## TO-220L Plastic-Encapsulate Transistors

## FEATURES

- High Forward CurrentTransferRatio hFE which
- Has Satisfactory Linearity
- Low Collector to Emitter Saturation Voltage VcE(sat)
- Allowing Supply with the Radial Taping
- TRANSISTOR (NPN)


## MECHANICAL DATA

- Case style:TO-220L molded plastic
- Mounting position:any


MAXIMUM RATINGS AND CHARACTERISTICS
@ $25^{\circ} \mathrm{C}$ Ambient Temperature (unless otherwise noted)

| Parameter | Symbol | Value | Unit |
| :--- | :---: | :---: | :---: |
| Collector-Base Voltage | $\mathrm{V}_{\text {CBO }}$ | 80 | V |
| Collector-Emitter Voltage | $\mathrm{V}_{\text {CEO }}$ | 80 | V |
| Emitter-Base Voltage | $\mathrm{V}_{\text {EBO }}$ | 6 | V |
| Collector Current -Continuous | IC | 3 | A |
| Collector Power Dissipation | PC | 2 | W |
| Junction Temperature | $\mathrm{TJ}_{\mathrm{J}}$ | 150 | ${ }^{\circ} \mathrm{C}$ |
| Storage Temperature | $\mathrm{T}_{\text {stg }}$ | $-55 \sim+150$ | ${ }^{\circ} \mathrm{C}$ |


| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Collector-base breakdown voltage | $\mathrm{V}_{\text {(BR) }}$ CBO | $\mathrm{I}_{\mathrm{C}}=0.1 \mathrm{~mA}, \mathrm{I}_{\mathrm{E}}=0$ | 80 |  |  | V |
| Collector-emitter breakdown voltage | $V_{\text {(BR)CEO }}$ | $\mathrm{I}_{\mathrm{C}}=30 \mathrm{~mA}, \mathrm{I}_{\mathrm{B}}=0$ | 80 |  |  | V |
| Emitter-base breakdown voltage | $V_{\text {(BR) }}$ Ebo | $\mathrm{I}_{\mathrm{E}}=0.1 \mathrm{~mA}, \mathrm{I}_{\mathrm{C}}=0$ | 6 |  |  | V |
| Collector cut-off current | Icbo | $\mathrm{V}_{\mathrm{CB}}=60 \mathrm{~V}, \mathrm{I}_{\mathrm{E}}=0$ |  |  | 100 | $\mu \mathrm{A}$ |
| Collector cut-off current | ICEO | $\mathrm{V}_{\mathrm{CE}}=30 \mathrm{~V}, \mathrm{I}_{\mathrm{B}}=0$ |  |  | 100 | $\mu \mathrm{A}$ |
| Emitter cut-off current | Iebo | $\mathrm{V}_{\mathrm{EB}}=6 \mathrm{~V}, \mathrm{I}_{\mathrm{C}}=0$ |  |  | 100 | $\mu \mathrm{A}$ |
| DC current gain | $\mathrm{hfE}_{\text {(1) }}$ | $\mathrm{V}_{\mathrm{CE}}=4 \mathrm{~V}, \mathrm{I}_{\mathrm{C}}=1 \mathrm{~A}$ | 70 |  | 320 |  |
|  | $\mathrm{h}_{\text {FE }(2)}$ | $\mathrm{V}_{\mathrm{CE}}=4 \mathrm{~V}, \mathrm{I}_{\mathrm{C}}=3 \mathrm{~A}$ | 10 |  |  |  |
| Collector-emitter saturation voltage | $\mathrm{V}_{\text {CE(sat) }}$ | $\mathrm{I}_{\mathrm{C}}=3 \mathrm{~A}, \mathrm{I}_{\mathrm{B}}=375 \mathrm{~mA}$ |  |  | 1.2 | V |
| Base-emitter voltage | $V_{B E}$ | $\mathrm{V}_{\mathrm{CE}}=4 \mathrm{~V}, \mathrm{I}_{\mathrm{C}}=3 \mathrm{~A}$ |  |  | 1.8 | V |
| Transition frequency | $\mathrm{f}_{\top}$ | $\mathrm{V}_{\mathrm{CE}}=5 \mathrm{~V}, \mathrm{I}_{\mathrm{C}}=0.2 \mathrm{~A}, \mathrm{f}=10 \mathrm{MHz}$ |  | 30 |  | MHz |

