

TO-92L Plastic-Encapsulate Transistors

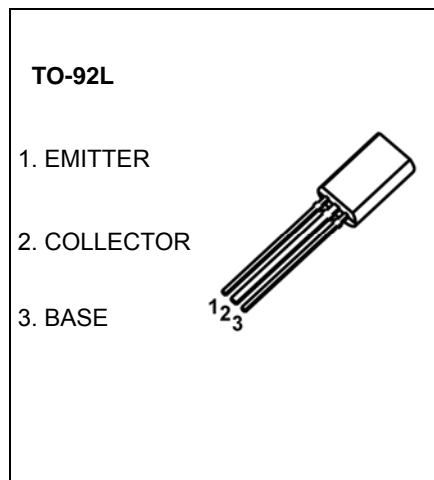
2SA1020 TRANSISTOR (PNP)

FEATURES

Power Amplifier Applications

MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{CB0}	Collector-Base Voltage	-50	V
V _{CEO}	Collector-Emitter Voltage	-50	V
V _{EBO}	Emitter-Base Voltage	-5	V
I _C	Collector Current –Continuous	-2	A
P _C	Collector Power Dissipation	900	mW
T _J	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55-150	°C



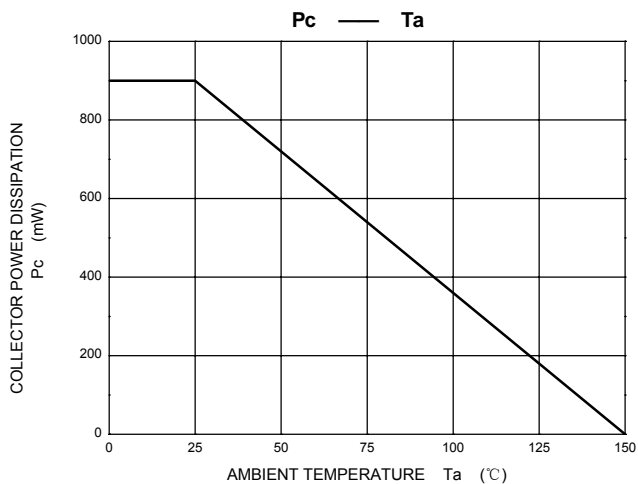
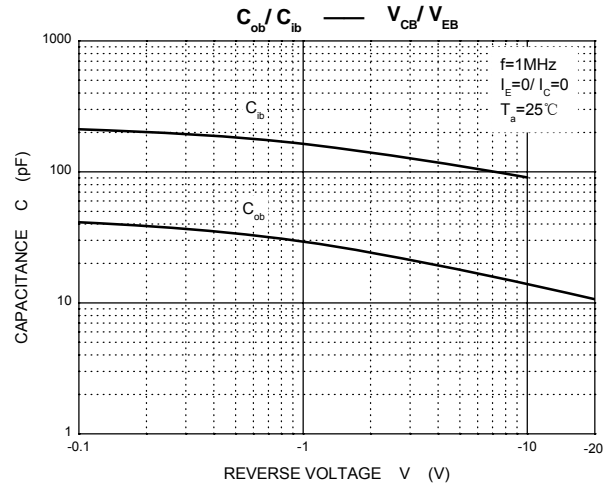
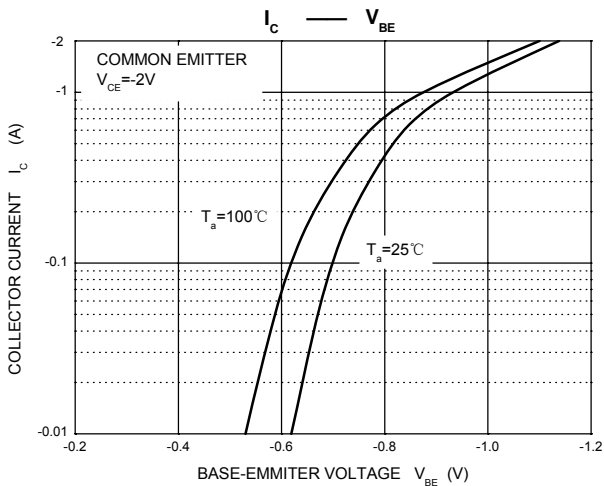
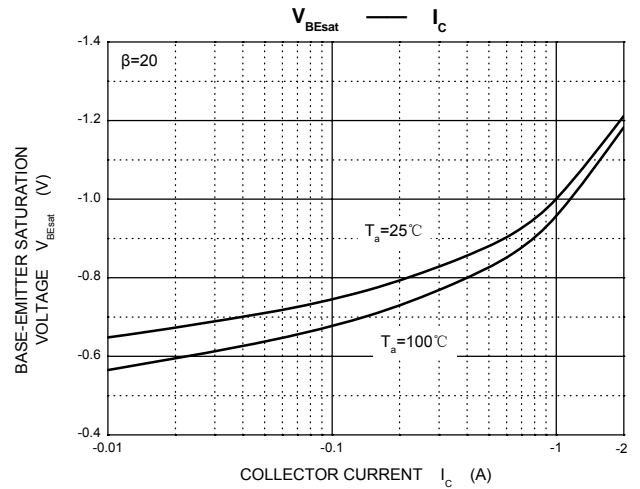
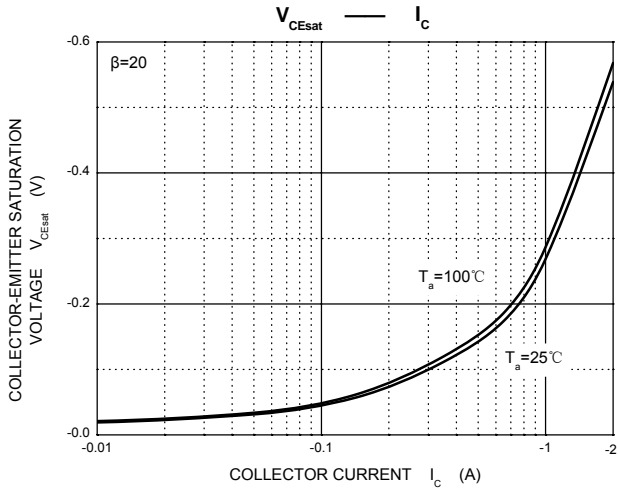
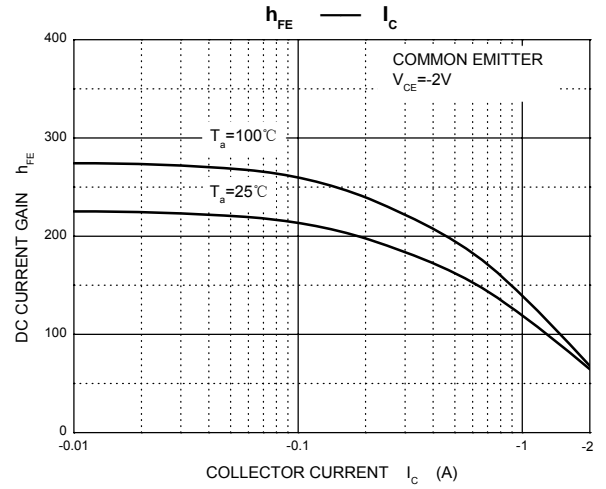
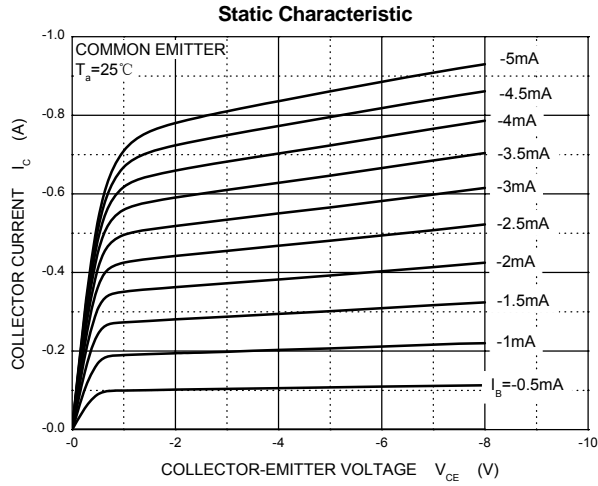
ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C = -100μA, I _E = 0	-50			V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C = -10mA, I _B = 0	-50			V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E = -100μA, I _C = 0	-5			V
Collector cut-off current	I _{CBO}	V _{CB} = -50V, I _E = 0			-1	μA
Emitter cut-off current	I _{EBO}	V _{EB} = -5V, I _C = 0			-1	μA
DC current gain	h _{FE(1)}	V _{CE} = -2V, I _C = -0.5A	70		240	
	h _{FE(2)}	V _{CE} = -2V, I _C = -1.5A	40			
Collector-emitter saturation voltage	V _{CE(sat)}	I _C = -1A, I _B = -50mA			-0.5	V
Base-emitter saturation voltage	V _{BE(sat)}	I _C = -1A, I _B = -50mA			-1.2	V
Transition frequency	f _T	V _{CE} = -2V, I _C = -500mA		100		MHz
Collector output capacitance	C _{ob}	V _{CB} = -10V, I _E = 0, f = 1MHz		40		pF
Turn-on time	t _{on}	V _{CC} = -30V, I _{B1} = -I _{B2} = -0.05A, I _C = -1A		0.1		μs
Storage time	t _s			1		μs
Fall time	t _f			0.1		μs

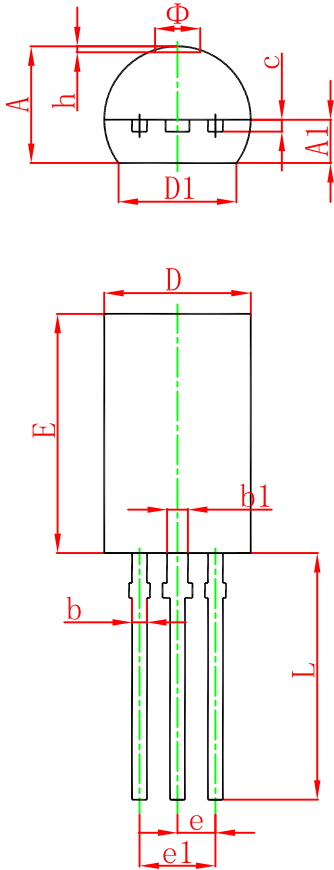
CLASSIFICATION OF h_{FE(1)}

Rank	O	Y
Range	70-140	120-240

Typical Characteristics

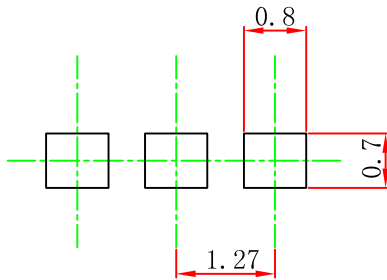


TO-92L Package Outline Dimensions



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
Φ		1.600		0.063
h	0.000	0.300	0.000	0.012

TO-92L Suggested Pad Layout



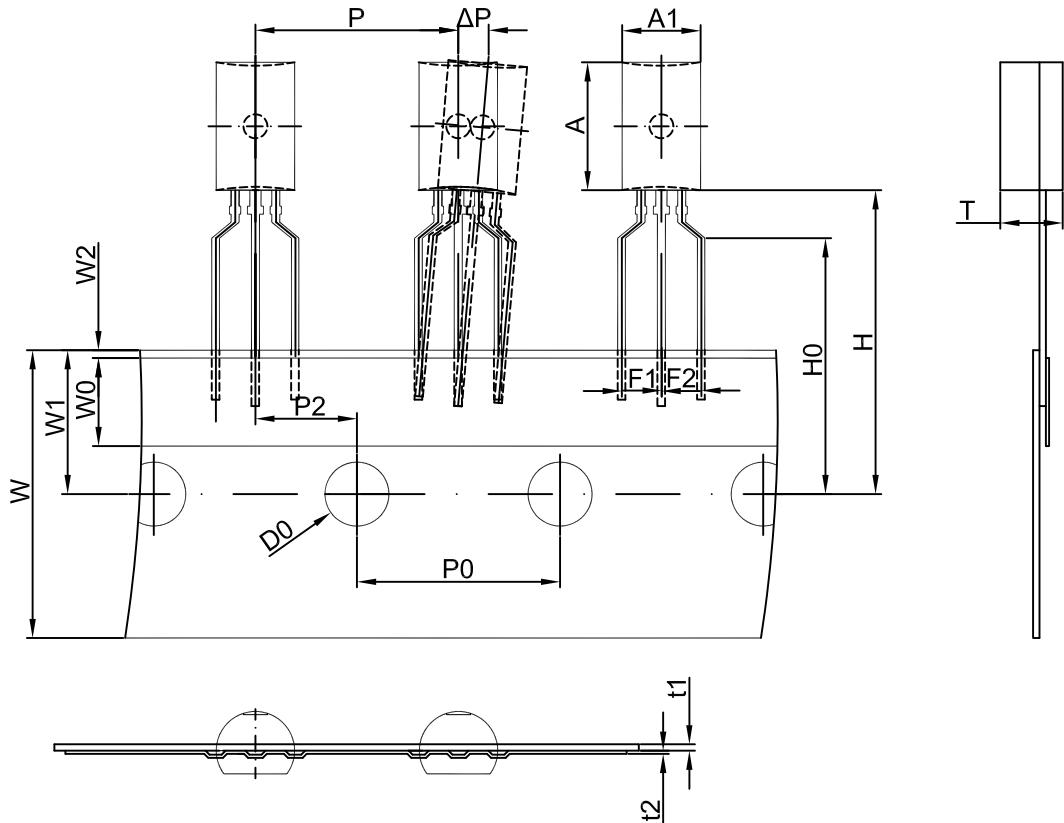
Note:

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

NOTICE

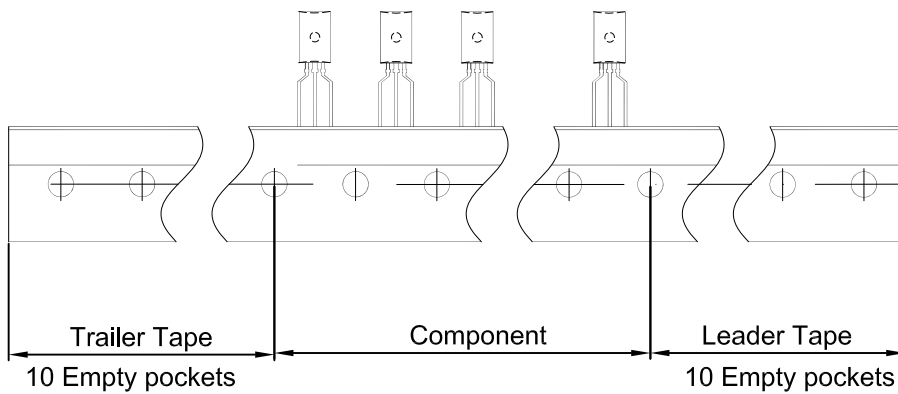
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TO-92L PACKAGE TAPING DIMENSION



Dimensions are in millimeter

A1	A	T	P	P0	P2	F1	F2	W
4.9±0.15	8.0±0.15	3.9±0.15	12.7±0.3	12.7±0.2	6.35±0.3	2.5±0.3	2.5±0.3	18.0+1.0/-0.5
W0	W1	W2	H	H0	D0	t1	t2	ΔP
6.0±0.5	9.0±0.5	1.0 MAX.	19.0+2.0/-1.0	16.0±0.5	4.0±0.2	0.4±0.05	0.2±0.05	0 ± 1.0



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

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