



# TO-92 Plastic-Encapsulate Transistors

## 2N2904 TRANSISTOR ( NPN )

### FEATURES

Power dissipation

$$P_{CM}: 0.80 \text{ W (Tamb=25}^\circ\text{C)}$$

Collector current

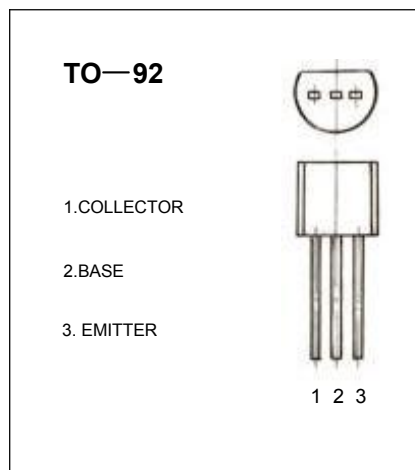
$$I_{CM}: 0.6 \text{ A}$$

Collector-base voltage

$$V_{(BR)CBO}: 60 \text{ V}$$

Operating and storage junction temperature range

$$T_J, T_{stg}: -55^\circ\text{C to } +150^\circ\text{C}$$



### ELECTRICAL CHARACTERISTICS (Tamb=25°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	$V_{(BR)CEO}$	$I_C=10\text{mA}, I_B=0$	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=50\text{V}, I_E=0$			0.02	$\mu\text{A}$
DC current gain	$H_{FE(1)}$	$V_{CE}=10\text{V}, I_C=0.1\text{mA}$			20	
DC current gain	$H_{FE(2)}$	$V_{CE}=10\text{V}, I_C=1\text{mA}$			25	
DC current gain	$H_{FE(3)}$	$V_{CE}=10\text{V}, I_C=10\text{mA}$			35	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			1.6	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			2.6	V
Current Gain-Bandwidth Product	$f_T$	$V_{CE}=20\text{V}, I_C=50\text{mA}$ $f=100\text{MHz}$	200			MHz

### CLASSIFICATION OF HFE

Rank	1	2	3
Range	10-15	15-20	20-35

