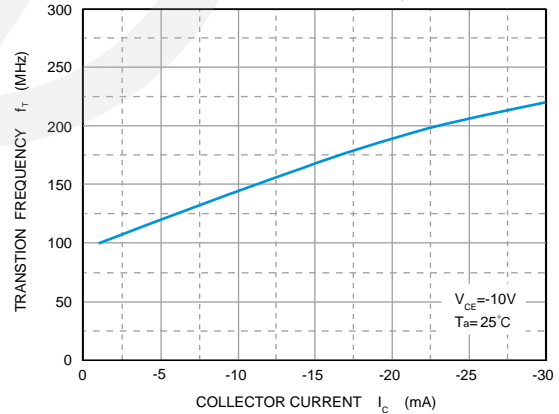
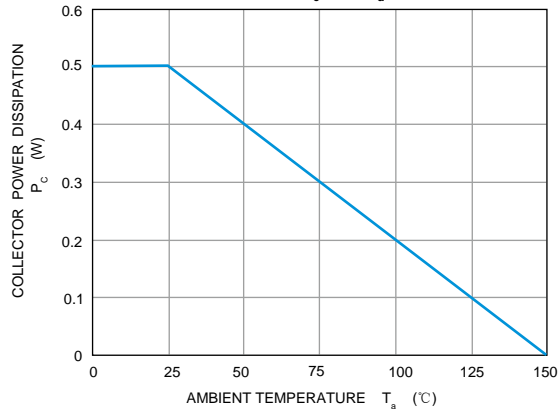
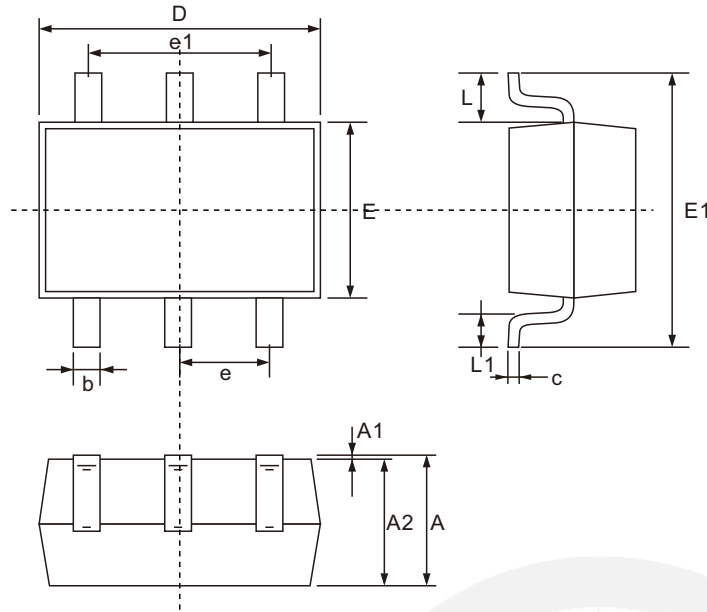


Fig.7  $P_c$  vs  $T_a$





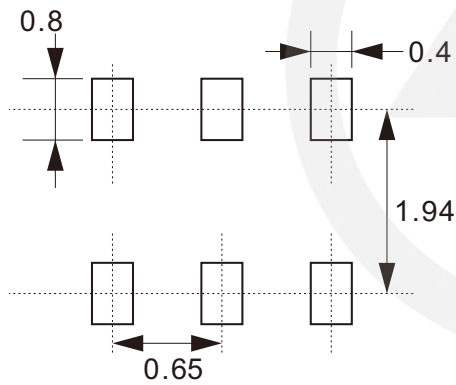
SOT-363 Package Outline



Unit: mm

SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.100
A1	0.000	0.100
A2	0.900	1.000
b	0.150	0.350
c	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.450
e	0.650 TYP.	
e1	1.200	1.400
L	0.525 TYP.	
L1	0.260	0.460
θ	0°	8°

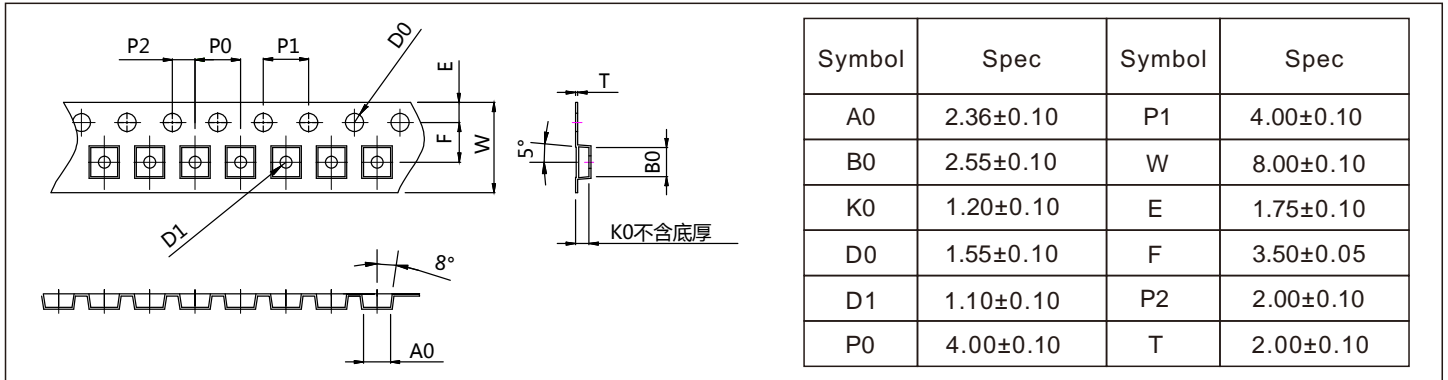
SOT-363 Suggested Pad Layout



Note:  
1. Controlling dimension: in millimeters.  
2. General tolerance:  $\pm 0.05$  mm  
3. The pad layout is for reference purpose only.

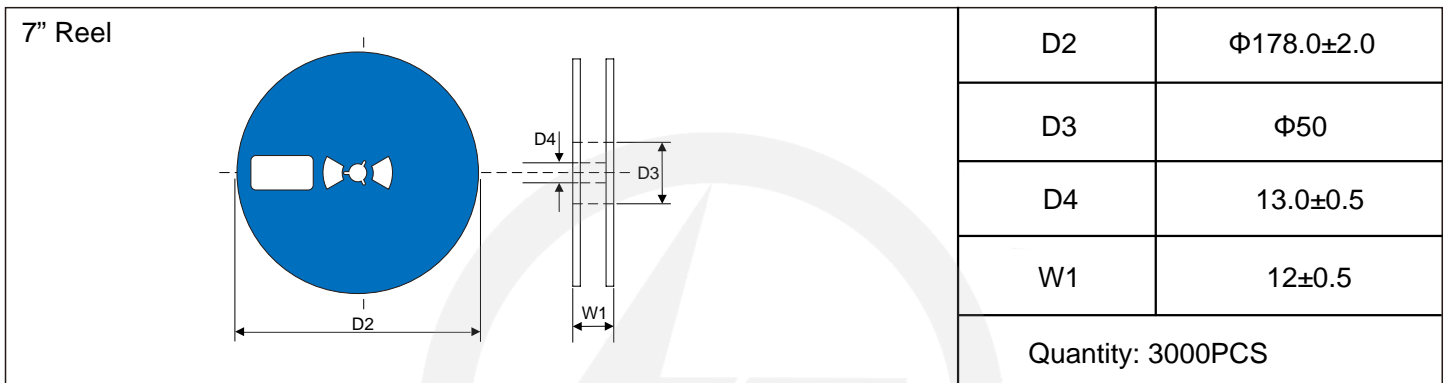
## Carrier Tape Dimensions

Unit : mm



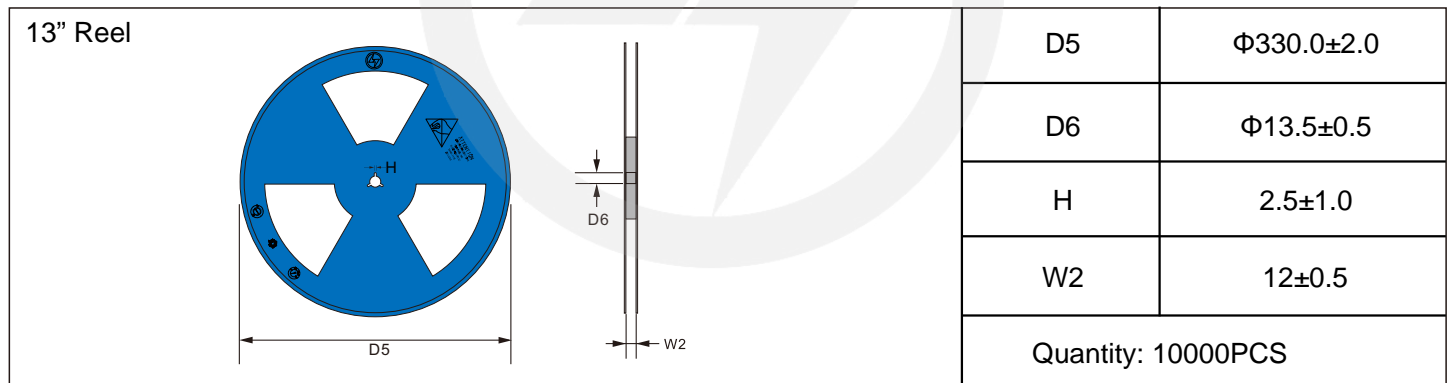
## Reel Dimensions

Unit : mm

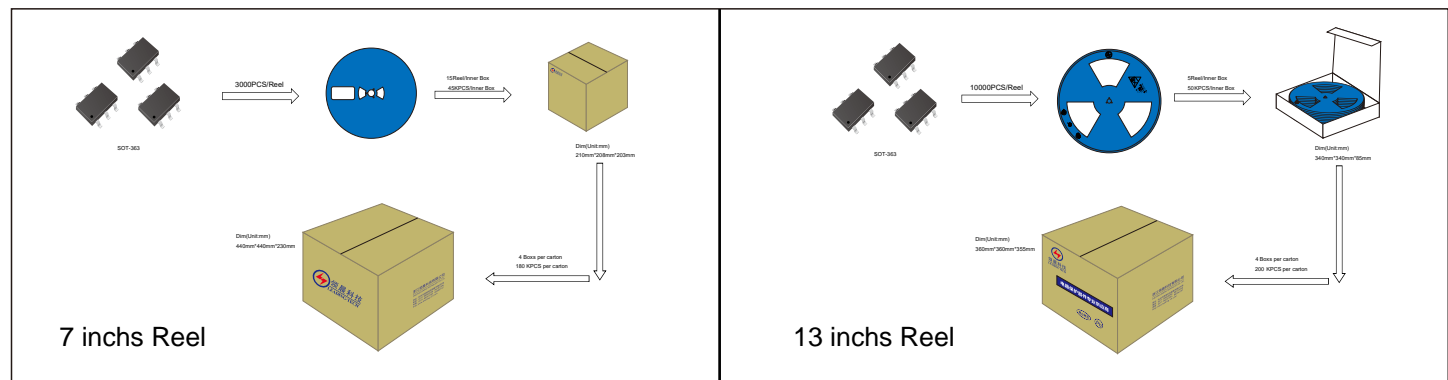


## Reel Dimensions

Unit : mm

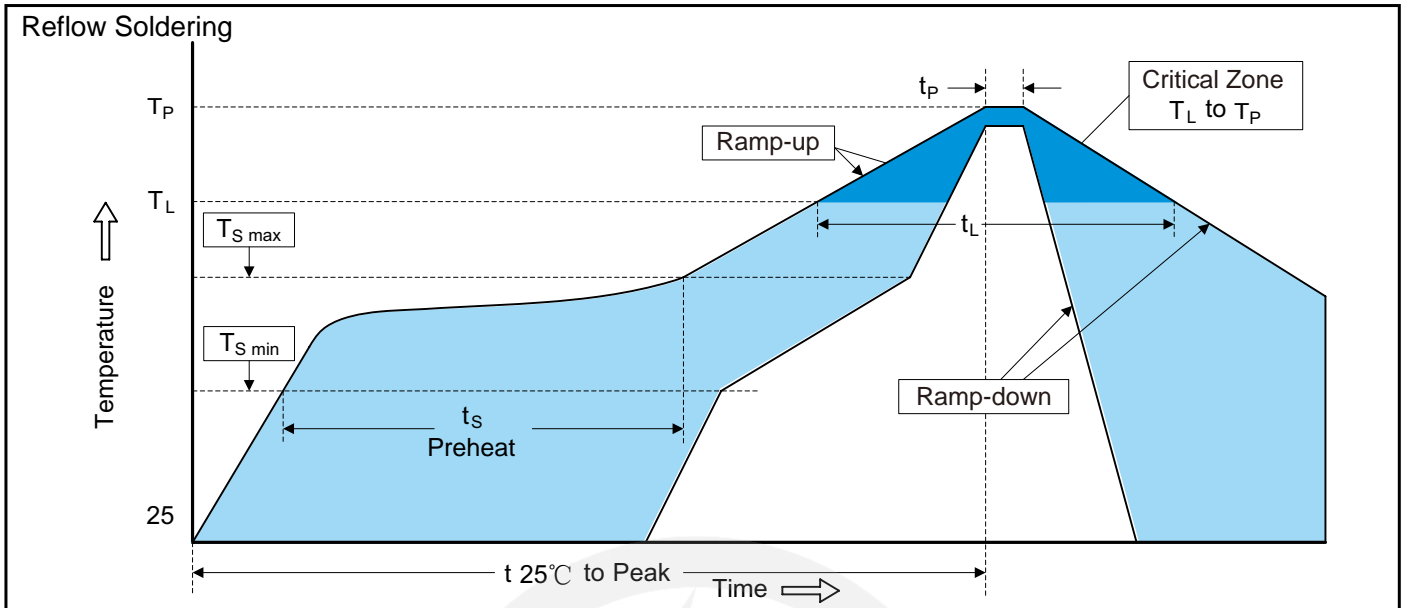


## Packaging





Recommended Soldering Conditions



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T <sub>L</sub> to T <sub>P</sub> )	3°C/second max.
Preheat	
-Temperature Min (T <sub>S min</sub> )	150°C
-Temperature Max (T <sub>S max</sub> )	200°C
-Time (min to max) (t <sub>s</sub> )	60-180 seconds
T <sub>S max</sub> to T <sub>L</sub>	
-Ramp-up Rate	3°C/second max.
Time maintained above:	
-Temperature (T <sub>L</sub> )	217°C
-Time (t <sub>L</sub> )	60-150 seconds
Peak Temperature (T <sub>P</sub> )	260°C
Time within 5°C of actual Peak Temperature (t <sub>p</sub> )	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

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## Version Update Information

Series NO.	Enactment/Revision Date	Effective Date	Version	Revision content	Revision Reason	Revision Person	Note
01	2024.10.08	2024.10.08	3.0	New File	/	Ding	
02	2025.06.11	2025.06.11	3.1	Update packaging information	/	Ding	