

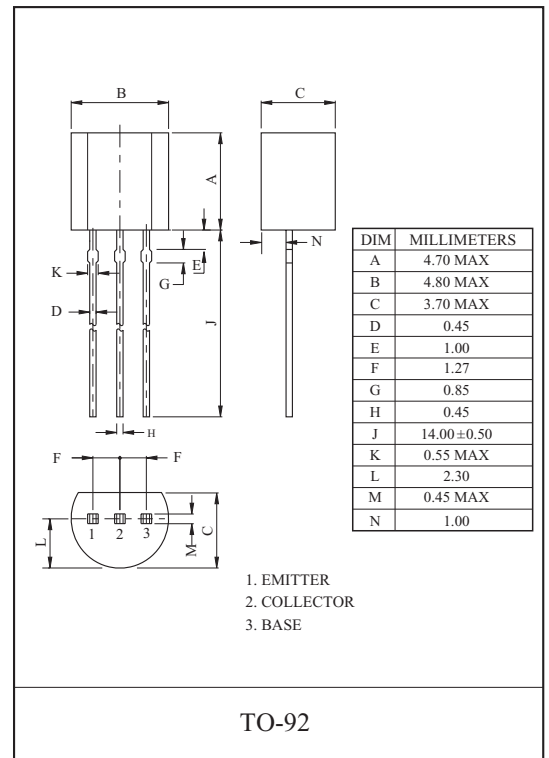
GENERAL PURPOSE APPLICATION.  
HIGH VOLTAGE APPLICATION.

#### FEATURES

- High Collector Breakdown Voltage  
:  $V_{CBO} = -160V$ ,  $V_{CEO} = -150V$
- Low Leakage Current.  
:  $I_{CBO} = -50nA(\text{Max.}) @ V_{CB} = -120V$
- Low Saturation Voltage  
:  $V_{CE(\text{sat})} = -0.5V(\text{Max.}) @ I_C = -50mA, I_B = -5mA$
- Low Noise :  $NF = 8dB(\text{Max.})$

#### MAXIMUM RATING (Ta=25 °C)

| CHARACTERISTIC                            | SYMBOL    | RATING    | UNIT |
|---|-----------|-----------|------|
| Collector-Base Voltage                    | $V_{CBO}$ | -160      | V    |
| Collector-Emitter Voltage                 | $V_{CEO}$ | -150      | V    |
| Emitter-Base Voltage                      | $V_{EBO}$ | -5        | V    |
| Collector Current                         | $I_C$     | -600      | mA   |
| Base Current                              | $I_B$     | -100      | mA   |
| Collector Power Dissipation<br>(Ta=25 °C) | $P_C$     | 625       | mW   |
| Collector Power Dissipation<br>(Tc=25 °C) | $P_C$     | 1.5       | W    |
| Junction Temperature                      | $T_j$     | 150       | °C   |
| Storage Temperature Range                 | $T_{stg}$ | -55 ~ 150 | °C   |



# 2N5401C

## ELECTRICAL CHARACTERISTICS (Ta=25 °C)

| CHARACTERISTIC                         | SYMBOL         | TEST CONDITION  | MIN. | TYP. | MAX. | UNIT    |
|--|----------------|---|------|------|------|---------|
| Collector Cut-off Current              | $I_{CBO}$      | $V_{CB}=-120V, I_E=0$   | -    | -    | -50  | nA      |
|  |                | $V_{CB}=-120V, I_E=0, T_a=100^\circ C$                              | -    | -    | -50  | $\mu A$ |
| Emitter Cut-off Current                | $I_{EBO}$      | $V_{EB}=-3V, I_C=0$   | -    | -    | -50  | nA      |
| Collector-Base Breakdown Voltage       | $V_{(BR)CBO}$  | $I_C=-0.1mA, I_E=0$   | -160 | -    | -    | V       |
| Collector-Emitter Breakdown Voltage *  | $V_{(BR)CEO}$  | $I_C=-1mA, I_B=0$   | -150 | -    | -    | V       |
| Emitter-Base Breakdown Voltage         | $V_{(BR)EBO}$  | $I_E=-10\mu A, I_C=0$   | -5   | -    | -    | V       |
| DC Current Gain *                      | $h_{FE}(1)$    | $V_{CE}=-5V, I_C=-1mA$  | 50   | -    | -    |         |
|  | $h_{FE}(2)$    | $V_{CE}=-5V, I_C=-10mA$   | 60   | -    | 240  |         |
|  | $h_{FE}(3)$    | $V_{CE}=-5V, I_C=-50mA$   | 50   | -    | -    |         |
| Collector-Emitter Saturation Voltage * | $V_{CE(sat)1}$ | $I_C=-10mA, I_B=-1mA$   | -    | -    | -0.2 | V       |
|  | $V_{CE(sat)2}$ | $I_C=-50mA, I_B=-5mA$   | -    | -    | -0.5 |         |
| Base-Emitter Saturation Voltage *      | $V_{BE(sat)1}$ | $I_C=-10mA, I_B=-1mA$   | -    | -    | -1.0 | V       |
|  | $V_{BE(sat)2}$ | $I_C=-50mA, I_B=-5mA$   | -    | -    | -1.0 |         |
| Transition Frequency                   | $f_T$          | $V_{CE}=-10V, I_C=-10mA, f=100MHz$                                  | 100  | -    | 300  | MHz     |
| Collector Output Capacitance           | $C_{ob}$       | $V_{CB}=-10V, I_E=0, f=1MHz$  | -    | -    | 6    | pF      |
| Small-Signal Current Gain              | $h_{fe}$       | $V_{CE}=-10V, I_C=-1mA, f=1kHz$                                     | 40   | -    | 200  |         |
| Noise Figure                           | NF             | $V_{CE}=-5V, I_C=-250\mu A$<br>$R_g=1k \Omega, f=10Hz \sim 15.7kHz$ | -    | -    | 8    | dB      |

\* Pulse Test : Pulse Width  $\leq 300 \mu s$ , Duty Cycle  $\leq 2\%$ .