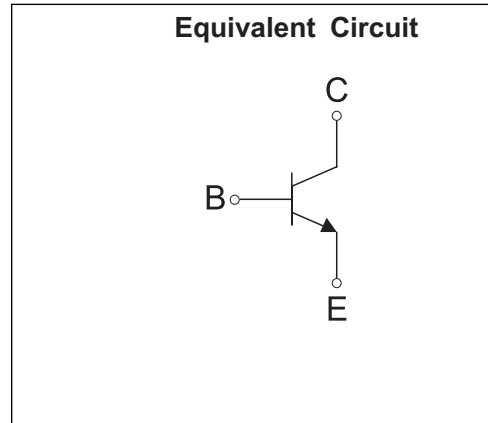


## TO-92 Plastic-Encapsulate Transistors

TRANSISTOR (NPN)

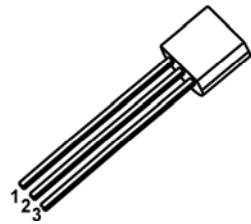
### FEATURES

- Power switching applications



### TO-92

- 1. EMITTER
- 2. COLLECTOR
- 3. BASE



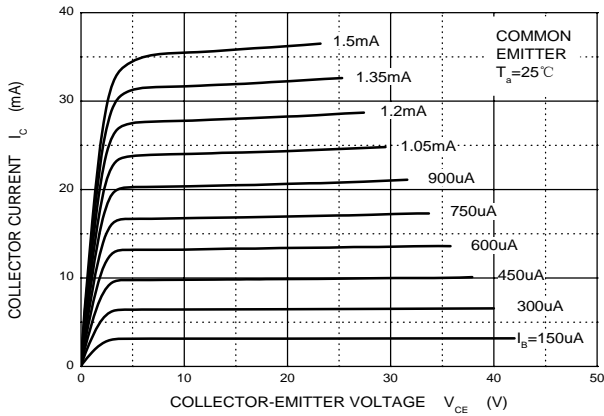
### MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V <sub>CB0</sub>	Collector-Base Voltage	700	V
V <sub>CE0</sub>	Collector-Emitter Voltage	450	V
V <sub>EB0</sub>	Emitter-Base Voltage	8	V
I <sub>C</sub>	Collector Current -Continuous	0.2	A
P <sub>C</sub>	Collector Power Dissipation	0.625	W
T <sub>J</sub> , T <sub>stg</sub>	Operation Junction and Storage Temperature Range	-55 ~ 150	°C

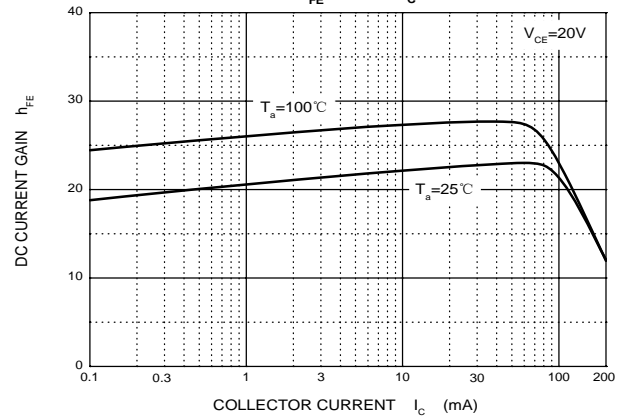
$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=1\text{mA}, I_E=0$	700			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	450			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=0.1\text{mA}, I_C=0$	8			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=600\text{V}, I_E=0$			100	$\mu\text{A}$
Collector cut-off current	$I_{CEO}$	$V_{CE}=400\text{V}, I_B=0$			100	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=7\text{V}, I_C=0$			100	$\mu\text{A}$
DC current gain	$h_{FE(1)}$	$V_{CE}=20\text{V}, I_C=20\text{mA}$	14		29	
	$h_{FE(2)}$	$V_{CE}=10\text{V}, I_C=0.25\text{mA}$	5			
	$h_{FE(3)}$	$V_{CE}=5\text{V}, I_C=0.5\text{A}$	1			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=50\text{mA}, I_B=10\text{mA}$			0.4	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=50\text{mA}, I_B=10\text{mA}$			1.1	V
Transition frequency	$f_T$	$V_{CE}=20\text{V}, I_C=20\text{mA}, f=1\text{MHz}$	8			MHz
Rail time	$t_r$	$I_C=0.1\text{A}$			0.9	$\mu\text{s}$
Storage time	$t_s$		1.7		2.9	$\mu\text{s}$

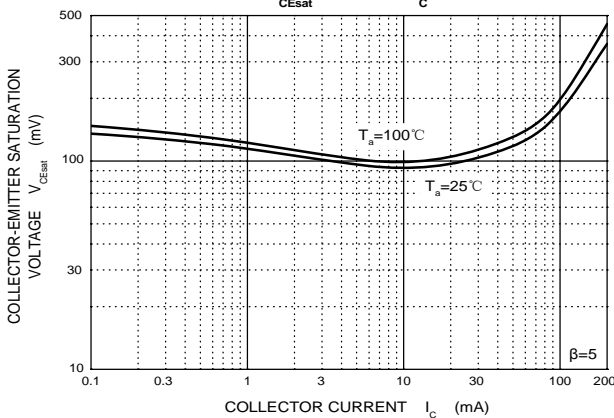
**Static Characteristic**



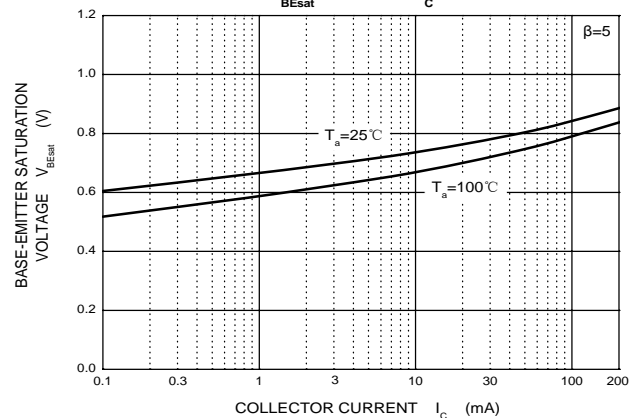
**$h_{FE}$  —  $I_c$**



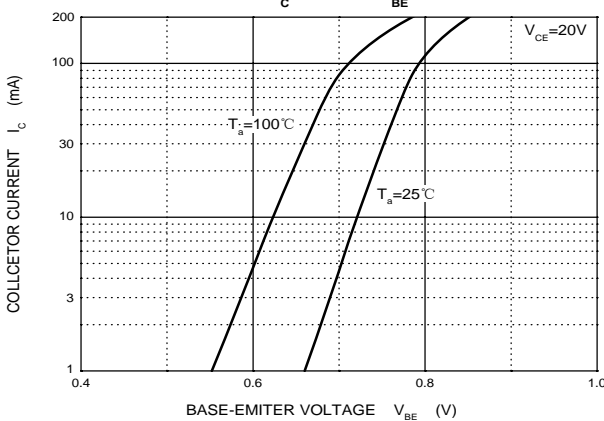
**$V_{CEsat}$  —  $I_c$**



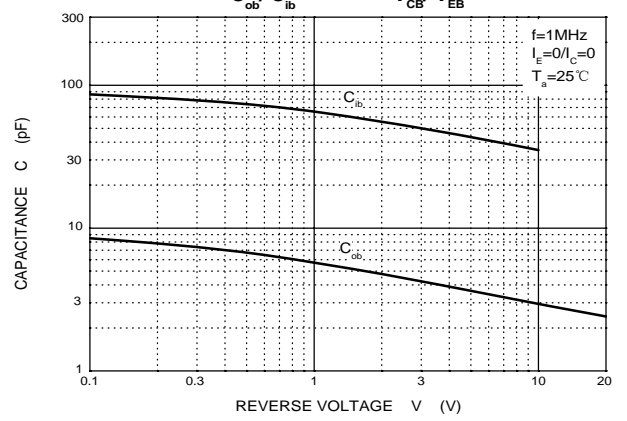
**$V_{BEsat}$  —  $I_c$**



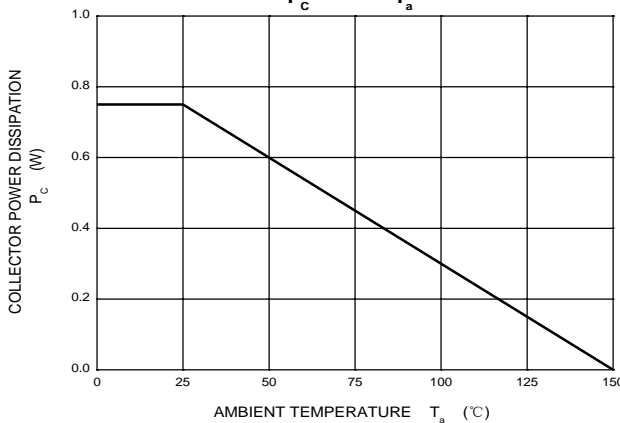
**$I_c$  —  $V_{BE}$**

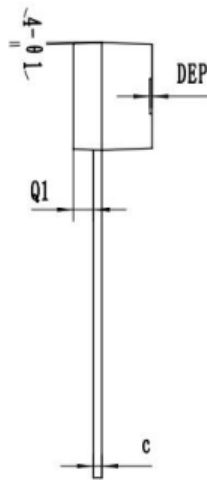
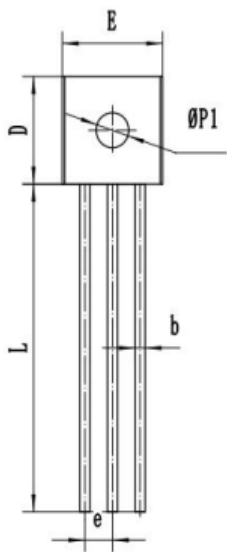


**$C_{ob}/C_{ib}$  —  $V_{CB}/V_{EB}$**



**$P_c$  —  $T_a$**





**TO-92**

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			

