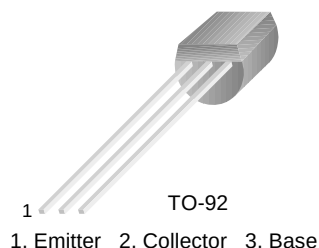


# FJN3313R

FJN3313R

## Switching Application (Bias Resistor Built In)

- Switching circuit, Inverter, Interface circuit, Driver Circuit
- Built in bias Resistor ( $R_1=2.2K\Omega$ ,  $R_2=47K\Omega$ )
- Complement to FJN4313R

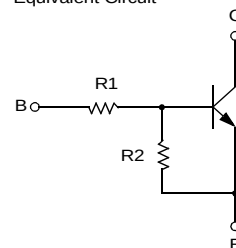


## NPN Epitaxial Silicon Transistor

### Absolute Maximum Ratings $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter                   | Value     | Units            |
|-----------|-----------------------------|-----------|------------------|
| $V_{CBO}$ | Collector-Base Voltage      | 50        | V                |
| $V_{CEO}$ | Collector-Emitter Voltage   | 50        | V                |
| $V_{EBO}$ | Emitter-Base Voltage        | 10        | V                |
| $I_C$     | Collector Current           | 100       | mA               |
| $P_C$     | Collector Power Dissipation | 300       | mW               |
| $T_J$     | Junction Temperature        | 150       | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature         | -55 ~ 150 | $^\circ\text{C}$ |

Equivalent Circuit

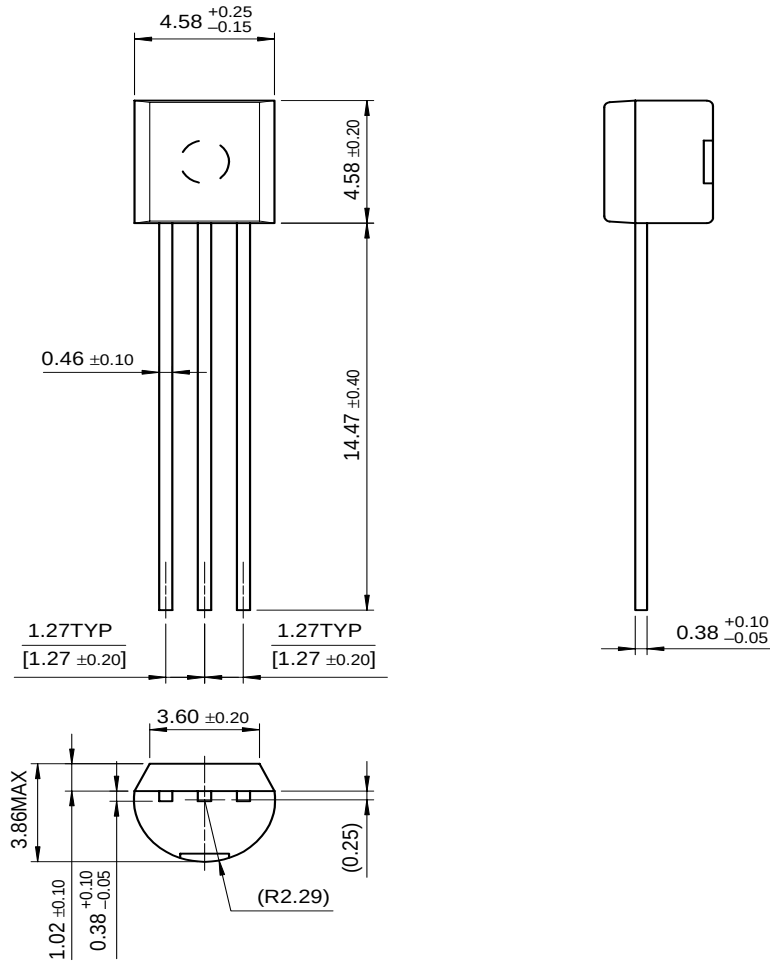


### Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol            | Parameter                            | Test Condition                                     | Min.  | Typ.  | Max.  | Units         |
|-------------------|--------------------------------------|----------------------------------------------------|-------|-------|-------|---------------|
| $BV_{CBO}$        | Collector-Base Breakdown Voltage     | $I_C=10\mu\text{A}$ , $I_E=0$                      | 50    |       |       | V             |
| $BV_{CEO}$        | Collector-Emitter Breakdown Voltage  | $I_C=100\mu\text{A}$ , $I_B=0$                     | 50    |       |       | V             |
| $I_{CBO}$         | Collector Cut-off Current            | $V_{CB}=40\text{V}$ , $I_E=0$                      |       |       | 0.1   | $\mu\text{A}$ |
| $h_{FE}$          | DC Current Gain                      | $V_{CE}=5\text{V}$ , $I_C=5\text{mA}$              | 68    |       |       |               |
| $V_{CE(sat)}$     | Collector-Emitter Saturation Voltage | $I_C=10\text{mA}$ , $I_B=0.5\text{mA}$             |       |       | 0.3   | V             |
| $f_T$             | Current Gain Bandwidth Product       | $V_{CE}=10\text{V}$ , $I_C=5\text{mA}$             |       | 250   |       | MHz           |
| $C_{ob}$          | Output Capacitance                   | $V_{CB}=10\text{V}$ , $I_E=0$<br>$f=1.0\text{MHz}$ |       | 3.7   |       | pF            |
| $V_I(\text{off})$ | Input Off Voltage                    | $V_{CE}=5\text{V}$ , $I_C=100\mu\text{A}$          | 0.5   |       |       | V             |
| $V_I(\text{on})$  | Input On Voltage                     | $V_{CE}=0.2\text{V}$ , $I_C=5\text{mA}$            |       |       | 1.1   | V             |
| $R_1$             | Input Resistor                       |                                                    | 1.5   | 2.2   | 2.9   | $K\Omega$     |
| $R_1/R_2$         | Resistor Ratio                       |                                                    | 0.042 | 0.047 | 0.052 |               |

# Package Dimensions

## TO-92



Dimensions in Millimeters

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|--------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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