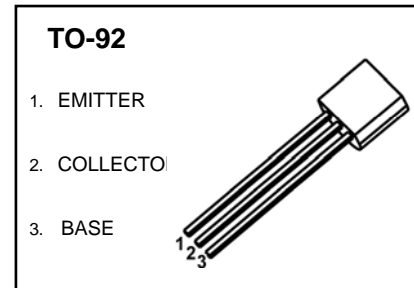


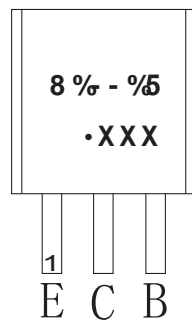
2SD1991A TRANSISTOR (NPN)

FEATURES

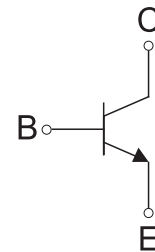
- High Forward Current Transfer Ratio h_{FE}
- Low Collector to Emitter Saturation Voltage $V_{CE(sat)}$
- Allowing Supply with the Radial Taping.



MARKING



Equivalent Circuit



ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
2SD1991A	TO-92	Bulk	1000pcs/Bag

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

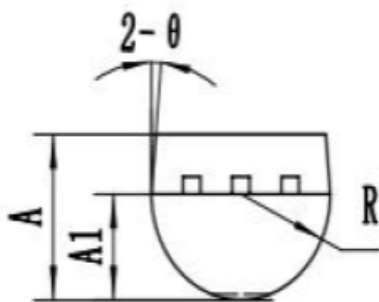
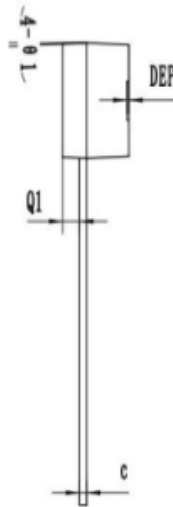
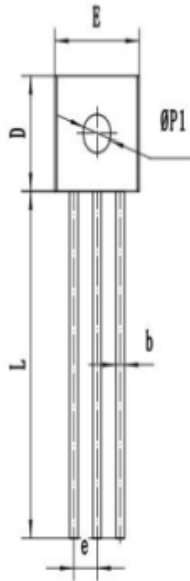
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	50	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current -Continuous	100	mA
P_C	Collector Power Dissipation	400	mW
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	$^\circ\text{C}$

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=2\text{mA}, I_B=0$	50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	7			V
Collector cut-off current	I_{CBO}	$V_{CB}=20\text{V}, I_E=0$			1	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=7\text{V}, I_C=0$			1	μA
DC current gain	$h_{FE(1)}$	$V_{CE}=10\text{V}, I_C=2\text{mA}$	160		460	
	$h_{FE(2)}$	$V_{CE}=2\text{V}, I_C=100\text{mA}$	90			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=100\text{mA}, I_B=10\text{mA}$			0.3	V
Transition frequency	f_T	$V_{CE}=10\text{V}, I_C=2\text{mA}, f=200\text{MHz}$		150		MHz
Collector output capacitance	C_{ob}	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$		3.5		pF

CLASSIFICATION OF $h_{FE(1)}$

Rank	Q	R	S
Range	160-260	210-340	290-460



SYMBOL	MM		
	MIN	NOM	MAX
*A	3.00	3.25	3.50
A1	2.20	2.30	2.40
*b	0.40	0.45	0.50
*c	0.25	0.30	0.35
*D	4.50	4.60	4.70
*E	4.50	4.60	4.70
*e	1.22	1.27	1.32
*L	14.00	14.30	14.60
R	2.20	2.30	2.40
Q1	0.85	0.90	0.95
θ	3°	5°	7°
Ø1	1°	3°	5°
ØP1	1.40	1.50	1.60
DEP	0.05	0.10	0.20
带*为检验尺寸			