

Transistors

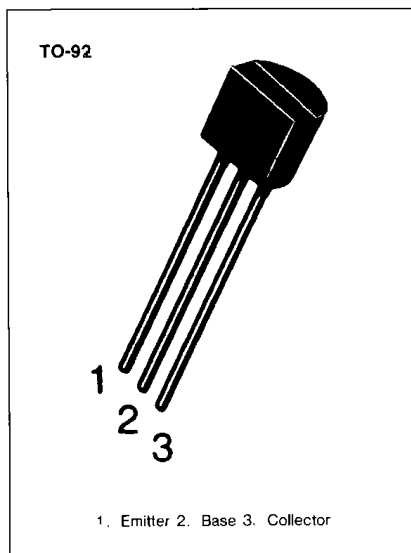
2N3906

GENERAL PURPOSE TRANSISTOR

- Collector-Emitter Voltage: $V_{CEO} = 40V$
- Collector Dissipation: $P_C (max) = 625mW$

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ C$)

| 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 |
| Collector Dissipation | P_C | -625 | mW |
| Junction Temperature | T_J | 150 | $^\circ C$ |
| Storage Temperature | T_{stg} | -55 ~ 150 | $^\circ C$ |



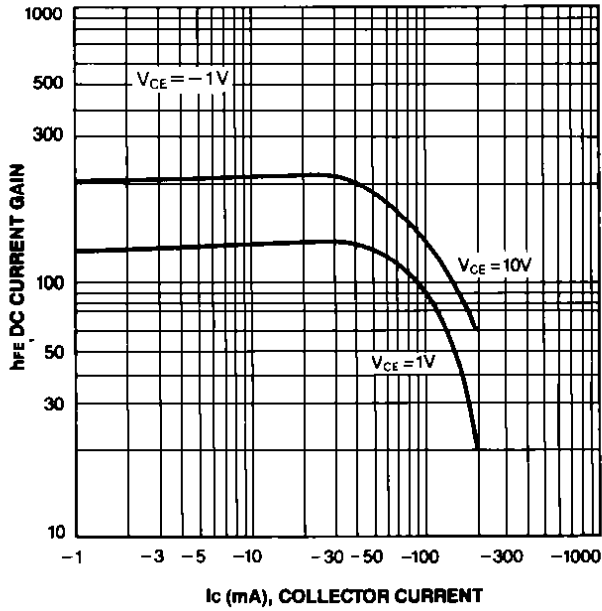
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------------------|----------------|--------------------------------|-------|-----|-------|------|
| Collector-Base Breakdown Voltage | BV_{CBO} | $I_C = -10\mu A, I_E = 0$ | -40 | | | V |
| *Collector-Emitter Breakdown Voltage | BV_{CEO} | $I_C = -1mA, I_B = 0$ | -40 | | | V |
| Emitter-Base Breakdown Voltage | BV_{EBO} | $I_E = -10\mu A, I_C = 0$ | -6 | | | V |
| 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 |
| *DC Current Gain | h_{FE} | $V_{CE} = -1V, I_C = -0.1mA$ | | 60 | | |
| | | $V_{CE} = -1V, I_C = -1mA$ | | 80 | | |
| | | $V_{CE} = -1V, I_C = -10mA$ | | 100 | 300 | |
| | | $V_{CE} = -1V, I_C = -50mA$ | | 60 | | |
| | | $V_{CE} = -1V, I_C = 100mA$ | | 30 | | |
| *Collector-Emitter Saturation Voltage | $V_{CE (sat)}$ | $I_C = -10mA, I_B = -1mA$ | | | -0.25 | V |
| | | $I_C = -50mA, I_B = -5mA$ | | | -0.4 | V |
| *Base-Emitter Saturation Voltage | $V_{BE (sat)}$ | $I_C = -10mA, I_B = -1mA$ | -0.65 | | -0.85 | V |
| | | $I_C = -50mA, I_B = -5mA$ | | | -0.95 | V |
| Output Capacitance | C_{OB} | $V_{CB} = -5V, I_E = 0$ | | | 4.5 | pF |
| | | $f = 100KHz$ | | | | |
| Current Gain Bandwidth Product | f_T | $V_{CE} = -20V, I_C = -10mA$ | | | | |
| | | $f = 100MHz$ | 250 | | | MHz |
| Turn On Time | t_{ON} | $V_{CC} = -3V, V_{BE} = -0.5V$ | | | 70 | ns |
| | | $I_C = -10mA, I_{B1} = -1mA$ | | | | |
| Turn Off Time | t_{OFF} | $V_{CC} = -3V, I_C = -10mA$ | | | | |
| | | $I_{B1} = I_{B2} = 1mA$ | | | 300 | ns |

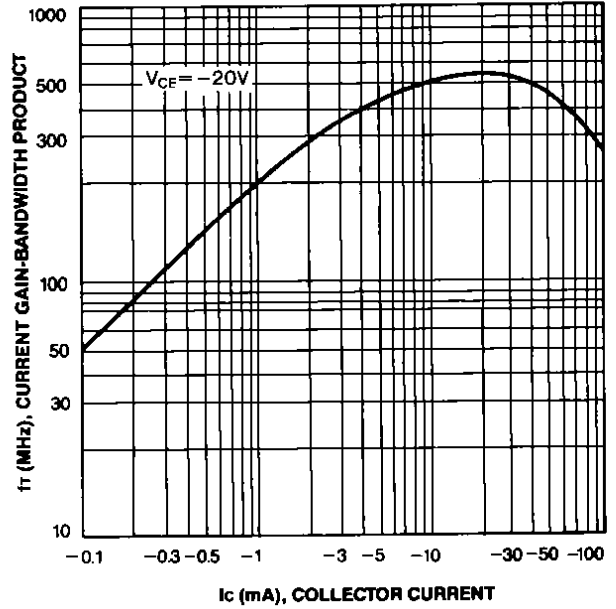
* Pulse Test: Pulse Width $\leq 300\mu s$. Duty Cycle $\leq 2\%$



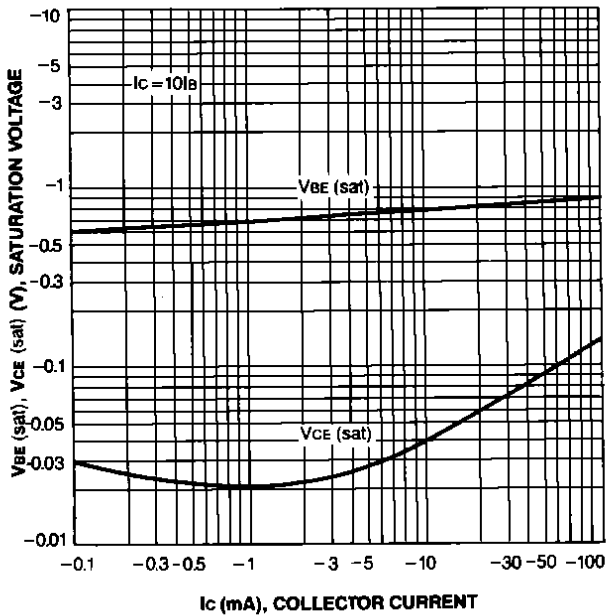
DC CURRENT GAIN



CURRENT GAIN-BANDWIDTH PRODUCT



**BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE**



OUTPUT CAPACITANCE

