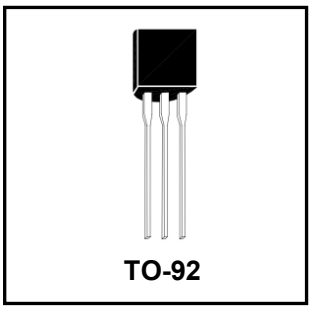
WT9013L

NPN Silicon Transistor

Features

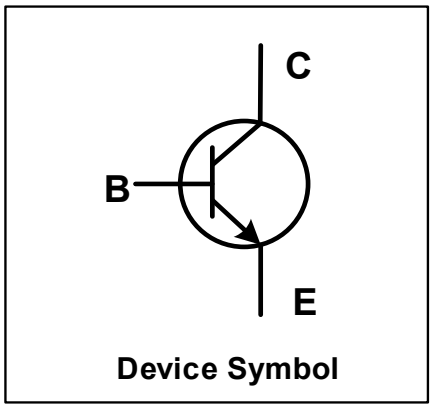
- Complementary to WT9012L
- Excellent h_{FE} linearity

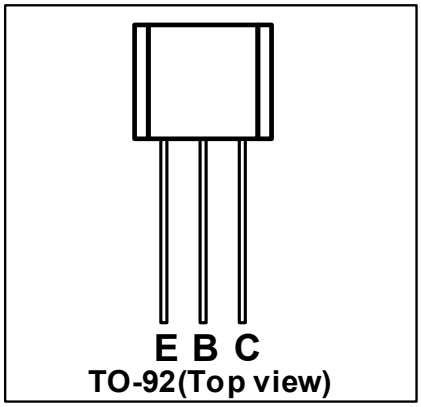


Mechanical Characteristics

- TO-92 Package
- Marking : Making Code

Schematic & PIN Configuration





Absolute Maximum Rating

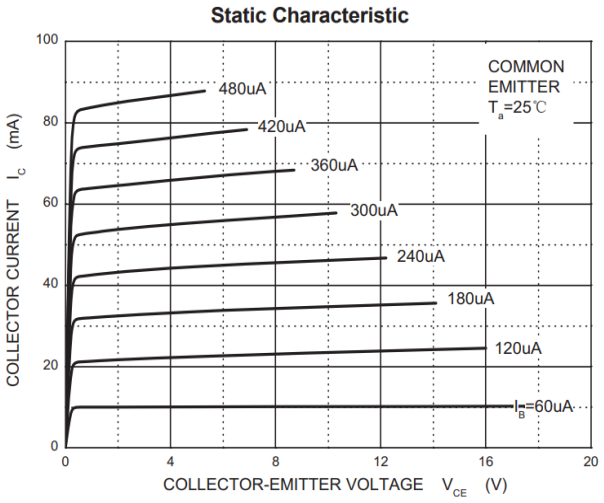
Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	40	V
Collector Emitter Voltage	V_{CEO}	25	V
Emitter Base Voltage	V_{EBO}	5	V
Collector Current-Continuous	I_C	500	mA
Collector Power Dissipation	P_C	625	mW
Operation Junction and Storage Temperature Range	T_j ,T_{stg}	-55 ~ 150	°C
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	200	°C/W

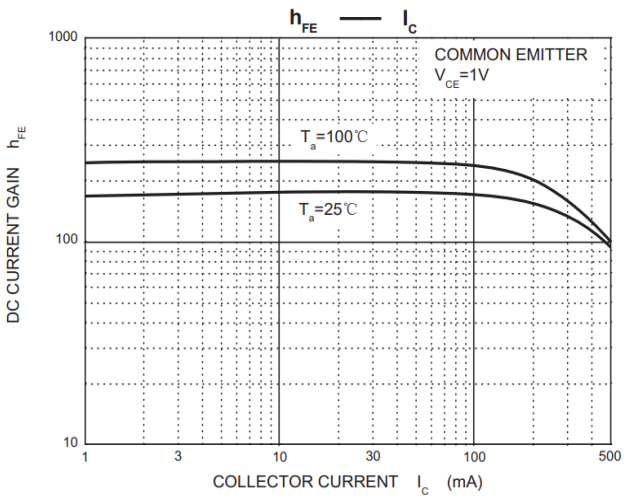
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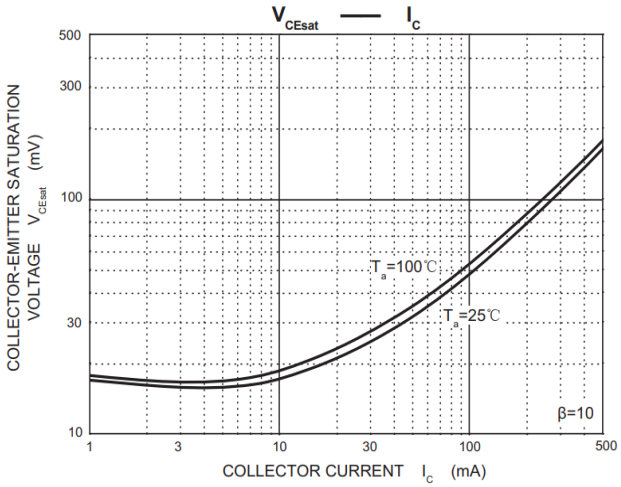
Electrical Characteristics (Tamb=25°C unless otherwise noted)

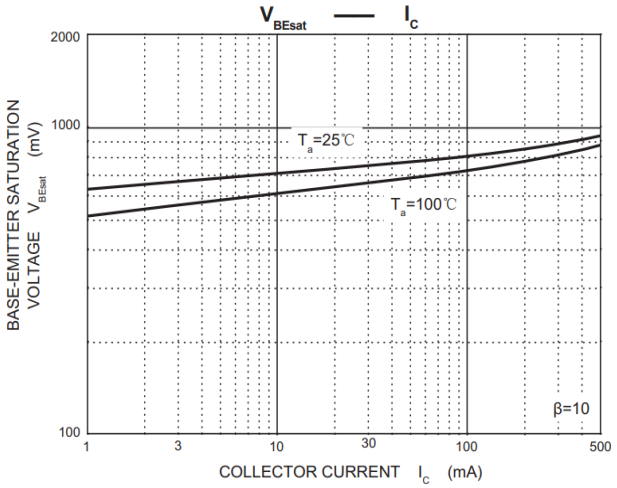
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100μA, I_E = 0	40	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	25	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100μA, I_C = 0	5	-	-	V
Collector Cut-Off Current	I_{CBO}	V_{CB} = 40V, I_E = 0	-	-	100	nA
Collector Cut-Off Current	I_{CEO}	V_{CE} = 20V, I_B = 0	-	-	100	nA
Emitter Cut-Off Current	I_{EBO}	V_{EB} = 5V, I_C = 0	-	-	100	nA
DC current Gain	$h_{FE(1)}$	V_{CE} = 1V, I_C = 50mA	200	-	350	-
	$h_{FE(2)}$	V_{CE} = 1V, I_C = 500mA	40	-	-	-
Collector-Emitter Saturation Voltage [1]	$V_{CE(sat)}$	I_C = 500mA, I_B = 50mA	-	-	0.6	V
Base-Emitter Saturation Voltage [1]	$V_{BE(sat)}$	I_C = 500mA, I_B = 50mA	-	-	1.2	V
Transition Frequency	f_T	V_{CE}=6V, I_C=20mA, f=30MHz	150	-	-	MHz

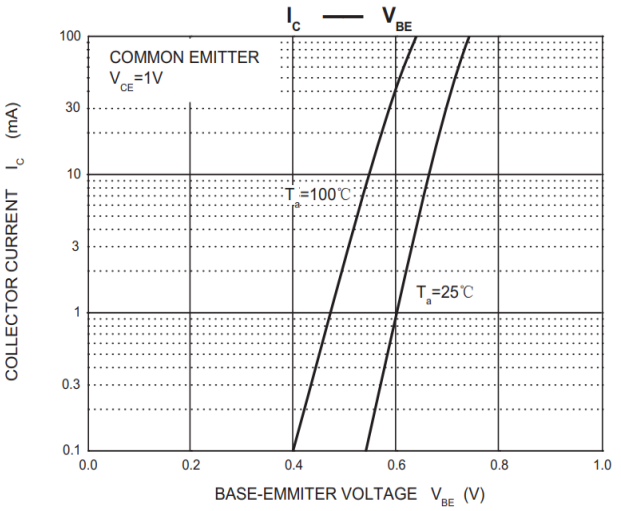
Typical Characteristics

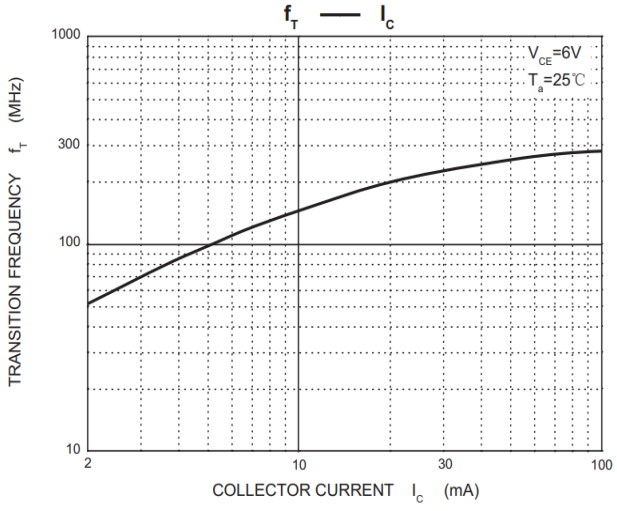


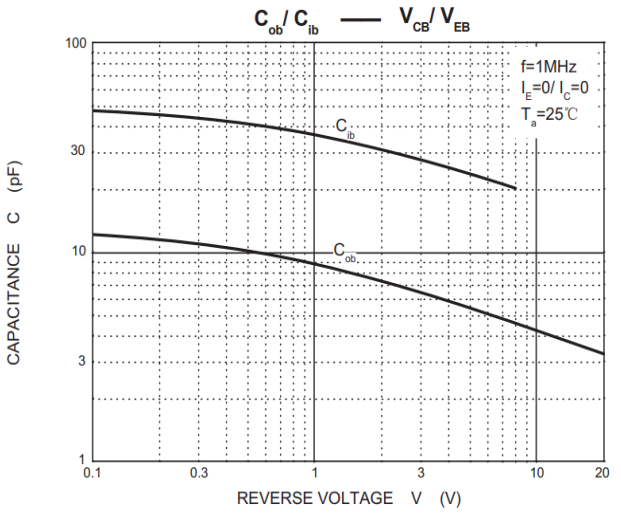


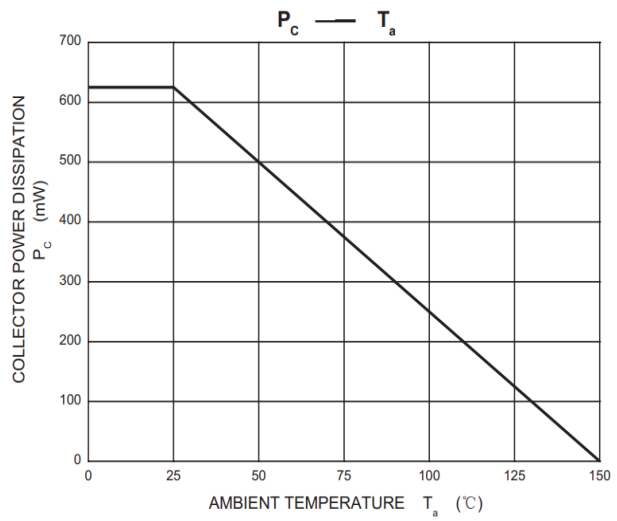

V_{CEsat} — I_C
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
500
300
100
30
10
1
3
10
30
100
500
T_a=100℃
T_a=25℃
β=10
COLLECTOR CURRENT I_C (mA)


V_{BEsat} — I_C
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (mV)
2000
1000
100
1
3
10
30
100
500
T_a=25℃
T_a=100℃
β=10
COLLECTOR CURRENT I_C (mA)

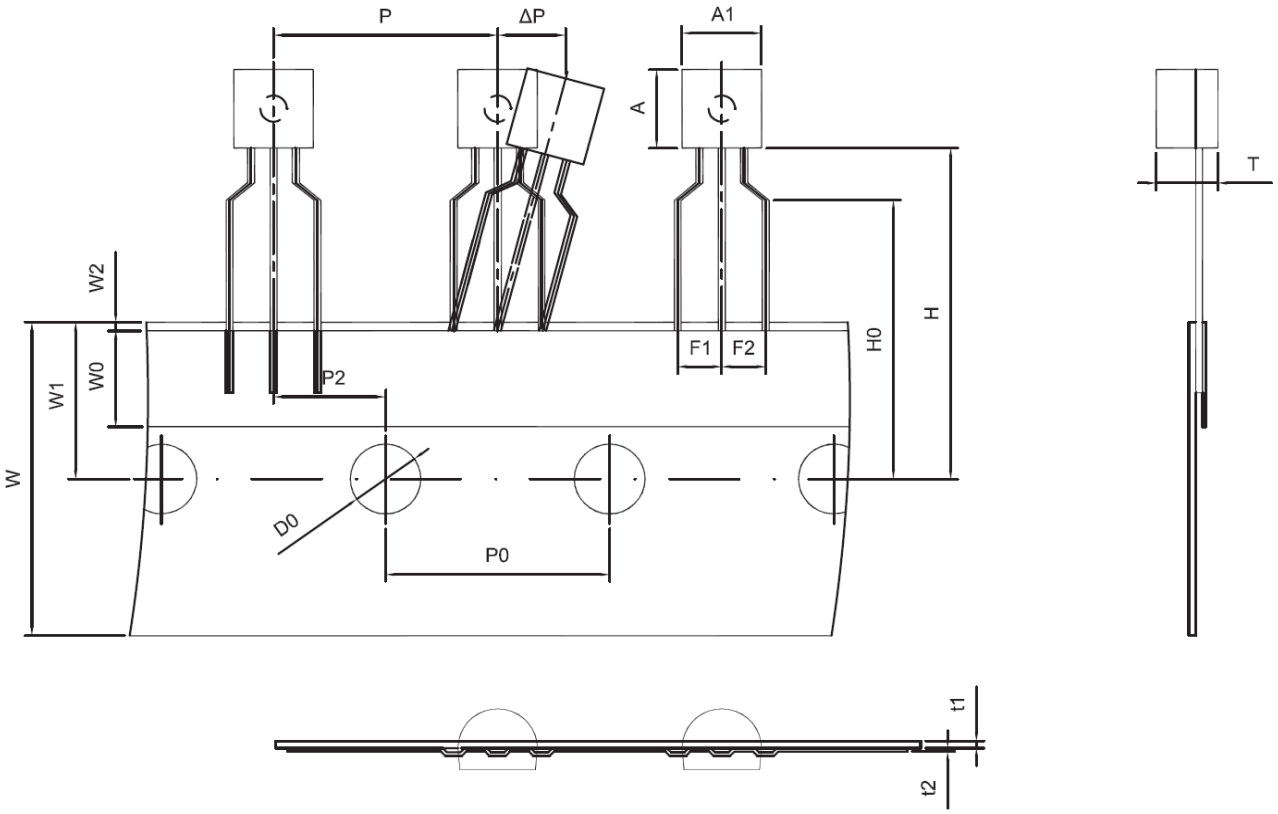

I_C — V_{BE}
COMMON EMITTER
V_{CE}=1V
COLLECTOR CURRENT I_C (mA)
100
30
10
3
1
0.3
0.1
T_a=100℃
T_a=25℃
0.0
0.2
0.4
0.6
0.8
1.0
BASE-EMMITER VOLTAGE V_{BE} (V)


f_T — I_C
TRANSITION FREQUENCY f_T (MHz)
1000
300
100
10
2
10
30
100
V_{CE}=6V
T_a=25℃
COLLECTOR CURRENT I_C (mA)


C_{ob} / C_{ib} — V_{CB} / V_{EB}
CAPACITANCE C (pF)
100
30
10
3
1
0.1
0.3
1
3
10
20
f=1MHz
I_E=0/ I_C=0
T_a=25℃
C_{ib}
C_{ob}
REVERSE VOLTAGE V (V)


P_C — T_a
COLLECTOR POWER DISSIPATION P_C (mW)
700
600
500
400
300
200
100
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE T_a (℃)

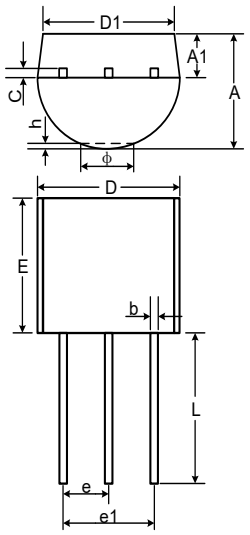
Tape And Reel Information

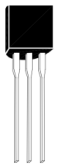


Dimensions are in millimeter								
A1	A	T	P	P0	P2	F1	F2	W
4.55	4.5	3.5	12.7	12.7	6.35	2.5	2.5	18.0
W0	W1	W2	H	H0	D0	t1	t2	Δ P
6.0	9.0	1.0 Max	19.0	16.0	4.0	0.46	0.2	0

Outline Drawing – TO-92

PACKAGE OUTLINE

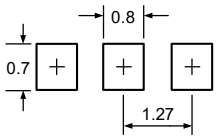




TO-92

SYMBOL	MILLIMETERS	
	MIN	MAX
A	3.30	3.70
A1	1.10	1.40
b	0.36	0.56
c	0.28	0.51
D	4.30	4.70
D1	3.43	4.30
E	4.30	4.70
e	1.27 TYP	
e1	2.44	2.64
L	14.1	14.5
ϕ		1.60
h	0	0.38

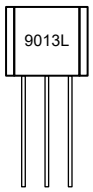
Pad Layout



Notes

1. Controlling dimension: in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purposes only.

Marking Codes

Part Number	WT9013L
Marking Code	

Package Information

Qty：2k/Box

CONTACT INFORMATION

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WAYON website: **http://www.way-on.com**
For additional information, please contact your local Sales Representative.

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Product Specification Statement

1. The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

2. The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. WAYON shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and WAYON assumes no responsibility for the application of the product.

3. WAYON strives to provide accurate and up-to-date information to the best of our ability. However, due to technical, human, or other reasons, WAYON cannot guarantee that the information provided in the product specification is entirely accurate and error-free. WAYON shall not be held responsible for any losses or damages resulting from the use or reliance on any information in these product specifications. WAYON reserves the right to revise or update the product specification and the products at any time without prior notice, and the user's continued use of the product specification is considered an acceptance of these revisions and updates. Prior to purchasing and using the product, users should verify the above information with WAYON to ensure that the product specification is the most current, effective, and complete. If users are particularly concerned about product parameters, please consult WAYON in detail or request relevant product test reports. Any data not explicitly mentioned in the product specification shall be subject to separate agreement.

4. Users are advised to pay attention to the parameter limit values specified in the product specification and maintain a certain margin in design or application to ensure that the product does not exceed the parameter limit values defined in the product specification. This precaution should be taken to avoid exceeding one or more of the limit values, which may result in permanent irreversible damage to the product, ultimately affecting the quality and reliability of the system or equipment.

5. The design of the product is intended to meet civilian needs and is not guaranteed for use in harsh environments or precision equipment. It is not recommended for use in systems or equipment such as medical devices, aircraft, nuclear power, and similar systems, where failures in these systems or equipment could reasonably be expected to result in personal injury. WAYON shall assume no responsibility for any consequences resulting from such usage.

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