

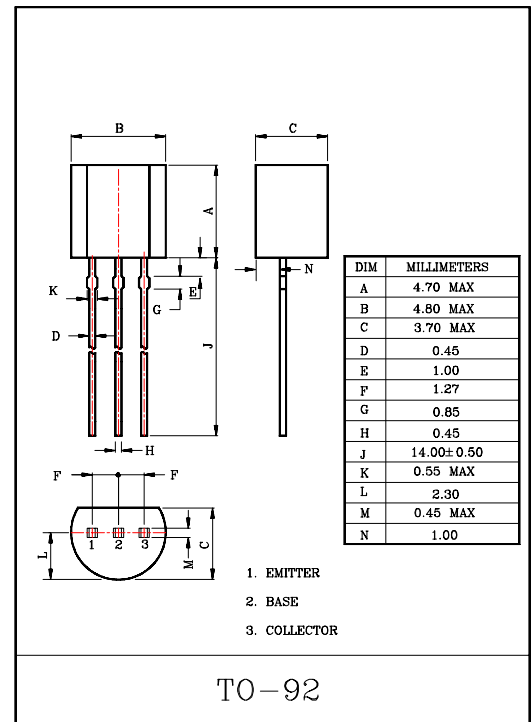
GENERAL PURPOSE APPLICATION.
SWITCHING APPLICATION.

FEATURES

- Low Leakage Current
: $I_{CEX} = -50\text{nA}(\text{Max.})$, $I_{BL} = -50\text{nA}(\text{Max.})$
@ $V_{CE} = -30\text{V}$, $V_{EB} = -3\text{V}$.
- Excellent DC Current Gain Linearity.
- Low Saturation Voltage
: $V_{CE(\text{sat})} = -0.4\text{V}(\text{Max.})$ @ $I_C = -50\text{mA}$, $I_B = -5\text{mA}$.
- Low Collector Output Capacitance
: $C_{ob} = 4.5\text{pF}(\text{Max.})$ @ $V_{CB} = -5\text{V}$.
- Complementary to 2N3904.

MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|-----------------------------|--------------------------|-----------|-----------|------------------|
| Collector-Base Voltage | | V_{CBO} | -40 | V |
| Collector-Emitter Voltage | | V_{CEO} | -40 | V |
| Emitter-Base Voltage | | V_{EBO} | -5 | V |
| Collector Current | | I_C | -200 | mA |
| Base Current | | I_B | -50 | mA |
| Collector Power Dissipation | $T_a = 25^\circ\text{C}$ | P_C | 625 | mW |
| | $T_c = 25^\circ\text{C}$ | | 1.5 | W |
| Junction Temperature | | T_j | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | | T_{stg} | -55 ~ 150 | $^\circ\text{C}$ |



2N3906

ELECTRICAL CHARACTERISTICS (Ta=25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---------------------------------------|--------------|----------------|------------------------------------|---|------|-------|------------------|
| Collector Cut-off Current | | I_{CEX} | $V_{CE}=-30V, V_{EB}=-3V$ | - | - | -50 | nA |
| Base Cut-off Current | | I_{BL} | $V_{CE}=-30V, V_{EB}=-3V$ | - | - | -50 | nA |
| Collector-Base Breakdown Voltage | | $V_{(BR)CBO}$ | $I_C=-10\mu A, I_E=0$ | -40 | - | - | V |
| Collector-Emitter Breakdown Voltage * | | $V_{(BR)CEO}$ | $I_C=-1mA, I_B=0$ | -40 | - | - | V |
| Emitter-Base Breakdown Voltage | | $V_{(BR)EBO}$ | $I_E=-10\mu A, I_C=0$ | -5.0 | - | - | V |
| DC Current Gain | * | $h_{FE(1)}$ | $V_{CE}=-1V, I_C=-0.1mA$ | 60 | - | - | |
| | | $h_{FE(2)}$ | $V_{CE}=-1V, I_C=-1mA$ | 80 | - | - | |
| | | $h_{FE(3)}$ | $V_{CE}=-1V, I_C=-10mA$ | 100 | - | 300 | |
| | | $h_{FE(4)}$ | $V_{CE}=-1V, I_C=-50mA$ | 60 | - | - | |
| | | $h_{FE(5)}$ | $V_{CE}=-1V, I_C=-100mA$ | 30 | - | - | |
| Collector-Emitter Saturation Voltage | * | $V_{CE(sat)1}$ | $I_C=-10mA, I_B=-1mA$ | - | - | -0.25 | V |
| | | $V_{CE(sat)2}$ | $I_C=-50mA, I_B=-5mA$ | - | - | -0.4 | |
| Base-Emitter Saturation Voltage | * | $V_{BE(sat)1}$ | $I_C=-10mA, I_B=-1mA$ | -0.65 | - | -0.85 | V |
| | | $V_{BE(sat)2}$ | $I_C=-50mA, I_B=-5mA$ | - | - | -0.95 | |
| Transition Frequency | | f_T | $V_{CE}=-20V, I_C=-10mA, f=100MHz$ | 250 | - | - | MHz |
| Collector Output Capacitance | | C_{ob} | $V_{CB}=-5V, I_E=0, f=1MHz$ | - | - | 4.5 | pF |
| Input Capacitance | | C_{ib} | $V_{BE}=-0.5V, I_C=0, f=1MHz$ | - | - | 10 | pF |
| Input Impedance | | h_{ie} | $V_{CE}=-10V, I_C=-1mA, f=1kHz$ | 2.0 | - | 12 | k Ω |
| Voltage Feedback Ratio | | h_{re} | | 1.0 | - | 10 | $\times 10^{-4}$ |
| Small-Signal Current Gain | | h_{fe} | | 100 | - | 400 | |
| Collector Output Admittance | | h_{oe} | | 3.0 | - | 60 | μS |
| Noise Figure | | NF | | $V_{CE}=-5V, I_C=-0.1mA$ $R_g=1k\Omega, f=10Hz \sim 15.7kHz$ | - | - | 4.0 |
| Switching Time | Delay Time | t_d | | - | - | 35 | nS |
| | Rise Time | t_r | | - | - | 35 | |
| | Storage Time | t_{stg} | | - | - | 225 | |
| | Fall Time | t_f | | - | - | 75 | |

Note : *Pulse Test : Pulse Width $\leq 300\mu S$, Duty Cycle $\leq 2.0\%$