

## TO-92L Plastic-Encapsulate Transistors

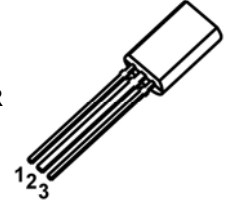
### 2SC2060 TRANSISTOR (NPN)

#### FEATURE

- Power Dissipation  $P_{CM}$ : 0.75 W ( $T_a=25^\circ\text{C}$ )
- Low Saturation Voltage ( $V_{CE(sat)}=0.15\text{V}$  at 500mA)
- Complementary Pair with 2SA934

#### TO-92L

1. EMITTER
2. COLLECTOR
3. BASE



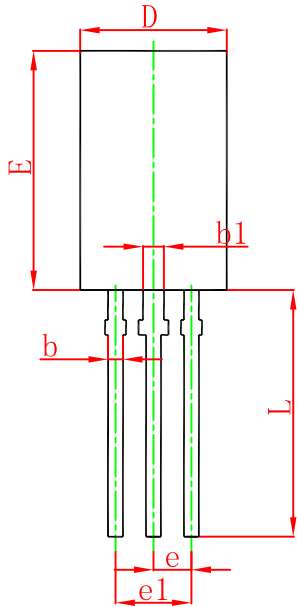
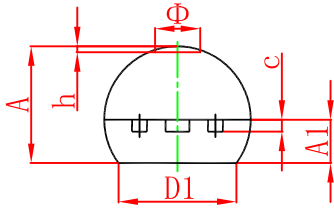
#### MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-base voltage	40	V
$V_{CEO}$	Collector-Emitter Voltage	32	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current -Continuous	1	A
$P_C$	Collector Power Dissipation	750	mW
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55-150	$^\circ\text{C}$

#### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ unless otherwise specified)

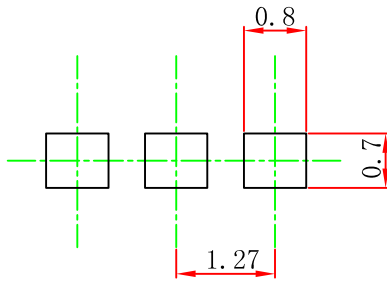
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V(BR)_{CBO}$	$I_C=100\mu\text{A}$ , $I_E=0$	40		V
Collector-emitter breakdown voltage	$V(BR)_{CEO}$	$I_C=1\text{mA}$ , $I_B=0$	32		V
Emitter-base breakdown voltage	$V(BR)_{EBO}$	$I_E=100\mu\text{A}$ , $I_C=0$	5		V
Collector cut-off current	$I_{CBO}$	$V_{CB}=20\text{V}$ , $I_E=0$		0.5	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=4\text{V}$ , $I_C=0$		0.1	$\mu\text{A}$
DC current gain	$h_{FE}$	$V_{CE}=3\text{V}$ , $I_C=100\text{mA}$	80	400	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=500\text{mA}$ , $I_B=50\text{mA}$		0.4	V
Transition frequency	$f_T$	$V_{CE}=5\text{V}$ , $I_E=-50\text{mA}$	50		MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$		30	pF

## 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



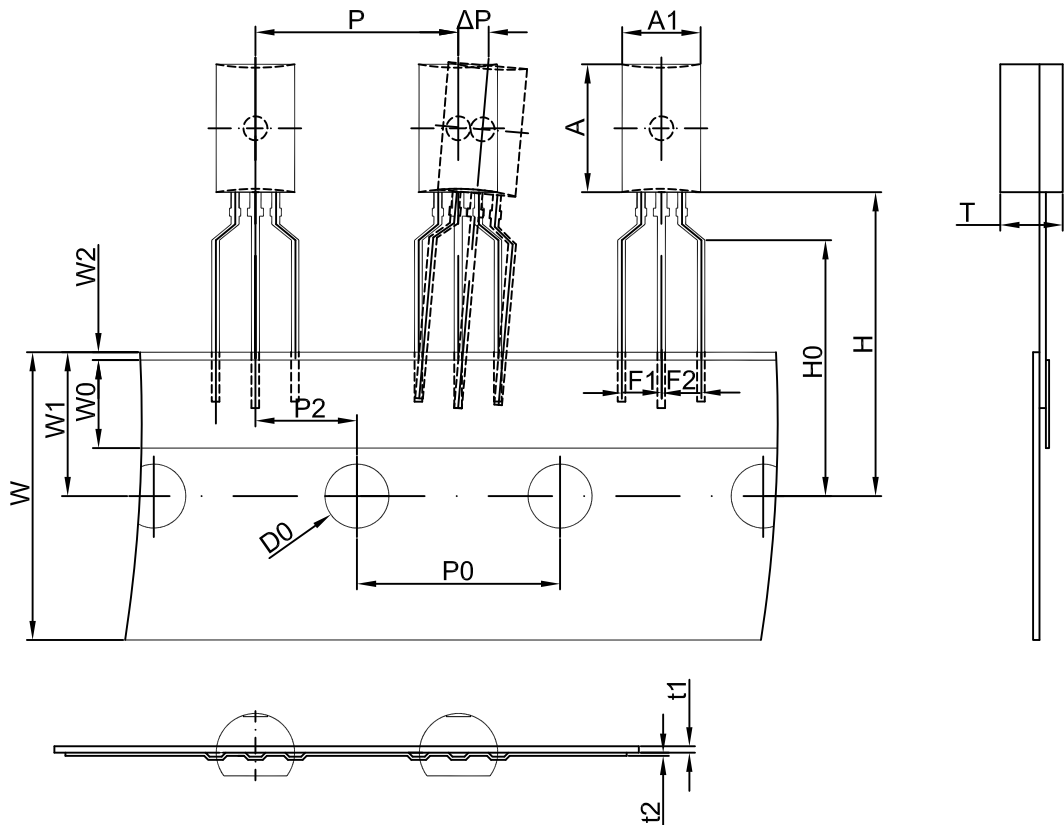
### Note:

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

### NOTICE

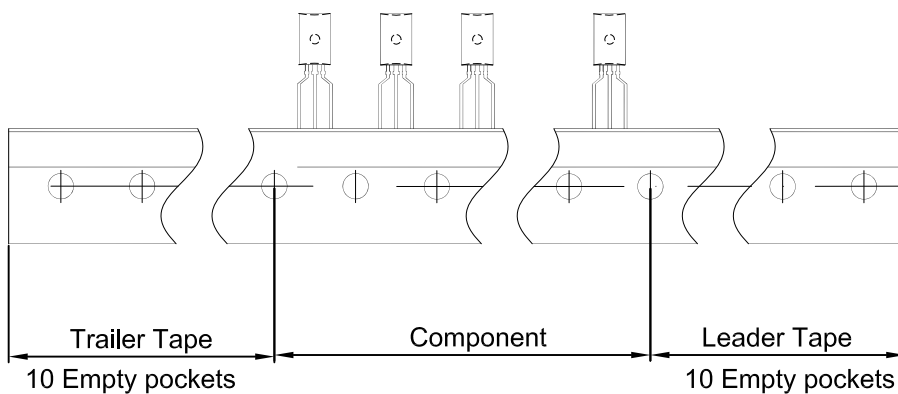
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# TO-92L PACKAGE TAPEING DIMENSION



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	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