



JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO., LTD

## TO-92MOD Plastic-Encapsulate Transistors

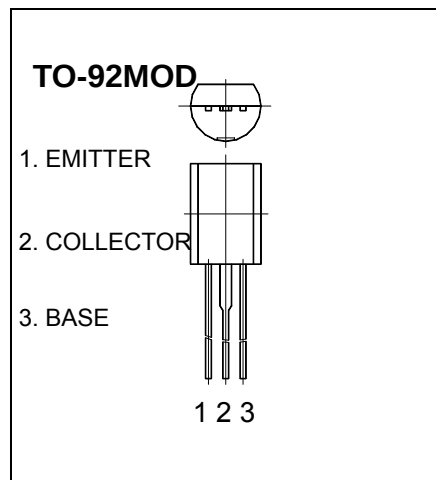
### 2SA1020 TRANSISTOR (PNP)

#### FEATURES

Power amplifier applications

#### 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          | -5      | V                  |
| $I_C$     | Collector Current –Continuous | -2      | A                  |
| $P_C$     | Collector Power Dissipation   | 900     | mW                 |
| $T_J$     | Junction Temperature          | 150     | $^{\circ}\text{C}$ |
| $T_{stg}$ | Storage Temperature           | -55-150 | $^{\circ}\text{C}$ |



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

| Parameter                            | Symbol        | Test conditions                                                            | MIN | TYP | MAX  | UNIT          |
|--------------------------------------|---------------|----------------------------------------------------------------------------|-----|-----|------|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C = -100\mu\text{A}, I_E = 0$                                           | -50 |     |      | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C = -10\text{mA}, I_B = 0$                                              | -50 |     |      | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E = -100\mu\text{A}, I_C = 0$                                           | -5  |     |      | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB} = -50\text{V}, I_E = 0$                                            |     |     | -1   | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = -5\text{V}, I_C = 0$                                             |     |     | -1   | $\mu\text{A}$ |
| DC current gain                      | $h_{FE1}$     | $V_{CE} = -2\text{V}, I_C = -0.5\text{A}$                                  | 70  |     | 240  |               |
|                                      | $h_{FE2}$     | $V_{CE} = -2\text{V}, I_C = -1.5\text{A}$                                  | 40  |     |      |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -1\text{A}, I_B = -50\text{mA}$                                     |     |     | -0.5 | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = -1\text{A}, I_B = -50\text{mA}$                                     |     |     | -1.2 | V             |
| Transition frequency                 | $f_T$         | $V_{CE} = -2\text{V}, I_C = -500\text{mA}$                                 |     | 100 |      | MHz           |
| Collector output capacitance         | $C_{ob}$      | $V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$                           |     | 40  |      | pF            |
| Turn-on time                         | $t_{on}$      | $V_{CC} = -30\text{V}, I_{B1} = -I_{B2} = -0.05\text{A}, I_C = -1\text{A}$ |     | 0.1 |      | $\mu\text{s}$ |
| Storage time                         | $t_s$         |                                                                            |     | 1   |      | $\mu\text{s}$ |
| Fall time                            | $t_f$         |                                                                            |     | 0.1 |      | $\mu\text{s}$ |

#### CLASSIFICATION OF $h_{FE1}$

| Rank  | O      | Y       |
|-------|--------|---------|
| Range | 70-140 | 120-240 |

# Typical Characteristics

2SA1020

