



DONGGUAN NANJING ELECTRONICS LTD.,

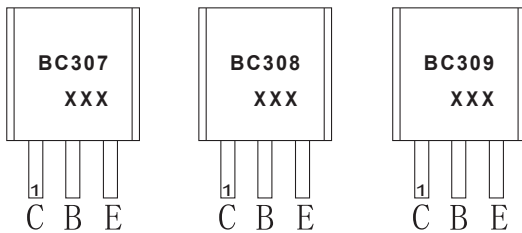
## TO-92 Plastic-Encapsulate Transistors

### BC307/308/309 TRANSISTOR (PNP)

#### FEATURES

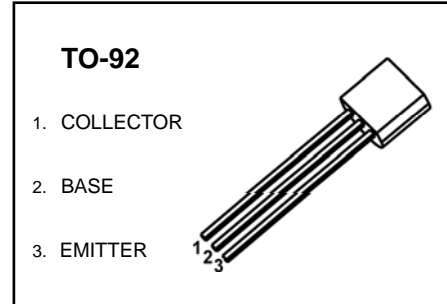
- Amplifier dissipation NPN Silicon

#### MARKING

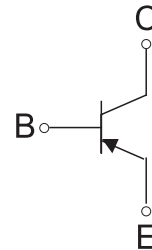


BC307,BC308,BC309=Device code

XXX=Code



#### Equivalent Circuit



#### ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
BC307	TO-92	Bulk	1000pcs/Bag
BC307-TA	TO-92	Tape	2000pcs/Box
BC308	TO-92	Bulk	1000pcs/Bag
BC308-TA	TO-92	Tape	2000pcs/Box
BC309	TO-92	Bulk	1000pcs/Bag
BC309-TA	TO-92	Tape	2000pcs/Box

#### MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V <sub>CEO</sub>	Collector-Emitter Voltage	BC307	-45
		BC308/309	-25
V <sub>EBO</sub>	Emitter-Base Voltage	BC307	-6
		BC308/309	-5
I <sub>C</sub>	Collector Current -Continuous	-0.1	A
P <sub>C</sub>	Collector Power Dissipation	500	mW
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	357	°C /W
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	125	°C /W
T <sub>J</sub> , T <sub>stg</sub>	Operation Junction and Storage Temperature Range	-55-150	°C

## ELECTRICAL CHARACTERISTICS

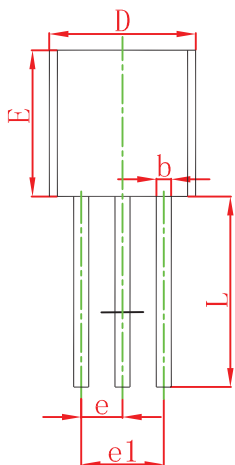
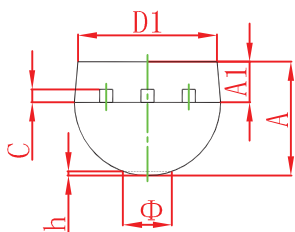
$T_a=25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0$ BC307 BC308/309	-50 -30			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-2\text{mA}, I_B=0$ BC307 BC308/309	-45 -25			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0$	-5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=-45\text{V}, I_E=0$ $V_{CB}=-25\text{V}, I_E=0$ BC307 BC308/309			-15	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB}=-5\text{V}, I_C=0$			-15	nA
DC current gain	$h_{FE}$	$V_{CE}=-5\text{V}, I_C=-2\text{mA}$	120		800	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=-10\text{mA}, I_B=-0.5\text{mA}$			-0.3	V
		$I_C=-100\text{mA}, I_B=-5\text{mA}$			-0.6	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=-10\text{mA}, I_B=-0.5\text{mA}$			-0.75	V
		$I_C=-100\text{mA}, I_B=-5\text{mA}$			-1	V
Base-emitter voltage	$V_{BE}$	$V_{CE}=-5\text{V}, I_C=-2\text{mA}$	-0.55		-0.75	V
Transition frequency	$f_T$	$V_{CE}=-5\text{V}, I_C=-10\text{mA}, f=50\text{MHz}$		130		MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$			6	pF
Noise figure	NF	$V_{CE}=-5\text{V}, I_C=-0.2\text{mA},$ $f=1\text{KHz}, R_G=2\text{K}\Omega$ BC307/BC308			10	dB
		$V_{CE}=-5\text{V}, I_C=-0.2\text{mA},$ $f=30-15\text{KHz}, R_G=2\text{K}\Omega$ BC309			4	

### CLASSIFICATION OF $h_{FE}$

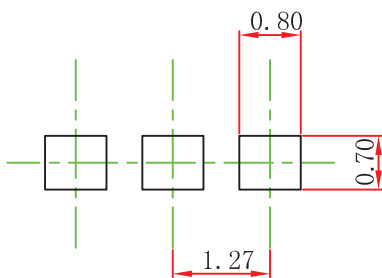
Rank	A	B	C
Range	120-220	180-460	380-800

## TO-92 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

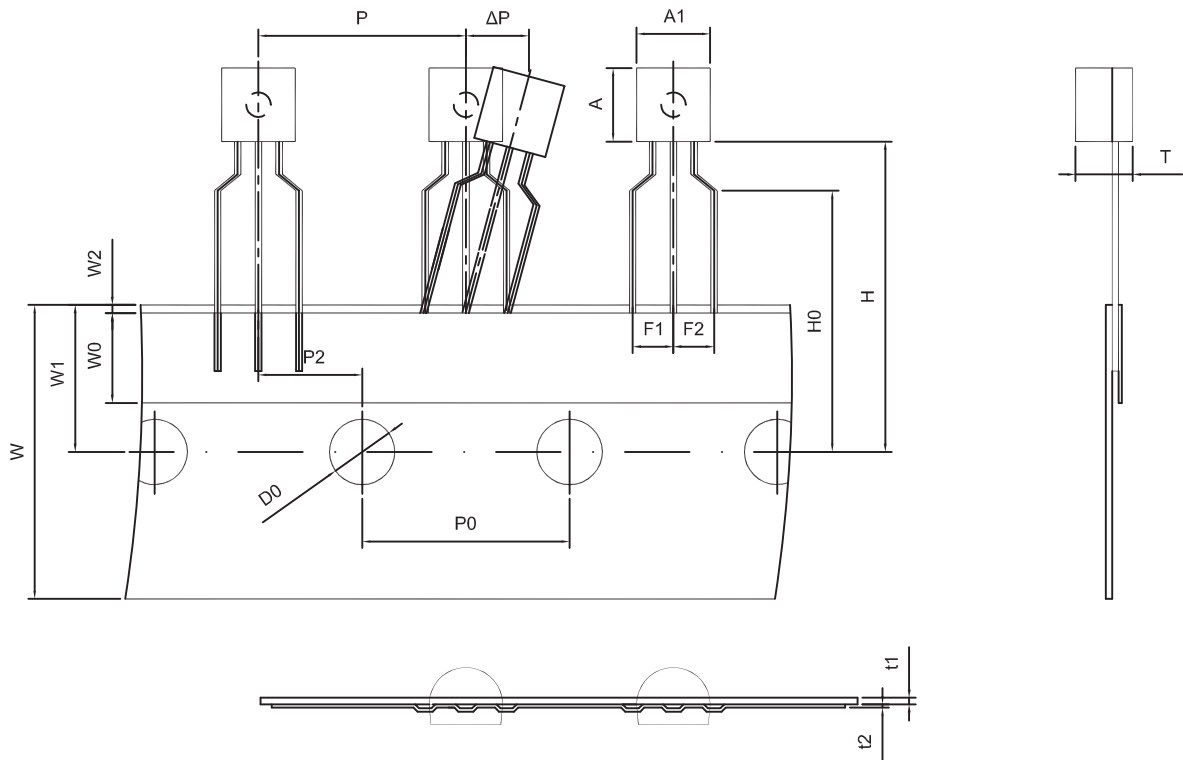
## TO-92 Suggested Pad Layout



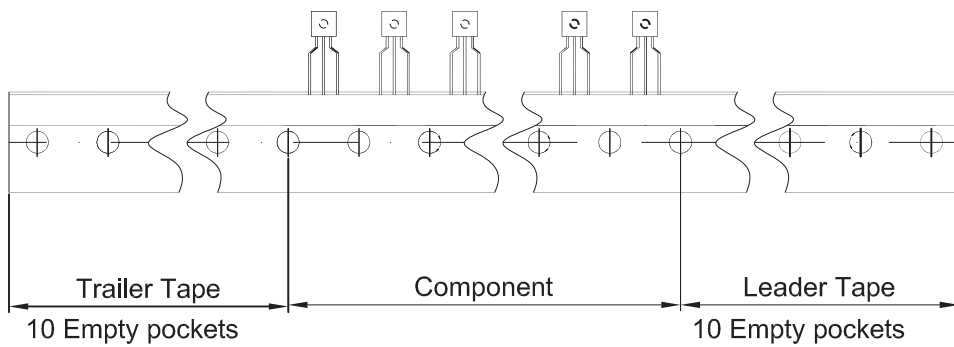
### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

# TO-92 Tape and Reel



Dimiensions are in millimeter								
A1	A	T	P	P0	P2	F1	F2	W
4.5	4.5	3.5	12.7	12.7	6.35	2.5	2.5	18.0
W0	W1	W2	H	H0	D0	t1	t2	$\Delta P$
6.0	9.0	1.0 MAX.	19.0	16.0	4.0	0.4	0.2	0



Package	Box	Box Size(mm)	Carton	Carton Size(mm)
TO-92	2000 pcs	333×162×43	20,000 pcs	350×340×250