

## NPN Plastic-Encapsulate Transistors

**(Pb)** Lead(Pb)-Free

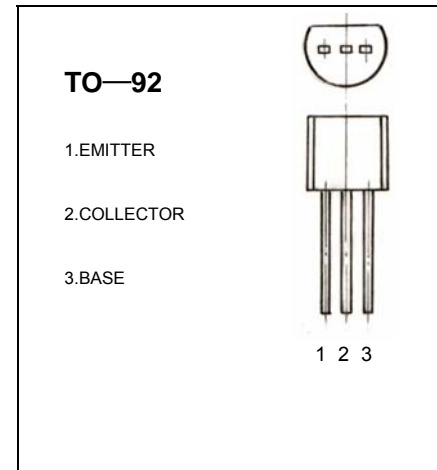
### FEATURES

Power dissipation

**MAXIMUM RATINGS\***  $T_A=25^{\circ}\text{C}$  unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CB0}$	Collector-Base Voltage	60	V
$V_{CE0}$	Collector-Emitter Voltage	50	V
$V_{EB0}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current -Continuous	150	mA
$P_D$	Total Device Dissipation	400	mW
$T_J, T_{stg}$	Junction and Storage Temperature	-55-150	$^{\circ}\text{C}$

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.



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

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V(BR)_{CBO}$	$I_C=100\ \mu\text{A}, I_E=0$	60			V
Collector-emitter breakdown voltage	$V(BR)_{CEO}$	$I_C=0.1\ \text{mA}, I_B=0$	50			V
Emitter-base breakdown voltage	$V(BR)_{EBO}$	$I_E=100\ \mu\text{A}, I_C=0$	5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=60\ \text{V}, I_E=0$			0.1	$\mu\text{A}$
Collector cut-off current	$I_{CEO}$	$V_{CE}=50\ \text{V}, I_B=0$			0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=5\ \text{V}, I_C=0$			0.1	$\mu\text{A}$
DC current gain	$h_{FE(1)}$	$V_{CE}=6\ \text{V}, I_C=2\ \text{mA}$	70		700	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=100\ \text{mA}, I_B=10\ \text{mA}$			0.25	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=100\ \text{mA}, I_B=10\ \text{mA}$			1	V
Transition frequency	$f_T$	$V_{CE}=10\ \text{V}, I_C=1\ \text{mA}$ $f=30\ \text{MHz}$	80			MHz
Collector Output Capacitance	$C_{ob}$	$V_{CB}=10\ \text{V}, I_E=0$ $f=1\ \text{MHz}$			3.5	pF
Noise Figure	NF	$V_{CE}=6\ \text{V}, I_C=0.1\ \text{mA}$ $f=1\ \text{KHz}, R_G=10\ \text{K}$			10	dB

### CLASSIFICATION OF $h_{FE(1)}$

Rank	O	Y	GR	BL
Range	70-140	120-240	200-400	350-700

## Typical Characteristics

