

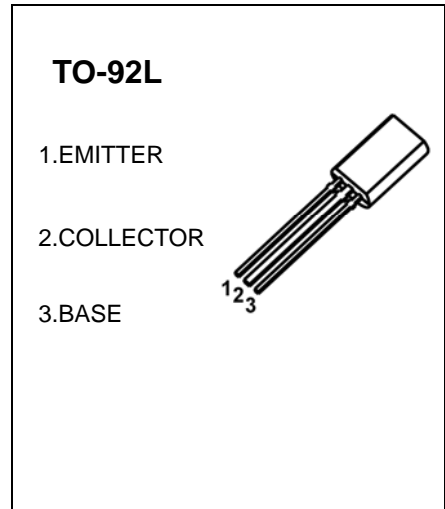


**TO-92L Plastic-Encapsulate Transistors**

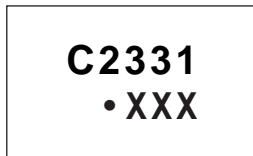
**KSC2331** TRANSISTOR (NPN)

**FEATURE**

- Complement to KSA931
- High Collector-Base Voltage:  $V_{CB0}=80V$
- Collector Current:  $I_C=700mA$
- Collector Dissipation:  $P_C=0.75W$

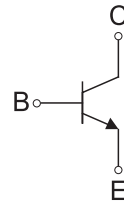


**MARKING**



C2331=Device code  
 Solid dot = Green molding compound device,  
 if none, the normal device  
 XXX=Code

**Equivalent Circuit**



**ORDERING INFORMATION**

Part Number	Package	Packing Method	Pack Quantity
2SC2331	TO-92L	Bulk	500pcs/Bag
2SC2331-TA	TO-92L	Tape	2000pcs/Box

**MAXIMUM RATINGS ( $T_a=25^{\circ}C$  unless otherwise noted)**

Symbol	Parameter	Value	Unit
$V_{CB0}$	Collector-Base Voltage	80	V
$V_{CE0}$	Collector-Emitter Voltage	60	V
$V_{EB0}$	Emitter-Base Voltage	8	V
$I_C$	Collector Current -Continuous	700	mA
$P_C$	Collector Power Dissipation	0.75	W
$T_J, T_{stg}$	Operation Junction and Storage Temperature Range	-55-150	$^{\circ}C$

## ELECTRICAL CHARACTERISTICS

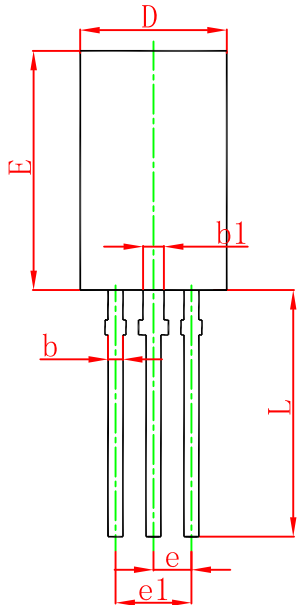
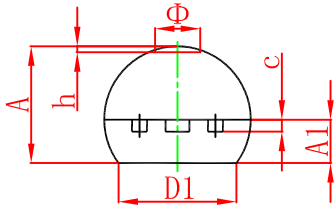
$T_a=25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	80			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10\text{mA}, I_B=0$	60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	8			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=60\text{V}, I_E=0$			0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=5\text{V}, I_C=0$			0.1	$\mu\text{A}$
DC current gain	$h_{FE}$	$V_{CE}=2\text{V}, I_C=50\text{mA}$	40		240	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			0.7	V
Base-emitter voltage	$V_{BE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			1.2	V
Collector output capacitance	$C_{ob}$	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$		8		pF
Transition frequency	$f_T$	$V_{CE}=10\text{V}, I_C=50\text{mA}$	30			MHz

### CLASSIFICATION OF $h_{FE}$

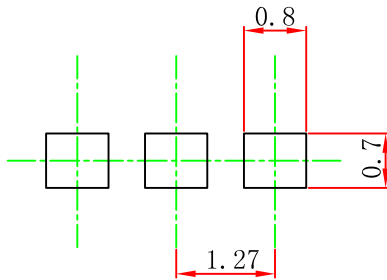
Rank	R	O	Y
Range	40-80	70-140	120-240

## 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



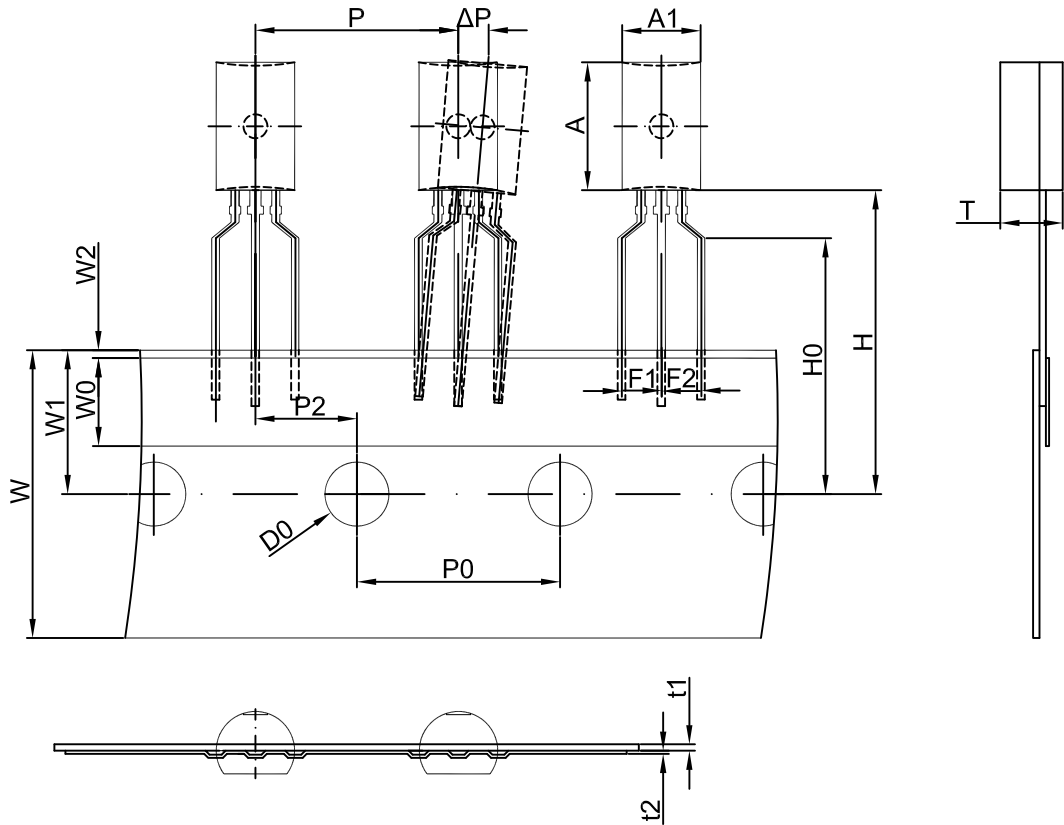
### Note:

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

### NOTICE

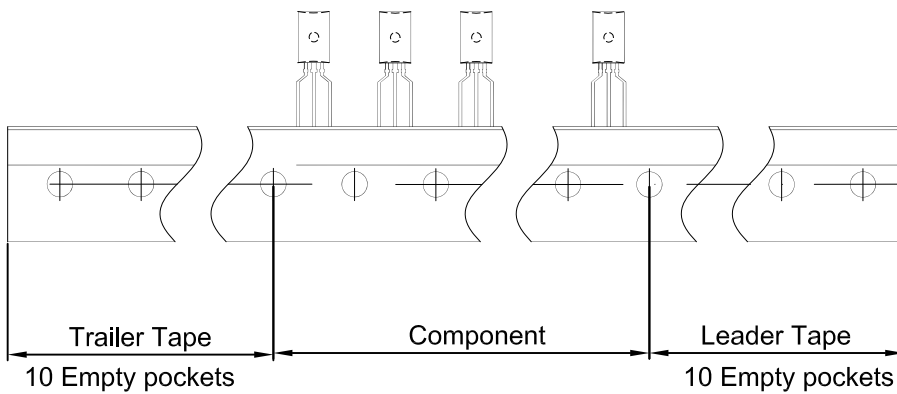
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# TO-92L PACKAGE TAPING DIMENSION



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	ΔP
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