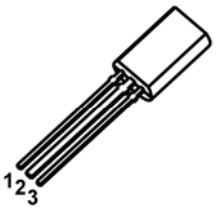
JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO., LTD

JCET

TO-92L Plastic-Encapsulate Transistors

TO – 92L

1. EMITTER
2. COLLECTOR
3. BASE



2SB649/2SB649A TRANSISTOR (PNP)

FEATURES

- High Collector Current
- High Collector-Emitter Breakdown Voltage
- Low Saturation Voltage

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Symbol	Parameter		Value	Unit
V_{CBO}	Collector-Base Voltage		-180	V
V_{CEO}	Collector-Emitter Voltage	2SB649	-120	V
		2SB649A	-160	
V_{EBO}	Emitter-Base Voltage		-5	V
I_C	Collector Current		-1.5	A
P_C	Collector Power Dissipation		900	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient		139	℃/W
T_j	Junction Temperature		150	℃
T_{stg}	Storage Temperature		-55~+150	℃

ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

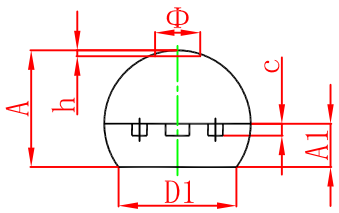
Parameter	Symbol	Test conditions		Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=-1mA,I_E=0		-180			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=-10mA,I_B=0	2SB649	-120			V
			2SB649A	-160			
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-1mA,I_C=0		-5			V
Collector cut-off current	I_{CBO}	V_{CB}=-160V,I_E=0				-10	μA
Emitter cut-off current	I_{EBO}	V_{EB}=-4V,I_C=0				-10	μA
DC current gain	$h_{FE(1)}$	V_{CE}=-5V,	2SB649	60		320	
		I_C=-150mA	2SB649A	60		200	
	$h_{FE(2)}$*	V_{CE}=-5V, I_C=-500mA		30			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=-500mA,I_B=-50mA				-1	V
Base-emitter voltage	V_{BE}	V_{CE}=-5V, I_C=-150mA				-1.5	V
Collector output capacitance	C_{ob}	V_{CB}=-10V,I_E=0, f=1MHz			27		pF
Transition frequency	f_T	V_{CE}=-5V,I_C=-150mA			140		MHz

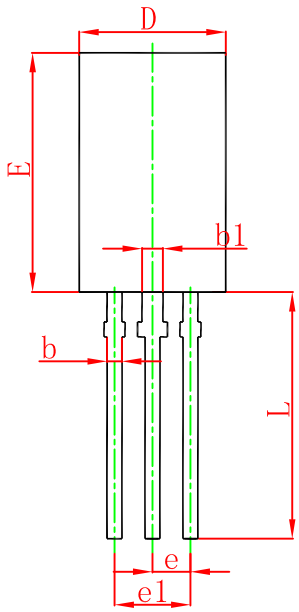
*Pulse test

CLASSIFICATION OF $h_{FE(1)}$

TYPE	2SB649		
	2SB649A		
RANK	B	C	D
RANGE	60-120	100-200	160-320

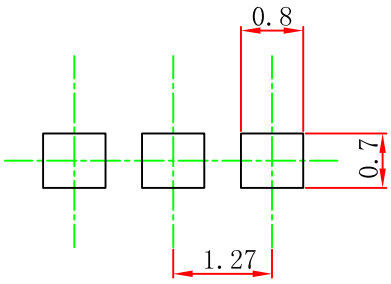
TO-92L Package Outline Dimensions





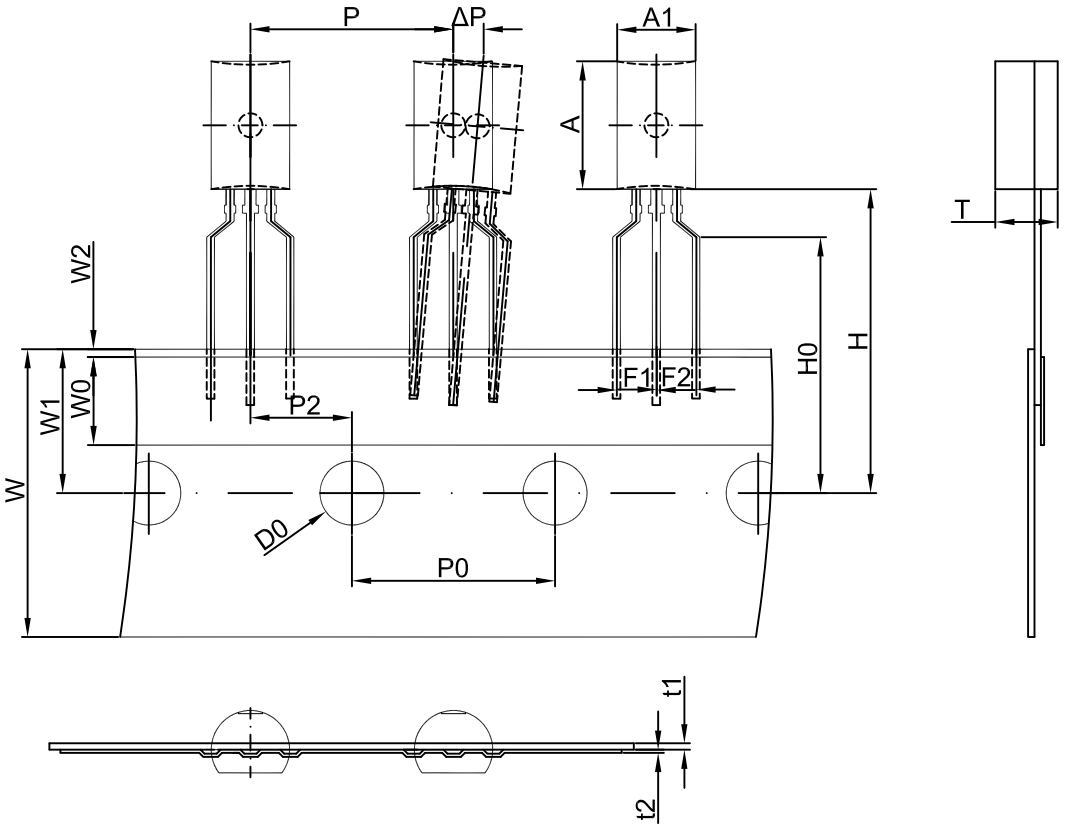
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	3.750	4.050	0.148	0.159
A1	1.280	1.580	0.050	0.062
b	0.380	0.550	0.015	0.022
b1	0.620	0.780	0.024	0.031
c	0.350	0.450	0.014	0.018
D	4.750	5.050	0.187	0.199
D1	4.000		0.157	
E	7.850	8.150	0.309	0.321
e	1.270 TYP.		0.050 TYP.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

TO-92L Suggested Pad Layout

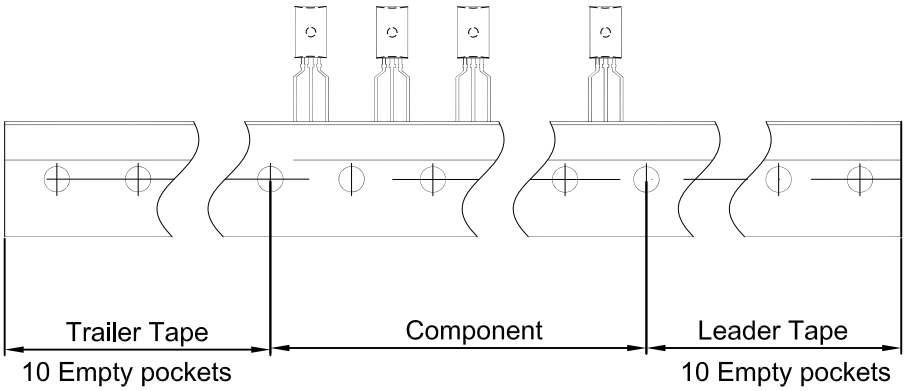


Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

TO-92L PACKAGE TAPEING DIMENSION



Dimiensions 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