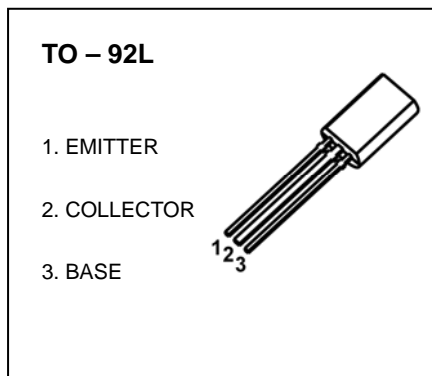


## TO-92L Plastic-Encapsulate Transistors

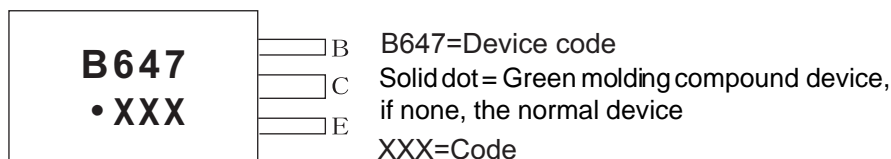
### 2SB647 TRANSISTOR (PNP)

#### FEATURES

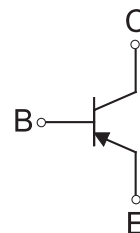
- Low Frequency Power Amplifier
- Complementary Pair with 2SD667



#### MARKING



#### Equivalent Circuit



#### ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
2SB647	TO-92L	Bulk	500pcs/Bag
2SB647-TA	TO-92L	Tape	2000pcs/Box

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

Symbol	Parameter	Value	Unit
V <sub>CB0</sub>	Collector-Base Voltage	-120	V
V <sub>CE0</sub>	Collector-Emitter Voltage	-80	V
V <sub>EB0</sub>	Emitter-Base Voltage	-5	V
I <sub>C</sub>	Collector Current	-1	A
P <sub>C</sub>	Collector Power Dissipation	750	mW
R <sub>θJA</sub>	Thermal Resistance From Junction To Ambient	167	°C/W
T <sub>j</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55~+150	°C

## ELECTRICAL CHARACTERISTICS

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

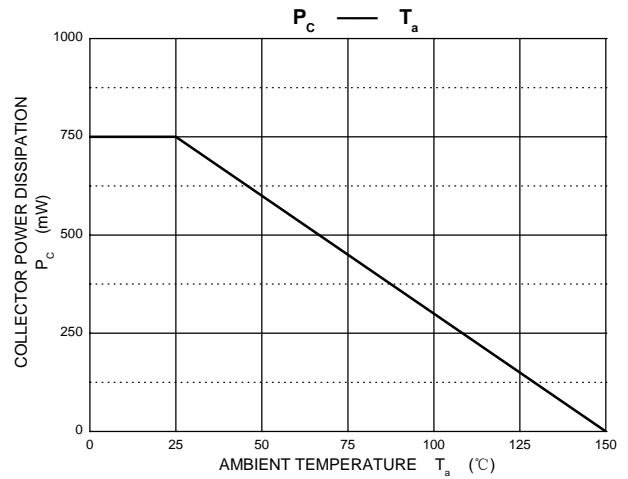
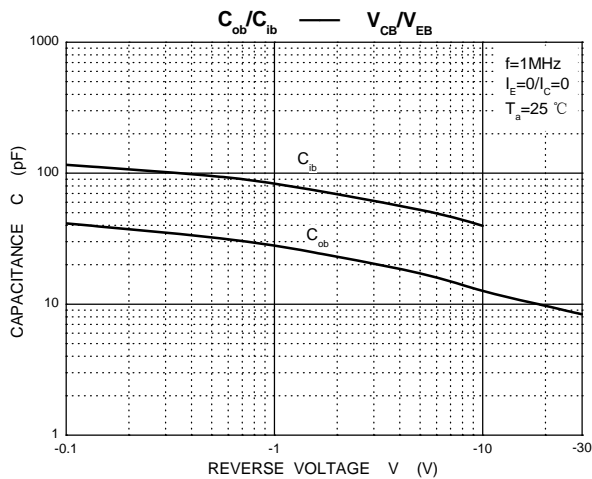
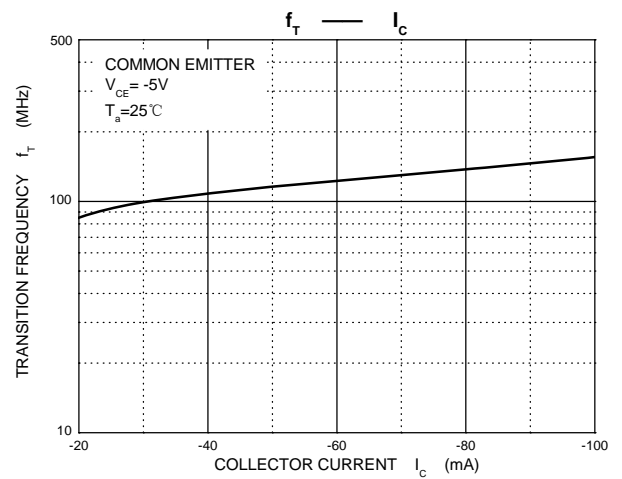
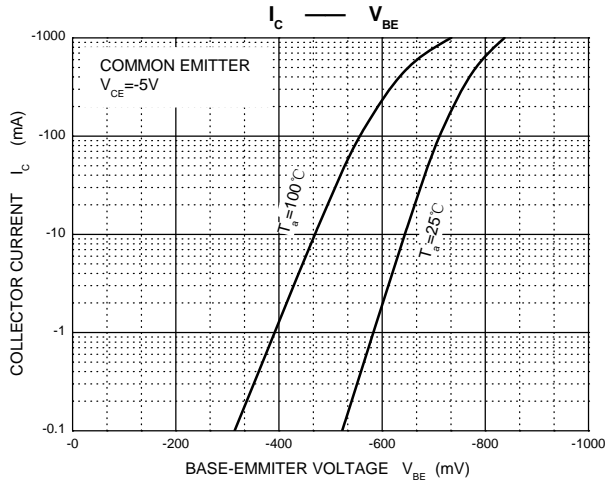
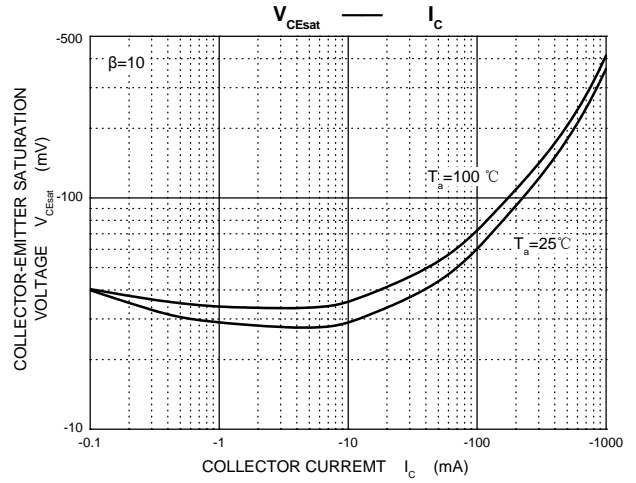
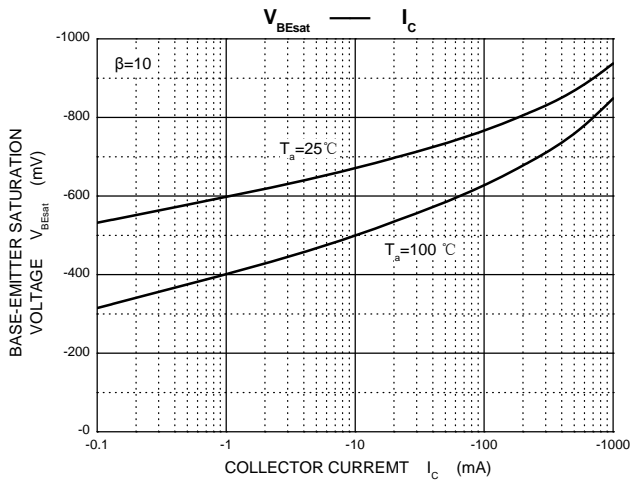
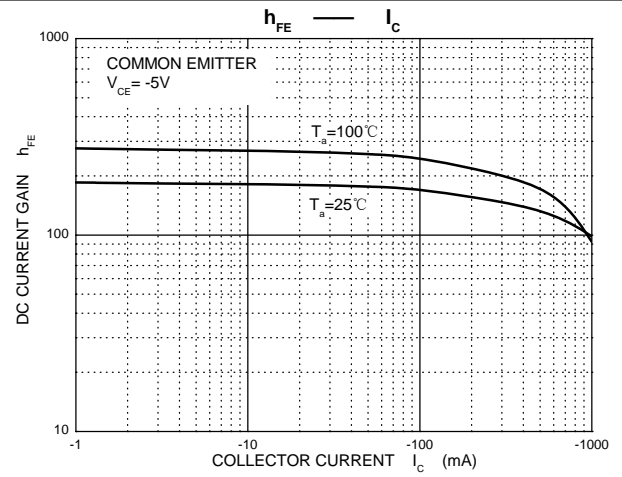
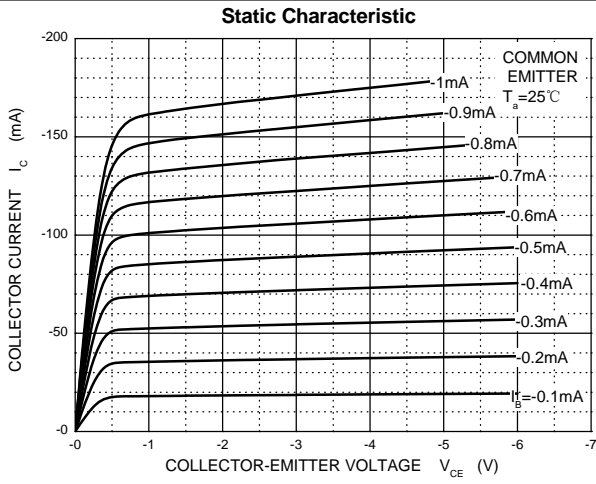
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0$	-120			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, I_B=0$	-80			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0$	-5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=-100\text{V}, I_E=0$			-10	$\mu\text{A}$
DC current gain	$h_{FE(1)}$ *	$V_{CE}=-5\text{V}, I_C=-150\text{mA}$	60		320	
	$h_{FE(2)}$ *	$V_{CE}=-5\text{V}, I_C=-500\text{mA}$	30			
Collector-emitter saturation voltage	$V_{CE(sat)}$ *	$I_C=-500\text{mA}, I_B=-50\text{mA}$			-1	V
Base-emitter voltage	$V_{BE}$ *	$V_{CE}=-5\text{V}, I_C=-150\text{mA}$			-1.5	V
Collector output capacitance	$C_{ob}$	$V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$		20		pF
Transition frequency	$f_T$	$V_{CE}=-5\text{V}, I_C=-150\text{mA}$		140		MHz

\*Pulse test

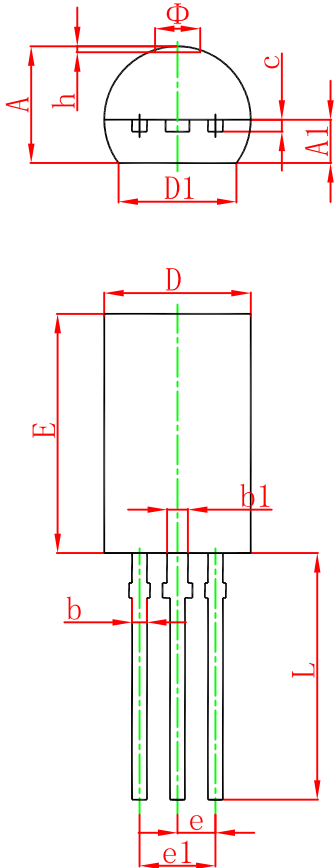
### CLASSIFICATION OF $h_{FE(1)}$

RANK	B	C	D
RANGE	60-120	100-200	160-320

# Typical Characteristics

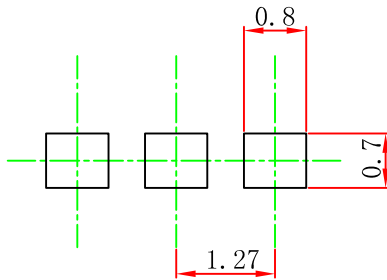


## TO-92L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	3.750	4.050	0.148	0.159
A1	1.280	1.580	0.050	0.062
b	0.380	0.550	0.015	0.022
b1	0.620	0.780	0.024	0.031
c	0.350	0.450	0.014	0.018
D	4.750	5.050	0.187	0.199
D1	4.000		0.157	
E	7.850	8.150	0.309	0.321
e	1.270 TYP.		0.050 TYP.	
e1	2.440	2.640	0.096	0.104
L	13.800	14.200	0.543	0.559
$\Phi$		1.600		0.063
h	0.000	0.300	0.000	0.012

## TO-92L Suggested Pad Layout



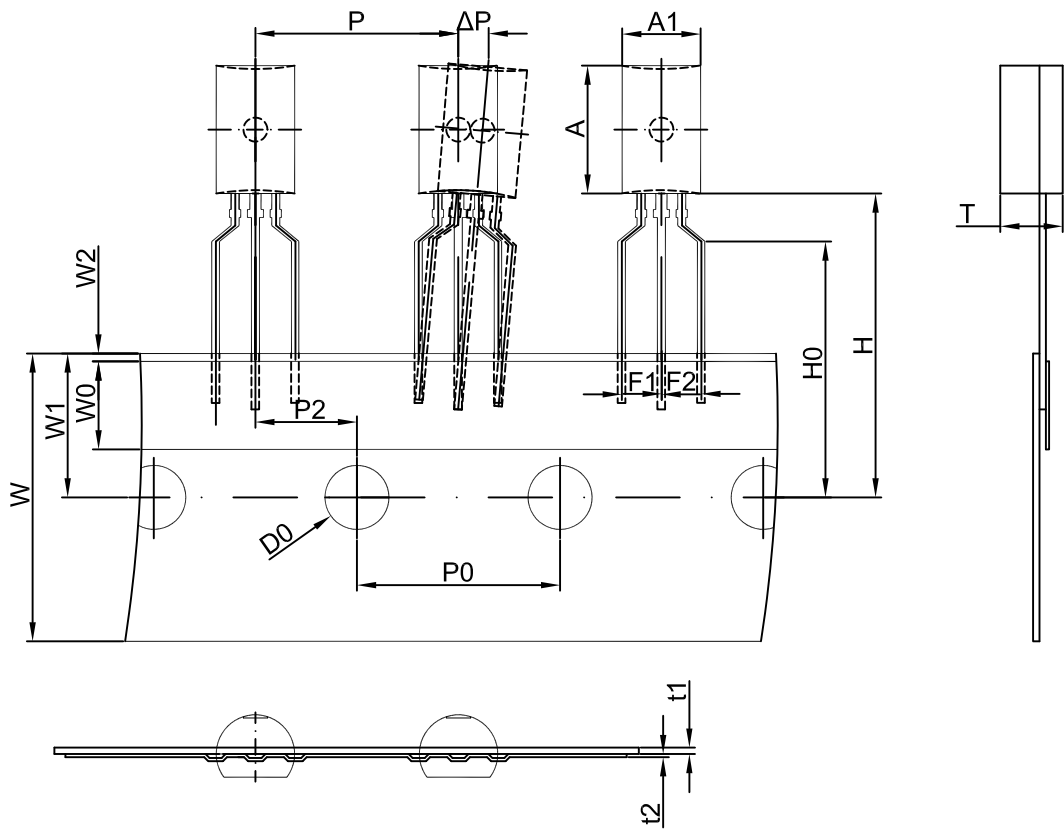
### Note:

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

### NOTICE

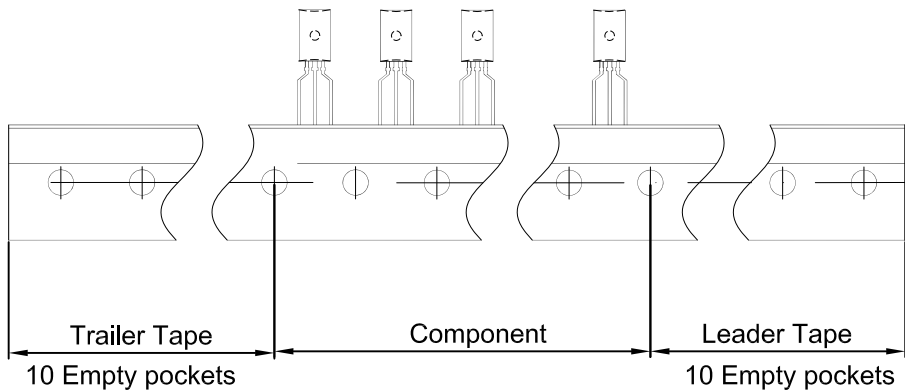
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# TO-92L PACKAGE TAPEING DIMENSION



Dimensions are in millimeter

A1	A	T	P	P0	P2	F1	F2	W
4.9	8.0	3.9	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	19.0	16.0	4.0	0.4	0.2	0



Package	Box	Box Size(mm)	Carton	Carton Size(mm)
TO-92L	2000 pcs	333×203×42	20,000 pcs	493×400×264